

ASRM 2026

Scientific Congress & Expo

Baltimore, Maryland

OCTOBER 24-28

ABSTRACT GUIDE

The official *Fertility & Sterility* Abstract Supplement will be released in early December 2026. This preliminary abstract guide is intended solely as a planning resource to assist attendees in developing their schedules.

Please be advised that all presentation information, including session dates and times, remains subject to change as final program adjustments are made, including those resulting from late withdrawals. The most up-to-date times will be available in the ASRM 2026 Scientific Congress mobile app.

ASRM 2026

ABSTRACT GUIDE

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BALTIMORE, MARYLAND • OCTOBER 24–28, 2026

DISCOVERY | INNOVATION | ADVANCEMENT

Monday, October 26, 2026

11:15 AM–12:15 PM

Oral Abstract Sessions

- **OSM-01 —** 2026 Scientific Congress Prize Paper (1 of 2) (301)
- **OSM-02 —** Oral Abstract Session: Law, Policy, & Advocacy (303)
- **OSM-03 —** Oral Abstract Session: Genetic Counseling (304)
- **OSM-04 —** Oral Abstract Session: Reproductive Urology (305)
- **OSM-05 —** Oral Abstract Session: Fertility Preservation (306)
- **OSM-06 —** Oral Abstract Session: Patient Centered Care (1 of 2) (311)

PSM-AM — Monday Morning Poster Sessions (Expo Hall, Poster Hall)

- **PSM-01 —** LGBTQIA+ (Poster Hall Station 1)
- **PSM-02 —** Mental Health & Psychosocial (1 of 4) (Poster Hall Station 2)
- **PSM-03 —** Mental Health & Psychosocial (2 of 4) (Poster Hall Station 3)
- **PSM-04 —** Mental Health & Psychosocial (3 of 4) (Poster Hall Station 4)
- **PSM-05 —** Mental Health & Psychosocial (4 of 4) (Poster Hall Station 5)
- **PSM-06 —** Pre-Clinical & Basic Research (1 of 10) (Poster Hall Station 6)
- **PSM-07 —** Pre-Clinical & Basic Research (2 of 10) (Poster Hall Station 7)
- **PSM-08 —** Pre-Clinical & Basic Research (3 of 10) (Poster Hall Station 8)
- **PSM-09 —** Pre-Clinical & Basic Research (4 of 10) (Poster Hall Station 9)
- **PSM-10 —** Pre-Clinical & Basic Research (5 of 10) (Poster Hall Station 10)
- **PSM-11 —** Pre-Clinical & Basic Research (6 of 10) (Poster Hall Station 11)
- **PSM-12 —** Pre-Clinical & Basic Research (7 of 10) (Poster Hall Station 12)
- **PSM-13 —** Pre-Clinical & Basic Research (8 of 10) (Poster Hall Station 13)
- **PSM-14 —** Pre-Clinical & Basic Research (9 of 10) (Poster Hall Station 14)
- **PSM-15 —** Pre-Clinical & Basic Research (10 of 10) (Poster Hall Station 15)
- **PSM-16 —** Technology & Innovation (1 of 8) (Poster Hall Station 16)
- **PSM-17 —** Technology & Innovation (2 of 8) (Poster Hall Station 17)
- **PSM-18 —** Technology & Innovation (3 of 8) (Poster Hall Station 18)
- **PSM-19 —** Genetics (1 of 21) (Poster Hall Station 19)
- **PSM-20 —** Genetics (2 of 21) (Poster Hall Station 20)

1:30 PM–2:45 PM

Oral and Video Abstract Sessions

- **OSM-07 —** 2026 Scientific Congress Prize Paper (2 of 2) (301)
- **OSM-08 —** Oral Abstract Session: Reproductive Urology- Traveling Scholars (303)
- **OSM-09 —** Oral Abstract Session: Recurrent Pregnancy Loss (304)
- **OSM-10 —** Oral Abstract Session: Health Disparities & Health Equity (305)
- **OSM-11 —** Oral Abstract Session: Technology & Innovation (1 of 2) (306)
- **VSM-01 —** Video Abstract Session: Surgery (311)

PSM-PM1 — Monday Early Afternoon Poster Sessions (Expo Hall, Poster Hall)

- **PSM-21 —** Law, Policy, & Advocacy (1 of 2) (Poster Hall Station 1)
- **PSM-22 —** Law, Policy, & Advocacy (2 of 2) (Poster Hall Station 2)
- **PSM-23 —** Infertility (1 of 10) (Poster Hall Station 3)
- **PSM-24 —** Infertility (2 of 10) (Poster Hall Station 4)

- **PSM-25 —** Infertility (3 of 10) (Poster Hall Station 5)
- **PSM-26 —** Infertility (4 of 10) (Poster Hall Station 6)
- **PSM-27 —** Infertility (5 of 10) (Poster Hall Station 7)
- **PSM-28 —** Infertility (6 of 10) (Poster Hall Station 8)
- **PSM-29 —** Infertility (7 of 10) (Poster Hall Station 9)
- **PSM-30 —** Infertility (8 of 10) (Poster Hall Station 10)
- **PSM-31 —** Infertility (9 of 10) (Poster Hall Station 11)
- **PSM-32 —** Infertility (10 of 10) (Poster Hall Station 12)
- **PSM-33 —** Environmental Factors (1 of 2) (Poster Hall Station 13)
- **PSM-34 —** Environmental Factors (2 of 2) (Poster Hall Station 14)
- **PSM-35 —** Global Health (1 of 3) (Poster Hall Station 15)
- **PSM-36 —** Global Health (2 of 3) (Poster Hall Station 16)
- **PSM-37 —** Global Health (3 of 3) (Poster Hall Station 17)
- **PSM-38 —** ART (1 of 27) (Poster Hall Station 18)
- **PSM-39 —** ART (2 of 27) (Poster Hall Station 19)
- **PSM-40 —** ART (3 of 27) (Poster Hall Station 20)

3:45 PM– 5:00 PM

Oral Abstract Sessions

- **OSM-12 —** Oral Abstract Session: SART CORS (301)
- **OSM-13 —** Oral Abstract Session: LGBTQIA+ (303)
- **OSM-14 —** Oral Abstract Session: Genetics (1 of 2) (304)
- **OSM-15 —** Oral Abstract Session: Endometriosis & Adenomyosis (305)
- **OSM-16 —** Oral Abstract Session: Infertility (1 of 3) (306)
- **OSM-17 —** Oral Abstract Session: ART – Artificial Intelligence (AI) (311)

PSM-PM2 — Monday Late Afternoon Poster Sessions (Expo Hall, Poster Hall)

- **PSM-41 —** ASRM 2026 Top Poster Session (1 of 2) (Poster Hall Station 1)
- **PSM-42 —** ASRM 2026 Top Poster Session (2 of 2) (Poster Hall Station 2)
- **PSM-43 —** ART (4 of 27) (Poster Hall Station 3)
- **PSM-44 —** ART (5 of 27) (Poster Hall Station 4)
- **PSM-45 —** ART (6 of 27) (Poster Hall Station 5)
- **PSM-46 —** ART (7 of 27) (Poster Hall Station 6)
- **PSM-47 —** ART (8 of 27) (Poster Hall Station 7)
- **PSM-48 —** ART (9 of 27) (Poster Hall Station 8)
- **PSM-49 —** ART (10 of 27) (Poster Hall Station 9)
- **PSM-50 —** ART (11 of 27) (Poster Hall Station 10)
- **PSM-51 —** ART (12 of 27) (Poster Hall Station 11)
- **PSM-52 —** ART (13 of 27) (Poster Hall Station 12)
- **PSM-53 —** ART (14 of 27) (Poster Hall Station 13)
- **PSM-54 —** ART (15 of 27) (Poster Hall Station 14)
- **PSM-55 —** ART (16 of 27) (Poster Hall Station 15)
- **PSM-56 —** ART (17 of 27) (Poster Hall Station 16)
- **PSM-57 —** ART (18 of 27) (Poster Hall Station 17)
- **PSM-58 —** ART (19 of 27) (Poster Hall Station 18)
- **PSM-59 —** ART (20 of 27) (Poster Hall Station 19)
- **PSM-60 —** ART (21 of 27) (Poster Hall Station 20)

Tuesday, October 27, 2026

11:15 AM–12:15 PM

Oral Abstract Sessions

- **OST-01 —** Oral Abstract Session: Randomized Control Trials (312)
- **OST-02 —** Oral Abstract Session: Mental Health & Psychosocial (303)
- **OST-03 —** Oral Abstract Session: Business of Medicine (304)
- **OST-04 —** Oral Abstract Session: Access to Care (305)
- **OST-05 —** Oral Abstract Session: ART (1 of 3) (306)
- **OST-06 —** ASRM Research Institute Presents (1 of 2) (301)

PST-AM — Tuesday Morning Poster Sessions (Expo Hall, Poster Hall)

- **PST-01 —** Complex Family Planning (Poster Hall Station 1)
- **PST-02 —** Fertility Preservation (1 of 12) (Poster Hall Station 2)
- **PST-03 —** Fertility Preservation (2 of 12) (Poster Hall Station 3)
- **PST-04 —** Fertility Preservation (3 of 12) (Poster Hall Station 4)
- **PST-05 —** Fertility Preservation (4 of 12) (Poster Hall Station 5)
- **PST-06 —** Fertility Preservation (5 of 12) (Poster Hall Station 6)
- **PST-07 —** Fertility Preservation (6 of 12) (Poster Hall Station 7)
- **PST-08 —** Fertility Preservation (7 of 12) (Poster Hall Station 8)
- **PST-09 —** Fertility Preservation (8 of 12) (Poster Hall Station 9)
- **PST-10 —** Fertility Preservation (9 of 12) (Poster Hall Station 10)
- **PST-11 —** Fertility Preservation (10 of 12) (Poster Hall Station 11)
- **PST-12 —** Fertility Preservation (11 of 12) (Poster Hall Station 12)
- **PST-13 —** Fertility Preservation (12 of 12) (Poster Hall Station 13)
- **PST-14 —** Reproductive Medicine - Non-Infertility (1 of 4) (Poster Hall Station 14)
- **PST-15 —** Reproductive Medicine - Non-Infertility (2 of 4) (Poster Hall Station 15)
- **PST-16 —** Reproductive Medicine - Non-Infertility (3 of 4) (Poster Hall Station 16)
- **PST-17 —** Reproductive Medicine - Non-Infertility (4 of 4) (Poster Hall Station 17)
- **PST-18 —** Technology & Innovation (4 of 8) (Poster Hall Station 18)
- **PST-19 —** ART (22 of 27) (Poster Hall Station 19)
- **PST-20 —** ART (23 of 27) (Poster Hall Station 20)

1:30 PM–2:45 PM

Oral and Video Abstract Sessions

- **OST-07 —** Oral Abstract Session: ART (2 of 3) (312)
- **OST-08 —** Oral Abstract Session: Pre-Clinical & Basic Research (1 of 2) (303)
- **OST-09 —** Oral Abstract Session: Benign Gynecological Disease (305)
- **OST-10 —** Oral Abstract Session: Technology & Innovation (2 of 2) (306)
- **OST-11 —** ASRM Research Institute Presents (2 of 2) (301)
- **VST-01 —** Video Abstract Session: ART & Surgery (311)

PST-PM1 — Tuesday Early Afternoon Poster Sessions (Expo Hall, Poster Hall)

- **PST-21 —** Reproductive Urology (1 of 7) (Poster Hall Station 1)
- **PST-22 —** Reproductive Urology (2 of 7) (Poster Hall Station 2)
- **PST-23 —** Reproductive Urology (3 of 7) (Poster Hall Station 3)
- **PST-24 —** Reproductive Urology (4 of 7) (Poster Hall Station 4)
- **PST-25 —** Reproductive Urology (5 of 7) (Poster Hall Station 5)

- **PST-26 —** Reproductive Urology (6 of 7) (Poster Hall Station 6)
- **PST-27 —** Reproductive Urology (7 of 7) (Poster Hall Station 7)
- **PST-28 —** Business of Medicine (1 of 2) (Poster Hall Station 8)
- **PST-29 —** Business of Medicine (2 of 2) (Poster Hall Station 9)
- **PST-30 —** Professional Development (Poster Hall Station 10)
- **PST-31 —** Patient Centered Care (1 of 6) (Poster Hall Station 11)
- **PST-32 —** Patient Centered Care (2 of 6) (Poster Hall Station 12)
- **PST-33 —** Patient Centered Care (3 of 6) (Poster Hall Station 13)
- **PST-34 —** Patient Centered Care (4 of 6) (Poster Hall Station 14)
- **PST-35 —** Patient Centered Care (5 of 6) (Poster Hall Station 15)
- **PST-36 —** Patient Centered Care (6 of 6) (Poster Hall Station 16)
- **PST-37 —** Recurrent Pregnancy Loss (1 of 2) (Poster Hall Station 17)
- **PST-38 —** Recurrent Pregnancy Loss (2 of 2) (Poster Hall Station 18)
- **PST-39 —** ART (24 of 27) (Poster Hall Station 19)
- **PST-40 —** ART (25 of 27) (Poster Hall Station 20)

3:45 PM–5:00 PM

Oral Abstract Sessions

- **OST-12 —** Oral Abstract Session: Global Health (301)
- **OST-13 —** Oral Abstract Session: ART – Lab (303)
- **OST-14 —** Oral Abstract Session: Genetics (2 of 2) (304)
- **OST-15 —** Oral Abstract Session: Infertility (2 of 3) (305)
- **OST-16 —** Oral Abstract Session: Advanced Practice Provider (306)
- **OST-17 —** Oral Abstract Session: Nursing (306)
- **OST-18 —** Oral Abstract Session: Reproductive Medicine (Non-Infertility) (311)

PST-PM2 — Tuesday Late Afternoon Poster Sessions (Expo Hall, Poster Hall)

- **PST-41 —** Surgery (1 of 2) (Poster Hall Station 1)
- **PST-42 —** Surgery (2 of 2) (Poster Hall Station 2)
- **PST-43 —** Benign Gynecological Disease (1 of 5) (Poster Hall Station 3)
- **PST-44 —** Benign Gynecological Disease (2 of 5) (Poster Hall Station 4)
- **PST-45 —** Benign Gynecological Disease (3 of 5) (Poster Hall Station 5)
- **PST-46 —** Benign Gynecological Disease (4 of 5) (Poster Hall Station 6)
- **PST-47 —** Benign Gynecological Disease (5 of 5) (Poster Hall Station 7)
- **PST-48 —** Health Disparities & Health Equity (1 of 6) (Poster Hall Station 8)
- **PST-49 —** Health Disparities & Health Equity (2 of 6) (Poster Hall Station 9)
- **PST-50 —** Health Disparities & Health Equity (3 of 6) (Poster Hall Station 10)
- **PST-51 —** Health Disparities & Health Equity (4 of 6) (Poster Hall Station 11)
- **PST-52 —** Health Disparities & Health Equity (5 of 6) (Poster Hall Station 12)
- **PST-53 —** Health Disparities & Health Equity (6 of 6) (Poster Hall Station 13)
- **PST-54 —** Access to Care (Poster Hall Station 14)
- **PST-55 —** Technology & Innovation (5 of 8) (Poster Hall Station 15)
- **PST-56 —** Technology & Innovation (6 of 8) (Poster Hall Station 16)
- **PST-57 —** Technology & Innovation (7 of 8) (Poster Hall Station 17)
- **PST-58 —** Technology & Innovation (8 of 8) (Poster Hall Station 18)
- **PST-59 —** ART (26 of 27) (Poster Hall Station 19)
- **PST-60 —** ART (27 of 27) (Poster Hall Station 20)

Wednesday, October 28, 2026

11:15 AM-12:15 PM

Oral Abstract Sessions

- **OSW-01 —** Oral Abstract Session: Genetics – PGT (301)
- **OSW-02 —** Oral Abstract Session: Complex Family Planning (303)
- **OSW-03 —** Oral Abstract Session: Surgery (304)
- **OSW-04 —** Oral Abstract Session: Fertility Preservation – Infertility & Cancer (305)
- **OSW-05 —** Oral Abstract Session: Pre-Clinical & Basic Research (2 of 2) (306)

PSW-AM — Wednesday Morning Poster Sessions (Expo Hall, Poster Hall)

- **PSW-01 —** Social Media (Poster Hall Station 1)
- **PSW-02 —** Genetics (3 of 21) (Poster Hall Station 2)
- **PSW-03 —** Genetics (4 of 21) (Poster Hall Station 3)
- **PSW-04 —** Genetics (5 of 21) (Poster Hall Station 4)
- **PSW-05 —** Genetics (6 of 21) (Poster Hall Station 5)
- **PSW-06 —** Genetics (7 of 21) (Poster Hall Station 6)
- **PSW-07 —** Genetics (8 of 21) (Poster Hall Station 7)
- **PSW-08 —** Genetics (9 of 21) (Poster Hall Station 8)
- **PSW-09 —** Genetics (10 of 21) (Poster Hall Station 9)
- **PSW-10 —** Genetics (11 of 21) (Poster Hall Station 10)
- **PSW-11 —** Genetics (12 of 21) (Poster Hall Station 11)
- **PSW-12 —** Genetics (13 of 21) (Poster Hall Station 12)
- **PSW-13 —** Genetics (14 of 21) (Poster Hall Station 13)
- **PSW-14 —** Genetics (15 of 21) (Poster Hall Station 14)
- **PSW-15 —** Genetics (16 of 21) (Poster Hall Station 15)
- **PSW-16 —** Genetics (17 of 21) (Poster Hall Station 16)
- **PSW-17 —** Genetics (18 of 21) (Poster Hall Station 17)
- **PSW-18 —** Genetics (19 of 21) (Poster Hall Station 18)
- **PSW-19 —** Genetics (20 of 21) (Poster Hall Station 19)
- **PSW-20 —** Genetics (21 of 21) (Poster Hall Station 20)

1:30 PM-2:30 PM

Oral and Video Abstract Sessions

- **OSW-06 —** Oral Abstract Session: ART (3 of 3) (301)
- **OSW-07 —** Oral Abstract Session: Professional Development (303)
- **OSW-08 —** Oral Abstract Session: Social Media (304)
- **OSW-09 —** Oral Abstract Session: Infertility (3 of 3) (305)
- **OSW-10 —** Oral Abstract Session: Patient Centered Care (2 of 2) (306)
- **VSW-01 —** Video Abstract Session: Technology & Innovation (311)


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VIDEO
ABSTRACTS
BALTIMORE, MARYLAND
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VIDEO ABSTRACT SESSION: SURGERY

V-1 1:33 PM Monday, October 26, 2026

ROBOTIC EXCISION OF PERICARDIAL AND BILATERAL DIAPHRAGMATIC ENDOMETRIOSIS. Jasmine Eliwa, MD[1], Florence Osei, MD[1], Diana Encalada-Soto, MD[1], Keith Sommers, MD[2] and Emad Mikhail, MD[1], [1]University of South Florida, Morsani College of Medicine, Tampa, FL, [2]Tampa General Hospital, Tampa, FL

OBJECTIVE:
To demonstrate a multidisciplinary and stepwise approach to excision of pericardial and bilateral diaphragmatic endometriosis.
METHODOLOGY:
A 27-year-old nullipara with a history of primary infertility and stage 4 endometriosis presented with right catamenial shoulder pain. Chest x-ray showed right diaphragm elevation. Multidisciplinary preoperative planning was performed with thoracic surgeons. Right diaphragmatic endometriosis was noted intraoperatively, consisting of multiple superficial, peritoneal lesions and a 9cm, full-thickness lesion corresponding to the eighth hepatic segment. Following an abdominal survey, a 3cm, full-thickness left diaphragmatic endometriotic lesion infiltrating the inferior pericardium was identified. To improve visualization of the right diaphragm and access the left diaphragm, the liver was mobilized via the release of the falciform ligament, lysis of perihepatic adhesions, and liver retraction with an Endopaddle retractor. The peritoneum overlying each superficial, right diaphragmatic lesion was elevated prior to excising each lesion with monopolar energy. The full thickness right diaphragmatic lesion was completely excised circumferentially via monopolar energy. During excision, the thoracic cavity was inspected to assess for additional pleural or pulmonary lesions. None were seen. The phrenic nerve was visualized medial to the right diaphragmatic lesion. The left diaphragmatic and pericardial lesion was excised circumferentially using monopolar energy. The right diaphragm was repaired with interrupted 0-Ethibond sutures whereas the left was repaired in a purse string fashion with 0-Ethibond. A 24 French size chest tube was placed in the right hemithorax to evacuate accumulated air and prevent pneumothorax. Histopathology confirmed endometriosis. No intraoperative or postoperative complications occurred. Estimated blood loss was minimal. The patient was discharged on postoperative day 2 after a reassuring chest x-ray and chest tube removal. Four months later, her chest pain resolved, and she started to attempt conception.
CONCLUSIONS:
Robotic excision of pericardial and bilateral diaphragmatic endometriosis can be performed safely with minimal complications and symptomatic improvement. Multidisciplinary preoperative planning and intraoperative collaboration between reproductive and thoracic surgery experts is essential. Key steps include systematic survey of both abdominal and thoracic cavities, hepatic mobilization, complete excision of endometriotic lesions, and primary repair. In addition to improving dexterity and visualization, robotic surgery facilitates interdisciplinary surgical collaboration.
IMPACT STATEMENT:
Bilateral diaphragm endometriosis associated with pericardial lesions is rare but can be safely excised robotically in a multidisciplinary team of reproductive and thoracic surgeons. Further research on postoperative reproductive outcomes is needed.
SUPPORT: No disclosures

V-2 1:43 PM Monday, October 26, 2026

UNEXPECTED UTERINE NEOPLASMS AFTER MYOMECTOMY: HOW MOLECULAR TUMOR PROFILING CAN REFINE DIAGNOSIS AND GUIDE FERTILITY-PRESERVING MANAGEMENT. Lauren Pace, M.D.[1], Christian Dagher, MD, MSc[1], Scott E. Edwards, M.D.[2] and Divya Kelath Shah, MD, MME[1], [1]Hospital of the University of Pennsylvania, Philadelphia, PA, [2]Pennsylvania Hospital, Philadelphia, PA

OBJECTIVE:
Most uterine tumors in reproductive-age patients undergoing myomectomy represent benign leiomyomas. Rare tumors such as mesenchymal, epithelial, or mixed uterine neoplasms may present similarly on imaging and intraoperative assessment, creating diagnostic and management challenges when unexpected pathology is identified. Molecular tumor profiling is a diagnostic approach that integrates next generation sequencing of DNA and RNA with proteomics and immunohistochemical staining to comprehensively characterize tumors. We describe three cases in which postoperative molecular tumor profiling clarified diagnosis and informed subsequent counseling and management.
METHODOLOGY:
We present a series of three reproductive-age patients who underwent minimally invasive myomectomy for presumed leiomyomas and were subsequently found to have unusual uterine neoplasm on final pathology. Case 1 was a 27-year-old patient with final pathology demonstrating uterine perivascular epithelioid cell tumor (PEComa). Case 2 was a 32-year-old with an epithelial and spindle cell neoplasm of uncertain malignant potential. Case 3 was a 20-year-old patient with inflammatory myofibroblastic tumor. In all cases, pathology was reviewed in a multidisciplinary setting with Gynecologic Oncology, and comprehensive molecular profiling was obtained to refine diagnosis and assess clinically actionable alterations.
CONCLUSIONS:
Unexpected uterine neoplasms may be encountered after myomectomy despite benign preoperative evaluation. When histopathology is rare, atypical, or indeterminate, molecular tumor profiling can serve as a valuable adjunct to establish diagnosis and guide postoperative management in patients desiring future fertility.
IMPACT STATEMENT:
Reproductive surgeons should be familiar with indications for comprehensive tumor profiling and the interpretation of results to facilitate patient counseling and multi-disciplinary care. Identification of targetable mutations may guide treatment and surveillance, particularly in cases of rare tumors where standard management guidelines are limited.

V-3 1:54 PM Monday, October 26, 2026

OHVIRA SYNDROME: SURGICAL MANAGEMENT OF OBSTRUCTED HEMIVAGINA IN A MÜLLERIAN ANOMALY MISDIAGNOSED AS BICORNUATE UTERUS. Andrea V. V Parra Jaimes, MD[1], Andrew D Masciarella, MD, MBA[2], Stefany Vicente, MD[2], Sarah L Chang, BS[3] and Randal D Robinson, MD, MBA[2], [1]San Antonio, TX, [2]University of Texas Health San Antonio, San Antonio, TX, [3]The Joe R. and Teresa Lozano Long School of Medicine, San Antonio, TX

OBJECTIVE: To highlight the diagnostic challenges of OHVIRA syndrome and demonstrate the role of surgical management in symptom resolution and restoration of reproductive tract anatomy.
METHODOLOGY: Case report of an 18-year-old female with a known Müllerian anomaly and right renal agenesis who presented with chronic pelvic pain since 2020, refractory to combined oral contraceptives. In 2024, she underwent examination under anesthesia (EUA), hysteroscopy, and laparoscopy showing a bicornuate uterus without endometriosis. Pelvic exam revealed a vaginal bulge concerning for obstructed hemivagina; however, only one cervix was identified. She was diagnosed with a bicornuate uterus with a non-communicating horn and managed with menstrual suppression.
Due to persistent symptoms, she was referred to our center. In December 2025, she underwent EUA, hysteroscopy, vaginal septum resection, and laparoscopy with chromopertubation. Findings confirmed uterus didelphys with obstructed hemivagina, consistent with OHVIRA syndrome. Septum resection unified the vaginal canal and improved access to both cervices. Chromopertubation confirmed bilateral tubal patency, with improved pain postoperatively.
CONCLUSIONS: OHVIRA syndrome is defined by uterine didelphys, obstructed hemivagina, and ipsilateral renal anomaly. Delayed diagnosis may result in pelvic pain, endometriosis, and infection. Surgical management with vaginal septum excision requires careful dissection to avoid injury to adjacent structures. A combined vaginal and laparoscopic approach allows safe resection, restoration of anatomy, and confirmation of reproductive tract patency, with implications for future fertility.
IMPACT STATEMENT: OHVIRA syndrome is a rare and often misdiagnosed Müllerian anomaly, frequently mistaken for bicornuate uterus. This case highlights the importance of thorough evaluation when clinical findings and imaging are discordant. Early involvement of Reproductive Endocrinology and Infertility (REI) specialists can improve diagnosis, guide management, and reduce morbidity.
SUPPORT: None
REFERENCES:
ACOG Committee Opinion No. 779. Management of acute obstructive uterovaginal anomalies. *Obstet Gynecol.* 2019;133(6):e363–e371.
Dou Z, et al. OHVIRA syndrome: multicenter study. *J Pediatr Urol.* 2025;21(6):1731–1743.

V-4 2:02 PM Monday, October 26, 2026

TIPS, TRICKS & TECHNIQUES: MASTERING THE HYSTEROSCOPIC MORCELLATOR. Alexandra M Herweck, MD, MPH[1], Megan Murphy-Belcaster, MD[2] and Magdy P Milad, M.D., M.S.[1], [1]Northwestern University Feinberg School of Medicine, Chicago, [2]Northwestern University, Chicago, IL

OBJECTIVE: To highlight a series of small but high-impact technical skills that meaningfully improve the safety, efficiency, and completeness of hysteroscopic morcellation, with particular emphasis on the management of submucosal fibroids.
METHODOLOGY: This instructional video demonstrates eight evidence- and experience-informed techniques performed during hysteroscopic morcellation in patients with intracavitary pathology. Techniques include: (1) paracervical block with lidocaine and vasoconstrictor for analgesia and hemostasis; (2) two-finger thumb-and-index technique for controlled cervical dilation with a Pratt dilator, (3) hysteroscopic set-up with the camera angled superiorly to prevent fluid contact with the optical lens and preserve visualization; (4) MyoSure morcellator insertion using the device's black line as a depth marker; (5) handpiece pivoting, in which the camera is rotated 180 degrees along a clock-face arc to optimize access to lesions in any quadrant of the cavity; (6) intralesional injection of dilute vasopressin (0.05 units/mL) or 1% lidocaine with epinephrine 1:100,000, delivered through a Sidekick injection needle to reduce bleeding and minimize fluid intravasation; (7) endomyometrial injection of dilute carboprost (10 mcg/mL, 1–2 mL total) at the endomyometrial junction to induce myometrial contraction and express the intramural component of FIGO type 2 fibroids into the cavity, promoting a more complete resection and avoiding a second operative procedure; and (8) hysteroscopic enucleation using the blunt tip of the morcellator for capsular dissection along the pseudocapsule plane, preserving surrounding endometrium.
CONCLUSIONS: Submucosal fibroids and other intracavitary pathology are well-established contributors to subfertility, recurrent pregnancy loss, and reduced implantation rates. The techniques presented support the core priorities of the reproductive surgeon: complete resection of pathology, preservation of endometrial integrity, and avoidance of repeat uterine instrumentation that may predispose to intrauterine adhesions.

IMPACT STATEMENT: While demonstrated with the MyoSure device, the underlying principles apply broadly to any surgeon performing hysteroscopic surgery in the fertility patient. Wider adoption has the potential to improve reproductive outcomes through safer operations, more complete single-stage resections of FIGO type 2 fibroids, reduced fluid absorption during prolonged cases, and a lower likelihood of post-operative adhesion formation, ultimately supporting improved implantation and live birth rates following surgical management of intracavitary pathology.
SUPPORT: None

V-5 2:10 PM Monday, October 26, 2026

HYSTEROSCOPIC ADENOMYOMECTOMY FOR RECURRENT INTRACAVITARY ADENOMYOMA FOLLOWING UTERINE-SPARING SURGERY. Bahi Fayek, MBBCh., M.D., M.Sc.[1], Nichole Pun, BSc[2], Esraa Khalifa, MD, MSc[2], Catherine Allaire, M.D., FRCSC[3] and Mohamed Ali Bedaiwy, M.D., PH.D.[4], [1]BC Women's Hospital and Health Centre, Vancouver, BC, Canada, [2]University of British Columbia, [3]UBC, Vancouver, BC, Canada, [4]University of British Columbia, Vancouver, BC, Canada

OBJECTIVE: The role of hysteroscopy in the management of selected patients with adenomyosis remains under investigation. This video aims to illustrate a potential indication for hysteroscopic management of adenomyosis, specifically recurrent intracavitary disease following Osada procedure.
METHODOLOGY: This video demonstrates the surgical techniques used in two complex cases of adenomyosis-associated infertility and recurrent intracavitary adenomyoma following a prior Osada procedure for diffuse adenomyosis. In both cases, a stepwise hysteroscopic adenomyomectomy approach was employed, with preoperative imaging used to accurately localize the lesions and evaluate intrauterine pathology. In the first case, a 44-year-old patient underwent the procedure under general anesthesia with ultrasound guidance. A hysteroscopy was performed, revealing intrauterine adhesions, which were carefully lysed using cold scissors to restore uterine cavity architecture. Subsequently, operative hysteroscopy was performed using the MyoSure system with normal saline distension. The adenomyoma was resected in a controlled fashion down to the level of the surrounding endometrium, ensuring preservation of uterine integrity and visualization of both tubal ostia at completion. In the second case, a 36-year-old patient underwent hysteroscopic surgery under conscious sedation with paracervical block and vasopressin injection. Following cervical dilation, a systematic cavity assessment identified a posterior wall adenomyoma and a lateral wall fibroid. Resection was performed using a MyoSure Reach blade with a progressive shaving technique. Hemostasis was achieved using adjunctive tranexamic acid and vasopressin in response to increased vascularity. Procedural success was defined by restoration of uterine cavity integrity and clear visualization of both tubal ostia. Both patients achieved live births, at 30 weeks' gestation in the first case and at 37 weeks' gestation in the second case.
CONCLUSIONS: Hysteroscopic adenomyomectomy for recurrent intracavitary adenomyosis following uterine sparing surgery is safe and effective.
IMPACT STATEMENT: This video highlights a fertility-preserving surgical approach for managing recurrent intracavitary adenomyosis, supporting an expanded role for hysteroscopy in complex cases.

V-6 2:20 PM Monday, October 26, 2026

STEP-BY-STEP MODIFIED END-TO-SIDE VASOEPIDIDYMOSTOMY IN THE OFFICE SETTING. Ellen M Cahill, MD[1], Ari P Bernstein, MD[2] and Sevann Helo, M.D.[2], [1]New Haven, CT, [2]Mayo Clinic, Rochester, MN

OBJECTIVE: We previously demonstrated our approach to office-based vasovasostomy. Surgeons offering vasectomy reversal in the office setting must also be prepared to perform vasoepididymostomy (VE) when indicated. Here, we present our step-by-step approach to office-based VE, a more technically complex reconstruction.
METHODOLOGY: Careful patient selection is essential. Ideal candidates are able to tolerate an awake procedure in the supine position for an extended duration. Patients receive pre-procedural oral antibiotics and anxiolysis with oral midazolam. Throughout the procedure, patients are counseled in real time regarding potentially uncomfortable steps and are encouraged to provide immediate feedback to ensure adequate analgesia. Local anesthesia is achieved using 20 mL 1.3% liposomal bupivacaine diluted with 30 mL 0.9% sodium chloride. The video details each step of the procedure, including initial dissection and identification of the vas deferens, vasal transection with intraoperative microscopic assessment for sperm, and delivery of the testicle with evaluation of the epididymis when VE is required.
We demonstrate a modified end-to-side VE technique in which two needles are placed into a single dilated epididymal tubule to facilitate creation of a larger anastomotic lumen. A two-layer anastomosis is performed. To minimize tension, anchoring sutures are placed between the vasal sheath and tunica albuginea.
CONCLUSIONS: We demonstrate that office-based VE is feasible and well-tolerated, and we present a reproducible modified end-to-side technique suitable for the office setting.
IMPACT STATEMENT: Office-based VE represents a safe and effective alternative to operating room procedures, offering advantages to both patients and providers. Patients benefit from avoidance of general anesthesia and reduced cost, while surgeons gain increased scheduling flexibility and efficiency. In our experience, even with testicular delivery, patients tolerate the procedure well, with most reporting minimal intraoperative pain.

V-7 2:31 PM Monday, October 26, 2026

ROBOT ASSISTED EXCISION OF NON-COMMUNICATING UTERINE HORN. Mary Fran Donovan, D.O., Rusha Bajpai, M.D., Alma Farooque, M.D. and Bala Bhagavath, MD, University of Wisconsin School of Medicine and Public Health, Madison, WI

OBJECTIVE: The purpose of this study was to perform a video and literature review to evaluate the surgical approach for excision of a non-communicating rudimentary uterine horn.
METHODOLOGY: A narrative literature review was performed with a focus on surgical management and perioperative outcomes. Results were synthesized using a narrative analysis rather than a meta-analysis due to findings being limited to case reports, case series and small observational studies.
CONCLUSIONS: Unicornuate uterus with a non-communicating horn represents a rare Müllerian duct anomaly associated with an increased risk of ectopic pregnancy within the rudimentary horn. As they commonly present with second trimester rupture requiring emergent laparotomy, rudimentary horn ectopic pregnancies are associated with high maternal morbidity. Given the horn may contain functional endometrium, it also carries an increased risk of endometriosis, dysmenorrhea and hematometra (2,3). Surgical excision is the definitive management for symptomatic horns but is increasingly being performed in asymptomatic patients due to the risk of chronic pelvic pain and catastrophic pregnancy complications.

When diagnosed prior to pregnancy, surgical excision is recommended. Delayed or missed diagnosis is frequent, with some literature reporting that only 14% of cases are identified prior to pregnancy (1). Preoperative evaluation with pelvic MRI is beneficial for visualizing horn anatomy. Renal imaging should be considered given the association with ipsilateral urinary tract anomalies.

Case reports have demonstrated feasibility, safety and symptom relief after preconception surgical management. While historically performed by laparotomy, case reports have suggested minimally invasive surgery as the gold standard approach (2). Laparoscopic excision has been associated with low blood loss and short operative times. Most case series report no intraoperative or postoperative complications (2,3). Ipsilateral salpingectomy is commonly performed to reduce ectopic pregnancy risk and to decrease the risk of ovarian cancer (4). While there is limited data comparing robot-assisted and conventional laparoscopic surgery, theoretical advantages of a robot-assisted approach include improved ergonomics for complex pelvic anatomy and enhanced suturing and dissection.

In terms of reproductive health outcomes, one retrospective study showed seven out of eight females who achieved pregnancy following laparoscopic excision of a non-communicating uterine horn (5). Multicenter studies and increased reporting of obstetrical outcomes are needed.
IMPACT STATEMENT: Excision of a non-communicating uterine horn is a safe surgical procedure performed to decrease the risk of ectopic pregnancy and improve chronic pelvic pain. Effective management relies on early diagnosis, careful preoperative planning and expertise in pelvic anatomy.
SUPPORT: There are no financial disclosures.
REFERENCES:
References are listed on last slide of video.

VIDEO ABSTRACT SESSION: ART & SURGERY

V-8 1:33 PM Tuesday, October 27, 2026

LIVE-CELL IMAGING REVEALS FREQUENT MICRONUCLEUS FORMATION DURING EARLY CLEAVAGE IN HUMAN EMBRYOS. Mikiko Tokoro, Ph.D.[1], Tatsuma Yao, Ph.D.[2], Noritaka Fukunaga, Ph.D.[1], Kazuo Yamagata, Ph.D.[3] and Yoshimasa Asada, M.D., Ph.D.[1], [1]Asada Ladies Clinic, Nagoya, Japan, [2]Fuso Pharmaceutical Industries, Ltd., Osaka, Japan, [3]Kindai University, Kinokawa, Japan

OBJECTIVE:
Chromosomal abnormalities are a major cause of implantation failure and miscarriage in human reproduction. However, the timing and frequency of abnormal chromosome segregation (ACS) during the preimplantation development of human embryos remains poorly understood. This study aimed to characterize the frequency and types of ACS during the first to third cleavage divisions in human embryos using live-cell imaging and to examine their association with blastocyst development and Preimplantation Genetic Testing for Aneuploidy (PGT-A) outcomes.
METHODOLOGY:
Cryopreserved human embryos donated for research were used after completion of their storage period with informed consent. This study was approved by the institutional ethics committee of Asada Ladies Clinic and registered with the Japan Society of Obstetrics and Gynecology. Embryos derived from IVF or ICSI were microinjected at the pronuclear stage using a piezo manipulator with mRNA encoding histone H2B–mRFP1 and Alexa Fluor 488–labeled Fab fragment (Fab313) against histone H3 lysine 9 trimethylation and serine 10 phosphorylation. Histone H2B–mRFP1 enabled visualization of nuclei and chromosomes, while Fab313 allowed identification of maternal chromosomes during mitosis. Embryos were cultured and imaged using a box-type confocal fluorescence microscope from the pronuclear stage to the blastocyst stage. Chromosome segregation dynamics during the first to the third cleavage were analyzed using live-cell imaging data to identify ACS. Whole blastocysts were analyzed by PGT-A using next-generation sequencing. Live-cell imaging analysis included 72 embryos, and PGT-A was performed in 12 blastocysts that developed from these embryos.
CONCLUSIONS:
ACS was observed in 79.2% (57/72) of embryos at least once during the first to third cleavage. Among the ACS types analyzed (misaligned chromosomes, lagging

chromosomes, and micronucleus formation), micronucleus formation was the most frequent, observed in 75.0% (54/72) of embryos. Embryos exhibiting micronucleus formation showed significantly lower blastocyst formation rates than embryos without micronuclei (25.9% [14/54] vs. 94.4% [17/18]). Among blastocysts analyzed by PGT-A, all embryos without ACS were euploid (3/3), whereas among embryos with ACS, 6 of 9 blastocysts were euploid and 3 of 9 were aneuploid or mosaic, suggesting that corrective mechanisms may operate during early human embryo development.
IMPACT STATEMENT:
Live-cell imaging revealed that chromosome segregation abnormalities occur frequently during early cleavage stages in human embryos, with micronucleus formation as the predominant event. These findings provide insight into the origins of chromosomal abnormalities and their potential impact on embryo developmental competence.
SUPPORT: None

V-9 1:44 PM Tuesday, October 27, 2026

TRANSRECTAL APPROACH TO OOCYTE RETRIEVAL IN A PATIENT WITH VAGINAL CANCER. Sahra Nathoo, MD, MSc[1], Bridget Lu, B.F.A.[2], Kelsey Zhao, B.Sc.[3], Steven R. Lindheim, M.D.[4], Dilkash Kajal, M.D.[5], Claire Jones, B.SC., M.D.[6], Heather Shapiro, MD, FRCSC[7] and Nigel Pereira, M.D.[8], [1]GREI, University of Toronto, Toronto, ON, Canada, [2]University of Toronto, Toronto, ON, Canada, [3]University of Toronto, Toronto, Canada, [4]Baylor Scott and White Health, Temple, TX, [5]University Health Network, Toronto, ON, Canada, [6]Mount Sinai Fertility, Sinai Health System, Toronto, ON, Canada, [7]Mount Sinai Hospital, Toronto, ON, Canada, [8]Division of Gynaecologic Reproductive Endocrinology and Infertility, University of Toronto, Toronto, ON, Canada

OBJECTIVE: To demonstrate the pre-procedural planning and intra-procedural technique of transrectal ultrasound-guided oocyte retrieval (TROR) in a patient with vaginal cancer.
METHODOLOGY: Video abstract. A 19-year-old virginal female with primary clear cell cancer of the vagina presented for a fertility preservation consultation. Magnetic resonance imaging (MRI) of the pelvis demonstrated a 5.3-cm mass in the right lower two thirds of the vagina. Urgent chemoradiation was recommended by her oncology team. She was unable to tolerate a pelvic examination or a transvaginal ultrasonography (TVUS) due to significant pain and bleeding. Her antral follicle count (AFC) via transabdominal ultrasonography (TAUS) and anti-mullerian hormone (AMH) levels were 37 and 67 pmol/L (9.4 ng/mL), respectively. On the 10th day of ovarian stimulation, her estradiol level was 4480 pmol/L (1220 pg/mL) and there were 11 follicles measuring 17 mm or larger in both ovaries. TAUS demonstrated that patient's right ovary was posterior to the bladder and adjacent to bowel, while the left ovary was posterior to both the bladder and uterus. Two retrieval options were proactively discussed with the patient and her family – transabdominal retrieval of oocytes from one or both ovaries, or transrectal retrieval of oocytes from one or both ovaries if transabdominal retrieval was not deemed feasible. An operating room (OR) was not available at short notice for a laparoscopic oocyte retrieval. The patient received a combined low dose hCG and GnRH-agonist trigger, and her oocyte retrieval was scheduled for 36 hours later. In anticipation of transrectal oocyte retrieval, bowel preparation and fasting guidelines were implemented the day before the procedure. An intravenous 1-gram dose of Cefazolin was administered prophylactically. TAUS was performed in the IVF suite once adequate sedation was achieved, which confirmed access to only the lateral portion of the right ovary; access to the left ovary was limited significantly by the uterus and intervening vasculature. Given these findings, the decision to proceed with oocyte retrieval via the transrectal approach was made. A 7 mHz vaginal transducer with diameter of 23.8 mm, covered with a sterile cover, and copious lubrication was gently introduced into the rectum. Both ovaries were easily visualized and accessible. A 17 G, 25-cm single lumen needle was passed through the needle guide, and the follicles were aspirated sequentially.
CONCLUSIONS: Twenty nine oocytes were retrieved, of which 28 mature oocytes were cryopreserved. No blood or fecal material was noted upon removal of the vaginal transducer from the rectum. The patient was prescribed oral Levofloxacin and Metronidazole for 5 days post-retrieval with an uneventful postoperative course. She began her oncologic treatment shortly after. No bacterial growth was noted from the follicular fluid, which was cultured for 5 days.
IMPACT STATEMENT: TROR is a viable alternative to transabdominal and/or laparoscopic approach in patients with vaginal or cervical cancer. Despite its novelty, TROR should be performed only when transvaginal, transabdominal or laparoscopic oocyte retrieval is not safe or feasible.
SUPPORT: The medical illustrations and 3-D models used in this video were made possible through funding provided by EMD Serono, the Canadian healthcare business of Merck KGaA, Darmstadt, Germany. The entire video was created independently of EMD Serono and reflects the views and opinions of the authors only.

V-10 1:55 PM Tuesday, October 27, 2026

PREVENTING CRYOSTORAGE LOCATION ERRORS IN IVF LABORATORIES: A SEVEN-YEAR MULTICENTRE NEAR-MISS ANALYSIS DEMONSTRATING SYSTEM-LEVEL AND PATIENT-SAFETY RISK ELIMINATION. Selva Karthick M Mr, B.Tech, PGDSCT, Krishna Mantravadi, MBBS, PGDHOM, Masters in clinical embryology and Durga Gedela Rao Dr., MBBS, DGO, MRCOG, Oasis Fertility, Hyderabad, India

OBJECTIVE:
To determine system level factors that cause cryo storage location errors in high-volume IVF laboratories and to determine whether phased automation can be effective in minimizing this risk.
METHODOLOGY:
This was a retrospective multicenter quality improvement study (2019-2025) that examined 21,323 ART cycles and 257 cryo storage mismatch or near-miss incidents among a high-volume IVF network. Any accident involving oocytes, embryos and sperm were all covered. Incident reports and cryo audits were used to do root cause analysis. A multi-stage approach to intervention was introduced: Phase 1-process controls and training of personnel; Phase 2-digitization of processes and scan-based verification and tank mapping; Phase 3-EMR-divable automation with chain-of-custody tracking. Chi-square analysis was done to compare incident rates per IVF cycles.
CONCLUSIONS:
Manual documentation errors are the main causes of cry storage mismatches. Automation that is integrated with EMRs and structured digitization, facilitated by audits and training, is a major mitigation of risk and increased traceability.
IMPACT STATEMENT:
Cryo storage errors are life-threatening and avoidable errors in ART. This research offers a practical guideline in the implementation of automatic tracking systems and justifies their presence in the future as a standard in the safety of IVF laboratories.

V-11 2:03 PM Tuesday, October 27, 2026

ROBOT-ASSISTED CESAREAN SCAR DEFECT REVISION TO OPTIMIZE ASSISTED REPRODUCTIVE TECHNOLOGY OUTCOMES: A CASE REPORT. Rachel Himel, BA, MA, MD[1], Jacqueline Early, MD[2], Erica F Robinson, MD[2] and Caiyun Liao, M.D., M.P.H[3], [1]UMass Chan Medical School, Worcester, MA, [2]UMASS Medical School/Memorial Health Care, Worcester, MA, [3]Wayland, MA

OBJECTIVE: To demonstrate surgical techniques of robot-assisted laparoscopic repair of a large cesarean scar defect (CSD) using daVinci Firefly near-infrared laser and concurrent hysteroscopic transillumination in a patient undergoing assisted reproductive technology (ART) treatments.
METHODOLOGY: Narrated video of both robot-assisted laparoscopic as well as hysteroscopic surgical technique with descriptions of key CSD revision steps. Our main outcome is the complete surgical repair of the depicted CSD in preparation for frozen embryo transfer. This video was deemed by the UMass Chan Review Board not to require institutional review board review. The patient included in this video gave consent for publication of the video and posting of the video online.
CONCLUSIONS: Key surgical techniques can be applied to the repair of CSD; CSD repair prior to embryo transfer may optimize ART and pregnancy outcomes.
IMPACT STATEMENT: More and more patients seeking ART have gone through cesarean deliveries in the past. It is therefore increasingly common for CSDs to complicate ART treatments. Revision of CSD prior to embryo transfer may be prudent in selected cases. Multi-disciplinary collaborations among reproductive surgeons are critical to improve patient outcomes.
SUPPORT: None

V-12 2:14 PM Tuesday, October 27, 2026

THE IMPORTANCE OF MULTIMODAL ANALGESIA IN GYNECOLOGIC SURGERY: QUADRATUS LUMBORUM BLOCK FOR PAIN CONTROL WITH MINIMALLY-INVASIVE MYOMECTOMY. Catherine Haering, MD[1], Amanda Faust, BA[1], Ariya Mobaraki, M.D.[2], Rebecca Flyckt, M.D.[2], Kathryn D Coyne, M.D.[3], Archana K Ayyar, MD[4], Isabelle Mason, M.D.[5] and Joseph Findley, M.D.[6], [1]Case Western Reserve University School of Medicine, [2]University Hospitals Fertility Center/Case Western Reserve University, Beachwood, OH, [3]University Hospitals Cleveland Medical Center, OH, [4]Baylor College of Medicine, Houston, TX, [5]Cleveland, OH, [6]University Hospitals Cleveland Medical Center, Beachwood, OH

OBJECTIVE: Minimally-invasive myomectomy is a common fertility-preserving surgery for uterine fibroids, but postoperative pain remains a significant concern. This video abstract illustrates the utility of quadratus lumborum (QL) blocks in gynecologic surgery to optimize postoperative pain control in patients undergoing minimally-invasive myomectomy. It highlights the value of familiarity with and consideration of multimodal anesthesia for gynecologic surgery.
METHODOLOGY:
Video footage was obtained to demonstrate the performance of an ultrasound-guided QL block administered preoperatively in patients undergoing minimally-invasive myomectomy. The videos demonstrate relevant anatomical landmarks and key procedural steps. Initial imaging shows an ultrasound-based anatomical survey to identify relevant landmarks. Relevant landmarks include the sacrospinalis posteriorly, the latissimus dorsi posterolateral, the psoas major anteriorly, and the hyperechoic thoracolumbar fascia [1, 2]. Subsequent footage demonstrates targeting of the potential space posterior to the QL muscle, with emphasis on visualization of the triangular facial plane and planning of the injection site. Needle advancement and fascial plane infiltration are shown, including deposition of local anesthetic and visualization of appropriate anesthetic spread, consistent with an anterior approach as the needle approaches the psoas muscle. The procedure is then repeated contralaterally, confirming accurate needle placement and anesthetic spread. The final video provides a bedside perspective, illustrating real-time ultrasound guidance, needle insertion, and local anesthetic administration to demonstrate the complete block technique in clinical practice.
CONCLUSIONS: Fascial plane blocks, specifically QL blocks, represent a practical and effective regional anesthetic modality for improving postoperative analgesia in gynecologic surgery, as demonstrated in patients undergoing minimally-invasive myomectomy. Successful integration into routine care requires multidisciplinary collaboration between surgical and anesthesia teams, but does not substantially increase procedural complexity or set-up time. Incorporation into standard ERAS protocols may help address persistent gaps in postoperative pain management, particularly in women's health where pain is often undertreated [2].

IMPACT STATEMENT:
Preoperative implementation of QL blocks into practice prior to minimally-invasive myomectomy may help to address concerns regarding postoperative pain and decrease the need for opioid analgesics during recovery. An ongoing randomized clinical trial evaluating the efficacy of QL blocks is underway at our institution, and will determine the effects of QL blocks as a potential adjunct to multimodal analgesia approaches.

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V-13 2:23 PM Tuesday, October 27, 2026

SEVERE PROGRESSIVE DYSMENORRHOEA IN YOUNG FEMALES, A CASE SERIES OF THREE UNCOMMON MULLERIAN ANOMALIES : THEIR DIAGNOSTIC DILEMMAS & THERAPEUTIC CHALLENGES". Neeta Singh, MD, FRCOG (Hon.)[1], Neha Varun Dr, MD[2], Sushree Monika Sahoo Dr, MS[3] and Gayatri Swetha Swetha Gunupuru, MD[4], [1]Professor, New Delhi, Delhi, India, [2]All India Institute of Medical Sciences, Obstetrics & Gynaecology, New Delhi, India, [3]Assistant Professor, [4]All India Institute of Medical Sciences, New Delhi, India

OBJECTIVE:
To demonstrate a structured, stepwise minimally invasive surgical approach for rare obstructive Müllerian anomalies, emphasizing imaging-based diagnosis and fertility-preserving management to optimize clinical and reproductive outcomes.

METHODOLOGY:
This surgical video includes three patients (ages 15, 17, and 24 years) presenting with severe progressive dysmenorrhea since menarche, with a mean diagnostic delay of ~2 years. All were initially misdiagnosed and considered for inappropriate or radical interventions, including hysterectomy. Preoperative evaluation included ultrasonography followed by pelvic MRI for detailed anatomical characterization. A combined hysteroscopic–laparoscopic approach was utilized. A standardized intraoperative protocol included: (1) systematic pelvic survey, (2) identification of obstructive pathology, (3) differentiation of Müllerian mimics (Robert's uterus, non-communicating rudimentary horn, and accessory cavitated uterine mass [ACUM]), and (4) tailored intervention. Procedures included hysteroscopic septal resection for cavity unification, laparoscopic excision of functional rudimentary horn with adnexal preservation, and laparoscopic excision of ACUM with meticulous dissection to avoid tubal, vascular, and urinary injury. Surgical decision-making prioritized preservation of uterine architecture and ovarian reserve. Follow-up (6–18 months) assessed symptom resolution and complications.

RESULTS:
Use of a structured imaging and endoscopic algorithm enabled accurate diagnosis, avoided misclassification, and facilitated fertility-preserving surgery. Case 1 (17 years): MRI suggested unicornuate uterus with rudimentary horn; intraoperative findings confirmed Type I Robert's uterus, managed with hysteroscopic septal resection restoring a single cavity. Case 2 (24 years): history of prior laparotomies and failed hysterectomy attempt; MRI confirmed rudimentary horn. Laparoscopic adhesiolysis, horn excision, and uterine reconstruction were performed with preservation of ovarian tissue and contralateral uterine function. Case 3 (15 years): imaging suggested a focal uterine lesion; intraoperatively confirmed as ACUM and excised laparoscopically with careful dissection. All patients had complete symptom resolution with no perioperative complications or recurrence.

CONCLUSIONS:
Structured imaging combined with systematic intraoperative assessment is critical for accurate diagnosis of Müllerian mimics. A stepwise minimally invasive approach enables definitive treatment with excellent outcomes while preserving reproductive anatomy and avoiding unnecessary radical surgery.

IMPACT STATEMENT:
Early recognition and precise differentiation of obstructive Müllerian anomalies using reproducible surgical principles facilitate timely fertility-preserving intervention, reduce morbidity, and improve long-term reproductive outcomes.

V-14 2:34 PM Tuesday, October 27, 2026

LEVERAGING DESIGN THINKING TO ADDRESS CLINICAL NEEDS IN REPRODUCTIVE MEDICINE. Aneri Kothari, BS[1], Paula Leon, MID[2], Andrew Kant, MS[3], Erin T Carey, MD, MSCR[4] and Nicole Wiley, MS[2], [1]Charlotte, NC, [2]NC TraCS Institute, [3]UNC-Chapel Hill, Chapel Hill, NC, [4]University of North Carolina Health, NC

OBJECTIVE: To introduce Design Thinking (DT) as a structured, human-centered framework for clinician-driven innovation in reproductive medicine, and to demonstrate its application to a clinically relevant unmet need at the intersection of infertility and minimally invasive gynecologic surgery.

METHODOLOGY: This educational video presents the five-stage DT framework—Empathize, Define, Ideate, Prototype, and Test—applied to a representative clinical challenge: the absence of a standardized, patient-centered pathway for fertility-directed management of suspected or confirmed endometriosis. We demonstrate a stepwise translation from clinical observation to actionable innovation. Empathy mapping captures patient priorities, including pain, fertility goals, and decisional uncertainty, alongside provider perspectives across reproductive endocrinology and minimally invasive gynecologic surgery. Problem definition refines a broad clinical concern into a precise statement addressing fragmentation in evaluation and treatment sequencing. Structured ideation uses SCAMPER methodology and mind mapping to generate care pathway concepts and decision-support tools. A low-fidelity prototype—a decision-support clinical pathway guiding timing of surgical intervention versus assisted reproductive technology based on patient goals and clinical factors—is developed and iteratively refined based on anticipated stakeholder feedback. The framework is grounded in established DT methodology and prior applications in healthcare innovation.

CONCLUSIONS: Design Thinking provides a replicable methodology for translating complex, multidisciplinary clinical challenges into structured, testable solutions. Through application to endometriosis-related infertility care, this video demonstrates how clinicians can move from fragmented observation to coordinated, patient-centered innovation without requiring formal engineering or research training.

IMPACT STATEMENT: Endometriosis care reflects a disconnect between surgical management, fertility planning, and patient priorities. This video offers a practical framework to align these domains by equipping clinicians with a shared language and structured approach to innovation. Broader adoption of Design Thinking in reproductive medicine may accelerate development of integrated care pathways, reduce delays in fertility-directed treatment, and expand the role of clinicians as drivers of patient-centered innovation.

VIDEO ABSTRACT SESSION: TECHNOLOGY & INNOVATION

V-15 1:33 PM Wednesday, October 28, 2026

IVF-VISION: A UNIVERSAL FOUNDATION MODEL FOR IVF. Yufei Jin, Ph.D candidate[1], Han Yang, Ph.D candidate[2], Aojun Jiang, M.S.[3], Zhichao Liang, B.S.[2], Haonan Feng, M.S.[4], Guanqiao Shan, Ph.D.[2], Yu Sun, Ph.D.[3] and Zhuoran Zhang, Ph.D.[5], [1]The Chinese University of Hong Kong, Shenzhen, Shenzhen, China, [2]Dalian University of Technology, Dalian, China, [3]University of Toronto, Toronto, ON, Canada, [4]Dalian University of Technology, Daliam, China, [5]Dalian University of Technology, Dalian City, Liaoning Province, China

OBJECTIVE: To develop a universal AI foundation model, which is capable of visual analysis of different IVF cell types and subcellular structures across sperm, oocyte, and embryo, generalizing across labs and imaging conditions without retraining.

METHODOLOGY: Existing AI models each deal with a single cell type with poor generalization. Here we built IVF-Vision, a universal AI model for analyzing IVF images. IVF-Vision is built on two technical innovations: 1) PRISM module decomposes images into frequency bands, separating device-specific noise from biological structure; 2) FUSE module performs on-the-fly calibration by blending similar imaging conditions at inference time. Together, they enable a single model to generalize across labs without retraining.

We validated IVF-Vision through four experiments, each probing a distinct dimension of generalization:

1) **Cross-cell breadth** — unified analysis three cell types and over twelve subcellular structures, including the sperm head, midpiece, and flagellum; the oocyte zona pellucida, perivitelline space, and polar body; and cleavage-stage blastomeres, blastocyst inner cell mass, and trophectoderm.

2) **Robustness to imaging shifts** — zero-shot evaluation across multiple cell types under diverse imaging conditions, including different labs, Hoffman contrast, phase contrast, varied illumination, preprocessing protocols, and magnifications.

3) **Temporal generalization** — video analysis of single- and multi-sperm sequences with identity preservation across flagellar crossings and automated motility metrics.

4) **Real-world generalization** — the "YouTube Challenge", a stress test on fully unseen IVF videos downloaded from YouTube, with unknown imaging conditions and protocols.

CONCLUSIONS: A single IVF-Vision model achieved zero-shot generalization across all tested conditions, cell types, subcellular structures, and clinical sites, with no retraining required. Its flexible multi-modal prompt interface — natural language complemented by points, boxes, and positive/negative examples — eliminates coding or configuration and ensures ease of use. Its lightweight architecture supports fully on-premise deployment on existing clinical computers (GPU or CPU) with zero data upload, preserving patient privacy and clinic data sovereignty.

IMPACT STATEMENT: To our knowledge, IVF-Vision is the first foundation model purpose-built for the entire IVF laboratory. Prior AI tools have addressed isolated tasks bound to specific cell types, microscopes, or labs; none has unified the IVF workflow at both the cellular and subcellular level. By bringing sperm, oocyte, and embryo analysis together through a single prompt-driven model, IVF-Vision removes a central barrier to AI adoption in reproductive medicine. IVF-Vision serves as a tool for both clinical applications (e.g., CASA, point-of-care semen testing, rare-sperm search, oocyte and embryo assessment) and fundamental research (e.g. sperm flagellar beating dynamics and embryo morphokinetics). It lays the groundwork for an AI partner at every embryologist's microscope, in every clinic, worldwide.

SUPPORT: This work was supported in part by the National Key R&D Program of China (2023YFE0205500), in part by the National Natural Science Foundation of China (The Science Fund for Excellent Research Groups, 62588301) and in part by the Fundamental and Interdisciplinary Disciplines Breakthrough Plan of the Ministry of Education of China (JYB2025XDXM117).

V-16 1:44 PM Wednesday, October 28, 2026

OSCILLATORY INSTABILITY AND LOSS OF RHYTHMIC COORDINATION IN REAL-TIME BLASTOCYST DYNAMICS REVEAL A NON-INVASIVE SIGNATURE OF CHROMOSOMAL ABNORMALITY. Cara Wessels, PH.D.[1], Claire Porter, BS[2] and Eduardo Kelly[3], [1]Viable Biosciences, Dripping Springs, TX, [2]Women's Specialty and Fertility Center, Clovis, CA, [3]Women's Specialty & Fertility Center, Clovis, CA

OBJECTIVE: To characterize oscillatory and temporal patterns of cytoplasmic activity associated with chromosomal status in human blastocysts using non-invasive, real-time embryo observation and to develop a biologically grounded model of dysregulated intracellular dynamics associated with aneuploidy.
METHODOLOGY: Retrospective observational cohort study of 81 human blastocysts with chromosomal status determined by preimplantation genetic testing (PGT). Short (~30-second) post-warming videos were recorded during routine laboratory handling using standard inverted microscopes and digital imaging systems. Frame-by-frame background subtraction was used to quantify intracellular cytoplasmic motion. Extracted, acute morphokinetic features included peak count, valley count, burst activity, mean activity, standard deviation, short-term autocorrelation, and dominant frequency power. Euploid and aneuploid embryos were compared using Welch's t-tests and Kruskal-Wallis non-parametric statistical analysis, with significance defined as $p<0.05$. Aneuploid blastocysts demonstrated increased oscillatory instability with more frequent and irregular fluctuations in intracellular activity, while euploid embryos exhibited stronger temporal coordination, rhythmic behavior, and sustained intracellular dynamics.
CONCLUSIONS: Chromosomal abnormalities were associated with a shift from coordinated rhythmic intracellular dynamics toward oscillatory instability and fragmented activity patterns in human blastocysts. These findings support a biologically grounded model in which gene-dosage imbalance disrupts proteostasis, mitochondrial energy regulation, and cytoskeletal organization, impairing coordinated intracellular behavior. Real-time embryo dynamics may therefore represent a non-invasive functional biomarker of embryo competence that captures consequences of chromosomal imbalance not detectable through static morphology assessment alone.
IMPACT STATEMENT: These findings suggest that short real-time embryo videos contain biologically meaningful dynamic signatures associated with chromosomal status that can be detected using standard laboratory equipment without embryo biopsy or specialized imaging systems. By identifying oscillatory instability as a functional consequence of chromosomal imbalance, this approach introduces a new dimension of embryo assessment based on real-time intracellular behavior rather than static morphology alone, with potential applications in non-invasive embryo selection and laboratory quality control.

V-17 1:55 PM Wednesday, October 28, 2026

AFFORDABLE AND ACCESSIBLE FOLLICLE MONITORING AND EGG RETRIEVAL SIMULATION: OPPORTUNITY FOR MEDICAL STUDENT AND RESIDENT REI PRACTICE. Sara C Pierpoint, MD, University of Virginia, Charlottesville, VA

OBJECTIVE: Create an affordable simulation for follicle measuring and oocyte retrieval for the medical student and resident level in order to increase comfort with transvaginal ultrasound skills, provide for procedure practice, expand understanding of the IVF process, and increase interest in the field of REI.
METHODOLOGY: Using low cost supplies, a simulation was created that provided the opportunity to practice transvaginal ultrasound use, measure follicle size, and retrieve oocytes.
CONCLUSIONS: Both medical students and residents expressed increased understanding and interest in the field of REI after completing this simulation. Confidence with transvaginal ultrasound also improved after completing this simulation.
IMPACT STATEMENT: This inexpensive and easy setup simulation could be easily replicated and provide medical students and residents opportunity to improve their ultrasound skills, practice oocyte retrieval, and also increase their interest in the field of REI.

V-18 2:02 PM Wednesday, October 28, 2026

RETRIEVED: A NOVEL, INTERACTIVE, WEB-BASED TRAINING PLATFORM FOR OOCYTE RETRIEVAL. Bridget Lu, B.F.A.[1], Kelsey Zhao, B.Sc.[2], Michael Corrin, B.F.A., B.A., Hons B.Sc., M.Sc.BMC[3], Nicholas Woolridge, B.F.A., B.Sc.BMC, M.Sc[1] and Nigel Pereira, M.D.[4], [1]University of Toronto, Toronto, ON, Canada, [2]University of Toronto, Toronto, Canada, [3]University of Toronto Mississauga, Mississauga, ON, Canada, [4]Division of Gynaecologic Reproductive Endocrinology and Infertility, University of Toronto, Toronto, ON, Canada

OBJECTIVE: Transvaginal ultrasound-guided oocyte retrieval (TVOR) is one of the most important steps of in vitro fertilization (IVF). Training reproductive endocrinology and infertility (REI) fellows in TVOR relies heavily on traditional teaching methods – observing procedures performed by an experienced operator, followed by supervised practice on patients. This approach is influenced by variability in operator technique and patient anatomy, leading to inconsistent or prolonged attainment of competency in REI fellows. Additionally, existing simulators may be prohibitively expensive or require onsite access. In this video, we describe the development and functionality of an innovative interactive, free, web-based training platform to address gaps in TVOR training among REI fellows.
METHODOLOGY: The "RetrievED" training platform was developed at an academic fertility center. After a comprehensive literature review and media audit, semi-structured interviews were conducted with REI fellows to identify challenges and gaps in TVOR training. A thematic analysis of the interview transcripts was performed using Quirkos and this led to the development of three interactive modules. The first briefly introduces the TVOR procedure. The second utilizes an interactive virtual procedure room to establish familiarity with the TVOR room setup, the equipment required to perform a TVOR, and the positioning and workflow of staff in the procedure room. The third provides interactive two dimensional (2-D) and three dimensional (3-D) models next to anonymized patient imaging to help REI fellows identify key anatomic landmarks during transvaginal ultrasonography (TVUS), identify the orientation of the TVUS plane, understand how to optimize TVUS images by adjusting machine settings, and describe the technique of introducing the aspiration needle into the ovary.
CONCLUSIONS: Our training platform orients new REI fellows to TVOR room setup, equipment, and basic troubleshooting. It uses interactive 2-D and 3-D models derived from real imaging to help fellows interpret TVUS and understand TVOR concepts. Next steps include measuring engagement and usage with site metrics, adding gamification to boost knowledge retention and skill, and providing pre- and post-TVOR coaching.
IMPACT STATEMENT: By combining evidence-based scientific text with interactive 2-D illustration, 3-D visuals, and gamification elements, the RetriveED training platform creates a flexible environment for active learning.
Authors B.L. and K.Z. have contributed equally.
SUPPORT: Authors B.L. and K.Z. received partial funding from the Vesalius Trust. The project was conducted without influence or input from the funding agency.

V-19 2:13 PM Wednesday, October 28, 2026

SPINDLE PREDICTION OF HUMAN OOCYTES USING ARTIFICIAL INTELLIGENCE FROM BRIGHTFIELD IMAGES. Yihan Fu, BS[1], Peng Yang, BS[2], Chao Ma, MSc[3], Mingkai Su, BS[2], Peiyuan Hong, MSc[2], Zhuoran Zhang, Ph.D.[2], Yu Sun, Ph.D.[4] and Guanqiao Shan, Ph.D.[2], [1]Dalian University of Technology, Dalian, Liaoning, China, [2]Dalian University of Technology, Dalian, China, [3]Women and Children's Hospital of Dalian University of Technology, Dalian, China, [4]University of Toronto, Toronto, ON, Canada

OBJECTIVE:
To develop an artificial intelligence-based technique for accurate prediction of meiotic spindle location in human oocytes under brightfield microscopy during ICSI.
METHODOLOGY:
A dataset of 1,113 paired human oocyte images was collected, with each pair consisting of a brightfield image and the corresponding Polscope image. The presence and location of meiotic spindles were confirmed by embryologists using Polscope images. The dataset was divided into 80% for training and validation, and 20% for testing. The test set contained 223 images, including 160 spindle-positive images.
To overcome the limitations of spindle inference based on polar body location or spindle observation by polarized light microscopy, we developed a two-step artificial intelligence (AI) workflow. First, a ControlNet-based model was trained using paired brightfield-Polscope images to translate brightfield images into Polscope-like images, enhancing weak spindle-related information in brightfield images. Second, a spindle detection network was developed to identify the spindle location in generated Polscope-like images, and the result was projected back onto the corresponding brightfield images for ICSI visualization.
To improve robustness, the AI model extracted spindle-related features from different frequency components and generated multiple candidate predictions. These candidates were clustered, and a consensus voting was used to obtain the final spindle location. In addition, an enhancement mask and a spindle-weighted loss were designed to increase model attention to the small spindle region.
Model performance was evaluated by comparing predicted spindle locations with ground-truth spindle locations from Polscope images. Based on the ICSI procedure, prediction errors less than 45º were considered clinically acceptable.
CONCLUSIONS:
The proposed method achieves accurate spindle location prediction from brightfield images of human oocytes. Spindle-containing regions show significant feature differences compared with spindle-free regions, supporting the hypothesis that spindle-related information is detectable in brightfield images. The model achieves a success rate of 85.2% in detecting spindle presence/absence in brightfield oocyte images. 83.3% of predictions show an error of less than 45º compared with ground-truth spindle locations, and the mean angular deviation is 23º±28º. Among difficult cases where the spindle was located far from the polar body, 65.2% (15/23) of predictions show an error of less than 45º. Clinical demonstrations further show that the proposed method can be integrated into the ICSI procedure and guide oocyte orientation adjustment, reducing spindle damage during sperm injection.
IMPACT STATEMENT:
The proposed artificial intelligence-based technique enables accurate prediction of spindle location under brightfield microscopy. By integrating the AI model into the clinical setup, our method can provide spindle-aware guidance for adjusting spindle location during ICSI. It has the potential to standardize the ICSI workflow and reduce the risk of spindle damage.
SUPPORT: This work was supported in part by the Young Scientists Fund (C) of the National Natural Science Foundation of China (Grant No. 62503079), in part by the Fundamental Research Funds for the Central Universities from Dalian University of Technology (Project No. DUT25RC(3)046), and in part by the National Natural Science Foundation of China (The Science Fund for Excellent Research Groups, 62588301).
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2026 SCIENTIFIC CONGRESS PRIZE PAPER (1 OF 2)

O-1 11:15 AM Monday, October 26, 2026

EMERGING YOUNG ADULT WOMEN WANT MORE EDUCATION ON AGE RELATED FERTILITY DECLINE: Results OF A NATIONAL SURVEY. Vivian R. Didomenico, BA[1], Katherine G. Unger, B.S.[2], Monica Stanwick, MPH[3], Gwendolyn P. Quinn, PhD[1], Jennifer K Blakemore, MD, MSCI[1], Emily Michelle Weidenbaum, MD[1], Tanvi Karkare, B.S.[3] and Leena Nahata, M.D.[3], [1]NYU Grossman School of Medicine, New York, NY, [2]New York, NY, [3]Nationwide Children's Hospital, Columbus, OH

OBJECTIVE: To examine emerging adult women's desires for education about age-related fertility decline (ARFD) and their preferences for its timing, format, setting, and content.
MATERIALS AND METHODS: A 35-item cross-sectional survey on fertility and ARFD education preferences and experiences was distributed across the US via Prolific©, a web-based crowdsourcing survey platform. Eligible participants were assigned female at birth, aged 18–29 years, US residents, and fluent in English. Fertility education experiences and preferences were summarized using descriptive statistics. Chi-square tests assessed differences by current number of children, reproductive/gynecologic diagnoses, and childbearing goals.
RESULTS: The sample included 994 women with a median age of 25 years (IQR 23–27). Most participants were white (56.8%; 565/994), heterosexual (60.0%; 596/994), in a committed monogamous relationship (54.1%; 538/994), and had no children (82.2%; 817/994). The majority reported "somewhat" understanding ARFD (71.5%; 711/994) and had never discussed fertility (71.3%; 709/994) or parenthood goals (75.3%; 748/994) with a clinician. Women with ≥1 child were significantly more likely than those without children to have had these conversations (fertility: p<0.001; parenthood goals: p<0.001). The majority agreed young adult women should receive fertility education during routine healthcare visits (87.9%; 874/994), and this view was more common among those who desired (more) children (p<0.001). The majority (63.1%; 627/994) believed fertility education should occur before age 22. Among those interested in receiving fertility information, the most endorsed formats were discussion with a clinician (72.6%; 722/994), an online module or website (66.8%; 664/994), and a mobile app (49.3%; 490/994). Preferred settings included a clinician's office (46.3%; 444/959), home (42.1%; 404/959), through social media (5.9%; 57/959), or at a university student health center (5.1%; 49/959). Participants were most interested in learning about fertility and aging (69.4%; 690/994), the emotional aspects of fertility and infertility (58.7%; 583/959), birth control/family planning (58.1%; 578/994), and genetic testing related to reproduction (47.5%; 472/994).
CONCLUSIONS: Regardless of childbearing goals, emerging adult women desired clinician-delivered fertility education before age 22, a milestone correlated with college graduation for many. Yet, most reported that these discussions had not occurred during their routine care. There is a need for comprehensive fertility education in a clinical setting that includes ARFD content.
IMPACT STATEMENT: Integrating ARFD-inclusive fertility education into routine healthcare for emerging adult women may address important knowledge gaps and better support informed reproductive decision-making. Future research should identify effective approaches, such as clinician counseling, type, and digital tools, to embed ARFD education into standard care pathways and address cultural differences in ARFD education preferences.

O-2 11:25 AM Monday, October 26, 2026

EFFECT OF COENZYME Q10 ON IVF OUTCOMES. Shuqin Wei, MD, PhD[1] and Seang Tan, M.B.A., M.B.B.S., M.SC.[2], [1]Montreal, QC, Canada, [2]Division of REI, McGill University and OriginElle Fertility Clinic and Women's Health Centre, Montreal, QC, Canada

OBJECTIVE: Coenzyme Q10 (CoQ10) has been proposed as an adjuvant therapy for women with poor ovarian response (POR) undergoing in vitro fertilization (IVF), but evidence regarding its effectiveness remains inconsistent. We conducted a systematic review and meta-analysis to evaluate the impact of CoQ10 supplementation on IVF outcomes.
MATERIALS AND METHODS: A systematic review and meta-analysis of randomized controlled trials (RCTs) was performed following PRISMA guidelines (PROSPERO: CRD420261331578). Eligible studies included women undergoing IVF cycles comparing adjuvant CoQ10 with no CoQ10. Primary outcomes were clinical pregnancy and live birth. Risk of bias was assessed using the Cochrane RoB 2 tool. Random-effects models were used to calculate pooled odds ratios (ORs) with 95% confidence intervals (CIs).
RESULTS: Ten RCTs involving 1,766 participants were included. CoQ10 supplementation significantly increased the clinical pregnancy rate per cycle (OR 2.10, 95% CI 1.50–2.95; p<0.00001; I^2=38%). No significant differences were observed in miscarriage rates or adverse events.
CONCLUSIONS: CoQ10 supplementation was associated with approximately a twofold increase in clinical pregnancy rates among women undergoing IVF.
IMPACT STATEMENT: These findings support a potential role for CoQ10 as an adjuvant therapy in IVF; however, additional high-quality RCTs, particularly those reporting live birth, are needed to clarify which patient subgroups benefit most.
SUPPORT: NA

O-3 11:35 AM Monday, October 26, 2026

AI-GUIDED MICROFLUIDIC SPERM RECOVERY IDENTIFIES A DETECTION-LIMITED STATE IN A 175-PATIENT COHORT. Hemant Suryawanshi, PhD[1], Chloe M LoSauro, B.S.[1], Yejin Bann, A.B.[1], Stephanie Morgan, M.S.[1], Laura C. Gemmell, MD[2], Sajal Gupta, M.D.[3], George Koustas, PhD[1], Robert W Prosser, B.A.[1], Eric J. Forman, H.C.L.D, M.D.[1] and Zev Williams, M.D., PH.D.[1], [1]Columbia University Fertility Center, New York, NY, [2]New York, NY, [3]IVF Michigan and Ohio Fertility Center, Grand Rapids, MI

OBJECTIVE: In severe male factor infertility, rare sperm may be present but evade manual detection, leaving couples without viable reproductive options. We developed the Sperm Tracking and Recovery (STAR) system, an artificial intelligence (AI)-guided microfluidic platform for autonomous detection and isolation of ultra-rare sperm, and evaluated whether it converts azoospermic samples into viable reproductive opportunities.
MATERIALS AND METHODS: STAR integrates high-speed phase-contrast imaging (300 frames/s), real-time AI object detection, and pneumatically gated microfluidic capture of sperm into 300–600 nL droplets for intracytoplasmic sperm injection (ICSI). Evaluation included: (1) blinded analytical validation (20 samples spiked with ~5 sperm, 20 blanks; two operators, two instruments); (2) a paired split-sample comparison against expert manual search under rare-sperm conditions, capped at 60 min; and (3) a retrospective clinical cohort of 175 consecutive patients with azoospermia referred after negative manual evaluation. STAR-recovered sperm were used for ICSI or cryopreservation per standard protocols. Fisher's exact and Wilcoxon signed-rank tests were applied.
RESULTS: STAR correctly classified all 40 validation samples as spike-in or blanks (100% sensitivity and specificity). In paired split samples, STAR detected sperm in 10/10 samples versus 3/10 by manual search (*p=0.002*), detecting 167 total sperm versus 4 by manual search (41-fold; *p=0.006*). In the 175-patient cohort, STAR identified ≥1 sperm in 26%, including 29% of prior testicular sperm extraction (TESE)-negative cases. STAR-recovered sperm enabled a live birth, an ongoing clinical pregnancy from a single recovered motile sperm, and an ongoing pregnancy from a Klinefelter syndrome (47,XXY) TESE sample reported sperm-negative at two independent centers.
CONCLUSIONS: A substantial proportion of patients diagnosed with azoospermia harbor rare but recoverable sperm systematically missed by conventional evaluation—a state we define as detection-limited azoospermia. STAR overcomes this detection barrier with validated analytical performance, superiority over expert manual search, and direct clinical actionability.
IMPACT STATEMENT: Detection-limited azoospermia is prevalent and addressable. Patients counseled toward donor gametes, adoption, or repeat surgical retrieval may instead achieve biological parenthood through AI-guided sperm recovery.
TABLE:

Parameter	Value
Patients analyzed	175
Male age, median (IQR), y	36 (33-40)
Manual pellet negative pre-STAR	175/175 (100%)
STAR-positive (≥1 sperm)	46/175 (26%)
≥5 sperm detected	39/175 (22%)
≥10 sperm detected	33/175 (19%)
Sperm/positive sample, median (IQR)	50 (6–200)

Prior TESE-negative → STAR-positive	8/28 (29%)
Clinical pregnancies	3 (1 live birth)

SUPPORT: This research was supported by the Havens Innovation Fund.

O-4 11:45 AM Monday, October 26, 2026

PSYCHOSOCIAL HEALTH IN ADULTS WITH INFERTILITY: DIFFERENCES BY TREATMENT-SEEKING STATUS. Dr. Brittany Woods, PhD, RN, CNOR, Kathleen Gunter, PhD, MSN and Jayne Graben Turner, DNP, University of Alabama, Tuscaloosa, AL

OBJECTIVE: While infertility prevalence continues to rise, disparities in access to infertility care persist. Prior research focuses primarily on those seeking care, limiting our understanding of the psychosocial needs of those who cannot or choose not to pursue treatment. This pilot mixed-methods study aimed to determine whether differences exist in mental health, resilience, coping, social support, infertility stress, and fertility quality of life (FertiQoL) based on infertility treatment-seeking status.
MATERIALS AND METHODS: Adults with infertility, recruited via social media and research registries, completed a one-time set of validated instruments via Qualtrics. Anxiety, depression, coping, resilience, infertility stress, FertiQoL, and perceived social support were compared by treatment-seeking status using independent samples *t*-tests or Mann-Whitney *U* when assumptions of normality were not met. Given the pilot sample size, correlations were assessed with Spearman's Rho. Analyses were conducted in SPSS with two-sided p-values <.05 considered statistically significant. The study was IRB-approved and participants were compensated for their time.
RESULTS: Fifty adults (30 female, 20 male) aged 20-51 years (mean 34.4±6.92) completed surveys. Most were married (96%), white/non-Hispanic (82%), working full-time (86%), and nonparents (72%). There were no significant differences between groups based on key demographic variables (n= 25 non-seeking, n=25 seeking). Groups did not differ significantly in mean anxiety (6.7 vs. 6.3), depression (8.6 vs. 7.6), perceived support (5.3 vs. 5.4), infertility stress (154.1 vs. 167.0), resilience (72.2 vs. 65.3), or FertiQoL (52.3 vs. 54.0) by treatment-seeking status. Coping style also did not differ significantly between groups. In the overall sample (n=50), greater perceived social support was associated with lower depression (p=.027), higher resilience (p=.004), and higher FertiQoL (p=.006). Greater support was associated with adaptive coping styles (meaning-based and active confronting; p=.002 and .007, respectively). Resilience was associated with lower depression (p<.001), higher FertiQoL (p<.001), and greater use of meaning-based coping (p<.001). Active avoidance was associated with higher depression (p<.001) and lower FertiQoL (p<.001), while passive avoidance was associated with higher anxiety (p=.013), lower perceived support (p=.013), and lower FertiQoL (p=.024).
CONCLUSIONS: Non-treatment seeking adults reported levels of psychological distress, coping, resilience, and FertiQoL comparable to those seeking treatment. Perceived social support and resilience were strongly associated with lower distress, adaptive coping, and better FertiQoL, while avoidant coping strategies were linked to poorer mental health and quality of life.
IMPACT STATEMENT: Findings suggest the psychosocial burden of infertility is not limited to those seeking care. Psychosocial screenings and interventions that enhance social support, resilience, and adaptive coping should extend beyond fertility treatment settings to reduce disparities and benefit those with infertility regardless of treatment-seeking status.
SUPPORT: This work was supported by the University of Alabama Capstone College of Nursing.

O-5 11:55 AM Monday, October 26, 2026

RETROSPECTIVE VALIDATION OF A PATIENT-INITIATED PRECONCEPTION SCREENER AGAINST OBSTETRIC COMORBIDITY INDICES TO ASSESS PREGNANCY COMPLICATIONS. Umair Khan, BS[1], Saloni Shah, BS[2], Gabriela Luna-Victoria, BS[3], Lauren Groves, MPH[4], Diana E. Ramos, MD, MPH, MBA[4], Marina Sirota, PhD[5] and Tomiko T Oskotsky, MD[6], [1]University of California, San Francisco, San Francisco, CA, [2]Icahn School of Medicine at Mount Sinai, [3]1University of California, San Francisco, [4]Office of the California Surgeon General, [5]University of California, San Francisco, [6]University of California San Francisco

OBJECTIVE: Severe maternal morbidity (SMM) remains a pressing public health issue in the United States, disproportionately affecting higher-risk populations and underscoring the need for scalable preconception risk assessment. We evaluated whether the brief, patient-initiated Preconception Medical Assessment (PreMA) at entry into prenatal care is associated with SMM and non-transfusion SMM (NT-SMM) at delivery, relative to established clinician-derived comorbidity indices, and assessed heterogeneity across demographic and socioeconomic strata.
MATERIALS AND METHODS: We conducted a retrospective cohort study using electronic health record data from six academic medical centers. Singleton births with ≥10 recorded maternal clinical events prior to conception were included. PreMA questionnaire items were mapped to OMOP concepts and scored alongside the Bateman and Leonard indices; all scores were standardized (z-scores). Outcomes were SMM and NT-SMM, defined by CDC indicators. We applied Poisson regression to estimate relative risks per standard deviation increase in each score. Stratified analyses were conducted by race, ethnicity, and Area Deprivation Index (ADI) quintiles. Associations between individual PreMA domains and SMM were evaluated with adjusted Poisson regression.
RESULTS: Across >58,000 births, PreMA, Bateman, and Leonard scores were associated with SMM (RRs 1.26 [1.22–1.30], 1.30 [1.27–1.33], 1.32 [1.29–1.34]) and NT-SMM (1.33 [1.29–1.40], 1.31 [1.28–1.35], 1.33 [1.30–1.36]) per SD, respectively (all adj. $p < 0.001$). Associations persisted across racial and ethnic groups, with higher estimates in some patient subgroups (e.g., for SMM, RR 1.37 [95% CI 1.15–1.63] for American Indian or Alaska Native, 1.32 [95% CI 1.20–1.44] for Black, and 1.36 [95% CI 1.28–1.44] for Hispanic; all adj. $p < 0.001$). Stratified analyses by ADI demonstrated increasing risk with higher deprivation (SMM RR 1.11 in the lowest vs 1.31 in the highest quintile; adj. $p \leq 0.001$). The stratified SMM PreMA estimates were generally comparable to Bateman and Leonard, with modest attenuation in some strata. Among PreMA domains, heart conditions (SMM RR 2.27 [95% CI 1.95–2.65]), hypertension (2.27 [1.94–2.65]), and diabetes (1.83 [1.50–2.23]) showed the strongest associations with SMM (all adj. $p < 0.001$).
CONCLUSIONS: In large EHR cohorts, the patient-initiated PreMA score at entry into prenatal care demonstrated associations with SMM and NT-SMM comparable to established clinician-facing indices, with robust performance across demographic and socioeconomic strata, and identified heart conditions, hypertension, and diabetes as the domains most strongly associated with SMM.
IMPACT STATEMENT: PreMA provides a scalable, patient-centered approach to early risk stratification that is informative across populations. Because it is brief and patient-initiated, integration into routine care and public-facing preconception screening may enable earlier identification of high-risk individuals and support targeted preconception interventions to reduce severe maternal morbidity.
SUPPORT: This work was supported by the March of Dimes UCSF Prematurity Research Center.

O-6 12:05 PM Monday, October 26, 2026

EMBRYOS FROM VITRIFIED OOCYTES EXHIBIT REDUCED BLASTULATION BUT COMPARABLE EUPLOIDY TO FRESH OOCYTES. Ilissa Pipia, B.S.[1], Gabriela Beroukhim, M.D.[2], Farrah Saleh, M.D.[2] and Steven D Spandorfer, M.D.[2], [1]Weill Cornell Medical College, New York, NY, [2]NewYork-Presbyterian Hospital/Weill Cornell Medical Center, New York, NY

OBJECTIVE:
To compare embryologic outcomes between patients undergoing planned oocyte cryopreservation (OC) and subsequent oocyte thaw with PGT-A versus those undergoing IVF with PGT-A.
MATERIALS AND METHODS:
A retrospective chart review was performed of 9,070 IVF and 145 FOT cycles utilizing a GnRH antagonist protocol with combined FSH/LH between 2023-2025 at an academic clinic. Included patients were >18 years old and underwent their first ovarian stimulation cycle utilizing GnRH antagonist with combined FSH/LH protocols for planned OC and eventual oocyte thaw with PGT-A, or IVF with PGT-A. Primary outcomes included fertilization, blastulation, and euploidy rates. Cycles in which oocytes were thawed within 12 months of cryopreservation and cases involving severe male factor infertility were excluded. Univariate analyses were conducted via Mann Whitney-U test and Fisher's exact test. Multivariate regression analyses were performed to adjust for significant predictors; outputs were reported as risk ratio (RR) or odds ratio (OR).
RESULTS:
Among the 1,243 patients who met inclusion criteria, 1167 pursued IVF with PGT-A and 76 pursued PGT-A utilizing previously frozen oocytes. The mean time elapsed from oocyte retrieval to thaw was 3.9 years (+/-2.4). Age at oocyte retrieval (36 [34-39] vs 36 [34-38.5]), BMI (22.8 kg/m2 [20.7-26.0] vs 22.2 [20.5-25.4]), and peak estradiol level (2517 pg/mL [1761-3322] vs 2347 pg/mL [1532-3113]) were similar between IVF and planned OC groups, respectively (all p>0.05). AMH was higher in the planned OC group (2.89 ng/mL [1.8–4.3] vs 2.15 ng/mL [1.2–3.7], p<0.01), corresponding to greater total (18 [12–26] vs 15 [10–22]) and mature oocyte yield (15 [10–20] vs 11 [7–17]; both p<0.01).
In a multivariate analysis, younger age and higher AMH level were associated with a greater number of total and mature oocytes retrieved (all p<0.01). The proportion of mature oocytes did not differ between IVF and planned OC groups (78.6% vs 78.8%, p>0.05). After controlling for age, BMI, AMH level, and estradiol level on the day of ovulatory trigger, patients pursuing planned OC had similar odds of fertilization (OR=1.1, 95% CI 0.94-1.3, p<0.05) but lower odds of blastulation relative to patients pursuing IVF with PGT-A (39.5% vs 69.8%; OR=0.77, 95% CI 0.65-0.91, p<0.01). Euploidy rates were solely associated with age (p<0.001) and did not differ between groups after controlling for age, BMI, AMH level, and estradiol level on the day of ovulatory trigger (42.8% vs 30.8%; OR=0.95, 95% CI 0.78-1.16).
CONCLUSIONS:
Cryopreserved oocytes may exhibit lower blastulation rates compared to fresh oocytes, though age-controlled euploidy rates among resulting blastocysts are preserved.
IMPACT STATEMENT:
Lower blastulation rates in cryopreserved oocytes may reflect effects of vitrification and warming on developmental competence, refining our understanding of post-thaw embryologic outcomes and supporting the need for continued optimization of protocols.
SUPPORT: NA

ORAL ABSTRACT SESSION: LAW, POLICY, & ADVOCACY

O-13 11:15 AM Monday, October 26, 2026

FERTILITY CARE IN CRISIS: OPERATIONAL CHALLENGES IN U.S. MILITARY ASSISTED REPRODUCTIVE TECHNOLOGY PROGRAMS. Joshua

C. Combs, MD[1], Allison A Eubanks, MD[2,3], Sean Tipton, MA[4], Micah J Hill, DO[5] and Benjamin S Harris, M.D., M.P.H[6], [1]Naval Medical Center Portsmouth, Portsmouth, VA, [2]Potomac, MD, [3]Walter Reed National Military Medical Center, Bethesda, MD, [4]ASRM, Washington, MD, [5]NIH-NICHD, Germantown, MD, [6]Shady Grove Fertility - Jones Institute, Norfolk, VA

OBJECTIVE:
To evaluate U.S. military assisted reproductive technology (ART) programs as a readiness and retention capability, quantify workforce and capacity constraints, and define urgent targets for policy and workforce interventions affecting reproductive care for service members and military families.
MATERIALS AND METHODS:
A 2026 cross-sectional assessment of all military ART programs was performed using program survey data, review of current coverage policy, and analysis of 2024–2025 utilization metrics including network IVF activity and fertility preservation claims. Program structure, staffing, access models, and operational barriers were evaluated descriptively.
RESULTS:
Seven military ART programs performed 876 *in vitro* fertilization (IVF) cycles in 2025, demonstrating substantial treatment capacity despite constrained infrastructure. Start times for cycles ranged from 1 to 12 months and are projected to worsen as new referral processing dwindles due to decreasing staffing. Despite serving over 95,000 infertility-affected beneficiaries, medically indicated fertility preservation coverage generated only $133,345 in East-region claims over 15 months, covering less than 25 beneficiaries. Utilization is accelerating but retrospective data confirm significant early underutilization driven by awareness and referral gaps, not lack of need. Persistent operational barriers include lack of consistent policy to prevent treatment interruption from permanent change of station moves and deployment timelines, prolonged batching intervals, geographic access limitations, and lack of coverage for lower-cost first-line therapies such as intrauterine insemination. Since 2018, the active-duty reproductive endocrinology workforce has declined by 40%, leading several programs to develop civilian procedural partnership models to sustain care delivery.
CONCLUSIONS:
Military fertility care functions as an underrecognized readiness and retention capability. Workforce contraction, staffing shortages, and fragmented policy design threaten equitable access and long-term sustainability despite demonstrated system demand and clinical capacity. Civilian partnership models and targeted policy reform represent scalable, evidence-aligned solutions.
IMPACT STATEMENT:
The U.S. military requires service members to delay family building in service of mission. Ensuring timely, reliable access to fertility care is therefore a readiness imperative, not a luxury. Current system constraints demonstrate that this obligation is not consistently being met.
SUPPORT: None

O-14 11:25 AM Monday, October 26, 2026

NEITHER INTRACYTOPLASMIC SPERM INJECTION (ICSI) NOR PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY (PGT-A) WITH GENDER DISCLOSURE ALTER SEX RATIO AMONG LIVE BIRTHS FOLLOWING EMBRYO TRANSFER: A RETROSPECTIVE COHORT STUDY.
Roni Farkash, B.S.[1], Patricia Xu, B.S.[2], Lauren Tetelbaun, B.M.Sc.[2], Dr. Carolyn Robb, MD, MPH[3] and Martin Keltz, M.D.[4], [1]Woodland Hills, CA, [2]New York Medical College, Valhalla, NY, [3]New York Medical College School of Medicine, NY, [4]Medical Director Reproductive Endocrinology, Purchase, NY

OBJECTIVE: Recent literature has raised concerns that preimplantation genetic testing (PGT) may alter sex ratios at live birth, with a reported increase in male offspring potentially reflecting elective sex selection and patient preference. However, it remains unclear whether such differences occur and, if so, whether they are driven by patient preference or IVF-related factors. This study aimed to evaluate sex ratios among live births following ICSI, conventional IVF, and PGT-A with optional gender disclosure, which may allow for patient-driven embryo selection.
MATERIALS AND METHODS: Data was obtained from Cooper Genomics and the Society for Assisted Reproductive Technology (SART) and included IVF cycles with PGT-A from 2015-2024. Sex ratios were evaluated at two levels: embryo-level distributions by ploidy status (euploid vs mosaic) and live births. The primary outcome was male-to-female sex ratio. Statistical comparisons assessed deviation from an expected population sex ratio (1.05:1). Transferable embryos include tested euploid and transferable mosaic embryos. In our practice, IVF is not offered for non-medical sex selection, however, sex selection is permitted for patients undergoing IVF for clinical indications.
RESULTS: No significant deviation in sex ratio was observed among live births following PGT-A or in the overall cohort, regardless of PGT-A status. At the embryo level, transferable embryos also did not deviate from the expected sex ratio overall. However, when stratified by fertilization method, standard IVF was associated with a higher proportion of male embryos compared to ICSI, including among euploid embryos. Despite these embryo-level differences, no corresponding difference in overall sex ratios was observed.
CONCLUSIONS: In this single-center cohort, neither ICSI nor PGT-A with gender disclosure was associated with deviation from the expected sex ratio in either tested embryos or live births. Although standard IVF was associated with a modest increase in the proportion of male embryos, no significant deviation from the expected sex ratio was observed. These findings suggest that PGT-A with gender disclosure is unlikely to result in gender bias favoring male offspring.
IMPACT STATEMENT: These findings provide reassurance that PGT-A does not inherently bias sex ratios of either tested embryos or at live birth. Ethical concerns that widespread availability of PGT-A may lead to a significant increase in male births is unwarranted in our practice.

	Male Count	Female Count	% Male	P-Value
All Live Births	508	512	49.8	0.278
Live Births (PGT-A)	379	380	49.9	0.388
Live Births (Without PGT-A)	129	132	49.4	0.502
All Transferable Embryos	1559	1504	50.9	0.505
Transferable Embryos (ICSI)	1133	1143	49.8	0.101
Transferable Embryos (Without ICSI)	426	361	54.1	0.140

O-15 11:35 AM Monday, October 26, 2026

FINANCIAL LIMITATIONS OF EMPLOYER-SPONSORED IN VITRO FERTILIZATION (IVF) COVERAGE AMONG 60 LARGE SELF-FUNDED EMPLOYERS IN THE UNITED STATES.
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OBJECTIVE: Many self-funded employers are beginning to offer IVF coverage as a component of employees' benefits packages. Yet, little is known about the landscape of financial restrictions and the spectrum of relative generosity among employers. We characterized financial and cycle-based limits across 60 large self-funded employers that cover IVF.
MATERIALS AND METHODS: We conducted a content analysis of health insurance documents from 60 large employers obtained from Leverage Global Consulting, representing over 15 million covered lives. Expert qualitative analysts coded documents to identify key IVF benefit limits, including lifetime dollar (medical and pharmaceutical) and cycle caps. Analysts recorded the numerical dollar or cycle maximum within each plan, if present. We then summarized the distribution of dollar and cycle limits, comparing relative generosity across plans.
RESULTS: Financial limitations in the 60 plans offering IVF coverage vary widely (Table). Thirty-six have dollar limits, 32 have cycle limits, 12 have both, and 4 do not have either. Among those with dollar limits, 64% have a cap of $21,000 or greater. Among those with cycle limits, 53% cover at least 3 cycles. For other plans, however, lifetime dollar maximums and restrictions on the number of covered cycles may not align with the cost of a complete course of IVF treatment. Four plans in our sample cap IVF coverage at $5,000–$10,000, and four restrict coverage to one IVF cycle.
CONCLUSIONS: Employer-sponsored fertility coverage often includes limits on how much IVF care patients can utilize. Lifetime dollar and cycle caps may create barriers to accessing the full course of recommended fertility care, especially for employees whose benefits cap out between $5k-$10k or at one IVF cycle. Our findings highlight that even among self-funded employer plans offering IVF coverage, benefit limits can constrain access to care.
IMPACT STATEMENT: These findings highlight variability in the value of IVF benefits. For patients who need more than one IVF cycle for a live birth, costs can exceed $30,000 once medications and additional medical services are included. Coverage may be financially adequate for average treatment needs, or an employee may still have to pay tens of thousands of dollars out of pocket if they exceed their plan's caps. Our findings can inform employers and policymakers seeking to improve equitable access to IVF by designing more comprehensive fertility benefits.
Table: Lifetime Dollar and Cycle Limits Among Self-Funded Employer Plans Covering IVF

	Frequency (%)
Lifetime Dollar Cap Range (n = 36)	
$5,000–10,000	4 (11)
$11,000–20,000	9 (25)
$21,000–30,000	11 (31)
$31,000–40,000	5 (14)
$41,000–50,000	3 (8.3)
$75,000+	4 (11)
Lifetime Cycle Limit (n = 32)	
1	4 (13)
2	11 (34)
3	9 (28)

4	6 (19)
5	2 (6.3)

SUPPORT: Funding to support this work came from the R01HD113625 from the National Institute of Health. C.A., P.Y., J.M.D., and A.K. receive grant funding from the National Institute of Health (R01HD113625).

O-16 11:45 AM Monday, October 26, 2026

LACK OF REACH FOR PATIENTS WITH INFERTILITY: STATE-MANDATED IVF POLICY DESIGN AND IMPLEMENTATION BARRIERS.

Carissa J. Pekny, B.S., M.D.[1], Vaibhavi Patankar, BS[2], Sally A. D. Romero, PhD, MPH[1], Jamie L Resnik, MD[1], Nia Palmer, B.S. (candidate)[3] and Irene Su, MD, MSCE[2], [1]University of California San Diego, La Jolla, CA, [2]University of California San Diego, San Diego, CA, [3]San Diego State University, San Diego, CA

OBJECTIVE: To evaluate the association between state-level IVF insurance mandates and evidence of IVF coverage in benchmark insurance plans and to examine how mandate design relates to the quality of IVF benefits. We hypothesized that IVF mandates would be related to increased evidence of IVF coverage.
MATERIALS AND METHODS: We abstracted data from state-level IVF mandates and essential health benefit (EHB) or marketplace plans from 50 states and the District of Columbia. EHB benchmark plans define the scope of benefits that must be covered by state health insurance plans sold in individual and small-group markets. The primary exposure was state mandate, and the primary outcome was presence of IVF benefits in the state EHB benchmark or marketplace plan. Fisher's exact tests were conducted to compare characteristics across mandates and EHB plans.
RESULTS: Of 25 states with infertility laws, 17 included IVF-specific mandates. On mandate design, 13/17 (76%) applied to individual or small group markets. All 17 required parity with medical benefits, while 14 (82%) required parity with pharmacy benefits. Although all 17 states defined infertility, only 6 (35%) used a definition that was consistent with the American Society of Reproductive Medicine. Four (24%) of these states restricted services to partnered individuals. Coverage varied by service: 13 (76%) covered diagnostic evaluation and egg retrieval, 12 (71%) embryo transfer, 3 (18%) pre-implantation genetic testing, 5 (29%) donor gametes or embryos, and 7 (41%) gestational carriers. Thirteen (76%) of these states imposed lifetime limitations including financial caps and restrictions on retrievals, transfers, or embryo storage.
When examining EHB or marketplace plans for states with IVF mandates, 6/17 states defined infertility, only 2 of which were consistent with the ASRM definition of infertility. 7 states included egg retrieval, and 6 states included pharmacy benefits; however, 4 states had relationship restrictions, and 2 states had partner gender or age limit restrictions.
IVF mandate states were significantly more likely to include IVF coverage in EHB benchmark or marketplace plans compared to non-mandate states (41.2% vs 0%; Fisher's exact p = 0.00017). Only 54% (7/13) states with mandated IVF coverage for individual and small group markets included IVF-specific coverage in the EHB benchmark or marketplace plans.
CONCLUSIONS: State IVF mandates are highly variable in terms of market coverage, eligibility, and services covered. The significant discordance in IVF coverage between state mandates and benchmark insurance plans helps explain why patients may face access limitations despite supposed statutory coverage. States could better meet consumer needs by consistently updating their benchmark plans and leveraging new flexibilities available for redesigning benchmarks granted through federal law as of 2026.
IMPACT STATEMENT: State IVF mandates are highly variable and inconsistently reflected in benchmark insurance plans, excluding key populations and services and thereby limiting equitable access to IVF; aligning and regularly updating benchmark plans could improve real-world access to mandated IVF benefits.
REFERENCES:
Stacey Pogue et al., Enhancing Essential Health Benefits: How States Are Updating Benchmark Plans to Improve Coverage (Commonwealth Fund, Nov. 2024). https://doi.org/10.26099/pkqy-dv82.

O-17 11:55 AM Monday, October 26, 2026

POLICY, ACCESS, AND GEOGRAPHY: WHERE RESTORATIVE REPRODUCTIVE MEDICINE EXISTS IN POST-ROE AMERICA.

Shea E Randall, BA[1], Katherine Roberts, BA[2], Riley Bonaccorsi, BA, MA[2], Brianna C Borger, BS[2], Emily Martinbianco, M.D.[3] and Eve C Feinberg, M.D.[2], [1]Loyola University Chicago, [2]Northwestern University Feinberg School of Medicine, Chicago, IL, [3]Cleveland Clinic

OBJECTIVE:
To evaluate the relationship between state abortion policy environments and the geographic distribution of clinicians practicing restorative reproductive medicine (RRM) in the United States.
MATERIALS AND METHODS:
We conducted a cross-sectional study of U.S. clinicians advertising RRM or related approaches (NaProTechnology, FEMM, and Creighton Model FertilityCare) via national directories and targeted web searches conducted between November 2025 and March 2026. Providers were assigned to a state based on primary practice location. Telehealth only providers (n=24) were excluded from state-level analysis. State-level provider density per million residents was calculated using U.S. Census data. Abortion policy environments were classified using the Guttmacher Institute policy restriction classifications (0=most restrictive, 6=most protective). Associations were assessed using Spearman correlation and Kruskal-Wallis tests. Publicly available practitioner characteristics, including religious affiliation when explicitly stated, were also recorded.
RESULTS:
RRM providers were identified in 43 U.S. states with substantial geographic variation (0-17.1 providers per million residents). There was no significant association between RRM provider density and abortion policy score when analyzed continuously (Spearman ρ=-0.21, p=0.138; Kruskal-Wallis p=0.138). However, grouped analysis demonstrated a significant difference across policy environments (p=0.032). States with restrictive abortion policy environments had higher mean RRM provider density compared with protective states (3.59 vs 1.76 per million residents). Post-hoc comparisons suggested a trend toward higher density in restrictive versus protective states (raw p=0.018), though this did not remain statistically significant after correction (adjusted p=0.055). Approximately 50.5% of identified practitioners publicly reported Catholic affiliation. This classification was limited to explicitly stated affiliations in provider biographies, publicly available materials, or inclusion in Catholic physician directories, and likely underestimates the true proportion. High-density regions were concentrated in the Midwestern United States.
CONCLUSIONS:
RRM providers are unevenly distributed across the United States with higher density in restrictive abortion policy states and substantial publicly reported Catholic representation. Geographic clustering, substantial representation of Catholic-affiliated practitioners, and proximity to established networks (e.g. Creighton University) suggests that the adoption and promotion of RRM may be shaped by broader ideological, religious, and institutional frameworks.
IMPACT STATEMENT:
The observed clustering of RRM providers in states with restrictive abortion policies, along with substantial publicly reported religious affiliation, may reflect the integration of religiously informed frameworks alongside conventional reproductive medical practices, potentially influencing care delivery and access to assisted reproductive technology services.

O-18 12:05 PM Monday, October 26, 2026

FROZEN AND FORGOTTEN: A QUANTITATIVE ANALYSIS OF OOCYTE DISPOSITION OUTCOMES IN UK LICENSED FERTILITY CLINICS, 2000-2023.

Lauren Crawford, BSc (Hons), MSc[1] and Helen C O'Neill, B.SC., M.SC., PH.D.[2], [1]London, United Kingdom, [2]UCL Institute for Women's Health, London, United Kingdom

OBJECTIVE: To quantify national trends in oocyte storage and utilisation in UK fertility clinics, and to assess downstream disposition pathways, including discard and research donation.
MATERIALS AND METHODS: A retrospective descriptive analysis was conducted using aggregated, non-identifiable national data from the UK Human Fertilisation and Embryology Authority (HFEA) between 2000 and 2023. Public datasets provided annual counts of oocytes entering storage, thawed for treatment, and donated to other patients. Additional data on oocyte discard and donation to research were obtained via a Freedom of Information request made to the HFEA. Outcomes were summarised using absolute counts, percentage change over time, and proportions relative to oocytes entering storage, including utilisation, discard, and research donation rates. Trends were assessed descriptively. No ethical approval was required.
RESULTS: Between 2000 and 2023, oocytes entering storage increased from 234 to 69,521 (+29,624%). Oocyte utilisation rose from 26 to 21,306 (+818%) but remained proportionally low relative to storage volumes. Similarly, donation of stored oocytes to other patients increased substantially in absolute terms but remained low relative to overall storage volumes.
Oocyte discard increased from 9 to 3,209 (+35,567%), with a rising proportion of stored oocytes ultimately discarded. In contrast, rates of donation to research declined from 2,016 in 2001 to 101 in 2023 (−94%), with a decreasing proportion entering research pathways. By 2023, approximately 32 oocytes were discarded for every one donated to research.
Overall, the proportion of stored oocytes used in treatment or research remained low relative to the rapid expansion in storage.
CONCLUSIONS: Oocyte cryopreservation has expanded substantially in the UK; however, utilisation has not kept pace with storage. Increasing discard alongside declining rates of research donation highlights a growing divergence between oocyte preservation and downstream use. A substantial proportion of stored oocytes are not ultimately used in treatment or research, warranting further investigation into factors influencing disposition.
IMPACT STATEMENT: As oocyte cryopreservation increases globally, understanding downstream utilisation is critical for patient counselling, clinical planning, and resource use. This study provides the first national-level quantification of oocyte disposition outcomes, identifying a substantial proportion of oocytes not used in treatment or research. Given that oocytes occupy an irreplaceable position in biomedical research in which the sequence of events underpinning human reproduction can be uniquely studied within their native cellular context, this study highlights where opportunities for advancing scientific knowledge are being systemically missed.

ORAL ABSTRACT SESSION: GENETIC COUNSELING

O-19 11:15 AM Monday, October 26, 2026

PRECISION DIAGNOSIS OF GENUINE EMPTY FOLLICLE SYNDROME VIA WHOLE GENOME SEQUENCING OF MONOGENIC REPRODUCTIVE GENES: THERAPEUTIC IMPLICATIONS.

Mili Thakur, M.D., FACOG, FACMG[1] and Neil R Chappell, B.S., M.D., MSCI[2], [1]Genome Ally P.C., Grand Rapids, MI, [2]Fertility Answers, Baton Rouge, LA

OBJECTIVE: To demonstrate that whole genome sequencing (WGS)–based candidate gene analysis can establish a definitive diagnosis of genuine empty follicle syndrome (EFS) and guide precision reproductive management.
MATERIALS AND METHODS: A 32-year-old G0 with infertility and consanguinity underwent two IVF cycles at two different practices with normal follicular development but failed oocyte retrieval. Stimulation parameters, hormonal profiles, and embryology findings were reviewed. WGS with targeted analysis of monogenic reproductive genes was performed. Relevant literature was evaluated.
RESULTS: Both cycles showed adequate follicular recruitment but complete absence of oocytes and cumulus complexes. Estradiol remained low (145–165 pg/mL) relative to follicular growth. Trigger labs confirmed appropriate hCG exposure (84 IU/L) with low progesterone (1.16 ng/mL), indicating impaired granulosa cell response. WGS identified a homozygous pathogenic nonsense variant in LHCGR (c.562G>T; p.Glu188Ter), confirming loss of LH/hCG receptor function and diagnosis of genuine EFS refractory to standard stimulation.
CONCLUSIONS: WGS enabled definitive diagnosis of genuine EFS and distinguished it from protocol-related failure, preventing futile repeat IVF cycles. In patients with ≥1 IVF cycle demonstrating normal follicular development but absent oocyte retrieval with appropriate trigger, early genomic testing should be considered. In the absence of functional LH/hCG signaling, conventional stimulation is ineffective. In vitro maturation approaches using ex vivo ovarian support cell systems may offer a strategy to bypass receptor-level defects.
IMPACT STATEMENT: This case supports integration of genomic testing into unexplained IVF failure and advances a precision medicine framework in reproductive endocrinology. Emerging in vitro maturation platforms that recreate the ovarian microenvironment may enable oocyte maturation independent of endogenous receptor signaling, redefining care for genetically mediated infertility.
SUPPORT: No financial support for this work
REFERENCES:
1.Inherited mutation of the luteinizing hormone/choriogonadotropin receptor (LHCGR) in empty follicle syndrome. *Fertil Steril*. 2011;96(2):e125-130.
2. Development of human induced pluripotent stem cell-derived ovarian support cells as a clinical-grade product for in vitro fertilization. *Cell Stem Cell*. 2026;S1934-5909(25)00454-0.

O-20 11:25 AM Monday, October 26, 2026

CHECK YES OR NO: EVALUATION OF REPORTED CANCER FAMILY HISTORY IN A PRE-SCREENED PROSPECTIVE EGG DONOR COHORT USING NATIONAL COMPREHENSIVE CANCER NETWORK GUIDELINES DURING GENETIC RISK ASSESSMENT. Jillian Carroll, MS, CGC[1], Jennifer Murphy, MS, CGC[1], Priya Ramaswamy, B.S., M.S.[1], Danika Coulson, MS, CGC[1], Maya Briskin-Breen, MS, CGC[1], Esther Orr-Ferdinand, MS, CGC[1], Amy Cronister, MS, CGC[2], Jodie L. Asher, M.S., CGC[3], Camelia V Varriale, BS[4] and Lauri D Black, M.S., CGC[5], [1]Labcorp Genetics, Burlington, NC, [2]Labcorp Genetics, Phoenix, AZ, [3]Labcorp Genetics, Denver, CO, [4]Inception Fertility, Houston, TX, [5]Delete, Pacifica, CA

OBJECTIVE: The objective of this study was to assess how often prospective egg donors report cancer family history during genetic risk assessment (GRA) and how frequently this history meets National Comprehensive Cancer Network® (NCCN®) guidelines for common cancer susceptibility genetic testing.
MATERIALS AND METHODS: A cohort of prospective egg donors (N=610) from a single national donor program underwent GRA with a genetic counselor between 11/01/2025 and 03/31/2026. Prior to being cleared for GRA, donors were pre-screened by the donor program via questionnaire and phone interview to identify and exclude those with reported cancer histories meeting NCCN guidelines for common cancer susceptibility genetic testing. During GRA, the genetic counselor elicited and recorded a three-generation family history. When a prospective donor disclosed cancer history, whether previously reported during pre-screening or newly reported as part of GRA, the information was reviewed and classified as either requiring or not requiring follow-up questioning, based on the specific cancer type. Those cancers necessitating follow-up included breast, ovarian, prostate, pancreatic, and Lynch-syndrome associated cancers. Histories including these cancers were interrogated to determine if the prospective donor met NCCN guidelines for cancer susceptibility genetic testing. If guidelines were met, record was made of which criteria were satisfied.
RESULTS: Cancer history of any kind was reported by 52.0% (317/610) of pre-screened prospective egg donors; 61.8% (196/317) of these histories contained one or more cancer(s) requiring follow up. Upon further investigation, 22.4% (44/196) of these cancer histories met NCCN guidelines for common cancer susceptibility genetic testing. Donors reporting NCCN positive histories accounted for 7.2% (44/610) of the cohort as a whole and 13.9% (44/317) of the subset who reported any cancer history. When examining the 44 instances in which NCCN guidelines were met, breast, prostate, and ovarian criteria were satisfied most frequently with 22 (50.0%), 10 (22.7%), and 7 (15.9%) cases, respectively. Another 3 (6.8%) cases met both breast and prostate criteria simultaneously. Pancreatic and Lynch syndrome criteria were each met one time (2.3% each).
CONCLUSIONS: These results indicate that even following pre-screening, roughly 1 in every 14 (7.2%) pre-screened prospective egg donors report cancer history that meets NCCN guidelines for common cancer susceptibility genetic testing and half (52.0%) of all pre-screened donors report cancer family history in general. Determining whether a prospective egg donor meets common NCCN guidelines can be valuable to a donor program as it may serve as a component of eligibility for participation in the program and informed consent for future intended recipients. Genetic counseling as part of the GRA process provides a specialized checkpoint where additional important cancer family history can be gathered, clarified, and flagged.
IMPACT STATEMENT: During genetic risk assessment following pre-screening, 7.2% of pre-screened prospective egg donors were found to meet NCCN guidelines for common cancer susceptibility genetic testing.
SUPPORT: None
REFERENCES:
None

O-21 11:35 AM Monday, October 26, 2026

INCREASING PATIENT-INITIATED RAW DATA REQUESTS FOR PREIMPLANTATION GENETIC TESTING (PGT). Alyssa Snider, MS, CGC, PH.D[1], Lauren Staunch, B.SC., M.S.[2], Holly Dong, B.S.[3], Angela Linville, PhD[4] and Ania Pinares De La Fe, M.Sc.[3], [1]Igenomix, Torrance, CA, [2]Igenomix, part of VitroLife Group, Fairport, NY, [3]Igenomix, part of Vitrolife Group, [4]Igenomix, part of Vitrolife Group, Miami, FL

OBJECTIVE: Our objective is to quantify the increase in requests from PGT-A patients for raw data over a 1-year period. In response to technology advancement and accumulation of clinical outcome data influencing result interpretation, patients are demanding transparency of their PGT-A data. The increasing patient demand is fueled by AI-based tools that incorporate peer advice from social media directing patients to request raw data from their PGT laboratory. Patients request their medical records (MRs), including their raw data, and may then utilize AI platforms to reinterpret their raw data and obtain pseudo-medical advice.
MATERIALS AND METHODS: MR requests were submitted by patients to a single reference laboratory that performed PGT-A using next generation sequencing (NGS). MR requests could include copies of test reports, additional testing information not included on the original report (e.g. chromosomal sex or mosaic categorization), or raw data. For raw data requests, unless data files (BAM files) were specifically requested, visualization profiles were provided. In compliance with the 21st Century Cures Act, requests were actioned without redirection to the ordering physician. Patients were not charged for MR requests. The frequency of MR requests was counted quarterly over 12 months in 2025. Growth rates were evaluated for the total number of MR requests, mosaic updates, chromosomal sex updates, and raw data requests. Compound average growth rates (CAGRs) were used for data sets with a non-zero starting point, and R^2 values were used to evaluate the consistency of the trend over time.
RESULTS: A total of 3,596 MR requests were received in 2025 with a CAGR of 7% and an R^2 of 0.34. Raw data requests were received for 192 cases with a CAGR of 56% and R^2 of 0.77. Raw data requests specifying BAM files were received for 15 cases with an average increase of ~4 requests per quarter and an R^2 value of 0.75. Zero requests occurred in Q1 and 11 requests (73%) occurred in Q4. Requests were received for 421 mosaicism updates and 676 chromosomal sex updates, with CAGRs of 3% ($R^2 = 0.04$) and 4% ($R^2 = 0.01$), respectively. The CAGR for the total number of tests performed during this time period was 5% ($R^2 = 0.59$).
CONCLUSIONS: The total number of MR requests in 2025 showed a moderate increase, likely attributable to the general increase in testing volume. Requests for report updates occurred at a relatively stable frequency. In contrast, requests for raw data increased substantially over the study period. Requests for BAM files rose sharply in 2025 and are likely to continue growing.
IMPACT STATEMENT: HIPAA requires laboratories to provide patients access to their designated MR set, which includes raw data. However, how patients use this information in their clinical care is uncertain. Patients should understand that physicians and genetic counselors may not feel qualified to review PGT-A raw data and that clinics may not be able to consider unvalidated result reinterpretation when making embryo transfer decisions. Patients should use AI platforms with caution and include their provider when making a request for raw data, with the goal of setting realistic expectations of how the raw data will be used for their clinical management.
SUPPORT: None

O-22 11:45 AM Monday, October 26, 2026

PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY (PGT-A) DISCREPANCY FROM A SPONTANEOUS CONCEPTION OCCURRING AT THE TIME OF EMBRYO TRANSFER. Alicia Polak, MS, CGC[1], Lauri D Black, M.S., CGC[2], Inalvis Alvarez, BS[3], David Prokai, M.D.[4], Chunmin Wang, PH.D.[4], Refik Kayali, PH.D[5], Adedoyin Akinwole, MPH[3] and Alyssa Snider, MS, CGC, PH.D[6], [1]Denver, CO, [2]Inception Fertility, Houston, TX, [3]Igenomix, Part of Vitrolife Group, Miami, FL, [4]Aspire Fertility, Austin, TX, [5]Igenomix US, Torrance, CA, [6]Igenomix, San Ramon, CA

OBJECTIVE: The accuracy of PGT-A relies not only on the testing platform and assumption that the biopsy sample represents the embryo and developing fetus, but also on each step of the IVF process, including correct embryo labeling, biopsy labeling, and embryo transfer. Here we describe a case in which a PGT-A tested euploid male embryo was transferred, and products of conception (POC) testing reported a female pregnancy with trisomy 16, for which spontaneous conception was the identified cause of the discrepancy.
MATERIALS AND METHODS: A 29-year-old woman with a history of recurrent pregnancy loss (RPL) from both spontaneous and assisted conceptions underwent IVF and obtained three blastocysts. The couple's karyotypes were normal. Biopsies were submitted to a reference laboratory for PGT-A using next generation sequencing (NGS). Two embryos were reported as euploid and one as aneuploid with monosomy of chromosome 15; all were reported as male. The patient had a natural cycle frozen embryo transfer, and a singleton pregnancy resulted. The pregnancy miscarried, and the POC was sent to the same laboratory for chromosome analysis via NGS, revealing a female trisomy 16 pregnancy. A careful chain of custody review was conducted by both the IVF and

PGT laboratories. The patient had no stored embryos from other IVF cycles. Genetic fingerprinting using a 16-short tandem repeat (STR) panel compared the POC to surplus DNA from each PGT-A sample and the maternal sample.
RESULTS: STRs in the POC sample were nonidentical to any of the PGT-A samples, including the transferred embryo. One STR allele at each locus in the POC was observed in the maternal sample, consistent with maternity and ruling out unrelated embryo transfer. Maternity was confirmed for all PGT-A samples. A maximum of 4 unique alleles were observed across all 5 samples, as expected for genetic relatedness. No extraneous STR allele was observed in the PGT-A sample of the transferred embryo, ruling out external contamination. Shared alleles were observed between the POC and three PGT-A samples, consistent with 50% sibling relatedness.
CONCLUSIONS: This case illustrates spontaneous conception as the cause of a PGT-A discrepancy. Genetic fingerprinting showed the pregnancy did not arise from a PGT-A tested embryo, but was biologically related to the patient and showed sibling relatedness to the tested embryos. Alternate explanations such as unintended embryo transfer and external contamination were ruled out. This embryo was transferred via a natural cycle protocol, and the couple did not comply with recommendations to abstain from intercourse. Collaboration between the fertility center and testing laboratory allowed root cause analysis, resolution, and informed future treatment decisions.
IMPACT STATEMENT: When considering embryo transfer following PGT, risk reduction is the clinical goal. Consideration of controlled versus natural cycle embryo transfer will mitigate the chance of spontaneous conception as a cause of discrepancy between PGT result and pre- or post-natal outcomes. This is of even greater significance for patients with proven or presumed fertility, such as those pursuing PGT for the indication of RPL or single gene disorders.
SUPPORT: None.

O-23 11:55 AM Monday, October 26, 2026

DONOR PERSPECTIVES ON PREDISPOSITION GENETIC TESTING IN GAMETE DONOR PROGRAMS: ARE DONORS READY TO TAKE PART? Kara Baldwin, MS, CGC[1], Luise Johannes, MS, CGC[1], Lauren K Read, BS[2], Elizabeth Hennessy, BA[1], Nataliia Zarytska, B.S.[1] and Jessica Park, MS, CGC[2], [1]California Cryobank and Donor Egg Bank USA by CooperSurgical Inc, Los Angeles, CA, [2]California Cryobank by CooperSurgical Inc, Los Angeles, CA

OBJECTIVE: As interest in genetics and lifestyle-focused health testing grows in the general population, this study aimed to understand sperm donor interest in predisposition genetic testing and to inform best practices for its potential integration into gamete donor programs by assessing attitudes, perceived risks and benefits, and impact on donor participation.
MATERIALS AND METHODS: An anonymous cross-sectional electronic survey was administered in February 2022 to sperm donors who had qualified at a large U.S. gamete bank between January 2016 and January 2022. Educational material distinguishing reproductive carrier screening from predisposition testing was provided before participation. The survey assessed demographics, prior direct-to-consumer (DTC) testing, interest in predisposition testing, perceived risks and benefits, comfort with family disclosure, healthcare engagement, and willingness to participate if testing were required. Free-text responses were analyzed qualitatively.
RESULTS: Seventy-four donors responded, with 69 providing answers to most survey questions; respondents were primarily aged 25–30 years, White, unmarried, and without children. Prior DTC testing was reported by about 20%, most commonly for ancestry and health-related information. Interest in predisposition testing was high, with 70% indicating they would want testing for themselves. Donors most frequently expressed interest in testing for hereditary cancer (90%), neurological (88%), and cardiovascular (85%) conditions, as well as medication sensitivities (80%). Approximately 85% reported they would share a high-risk result with relatives and discuss results with a personal physician. Reported concerns were limited (18%) and included genetic privacy, discrimination, insurance implications, and misuse of genetic information. Over 90% indicated they would continue participating in the donor program if predisposition testing were mandatory, with no respondents indicating they would decline participation.
CONCLUSIONS: In this small study at a single gamete bank, donors demonstrated strong interest in and acceptance of predisposition genetic testing in gamete donor programs. Although concerns were uncommon, they highlighted the importance of informed consent and structured pre- and post-test genetic counseling. Counseling should address clinical relevance, follow-up care, psychosocial impacts, and privacy considerations to support informed decision-making. Comprehensive counseling may help ensure predisposition testing is implemented thoughtfully and responsibly without negatively affecting donor participation. Study limitations include a small sample size, focus only on sperm donors, and potential selection bias because respondents were already accepted into a donor program.
IMPACT STATEMENT: High donor acceptance suggests predisposition genetic testing, when paired with genetic counseling, can be integrated into routine donor screening.
SUPPORT: Financial support for this study was provided by California Cryobank by CooperSurgical, Inc
REFERENCES:
PMID: 40659013; PMCID: PMC12503421.

O-24 12:05 PM Monday, October 26, 2026

BEYOND THE BINARY: "GRAY AREA" EMBRYO TRANSFERS IN THE ERA OF COMPLEX PREIMPLANTATION GENETIC TESTING (PGT). Hannah N Green, MS, Carissa Huber, MS, CGC, Jennifer K Blakemore, MD, MSCI, James A Grifo, MD, PHD, Caroline McCaffrey, PHD, HCLD and Andria G Besser, M.S., NYU Langone Fertility Center, New York, NY

OBJECTIVE: Aneuploidy testing (PGT-A) has evolved from binary reporting to include mosaicism and segmental aneuploidy, while monogenic testing (PGT-M) has expanded to include a broader range of conditions with variable penetrance and severity. Accordingly, embryo transfer (ET) decisions have become more complex and increasingly involve embryos that are not strictly "normal." We aimed to describe the frequency and outcomes of ETs involving "gray area" PGT results in a high-volume IVF center with integrated genetic counselors (GCs).

MATERIALS AND METHODS: This is a retrospective cohort study of all frozen ETs at a single academic fertility center from Sept 2015 - Jan 2026.

At our center, post-PGT embryos are assigned into 3 categories: "Yes" (PGT-A euploid; PGT-M unaffected or carrier of autosomal recessive (AR) condition); "No" (whole chromosome aneuploid); or "Potential with Genetic Counseling (PGC)" (PGT-A mosaic or segmental aneuploid; PGT-M positive for autosomal dominant (AD) or X-linked (XL) variant or homozygous/compound heterozygous for AR condition).

All patients requesting PGC ET were offered an in-house GC consult, which was typically 30-45 minutes.

Primary outcome was the frequency of PGC ETs. Secondary outcomes were distribution of PGC ETs over time, resulting number of live births (LB), and ongoing pregnancy (OP) rate for PGC embryos.

RESULTS: Of 13254 post-PGT ETs, 690 (5.2%) involved PGC embryos: 585 (84.8%) mosaic, 47 (6.8%) segmental aneuploid, and 58 (8.4%) PGT-M positive (M-pos). Four embryos were both mosaic and M-pos.

Among 58 M-pos embryos, 30 (51.7%) were positive for AD conditions (72.7% of which were hereditary cancer syndromes). The remainder included 9 (15.5%) females positive for XL genes and 1 (1.7%) male positive for an XL gene; 8 (13.8%) with AR conditions; and 8 (13.8%) with positive mtDNA mutant load. Two embryos were AR carriers for which the second variant status could not be determined.
The number and proportion of PGCs increased significantly from 158/4564 (3.5%) between 2015-2020 to 532/8690 (6.1%) from 2021-2026 (X^2: 42.9; $p<0.0001$). On Poisson regression, this corresponded to an approximate 21% annual increase (IRR: 1.210, 95% CI: 1.185-1.237; $p<0.001$, Wald Z: 14.0).
Overall, 240 babies were born from PGC embryos, with 42 OPs. OP/LB rate was 41.4% (239/577) among mosaic, 20.0% (9/45) among segmental aneuploid, and 58.6% (34/58) among M-pos ETs.

CONCLUSIONS: Integrated in-house genetics expertise enables patients to make informed decisions about their embryos with "gray area" PGT results, representing more than 5% of ETs at our center. As a result, over 200 babies have been born from these embryos, contributing meaningfully to birth outcomes.

IMPACT STATEMENT: As genetic testing increases in complexity, ET decisions will continue to become less straightforward and challenge clinic policies that categorically exclude them from consideration. Evolving reproductive technologies necessitate genetics expertise to shape these policies in ways that promote patient autonomy and informed decision-making. Ultimately, the 21% annual growth in PGC ETs underscores a critical need for proactive workforce planning and integration of GCs within IVF centers.

ORAL ABSTRACT SESSION: REPRODUCTIVE UROLOGY

O-25 11:15 AM Monday, October 26, 2026

IMPACT OF TRANSIT TIME ON FRESH AND POST-THAW SPERM MOTILITY IN A CONTEMPORARY MAIL-IN SEMEN TESTING COHORT. Sohei Kuribayashi, M.D, Ph.D[1], Jayant Siva, BS[1], Scott Lundy, MD, PhD, HCLD[2] and Ramy Abou Ghayda, MD, MHA, MPH, MBA[3], [1]Cleveland Clinic Foundation, Cleveland, OH, [2]Cleveland Clinic Glickman Urological Institute, [3]Case Western Reserve University/University Hospitals Urology Institute, Cleveland, OH

OBJECTIVE: Mail-in semen testing significantly expanded in recent years, but the relationship between transit time and semen quality in real-world clinical cohorts remains incompletely characterized. We aimed to evaluate the association between transit time and motility-related semen parameters, with particular focus on post-thaw motility and risk factors predicting post-thaw quality concerning for failed IVF as measured by 0% motility.
MATERIALS AND METHODS: We performed a retrospective analysis of de-identified semen testing data from the a commercial mail-in testing platform (Give Legacy, New York) from January 2023 onward. The cohort was restricted to the first sample from men aged 18–70 years and transit time within 48 hours per lab protocol. Outcomes included motility, progressive motility, post-thaw motility, and post-thaw 0% motility. Crude linear associations were assessed, followed by adjusted restricted cubic spline models controlling for age and days of abstinence. Adjusted predicted values at 24, 36, and 48 hours were calculated. We also evaluated post-thaw 0% motility across clinically relevant transit groups (≤24 h, 24–36 h, and 36–48 h). In accordance with the clinical SOP, sperm vitality testing was performed whenever a sample demonstrated 0% motility at the time of freezing.
RESULTS: A total of 4,645 men met inclusion criteria. Median age was 35 years and median abstinence was 3 days. Longer transit time was associated with lower motility, progressive motility, and post-thaw motility on crude analysis (all $p<0.0001$). In adjusted spline models, overall associations remained significant for motility, progressive motility,

and post-thaw motility (all p<0.0001). Nonlinear associations were observed for motility (p=0.0129) and post-thaw motility (p=0.0050), while progressive motility showed a predominantly progressive decline. The rate of post-thaw 0% motility increased across transit groups: 5.6% for ≤24 h, 7.7% for 24–36 h, and 11.7% for 36–48 h. Compared with ≤24 h, adjusted odds of post-thaw 0% motility were higher for 24–36 h (OR 1.40, 95% CI 1.03–1.92, p=0.0321) and 36–48 h (OR 2.27, 95% CI 1.40–3.60, p=0.0006). Preliminary clinical experience with this mail-in semen testing system suggests that viable sperm may be recovered for ART after transit times as long as 72 hours.
CONCLUSIONS: Longer transit time was associated with deterioration in fresh and post-thaw motility parameters in a contemporary mail-in semen testing cohort. Post-thaw motility showed the clearest nonlinear decline, and the likelihood of post-thaw 0% motility increased progressively with longer transit duration. Samples appeared to be best preserved within 24 hours, while deterioration became more clinically apparent beyond 36 hours.
IMPACT STATEMENT: These findings support practical transit time targets for mail-in semen testing and sperm preservation workflows, suggesting that arrival within 24 hours is ideal and that delays beyond 36 hours may meaningfully compromise post-thaw usability.

O-26 11:25 AM Monday, October 26, 2026

PATERNAL AGING SHIFTS BASELINE SPERM EPIGENETIC STATES AND AMPLIFIES ALTERATIONS ACROSS GENERATIONS. Michelle M Denomme Tignanelli, PhD[1], Mary E Haywood, PhD[2], Cameron M Hebert, BSc[3], Keelee J McCarty, PhD[3], Blair R McCallie, PhD[3], William B Schoolcraft, M.D.[4] and Mandy Katz-Jaffe, PhD[4], [1]Colorado Center For Reproductive Medicine, Lone Tree, CO, [2]CCRM Genetics, Lone Tree, CO, [3]CCRM Research, Lone Tree, CO, [4]CCRM Fertility, Lone Tree, CO

OBJECTIVE: Male aging is associated with aberrant sperm epigenetic remodeling, but whether these alterations are reversible, remain stable, or intensify with age in the subsequent generation remains unclear. This study examined how age-associated sperm epigenetic changes are perpetuated through two outbred male natural reproductive lifespans.
MATERIALS AND METHODS: Outbred CF1 males (F0; n=17) were frequently mated to verify fertility across their reproductive lifespan (3–15 months). Sperm was collected at 3-4 months (young) and 12-15 months (aged). Male offspring derived from F0 aged fathers (F1; n=15) were also frequently mated, with sperm collected at equivalent ages. Whole-genome bisulfite sequencing (WGBS; Zymo Research) of young and aged sperm (F0: n=5/group, F1: n=4/group) identified differentially methylated regions (DMRs; FDR≤0.05 and ≥10% methylation difference). Pyrosequencing (Qiagen) assessed eight imprinted DMRs (F0: n=12/group, F1: n=11/group) by 2-way ANOVA (p<0.05). MicroRNA sequencing (Illumina) was performed (F0: n=5/group, F1: n=11/group) and analyzed by DESeq2 (padj<0.05). Pathway enrichment was examined by g:Profiler; p<0.05.
RESULTS: Aging in F0 males was associated with genome-wide sperm methylation changes, further amplified in F1 males (F0: 1,041 DMRs; F1: 14,649 DMRs; FDR≤0.05). Among these, 233 DMRs were shared across both generations (Z-score=183.7; p<0.001), highlighting conserved regions of epigenetic susceptibility. Functional enrichment showed significant cross-generational overlap, with shared KEGG pathways (F0: 7/12; F1: 7/55; p<0.05) comprising neuronal (glutamatergic synapse, axon guidance), signaling (cAMP, phospholipase D, cGMP-PKG), and endocrine regulation (parathyroid hormone, insulin secretion). Shared Reactome pathways (F0: 3/6; F1: 3/21; p<0.05) included neuronal system and GPCR signaling, while top overlapping gene ontology terms (F0: 155/164; F1: 155/922; p<0.05) were enriched for neurodevelopmental, and signaling processes. Likewise, imprinted regions showed amplified generational methylation differences (F0: 2.2%±1.4%; p<0.05, F1: 5.8%±2.7%; p<0.01). Additionally, several miRNAs overlapped (F0: 12/33; F1: 12/37; p<0.001) with genes targeting neurodevelopmental pathways (neurotrophin signaling, axon guidance). Across many shared DMRs and miRNAs, F1 young sperm exhibited epigenetic profiles more similar to F0 aged, suggesting a generational shift in baseline epigenetic states prior to secondary aging effects.
CONCLUSIONS: Paternal aging drives aberrant sperm epigenetic remodeling that is intensified across the subsequent generation including a baseline epigenetic shift. Disruption of global and imprinted DNA methylation, together with shared miRNA dysregulation, indicates accumulating epigenetic instability. Moreover, enrichment for neuronal pathways across multiple epigenetic layers aligns with elevated neurodevelopmental risk in offspring of older fathers.
IMPACT STATEMENT: Paternal aging induces sperm epigenetic changes that are amplified in the next generation, suggesting a heritable component to the paternal age effect and ongoing increased risk to offspring health.
SUPPORT: None.
REFERENCES:
None.

O-27 11:35 AM Monday, October 26, 2026

SPERM-DERIVED CELL-FREE DNA PREDICTS SPERM RETRIEVAL OUTCOMES AND REVEALS FSH-DEPENDENT BIOLOGICAL SUBTYPES OF NON-OBSTRUCTIVE AZOOSPERMIA. Dr. Kristin Brogaard, PhD[1], Larry I. Lipshultz, M.D.[2], Blair T. Stocks, M.D., Ph.D.[2,3], Derek Petersen, BS[1], Ryan Miller, Ms[4], Jonathon Hill, PhD[5] and Tim G Jenkins, PhD[6], [1]Path Fertility, [2]Baylor College of Medicine, Houston, TX, [3]Houston, TX, [4]Brigham Young University, [5]BYU, [6]Brigham Young University, Provo, UT

OBJECTIVE: To determine whether sperm-derived cell-free DNA (cfDNA) predicts surgical sperm retrieval outcomes in non-obstructive azoospermia (NOA), whether its interpretation varies across follicle-stimulating hormone (FSH) levels, and whether it reflects underlying testicular pathology, including maturation arrest (MA).
MATERIALS AND METHODS: Men with NOA undergoing surgical sperm retrieval were analyzed using retrospectively and prospectively collected semen samples. Seminal plasma cfDNA was profiled using single-molecule native DNA methylation sequencing to quantify sperm-derived cfDNA. Outcomes were recorded as positive or negative. Analyses were performed across FSH tiers (<20, 20–38 IU/L). Associations between cfDNA and outcome were evaluated using linear and logistic regression. Interaction between cfDNA and FSH was assessed using likelihood ratio testing (LRT). Pathology-confirmed MA was available in a subset (n=11), and its contribution was evaluated in adjusted models.
RESULTS:
A total of 67 men were included, with overall sperm retrieval success of 43% (29/67). No successful retrievals were observed in FSH ≥38.
In FSH <20 IU/L (n=37), higher cfDNA was associated with lower probability of retrieval (OLS β = −0.015 per 1% cfDNA, p = 0.002; LRT p = 0.0004)**, with each 1% increase reducing success by ~1.5 percentage points.** In FSH 20–38 IU/L (n=21), the direction reversed, with higher cfDNA associated with increased likelihood of retrieval (β = +0.165, p = 0.09), though this estimate is based on a narrow cfDNA range and should be interpreted cautiously. **The interaction between cfDNA and FSH tier was statistically significant (LRT p = 0.036), demonstrating that the association between cfDNA and outcome differs across FSH ranges.**
Among patients with pathology (n=11), all MA cases had negative retrieval outcomes (0/11 positive, p = 0.0016) and were enriched in FSH <20. Within this subset, cfDNA distinguished MA from non-MA (AUC = 0.79, p = 0.011). In MA-adjusted models, the cfDNA–outcome association remained significant (p = 0.0004), indicating that MA accounts for part of the association but does not fully explain it.
CONCLUSIONS: Sperm-derived cfDNA predicts sperm retrieval outcomes in NOA and reflects underlying testicular biology. In FSH <20, elevated cfDNA reflects increased germ cell turnover and loss, including maturation arrest, and is associated with poor outcomes, providing a biological explanation for the negative cfDNA–success relationship. In FSH 20–38, where maturation arrest is less prevalent, higher cfDNA may reflect residual focal spermatogenesis, resulting in a reversal of association. The clinical interpretation of cfDNA depends on FSH level, with opposing associations observed across FSH ranges. **These findings support biologically distinct NOA subtypes defined by cfDNA and FSH.**
IMPACT STATEMENT:
A non-invasive cfDNA-based approach, interpreted in the context of FSH, may identify underlying testicular dysfunction, including maturation arrest, and improve patient selection and counseling for surgical sperm retrieval in NOA, a population for whom these procedures often represent the only opportunity to achieve a biological child.
SUPPORT: This study was funded through the NICHD SBIR Grant 1R44HD112264

O-28 11:45 AM Monday, October 26, 2026

MECHANISTIC EVIDENCE OF A SPECIFIC GENE FUNCTION ON GERM CELL DIFFERENTIATION BY DESIALYLATION. Stephanie Cheung, M.S., Philip Xie, B.SC., Lily Ng, B.S., Zev Rosenwaks, M.D. and Gianpiero D. Palermo, M.D., PH.D., The Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY

OBJECTIVE:
The majority of nonobstructive azoospermia (NOA) cases remain unexplained. Prior epigenomic screening of seminal fluid identified a novel mutation in *NEU1* (ENST00000375631:c.48dup), which is consistently dysregulated in NOA men that failed microsurgical testicular sperm extraction (micro-TESE). *NEU1* primarily encodes a lysosomal sialidase, which is implicated in sperm capacitation and sperm-egg fusion. However, its specific role in spermatogenesis is unknown. This study examines how *NEU1* dysfunction affects early germ cell development, implicating its potential causal role in spermatogenic failure.
MATERIALS AND METHODS:
CRISPR/Cas9 was used to introduce the *NEU1* mutation into C57BL/6-derived mouse embryonic stem cells (mESCs), followed by correcting it back to the wildtype sequence in a subset of edited cells. *NEU1*-mutant, CRISPR-corrected, & unedited wildtype mESCs were cultured in parallel within a 3D alginate-based *in vitro* spermatogenesis model for 29 days with BMP4, LIF, SCF, and EGF-supplemented medium. Weekly assessments of stage-specific germ cell differentiation markers were compared by immunofluorescence, cell ploidy by FISH, DNA fragmentation by TUNEL, as well as by sialic acid concentration by an absorbance-based assay among the groups.
RESULTS:
Wildtype mESCs exhibited normal free sialic acid concentration of 0.15±0.1pmol/cell, with a consistently low DNA fragmentation (21.8±6%). These wildtype mESCs underwent normal germ cell differentiation and successful meiotic completion, confirmed by spermatid-stage marker expression (Acrosin; 17.3%) and 80.6% haploidy. To confirm their embryo developmental competence, we inseminated mouse oocytes with these pseudo-gametes, which generated a 30.6% full preimplantation development rate and yielded healthy live pups.
In contrast, *NEU1*-mutant mESCs showed negligible free sialic acid levels (0.03±0.1pmol/cell, $P<0.01$) and remarkably elevated DNA fragmentation (64±13%, $P<0.005$). They also displayed reduced spermatogonia-stage marker expression (DAZL; 2.8%), followed by complete differentiation arrest at the primary spermatocyte stage. Indeed, ploidy assessment did not identify any haploid cells.
Correction of the *NEU1* mutation restored free sialic acid concentration to 0.1±0.1pmol/cell and reduced DNA fragmentation (39.0±3%). Moreover, cells regained

germ cell differentiation capacity and the ability to successfully restore post-meiotic progression to pseudo-gamete.

CONCLUSIONS:

These results provide the first mechanistic evidence that a novel gene function can be attributed to an *NEU1* mutation capable of halting spermatogenesis by triggering germ cell apoptosis and leading to meiotic arrest. Convincingly, normal *NEU1* function can be restored by male genome editing.

IMPACT STATEMENT:

This study addresses a critical gap in our current knowledge of NOA etiologies by proposing that a specific gene mutation can prevent sperm production. Moreover, these findings are corroborated by the ability to restore *NEU1*function by CRISPR/Cas9. The ability to reproduce these findings in the human may not only provide evidence of causality, but may lead to development of future treatments for NOA.

SUPPORT: None

REFERENCES:

Cheung S, Ng L, Xie P, Kocur O, Elias R, Schlegel P, Rosenwaks Z, Palermo GD. Genetic profiling of azoospermic men to identify the etiology and predict reproductive potential. J Assist Reprod Genet. 2024 Apr;41(4):1111-1124. doi: 10.1007/s10815-024-03045-5. Epub 2024 Feb 26. PMID: 38403804; PMCID: PMC11052749.

O-29 11:55 AM Monday, October 26, 2026

A SIMPLE ASSAY ON THE EJACULATE TO PREDICT PRESENCE OF SPERMATOZOA AT TESE.

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OBJECTIVE:

For men with idiopathic non-obstructive azoospermia (iNOA), the only chance to father their own biological child is through microscopic testicular sperm extraction (m-TESE), even if the chance of retrieving spermatozoa is at best 60%. We propose a simple assay carried out at the time of semen analysis that can be used to reliably predict presence of residual spermatogenesis within the seminiferous tubules.

MATERIALS AND METHODS:

Over the past six years, we identified 45 consenting iNOA men who had failed several extensive semen analyses and underwent testicular biopsy. Cell-free RNA was isolated from seminal fluid using a commercially available spin column kit and then sequenced by Illumina HiSeq3000/4000 platform to browse the expression profiles in relation to a fertile donor control. An absolute log2fold change of >1 and P<0.0005 were considered statistically significant. DNAseq was also carried out to detect eventual mutations of the involved genes to confirm our findings. To provide faster turnaround results, some of the samples were additionally fixed onto slides for fast-track RNA FISH analysis.

RESULTS:

Transcriptomic analysis of 45 ejaculates from iNOA men identified a total of 44,221 genes against a fertile donor control. A total of 3,505 imbalanced genes were identified, of which 987 were related to reproductive function and 820 were specifically associated with spermatogenesis. Specifically, as we identified in a previous pilot study, we focused on two genes, TPTE2, a testis-specific gene that regulates spermatogenesis, and NEU1, a gene involved in acrosome development and fertilization that appeared to reliably predict residual seminiferous tubule spermatogenesis.

Men were then allocated to two cohorts according to whether the two genes were overexpressed (OExp, n=20) or underexpressed (UExp, n=25). DNAseq confirmed that the gene was conserved in the first group, while exhibiting frameshift mutations in the latter group.

All 45 men eventually underwent m-TESE and spermatozoa were identified in all 20 men from the OExp, while the 25 men in the UExp failed to yield spermatozoa.

The fast-track expedited RNA FISH assay was offered to 8 men, 5 of them exhibited OExp of the NEU1 gene and yielded spermatozoa at m-TESE, while the 3 other who exhibited UExp failed m-TESE.

CONCLUSIONS:

NEU1 and TPTE2 function and integrity reliably predicted sperm presence in the seminiferous tubules of men undergoing TESE. According to the known role of these genes, it remains to be established if their function and integrity is simply associated with azoospermia or causative. The adoption of an expedited assay, available in days instead of weeks, appears promising.

IMPACT STATEMENT:

Gene studies using cell-free-RNA/DNA in the seminal plasma assessed during routine semen analysis appears to be a non-invasive tool to predict the presence of residual spermatogenesis and therefore spermatozoa at testicular biopsy. Targeting specific genes, particularly by an expedited assay, would allow physicians to properly counsel their patients and manage expectations for those considering a surgical procedure.

O-30 12:05 PM Monday, October 26, 2026

SRBT/SMRU ALLIANCE SURVEY ON MICRODISSECTION TESTICULAR SPERM EXTRACTION (MICROTESE) PRACTICE PATTERNS: SOCIETY FOR MALE REPRODUCTION AND UROLOGY (SMRU) Results.

Mary Katherine Samplaski, M.D.[1], Liesl Nel-Themaat, PH.D., MBA, HCLD[2], Robert M. Coward, M.D., F.A.C.S.[3], Joshua A. Halpern, M.D., M.S.[4], Paul Shin, M.D.[5], James F Smith, M.D., M.S.[6], Aaron Spitz, M.D.[7] and Michael L. Eisenberg, M.D.[8], [1]Vasweb, Lutz, FL, [2]Division of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gynecology, Stanford University School of Medicine, Stanford, CA, [3]Atlantic Fertility, Raleigh, NC, [4]Northwestern University Feinberg School of Medicine, Chicago, IL, [5]Shady Grove Fertility, Washinton DC, DC, [6]UCSF, San Francisco, CA, [7]Private Practice, Irvine, CA, [8]Stanford University School of Medicine, Stanford, CA

OBJECTIVE:

Testicular sperm extraction procedures are needed for some males, and the processing of specimens obtained requires collaboration between urology and lab teams. There are no universally accepted protocols standardizing practice between these teams. We sought to gain an understanding of practice patterns regarding testicular specimen acquisition and processing.

MATERIALS AND METHODS:

An survey was developed by members of the SRBT and SMRU alliance committees with questions regarding testicular tissue acquisition and processing. There were 21 SMRU-specific questions regarding microdissection testicular sperm extraction (microTESE) practice patterns. This survey was distributed by the ASRM to SMRU members three times in Q1 2026.

RESULTS:

Among 67 responses (41%), the majority of respondents (86%) were fellowship trained in reproductive urology. Most urologists found sperm in approximately 50% of microTESE cases (39%), followed by 31-50% (25%). Most microTESE cases were reported always or almost always (in 80% or more of cases) done frozen, independent of an egg retrieval (54%). 30% of microTESE cases were always or almost always (in 81% or more of cases) done fresh, timed to an egg retrieval. For those microTESE done fresh, 38% were typically done the day before partner egg retrieval, 25% the day of egg retrieval, and the remainder were done either their > one day before egg retrieval (7%), no consistent pattern (20%), or the provider did not perform fresh microTESE (27%). Just over half of urologists (55%) attempted to optimize serum testosterone prior to microTESE, with an additional 38% doing this in some patients. 89% of urologists did not perform mapping prior to microTESE. The most common location for microTESE was at a general surgical center (52%), followed by reproductive endocrinology and infertility (REI) based surgical suite (38%). The embryology/andrology lab was the most commonly reported group to look for sperm (73%), followed by both the urology and embryology/andrology teams (25%) and urology team only (2%). An equal number of urologists searched for sperm in testicular specimens for 1-2 hours and 2-3 hours (39%), followed by 3 hours or more (13%) and < 1 hour (9%). The majority of urologists (75%) had an andrologist or embryologist from an REI fertility clinic looking for sperm in tandem with the surgical exploration. Regarding number of specimens examined, most urologists examined 6-10 specimens (32%), followed by > 16 specimens (29%), 11-15 specimens (20%) and 0-5 specimens (18%). Over half of urologists (55%) processed testicular specimens by mincing with scissors, followed by dissociating by expelling through a syringe or angiocath (24%) and mincing with pick-ups (13%).

CONCLUSIONS:

Among urologists performing microTESE, there is significant variation in medical management, procedural techniques, handling of specimens, and coordination with andrology/embryology labs. Further studies are needed to determine which, if any, of these practice patterns influence patient outcomes.

IMPACT STATEMENT:

Urologist and andrologist/embryologist practice pattern data may be used to formulate standard practice recommendations and optimize patient fertility outcomes.

SUPPORT: none

ORAL ABSTRACT SESSION: FERTILITY PRESERVATION

O-31 11:15 AM Monday, October 26, 2026

A NOVEL HUMAN PRIMORDIAL FOLLICLE DENSITY NOMOGRAM FOR POST-PUBERTAL FEMALES UNDERGOING OVARIAN CORTICAL TISSUE CRYOPRESERVATION AND TRANSPLANTATION.

Murat Erden, MD[1], Soner Celik, PhD[2] and Kutluk H Oktay, M.D., PhD[3], [1]Ankara, Turkey, [2]Yale University, New Haven, CT, [3]Yale University School of Medicine, New Haven, CT

OBJECTIVE: To develop an age-specific nomogram of human ovarian cortical primordial follicle density in guiding decision on the volume of ovarian tissue to transplant.

MATERIALS AND METHODS: Ovarian cortical tissue samples were obtained from 33 individuals aged 16-43 prior to undergoing ovarian tissue cryopreservation without prior exposure to highly gonadotoxic therapy. Cortex tissue blocks were serially sectioned at 5-µm thickness. To determine primordial follicle density (follicles/mm²), approximately 125 non-overlapping high-power fields per block were analyzed by blinded observers. Follicles were counted only when the oocyte nucleus was visible to avoid double counting. Age-specific distributions were modeled using log-transformed quantile regression across the 10th, 25th, 50th, 75th, and 90th percentiles, with bootstrap-based internal validation to estimate empirical confidence intervals**.** In eight recipients of the autologous ovarian transplant, primordial follicle density's predictiveness of the graft longevity was preliminarily analyzed.

RESULTS: Primordial follicle density declined nonlinearly with age, showing wide interindividual variability in adolescence and early adulthood, followed by marked decrease after the mid-twenties. The predicted median primordial follicle density decreased from 1.52 follicles/mm² at age 16 to 0.28 follicles/mm² at age 43. Bootstrap resampling confirmed stability of percentile estimates while highlighting wider uncertainty at the extremes of age. An interactive version of the nomogram can be found at https://codepen.io/hme1/full/pvEjKWX. Eight women underwent autologous ovarian tissue transplantation. In all individuals, post-thaw primordial follicle density was used to empirically guide the amount of tissue to thaw and transplant. These transplantations resulted in eight children being born with a median graft longevity of 59 months (range 18–106 months). When the entire cohort was analyzed, a moderate positive correlation was observed between primordial follicle density and graft longevity (Spearman's rho=0.48).

CONCLUSIONS: This study introduces the first human nomogram describing the age-specific distribution of primordial follicle density with a view to optimizing the amount of ovarian cortex for auto-transplantation. This nomogram can be used for future studies linking follicle density to graft function and longevity as well as to individualize approach to ovarian tissue transplantation.
IMPACT STATEMENT: We, for the first time, developed a human post-pubertal primordial follicle density nomogram to guide decision making in ovarian tissue transplantation. The online nomogram can be used to judge the age-normalcy of the transplant candidates' follicle density, and based on that assessment, to adjust the amount of cortical tissue to transplant with the goal of maximizing graft longevity.
SUPPORT: This work was supported by the National Institutes of Health (grant number: RO1HD053112).

O-32 11:25 AM Monday, October 26, 2026

A NOVEL ELECTROCHEMICAL TESTOSTERONE SENSOR-INTEGRATED MICROFLUIDIC PLATFORM FOR LONGITUDINAL ASSESSMENT OF CELL THERAPEUTICS-ENHANCED IN VITRO SPERMATOGENESIS. Selin Onen, PhD[1], Ege Tongün, MSc Student[2], Merve Gizer, PhD[1], Imran Özge Çolak, PhD Student[3], Zeynep Çağlayan Arslan, PhD[1], Atacan Beyenir, MSc Student[1], Ali Can Atik, PhD Candidate[1], Haluk Külah, Prof[4] and Petek Korkusuz, MD, PhD[5], [1]METU MEMS Center, Ankara, Turkey, [2]Hacettepe University, Graduate School of Science and Engineering, Ankara, Turkey, [3]Hacettepe University, Graduate School of Health Sciences, Ankara, Turkey, [4]Middle East Technical University, Faculty of Engineering, Ankara, Turkey, [5]Hacettepe University, Faculty of Medicine, Ankara, Turkey

OBJECTIVE: Gonadotoxic cancer therapies pose a significant risk of infertility in prepubertal male patients since fertility preservation options remain limited due to absence of mature sperm[1,2]. While in vitro spermatogenesis (IVS) offers a promising strategy[3], current systems lack functional readouts to spermatogenic progress. We previously exhibited promotive effect of bone marrow derived mesenchymal stem cell (BMSC) conditioned medium on IVS[4,5]. Building on these findings, we hypothesized that concentrated and dose-optimized BMSC exosomes (BMSC-Exo) would enhance IVS in a MD integrating electrochemical (EC) testosterone sensing. This novel MD enables non-invasive monitoring of spermatogenic progression and evaluation of dose-optimized syngeneic BMSC-Exo effects on IVS in neonatal C57BL/6 mouse testes, with assessment of long-term outcomes including metabolomic changes, genetic integrity, IVS, and germ cell engraftment.
MATERIALS AND METHODS: All experiments were approved by Bilkent University Ethical Board (#2022-2). An actively perfused MD with porous membrane-based nutrient supply and integrated EC sensing was developed. MD was compared with air-liquid interface (ALI) culture setup. BMSC-Exos (10^{-4}- 10^{1} µg/ml) were tested to determine effective concentration (EC) from testosterone output. Neonatal mouse testes were cultured within the device for up to 120 days. Germ cell pool, testosterone level, metabolomic changes and engraftment success by FCM, LC-MS/MS, GC-MS, karyotyping and whole mount immunostaining evaluated efficacy of the system. One-way ANOVA and Kruskal-Wallis tests were used for parametric and nonparametric analyses.
RESULTS: The EC testosterone sensor-integrated MD was successfully optimized for testicular growth, and a patent application has been filed by study group (2026/005352). The MD provided enhanced germ cell percentage when compared to ALI on day 60 of culture ($p<0.05$) and higher testosterone level on days 28, 42 and 60 ($p<0.05$). The EC of BMSC-Exos was determined as 1.849 µg/ml, and subsequent long-term cultures were conducted on the MD at this dose. BMSC-Exos altered metabolic profiles with increased glycerophospholipid-related metabolites and decreased fatty acid-derived lipids. Testicular cells maintained a normal karyotype after 120 days of culture. The presence and tubular localization of SCP3, ACR, and $VASA^{+}$ cells were observed in engrafted mice.
CONCLUSIONS: The newly developed MD integrating EC testosterone sensing enables periodic, non-invasive monitoring of spermatogenic progression, while BMSC-Exo supplement enhances IVS by expanding the germ cell pool and supporting differentiation up to elongating spermatids, with successful engraftment and high genetic integrity demonstrated under long term conditions.
IMPACT STATEMENT: This study presents a MD integrating hormone sensing with cell therapeutics for functional assessment and monitoring of IVS, generating elongating spermatids with potential clinical use in ROSI. Collectively, this work introduces a promising theranostic platform combining a medical device and cell-based intervention for fertility preservation in prepubertal male oncology patients.
SUPPORT: This work was supported by The Scientific and Technological Research Council of Turkey (#22AG008, MAESTRO).
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O-33 11:35 AM Monday, October 26, 2026

RESTORING SHUGOSHIN 1 REDUCES CHROMOSOME ERRORS IN HUMAN EGGS. Debojit Saha, Ph.D.[1], Saba Manshaei, Ph.D.[2], Tommaso Cavazza, Ph.D.[3], Zuzana Holubcová, Ph.D.[4], Barbora Maierová, M.SC.[5], Agata P. Zielinska, PhD[2], Lena Wartosch, Ph.D.[6], Martyn L. Blayney, M.SC.[7], Kay Elder, B.SC., M.B.B.CH., PH.D.[7] and Melina Schuh, Ph.D.[8], [1]Goettingen, Germany, [2]Ovo Labs GmbH, [3]University of Zurich, Switzerland, [4]Masaryk University, [5]Reprofit International, [6]Max Planck Institute For Multidisciplinary Science, Goettingen, Germany, [7]Bourn Hall Fertility Clinic, [8]Max Planck Institute for Multidisciplinary Sciences, Göttingen, Germany

OBJECTIVE: To identify the molecular mechanisms underlying age-related chromosome cohesion loss in mammalian oocytes and to evaluate whether targeted intervention can restore chromosomal integrity in aged mouse and human eggs.
MATERIALS AND METHODS: Mouse oocytes from young and aged females were analysed by immunofluorescence microscopy and live imaging to assess centromeric localization and function of the cohesion protectors SGO1 and PP2A, as well as pericentromeric transcription activity during meiosis. The incidence of a major chromosome missegregation pathway in mammalian oocytes, premature separation of sister chromatids (PSSC), was quantified in control aged oocytes and following microinjection of *Sgo1* mRNA into aged oocytes. For translational validation, human oocytes from IVF patients across a diverse age range were examined for centromeric SGO1 levels, and *SGO1* supplementation experiments were performed to evaluate whether PSSC could be rescued in human eggs. Statistical analyses were performed using an unpaired two-tailed Student's t-test for continuous variables and Fisher's exact test for categorical variables.
RESULTS: We find that pericentromeric transcription is required to maintain SGO1 and PP2A at centromeres in mouse oocytes. During ageing, oocytes progressively lose pericentromeric transcription, leading to depletion of centromeric SGO1 and PP2A and a consequent rise in PSSC and aneuploidy. Restoration of SGO1 by mRNA microinjection in aged mouse oocytes reduced PSSC to levels comparable to young controls. Consistent with the mouse data, human oocytes from older IVF patients exhibited significantly reduced centromeric SGO1, and SGO1 supplementation improved sister chromatid cohesion and reduced PSSC rates.
CONCLUSIONS: Age-related aneuploidy is mechanistically linked to loss of pericentromeric transcription and failure of centromeric cohesion protection. Targeted SGO1 restoration rescues chromosome segregation fidelity in aged mouse and human oocytes, the first evidence that molecular intervention can improve chromosomal integrity in human eggs.
IMPACT STATEMENT: These findings identify centromeric cohesion protection as a modifiable determinant of oocyte quality and establish SGO1 as a promising therapeutic target, with direct implications for improving IVF success rates in patients.
SUPPORT: The research leading to these results was financially supported by the Max Planck Society and the German Research Foundation (DFG) under the German Excellence Strategy (EXC 2067/1-390729940) and a DFG Leibniz Prize for MS (SCHU 3047/1-1). D.S. was a Ph.D. student in the Ph.D. Program "Molecular Biology" - International Max Planck Research School and the Göttingen Graduate School for Neurosciences, Biophysics, and Molecular Biosciences (GGNB) at the Georg-August-Universität Göttingen.
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O-34 11:45 AM Monday, October 26, 2026

MISSED OPPORTUNITIES IN ONCOFERTILITY CARE FOR PATIENTS WITH YOUNG ONSET COLORECTAL CANCER. Sarah Hmaidan, DO[1], Nicole Noto, MS-3[2], Morgan Bou Zerdan, MD[3], Michael Jochum, PhD[4], Momal Sharif, PhD[1], Laura Detti, MD[5], Terri L Woodard, MD[3], Y. Nancy You, MD[6] and Laurie McKenzie, MD[3], [1]Baylor College of Medicine, Dept. of Obstetrics and Gynecology, Division of Reproductive Endocrinology & Infertility, Houston, TX, [2]Baylor College of Medicine, [3]The University of Texas MD Anderson Cancer Center, Houston, TX, [4]Baylor College of Medicine, Houston, [5]Baylor College of Medicine, Houston, TX, [6]The University of Texas MD Anderson Cancer Center

OBJECTIVE: The incidence of young onset colorectal cancer (YOCRC) is increasing, yet delivery of oncofertility care in this population remains poorly characterized. We aimed to evaluate rates of oncofertility referral and consultation completion among individuals with YOCRC and identify factors associated with receipt of oncofertility care.
MATERIALS AND METHODS: A retrospective analysis was performed of 1,504 reproductive-age YOCRC patients, defined as age $\leq$ 45 years at diagnosis, at an NCI-designated Comprehensive Cancer Center between January 1, 2020, and May 31, 2025. Demographic and clinical variables included age at diagnosis, sex, race, ethnicity, cancer stage, and hereditary cancer status. Primary outcomes were (1) referral to oncofertility and (2) completion of oncofertility consultation. Descriptive statistics were used to calculate referral and consultation rates. Multivariate logistic regression was used to identify factors associated with oncofertility referral and, among referred patients, consultation completion.
RESULTS: A total of 1,504 YOCRC patients met inclusion criteria, of whom 44.8% (n=674) were female and 55.2% (n=830) were male with a median age of 40 years at diagnosis (range 17-45). 24.1% (n=362) were offered referral to oncofertility, of whom 30.1% (n=109) accepted. Among patients who were referred, 65.1% (n=71) completed oncofertility consultation. Referral and consultation rates were higher among female patients compared with males (referral: 14.1% vs 1.7%; overall completion rate: 9.3% vs 1.0%, respectively). On multivariable analysis, male sex (aOR 0.07, 95% CI 0.04-0.13) and age $\geq$ 40 years (aOR 0.12, 95% CI 0.05-0.32) were associated with lower odds of referral, while hereditary cancer status was associated with higher odds of referral to oncofertility (aOR 3.05, 95% CI 1.65-5.52). Among referred patients, age $\geq$ 40 years was associated with lower odds of consultation completion (aOR 0.07, 95% CI 0.01-0.58).
CONCLUSIONS: Despite established guidelines by The American Society of Reproductive Medicine and The American Society of Clinical Oncology recommending oncofertility counseling for reproductive-age patients undergoing gonadotoxic therapy,

referral rates among YOCRC patients remain low. Significant disparities exist by sex and age. In contrast, consultation completion rates are high once referral occurs, suggesting that missed referral opportunities, rather than patient-level barriers, represent the primary gap in care.
IMPACT STATEMENT: These findings highlight a critical gap in oncofertility care delivery for YOCRC patients and support the need for standardized oncofertility referral pathways to ensure equitable access to fertility preservation counseling.

O-35 11:55 AM Monday, October 26, 2026

ROBUST AND SIMPLE IN VITRO MATURATION OF OVARIAN TISSUE OOCYTES. Sherman Silber, M.D.[1], Sierra Goldsmith, M.S.[2], Nestor N Rodriguez, M.S.[1] and Alexis R Jones, BS, MS[3], [1]Infertility Center of St. Louis, Chesterfield, MO, [2]Silber Infertility Center of St. Louis, Chesterfield, MO, [3]Embryologist

OBJECTIVE: Using in-vitro gametogenesis results in mice, can we perform simple, robust in-vitro maturation (IVM) of oocytes from human ovarian tissue?
MATERIALS AND METHODS: This is a prospective non-randomized pilot study based upon our results with in vitro oogenesis in mice. A total of 186 females underwent ovary tissue cryopreservation since 1979. The most recent 79 consecutive such patients between 1 and 38 years of age also underwent in-vitro maturation of oocytes (IVM) derived from dissected ovarian tissue prior to ovary tissue cryopreservation. After ovarian cortex dissection, the spent media is examined for cumulous complexes (CC's) which were placed in culture with widely varying concentrations of follicle stimulating hormone (FSH) and human chorionic gonadotropin (HCG), and in a variety of different media. There was no prior hormone administration. 43 of these cases were either pre-pubertal or were on hormonal birth control and 36 of them had no prior chemotherapy, were post-pubertal, and were stratified into 4 groups by age: 13-20 years (n=11), 21-25 years (n=7), 26-30 years (n=6) and >30 (n=12). We thus tested whether prior in vivo exposure to gonadotropin for more than 7 and less than 12 days would prepare newly formed GV's in vivo for simple and robust in vitro maturation using simple IVF media supplemented with HCG.
RESULTS: The harvested germinal vesicle oocytes developed into mature metaphase II oocytes with simple IVF culture media just as well as with "IVM media", and with HCG concentrations varying widely from 10mIU/l to 1000 mIU/l. The 43 cases that were either pre-pubertal, or had received chemotherapy prior to ovary tissue freeze, were uniformly not successful. The remaining 36 cases were all successful. The number of CC's in the spent media averaged 17 per patient. Of a total of 670 GV oocytes, 217 became mature MII's (32%), varying between 18% to 76%. IVM rates remained stable at around 34% up to age 30, but decreased to 25% over age 30 ($p<0.04$).
CONCLUSIONS: About 35% of oocytes in the ovary on any given day at any given time will have already been prepared in vivo for IVM because of greater than 7and less than 12 days of in vivo exposure to gonadotropin, similar to our findings with in vitro oogenesis in animals. This window is clearly wider for younger than older patients.
IMPACT STATEMENT: Ovary tissue freezing along with robust IVM will provide cancer patients simultaneously with two possibilities for fertility preservation, ovary cortex cryopreservation and egg freezing, without any need for ovarian hyperstimulation, (problematic for IVM because of over exposure to FSH) that would delay cancer treatment.

O-36 12:05 PM Monday, October 26, 2026

OB/GYN RESIDENT PREPAREDNESS FOR FERTILITY PRESERVATION COUNSELING: A NATIONAL SURVEY. Francesca R Mancuso, M.D.[1,2], Diana C Arrocha, MD[2], William H Kutteh, MD, PhD, HCLD[3], Madeline Cory, BS[2] and Amy Boone, MD[4], [1]Memphis, TN, [2]Indiana University, Indianapolis, IN, [3]University of Tennessee Health Sciences Center, Memphis, TN, [4]Indiana University - Obstetrics and Gynecology, Indianapolis, IN

OBJECTIVE: Fertility preservation (FP) is an increasingly important component of reproductive care, particularly for patients facing gonadotoxic therapy. The American Society for Reproductive Medicine (ASRM) recommends timely counseling; however, prior studies suggest limited provider confidence and inconsistent practices among trainees. This study aimed to characterize FP counseling practices among OB/GYN residents, including counseling frequency, self-reported confidence, and perceived barriers, to inform targeted educational interventions.
MATERIALS AND METHODS: A cross-sectional, anonymous survey was distributed to OB/GYN residency programs in the United States via program directors and coordinators identified through the Accreditation Council for Graduate Medical Education (ACGME) website, with additional distribution through social media and the Central Association of Obstetricians and Gynecologists listserv. Responses were collected between February and April 2026.
RESULTS: Of 302 respondents, 252 completed the survey, representing OB/GYN residents across 29 states and all levels of training. 65.5% (n=163) reported completing an REI rotation at this point in their training, with an average duration of 5–6 weeks. Access to REI faculty varied: 47.8% (n=121) had on-site faculty, 23.7% (n=60) had external/off-site faculty, and 27.3% (n=69) reported no access. Less than half the respondents (41.1%, n=104) reported receiving formal FP education.
Most residents reported infrequent FP counseling practices, with 35.1% (n=85) stating they refer patients to REI specialists without providing counseling themselves. While 94.8% agreed FP counseling should be routine, most lacked confidence discussing cryopreservation procedures, success rates, and cost/insurance, with lowest confidence in counseling patients <18 years. Key barriers included lack of knowledge, cost concerns, and limited time. Residents identified hands-on exposure, focused lectures, and concise clinical tools as preferred educational interventions.
CONCLUSIONS: OB/GYN residents frequently feel underprepared to provide comprehensive fertility preservation counseling. Targeted education, increased exposure to REI rotations, and structured training interventions are needed to enhance resident confidence and competence, ultimately improving patient care for individuals at risk of gonadotoxic therapy.
IMPACT STATEMENT: This national study identifies significant gaps in OB/GYN resident preparedness for fertility preservation counseling despite strong support for its importance, highlighting a critical need for structured educational interventions to improve timely, patient-centered reproductive care.

ORAL ABSTRACT SESSION: PATIENT CENTERED CARE (1 OF 2)

O-37 11:15 AM Monday, October 26, 2026

INDIVIDUALIZED PREDICTION OF IUI SUCCESS IN DIMINISHED OVARIAN RESERVE: DEVELOPMENT AND VALIDATION OF A PATIENT-SPECIFIC CLINICAL CALCULATOR. Stylianos Vagios, MD[1], Kaitlyn E James, PhD[2], Christopher Ke Arkfeld, MD[3], Alexa M. Sassin, MD[3], Panagiotis Cherouveim, MD, MS, PhDc[4], Evelyn Minis, MD[3], Irene Dimitriadis, M.D.[3], Charles L Bormann, PhD[5] and Irene Souter, MD[3], [1]MGH Fertility Center and Harvard Medical School, Boston, MA, [2]Massachusetts General Hospital, Boston, MA, [3]Massachusetts General Hospital Fertility Center, Massachusetts General Hospital and Harvard Medical School, Boston, MA, [4]Hurley Medical Center/Michigan State University, Flint, MI, [5]Massachusetts General Hospital, Harvard Medical School, Boston, MA

OBJECTIVE:
To identify predictors of intrauterine insemination (IUI) success in patients with diminished ovarian reserve (DOR) and develop a patient-specific calculator to estimate clinical pregnancy (CP) probability and assist with patient counseling and treatment planning.
MATERIALS AND METHODS:
Design: Retrospective cohort study
Setting: Academic fertility center
Patients: Patients with a SART diagnosis of DOR undergoing ovulation induction (OI)/IUI cycles (gonadotropins n=1,092; letrozole n=7; clomiphene n=210; natural n =115; unknown n=171).
Outcome Measures: Primary outcome was CP per cycle. Multivariate logistic regression with LASSO-based covariate selection was used to identify predictors of CP and construct a patient-specific prediction model. Model performance was assessed using receiver operating characteristic (ROC) curves and calibration analysis in training (80% of total population) and validation (20% of total population) datasets.
RESULTS:
A total of 1,595 IUI cycles were included, of which 83 (5.2%) resulted in CP. Baseline patient characteristics were similar between patients who had a CP and those who did not. Patients who achieved a CP underwent a lower median (IQR) number of IUI cycles [2 (1, 3)] compared to those without CP [3 (1, 4)] ($p<0.001$). CP cycles when compared to non-CP used more often gonadotropins (OI regimen rates for CP vs. non-CP cycles respectively: gonadotropins 86.7% vs.67.5%, letrozole 1.2% vs. 0.4%, clomiphene 8.4% vs. 13.4%, p=0.002). In patients who used gonadotropins, those who achieved CP received lower median (IQR) doses (IU) [868.75 (600, 1537.5)] compared to those without a CP [1200 (675, 2700)] (p=0.002).
Adjusted logistic regression models were performed to construct the CP calculator; the covariates selected by the LASSO method were age, BMI, number of cycles, OI method, AMH, and day 3 FSH. Stimulation method (p=0.012) and number of cycles ($p<0.001$) were independent CP predictors. The prediction model demonstrated good discrimination with an area under the curve (AUC) of 0.76 (95% CI 0.71–0.81) in the training set and 0.74 (0.64–0.83) in the validation set, with appropriate calibration.
The calculator equation is as follows: logit(CP) = -0.276 -0.014*age (years) -0.038 *BMI (kg/m^2) -0.657*cycle number -0.045*FSH (IU/L) + β_{stim} + β_{AMH}.
For β_{stim}: if clomiphene = 0, if gonadotropins = +0.64, if letrozole = +1.76, if natural cycle = -0.5
For β_{AMH}: if <0.7 = 0, if ≥0.7 = +0.08
CP probability = $1/[1 + e^{-logit(CP)}]$
Example for patient with following characteristics: Age 39, BMI 24, second IUI cycle, FSH 11, OI with gonadotropins, AMH 0.5.
Logit(CP) = -0.276 -0.014*39 -0.038*24 -0.657*2 -0.045*11 +0.64 + 0 = -2.903. CP probability = 5.2%
CONCLUSIONS:
In patients with DOR undergoing IUI, treatment-related factors, particularly cycle number and stimulation protocol, are the strongest CP predictors. A patient-specific prediction model demonstrates good performance and may aid in individualized counseling.
IMPACT STATEMENT:
This easy-to-use calculator highlights the value of personalized medicine and serves as a practical tool for physicians to guide counseling and optimize treatment decision-making in patients with DOR.
SUPPORT: Not applicable

O-38 11:25 AM Monday, October 26, 2026

PATIENT PERCEPTIONS OF REPRODUCTIVE HORMONE TESTING AND THE GAP BETWEEN CONSUMER EXPECTATIONS AND CLINICAL APPLICATION. Nimerta K. Sandhu, MD, MPH[1] and Mitchell D. Creinin, MD[2], [1]University of California, Davis Health, Sacramento, CA, [2]University of California, Davis, Sacramento, CA

OBJECTIVE: To evaluate patient motivations, understanding, and perceived utility of at-home hormone testing.
MATERIALS AND METHODS: We conducted a cross-sectional, anonymous online survey between September and October 2025 using a convenience sample recruited through the UC Davis Health electronic medical record. The UC Davis Institutional Review Board approved the study. We used Epic MyChart to randomly identify patients 21–65 years who had a general obstetrics and gynecology visit within the past year and disseminated survey invitations to these patients until we obtained 100 responses with >80% completion. The surveys asked participants if and how they heard about hormone testing, motivations for testing, and which hormones they perceived as clinically relevant. They were also asked whether they would request testing if informed it would not change their care. In the final section, respondents viewed sample direct to consumer (DTC) advertisements for home hormone testing and were again asked if they would pursue testing despite being told results would not guide medical management.
RESULTS: We sent 1400 invitations in 3 batches to achieve our sample of 100 respondents. Overall, 38% of respondents reported hearing about at-home hormone testing from social media, friends, or family (38%); their healthcare provider (34%); and other sources (12%); 16% had not previously heard of at-home hormone testing. Of the 41 respondents who had sought hormone testing in the past, the most common motivations for seeking testing were to evaluate menopausal transition (23 [53%]) and interest in fertility (11 [26%]). Of the total 100 respondents, 70% were unsure which hormones to test, 56% believed hormone testing would be "very helpful" to their provider, and 25% felt it would be "somewhat helpful." Notably, 77% reported they would still pursue testing even if told results would not impact care. After viewing DTC advertisements, 61% stated they would still complete at-home testing even if their physician counseled that it would not impact care.
CONCLUSIONS: Patients demonstrate substantial interest in hormone testing, perceiving it as a proactive tool for fertility and health insight even when clinical benefit is uncertain. This disconnect underscores a critical opportunity for REI specialists to lead patient education on hormone physiology, timing of testing, and interpretation within the menstrual cycle context. As DTC testing expands, REI physicians are uniquely positioned to bridge the gap between consumer expectations and evidence based clinical application, ensuring hormone data is interpreted within an appropriate physiologic and clinical framework.
IMPACT STATEMENT: This study reveals a critical disconnect between patient enthusiasm for DTC hormone testing and its actual clinical utility, underscoring an urgent need for reproductive specialists to lead patient education that bridges the gap between consumer expectations and evidence based medicine.
SUPPORT: None

O-39 11:35 AM Monday, October 26, 2026

"HOW MANY CYCLES WILL I NEED?" A COUNSELING TOOL BASED ON REAL-WORLD DATA FROM A LARGE FERTILITY CENTER. Sheridan Wertz, High School Student[1], Julia Buldo-Licciardi, M.D.[2], David H McCulloh, PH.D.[3], Sarah D Cascante, MD[4], Mary Elizabeth Fino, M.D.[2], Alan S Berkeley, MD[2] and Brooke H Wertz, MD, MPH[2], [1]Haworth, NJ, [2]NYU Langone Fertility Center, New York, NY, [3]NYU Grossman School of Medicine, New York, NY, [4]NYU Langone Prelude Fertility Center, New York, NY

OBJECTIVE: Patients often need >1 cycle, and studies have shown they are willing to plan for this if properly counseled[1]. Our objective was to use real-world data to assess the # of egg retrieval cycles (in vitro fertilization (IVF), embryo banking (EB), and oocyte cryopreservation (OC)) done by patients for a high chance of live birth based on published studies.
MATERIALS AND METHODS: This is a retrospective cohort study that includes a review of patients at a large academic fertility center that underwent the same type of autologous IVF/EB with PGT-A and cryopreservation of all embryos or OC between 2021 and 2025 and had at least one egg retrieved. We excluded patients undergoing medical cryopreservation and using PGT-M. The primary outcome was the # of cycles to achieve 20 M2s for OC, or 3 euploid (eup) embryos for IVF/EB. Data was stratified by age and AMH. Statistics included independent sample T-test and ANOVA.
RESULTS: There were 11,657 patients that underwent at least 1 type of egg retrieval (ER) cycle (OC 5740, EB 1273, IVF 4643). The mean age at 1st retrieval was 35.3 y ± 3.8 and of those that had AMH drawn in the last 6 months (7990), the mean was 3.1 ng/mL ± 2.7. Patients underwent a mean of
1.5 cycles ± 0.9 (1-13), with 30% of patients doing more than 1 cycle. Not surprisingly, # of cycles associated significantly with increasing age (<0.001) and decreasing AMH (<0.001) for all cycle types, and IVF patients underwent more cycles 1.8 ± 1.1 (1-13) than fertility preservation patients (EB & OOF both 1.3 ± 0.7,1-8, <0.001). For all cycle types, >30% of patients >40y did ≥3 cycles and 24% of patients <35y underwent ≥2 cycles. After 5 IVF cycles,19% of those ≥42y still had no euploid embryos.

Age (yrs)	<30	30-34	35-39	40-41	≥42
% 1st OOF w/ ≥ 20 M2 (n=5736)	43	33	21	12	12
% 2nd OOF w/ ≥ 20 M2 (n=1476)	56, 85**	47, 73**	35, 46**	21, 37**	21, 34**
% 3rd OOF w/ ≥ 20 M2 (n=324)	59, 97**	49, 88**	39, 69**	26, 64**	27, 56**
% of 1st ER w/ ≥3 eup (EB, IVF) (n=1197, n=4077)	79, 72	72,65	46, 39	24, 10	9, 3
% of 2nd ER w/ ≥3 eup (EB, IVF) (n=290, n=1993)	91, 86	84, 87	51, 60	34, 22	9, 5
% of 3rd ER w/ ≥3 eup (EB, IVF) (n=72, n=838)	93, 90	86, 95	64, 66	34,29	9, 6
% of 1st ER w/ 0 eup (EB,IVF)	3,11	6, 11	12, 20	45,43	82, 72
% of 2nd ER w/ 0 eup (EB, IVF)	0,0	1, 4	5, 8	28, 27	55, 56
% of 3rd ER w/ 0 eup (EB, IVF)	0, 0	0, 1	1, 4	7, 13	27, 23

*projected if all patients did 2nd cycle
**projected if all patients did 3rd cycle
CONCLUSIONS: Patients often need more than one cycle to achieve a high chance of live birth, even at a young age. Nonetheless, patients are often counseled on a cycle-by-cycle basis. The number of cycles a patient undergoes increases with increasing age, decreasing AMH, and varies by procedure type, and this information should be to counsel patients ahead of the 1st ER.

IMPACT STATEMENT: Real world data can help set expectations and allow patients to properly plan for a multi-cycle approach tailored to their family planning desires.
SUPPORT: None
REFERENCES:
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for three complete cycles of IVF/ICSI treatment. Human Reproduction 2021,36:(5)1339–1352.

O-40 11:45 AM Monday, October 26, 2026

"IS THERE A BENEFIT TO DOING ANOTHER CYCLE RIGHT NOW OR CAN I TAKE TIME OFF?" ANALYSIS OF REPEAT CYCLES AT A LARGE FERTILITY CENTER. Sheridan Wertz, High School Student[1], Julia Buldo-Licciardi, M.D.[1], David H McCulloh, PH.D.[2], Mary Elizabeth Fino, M.D.[1], Jennifer K Blakemore, MD, MSCI[1], Alan S Berkeley, MD[1] and Brooke H Wertz, MD, MPH[1], [1]NYU Langone Fertility Center, New York, NY, [2]NYU Grossman School of Medicine, New York, NY

OBJECTIVE: Patients often want to know if there would be an improvement in cycle outcomes if they underwent additional cycles and when the ideal timing of the subsequent cycle(s) should be. The purpose of this study was to evaluate if there is a difference in additional retrieval cycles and if the interval between cycles influences those outcomes.
MATERIALS AND METHODS: This is a retrospective cohort study at a large academic fertility center of patients that underwent >1 autologous freeze all cycles with PGT-A [in vitro fertilization (IVF) or embryo banking (EB)] or oocyte cryopreservation (OC) with their 1st cycle between 2021 and 2025. We excluded patients undergoing medical cryopreservation and patients using PGT-M & SR. Our primary outcome was the change in # of mature eggs (M2) & % change in M2 between cycles. Secondary outcomes included change in # of euploid embryos (Eup) & % change in Eup for PGT-A cycles. The % change was calculated by taking the difference between the cycles divided by the 1st cycle's outcome. Statistics included independent samples t-test, paired t-test and ANOVA.
RESULTS: There were 3759 patients that underwent >1 type of the same cycle (IVF 1993, EB 290, OC 1476). The mean age at 1st egg retrieval (ER) was 36.6 yo ± 3.9 (22-48yo). Patients underwent on average 2.6 ± 1.1 cycles (range 2-13); 67% underwent 2 cycles only. The mean time between 1st & 2nd ERs was 143 ± 199 days(d) (16-1621, median 77 d). Improvements in M2 and Eup are seen after the 2nd ER (9.9 vs 11.3 M2, 1.1 vs 1.5, p<0.001). When 1st to 2nd ERs were >150 d apart there was significantly lower

M2 increase (p<0.001) for all ages and for patients >37yo at the 1st ER cycles after 90 d between ERs, the M2 increase starts to decline (1.6 for <90 d vs 0.8 M2 for >90 d, p<0.001). When patients did multiple cycles there was a significant increase in M2 & Eup in PGT-A cycles up to 6 cycles (increase of 1.9 M2 after 6th cycle (n=92, median 355 days apart) vs. 0.9 M2 after 2nd (p<0.001) and 0.11 increase in Eup (n=84, median 355d, <0.001) compared to - 0.05 after 2nd ER.

Days btn 1st and 2nd cycle	Change in M2 (n)	% Change M2	Change in Eup (n)	% Change in Eup
<30	1.6 (795)	43	0.5 (489)	19
31-60	1.6 (853)	38	0.6 (627)	41
61-90	2.0 (602)	43	0.6 (409)	29
91-150	1.2 (551)	35*	0.2 (339)	4
>150	0.5 (958)*	19*	0.0(419)*	0

*p<0.05 compared to <30 d

CONCLUSIONS: Clinical improvements in both M2 & Eup were consistently observed following a 2nd ER across all cycle types. These increases persisted in the 2nd cycle in both back-to-back cycles and longer cycle intervals separated by up to 150 d. Increases continued to be observed in subsequent repeat cycles through the 6th ER cycle.

IMPACT STATEMENT: Patients can be counseled and reassured regarding timing of a repeat cycle. There are benefits seen when doing cycles close together and taking up to 150 d off between cycles but cycles <90 d apart might provide the biggest benefit for those over 37yo.

SUPPORT: None

O-41 11:55 AM Monday, October 26, 2026

FEASIBILITY, SAFETY, AND PATIENT-REPORTED OUTCOMES OF AUTOMATED SELF-OPERATED TRANSVAGINAL ULTRASOUND IN IVF MONITORING.

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OBJECTIVE:
To determine whether automated self-operated transvaginal ultrasound enables patients to generate clinically interpretable imaging and improves patient-reported experience compared with standard-of-care (SoC).

MATERIALS AND METHODS:
Prospective first-in-human pilot study conducted in a high-volume private IVF center.
Ten women undergoing ovarian stimulation (mean age 33.1 ± 5.1 years; BMI 22.1 ± 3.5 kg/m²) performed supervised automated self-operated scans in a home-like environment without prior training following SoC ultrasound.
Feasibility was defined as the ability to obtain clinically interpretable ultrasound datasets, including ovarian and endometrial assessment.
Safety was assessed through systematic monitoring of device- and procedure-related adverse events during and after each scan.
Patient-reported outcomes were collected using structured questionnaires (comfort, ease of use, overall experience). Comparative analysis of transvaginal scan (TVS) patient experience between automated self-operated ultrasound and SoC ultrasound was performed using paired Wilcoxon and Fisher's exact tests.

RESULTS:
Nineteen scan attempts were performed; 18 datasets were evaluable.
Feasibility was demonstrated, with all evaluable scans (18/18, 100%) yielding clinically interpretable ovarian and endometrial imaging.
Bilateral ovarian visualization was achieved in 16/18 scans (88.9%). Incomplete bilateral visualization was attributable to the prototype-related anatomical or positioning limitations rather than patient handling.
No device-related or procedure-related adverse events were observed, including no bleeding, infection, or vaginal injury.
Patient-reported outcomes demonstrated high comfort and ease of use (median comfort 8.7/10; ease-of-use 8.9/10), with all patients willing to reuse the system.
Compared with SoC TVS, automated self-operated ultrasound significantly improved patient-reported experience (Wilcoxon p=0.002).

CONCLUSIONS:
In this first-in-human study, automated self-operated transvaginal ultrasound was feasible, safe, and improved patient-reported experience compared with standard-of-care, enabling patients to generate clinically interpretable imaging.

IMPACT STATEMENT:
Demonstrating feasibility, safety, and improved patient experience supports the potential deployment of automated self-operated ultrasound for repeated monitoring during ovarian stimulation.

SUPPORT: This study was funded by IMMA Health.

O-42 12:05 PM Monday, October 26, 2026

TREATMENT TRAJECTORY AND OUTCOMES AFTER IVF CYCLE CANCELLATION FOR POOR OVARIAN RESPONSE: A MULTICENTER COHORT OF 6,170 PATIENTS.

Allison A Eubanks, MD[1,2], David Boedeker, D.O., MHA[2], Kiley Hunkler, M.D., MSt, MSc[2], Jing Wu, MD, MS[3] and Kathleen Devine, MD[4], [1]Potomac, MD, [2]Walter Reed National Military Medical Center, Bethesda, MD, [3]US Fertility, Rockville, MD, [4]Shady Grove Fertility, Rockville, MD

OBJECTIVE:
To evaluate outcomes and treatment trajectories following IVF cycle cancellation for poor ovarian response, and to identify predictors of subsequent success and treatment burden.

MATERIALS AND METHODS:
This retrospective multicenter cohort study included patients with an IVF cycle cancelled for poor ovarian response who pursued a subsequent reproductive event within one year. The first post-cancellation event was categorized, and outcomes of the first subsequent IVF cycle were evaluated. Among patients undergoing repeat IVF, multivariable regression assessed predictors of ≥1 MII oocyte retrieval. Secondary analyses evaluated treatment trajectory, including number of subsequent IVF cycles, progression to frozen embryo transfer (FET), and high treatment burden (≥2 additional IVF cycles without FET).

RESULTS:
A total of 6,170 patients met inclusion criteria (mean age 38.0±4.0 years; median AMH 0.56 ng/mL). Following cancellation, 89.5% pursued repeat IVF.
Among those undergoing IVF, 67.5% achieved retrieval of ≥1 MII oocyte, while 20.2% experienced repeat cancellation. Median MII yield was 2 (IQR 0–5). Outcomes were strongly associated with age and ovarian reserve (p<0.001).
Despite modest per-cycle success, treatment burden was substantial. Among patients undergoing repeat IVF (n=7,864 cycles), 50.2% underwent multiple subsequent IVF cycles. High treatment burden with persistently poor yield occurred in 26.0% overall and about 30% of patients with 0–1 MII.
Progression to FET varied markedly by initial yield: 13.9% (1 MII), 28.3% (0 MII), and 53.4% (≥2 MII). Patients with 1 MII underwent the greatest number of subsequent IVF cycles (mean 2.27±1.81), despite limited downstream progression.
Increasing gonadotropin dose improved cycle completion but did not improve MII yield. Protocol modification was not consistently associated with improved outcomes.

CONCLUSIONS:
After IVF cycle cancellation, most patients pursue repeat IVF, and many achieve retrieval of ≥1 MII oocyte. However, per-cycle outcomes underestimate the true clinical trajectory, as patients with poor oocyte yield frequently undergo multiple additional cycles with limited progression to FET.
Initial MII yield provides clinically meaningful stratification: patients with ≤1 MII experience high treatment burden with poor downstream success, while ≥2 MII is associated with substantially higher likelihood of progression.
These findings support incorporating both expected outcomes and treatment burden into counseling after IVF cycle cancellation.

IMPACT STATEMENT:
These findings highlight that poor oocyte yield is associated with high treatment burden and limited downstream success, challenging reliance on per-cycle outcomes alone. Integrating both likelihood of success and anticipated treatment burden may enable more realistic counseling and better-informed decision-making after IVF cycle cancellation.

SUPPORT: None

2026 SCIENTIFIC CONGRESS PRIZE PAPER (2 OF 2)

O-7 1:30 PM Monday, October 26, 2026

LIVE BIRTH AFTER DAY 7 FROZEN EMBRYO TRANSFER IS ASSOCIATED WITH PRIOR TRANSFER HISTORY, NOT EMBRYO COHORT COMPOSITION.

Jensen Reckhow, MD, MPH[1], Kerry S.J. Flannagan, PhD[2], Erynne Jackson, BA, MPH[3], Joseph A. Lee, BA[3], Michael Vance Homer, M.D.[4], Luis R Hoyos, M.D.[5], Meike L Uhler, MD[6], Kathleen Devine, MD[7], Alan B. Copperman, MD[3] and Phillip A Romanski, M.D., M.SC.[8], [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]US Fertility, Rockville, MD, [3]RMANY || US Fertility, New York, NY, [4]Reproductive Science Center, [5]IVF Florida, [6]Fertility Centers of Illinois, Chicago, IL, [7]Shady Grove Fertility, Rockville, MD, [8]Reproductive Medicine Associates of New York, New York, NY

OBJECTIVE: Day 7 blastocysts are associated with lower live birth rates compared to earlier-developing embryos; however, it remains unclear whether the reproductive potential of a day 7 blastocyst from a cohort in which no day 5/6 embryos developed differs from that of one in which day 5/6 embryos from the cohort were also available. This study evaluates whether outcomes after day 7 frozen embryo transfer (FET) are associated with prior transfer history versus embryo cohort composition.

MATERIALS AND METHODS: This retrospective cohort study was conducted across a national fertility network and included all patients who underwent a day 7 FET between January 2013 and May 2025. Patients were stratified into three groups: (1) first FET with a day 7 embryo, (2) prior day 5/6 FET resulting in live birth, and (3) prior day 5/6 FET without live birth. Primary outcome was live birth. Secondary outcomes included positive pregnancy (hCG >2.5 mIU/mL), clinical pregnancy, and clinical pregnancy loss. A secondary analysis evaluated outcomes by embryo cohort composition, defined by the proportion of day 7 blastocysts as low (<50%) or high (≥50%). Poisson and log binomial regression models were used to model outcomes, adjusting for patient age, embryo quality, and peak endometrial thickness.

RESULTS: A total of 2,439 day 7 FET cycles were included: 1,318 first transfers, 716 following a prior Day 5/6 FET with live birth, and 405 following a prior Day 5/6 FET without live birth. Demographics and cycle characteristics were comparable between groups. Live birth was similar between those undergoing their first FET and those with a prior Day 5/6 FET with a live birth (25.2% vs. 24.1%, RR 0.99, 95% CI 0.81 – 1.21), but significantly lower among patients with a prior failed Day 5/6 FET (18.7% vs. 25.2%, RR

0.77, 95% CI 0.64 - 0.93). Clinical pregnancy loss was significantly higher in patients with a prior failed day 5/6 FET compared to those undergoing their first transfer with the day 7 embryo (34.5% vs. 24.9%, RR 1.37, 95% CI 1.06 – 1.77). In the secondary analysis, pregnancy outcomes did not differ by embryo cohort composition (low vs. high proportion of day 7 embryos).
CONCLUSIONS: Live birth after day 7 FET was similar between patients undergoing their first transfer and those with a prior successful Day 5/6 FET, but reduced among patients with a history of unsuccessful Day 5/6 FET. Embryo cohort composition, defined by the proportion of day 7 embryos, was not associated with reproductive outcomes.
IMPACT STATEMENT: Prior transfer history, rather than embryo cohort composition, is the primary determinant of outcomes after day 7 FET.
SUPPORT: No funding was used for this project.

O-8 1:40 PM Monday, October 26, 2026

PLASMA CELL-FREE RNA MACHINE LEARNING CLASSIFIER ENABLES NON-INVASIVE PREOPERATIVE DIAGNOSIS OF UTERINE LEIOMYOSARCOMA.
Aymara Mas, Ph.D.[1], Sören R Stahlschmidt, PhD[1], Victor Lago, MD, PhD[2], Alba Machado-Lopez, PhD[1], Esther Lara, Lab tech[1], Alicia Amadoz, PhD[3], Diana Valbuena Perilla, MD, PhD[3], Petr Volkov, PhD[4] and Carlos Simon, MD; PhD[5], [1]Carlos Simón Foundation, INCLIVA Health Research Institute, Valencia, Spain., [2]Gynecological Tumours, Breast and Hereditary Cancer Research Group, La Fe Health Research Institute (IISLAFE), Valencia, Spain, [3]Igenomix R&D, Paterna, Spain, [4]UCB, Uccle, Bruxelles, Belgium, [5]Professor Obstetrics and Gynecology, University of Valencia; Senior Lecturer PT, BIDMC Harvard University; President Carlos Simon Foundation, Paterna, Spain

OBJECTIVE:
Accurate preoperative differentiation between uterine leiomyosarcoma (ULMS) and benign uterine leiomyoma (ULM) remains a major clinical challenge, with significant implications for surgical planning and patient safety. To overcome this limitation, we aimed to develope a non-invasive plasma-based molecular classifier to improve preoperative diagnosis.
MATERIALS AND METHODS:
In this prospective, multicenter study, women undergoing surgery for suspected myometrial tumors were recruited across sixteen public hospitals. Peripheral blood samples were collected preoperatively, and final postoperative histopathology was used as the reference standard. The study included 102 patients (ULM, n=78; ULMS, n=24). Plasma cell-free RNA (cfRNA) profiles were analyzed to develop a machine learning classifier based on a 100-gene signature. Model performance was assessed using Monte Carlo cross-validation.
RESULTS:
The cfRNA-based classifier comprising 100 genes demonstrated strong discriminatory preoperative performance between UM and ULMS, achieving an Area Under the Receiver Operating Characteristic curve (AUROC) of 0.868, with a sensitivity of 73.2% and specificity of 81.3%. Performance was consistent across age groups, with AUROC of 0.879 in women under 55 years and 0.882 in those ≥ 55 years. Importantly, the gene signature showed predictive generalizability in an independent external tissue cohort, supporting its biological robustness and translational potential.
CONCLUSIONS:
These findings indicate that plasma cfRNA-based machine learning approach enables accurate, non-invasive preoperative differentiation between ULMS and ULM. This strategy provides clinically relevant information beyond traditional factors such as age and may improve surgical decision-making.
IMPACT STATEMENT:
This liquid biopsy approach provides the first evidence of a non-invasive, preoperative molecular diagnostic tool with the potential to reduce the risk of inadvertent dissemination of occult sarcoma during minimally invasive surgery and to enable more precise, individualized surgical decision-making.
SUPPORT: Funding: PI23/00536 (ISCIII/FEDER) (AM)

O-9 1:50 PM Monday, October 26, 2026

INFLUENCE OF CHROMOSOMAL REARRANGEMENT TYPE AND PARENTAL ORIGIN ON THE RATE OF UNBALANCED EMBRYOS IN PGT-SR CYCLES.
Xin Tao, PhD, HCLD, Xiyao Wang, M.S., Yiping Zhan, PhD, Amanda Iturriaga, M.S., Cara Vega, BS, Emily Mounts, MS, CGC and Chaim Jalas, ., Juno Genetics, Basking Ridge, NJ

OBJECTIVE: Chromosomal structural rearrangements (SR) can impair gametogenesis, increasing the risk of embryos with unbalanced chromosomal content (i.e., gain or loss of chromosomal segments). In such cases, IVF with preimplantation genetic testing for SR (PGT-SR) can be used. This study evaluated factors affecting the incidence of unbalanced embryos in SR carriers.
MATERIALS AND METHODS: This retrospective study included 652 PGT-SR cycles referred to a PGT laboratory between January 2020 and April 2026, where one of the intended parents was a known balanced SR carrier. The cohort included 652 cases (588 translocations and 64 inversions). The translocation cases included 465 reciprocal translocations (230 paternal, 235 maternal), 120 Robertsonian translocations (52 paternal, 68 maternal), and 3 insertions (1 paternal, 2 maternal). The inversion cases included 21 paracentric (9 paternal, 12 maternal) and 43 pericentric (21 paternal, 22 maternal). A total of 6,069 blastocysts were analyzed. Likelihood ratio tests were performed using nested mixed-effects logistic regression models, with intended parents included as a random effect and relevant variables included as fixed effects.
RESULTS: Translocations were associated with a significantly higher rate of unbalanced blastocysts (50.6%) compared with inversions (18.1%) (OR 4.7, 95% CI 3.57–6.34, $p < 0.001$). Among translocations, Robertsonians showed significantly lower odds of unbalanced blastocysts (29.5%) compared with reciprocal translocations (55.0%) (OR 0.33, 95% CI 0.28–0.40, $p < 0.001$), while insertions (55.7%) did not differ significantly from reciprocal translocations. Among Robertsonian translocation carriers, paternal carriers had significantly lower odds of unbalanced embryos (19.2%) compared with maternal carriers (37.0%) (OR 0.38, 95% CI 0.27–0.53, $p < 0.001$). No significant differences between paternal and maternal carriers were observed for reciprocal translocations. For inversion carriers, paracentric inversions were associated with significantly lower odds of unbalanced blastocysts (3.3%) compared with pericentric inversions (24.0%) (OR 0.09, 95% CI 0.03–0.27, $p < 0.001$). Among pericentric inversion carriers, paternal carriers showed higher odds of unbalanced embryos (33.3%) than maternal carriers (18.3%) (OR 2.21, 95% CI 1.06–4.61, $p = 0.034$). Neither carrier age nor maternal age was significantly associated with the likelihood of unbalanced embryos after adjusting for SR subtype.
CONCLUSIONS: Unbalanced embryo rates in SR carriers are strongly influenced by SR type and parental origin. Translocations, especially reciprocal, are associated with higher unbalanced embryo rates than inversions. Paternal Robertsonian carriers had lower unbalanced rates than maternal carriers, whereas paternal pericentric inversion carriers had higher risks.
IMPACT STATEMENT: Patients undergoing PGT-SR typically have a limited number of transferable blastocysts. These findings underscore the importance of individualized counseling in PGT-SR to improve expectation management and support informed clinical decision-making.

O-10 2:00 PM Monday, October 26, 2026

GENERATION OF HUMAN EUPLOID EMBRYOS FROM NEOGAMETES DIFFERENTIATED IN A CUSTOM THREE-DIMENSIONAL CULTURE SYSTEM.
Eros Lari, B.S.[1], Lily Ng, B.S.[1], Sabrina Bains, MD[1], Mandy Lin, B.S.[2], Philip Xie, B.SC.[1], Stephanie Cheung, M.S.[1], Zev Rosenwaks, M.D.[1] and Gianpiero D. Palermo, M.D., PH.D.[1], [1]The Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY, [2]Weill Cornell Medicine, New York, NY

OBJECTIVE:
Non-obstructive azoospermic (NOA) men, that fail repeated testicular biopsy are afflicted by germ-cell aplasia. Our goal is to differentiate human embryonic stem cells (HESC) and induced pluripotent stem cells (HiPSC) into neogametes.
MATERIALS AND METHODS:
Male HESCs and HiPSCs were encapsulated in calcium alginate spheres. The spheres were cultured in media supplemented with numerous factors, notably SCF, GDNF, testosterone, and rh-FSH for 70 days. Neogametogenesis was tracked using stage-specific germ cell markers: OCT4 (pluripotency), GFRA1 (spermatogonia, spg), VASA (germ cells, spg-sptd), BOULE (post-meiosis, spc-sptd), and ACROSIN (spermatid, sptd-spz). Ploidy was assessed by fluorescent in situ hybridization (FISH). HESC-sperm and HiPSC-sperm were inserted into donated to research, human MII oocytes (IRB 24-11028207), and were concurrently activated with recombinant PLCζ and ionophore. Fertilization and embryo development were monitored by time-lapse microscopy and ploidy evaluated by PGT-A.
RESULTS:
The progression of neogametogenesis in hESC showed a similar timeline to human spermatogenesis. OCT4 declined from 94.0% at plating to 80.1% by D7, reaching 6.1% by D56. GFRA1 (spg) emerged and peaked at 33.2% on D14. VASA (spg-sptd), appeared on D21, stabilizing at 47.5%. Post-meiosis marker BOULE appeared on D21 and reached 38.2% by D49. Cytogenetic analysis demonstrated 57.1% haploidy; among these, 14.3% expressed ACROSIN by D56.
HiPSC followed a comparable timeline profile. OCT4 declined from 93.6% at plating to 60.8% by D7, and to 13.9% by D56. GFRA1 (spg) was detected on D7 at 26.0%, rising to 28.4%. Spg-sptd marker peaked at 50.9% on D21 and settled at 35.6% by D56. BOULE emerged on D14, peaking at 49.4% by D56. Haploidy was confirmed in 27.2% of cells, with 10.7% concurrent ACROSIN expression on D56.
Control donor spermatozoa injected into 3 oocytes yielded 67% (2/3) fertilization and 100% (2/2) blastulation. HESC-sperm injected into 20 oocytes achieved 35.0% (7/20) fertilization and 100% (7/7) day 3 cleavage, but with only 1 embryo reaching the morula stage. HiPSC-sperm injected into 16 oocytes resulted in 37.5% (6/16) fertilization, 100% (6/6) day 3 cleavage, and interestingly 50% (3/6) blastulation rate. Assessing morphokinetic parameters revealed embryo development was delayed by 8–20h compared to controls. PGT-A confirmed euploidy in 33% (2/6) of the embryos tested (The one 46XX morula from HESC and one 46XY blastocyst from HiPSC).
CONCLUSIONS:
Human spermatogenesis has been successfully reproduced *in vitro* within our streamlined 3D culture. The generated haploid neogametes supported fertilization and sustained full pre-implantation development yielding euploid human embryos, albeit with suboptimal morphokinesis and reduced rates.
IMPACT STATEMENT: This simple and reproducible model circumvents the need for xenogeneic transplantation, in order to allow completion of spermatogenesis as a clinically translatable model. Future efforts will be focusing on the epigenetic status and the imprinting of these pseudo-gametes to assess their safety. In vitro human spermatogenesis represents a viable path for NOA men to father their biological children.
SUPPORT: N/A
REFERENCES:
N/A

O-11 2:10 PM Monday, October 26, 2026

MITIGATION OF CHEMOTHERAPY-INDUCED OVARIAN DAMAGE BY FTY720-AN FDA-APPROVED REPURPOSABLE DRUG. Soner Celik, PhD[1], Na-Young Rho, PhD[2] and Kutluk H Oktay, M.D., PhD[2], [1]New Haven, CT, [2]Yale University School of Medicine, New Haven, CT

OBJECTIVE: The molecular ovarian damage from the most commonly used gonadotoxic cancer drug cyclophosphamide has not been adequately characterized. Further, there is no proven agent to shield ovaries against chemotherapy-induced damage. Our aim was to determine the mechanism of cyclophosphamide-induced ovarian damage, and whether this damage can be prevented by a sphingosine-1-phosphate (S1P) analog FTY720. FTY720 is FDA-approved as Fingolimod for the treatment of multiple sclerosis and can potentially be repurposed as an ovarian-protective agent.
MATERIALS AND METHODS: Ovarian cortex from cadaveric donors (n=8) were xenografted into NOD-SCID mice and allowed to vascularize for 10 days. FTY720 (1 mg/kg/day) was administered intraperitoneally starting 24h before cyclophosphamide exposure. Mice then received a single intraperitoneal dose of cyclophosphamide (75 mg/kg) or vehicle, and xenografts were recovered 72h later. Primordial (Pd) and primary (Py) follicles were assessed for density(count/mm^2), apoptosis (Active-Caspase3 immunostaining), and DNA damage (γH2AX immunostaining). Ovarian niche damage was assessed by stromal (ImageJ analysis) and microvascular (CD31 immunostaining) densities. Pd follicle growth initiation was assessed by the Py/Pd ratio.
RESULTS: Cyclophosphamide exposure reduced Pd follicle density by 76% compared to baseline ($p=0.002$), and by 66% compared to vehicle-treatment ($p=0.013$). The Py/Pd follicle ratio was unchanged, indicating that this follicle loss was not driven by increased Pd follicle growth initiation. Cyclophosphamide exposure significantly increased apoptosis and DNA damage across early-stage follicles ($p<0.05$ to $p<0.001$). Stromal cell density was reduced following cyclophosphamide exposure ($p<0.05$), while microvascular density was unchanged. FTY720 co-treatment reduced cyclophosphamide induced Pd follicle loss to 22% ($p=0.0395$ compared to cyclophosphamide alone). This was associated with reduced cyclophosphamide-induced early-stage follicle apoptosis (83.9% vs 29.4%, $p=0.022$) and DNA damage (90.5% vs 12.1%, $p=0.03$ vs. vehicle co-treatment, without a change in Pd follicle growth initiation. FTY720 co-treatment also significantly reduced stromal damage ($p=0.0402$).
CONCLUSIONS: Cyclophosphamide-induced human ovarian follicle depletion appears to be driven by DNA damage and apoptosis rather than increased Pd follicle activation and burn-out. FTY720 mitigates this injury, supporting S1P pathway modulation as a potential strategy for fertility preservation.
IMPACT STATEMENT: These findings identify DNA damage and apoptosis-driven follicle loss as key therapeutic targets to mitigate chemotherapy-induced ovarian damage and justify clinical trials with fingolimod as a repurposed gonado-protective drug.
SUPPORT: This work was supported by the National Institutes of Health (R01 HD053112).

O-12 2:20 PM Monday, October 26, 2026

MATERNAL HYPERHOMOCYSTEINEMIA INDUCES PREMATURE OVARIAN AGING IN FEMALE OFFSPRING VIA mTOR-DRIVEN PRIMORDIAL FOLLICLE OVERACTIVATION. Rong Hu, Ph.D, M.D.[1] and Guiyi Ji, M.D.[1,2], [1]General Hospital of Ningxia medical university, China, [2]Yinchuan, China

OBJECTIVE: To determine whether maternal hyperhomocysteinemia (HHcy) compromises the ovarian reserve and long-term fertility of female offspring through dysregulation of primordial follicle dormancy.
MATERIALS AND METHODS: Female C57BL/6 mice were fed a high-methionine diet to induce HHcy prior to mating. Female offspring (F1) from HHcy and control dams were evaluated from postnatal day 3 (Pd3) to 12 months. Ovarian follicle counts were performed histologically. Immunohistochemistry assessed FOXO3a localization and rpS6 phosphorylation. Oocyte quality was analyzed via mitochondrial membrane potential (JC-1), reactive oxygen species (ROS), γH2AX staining, and spindle assembly. Serum anti-Müllerian hormone (AMH) and sex steroids were measured by ELISA. Fertility was tested through sequential breeding trials. RNA sequencing of ovaries at Pd3, Pd7, and Pd21 was followed by pathway enrichment and gene set variation analysis.
RESULTS: F1-HHcy offspring exhibited accelerated vaginal opening, irregular estrous cycles, and significantly reduced fertility, evidenced by decreased litter numbers and shortened reproductive span ($p<0.01$). Ovarian analysis revealed a 40% reduction in primordial follicle pool at Pd21 ($p<0.001$), coinciding with enhanced nuclear export of FOXO3a and elevated phospho-rpS6 at Pd3/Pd7, indicating hyperactivated mTORC1 signaling. Adult F1-HHcy oocytes displayed mitochondrial depolarization, elevated ROS levels, increased DNA damage, and aberrant spindle morphology (all $p<0.05$). RNA-seq demonstrated persistent dysregulation of pathways governing extracellular matrix-receptor interaction, cAMP signaling, and PI3K-AKT-mTOR activation across postnatal development. Serum AMH levels were consistently lower in F1-HHcy adults ($p<0.01$).
CONCLUSIONS: Maternal HHcy drives premature depletion of the primordial follicle reserve in female offspring through sustained mTOR pathway overactivation, leading to accelerated ovarian aging and subfertility. These findings identify maternal HHcy as a novel intergenerational risk factor for diminished ovarian reserve and highlight the critical role of maternal homocysteine homeostasis in female reproductive longevity.
IMPACT STATEMENT: This study establishes, for the first time, that maternal hyperhomocysteinemia is a direct and independent intergenerational risk factor for diminished ovarian reserve and premature ovarian aging in female offspring. By demonstrating that elevated maternal homocysteine disrupts the critical AKT/FOXO3a/mTOR signaling axis, leading to the precocious and excessive activation of primordial follicles, our findings shift the paradigm of ovarian reserve regulation from a solely intrinsic model to one encompassing significant maternal metabolic influence. This work provides a mechanistic basis for the observed decline in female fertility linked to maternal metabolic disorders and positions maternal homocysteine screening and management as a potential preventive strategy to safeguard the reproductive lifespan of future generations.
SUPPORT: Supported by Central Special Program for Guiding Local Science and Technology Development (2024FRD05140), Innovation and Technology Research Team of Clinical and Basic Research in Maternal-Fetal Medicine, Ningxia Hui Autonomous Region(2025CXTD004), the Key Research and Development Program Project of Ningxia Hui Autonomous Region (2025BEG02003), and Science and Technology for the Benefit of the People Program in the Ningxia Hui Autonomous Region (2025CMG03014) for data fee (scientific research informed consent), paper modification, and publication fee.

ORAL ABSTRACT SESSION: REPRODUCTIVE UROLOGY-TRAVELING SCHOLARS

O-43 1:30 PM Monday, October 26, 2026

UTILIZATION OF FERTILITY SERVICES AMONG REPRODUCTIVE-AGED MALE PATIENTS WITH CYSTIC FIBROSIS. Ellen M Cahill, MD[1], Xiangyi Xi, PhD[2], Stanton C Honig, M.D.[3] and Dr. Katherine L Rotker, M.D.[4], [1]New Haven, CT, [2]Yale University School of Public Health, New Haven, CT, [3]Yale University, New Haven, CT, [4]Yale Universtiy, New London, CT

OBJECTIVE: Cystic fibrosis (CF) is a genetic condition due to a mutation in the cystic fibrosis transmembrane conductance regulator (CFTR) gene which leads to various clinical manifestations including infertility in men, which is most commonly obstructive due to congenital bilateral absence of the vas deferens (CBAVD). There are approximately 40,0000 CF patients in the US, and with new therapies including CFTR modulators, the life expectancy of CF patients has significantly risen. Our aim was to characterize utilization of fertility services among men with CF.
MATERIALS AND METHODS: The Merative MarketScan database was utilized to identify reproductive-aged male patients (age 18-49) diagnosed with CF and/or CBAVD. Fertility service utilization from 2014-2024 was defined by fertility encounters using ICD10 codes, semen analyses, and sperm extraction procedures. Demographic and clinical variables including age, region, and Elixhauser Comorbidity Index (ECI) were collected and multivariable logistic regression was performed to identify factors associated with undergoing sperm extraction.
RESULTS: Our cohort included 7,533 patients of median age 29 with a diagnosis of CF and/or CBAVD (Table 1). 449 (6%) men had a fertility encounter, 410 (5.4%) had a semen analysis, and 373 (5%) underwent sperm extraction over the study period. Median age at first fertility encounter was 33. On multivariable analysis, older patients (OR 1.03, 95% CI 1.02-1.04, $p<0.001$) were significantly more likely to undergo sperm extraction, and those living in the south (OR 0.54, 95% CI 0.42-0.69, $p<0.001$) and west (OR 0.34, 95% CI 0.23-0.49, $p<0.001$) were less likely to undergo sperm extraction. Patients utilizing fertility services ranged from 1.1-3% of the population per year, and utilization did not appear to increase over time.
CONCLUSIONS: Male patients with CF will experience infertility, however only 6% of reproductive-aged males with CF utilized fertility services over a 10-year period.
IMPACT STATEMENT: It is important to counsel men with CF on their fertility potential and promptly refer those interested to reproductive urology. Further education of primary care, pulmonology, and gastroenterology care teams may help to improve utilization of fertility services in this population.
Table 1. Demographics and fertility service utilization in patients with CF/CBAVD 2014-2024.

Variable	Median (IQR) / n (%)
Age	29 (23, 36)
Region	
Northeast	1,772 (30%)
North Central	0 (0%)
South	2,933 (49%)
West	1,152 (19%)
Metropolitan statistical area	6,132 (81%)
Elixhauser Comorbidity Index	
0	5,327 (71%)
1-3	1,896 (25%)
≥4	310 (4.1%)
Fertility encounter	449 (6%)
Age at first fertility encounter	33 (29, 36)
Semen analysis	410 (5.4%)
Age at first semen analysis	32 (28, 37)
Sperm extraction	373 (5%)
Age at first sperm extraction	33 (30, 37)

O-44 1:40 PM Monday, October 26, 2026

DEVELOPMENT AND EXTERNAL VALIDATION OF A NOMOGRAM PREDICTING SEMEN PARAMETER UPGRADING AFTER MICROSURGICAL VARICOCELECTOMY IN INFERTILE MEN. Hriday P Bhambhvani, MD[1], Daniel R. Greenberg, M.D.[2], Myles M Reed, BS[1], Mark Shilling,

BS[1], Ramazan Omer Yazar, MD[1], Manish Kuchakulla, MD[1], Robert E. Brannigan, M.D.[3], Joshua A. Halpern, M.D., M.S.[3], Marc Goldstein, M.D.[1] and James A Kashanian, M.D.[1], [1]Weill Cornell Medicine, New York, NY, [2]McGaw Medical Center of Northwestern University, Chicago, IL, [3]Northwestern University Feinberg School of Medicine, Chicago, IL

OBJECTIVE: To develop and externally validate a nomogram predicting total motile sperm count (TMSC) category upgrade following varicocelectomy in infertile men.
MATERIALS AND METHODS: Men with preoperative TMSC ≤19M undergoing varicocelectomy at Weill Cornell Medicine (2008-2025) comprised the development cohort (N=402). Predictors included age, total testis volume, left varicocele grade, preoperative FSH, preoperative TMSC, and azoospermia status. Multivariable logistic regression was performed. An independent cohort from Northwestern Feinberg School of Medicine (2010-2020, N=74) provided external validation. TMSC upgrade was defined as postoperative movement to a higher clinical grade: azoospermia, IVF/ICSI (<5M sperm), IUI (5-19M sperm), or natural conception (>19M sperm).
RESULTS: 216/402 (53.7%) achieved TMSC upgrade in the development cohort (Table 1). On 5-fold cross-validation, the model demonstrated an AUC of 0.73 (95% CI 0.69-0.78), accuracy of 68%, sensitivity of 76%, and specificity of 58%. Independent predictors of upgrade were total testis volume (OR 1.04, 95% CI 1.01-1.07, p=0.01) and preoperative TMSC (OR 1.09, 95% CI 1.03-1.15, p=0.002). In the external validation cohort, AUC was 0.67 (95% CI 0.55-0.79), accuracy was 62%, sensitivity was 90%, and specificity was 29%. A nomogram and interactive calculator are available at https://urol.shinyapps.io/varicocele-nomogram/.
CONCLUSIONS: A parsimonious 6-predictor nomogram predicts semen parameter improvement after varicocelectomy with moderate accuracy. The model's high sensitivity favors its use as a preoperative screening tool.
IMPACT STATEMENT: This validated nomogram enables individualized pre-procedural counseling for infertile men considering varicocelectomy, with high sensitivity supporting its use as a preoperative screening tool.

Characteristic	Overall	Semen Parameter Upgraded	Semen Parameter Not Upgraded	p-value
Total	402	216	186	
Male age (mean (SD))	37.18 (8.10)	36.99 (7.97)	37.40 (8.28)	0.61
Left testis volume (mean (SD))	13.25 (4.85)	14.48 (4.60)	11.86 (4.76)	<0.001
Right testis volume (mean (SD))	14.43 (5.24)	15.80 (4.84)	12.87 (5.26)	<0.001
Left varicocele grade				0.003
1	46 (11.5)	15 (7.0)	31 (16.8)	
2	122 (30.5)	60 (27.9)	62 (33.5)	
3	205 (51.2)	125 (58.1)	80 (43.2)	
No varicocele/unknown	27 (6.8)	15 (7.0)	12 (6.5)	
Preoperative TMSC category				<0.001
Azoospermia	97 (24.1)	27 (12.5)	70 (37.6)	
<5M (IVF)	205 (51.0)	119 (55.1)	86 (46.2)	
5M-19M (IUI)	100 (24.9)	70 (32.4)	30 (16.1)	
Preoperative testosterone (median [IQR])	388.00 [304.00, 504.00]	375.00 [292.50, 511.50]	399.00 [316.00, 495.25]	0.52
Preoperative FSH (median [IQR])	8.53 [5.20, 17.80]	6.80 [4.56, 11.09]	12.80 [6.34, 22.00]	<0.001
Surgery Laterality				0.25
Bilateral	283 (70.4)	145 (67.1)	138 (74.2)	
Left	115 (28.6)	68 (31.5)	47 (25.3)	
Right	4 (1.0)	3 (1.4)	1 (0.5)	

O-45 1:50 PM Monday, October 26, 2026

THE RISK OF PATERNAL AUTOIMMUNE AND INFLAMMATORY DISORDERS IN MEN FROM COUPLES DIAGNOSED WITH RECURRENT PREGNANCY LOSS. Vadim Osadchiy, MD[1], Shufeng Li, MS[2], Chiyuan Amy Zhang, BS[2] and Michael L. Eisenberg, M.D.[2], [1]UCLA, [2]Stanford University School of Medicine, Stanford, CA

OBJECTIVE: Male reproductive health may be a marker of overall fitness. While semen quality is associated with later health in men including cancer, autoimmune diseases, and cardiometabolic disease; other measures of male reproductive health may also predict later health outcomes. Recurrent pregnancy loss (RPL) is attributed to both male and female factors with many causes unknown. Prior work in women, has shown an association between antecedent diagnosis of RPL and subsequent diagnosis of autoimmune disorders, but this has not been explored in men. We examined whether men from couples with RPL are more likely to be diagnosed with an autoimmune condition in the years following their pregnancy attempts.
MATERIALS AND METHODS: We analyzed data from a US health insurance claims database, capturing data inclusive of men, women, and pregnancies between 2007 and 2023. Based on diagnosis and pregnancy codes, couples were classified as having RPL or a full-term birth (FTB). All prevalent diseases were excluded. We examined the incidence of a new diagnosis of an autoimmune condition in the years following the pregnancy attempt. Analyses were adjusted for paternal age, geography, length of follow-up years, and medical comorbidities, as well as prevalent maternal disease.
RESULTS: In total, 996,498 couples were analyzed (FTB: 916,398 [92%] with mean paternal age: 33 and partner age: 31; RPL: 80,100 [8%], with paternal age 35 and partner age: 34). The mean follow-up duration was 3.6 years for FTB cohort and 3.5 years for RPL cohorts. In the years following pregnancy attempts, men from couples diagnosis with RPL had a higher odds of developing several distinct autoimmune conditions including auto-inflammatory syndromes (aOR: 4.05; 95% CI: 3.11-5.28), systemic connective tissue disorders (including systemic lupus erythematosus and scleroderma;

aOR: 1.20; 95% CI: 1.01-1.42), ulcerative colitis (aOR: 1.16; 95% CI: 1.03-1.30), and dermatitis (aOR 1.09; 95% CI: 1.06-1.11). Of note, the odds of developing other autoimmune and inflammatory conditions were not associated with a history of RPL, including Crohn's disease, psoriasis, rheumatoid arthritis, gout, and myositis.
CONCLUSIONS: Men with a history of RPL have a higher risk of subsequent diagnosis of several autoimmune diseases. These associations are strongest in pathology characterized by more *systemic* rather than *local* inflammation.
IMPACT STATEMENT: This is the first report of an association between antecedent diagnosis of RPL and paternal risk of developing an autoimmune or inflammatory condition in the years following pregnancy loss. Systemic inflammatory spillover may drive these findings.

O-46 2:00 PM Monday, October 26, 2026

LOWER TOTAL MOTILE COUNT AND SOCIOECONOMIC DISADVANTAGE ARE ASSOCIATED WITH THE NUMBER OF SEMEN SAMPLES PROVIDED FOR MAIL-IN SPERM CRYOPRESERVATION.
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OBJECTIVE: To evaluate demographic and clinical factors associated with the number of ejaculate samples cryopreserved among men utilizing a mail-in sperm cryopreservation service.
MATERIALS AND METHODS: We analyzed data from a prospective cohort study of men who cryopreserved at least one ejaculate sample through the Fellow Health mail-in sperm banking platform between March 2021 and January 2026. We explored the relationship between age, urbanization typology, Area Deprivation Index (ADI), ordering setting (clinic affiliated vs. direct-to-consumer), reason for cryopreservation, total motile count (TMC) and number of samples cryopreserved. TMC was categorized as <5M, 5-20M, 20-40M, or ≥40M. Bivariate comparisons used chi-square tests. A parsimonious multivariable logistic regression modeled the relationship between TMC, age, urbanization, ADI and the odds of banking ≥2 samples.
RESULTS: Men included in our study (n=1,781) had a mean age of 34.8, and 89.4% banked 1 sample (10.6% banked ≥2). In bivariate analyses, men with TMC <5M were most likely to bank ≥2 samples while those with TMC ≥40M were least likely (16.3% vs. 6.8%, p<0.05). The most socioeconomically disadvantaged ADI quintile had the lowest rate of banking ≥2 samples (5.2% vs. 13.8% for least disadvantaged, p<0.05). Urbanization differences were observed (p<0.05); nonmetro rural areas had the highest rate of ≥2 samples (15.2%) while suburban areas had the lowest (7.8%). For for banking ≥2 samples, no differences were found by age, indication for cryopreservation, or ordering setting. Rural patients were more likely to use direct-to-consumer ordering, compared to clinic affiliated ordering, across urbanization topographies ($\chi^2(5)=14.9$, p<0.05). In adjusted analyses, compared to TMC ≥40M, men with TMC <5M were 2.8 times more likely to bank ≥2 samples (aOR 2.77, 95% CI 1.89-4.08) while men with TMC 5-20M were 2.2 times more likely (aOR 2.22, 95% CI 1.47-3.35). The most disadvantaged ADI quintile was 70% less likely to submit ≥2 samples (aOR 0.30, 95% CI 0.10-0.73). Men from suburban areas were 44% less likely to submit ≥2 samples (aOR 0.56, 95% CI 0.33-0.93). Men from nonmetro rural areas were 62% more likely to submit ≥2 samples, however, this difference did not meet statistical significance in multivariable modeling (aOR 1.62, 95% CI 0.82-3.02).
CONCLUSIONS: A TMC <20M was the strongest predictor of banking multiple ejaculate samples, suggesting semen sample quality appropriately motivates additional cryopreservation. However, greater socioeconomic disadvantage was significantly associated with banking fewer samples, highlighting potential cost or access barriers. Nonmetro rural patients banked more samples and were more likely to utilize direct-to-consumer ordering, which may reflect advantages of mail-in cryopreservation in reducing geographic access disparities.
IMPACT STATEMENT: These findings reveal that while semen quality drives appropriate cryopreservation behavior, socioeconomic disparities may impact a patient's ability to effectively preserve their fertility. Rural patients appear to utilize this mail-in system at least as much, if not more, than men who live in urban and suburban environments.

O-47 2:10 PM Monday, October 26, 2026

ASSESSING THE IMPACT OF SMOKING AND VAPING ON SEMEN PARAMETERS; A NATIONWIDE ANALYSIS OF MEN SEEKING FERTILITY INSIGHTS.
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OBJECTIVE:
While often marketed as a safe alternative to smoking, vaping is not without risk. Given the impact of vaping on semen parameters is poorly understood, our objective was to compare semen parameters amongst those who smoke and vape, respectively.
MATERIALS AND METHODS:
From 1/2021-5/2025, all patients who ordered a mail-in semen analysis (SA) were invited to complete a survey. Exclusion criteria included patients less than 18 years old and SA related to a vasectomy or vasectomy reversal. The survey included questions pertaining to demographics, smoking status, and vaping status. Smokers were stratified into four groups: never smoker, former smoker (quit > 5 years ago), former smoker (quit ≤ 5 years ago), and current smoker. The vaping cohort was stratified into four groups: never vaper, former vaper, current vaper (≤3 years), and current vaper (>3 years). Our primary outcomes were semen volume, sperm concentration, and total motile sperm count (TMC). Statistical analysis consisted of one-way analysis of variance of the outcomes across the groups within each cohort.
RESULTS:
6,375 men were included in the smoking cohort and 1,042 in the vaping cohort. Mean age among men in the smoking cohort was 34.3 years old, compared to 34.5 years old in the vaping cohort. Within the smoking cohort, there was a significant difference between the groups in semen volume (p < 0.001) and TMC (p = 0.005), but not in sperm concentration (p > 0.05). Mean semen volume was 3.3 milliliters (ml) among current smokers, compared to 3.8 ml in never smokers, 3.9 ml in former smokers (>5 years ago), and 3.8 ml in former smokers (≤ 5 years ago). Mean TMC was 72.8 million among current smokers, compared to 90.6 million in never smokers, 101.1 million in former smokers (>5 years ago), and 92.4 million in former smokers (≤ 5 years ago). Mean sperm concentration was 70.2 million/ml in current smokers, compared to 62.7 million/ml in never smokers, 62.8 million/ml in former smokers (>5 years ago), and 63.1 million/ml in former smokers (≤5 years ago). Within the vaping cohort, semen volume, sperm concentration, and TMC did not differ significantly across groups. Mean semen volume was 3.2 ml among current vapers (>3 years), 3.1 ml among current vapers (≤3 years), 3.6 ml in former vapers, and 3.5 ml in never vapers. Mean sperm concentration was 64.0 million/ml in current vapers (>3 years), 51.1 million/ml in current vapers (≤3 years), 45.0 million/ml in former vapers, and 56.5 million/ml in never vapers. Mean TMC was 76.2 million among current vapers (>3 years), 69.7 million among current vapers (≤3 years), 64.9 million in former vapers, and 75.5 million in never vapers.
CONCLUSIONS: Smoking is associated with decreases in key semen parameters. Vaping is not clearly associated with significant abnormalities in key semen parameters. Although vaping was not shown in this cohort to definitively impact semen parameters, its widespread nature warrants further research to better assess its effect on semen quality, fertility, and pregnancy outcomes.
IMPACT STATEMENT:
Vaping may not be associated with the same decline in semen parameters that is traditionally associated with smoking, but long-term investigation is necessary to properly counsel our patients.
SUPPORT: This study did not receive financial funding.

O-48 2:20 PM Monday, October 26, 2026

TIMING OF OOCYTE RETRIEVAL AND MICRO TESTICULAR SPERM EXTRACTION: A SINGLE-CENTER RETROSPECTIVE COHORT STUDY.
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OBJECTIVE: To evaluate the embryological and clinical outcomes of couples undergoing micro-TESE at 24 hours or 48 hours before oocyte retrieval and intracytoplasmic sperm injection (ICSI).
MATERIALS AND METHODS: We conducted a retrospective study of 282 ICSI cycles using sperm recovered by micro-TESE from a single fertility center between June 2015 and January 2025. Patients were stratified according to timing of oocyte retrieval following micro-TESE: 24 hours (n=104) versus 48 hours (n=25). Baseline demographics, including age, hormonal profile, and degree of sperm concentration, were collected. Embryological outcomes included the number of retrieved oocytes, mature oocytes, fertilization rate, and blastocyst formation. Clinical outcomes assessed were biochemical pregnancy, clinical pregnancy, and live birth rates. Continuous variables were compared using parametric or non-parametric tests, according to data distribution. Categorical variables were compared using the Chi-square or Fisher's exact test. Relative risks and their 95% confidence intervals were calculated to estimate the strength of association between groups for binary outcomes. Associations were estimated using multivariable logistic regression, with adjustment for embryo transfer type.
RESULTS: Baseline characteristics did not differ significantly between groups. Embryological outcomes, including fertilization rate (67% vs. 65%; p=0.81) and blastocyst rate (50% ± 26 vs. 49% ± 29; p=0.90), were comparable between the 24-hour and 48-hour groups. The mean number of embryos transferred was similar between the 24 and 48-hour groups. While adjusting for embryo type, there was a statistically significant difference in patients with positive b-hCG levels between the two groups, with 72% (n=71) in the 24-hour group and 35% (n=8) in the 48-hour group (aOR 4,8, 95% CI [1.9, 13.3], P = 0.002). There was also a significant difference in the number of clinical pregnancies between the groups, with 65% (n=64) in the 24-hour group and 35% (n=8) in the 48-hour group (aOR 3,4, 95% CI [1.3, 3.4], P = 0.01). Lastly, we found a significant difference in the number of live births between the groups, with 56% (n=55) in the 24-hour group and 30% (n=7) in the 48-hour group (aOR 2,9, 95% CI [1.1, 8,2], P = 0.03). There were no significant differences in PGT-A testing [n=11 (10.6%) vs n=4 (16%); p>0.22] and euploid rates [n=8 (72.7%) vs n=4 (16.0%); p >0.99] in the 24 and 48-hour groups, respectively.
CONCLUSIONS: Although sperm culture up to 48 hours may enhance motility, extended culture appears to negatively affect clinical outcomes. Our findings support performing oocyte retrieval within 24 hours of micro-TESE to optimize clinical pregnancy rates and live birth rates in these couples.

IMPACT STATEMENT: No dedicated studies have evaluated the clinical implications of an extended sperm incubation (48 hours beyond micro-TESE) on live-birth rates. We demonstrate a possible reduction in clinical pregnancy rates and live birth rates following 48-hour culture of spermatozoa compared to the 24-hour group. These findings can guide patients and providers with an optimal time window when planning and performing ICSI to maximize chances of success.
SUPPORT: nil.

ORAL ABSTRACT SESSION: RECURRENT PREGNANCY LOSS

O-49 1:30 PM Monday, October 26, 2026

EFFICACY AND SAFETY OF CCT-102 REGIMEN OR EXPECTANT MANAGEMENT FOR THE TREATMENT OF MISSED MISCARRIAGE.
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OBJECTIVE:
The primary objective was to determine the efficacy of mifepristone/misoprostol regimen (CCT-102) for achieving uterine evacuation in participants with missed miscarriage (MM).
MATERIALS AND METHODS:
A multicenter, open-label, Phase 3 study assessed the efficacy of CCT-102 or Expectant Management for uterine expulsion of missed miscarriage (MM). MM was defined as arrest of pregnancy at less than 11 weeks gestational duration, where the cervix is closed and there is no or only slight bleeding. This included: 1) anembryonic pregnancy, and 2) embryonic or fetal demise. Expectant Management consisted of patient monitoring with no additional treatment.
Participants chose CCT-102 treatment or Expectant Management. At enrollment (Day 1), participants in the CCT-102 group self-administered one 200 mg mifepristone tablet orally. Approximately 24 hours (±2 hrs.) after taking mifepristone, participants self-administered four 200 mcg misoprostol tablets buccally. All participants recorded adverse events (AEs) in a daily diary and returned to the clinic on Day 7 (+/- 1 day).
The primary endpoint was defined as successful evacuation of sac/embryo/fetus within 8 days (up to and including study Day 8), as confirmed by pelvic ultrasound.
The safety endpoints included AEs, serious adverse events (SAEs), and clinical laboratory results.
RESULTS:
A total of 181 participants were enrolled. Of these, 145 were in the CCT-102 group and 36 in the Expectant Management group. In the CCT-102 group, 138/145 (95.2%) participants completed the study, and in the Expectant Management group, 31/36 (86.1%) participants completed the study.
In the CCT-102 group, 137 participants had an evaluable efficacy endpoint and the number and proportion of participants with a successful uterine evacuation within 8 days was 114/137 (83.2%) for the primary analysis and 122/137 (89.1%) for the sensitivity analysis.
In the Expectant Management group, 31 participants had an evaluable efficacy endpoint and the number and proportion of participants with a successful uterine evacuation within 8 days was 13/31 (41.9%).
Treatment-related treatment emergent AEs were reported in 133 (91.7%) participants in the CCT-102 group. The most common (>15%) were vaginal bleeding (44.8%), cramping (33.1%), abdominal pain (29.0%), nausea (22.1%), diarrhea (16.6%) and uterine bleeding (15.9%).
Five participants experienced 6 SAEs including post-abortion hemorrhage, retained products of conception, endometritis, vaginal hemorrhage, sepsis and blood loss anemia.
CONCLUSIONS: Mifepristone 200 mg orally followed approximately 24 hours (±2 hrs.) by mifepristone 800 mcg buccally (CCT-102) was effective and had an acceptable safety profile for treating MM.
IMPACT STATEMENT: These data support the efficacy and safety of CCT-102 for management of MM and should be considered when counseling patients regarding MM treatment options.
SUPPORT: This study was supported by Conceptra Biosciences.

O-50 1:40 PM Monday, October 26, 2026

INHERITED ARRHYTHMIA SYNDROMES ARE ASSOCIATED WITH RECURRENT PREGNANCY LOSS: A POPULATION-LEVEL CASE-CONTROL STUDY.
Anagh Astavans, BS[1], Bronwyn S Bedrick, MD, MSCI[2], Shannon Anderson, MD, MS[3], Brittney Murray, MS, CGC[4], Rebecca McClellan, MGC, CGC[5], Konstantinos N Aronis, MD, PhD[6], Vasiliki A Moragianni, M.D., M.SC.[7] and Andreas S Barth, MD, PhD[6], [1]Johns Hopkins School of Medicine, Baltimore, [2]Johns Hopkins University School of Medicine, Baltimore, MD, [3]Johns Hopkins School of Medicine, [4]The Johns Hopkins Center of Inherited Heart Diseases, Baltimore, [5]The Johns Hopkins Center of Inherited Heart Diseases, Baltimore, MD, [6]Johns Hopkins School of Medicine, Baltimore, MD, [7]Johns Hopkins Hospital, Lutherville, MD

OBJECTIVE:
Emerging evidence suggests that inherited arrhythmia syndromes (IAS), such as Long QT Syndrome (LQTS), are associated with late-gestation fetal loss and stillbirth. However, the relationship between IAS and early pregnancy loss is unknown. This study sought to examine whether inherited arrhythmia syndromes are associated with recurrent pregnancy loss (RPL).
MATERIALS AND METHODS:
This retrospective case-control study from 2006-2026 utilized the TriNetX Research Network, a globally federated database of aggregated electronic health record data for over 140 million patients. Reproductive-aged women (18-50 years) with both a documented pregnancy-related encounter and electrocardiogram (ECG) were included. Patients were stratified into RPL and non-RPL cohorts based on either ICD-10 codes (N96, O26.2) or ≥2 separate pregnancy loss encounters ≥6 months apart. One-to-one propensity score matching was used to match groups by demographics and comorbidities, including age, obesity, antiphospholipid antibody syndrome, diabetes, and Mullerian anomalies. Covariate balance was assessed using standardized mean differences (SMDs), with values <0.10 considered acceptable. Primary outcomes included odds of LQTS diagnosis or a composite of arrhythmia syndromes as identified by ICD-10 codes. Using ECG data, quantitative phenotypic expression was assessed by comparing mean QTc by RPL status.
RESULTS:
Prior to matching, RPL patients (n=12,615) were older and had a greater comorbidity burden than controls (n=13,239). After matching, RPL patients (n=10,886) demonstrated significantly greater odds of LQTS diagnosis (2.2% vs. 1.7%; P = 0.009; odds ratio [OR] 1.30 [95% CI, 1.07-1.58]) and the arrhythmia syndrome composite (9.3% vs. 7.0%; P < 0.0001; OR 1.38 [95% CI, 1.25-1.52]). Quantitative analysis revealed significantly higher mean QTc in the RPL cohort, and a significant stepwise phenotypic gradient was observed across QTc brackets demonstrating that a longer QTc interval was associated with an increased risk of RPL (P_{trend} < 0.0001).
CONCLUSIONS:
RPL is associated with significantly increased odds of arrhythmia syndromes and prolonged cardiac repolarization, with a dose-response relationship between QTc interval and RPL diagnosis. These results add to the current understanding of the association between IAS and adverse pregnancy outcomes and support further investigation into whether targeted cardiovascular screening in women with RPL could identify undiagnosed channelopathies.
IMPACT STATEMENT:
RPL may serve as a critical early marker for overall health, signaling underlying vulnerabilities that manifest later in life. Among these, IAS are particularly dangerous as they often affect young, otherwise healthy individuals and carry a risk of sudden cardiac death. This is the first population-level study to find that IAS are associated with recurrent early pregnancy loss, highlighting a potential novel diagnostic window for maternal cardiovascular health.

O-51 1:50 PM Monday, October 26, 2026

SHARED IMPLANTATION PATHWAY DYSREGULATION IN ENDOMETRIOSIS AND RECURRENT IMPLANTATION FAILURE: EVIDENCE FOR FOXA2-LIF-STAT3 AXIS INVOLVEMENT.
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OBJECTIVE:
To determine whether eutopic endometrial transcriptomic signatures in endometriosis and recurrent implantation failure (RIF) share disruption of implantation-related pathways, with a focus on the FOXA2-LIF-STAT3 signaling axis.
MATERIALS AND METHODS:
Two publicly available transcriptomic datasets were analyzed from the Gene Expression Omnibus. Mid-secretory eutopic endometrial samples from GSE51981 (28 endometriosis, 22 controls; Affymetrix U133 Plus 2.0) and LH+7 endometrial biopsies from GSE103465 (3 RIF, 3 controls; Affymetrix PrimeView) were independently analyzed using limma for differential expression. Gene Set Enrichment Analysis was performed using fgsea with seven custom gene sets representing implantation-related pathways downstream of ARID1A-dependent chromatin remodeling (FOXA2-LIF axis, progesterone signaling, decidualization, immune regulation, estrogen response, PI3K/AKT, and SWI/SNF chromatin remodeling), curated from published mouse genetic and chromatin profiling studies. Additional GSEA was performed using KEGG and MSigDB Hallmark gene set collections. Genes differentially expressed at nominal P<0.05 with |log2FC|>0.5 in both datasets were assessed for directional concordance using a binomial test.
RESULTS:
GSEA revealed significant suppression of the FOXA2-LIF-STAT3 axis in RIF endometrium (NES=−1.85, padj=0.014). Immune regulation pathways were significantly dysregulated in both conditions, with upregulation in endometriosis (NES=+1.68, p=0.021) and downregulation in RIF (NES=−1.72, padj=0.035). Key implantation genes showed concordant downregulation across both datasets: PGR (logFC −0.76 endometriosis, −0.90 RIF), FOXO1 (−0.75, −1.63), and IL15 (−0.44, −1.42). Among 406 genes differentially expressed in both conditions, 265 (65%) showed concordant directionality, significantly exceeding chance expectation (binomial $P=3.84\times10^{-19}$). Thirty-two MSigDB Hallmark pathways were dysregulated in both conditions, including oxidative phosphorylation, mTORC1 signaling, and TNFα/NFκB signaling. Notably, inflammatory pathways were activated in endometriosis but suppressed in RIF, suggesting divergent immune remodeling in these conditions.
CONCLUSIONS:
Endometriosis and RIF share pathway-level transcriptomic dysregulation of implantation-critical programs, particularly the FOXA2-LIF-STAT3 axis and progesterone signaling. The significant directional concordance among shared differentially expressed genes suggests common upstream regulatory disruption rather than incidental overlap. ARID1A-dependent chromatin remodeling represents a plausible but unproven upstream mechanism warranting further investigation.
IMPACT STATEMENT:

This study identifies convergent pathway-level endometrial dysfunction in endometriosis and RIF, highlighting the FOXA2-LIF-STAT3 axis as a shared molecular target that may guide future diagnostic and therapeutic strategies for endometriosis-associated implantation failure.

O-52 2:00 PM Monday, October 26, 2026

ENDOMETRIAL NATURAL KILLER CELL GENE EXPRESSION AND THE IGF AXIS IN WOMEN WITH RECURRENT IMPLANTATION FAILURE AND RECURRENT PREGNANCY LOSS. Riyas Ali Ampadathu Pareekutty, MD, MRCOG[1], Umida Ganieva, PhD[2], Thanh Luu, D.O.[3], Mahmood Bilal, PhD[4], Svetlana Dambaeva, PH.D.[5] and Joanne Kwak-Kim, MD, MPH, FCRI[6], [1]Reproductive Medicine and Immunology, Obstetrics and Gynecology, Clinical Sciences Department, Chicago Medical School, Rosalind Franklin University, [2]Rosalind Franklin University of Medicine and Science, Clinical Immunology Laboratory, Center for Cancer Cell Biology, Immunology and Infection, North Chicago, IL, [3]Rosalind Franklin University Health Clinics, North Chicago, IL, [4]Rosalind Franklin University of Medicine and Science, Center for Cancer Cell Biology, Immunology and Infection, North Chicago, IL, [5]Rosalind Franklin University of Medicine and Science, North Chicago, IL, [6]Chicago Medical School, Rosalind Franklin University of Medicine and Science, Vernon Hills, IL

OBJECTIVE: Dysregulation of the insulin-like growth factor (IGF) axis and decidual natural killer (dNK) cells has been implicated in reproductive failure. This study investigates associations between serum IGFBP-1, IGFBP-3, and total IGF-1 with endometrial expression of interleukin-15 (IL-15) and granzyme B (GZMB) in women with recurrent implantation failure (RIF) and recurrent pregnancy loss (RPL). IL-15 regulates dNK activation and proliferation, while GZMB serves as a marker of dNK cytotoxic potential.
MATERIALS AND METHODS: This retrospective cohort study included 62 non-pregnant women with reproductive failure (RIF n=15, RPL n=33, RIF+RPL n=5, infertility n=5). Serum IGFBP-1 (n=48), IGFBP-3 (n=49), and total IGF-1 (n=62) were evaluated via quantitative immunoassay. Mid-luteal endometrial biopsies (n=40) were analyzed for IL-15 and GZMB mRNA by targeted RNA-seq, after normalizing to 10 internal housekeeping genes. The function of NK cells was evaluated through peripheral NK cytotoxicity (NKC) assay utilizing 50:1 and 25:1 effector-to-target ratios. Peripheral NK cell numbers were assessed through quantification of CD56+ percentages by flow cytometry (n=52). Pearson correlation and one-way ANOVA were used for analysis.
RESULTS: Mean endometrial expression in molecular units: IL-15, 2.01±1.23; GZMB, 1.06±0.99. IL-15 and GZMB were positively correlated (r=0.523, p=0.001, n=40), consistent with IL-15 signaling driving dNK cytotoxic priming. Serum IGFBP-3 demonstrated a significant inverse correlation with endometrial IL-15 (r=−0.392, p=0.029, n=31), suggesting higher systemic IGFBP-3 is associated with a less supportive endometrial niche for dNK activation. Neither IGFBP-1 nor total IGF-1 correlated with IL-15 or GZMB (all p>0.10). Peripheral NKC and CD56+ percentages did not correlate with endometrial IL-15 or GZMB (all p>0.30), indicating compartmentalized regulation of systemic and local uterine NK activity. No significant differences in IL-15 or GZMB were observed across diagnostic subgroups (ANOVA, p>0.25).
CONCLUSIONS: This study identifies a novel inverse relationship between serum IGFBP-3 and endometrial IL-15 expression, implicating the systemic IGF axis in modulating the endometrial cytokine niche that sustains dNK activation. The significant IL-15/GZMB co-expression confirms that endometrial IL-15 signaling may drive dNK cytotoxic priming in this cohort. The dissociation between peripheral NK function and endometrial dNK markers underscores the necessity of tissue-level assessment in reproductive immunology. These findings suggest IGFBP-3 may directly or indirectly suppress endometrial dNK readiness through IL-15-dependent pathways, warranting prospective investigation.
IMPACT STATEMENT: IGFBP-3 may serve as an accessible serum biomarker reflecting suppressed endometrial IL-15 signaling and inadequate dNK activation. If validated, this could enable targeted immunomodulatory intervention to improve outcomes in women with RIF and RPL.
SUPPORT: No financial Support.

O-53 2:10 PM Monday, October 26, 2026

UNEXPLAINED RECURRENT PREGNANCY LOSS (RPL) IS NOT ASSOCIATED WITH INCREASED ANEUPLOIDY IN FIRST IN VITRO FERTILIZATION (IVF) CYCLES USING PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY (PGT-A): A RETROSPECTIVE COHORT STUDY. Jordan Naylor, MD, MS, MSc, MBA[1], Lea C George, MD[2], Devika Sachdev, MD[2], Blake Vessa, M.D.[2], Amanda D Kadesh, M.D., M.S.[2], Christine V Whitehead, MS, BSN, RN[3], Alejandro Sánchez, MSc[4] and Marie D Werner, B.A., H.C.L.D, M.D.[5], [1]Abington-Jefferson Hospital, Abington, PA, [2]IVIRMA Global Research Alliance, Basking Ridge, NJ, [3]IVIRMA New Jersey, Basking Ridge, NJ, [4]IVI FOUNDATION, Valencia, Comunidad Valenciana, Spain, [5]RMA NJ, Eatontown, NJ

OBJECTIVE: The current literature remains equivocal regarding aneuploidy rates in patients with unexplained RPL and guidelines are limited. Given the strong association of aneuploidy with early pregnancy loss, many providers recommend PGT-A if undergoing IVF in those without a recognized etiology for RPL. We investigated whether patients with unexplained RPL undergoing their first IVF cycle have inferior PGT-A outcomes compared to non-RPL controls.
MATERIALS AND METHODS: This retrospective cohort study included all patients with unexplained RPL undergoing their first autologous IVF cycle at an academic affiliated center between January 2020 – June 2024. Cycles using surgical sperm were excluded. Couples with unexplained RPL, defined as an absence of parental chromosomal abnormalities, uterine anatomical disorders, inherited and/or acquired thrombophilia, nor endocrine disorders, were compared to a control group consisting of couples with a female partner who had iatrogenic tubal factor infertility (bilateral salpingectomy) or presented for family balancing. This control group was selected as they had no other infertility diagnoses. The primary outcome was whole chromosome aneuploidy (WCA) rate. Secondary outcomes were rates of atypical WCA (1, 2, or 3+ aneuploidies per embryo) and segmental aneuploidy. Embryology outcomes were also analyzed. Logistic regression models adjusted for maternal age and body mass index, and total motile count of the sperm sample provided for intracytoplasmic sperm injection.
RESULTS: 280 cycles were analyzed: 211 cycles in those with unexplained RPL and 69 cycles in the control group. The control group was older (mean age 37.2 vs 36.1 years, p=0.027). Overall, the WCA rate was 34.3%. The adjusted analysis showed that there was no significant difference in WCA rate between the control group and the unexplained RPL group (39.6% vs 32.6%, p=0.126). There were no statistically significant differences in adjusted analysis for number of WCAs per embryo (p=0.315, p=0.712, p=0.142 for 1, 2, or 3+ aneuploidies per embryo, respectively) and segmental aneuploidy (p=0.266). In the adjusted analysis of embryology outcomes, there were no statistically significant differences between groups in terms of the number of mature oocytes (p=0.498), fertilization rate per fertilized zygote (p=0.737), and blastulation rate per fertilized zygote (p=0.088).
CONCLUSIONS: No association was identified between patients with unexplained RPL undergoing their first IVF cycle with PGT-A and rate of WCA compared to controls with no infertility diagnosis. However, a limitation of the study was the small sample size of the control group.
IMPACT STATEMENT: These findings suggests that patients with unexplained RPL do not have an increased rate of aneuploidy and therefore other factors outside of chromosomal abnormalities may play a larger role in unexplained RPL. This is also reassuring for patients with unexplained RPL who pursue IVF without PGT-A. Further prospective studies are needed to draw definitive conclusions.

O-54 2:20 PM Monday, October 26, 2026

POR GENE MUTATIONS IN NON-CLASSICAL CONGENITAL ADRENAL HYPERPLASIA AFFECT MISCARRIAGE VIA NEUTROPHIL EXTRACELLULAR TRAPS. LEI Chen, M.Med[1] and Wu Wei, M.D.[2,3], [1]Nanjing Medical University, Nanjing, Jiangsu, China, [2]Nanjing, China, [3]Nanjing Medical University, Nanjing, China

OBJECTIVE:
Congenital adrenal hyperplasia (CAH) is a group of genetic disorders , female patients often experience ovulatory dysfunction, and so on, leading to infertility.
In this study, we identified an infertile patient in clinical practice， who has a homozygous mutation in the POR gene—a rare cause of CAH.After definitive diagnosis,the patient experienced pregnancy loss after two cycles of embryo implantation. Embryonic pathology excluded chromosomal structural abnormalities and other causes. We integrated transcriptomic, proteomic, and metabolomic analyses of aborted chorionic villi and endometrium to localize the pathway to neutrophil extracellular traps（NETs）.
However, whether the POR gene regulates the pregnancy remain unclear. Therefore, this study aims to elucidate the molecular mechanism by which POR gene mutations and define its pathological significance in pregnancy loss.
MATERIALS AND METHODS:
1.We generate NETs from differentiated HL-60 (dHL-60) cells by LPS and knock down POR gene expression in dHL-60. Quantitative Polymerase Chain Reaction (qPCR), SYTOX Green staining combined with CitH3 immunofluorescence (IF) co-staining were used to detect and analyze the correlation between POR gene expression and NETs generation.
2.POR-knockdown（POR-KD）in mouse endometrium was achieved using shRNA-POR adeno-associated virus to evaluate litter size, abortion rate, placental and fetal weight, placental vascular and stromal involvement. Immunohistochemistry was used to detect NETs formation in the placenta.
RESULTS:
1.In the cell model, after stimulating dHL-60 to generate NETs, we found that POR gene expression was negatively correlated with NETs. NETs levels were elevated after POR knockdown in the neutrophil cell line.We will further clarify its relationship with endothelial cells.
2.In the animal model, we found that POR-KD in mice resulted in pregnancy loss, which led to placental vascular involvement, thickening, and even structural deformation, as well as inflammatory responses. NETs caused endothelial cell mitochondrial dysfunction and apoptosis, thereby triggering vascular injury.
CONCLUSIONS:
1.we confirmed that POR gene knockdown could induce high expression of NETs in dHL-60 cells. These findings provide an important theoretical basis for further research into the pathological mechanisms of pregnancy loss and the development of novel therapeutic strategies.
2.By constructing a POR-KD mouse model and using AAV intrauterine injection to specifically knock down the POR gene in the endometrium, we confirmed that it significantly increased embryo loss rates, enhanced inflammatory responses, and damaged placental vasculature and placental stroma. These results are consistent with our in vitro findings, emphasizing that may be an effective therapeutic strategy.
IMPACT STATEMENT:
By translating mechanistic findings into clinical practice, NET inhibition with hydroxychloroquine enabled successful ongoing pregnancy in a patient with POR mutation who had previously experienced repeated embryo transfer failures, offering a paradigm shift from "unexplained" miscarriage to precision immunomodulation for this rare and underserved population.

O-55 2:30 PM Monday, October 26, 2026

ONGOING PREGNANCY RATES RANGE FROM 21% TO 58% ACROSS RECURRENT PREGNANCY LOSS SUBGROUPS: EVIDENCE FOR PROGNOSIS-DRIVEN PATIENT STRATIFICATION. Sakshi Bakshi, MSc., MBA[1] and Rita Bakshi, M.B.B.S., M.D.[2], [1]EPIA - Egg Preservation Institute of Asia, New Delhi, India, [2]International Fertility Centre, New Delhi, India

OBJECTIVE: To characterize prognosis-relevant heterogeneity in recurrent pregnancy loss (RPL) by quantifying the independent contribution of maternal age, cumulative loss burden, and loss phenotype to ongoing pregnancy rates, and to identify clinically meaningful subgroups to guide individualized counseling.

MATERIALS AND METHODS:

This retrospective observational cohort study included 120 women with ≥2 pregnancy losses presenting to a tertiary fertility center. All patients underwent standardized RPL evaluation including parental karyotyping, uterine cavity assessment, thrombophilia screening, and thyroid function testing. Management was individualized based on identified etiology and current evidence-based guidelines.

Patients were stratified by age (<35 years, n=52; 35–39 years, n=44; ≥40 years, n=24), number of prior losses (2 losses, n=68; ≥3 losses, n=52), and type of loss (early only, n=78; mixed or later, n=42).

The primary outcome was ongoing pregnancy, defined as a viable intrauterine pregnancy beyond 12 weeks gestation. Multivariable logistic regression was performed to evaluate independent predictors of outcome, adjusting for identified etiology.

RESULTS:

Overall, 64% of patients conceived during follow-up, with a median time to conception of 4.5 months across the cohort.

Ongoing pregnancy rates were 58% in women <35 years, 43% in those aged 35–39 years, and 21% in those ≥40 years (p=0.003). Patients with two prior losses had higher ongoing pregnancy rates compared to those with ≥3 losses (55% vs 36%, p=0.02). Women with early losses only demonstrated more favorable outcomes compared to those with mixed or later losses (52% vs 34%, p=0.04).

Identifiable etiologies were present in 46% of patients (chromosomal 14%, anatomic 11%, thrombophilic 9%, other 12%).

On multivariable analysis, maternal age ≥40 (OR 0.34, 95% CI 0.15–0.78), ≥3 prior losses (OR 0.49, 95% CI 0.26–0.91), and mixed or later loss phenotype (OR 0.52, 95% CI 0.28–0.97) each independently predicted reduced ongoing pregnancy rate, adjusting for identified etiology.

A composite favorable subgroup (age <35, two losses, early losses only; n=28) demonstrated an ongoing pregnancy rate of 64%, compared to 24% in a higher-risk subgroup (age ≥40, ≥3 losses, mixed or later losses; n=18; p=0.01), though these findings should be interpreted cautiously given subgroup sizes.

Live birth data are being collected and will be reported in the full manuscript.

CONCLUSIONS: RPL demonstrates substantial clinical heterogeneity, with ongoing pregnancy rates varying nearly threefold across identifiable subgroups. These findings support a prognosis-driven approach, enabling more accurate patient counseling and individualized management.

IMPACT STATEMENT: In a condition where prognosis is often communicated in generalities, this study demonstrates that outcomes vary nearly threefold across identifiable subgroups, providing a practical, data-driven framework for individualized counseling in RPL.

ORAL ABSTRACT SESSION: HEALTH DISPARITIES & HEALTH EQUITY

O-56 1:30 PM Monday, October 26, 2026

IMPACT OF 2012 UNITED STATES PREVENTIVE SERVICES TASK FORCE CHANGE TO CERVICAL CANCER SCREENING RECOMMENDATIONS ON PREVENTIVE CARE IN WOMEN: AN INTERRUPTED TIME SERIES ANALYSIS. Elizabeth D Brouwer, PhD, MPH[1], Kristina Rosa R Bolling, PhD[2], Jihaeng Heo, PhD[2], Ryan Farej, MS[2], Scott Ramsey, MD, PhD[1], Maria Jose Torres, PhD, MBA[2], David Sheyn, MD[3], Stephanie Teal, MD, MPH[4] and Angelina Gangestad, MD[4], [1]Curta, Seattle, WA, [2]Bayer, Whippany, NJ, [3]University Hospitals of Cleveland, Cleveland, OH, [4]University Hospitals Cleveland, Cleveland, OH

OBJECTIVE:

To evaluate whether the 2012 United States Preventive Services Task Force (USPSTF) guideline reducing cervical cancer screening from annual to every 3 years was associated with changes in preventive visit utilization, contraception-related care, sexually transmitted infection (STI) screening, and STI diagnoses among reproductive-aged women.

MATERIALS AND METHODS: This retrospective interrupted time series study used segmented least-squares regression of commercial claims from two national databases: Merative MarketScan (n=17,452,071) and Optum Clinformatics DataMart (n=5,565,397). Women aged 15–45 with claims between July 2009 and December 2014 were included; the intervention point was April 1, 2012. Outcomes, measured as monthly rates per 1,000 eligible women, included Pap tests, HPV screening, routine gynecological examinations, STI screening and diagnoses, contraception visits, intrauterine device (IUD) insertions, long-acting reversible contraception (LARC) use, and contraceptive prescriptions. Women with HIV/AIDS, cervical intraepithelial neoplasia 2/3, carcinoma in situ, or prior hysterectomy were excluded. Outcomes were stratified by age (15–20, 21–29, 30–45 years) in a subgroup analysis. Models were assessed for autocorrelation and seasonality and adjusted where indicated.

RESULTS: Post-April 2012, Pap test rates showed a significant downward change in slope in Optum (−0.051 per 1,000 women/month; P=.004) but not in MarketScan. HPV screening declined significantly in Optum (−0.025; P=.002). Routine gynecological examinations, STI screening, and STI diagnoses showed no significant changes in either database. Age-stratified analysis revealed the strongest Pap test declines among women aged 30–45 in Optum, the group for whom the guideline introduced co-testing, while divergent HPV screening patterns across databases suggest heterogeneous implementation. IUD insertion rates increased significantly in both databases (Optum: +0.014, P=.001; MarketScan: +0.009, P=.005), as did LARC visit rates (Optum: +0.024, P=.001; MarketScan: +0.019, P<.001). In MarketScan, contraceptive visit rates (+0.066, P=.001) and oral contraceptive visits (+0.426, P<.001) also increased per 1,000 women/month.

CONCLUSIONS: Following guideline-driven reductions in cervical cancer screening, Pap and HPV testing declined without corresponding decreases in contraceptive care, STI services, or wellness visits. Increases in LARC and IUD use across both databases demonstrate successful decoupling of contraception from screening visits, supporting sustained reproductive health care access independent of Pap testing frequency.

IMPACT STATEMENT: This national, claims-based analysis addresses a critical evidence gap: prior studies of spillover effects from cervical cancer screening guideline changes were limited to regional populations with mixed results. Demonstrating that contraceptive and preventive care access was maintained at population scale provides evidence relevant to evaluating downstream reproductive health consequences of the 2020 American Cancer Society primary HPV testing recommendation and future guideline evolution.

SUPPORT: This study was funded Bayer U.S.

O-57 1:40 PM Monday, October 26, 2026

DISPARITIES IN COMPLETE EVALUATION OF RECURRENT PREGNANCY LOSS AMONG A COHORT WITH EUPLOID PRODUCTS OF CONCEPTION. Emily K Guernsey, BS[1], Gisely Torres, BA[1], Sanaa Nakad Borrego, MD[2], Anagha Alapati, BS[1], Kristin Petras, BS[3], Carrie Fitzpatrick, PhD[3] and Sana M Salih, MD[2], [1]The University of Chicago Pritzker School of Medicine, Chicago, IL, [2]University of Chicago Medical Center, Chicago, IL, [3]University of Chicago Medicine, Chicago, IL

OBJECTIVE:

Chromosome abnormalities account for a large proportion of pregnancy losses. Among individuals with recurrent pregnancy loss (RPL) and euploid products of conception (POC), further workup is critical. This study aimed to identify predictors of completing further workup to determine the etiologies of RPL in this cohort.

MATERIALS AND METHODS:

We conducted a single-site retrospective cohort analysis of all individuals who met the criteria for RPL (two or more clinical pregnancy losses before 20 weeks' gestation), who underwent cytogenetic analysis of POC and were found to have euploid POC from 2022 to 2025. The primary outcome was completion of any further workup for RPL: endocrine (HbA1c, prolactin, and TSH levels), immunologic (anti-phospholipid syndrome testing), anatomical (transvaginal ultrasound, saline sonogram, or hysteroscopy), or genetic (parental karyotype) testing within one year of POC testing. The exposure was insurance provider (government payor vs. private/self-pay). Other variables considered for inclusion based on $p < 0.05$ in bivariate analysis included self-reported race, age, and whether a diagnosis of RPL was documented in a clinical note. Multivariate logistic regression was performed, and the area under the ROC curve (AUC) was calculated.

RESULTS:

66 individuals were available for analysis. Overall, rates of completion of further RPL workup were low: 11 (17%) completed endocrine, 46 (70%) immunologic, 13 (20%) anatomical, and 13 (20%) genetic workup. Clinical documentation of RPL diagnosis (OR 17.8, 95% CI 3.80–122.16, p<0.001) significantly increased the odds of any further RPL workup. Government payor decreased odds of any further workup (OR 0.17, 95% CI 0.03–0.62, p=0.018). Race (p=0.46) and age (p=0.071) were not significantly associated with odds of further workup. The logistic regression model resulted in an AUC of 0.79.

CONCLUSIONS:

Preliminary predictors of completion of further RPL workup after finding euploid POC include clinical documentation of RPL diagnosis and insurance payor. These data highlight disparities in access to appropriate RPL evaluation. Given the small sample size available, further work is needed to improve the generalizability of these findings.

IMPACT STATEMENT:

Clinical documentation of an RPL diagnosis strongly influences whether further RPL workup is completed, highlighting the importance of labeling RPL for patients and providers alike. Having government insurance also decreases the likelihood of receiving further RPL workup, despite Medicaid coverage for these workups. Further provider-level interventions are needed to ensure equitable access to care for individuals experiencing RPL.

O-58 1:50 PM Monday, October 26, 2026

ASSOCIATION OF RACE/ ETHNICITY AND PERINATAL OUTCOMES AMONG PATIENTS WITH INFERTILITY : A NATIONAL INPATIENT SAMPLE ANALYSIS. Mehr Jain, MD, MSc[1], Heather Shapiro, MD, FRCSC[2] and Michael H. Dahan, M.D.[3], [1]Ottawa, ON, Canada, [2]Mount Sinai Hospital, Toronto, ON, Canada, [3]Division of Reproductive Endocrinology and Infertility, McGill University Health Centre, Montreal, Canada

OBJECTIVE: The objective of this study is to assess the impact of race/ ethnicity on pregnancy, delivery and neonatal outcomes amongst pregnant patients with infertility.

MATERIALS AND METHODS: A retrospective cohort study utilizing the Healthcare Cost and Utilization Project Nationwide Inpatient Sample (HCUP-NIS) from 2016 to 2021 was conducted. Race/ethnicity amongst pregnant patients with infertility was studied. The exposure was race/ethnicity (White, Black, Hispanic, and Asian/Pacific

Islander). The primary outcomes were three composite measures of 1) pregnancy outcomes, 2) delivery outcomes, and 3) neonatal outcomes. Multivariate logistic regression reported composite measures and individual outcomes with national estimates, while controlling for confounders. All race/ ethnicity groups were compared to White patients.
RESULTS: Of 2967 patients, there were 2075 (66.57%) White, 225 (7.22%) Black, 384 (12.32%) Hispanic and 283 (9.08%) Asian/ Pacific Islander patients included. After applying weight estimates, this cohort represented 10,375 White, 1125 Black, 1920 Hispanic and 1415 Asian/ Pacific Islander patients nationally. Pregnancy complications were higher in Hispanic patients (adjusted-OR: 1.39; 95%-CI 1.06-1.69; p=0.016) and Asian/ Pacific Islander patients (adjusted-OR: 1.46; 95%-CI 1.11-1.92; p=0.006) compared to White patients. Specifically, Hispanic and Asian/ Pacific Islander patients had higher odds of gestational diabetes (Hispanic–adjusted-OR: 1.86; 95%-CI 1.33-2.58; p=<0.001; Asian/Pacific Islander–adjusted-OR: 2.94; 95%-CI 2.05-4.22; p=<0.001). Secondly, Hispanic patients had higher odds of delivery complications (adjusted-OR: 1.33; 95%-CI 1.01-1.75; p=0.042). Amongst all delivery complications, Hispanic and Asian/ Pacific Islander patients had higher odds of chorioamnionitis (Hispanic – adjusted-OR: 2.41; 95%-CI 1.33-4.35; p=0.004; Asian/Pacific Islander – adjusted-OR: 3.05; 95%-CI 1.73-5.36; p=<0.001). Black patients had higher odds of preterm birth (adjusted-OR: 1.92; 95%-CI 1.15-3.22; p=0.013). Lastly, Asian/ Pacific Islander patients also had higher odds of neonatal complications (adjusted-OR: 1.74; 95%-CI 1.10-2.77; p=0.018). Specifically, Asian/ Pacific Islander patients had higher odds of small for gestational age fetus (adjusted-OR: 2.44; 95%-CI 1.47-4.03; p=<0.001) and birth trauma (adjusted-OR: 6.103; 95%-CI 1.05-35.33; p=0.044).
CONCLUSIONS: Black, Hispanic and Asian/Pacific Islander patients had higher odds of perinatal complications compared to White patients, however specific complications varied by group.
IMPACT STATEMENT: This study highlights the presence of racial/ ethnic inequities in outcomes amongst pregnant patients with infertility. Understanding differences in odds of complications amongst Black, Hispanic and Asian/ Pacific Islander pregnant patients with infertility can improve equitable access to care and inform national policies. These findings support the need for tailored risk stratification, culturally and equity informed counselling, as well as targeted health system interventions to address underlying drivers of inequity.

O-59 2:00 PM Monday, October 26, 2026

UNMET NEED FOR MEDICAL HELP TO GET PREGNANT AMONG U.S. WOMEN WITH REPRODUCTIVE DESIRE AND FERTILITY BARRIERS: A 2022–2023 NATIONAL SURVEY OF FAMILY GROWTH CROSS-SECTIONAL ANALYSIS. Audrey Yao, MPH, Hannah Silverstein, PhD and Larissa Jennings Mayo-Wilson, PhD, MHS, University of North Carolina at Chapel Hill, Chapel Hill, NC

OBJECTIVE: This study estimated the prevalence of unmet need for medical help to get pregnant among U.S. women who wanted a future child and had a conception-related fertility barrier. We examined sociodemographic correlates of never having received medical help to get pregnant. Distinguishing nonuse due to lack of need from nonuse among women with reproductive desire and conception-related fertility barriers clarifies unmet need for fertility care.
MATERIALS AND METHODS: We analyzed data from the 2022–2023 National Survey of Family Growth female respondent public-use file. Participants were eligible if they were aged 20–49 years, wanted a future child, were not currently pregnant and had a conception-related fertility barrier based on National Survey of Family Growth fecundity recodes, including noncontraceptive surgical sterility, nonsurgical sterility, subfecundity or a long interval without conception. Unmet need was defined as never having received medical help to get pregnant. Survey-weighted descriptive analyses estimated unmet need overall and across sociodemographic groups. Survey-weighted logistic regression models examined associations between unmet need and age, race and Hispanic origin, education, family income, insurance, parity, relationship status and metropolitan residence.
RESULTS: The analytic sample included 468 women. Mean age was 33.3 years; 53.9% were non-Hispanic White; 41.5% had a bachelor's degree or higher; 55.7% had private insurance; 56.2% were nulliparous; 47.0% were married; and 85.0% lived in a metropolitan area. Overall, 66.5% (95%CI: 60.7–72.3) had unmet need, meaning they had never received medical help to get pregnant. Among women aged 20–24 years who wanted a future child, were not pregnant and had a conception-related fertility barrier, 91.7% had never received medical help to get pregnant, compared to 47.0% among women aged 45–49 years. In adjusted models, older age was associated with lower odds of unmet need (aOR=0.96, 95%CI: 0.92–1.00). Compared to married women, cohabiting women (aOR=4.20, 95%CI: 1.82–9.71) and never-married women (aOR=8.55, 95%CI: 3.30–22.19) had higher odds of unmet need. Race and Hispanic origin, education, family income, insurance, parity and metropolitan residence were not statistically significantly associated with unmet need after adjustment.
CONCLUSIONS: Two thirds of U.S. women who wanted a future child and had a conception-related fertility barrier had never received medical help to get pregnant. Age and relationship status were statistically significant correlates of unmet need.
IMPACT STATEMENT: This study highlights a potential need for strategies that may help women who want fertility care access timely information, referral and clinical evaluation. More research is needed to assess whether outreach, counseling and referral interventions could reduce unmet need for medical help to get pregnant among women who want a future child and face conception-related barriers.

O-60 2:10 PM Monday, October 26, 2026

INFLUENCE OF DEMOGRAPHIC AND GEOGRAPHIC FACTORS ON SUCCESS OF FERTILITY TREATMENT CROWDFUNDING. Winter O Rothwell, NA[1], James M Hotaling, M.D., M.S.[2] and Joemy M Ramsay, PhD, MS[3], [1]University of Utah, [2]University of Utah, Salt Lake City, UT, [3]Division of Urology, Department of Surgery, University of Utah School of Medicine, Salt Lake City, UT

OBJECTIVE: Describe associations between demographic and geographic factors and success of crowdfunding for fertility treatment (FT).
MATERIALS AND METHODS: We identified all medical funding campaigns on GoFundMe from 2011-2022 (N=1,060,146). A list of terms related to fertility and FT was used to tag all potential fertility-related campaigns (N=4,790). Due to common use of these terms in background for non-fertility campaigns, all tagged campaigns were manually reviewed and classified as fertility (N=2,508) or non-fertility (N=2,282). Reviewers also categorized demographic characteristics including relationship status (single, married, other), whether the individual(s) identified as LGBTQ+, and whether the campaign was for fertility preservation or FT. Area-level characteristics including insurance mandates and rurality were linked by city, state. Generalized linear models with either binomial or gamma distribution and log link were used to estimate associations between demographic and geographic factors with odds of reaching funding goal, total amount raised, and number of donors. All models controlled for year of creation, rurality, and whether the campaign was created by or for the recipients.
RESULTS: A total of 1,474 FT campaigns were included in the analysis, with a majority created by the recipients (68%) and in recent years (median: 2021). Only 9% of campaigns reached their goal with a mean of $5,020 raised for a mean goal of $18,284. Donor engagement was moderate, with an average of 41 donors per campaign (median 26.5), contributing $129 each. Demographically, FT campaigns were primarily for married individuals (74.7%), with minimal representation of single individuals (1.5%) and LBGTQ+ individuals (2.5%). Geographically, campaigns were concentrated in metropolitan areas (89%) and in states lacking insurance mandates for FT (65.4%). Campaigns created on the recipient's behalf were 86% more likely to meet their funding goal (p=0.006), raised 53% more money (p<0.001), and had 56% more donors (p<0.001). Relative to campaigns for married couples, recipients with other relationships had 34% more donors (p=0.012), however, they received 15% less per donor (p=0.006) and single recipients received 30% less per donor (p<0.001). Compared to states with no FT insurance mandates, campaigns from states with comprehensive FT mandates were 27% more likely to meet their goal (p=0.002) while states with restrictive mandates (excluding coverage for single individuals or male fertility) raised 25% less money (p=0.007) and had 25% fewer donors (p=0.001).
CONCLUSIONS: These findings show that crowdfunding is generally ineffective for funding FT with most campaigns failing to meet their goals and relying on limited donors. The concentration of campaigns in urban areas and among heterosexual married couples suggests that structural healthcare gaps and social inequalities shape who turns to crowdfunding and who benefits from it.
IMPACT STATEMENT: These findings show that crowdfunding for FT is largely unsuccessful, even as individuals increasingly seek ways to offset costs, largely due to reliance on small social networks and structural inequities that shape the need for FT crowdfunding.

O-61 2:20 PM Monday, October 26, 2026

RACIAL AND ETHNIC TRENDS IN REPRODUCTIVE ENDOCRINOLOGY AND INFERTILITY FELLOWSHIP TRAINING BEFORE AND AFTER THE ASRM DIVERSITY, EQUITY, AND INCLUSION TASK FORCE. Aileen Portugal, MD[1], India Ames Claflin, MD[1], Dr. Irene Peregrin Alvarez, M.D.[2], Greysha Rivera-Cruz, M.D.[3], Rand El Sharaiha, MD[1], Mitra Sharifi, M.D.[1], Megan E Gornet, M.D.[1] and Patricia T Jimenez, B.A., M.D.[1], [1]Washington University in St. Louis, St. Louis, MO, [2]Baylor College of Medicine, Houston, TX, [3]Sunnyvale, CA

OBJECTIVE: A diverse physician workforce is essential to addressing persistent disparities in reproductive health access and outcomes. Physicians underrepresented in medicine remain disproportionately scarce in reproductive endocrinology and infertility (REI), and the longitudinal impact of subspecialty-specific diversity initiatives remains poorly defined. In response to these disparities, the American Society for Reproductive Medicine (ASRM) established a Diversity, Equity, and Inclusion (DEI) Task Force in 2020, outlining recommendations to expand recruitment, strengthen pipeline development, and promote equity in reproductive care. We therefore sought to evaluate trends in racial and ethnic representation in REI compared with obstetrics and gynecology (OB/GYN) overall before and after the ASRM DEI Task Force.
MATERIALS AND METHODS: We performed a retrospective analysis of publicly available Accreditation Council for Graduate Medical Education data from 2016–2017 through 2024–2025. Using the 2020 ASRM DEI Task Force as a reference point, pre-intervention (2016–2020) and post-intervention (2021–2025) periods were compared; 2020–2021 was excluded as a transition year. White, Asian, Hispanic/Latino, and Black/African American representation were analyzed as proportions of total fellows. Individuals categorized as unknown, other, or multiple race/ethnicity were excluded from both numerators and denominators. Differences were assessed using Pearson's chi-square test; p<0.05 was considered statistically significant.
RESULTS:

Group	REI Pre (2016-2020)	REI Post (2021-2025)	REI Δ	*p*-value	OB/GYN Pre (2016-2020)	OB/GYN Post (2021-2025)	OB/GYN Δ	*p*-value
White	71.6%	62.3%	**-9.3%**	**<0.001**	67.6%	61.1%	**-6.5%**	**<0.001**
Asian	15.3%	22.4%	**+7.1%**	**0.002**	13.8%	16.2%	**+2.4%**	**<0.001**

Hispanic/Latino	3.7%	7.4%	**+3.6%**	**0.008**	8.5%	12.0%	**+3.5%**	**<0.001**
Black/AA	9.4%	8.0%	-1.4%	0.392	9.7%	10.6%	**+0.9%**	**0.003**

CONCLUSIONS: The racial and ethnic composition of REI fellowships has shifted markedly in recent years. White representation declined significantly in both REI and OB/GYN, consistent with broader diversification of the graduate medical education pipeline. Proportional gains in REI were concentrated primarily among Asian and Hispanic/Latino trainees. In contrast, Black/African American representation declined in REI despite increasing significantly in OB/GYN overall, highlighting a critical subspecialty-specific bottleneck.
IMPACT STATEMENT: Disaggregated racial and ethnic trends demonstrate that diversity gains in REI are not uniformly distributed. While broader OB/GYN pipeline trends may partially explain Hispanic/Latino and Asian gains in REI, the divergent decline in Black/African American representation suggests a subspecialty-specific barrier warranting targeted recruitment interventions.

O-62 2:30 PM Monday, October 26, 2026

SOCIAL DETERMINANTS OF MALE FERTILITY: THE IMPACT OF SOCIOECONOMIC DEPRIVATION ON SEMEN QUALITY IN A NATIONWIDE COHORT. Mr. Juan P Varela, B.S.[1], Pablo A Suarez, BS[2], Rafael Aldaya Bourricaudy, B.S[3], Siya Bhutani, B.S[3], Daniel Nolte, MS[4], Joseph P Alukal, MD, MBA[5], James F Smith, M.D., M.S.[6] and Kevin J Campbell, M.D., M.S.[7], [1]University of Florida, Weston, FL, [2]Yale University, New Haven, CT, [3]University of Florida, Gainesville, FL, [4]Fellow Health, Inc, San Leandro, CA, [5]Columbia University Fertility Center, NYC, NY, [6]UCSF, San Francisco, CA, [7]University of Florida College of Medicine, Gainesville, FL

OBJECTIVE:
Socioeconomic disadvantage has been associated with disparities in nutrition, environment, and access to reproductive care, yet its relationship to semen quality has not been well quantified at a national level. We sought to evaluate the association between neighborhood socioeconomic deprivation, measured by the Area Deprivation Index (ADI), and semen quality parameters across adult men in the United States.
MATERIALS AND METHODS:
We conducted a population-based epidemiological study of adult men who ordered a mail-in semen analysis through Fellow Health between September 2020 and October 2024. Census tract code-level data enabled linkage to the ADI, a census-based metric of socioeconomic deprivation, and categorized by deciles (Q1=least deprived, Q10=most deprived). Demographic covariates included age, region, reason for ordering, and urbanization. Mean sperm concentration (million cells/mL), and total motile count (TMC, millions) were compared across ADI deciles using ANOVA tests.
RESULTS:
The total cohort included 29,071 adult men, with a mean age of 34.7 years. Men in the least prosperous decile (Q10) were younger, more likely to reside in the South or rural areas and predominately ordered tests after trying to conceive for >1 year. Men in the most prosperous decile (Q1) were older, resided in the West or urban areas, and primarily ordered tests because they were planning to conceive in ≥1 year, ($p<0.001$). Mean TMC across deciles (Q1-Q10) declined significantly. Increasing (decreasing prosperity) ADI was significantly associated with lower TMC ($p<0.001$). Sperm concentration demonstrated a similar pattern, decreasing significantly from Q1 to Q10 ($p<0.001$).
CONCLUSIONS:
Across a nationwide cohort, increasing socioeconomic deprivation was associated with significantly lower sperm concentration and TMC. This study supports a strong association between neighborhood disadvantage and male reproductive potential, emphasizing the role of social determinants in male fertility and the value of mail-in testing as a tool for population-level surveillance.
IMPACT STATEMENT:
In a nationwide cohort, neighborhood socioeconomic deprivation was significantly associated with poorer semen quality, positioning male fertility as a measurable indicator of broader social and reproductive inequities.
SUPPORT: Dr. Smith and Mr. Nolte are affiliated with Fellow Health; all authors have no financial disclosures to report.

ORAL ABSTRACT SESSION: TECHNOLOGY & INNOVATION (1 OF 2)

O-63 1:30 PM Monday, October 26, 2026

CAN ARTIFICIAL INTELLIGENCE PREDICT HUMAN REVIEWER DECISIONS IN SCIENTIFIC ABSTRACT SELECTION? A COMPARATIVE ANALYSIS OF TWO AI MODELS AGAINST HUMAN JUDGEMENT. Isabela Pasotti, M.D.[1], Claudia G Petersen, Ph.D.[2], Laura D Vagnini, M.Sc.[3], Fabiana C Massaro, B.Sc.[1], Bruna Petersen, B.Sc.[1], Bianca C Matuella, M.D.[1], Antonio Helio Oliani, M.D., Ph.D.[4], Joao Bosco Meziara, M.D.[1], Joao B A Oliveira, M.D., M.SC., PH.D.[5] and Jose G Franco Jr, M.D., Ph.D.[6], [1]Center for Human Reproduction Prof. Franco Jr., Ribeirao Preto, Brazil, [2]Center for Human Reproduction Prof. Franco Jr/ Paulista Center for Diagnosis, Research and Training, Ribeirao Preto, Brazil, [3]Paulista Center for Diagnosis, Research and Training / Sao Jose do Rio Preto School of Medicine FAMERP, Ribeirao Preto, Brazil, [4]Sao Jose do Rio Preto School of Medicine FAMERP, Sao Jose do Rio Preto, Brazil, [5]Center for Human Reproduction Prof. Franco Jr, Ribeirao Preto, Brazil, [6]Center for Human Reproduction Prof. Franco Jr/ Paulista Center for Diagnosis, Research and Training / Sao Jose do Rio Preto School of Medicine FAMERP, Ribeirao Preto, Brazil

OBJECTIVE: To evaluate the ability of two artificial intelligence (AI) models to reproduce human reviewer decisions in the selection of abstracts submitted to a major reproductive medicine congress.
MATERIALS AND METHODS: A total of 50 abstracts submitted to a scientific congress were independently evaluated by two AI models (AI-1 and AI-2) and compared with final human reviewer decisions, considered as the operational gold standard. Each abstract was classified into one of three categories: oral presentation (O), poster (P), or rejection (R). Performance metrics included overall accuracy, Cohen's kappa coefficient (agreement beyond chance), Matthews correlation coefficient (MCC). Sensitivity and specificity were calculated for oral and poster classifications. A paired comparison between AI models was performed using McNemar's test.
RESULTS: Human reviewers classified 25 abstracts as oral and 25 as poster, with no rejections. AI-1 demonstrated higher overall performance compared to AI-2. Accuracy was 56.0% (95% CI: 42.3–68.8) for AI-1 and 50.0% (95% CI: 36.6–63.4) for AI-2. Agreement with human decisions was low for both models (Cohen's kappa: 0.12 for AI-1 and 0.057 for AI-3). MCC values were similarly low (0.127 vs 0.059). For oral presentations, both models showed limited sensitivity (40.0%) but moderate specificity (72.0%). For poster classification, AI-1 demonstrated higher sensitivity (72.0% vs 60.0%), while specificity remained low (40.0%) for both models. AI-2 incorrectly classified 6% of abstracts as rejected, despite no human rejections, indicating potential overclassification bias. In contrast, AI-1 did not assign any abstract to the rejection category. Paired comparison showed no statistically significant difference between the models (McNemar $p = 0.629$), although AI-1 consistently outperformed AI-2 across most metrics.
CONCLUSIONS: Both AI models demonstrated limited ability to replicate human reviewer decisions in abstract selection. Although AI-1 showed numerically better performance, overall agreement remained low, particularly for identifying oral presentations. These findings suggest that, in their current form, AI systems cannot reliably replace human judgement in scientific abstract selection but may have a role as supportive tools
IMPACT STATEMENT: Artificial intelligence shows promise as an adjunct tool in abstract screening; however, its current performance highlights important limitations and reinforces the need for cautious integration alongside human expertise in scientific peer review.
SUPPORT: none

O-64 1:40 PM Monday, October 26, 2026

TROPHECTODERM STRUCTURAL PARAMETERS DERIVED FROM TIME-LAPSE-BASED 3D BLASTOCYST RECONSTRUCTION: ASSOCIATIONS WITH CLINICAL PREGNANCY AND LIVE BIRTH OUTCOMES. Bo Huang, PHD[1], Keyi Si, Ph.D[1] and Yifei Liu, PH.D.[2], [1]Reproductive Medicine Center, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China, [2]Penn State College of Medicine / Penn State Health, Hershey, PA

OBJECTIVE: The objective of this study was to investigate whether morphological parameters of the trophectoderm (TE), derived from three-dimensional (3D) blastocyst reconstruction using time-lapse (TL) imaging, are associated with clinical pregnancy and live birth outcomes following frozen embryo transfer (FET), thereby providing quantitative evidence to optimize embryo assessment and selection in assisted reproductive technology (ART).
MATERIALS AND METHODS: This study included 2,915 blastocysts from 2,915 FET cycles with a total of 32,065 TL images analyzed. 3D blastocyst reconstruction was performed to segment the TE and distinguish the polar TE (overlying the inner cell mass) from the mural TE (lining the blastocoel cavity). A set of TE morphological parameters was extracted, including surface area and cell density of both polar and mural TE, as well as cell-level features (cell surface area, perimeter, and roundness). Restricted cubic spline models fitted using generalized estimating equations, adjusted for maternal age, endometrial thickness, and embryo transfer time, were used to evaluate the associations between TE parameters and clinical outcomes.
RESULTS: The median (interquartile range [IQR]) total TE cell number was 98 (94–101), and the median blastocyst surface area was 74,723.3 (65,494.4–84,936.5) μm². The median polar-to-mural TE area ratio was 0.1497 (0.1054–0.2061), and the median polar-to-mural TE cell density ratio was 0.8460 (0.6843–1.0350). Polar TE cells were significantly larger and more circular than mural TE cells, with lower variability in cell size and morphology ($P < 0.0001$). Blastocysts associated with clinical pregnancy and live birth had a higher total TE cell number (pregnancy OR = 1.395, 95% CI 1.138–1.708), a smaller median cell surface area (pregnancy OR = 0.713, 95% CI 0.585–0.871), and a lower proportion of polar TE area (pregnancy OR = 0.784, 95% CI 0.640–0.960). The polar-to-mural TE cell density ratio showed a negative association with clinical pregnancy ($P = 0.033$) but no significant association in quartile-based analyses.
CONCLUSIONS: This study successfully delineated the polar TE region and quantitatively characterized TE morphology in both polar and mural compartments using 3D blastocyst reconstruction. Several TE morphological parameters (total TE cell number, median cell surface area, and polar TE area proportion) are significantly associated with clinical pregnancy and live birth outcomes, establishing a quantitative framework that can inform embryo selection strategies.
IMPACT STATEMENT: This study fills a critical gap in the characterization of TE spatial distribution and its clinical relevance, providing novel quantitative TE parameters that can improve the accuracy of embryo assessment in FET cycles. The findings advance reproductive medicine by offering a evidence-based framework for embryo selection, which may enhance ART success rates and lay the foundation for future mechanistic and translational research on TE function in blastocyst implantation and pregnancy outcomes.

O-65 1:50 PM Monday, October 26, 2026

THE EUPLOID CEILING: 2D IMAGE-BASED AI DEMONSTRATES LIMITED PREDICTIVE VALUE FOR LIVE BIRTH AMONG EUPLOID EMBRYOS.
Claudia G Durbin, M.S.[1], Jillian Pecoriello, MD[2], Fang Wang, PH.D.[3], James A Grifo, MD, PHD[2], Caroline McCaffrey, PHD, HCLD[2], David Fenyo, Ph.D.[4] and Jennifer K Blakemore, MD, MSCI[2], [1]NYU Grossman School of Medicine, New York, NY, [2]NYU Langone Fertility Center, New York, NY, [3]NYU Langone Prelude Fertility Center, New York, NY, [4]New York University, New York, NY

OBJECTIVE: Despite meeting both PGT-A and morphologic screening, only ~56% of euploid blastocyst transfers result in live birth, and determinants of live birth among pre-screened embryos remain incompletely understood.[1] We evaluated whether 2D imaging-derived features add incremental predictive value beyond clinical and morphologic features by comparing a clinical-only model, 2D image-only model, and hybrid model for live birth (LB) prediction among single euploid blastocysts selected for transfer.
MATERIALS AND METHODS: This retrospective cohort study included all single euploid blastocyst transfers with post-warming 2D microscopy images (day of transfer) and known LB outcomes at a large academic center (1/2015-12/2025). Patient-level splits were used to prevent data leakage. Three approaches were compared: (1) clinical-only logistic regression with embryo morphology and cycle-level variables (age at retrieval, ICM grade, trophectoderm grade, expansion, survival, transfer difficulty, composite morphology score); (2) image-only ResNet18 convolutional neural network (CNN); and (3) hybrid model combining principal component analysis (PCA)-reduced CNN features with the same clinical variables. Performance was evaluated at the embryo level using AUROC with DeLong 95% confidence intervals (CI), AUPRC, and Brier score. Fetal heartbeat (FHB) was assessed as a secondary endpoint. A sensitivity analysis restricted to first within-thaw-cycle transfers re-evaluated AUROC.
RESULTS: A total of 8076 single euploid blastocyst transfers from 4853 patients were analyzed (training n=5643; validation n=1233; test n=1200). Median oocyte age was 37 years [34-40]; 70.0% (n=5652) were day 5 blastocysts; 71.4% (n=5767) were first within-thaw-cycle transfers. LB prevalence was 59.1% (n=4770) and FHB 64.1% (n=5174). For LB prediction, the clinical-only model achieved the highest discrimination (AUROC 0.60, 95% CI 0.56-0.63; AUPRC 0.65, Brier 0.24), followed by hybrid (AUROC 0.57, 95% CI 0.54-0.61; AUPRC 0.64, Brier 0.24) and image-only CNN (AUROC 0.56, 95% CI 0.52-0.59; AUPRC 0.63, Brier 0.25)., Discrimination was modest across models (AUROC ≤0.60), with overlapping 95% CIs, indicating no improvement with addition of image-derived features. For FHB, the clinical-only and hybrid models performed similarly (AUROC 0.60 for both), with image-only model inferior (AUROC 0.57). Sensitivity analysis restricted to first within-thaw-cycle transfers (validation n=873) yielded AUROC differences between models ≤0.04.
CONCLUSIONS: Among euploid blastocysts selected for transfer, AI analysis of 2D images did not improve LB prediction beyond clinical and morphologic features; hybrid models did not outperform clinical variables alone. Convergent, modest across models supports a "euploid ceiling" whereby selection has removed the dominant predictive signal.
IMPACT STATEMENT: 2D image-based AI provides limited incremental value among pre-screened euploid blastocysts; improving live birth prediction may require complementary modalities beyond static imaging.
SUPPORT: None.
REFERENCES:
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O-66 2:00 PM Monday, October 26, 2026

SPATIAL MULTI-OMIC SINGLE CELL PROFILING REVEALS COMPARTMENT-SPECIFIC MOLECULAR ALTERATIONS AND DESTABILIZATION OF THE AGING MURINE OVARIAN FOLLICLE.
Jason Wilson, PhD[1], Cameron M Hebert, BSc[1], Shawn M Briley, PhD[1], William B Schoolcraft, M.D.[2] and Mandy Katz-Jaffe, PhD[2], [1]CCRM Research, Lone Tree, CO, [2]CCRM Fertility, Lone Tree, CO

OBJECTIVE: Ovarian aging is the primary determinant of the female reproductive lifespan; however, the cell-type-specific molecular mechanisms driving follicular dysfunction remain poorly understood, limiting the development of targeted therapies. Thus, this innovative study aimed to identify ovarian aging mechanisms using spatially co-registered single-cell transcriptomics and phospho-protein profiling technology.
MATERIALS AND METHODS: Xenium single-cell transcriptomics, an imaging-based in situ spatial profiling technology (n=688,375 ovarian cells; n=429 genes; 10X Genomics) and Akoya CODEX phospho-protein profiling (n=6 proteins; 10X Genomics) were co-registered in ovarian tissue from aged (15 months) and young (3-4 months) CD-1 outbred females (n=5 per group). Cell boundaries were used to extract per-cell CODEX protein intensities. Pseudobulk linear models with AF covariate correction were applied per cell type; transcriptomic significance was defined as P-adjusted<0.05 and |log2FC|>0.5.
RESULTS: Spatial single-cell transcriptomics revealed that aged follicles exhibit compartment-specific molecular alterations not detectable with bulk RNA sequencing. At the outer follicular boundary, thecal layers displayed distinct remodeling, with theca externa downregulating vascular support genes (*Thbs4* -2.56, *Angpt2* -1.43; log2FC; padj<0.05) alongside a trend towards pAKT1 elevation, while the theca interna adopted a fibrotic-like signature (*Des* 1.05, *Mustn1* 1.18, *S100a4* 1.02, *Mmp9* 0.76; log2FC; padj<0.05). Within the inner follicular compartments, reduced expression of *Hsd11b2* (log2FC = -1.05; padj<0.05) and *Nnat* (log2FC = -1.09; padj<0.05) suggests that glucocorticoid excess and metabolic insufficiency are conserved features of follicular aging. The mural granulosa cells showed decreased *Fshr* (log2FC=-0.95; padj<0.05) expression, indicating impaired signaling through pathways essential for follicular growth. In contrast, *Lhcgr* (log2FC=1.95; padj<0.05) was simultaneously upregulated in cumulus cells, where it is typically suppressed by oocyte-derived paracrine signaling. Aged cumulus cells were also upregulated for steroidogenic markers (*Star* 0.80, *Cyp11a1* 1.40; log2FC; padj<0.05), alongside a downregulation in oocyte support genes (*Cd36* -0.40, *Hpgd* -0.50; log2FC; padj<0.05). This pattern is consistent with a shift toward a more mural granulosa-like phenotype and dysfunction of the cumulus-oocyte complex. Complementary phospho-protein profiling further identified active EGFR pathway signaling in the aged inner follicular niche.
CONCLUSIONS: This innovative study provides the first spatially resolved, single-cell transcriptomic and phospho-protein map revealing the biological impact within each follicular compartment of the aging murine ovary. These data suggest follicular aging is driven not just by oocyte-intrinsic damage but also by a dysfunction of the surrounding somatic niche, which together disrupt normal LH signaling and compromise oocyte competence.
IMPACT STATEMENT: Follicular aging leads to region-specific molecular alterations, destabilizing the microenvironment required to maintain oocyte competence.
SUPPORT: None.
REFERENCES:
None.

O-67 2:10 PM Monday, October 26, 2026

DEVELOPMENTAL COMPETENCE OF MATURE AND IMMATURE OOCYTES RECOVERED FROM MANUALLY PRE-SCREENED FOLLICULAR FLUID USING A MICROFLUIDIC AUTOMATION SYSTEM.
Baris Mutlu, PhD[1], Neha Gupta, PhD[2], Sabrina Civale, MS[3], Victoria Christianson[4], Jacob Percival[4], Stephanie Low, MS[4], Tom Barber, PhD[4], Ravi Kapur, PhD[4], Denny Sakkas, PhD[5] and Emre Ozkumur, PhD[4], [1]AutoIVF, Natick, MA, [2]Shrewsbury, MA, [3]Watertown, MA, [4]AutoIVF Inc., Natick, MA, [5]Auto IVF, Natick, MA

OBJECTIVE: It was recently shown that a microfluidic technology can automate the oocyte recovery process from follicular fluid (FF), and identify undetected human oocytes from clinically pre-screened FF samples (1). The objective of this study is to further investigate the developmental competence of the oocytes that are recovered by a fully automated and environmentally controlled implementation of this technology.
MATERIALS AND METHODS: 174 pre-screened deidentified FF samples were collected, under an IRB determination, and processed with the automated system up to 6h after the egg retrieval and manual screening by embryologists. Functional competence of recovered human oocytes was assessed using a subset of available eggs. Metaphase-II (MII) stage oocytes were artificially activated (AOA) by calcium ionophore (ionomycin) before standard culture in Global Total media. Immature oocytes (Metaphase-I; MI and Germinal Vesicle; GV) were initially matured for 24h-48h in Global Total media and then subsequently activated. All oocytes were then incubated in a time lapse incubator. Oocyte functionality was also assessed using a bovine model in which bovine cumulus-oocyte complexes (COCs) were added to human FF, denuded, and recovered using the automated system. Bovine oocytes were then inseminated with bull sperm and evaluated for fertilization and embryo development (1) in commercial bovine media.
RESULTS: The automated system recovered one or more extra human oocytes in (85/174) 49% of the pre-screened FF samples. Of the 177 total extra oocytes recovered, 42.5% were MII, 8.4% MI, 46.1% GV stage and 3.0% categorized as abnormal. Overall, 69% of the recovered immature oocytes matured to MII after IVM. Following AOA, 58% of in-vitro matured oocytes (from GV/MI to MII) activated compared to 75% of MII oocytes recovered directly from pre-screened FF, supporting the functional competence of both populations.
In the bovine model, fertilization and blastocyst development were comparable between oocytes processed through automated and conventional manual processing. Blastocysts derived from system-denuded oocytes showed a mean ± SD blastomere count of 134.5 ± 7 (N=77) which was comparable to undenuded controls (135.7 ± 5.3; N=56; p=0.6) and significantly higher than manually denuded COCs (125 ± 13.1; N=37; p=0.0005).
CONCLUSIONS: These findings further support previous data that microfluidic automation is able to find usable oocytes in pre-screened FF. The current results also validate that the automated process preserves oocyte quality despite prolonged FF exposure, delayed transport, and suboptimal maturation conditions. With optimized and immediate FF processing, and dedicated maturation conditions, this approach may further increase usable oocyte and embryo yield.
IMPACT STATEMENT: This study supports previous human trial outcomes, of blastocyst development and a live birth (1), that additional oocytes recovered via microfluidic automation are functionally competent. Generation of additional transferable embryos from immature oocytes may also be possible for patients going through IVF treatment.
SUPPORT: This work was partially supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) of the National Institutes of Health under award number R44HD105529 (E.O.).
REFERENCES:
(1) Mutlu, B.R. *et al.* Microfluidic automation improves oocyte recovery from follicular fluid of patients undergoing in vitro fertilization. *Nat Med* **32**, 906–914 (2026). https://doi.org/10.1038/s41591-026-04207-x

O-68 2:20 PM Monday, October 26, 2026

ELEVATED OCCURRENCE AND ASSOCIATED LOSS OF HETEROZYGOSITY OBSERVED IN PREIMPLANTATION EMBRYOS SCREENED FOR SELECT MICRODELETION AND MICRODUPLICATION SYNDROMES.
Christopher Weier, PH.D.[1], Alexander Griffith, B.S.[1], Kristine McWilliams, MD, PhD, HCLD (ABB)[2], Zhilin Liu, Ph.D.[1], John Burke, Ph.D.[3], Kate Brown, Ph.D[1] and Tony Gordon, Ph.D.[4], [1]CooperSurgical, Houston, TX,

[2]CooperSurgical, Trumbull, MI, [3]Echelondx, Marathon, FL, [4]CooperSurgical, London, United Kingdom

OBJECTIVE: To determine the prevalence of select microdeletion and microduplication syndromes (MMS) in preimplantation embryos and identify potential etiological commonalities or predisposition.
MATERIALS AND METHODS: A PGT-A platform integrating detection of ten clinically significant MMS using primary template–directed amplification, targeted enrichment, next-generation sequencing, and combined copy number and allelic balance analysis was developed and validated (>99% sensitivity and specificity). After validation in reference cell lines, the assay was applied to 125,255 trophectoderm biopsies from >28,000 IVF cases across >500 clinics. Genome-wide karyotypes were generated prior to MMS analysis. Segmental events ≥2 Mb overlapping MMS loci, including mosaic events >30%, were assessed. Selected cases underwent confirmation by whole-genome sequencing, MLPA, or parental haplotyping
RESULTS:
MMS analysis succeeded in 95.9% of biopsies. At least one MMS was detected in 1 in 436 embryos (0.23%) and 1 in 782 euploid embryos, exceeding postnatal prevalence estimates (~1 in 1,500; $p<1\times10^{-7}$). MMS occurred across all PGT-A categories and frequently co-occurred with additional abnormalities, including whole-chromosome aneuploidy (1/436), mosaic aneuploidy (1/281), and other segmental events (1/211). Among embryos considered for transfer (euploid or mosaic), MMS was present in 1/640. Orthogonal confirmation with whole-genome sequencing and MLPA showed high concordance.
MMS prevalence showed no association with maternal age in contrast with whole chromosome aneuploidy but similar to other segmental aneuploidies. Integrated allelic balance and copy-number analysis distinguished true MMS from frequent copy-neutral loss of heterozygosity (CN-LoH) which was observed in ~3.5% of samples and enriched among MMS-positive embryos (*p=0.003*) and affected sibling embryos (*p=0.001*). Trio analysis identified frequent inheritance of very similar parental haplotypes and confirmed the overwhelmingly *de novo* origin of MMS.
CONCLUSIONS: Clinically significant MMS are present at measurable, non-trivial, and elevated rates in preimplantation embryos, including those classified as euploid by conventional PGT-A. This suggests a possible role in embryonic lethality and highlights the importance of accurate detection of segmental aneuploidy. Integration of copy number and allelic balance analysis identified CN-LOH as common feature in the embryonic genome and its association with MMS may represent a genomic predisposition to instability and structural variation. Incorporating MMS detection into PGT-A could aid in embryo prioritization and counseling.
IMPACT STATEMENT: This large-scale study suggests that MMS represent an underappreciated source of genomic risk in preimplantation embryos, particularly those classified as euploid. High-resolution detection integrating copy number and allelic balance enables accurate identification, refines embryo selection, and expands the clinical utility of PGT-A.
SUPPORT: This study was conducted within research and development at CooperSurgical.

O-69 2:30 PM Monday, October 26, 2026

MULTI-CENTER VALIDATION OF AN INTEGRATED AI PLATFORM ACROSS THREE SEQUENTIAL IVF DECISION POINTS: FOLLICLE MONITORING, ENDOMETRIAL ASSESSMENT, AND EMBRYO SELECTION.
Piotr Wygocki, PhD[1], Andrzej Zapala, MSc[2] and Michal Siennicki, MSc[2], [1]MIM Fertility, Warsaw, Poland, Institute of Informatics, University of Warsaw, Warsaw, Poland, [2]MIM Fertility, Warsaw, Poland

OBJECTIVE: To evaluate an integrated artificial intelligence (AI) platform supporting three sequential in vitro fertilization (IVF) decision points: follicle monitoring, endometrial assessment, and blastocyst selection for transfer.
MATERIALS AND METHODS: This retrospective, multicenter validation pooled prospective and retrospective data from 11 fertility centers in 7 countries. Three AI modules were independently validated. Module A used neural-network segmentation of 2D/3D transvaginal ultrasound cine loops to automate follicle detection, counting, and measurement, and was evaluated using 719 prospective ultrasound examinations and 1,903 archived cine loops from 5 centers. Module B used U-Net segmentation to compute endometrial thickness and 3D volume; it was trained on 4,324 annotated sagittal scans and validated on 156 multicenter ultrasound videos. Module C analyzed static blastocyst images using convolutional neural networks trained on 15.2 million frames from 86,000 embryos to generate a 0-10 implantation probability score; it was tested on 1,681 embryo pairs from 6 centers with known pregnancy outcomes and prospectively applied in 80 consecutive transfers. Primary endpoints were concordance with expert clinicians and published benchmarks.
RESULTS: Module A achieved F1=93.3% and AUC-PR=0.951 for follicles >=10 mm, with mean absolute measurement error of 0.74 mm versus 0.83 mm inter-expert variability (ICC(2,1)=0.978). Expert editing was required in 3.27% of AI-generated measurements. Module B showed >89% agreement with expert sonographers at the clinically relevant 7 mm endometrial thickness threshold, and automated 3D volumetry was equivalent to manual VOCAL in under 2 seconds. Module C achieved 70.1% pairwise accuracy, outperforming 14 of 20 embryologists (mean 67.7%). In prospective use, AI-prioritized embryo selection yielded a 47.5% clinical pregnancy rate (38/80; mean age 35.3+/-4.4 years), comparable to conventional morphology (53.3%, 16/30; p=0.67) and above the ESHRE 2022 benchmark of 32.7%.
CONCLUSIONS: An integrated AI platform demonstrated expert-level or superior performance across follicle monitoring, endometrial assessment, and embryo selection in multicenter validation. The findings support comprehensive AI-assisted decision support spanning the IVF treatment cycle.
IMPACT STATEMENT: A single AI platform may standardize multiple IVF decision points, reduce inter-operator variability, and support more consistent care across diverse clinical settings.

ORAL ABSTRACT SESSION: SART CORS

O-70 3:45 PM Monday, October 26, 2026

ASSOCIATION OF GESTATIONAL CARRIER AGE WITH LIVE BIRTH IN DONOR EUPLOID BLASTOCYST TRANSFERS: A RETROSPECTIVE COHORT STUDY UTILIZING THE SOCIETY FOR ASSISTED REPRODUCTIVE TECHNOLOGY (SART) DATABASE.
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OBJECTIVE: Advanced maternal age has been shown to be associated with declining assisted reproduction technology (ART) outcomes independent of embryo ploidy (1). However, the impact of gestational carrier (GC) age remains unclear and is important given the proportion of GCs ≥35 years in ART practice (2). Our aim was to evaluate the association between GC age and live birth rates (LBR) in donor oocyte single euploid blastocyst transfer cycles (SEBT), and we hypothesized that increasing GC age would be associated with reduced reproductive outcomes independent of embryo ploidy.
MATERIALS AND METHODS: All recorded cycles of cryopreserved donor oocyte SEBT in the SART Database from 2014 to 2023 were reviewed. GC age was analyzed categorically (<30, 30-34, 35-39, 40-44, ≥45 years) and as a continuous variable in generalized estimating equation logistic regression models, with a quadratic term to account for nonlinear associations.The primary outcome was LBR. Secondary outcomes were clinical pregnancy rate (CPR), miscarriage, and neonatal outcomes.
RESULTS:
Table 1. Clinical outcomes by GC age (years)

	Total N=13212	**<30 N=4243**	**30–34 N=4629**	**35–39 N=3432**	**40–44 N=838**	**≥45 N=70**	**p-value**
LBR %	58.6	58.4	61.0	57.1	54.1	49.0	< 0.001
CPR %	69.0	69.5	70.3	67.3	66.0	69.0	0.013
Miscarriage %	13.4	14.2	11.9	13.6	15.5	27.1	0.002
Cesarean %	21.2	17.8	20.4	24.2	30.3	24.0	< 0.001
Birth Weight g	3372	3354	3386	3383	3329	3372	0.19

A total of 13,212 GC transfers were included (Table 1). The mean GC age was 32.1(SE 0.06). LBR was similar among GCs <35 years (58–61%) but declined with advancing age, reaching 49% in those ≥45. CPR differed significantly across groups, with higher rates in younger GCs. Miscarriage and cesarean rates increased with advancing GC age, with miscarriage rising to 27.1% in GCs ≥45. In logistic regression models, GC age showed a significant nonlinear association with LBR, with positive linear age term (OR 1.13, 95% CI 1.05–1.22; p=0.002) and negative quadratic age term (OR 0.998, 95% CI 0.997–0.999; p=0.001), indicating an inverted U-shape, with peak predicted live birth around 30.3 years. Model-estimated LBR declined from 59% at age 30 to 49% at age 45 (10% absolute reduction). Year of transfer and donor age were not significant contributors and excluded from the model.
CONCLUSIONS: While outcomes are comparable across younger age groups, GC age ≥40 years is associated with progressively lower LBR and increased miscarriage in donor euploid SEBT GC cycles, with a 10% absolute LBR reduction from age 30 to 45. These findings suggest that GC age may influence reproductive outcomes independent of embryo ploidy.
IMPACT STATEMENT: To our knowledge, this study represents the largest cohort to evaluate the underexplored role of GC age in ART outcomes. Findings may inform GC selection and counseling of intended parents, particularly given the decline at age ≥40.
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MALE PARTNER RACIAL AND ETHNIC DISPARITIES IN ASSISTED REPRODUCTIVE TECHNOLOGY CLINICAL OUTCOMES IN THE UNITED STATES, 2018-2023.
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OBJECTIVE: To investigate whether male partner (MP) race and ethnicity (R&E) is associated with clinical outcomes following embryo transfer among assisted reproductive technology (ART) cycles in the US.
MATERIALS AND METHODS: Using 2018-2023 SART CORS data, we identified 396,177 embryo transfer cycles from 296,536 patients who utilized partner sperm with R&E information. Multivariable log-binomial regression models with generalized estimating equations evaluated associations between MP R&E and pregnancy and live birth outcomes. We adjusted for female partner (FP) age and BMI, prior pregnancy and IVF cycle history, MP age, number of embryos transferred, and embryo transfer type (fresh or frozen). To isolate MP R&E impact, we evaluated joint classification of MP/FP R&E on live birth. Results are presented as adjusted risk ratios (aRRs) and 95% confidence intervals (CIs).
RESULTS: MP R&E was 67% non-Hispanic (NH) White, 16% NH-Asian, 9% Hispanic, and 8% NH-Black. Cycles excluded due to missing MP R&E (42% of initial sample) had similar live birth probability (46% vs. 47%). Compared to NH-White men, NH-Black men had lowest live birth probability (aRR=0.87, 95% CI 0.86-0.89), followed by Hispanic (0.95, 0.94-0.97) and NH-Asian (0.99, 0.98-0.995) men. NH-Black (1.21, 1.17-1.25), Hispanic (1.14, 1.10-1.18), and NH-Asian (1.08, 1.05-1.11) men had higher miscarriage risk compared to NH-White men. Most couples (84%) had concordant R&E. Compared to concordant NH-White couples, concordant Black couples had lowest live birth probability, followed by concordant Hispanic and Black male/non-Black female couples (Table 1).
CONCLUSIONS: Overall, NH-Black, Hispanic, and NH-Asian MP R&Es were associated with lower live birth probabilities following ART. The known association between FP R&E and IVF outcomes could explain some concordant couple R&E outcomes. However, in non-concordant couples, NH-Black MP R&E was associated with lower live birth rates. Thus, MP/couple-level factors may contribute to ART disparities.
IMPACT STATEMENT: Similar to the well-described R&E disparities in ART outcomes by FP R&E, MP R&E minority groups were modestly associated with worse clinical outcomes following embryo transfer. Awareness of these disparities should prompt investigation into healthcare inequities and social determinants of health affecting at-risk men.

Table 1. Joint associations between MP/FP R&E and live births in autologous oocyte embryo transfer cycles, 2018–2023.

R&E Partner Categories		Live Birth/Transfer (%)	aRR (95% CI)
Male	**Female**		
White	White	47.2	1.0 (REF)
White	Non-White	44.6	0.99 (0.97-0.999)
Black	Black	36.9	0.85 (0.83-0.86)
Black	Non-Black	41.9	0.95 (0.92-0.98)
Hispanic	Hispanic	41.4	0.92 (0.90-0.94)
Hispanic	NH	46.5	1.01 (0.99-1.03)
Asian	Asian	46.5	0.98 (0.97-0.99)
Asian	Non-Asian	46.8	1.03 (1.00-1.06)

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SEVERE MATERNAL MORBIDITY BY METHOD OF CONCEPTION AND PLURALITY AND CONSEQUENCES FOR INFANT HEALTH. Barbara Luke, ScD, MPH[1], Sarah C Fisher, PhD[2], Dayana Betancourt, MPH[3], Sarah Lederberg Stone, PhD, MPH[4], Nina E Forestieri, MPH[5], Valerie L Baker, M.D.[6], Katherine E Cameron, M.D.[7], Michael L. Eisenberg, M.D.[8], Melissa A Richard, PhD[9] and Philip J Lupo, PhD, MPH[10], [1]Michigan State University, East Lansing, MI, [2]New York State Department of Health, [3]Texas Department of State Health Services, Austin, TX, [4]Massachusetts Department of Public Health, Boston, MA, [5]N.C. Birth Defects Monitoring Program, Raleigh, NC, [6]10751 Falls Road, Lutherville, MD, [7]Johns Hopkins University School of Medicine, Baltimore, MD, [8]Stanford University School of Medicine, Stanford, CA, [9]Baylor College of Medicine, Houston, TX, [10]Emory University, GA

OBJECTIVE: To evaluate risks for severe maternal morbidity (SMM) by method of conception and plurality, and the adverse effects on newborns.
MATERIALS AND METHODS: In vitro fertilization (IVF) cycles resulting in live births from the Society for Assisted Reproductive Technology Clinic Outcomes Reporting System (SART CORS) were linked to birth certificates in MA, NY, NC, and TX from 2004-18. A 10:1 sample of non-IVF births were selected as controls: those with an indication of fertility treatment on the birth certificate but did not link to the SART CORS were grouped as subfertile; all others were grouped as controls. The rate of SMM (maternal transfusion, unplanned hysterectomy, or intensive care unit admission) was calculated per 10,000 women and modeled using multinominal logistic regression stratified by plurality. Results are given as adjusted odds ratios (AORs) and 95% confidence intervals. Models included parental ages, race and ethnicity, education; parity, body mass index, and year of the birth. Among SMM-exposed infants, the risk (%) of preterm birth and NICU admission were calculated.
RESULTS: The study population included 1,344,742 women and 1,510,044 infants. The rates of SMM are shown in the table below. Compared to controls, both subfertile and IVF groups had higher risks, greatest for IVF-conceived singletons and subfertile multiples; their infants had the highest risks for preterm birth and NICU admission. Maternal blood transfusion was the predominate SMM factor, with rates among singleton births to controls, subfertile, and IVF groups, respectively, of 30.9, 48.3, and 59.1; and among multiple births, 101.5, 234.8, and 139.2.
CONCLUSIONS: SMM was highest for IVF-conceived singletons and subfertile multiples, and the risks for preterm birth and NICU admission were highest for their infants. Due to the lack of a national registry for non-IVF treatments, such as ovulation induction and intrauterine insemination, the subfertile group is likely to be larger than estimated.
IMPACT STATEMENT: These results indicate that the risk for SMM varies by method of conception and plurality, and highlights the substantial morbidity experienced by the infants of these women, particularly those born as an infant from a multiple birth.

			Any SMM		Risks to SMM-Exposed Infants	
Plurality	N, Women	Group	Rate per 1,000 women	AOR (95% CI)	Preterm Birth (%)	NICU Admission (%)
Singletons	1,149,382	Controls	4.5	1.00 (Reference)	26.8	17.5
	9,946	Subfertile	6.0	1.56 (1.14-2.14)	28.3	16.7
	90,255	IVF	8.0	2.10 (1.89-2.33)	30.9	21.6
Multiples	33,306	Controls	13.7	1.00 (Reference)	69.1	40.5
	4,003	Subfertile	27.5	2.11 (1.59-2.80)	85.5	49.1
	57,851	IVF	19.1	1.53 (1.29-1.80)	72.2	36.6

SUPPORT: This analysis was supported by grant R01 HD112081.

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INDIVIDUAL AND AREA-LEVEL VARIATION IN ACCESS TO ASSISTED REPRODUCTIVE TECHNOLOGY AMONG FEMALE CANCER PATIENTS IN THE UNITED STATES. Isabel Beshar, MD, M. Phil[1], Chi-Fang Wu, PhD[1], Caitlin Murphy, PhD[2], Roni Wilke, MD, MPH[1], Alexander Melamed, M.D., M.P.H[3], Maria D Iniesta Donate, MD[1], David Viveros, MD[4], Hazel B Nichols, PhD[5], Terri L Woodard, MD[6] and Jose Alejandro Rauh-Hain, MD, MPH[1], [1]The University of Texas MD Anderson Cancer Center, Houston, TX, [2]The University of Chicago, Chicago, [3]Massachusetts General Hospital, Boston, MA, [4]Clínica Colsanitas S.A., Clínica Universitaria Colombia, Bogota, Colombia, [5]University of North Carolina at Chapel Hill, [6]Baylor College of Medicine, Houston, TX

OBJECTIVE: Cancer treatment can impair fertility and access to fertility treatments is critical to family-building goals. However, fertility-related care may not be provided equitably. We constructed a novel longitudinal dataset to capture individual and area-level variation in use of assisted reproductive technology (ART) among female cancer patients across the US from 2004-2022.
MATERIALS AND METHODS: We linked population-based cancer registry data (2004–2018 in 14 states), the Society for Assisted Reproductive Technology (2004-2022)

database, and the National Cancer Institute's social determinants of health data by 2010 census tracts. Cancer patients aged 15-45 at diagnosis with anticipated fertility detriment (defined as malignancy in the pelvis and/or receipt of chemotherapy, hormone therapy, or radiation in the abdomen/pelvis) were included. Identified cases were patients who used ART after cancer diagnosis (defined as ≥1 autologous embryo/oocyte freeze or transfer cycles). Controls were cancer patients who did not use ART after cancer diagnosis. Propensity score matching (1:2) was performed with respect to cancer site, stage (localized/regional/distant), treatment (receipt of surgery, therapy, or radiation), and diagnosis year. Multivariate generalized linear mixed models to account for census tract-level clustering were used to estimate associations between individual- (race/ethnicity, insurance, marital status) and area-level (census tract levels of educational attainment, poverty, metropolitan status, socioeconomic score, and distance to closest ART clinic in quartiles) variables. Exploratory outcome was live birth rate per cycle among cases. The study was approved by the institutional review board.
RESULTS: We identified 4,244 cases who accessed ART (median time: 389 days following cancer) matched to 8,488 controls with acceptable covariate balance (all standardized mean differences <0.1). Hispanic and non-Hispanic Black race (vs. non-Hispanic white, OR 0.55 [95% CI 0.47-0.65], p<0.001 and 0.44[0.38-0.51], p<0.001); public insurance (vs. private, 0.27 [0.23-0.32], p<0.001); below average educational attainment (vs. census tract above national average with bachelor's degree, 0.62[0.56-0.69], p<0.001); lower socioeconomic scores (census tract Q1 vs. Q5, 0.43[0.33-0.56], p<0.001); and longer average distance to the three closest fertility clinics (Q4 vs. Q1, 0.48[0.42-0.55], p<0.001) were associated with lower odds of ART use. Compared to patients who were married, those who were single were more likely (1.42[1.30-1.55], p<0.001) to use ART. Live birth rate per cycle was 14.8% (1,056 births/7,128 cycles).
CONCLUSIONS: Hispanic and non-Hispanic Black race and public insurance, as well as living in neighborhoods characterized by below average levels of education, low socioeconomic status and increasing geographic distance from a fertility clinic are associated with reduced likelihood of accessing ART.
IMPACT STATEMENT: Young cancer survivors face profound inequities accessing post-diagnosis fertility treatment; policies are urgently needed to reduce barriers and support parenthood goals in this population.
SUPPORT: This work was funded by the National Institutes of Health (NIH) Research Project R01 (#MD017999) and the Cancer Center Support Grant (#P30CA016672). Isabel Beshar is also supported by the NIH Institutional National Research Service Award for Training of Academic Gynecologic Oncologists (#T32CA101642).

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WHO BENEFITS FROM THE MASSACHUSETTS FERTILITY COVERAGE MANDATE? AN ANALYSIS OF INSURANCE COVERAGE OF PATIENTS FROM VARYING RACIAL AND ETHNIC BACKGROUNDS WITH LIVE BIRTHS FROM ART.
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OBJECTIVE: The objective of this study is to assess utilization of assisted reproductive technology (ART) among Massachusetts women by race and ethnicity and to better characterize the role of having insurance in a state with mandated fertility coverage for private payors.
MATERIALS AND METHODS: We analyzed data on all infants conceived by ART and born in Massachusetts between July 1, 2004 and December 31, 2017, linking the Society for Assisted Reproductive Technology Clinic Outcome Reporting System (SART CORS), a clinical database of treatment information on all IVF cycles in the U.S. and the Pregnancy to Early Life Longitudinal (PELL) data system, which links delivery records to hospital discharge records for mothers and infants. Analysis was limited to MA women with singletons ≥ 23 weeks' gestation, born and discharged alive from the same hospital. Year over year differences by maternal insurance by race/ethnicity as a percentage of total live births were calculated. Linear regression was used to test the trend of ART use over time within racial and ethnic groups. Statistical significance was assessed at $p < 0.05$.
RESULTS: In the Non-Hispanic Asian and Pacific Islander (AP) and the Hispanic (H) groups, there was a significant increase year over year in having private insurance, with the percentages increasing from 6.09% and 2.15% in 2004 to 11.63% and 4.58% in 2017, respectively. However, for the Non-Hispanic Black (NHB) group, there was no significant increase in private insurance coverage ($p = 0.0594$), with percentages being 2.15% in 2004 and 3.37% in 2017. We also found that AP, H, and NHB groups all had significantly increased ART live births as a proportion of the total, with the percentage increasing from 6.50%, 2.50%, and 2.20% in 2004, to 13.10%, 6.00%, and 4.10% in 2017, respectively, but these increases in ART births were smaller than the increase of each racial/ethnic group as a percentage of all live births in MA. In 2004, NHW infants were 72.20% of total live births in MA, while AP were 7.12%, H 12.79%, and NHB 7.90%. In 2017, NHW infants comprised 59.4% of total live births in MA, while AP were 9.30%, H 19.90%, and NHB 10.70% of total live births.
CONCLUSIONS: Private insurance coverage increased among NH-AP and Hispanic populations but not significantly among NH Black individuals, while ART live births rose across all groups except NHW. These increases did not keep pace with the percentage of total births in Massachusetts by race/ethnicity, suggesting potential differences in access or utilization that may warrant further study. The infertility insurance mandates implemented by some states have increased access to ART, but certain racial and ethnic groups unable to access private insurance coverage have not benefited from these mandates. Patients with public insurance in Massachusetts who need ART are required to self-pay for their treatments, which poses a large financial burden on those families and restricts access to ART.
IMPACT STATEMENT: This project analyzed over a decade of ART utilization data stratified by race and ethnicity as well as insurance type to contribute to the community's understanding of why inequities persist in ART utilization even in states with mandated insurance coverage.

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FROZEN EMBRYO TRANSFER ATTENUATES RACIAL DISPARITIES IN IVF LIVE BIRTH RATES AMONG ASIAN PATIENTS: A SART-CORS ANALYSIS.
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OBJECTIVE: Despite advances in assisted reproductive technology, Asian patients have consistently lower IVF success rates than White patients, primarily observed in data from fresh embryo transfer (ET) cycles. Asian patients exhibit higher estradiol levels during ovarian stimulation, which may be associated with reduced pregnancy rates in fresh ET. We hypothesize that frozen embryo transfer (FET) may improve pregnancy outcomes in Asian women by circumventing this effect. Herein, we compared IVF outcomes between White and Asian patients undergoing their first ET by mode of transfer (fresh vs. frozen).
MATERIALS AND METHODS: We analyzed 195,442 first autologous single blastocyst transfer cycles of each patient (fresh or frozen) from 2016-2023 in the SART CORS database. Analyses were restricted to women age 20-42 who identified as either White or Asian, without uterine factor infertility. Patient demographics, cycle characteristics, and outcomes were compared between groups. Multivariable logistic regression modeling estimated adjusted odds ratios (AOR) for live birth (LBR) and other pregnancy outcomes, adjusting for age, BMI, oocytes retrieved, endometrial thickness, and infertility diagnosis.
RESULTS: 158,955 (81.3%) White patients and 36,487 (18.6%) Asian patients met inclusion criteria for analysis. Asian patients were older (34.6 vs. 33.6 years, p<0.001) with lower BMI (24.5 vs. 26.8 kg/m², p<0.001). In fresh ET cycles, Asian patients had significantly lower LBR compared to White patients (38.8% vs. 46.9%, p<0.001). After adjusting for age, BMI, endometrial thickness, number of 2PNs and infertility diagnosis, the AOR for LBR was 0.72 (95%CI 0.72–0.77, p<0.001). In FET cycles, unadjusted LBR were equivalent (55.3% for both Asian and White patients), but after adjusting for age, BMI, endometrial thickness, PGT-A, and infertility diagnosis, Asian patients had modestly lower LBR (54.5% vs. 56.0%, AOR 0.94, 95%CI 0.92–0.97, p<0.001). FET was associated with substantially improved LBR for both groups. Notably, the observed benefit was particularly pronounced in Asian patients: the AOR for LBR, FET compared to fresh ET, was 2.11 (95% CI 1.97–2.26, p<0.001) for Asian patients, and 1.50 (95% CI 1.46-1.54, p<0.001) for White patients.
CONCLUSIONS: Asian patients had significantly lower adjusted LBR than White patients in both fresh ET and FET cycles. However, this disparity was substantially attenuated with FET.
IMPACT STATEMENT: Avoiding fresh ET may represent a modifiable strategy to mitigate disparities in IVF outcomes, particularly for Asian patients. Given higher estradiol levels observed in Asian patients during ovarian stimulation, these findings suggest that supraphysiologic estradiol may impair endometrial receptivity in a dose-dependent manner. Future studies are needed to investigate whether an estradiol threshold exists above which FET should be recommended.
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ARE PATIENTS FREEZING ENOUGH EGGS? TRENDS IN PLANNED OOCYTE CRYOPRESERVATION CYCLES FROM THE SOCIETY FOR ASSISTED REPRODUCTIVE TECHNOLOGY CLINIC OUTCOME REPORTING SYSTEM (SART CORS) 2016-2023.
Allison Bosch, MD[1], Meng Yao, MS[2], Nina Desai, Ph.D., HCLD[3] and Mindy S Christianson, M.B.A., M.D.[3], [1]Cleveland Clinic Foundation, Cleveland, OH, [2]Cleveland Clinic, Cleveland, OH, [3]Cleveland Clinic, Beachwood, OH

OBJECTIVE: Prior research suggests that women undergoing oocyte cryopreservation should freeze a minimum of 20 oocytes if they are under 38 years of age, and at least 30 oocytes if they are 38 years or older, to attain a 70% likelihood of achieving at least one live birth. This study aimed to examine U.S. trends in oocyte cryopreservation cycles for planned fertility preservation and identify predictive factors for patients 1) undergoing more than one oocyte cryopreservation cycle and 2) banking an age-based recommended number of oocytes.
MATERIALS AND METHODS: This retrospective cohort study utilized the SART CORS registry to analyze all autologous oocyte cryopreservation cycles for planned fertility preservation from 2016-2023. Patients undergoing oocyte cryopreservation prior to gonadotoxic treatment or with impending primary ovarian insufficiency (POI) were excluded, as were cycles reporting history of gonadotoxic treatment or oophorectomy. The recommended number of oocytes to freeze was set at 20 oocytes for those less than 38 years old and 30 oocytes for age 38 or greater. Univariate tests and logistic regression were performed for statistical analysis.

RESULTS: The analysis included 99,740 cycles. Overall, 75.7% of patients (N=75,462) completed 1 oocyte retrieval cycle, while 18% (N=17,944) completed 2 cycles, and 6.4% (N=6,334) completed 3 or more cycles. The percentage of patients completing >1 cycle increased with each age group (<30: 15.4%; 30-34: 21.7%; 35-37: 25.6%; 38-40: 29.5%; >40: 31.6%). Mean antimullerian hormone (AMH) was 2.6 ng/mL in the single cycle group versus 1.5 ng/mL in the multiple cycles group. Additional predictive factors for undergoing >1 cycle included endometriosis (OR 1.2, 95% CI [1.1, 1.4] p<0.001) and diminished ovarian reserve (OR 2.0, 95% CI [1.9, 2.1] p<0.001). Mean total number of oocytes cryopreserved decreased with age (<30: 17.5; 30-34: 17.1; 35-37: 15.0; 38-40: 12.9; >40: 9.5). Among patients <38 years old (N=77,393), 31.4% (n=24,312) banked 20 or more oocytes with a mean AMH of 4.0, while 68.6% (n=53,081) did not (mean AMH = 2.0). Stratified by age, 36.3% of those <30, 34.4% of those 30-34, and 27% of those 35-37 banked the recommended number. Among patients aged 38 or greater (N=22,347), only 6.4% of those aged 38-40 and 3.5% of those >40 years old banked 30 oocytes. Mean AMH was 3.5 in the group that banked 30 oocytes and 1.5 in the group that did not. State fertility preservation mandate was associated with increased likelihood of banking 20 oocytes in the age <38 group (OR 1.2 95% CI [1.1, 1.2] p<0.001) and 30 oocytes in the age 38+ group (OR 1.2 95% CI [1.03, 1.3] p=0.014).
CONCLUSIONS: Most patients in the U.S., particularly those of advanced reproductive age, do not achieve an age-based threshold of frozen oocytes regardless of number of oocyte retrieval cycles. Expanding the number of states with mandates for fertility preservation could help more patients reach this goal.
IMPACT STATEMENT: Most patients undergoing planned fertility preservation are not freezing sufficient oocytes. These findings are significant for establishing realistic expectations during patient consultations and helping patients make informed decisions about fertility preservation.
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ORAL ABSTRACT SESSION: LGBTQIA+

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DESIGN OF A RANDOMIZED CONTROLLED TRIAL INVESTIGATING PROGESTERONE IN TRANSGENDER WOMEN ON BREAST DEVELOPMENT, GENDER CONGRUENCE, AND CARDIOVASCULAR RISK.
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OBJECTIVE:
Gender-affirming hormone therapy (GAHT) for transgender women consists primarily of estrogen therapy supplemented with antiandrogen therapy. The role of progesterone use in transfeminine patients remains uncertain. Progesterone may affect breast development and improve quality of life, mood, and gender congruence; however, no randomized controlled trials have evaluated these effects. This study evaluates the safety of adjunctive progesterone therapy in transgender women on optimized estrogen therapy and its effects on psychological distress, sleep quality, breast development, and gender congruence.
MATERIALS AND METHODS:
This is a randomized, double-blinded, placebo-controlled study (IND #171225). Participants are recruited from the Emory Transgender Clinic. Enrollment criteria include transgender women aged 18–60 years on GAHT for at least six months with an estradiol concentration of 100–300 pg/mL. Exclusion criteria include cardiovascular, hepatic, or renal disease, prior thromboembolism, history of breast cancer, prior progesterone use, or uncontrolled psychiatric conditions. Participants are randomized to either 200 mg micronized oral progesterone nightly or placebo while maintaining current GAHT doses. Participants are followed monthly for six months. Breast development is assessed with breast hemi-circumference measurements at enrollment and study exit. Gender congruence is assessed using the Gender Congruence and Life Satisfaction Scale (GCLS) at enrollment, month 3, and study exit. Medication side effects and adverse effects are assessed monthly. The primary outcomes are gender congruence as measured by GCLS and change in breast hemi-circumference measurement. A total of 40 patients are planned for enrollment.
RESULTS:
To date, 10 transgender women have been enrolled. The mean age is 28.5 years, with baseline estradiol levels of 143.29 pg/mL. Additional baseline measures include triglycerides of 96.33 mg/dL, AST of 17.3 U/L, ALT of 15.6 U/L, and BMI of 25.85. Average baseline GCLS score is 119.4. Enrollment is ongoing.
CONCLUSIONS:
This randomized controlled trial is actively evaluating the safety and potential benefits of adjunctive progesterone therapy in transgender women receiving GAHT. Preliminary results demonstrate successful enrollment and establish baseline clinical and patient-reported outcome measures.
IMPACT STATEMENT:
This study will provide needed prospective evidence regarding the role of progesterone in GAHT for gender-expansive patients and may help inform clinicians on optimizing evidence-based transgender care.

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FERTILITY PRESERVATION (FP) OUTCOMES IN TRANSGENDER AND GENDER DIVERSE (TGD) INDIVIDUALS ASSIGNED FEMALE AT BIRTH: A SINGLE-CENTER EXPERIENCE.
Anjali Walia, MD, Carlos M Parra, MD, Jacquelyn Shaw, M.D., Jennifer K Blakemore, MD, MSCI and Mary Elizabeth Fino, M.D., NYU Langone Fertility Center, New York, NY

OBJECTIVE: FP outcome data in TGD individuals remain limited.[1] This study compares oocyte cryopreservation (OC) and embryo banking (EB) outcomes between testosterone (T)-exposed and T-naïve TGD patients (pts).
MATERIALS AND METHODS: This was a retrospective cohort study of TGD pts assigned female at birth who presented for FP consultation at our center between 2010-2025. Primary outcomes included total oocyte yield and metaphase II oocyte (MII) yield. Secondary outcomes included maturity, fertilization, blastulation, and euploidy rates. All outcomes were compared between T-exposed and T-naïve pts. Statistics included Mann-Whitney U, Fisher's exact, and linear regression tests (p<0.05 significant).
RESULTS: 110 TGD pts were included of which 72% (n=79) identified as trans male, 16% (n=18) nonbinary, and 12% (n=13) genderqueer. Median age was 29 years [IQR: 18-34]. Most were white (70%, n=77) and non-Hispanic (78%, n=86). 55% (n=60) were partnered (39 cis female, 8 cis males, 13 TGD partners). 56% (n=61) expressed a definite desire to become a parent. Gender-affirming therapy included 36% (n=40) on T treatment with a median duration of 3 years [2-7] and 43% (n=47) surgical treatment (46 top surgery, 2 hysterectomy). 66% (n=72) pursued FP treatment for a total of 89 cycles of which 57% (n=51) were OC and 43% (n=38) EB. 34% (n=38) did not pursue treatment, with a change of mind cited as the most common reason (n=8). Table shows outcomes between T-exposed vs T-naïve pts. T-exposed pts had a median T cessation of 3 months [1-3] prior to cycle. A regression adjusting for age, BMI and AMH showed that T exposure did not impact total oocyte yield (β=+2.2, p=0.44), MII yield (β=+1.0, p=0.68), 2PNs (β=+0.6, p=0.87), blastocysts (β=+1.6, p=0.51) or euploid blastocysts (β=+1.3, p=0.43). Among T-exposed cycles, MII yield was similar regardless of T cessation duration prior to cycle (β=-1.1, p=0.24). 14 pts returned for tissue use, including 2 T-exposed pts for oocyte thaw (30/33 MIIs survived, 27/30 2PNs, 13/17 euploid blastocysts). 79% (n=11) pts achieved a live birth / ongoing pregnancy (LB/OP).

	T-exposed	**T-naive**	**p-value**
All pts	**n=25**	**n=47**	
Age (years)	30 [27-32]	28 [16-35]	0.42
BMI (kg/m^2)	23 [22-26]	23 [21-28]	0.89
AMH (ng/mL)	3 [3-5]	3 [2-4]	0.17
Oocyte yield	29 [20-44]	24 [19-32]	0.07
MII yield	20 [16-31]	18 [9-26]	0.10
Maturity rate (%)	74 [59-88]	80 [74-87]	0.27
EB pts	**n=12**	**n=18**	
Fertilization rate (%)	85 [57-97]	82 [75-88]	0.90
Blastulation rate (%)	60 [39-68]	53 [36-69]	0.82
Euploidy rate (%)	71 [40-75]	55 [36-71]	0.77
Returned pts			
LB/OP rate (%)	83 (n=5/6)	75 (n=6/8)	1.0

All values as medians [IQR] except for LB/OP
CONCLUSIONS: Prior T exposure does not adversely impact FP outcomes in TGD pts, with a majority achieving a LB/OP upon return.
IMPACT STATEMENT: TGD pts can be reassured that initiating T prior to FP does not appear to impact future family-building.
REFERENCES:
1. Rubin E, Palmor M, Amato P. REPRODUCTIVE HEALTH IN TRANS AND GENDER DIVERSE PATIENTS: Fertility treatment and preservation options for transgender and gender diverse people. Reproduction. 2025 Jan 2;169(1):e240120.

O-79 4:05 PM Monday, October 26, 2026

TRANSGENDER WOMEN EXHIBIT SIGNIFICANTLY IMPAIRED SEMEN QUALITY COMPARED TO PROPENSITY-MATCHED CISGENDER MEN.
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OBJECTIVE:
Fertility preservation is an integral component of gender care, as many transgender individuals have a desire to have biologically related children. Thus, we sought to characterize differences in semen parameters and demographics between transgender women and cisgender men completing semen analysis and cryopreservation.
MATERIALS AND METHODS:
This was a cross-sectional study comprised of transgender women completing semen analysis and cryopreservation compared to cisgender men obtaining semen analysis for the purpose of planned semen donation, curiosity regarding fertility, and/or prior to vasectomy. Individuals completed a mail-in semen analysis test (Give Legacy, New York) and sperm cryopreservation between 2021-2026. Participants provided information about their age, body mass index, race/ethnicity, and primary reason for seeking analysis and cryopreservation. Participants were excluded if they were azoospermic or missing demographics or clinical information. Participants were propensity score matched on age at time of semen analysis, days of abstinence, and time in transit.
RESULTS:
A total of 2998 transgender women with variable stages of hormonal treatment and 6655 cisgender male controls met inclusion criteria. At baseline, prior to propensity score matching, transgender women were significantly younger and had lower BMI. The final propensity score matched analysis included 1723 matched pairs. When compared to cisgender males, transgender women had a significantly lower sperm concentration (mean 50.45 million/mL vs 56.64 million, p=0.0007), motile sperm count (mean 36.05 million vs 41.07 million, p<0.0001), progressive motile sperm count (mean of 23.44 million vs 27.98 million, p<0.0001), and total motile sperm count (61.8 million vs 80.98 million, p<0.0001).
CONCLUSIONS:
Our study found significantly worse semen parameters in transgender women presenting for semen analysis and cryopreservation compared to cisgender men, although mean semen parameters observed in transgender patients were still within functional thresholds for assisted reproductive technology.
IMPACT STATEMENT:
To our knowledge, this is the largest study evaluating semen analysis in transgender women. Our findings may help inform counseling regarding fertility preservation in transgender women, as biological parenthood remains a viable clinical outcome for many transgender women despite observed decreases in semen parameters.

O-80 4:15 PM Monday, October 26, 2026

PRICED OUT AND COUNSELED TOO LATE: FERTILITY PRESERVATION BARRIERS FOR TRANSGENDER AND NONBINARY PEOPLE. Elizabeth Dakan, MPH, University of Pittsburgh School of Medicine, Pittsburgh, PA

OBJECTIVE: Fertility preservation (FP) can support reproductive autonomy for transgender and nonbinary people, yet access is time-sensitive and unequally distributed.
MATERIALS AND METHODS: We analyzed a cross-sectional survey of transgender and nonbinary respondents (N=51), integrating closed-ended scales (item-level n≈38–42 for key measures) and open-ended comments. Barrier influence was rated 1–3; psychosocial responses were rated 1–5.
RESULTS: Cost (mean 2.55/3) and insurance exclusion (mean 2.36/3) were the most influential decision factors (n=42), consistent with the lived experience that "Cost was pretty much 95% of my decision not to pursue it". Procedural dysphoria/discomfort remained salient (mean 2.07/3; n=42), alongside psychosocial burden (stress mean 3.05/5; n=39; anxiety about procedures mean 3.61/5; n=38) and concern about future regret (mean 3.02/5; n=41). Nearly half reported that a provider had discussed FP (23/48=48%), and participants described missed opportunities ("I wish I knew any of this was an option"). Structural access barriers were common: 14/40 (35%) had not accessed a fertility clinic and 12/40 (30%) reported needing to travel ≥20 miles. Discrimination and mistrust were present, including provider dismissal ("It's hard for men to have babies"). The political climate added constraints: 17/40 (42.5%) avoided or delayed fertility-related healthcare due to political fears, and 29/41 (71%) reported increased concern about reproductive future due to anti-trans/anti-LGBTQ+ events. Reported facilitators centered on full insurance coverage, more comprehensive counseling/information, emotional/social support, and less invasive options.
CONCLUSIONS: FP access is constrained by multilevel barriers—financial/insurance exclusion, geographic/provider access, late/absent counseling, psychological burden, dysphoria/procedural misalignment, discrimination/mistrust, and political climate–related care avoidance—highlighting modifiable levers for equity.
IMPACT STATEMENT:
Policy/practice recommendations: Expand inclusive, full insurance coverage for FP (procedures, medications, and storage); standardize early FP counseling and referral within gender-affirming care; increase trans-competent FP service capacity and develop less invasive options that minimize dysphoria.
Implications: Clinicians should initiate routine early FP counseling integrated into gender-affirming care and proactively address cost and dysphoria-related barriers. Policymakers should mandate inclusive FP insurance coverage and protect access to fertility-related services amid politicized care environments.

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PERCEPTIONS OF HOW HIV AND ANTIRETROVIRAL THERAPY AFFECT FECUNDITY: A QUALITATIVE STUDY AMONG MEN AND WOMEN LIVING WITH HIV AND THE PROVIDERS WHO CARE FOR THEM. Erica Sedlander, DrPH, MPH[1], Njeri Wairimu, MA[2], Kyla Lawson, MPH[3], Kalin Werner, PhD[3], Sharon Mutai, Bsc[2], Divya Gottumukkala, BA (c)[4], Daniel Mwai Thangari, BA[5] and Monica Gandhi, MD[6], [1]University of California (san Francisco), San Francisco, CA, [2]Kenya Medical Research Institute (KEMRI), [3]Independent Consultant, [4]University of California Berkeley, [5]Kenya Medical Research Institute (KEMRI), Nairobi, Kiambu, Kenya, [6]San Francisco, CA

OBJECTIVE: Approximately one in six couples experience infertility globally, and men and women living with HIV face even higher rates. When adherence is high, HIV medication, antiretroviral therapy (ART), suppresses viral load and attenuates HIV's negative effects on fertility. But adherence is a stubborn issue with only 77% of people with HIV virally suppressed. We sought to understand perceptions of the relationship between HIV, ART, and fecundity (the biological capacity to have children) among men and women living with HIV, and providers who care for them. We also wanted to determine how fertility-protective education and practices can best be implemented among men and women with HIV to support ART adherence and reproductive goals.
MATERIALS AND METHODS: Between August and November 2025, we conducted in-depth interviews with 20 men and women living with HIV and 10 healthcare providers in central Kenya. Men and women (ages 18–45 years) were purposively selected to balance gender and age, while healthcare providers offering HIV care services and ART were sampled to include a mix of cadres. Data were collected using semi-structured interview guides and were analyzed thematically in Dedoose qualitative software, using a combination of inductive and deductive approaches. Post-interview reports, memos, code reports, and matrix analysis were triangulated to develop final themes.
RESULTS: Men had a mean age of 23 and women 28 years, 65% had children, and 35% had experienced infertility. Providers included nurses, clinical officers, and gynecologists. Participants described a range of perceptions about the relationship between HIV, ART, and fecundity, which we categorized into five themes: (1) most men and women did not believe that HIV negatively impacts fecundity, while providers held mixed beliefs; (2) most participants held predominantly positive but vague beliefs about ART, while a few voiced personal concerns or perceptions in the community that taking ART for HIV could make conception harder; (3) community stigma toward women with HIV who wanted children acted as a barrier to preconception care; (4) provider counseling that included discussion of HIV, ART, fecundity, and reproductive desires was rare; and (5) to raise awareness, participants preferred information delivered by a provider or a peer mentor with HIV.
CONCLUSIONS: While current provider and patient education in sub-Saharan Africa is generally simple and reassuring that people with HIV can have children, the relationship between HIV, ART, and fecundity is more nuanced and warrants clearer communication. Expanding counseling, by trusted providers or peers, to include the negative effects of uncontrolled HIV on fecundity, alongside the benefits of ART, may improve overall adherence and help couples achieve their reproductive goals.
IMPACT STATEMENT: Strengthening provider communication to clearly address the effects of uncontrolled HIV and the benefits of ART adherence could improve both virologic suppression rates and reproductive outcomes. Findings will inform the development of an intervention to improve understanding of how HIV and ART affect fecundity among men and women living with HIV in Kenya.
SUPPORT: NA
REFERENCES:
Cox CM, Thoma ME, Tchangalova N, et al. Infertility prevalence and the methods of estimation from 1990 to 2021: a systematic review and meta-analysis. *Hum Reprod Open*. 2022;2022(4):hoac051. doi:10.1093/hropen/hoac051
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O-82 4:35 PM Monday, October 26, 2026

GAPS IN FRONTLINE KNOWLEDGE OF FERTILITY CARE FOR PATIENTS WITH HIV AND HEPATITIS: IMPLICATIONS FOR ACCESS. Ibtihaj M Khan, B.S.[1] and Jessica R Walter, MD, MSCE[2], [1]Northwestern University Feinberg School of Medicine, Obstetrics and Gynecology, Reproductive Endocrinology and Infertility, Chicago, IL, [2]Northwestern University Feinberg School of Medicine, Chicago, IL

OBJECTIVE: Patients living with chronic infectious diseases, including HIV and hepatitis B and C, increasingly pursue family building as advances in treatment have improved life expectancy. Yet access to fertility care remains heterogeneous, with limited transparency regarding which clinics offer services. Fertility clinic receptionists serve as the first point of contact, yet their knowledge of clinic policies is not well characterized. This study assessed front-line staff awareness of clinic policies for patients with chronic medical conditions.
MATERIALS AND METHODS: We conducted a cross-sectional telephone survey of fertility clinic front desk staff across 12 Midwestern states. Respondents were asked about the clinic's specific policies (yes/no/not sure) regarding patient eligibility for IVF based on age, BMI, heart disease, diabetes, tubal ligation, HIV, hepatitis B, and hepatitis C, and to rate their confidence (1–5 Likert scale). Clinic-reported tags (age limits, BMI limits, HIV patients) were obtained from SART. Within-respondent comparisons were assessed using McNemar's tests, while associations between clinic-level characteristics and staff responses were evaluated using chi-square or Fisher's exact tests, as appropriate. Confidence scores were compared using Wilcoxon signed-rank tests.
RESULTS: Of 116 clinics identified, 68 were eligible and contacted; 42 completed surveys (61.8%). Respondents were primarily receptionists (33.3%) and patient navigators (31.0%), mostly from private practice settings (64.3%). Awareness of clinic policies varied by condition: most respondents reported policies for age (81.0%), BMI (61.9%), diabetes (71.4%), and tubal ligation (85.7%). In contrast, awareness of policies for infectious diseases was low, with only 21.4% reporting HIV policies, 19.0% hepatitis B policies, and 21.4% hepatitis C policies; most respondents were unsure (71–81%).

Respondents were more likely to report age-based policies than HIV (OR 9.33), hepatitis B (OR 7.5), and hepatitis C (OR 7.25) (all p<0.001). Among clinics with SART-reported policies, staff more frequently reported age (93.3%) and BMI (70.6%) policies than HIV policies (15.4%). SART-reported HIV services were not associated with staff-reported awareness (15.4% vs 24.1%, p=0.52), with similar findings for age and BMI. Confidence was uniformly high and did not differ across domains (all p>0.48), despite substantial differences in awareness.
CONCLUSIONS: Front-line awareness of fertility clinic policies for chronic infectious conditions is low despite high confidence, demonstrating a clinically meaningful knowledge–confidence mismatch at the point of patient access. Additionally, lack of concordance between SART-reported services and staff knowledge suggests a disconnect between institutional policy reporting and frontline implementation, which may contribute to inequities in access to fertility care.
IMPACT STATEMENT: Improving transparency and ensuring accurate dissemination of clinic policies to front-line staff may represent a critical, addressable barrier to equitable access to fertility care for patients with chronic infectious diseases.
SUPPORT: None

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LAYERED INEQUITIES IN INFERTILITY COVERAGE: HETERONORMATIVE DEFINITIONS, UNEQUAL PATHWAYS, AND FINANCIAL BARRIERS FOR SAME-SEX COUPLES. Rakasa Pattanaik, M.D.[1], Claire Miller, BS, MPH[2] and Avner Hershlag, M.D.[3], [1]Beth Israel Deaconess Medical Center/Harvard Medical School, Boston, MA, [2]University of San Diego School of Law, San Diego, CA, [3]Northwell Health Fertility, Manhasset, NY

OBJECTIVE: To evaluate whether United States (U.S.) infertility mandates provide equitable In vitro fertilization (IVF) access for same-sex couples and to characterize disparities arising from heteronormative definitions, divergent reproductive pathways, and financial barriers.
MATERIALS AND METHODS: Cross-sectional policy analysis of U.S. infertility mandates using statutory, regulatory, and advocacy organization data[1-3]. States were assessed for infertility definitions, IVF coverage, LGBTQ inclusion, alternative pathways to establish infertility, step-therapy requirements, and coverage of third-party reproduction. Cost estimates were derived from published sources[4,5].
RESULTS: Among 25 states with infertility mandates, 15 require IVF coverage; however, only 6 states (California, New York, Illinois, Massachusetts, New Jersey, Rhode Island) and Washington, D.C. permit non-coital pathways to establish infertility[1,3]. At least 15 states define infertility as failure to conceive after 6–12 months of heterosexual intercourse, excluding same-sex couples unless they self-fund treatment[1,2]. Nationally, 53% of LGBTQ individuals live in states without fertility-treatment mandates[3]. The American Society for Reproductive Medicine defines infertility independent of sexual orientation, yet most mandates remain discordant[2].
Disparities reflect three layered inequities:
(1) Heterosexual vs. same-sex access: eligibility is often contingent on heterosexual intercourse, delaying or denying coverage for same-sex couples[1,2].
(2) Within same-sex couples: same-sex female couples may access IVF after self-funded donor-insemination cycles, whereas same-sex male couples require donor-oocyte IVF with gestational surrogacy, which is not covered under any state mandate[2,5]. Employer-based expansions, including Aetna, improve access to intrauterine insemination/IVF but do not address surrogacy gaps[4].
(3) Financial stratification: costs for same-sex female pathways typically total $20,000–$35,000+, whereas male same-sex reproduction involving surrogacy ranges from $120,000–$220,000+, effectively restricting access to those with substantial financial resources[4,5].
CONCLUSIONS: Infertility mandates create three-tiered inequities driven by definition, pathway, and cost, resulting in systematically inequitable access to IVF.
IMPACT STATEMENT: Aligning mandates with inclusive definitions and extending coverage to third-party reproduction would reduce structural and financial inequities in access to fertility care. State mandates may cover IVF, but not for all patients, nor the pathways required to use it.
SUPPORT: N/A
REFERENCES:
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ORAL ABSTRACT SESSION: GENETICS (1 OF 2)

O-84 3:45 PM Monday, October 26, 2026

NOT JUST A LAST RESORT: UNDERSTANDING PATIENT DECISIONS TO UNDERGO MOSAIC EMBRYO TRANSFERS (MET) IN THE PRESENCE OF EUPLOID EMBRYOS. Jillian Pecoriello, MD[1], Lindsay N Marty, MD[2], Jacquelyn Shaw, M.D.[1], Hannah N Green, MS[1], Carissa Huber, MS, CGC[1], Melicia Clarke-Williams, MS[3], Caroline McCaffrey, PHD, HCLD[1], Jennifer K Blakemore, MD, MSCI[1] and Andria G Besser, M.S.[1], [1]NYU Langone Fertility Center, New York, NY, [2]NYU Grossman School of Medicine, New York, NY, [3]NYU Langone Prelude Fertility Center, New York, NY

OBJECTIVE: Adoption of MET in IVF care is increasing as knowledge and experience with embryonic mosaicism and PGT-A limitations continue to improve. While MET was initially viewed as a last-resort alternative in the absence of euploid embryos, reassuring outcome data has led to growing acceptance of MET as a first-line option in certain scenarios. There is limited research about patient decisions to pursue MET, especially when they have euploid embryos available. Our aim was to explore MET-related decisions.
MATERIALS AND METHODS: This was a single-center retrospective cohort study of all METs between 9/2015 and 2/2026. Primary outcome was reason for MET, as documented in the electronic medical record. Variables included euploid embryo availability and year of MET. Statistical analyses were Chi-square and Fisher's *exact* tests, with p<0.05 considered significant.
RESULTS: 580 MET cycles were performed for 488 unique patients. There was at least 1 euploid embryo in storage at time of MET for 119 (20.5%) MET cycles. Of these cycles, a mosaic embryo was selected for the following reasons: sex selection in 62 (52.1%) cycles, better morphology in 15 (12.6%), more favorable PGT-M result in 13 (10.9%), saving the euploid for a future cycle (either for use by the patient or gestational carrier) in 10 (8.4%), and preferred gamete source (donor versus autologous, or same sex partnership) in 4 (3.4%). In 15 (12.6%) cycles, a mosaic was transferred along with a euploid. Of the 62 METs elected for sex selection purposes, 44 (71%) cycles involved patients who had at least 1 child, with 31 (70.5%) desiring a child of a different sex, 5 (11.4%) desiring the same sex, and 8 (18.2%) already with children of both sexes (with equal selection of male and female embryos). The proportion of patients who decided to undergo MET while a euploid embryo was vs was not available significantly increased over time (2015 – 2017: 0.12 vs 2018 – 2020: 0.13 vs 2021 – 2023: 0.17 vs 2024 – 2026: 0.30, p < 0.001).
CONCLUSIONS: Among patients who underwent MET, about 20% had a euploid embryo available. Sex selection was the most common reason for this decision. The proportion of patients choosing a mosaic embryo over a euploid embryo increased over time.
IMPACT STATEMENT: MET is being increasingly used as a first-line option rather than only when there are no euploid embryos available. Embryo sex, morphology, PGT-M results, gamete source, and future reproductive plans are all essential considerations for patients pursuing embryo transfer.

O-85 3:55 PM Monday, October 26, 2026

TO EUPLOIDY AND BEYOND: PATIENT DECISION-MAKING FOR AND OUTCOMES FROM NON-MOSAIC SEGMENTAL ANEUPLOID (NM-SA) EMBRYO TRANSFERS. Lindsay N Marty, MD[1], Jillian Pecoriello, MD[2], Jacquelyn Shaw, M.D.[2], Hannah N Green, MS[2], Carissa Huber, MS, CGC[2], Caroline McCaffrey, PHD, HCLD[2], Melicia Clarke-Williams, MS[2], Esmeralda Ampeloquio, BS[2] and Jennifer K Blakemore, MD, MSCI[2], [1]NYU Grossman School of Medicine, New York, NY, [2]NYU Langone Fertility Center, New York, NY

OBJECTIVE: Patient counseling for preimplantation genetic testing (PGT) is well established for euploid and whole chromosome aneuploid embryos but remains unclear for NM-SA embryos. Factors influencing patient choices for/against NM-SA transfers and the resulting clinical outcomes following NM-SA frozen embryo transfers (FETs) are also ill-defined. This study examined patient decision-making and transfer outcomes following NM-SA FETs.
MATERIALS AND METHODS: This was a single-center retrospective cohort study at a large urban academic fertility center of all FETs using NM-SA embryos performed between September 2015 and February 2026. The primary variables of interest were the patient indication or reason for NM-SA FET and ongoing pregnancy rate (OPR)/live birth rate (LBR). Secondary outcomes included rate of euploid embryo availability and type of NM-SA embryo chosen. Statistical analysis was performed using Chi-Square and Fisher's exact tests, with a significance of p < 0.05.
RESULTS: 46 NM-SA FETs were performed for 45 patients. 29 NM-SA embryos had a chromosomal deletion, 12 had a chromosomal duplication, and 5 had both a deletion and duplication. A NM-SA embryo was chosen in 6 (13.0%) cycles when a euploid embryo was available in storage: 3 as a double embryo transfer with a euploid embryo, 2 for sex selection (both female), and 1 for a more favorable PGT-M result. The patients selecting for sex each first underwent one FET of a complex abnormal (>/= 3 segmental deletions or duplications) NM-SA female embryo, followed by two male mosaic or euploid FETs. Of the remaining 40 cycles, selection of NM-SA embryos was driven by superior morphology (17; 37.0%), lack of alternative embryos (no euploid, mosaic, or untested embryos available) (11; 23.9%), double embryo transfer with a mosaic (10; 21.7%), or preference over a high-level chromosome mosaic (2; 4.3%). There was no difference in the selected NM-SA embryo type (chromosomal duplication, deletion, or both) between patients with and without a euploid embryo at time of transfer (duplication: 0.08 vs deletion: 0.17 vs both: 0, p = 0.83). Out of the 46 NM-SA embryos transferred, the OPR/LBR was 23.9% (11/46). Embryos with duplications had significantly higher OPR/LBR compared to those with deletions or both a duplication and deletion (0.50 vs 0.17 vs 0, p = 0.031).
CONCLUSIONS: NM-SA embryo transfers were primarily driven by embryo morphology or limited availability of other embryos. A small subset of patients with euploid embryos elected NM-SA transfer, most often for sex selection or double embryo transfer with a euploid. OPR/LBR was higher in embryos with duplications.
IMPACT STATEMENT: Use of NM-SA embryos is expanding fertility options, but they are most often used as a last resort when no higher-quality embryos exist. As understanding of patient decision-making and outcomes evolves, comprehensive patient and genetic counseling is essential to guide informed use.

O-86 4:05 PM Monday, October 26, 2026

EXPLORATION OF PERSONAL HEALTH RISK DETECTION THROUGH REPRODUCTIVE CARRIER SCREENING IN A LARGE CLINICAL COHORT. Erica Vaccari, MS, CGC[1], Dana Neitzel, MS, CGC[1], Vivian Weinblatt, MS, CGC[2],

Lauren Petrarca, MS, CGC[2], Jennifer Helgeson, MS, CGC[2] and John Garcia, PhD[1], [1]Labcorp (formerly Invitae Corp), San Francisco, CA, [2]Labcorp, Durham, NC

OBJECTIVE: To quantify the prevalence of personal health risk findings identified through reproductive carrier screening and to assess how carrier screening panel size influences the detection of reportable personal risk variants by estimating expected personal risk frequencies across commonly ordered gene panels.
MATERIALS AND METHODS: This retrospective analysis includes reproductive carrier screening results from 464,320 individuals tested at a single commercial laboratory (68.2% female, 31.8% male). Personal risk findings were defined as pathogenic or likely pathogenic variants, or qualifying variant combinations, identified in genes included on the carrier panel and designated on the clinical laboratory report as having potential personal health implications for the individual. Results were analyzed using four virtual gene panels of increasing size (Table), modeled after commonly ordered panels, and applied as retrospective overlays to historical results. Individuals were considered "tested" for a given panel only if their original assay encompassed that panel's complete gene list. The expected proportion of individuals with at least one personal risk finding was computed for each panel.
RESULTS: Personal risk findings were identified in 19,188 (4.1%) of unique individuals. Among these, 1,424 (7.4%) had findings in more than one gene. X-linked genes accounted for 1,721 (9.0%) of individuals with personal risk findings, autosomal genes for 17,759 (92.6%) individuals, and 292 (1.5%) had findings in both X-linked and autosomal genes. Personal risk result detection rates increased with panel size: from 1.9% (3-gene) to 2.7% (14-gene), 11.4% (110-gene), and 14.4% (574-gene) (Table). As panel size grew, the qualifying tested population decreased (386,673 to 7,351), reflecting historical variation in gene coverage and test selection. Detection rates for the larger panels may also reflect selection of more comprehensively tested individuals.
CONCLUSIONS: In this large real-world cohort undergoing reproductive carrier screening, personal risk findings were relatively common, affecting approximately 1 in 24 individuals overall, with detection rates increasing markedly as gene panel size expanded.
IMPACT STATEMENT: Understanding the relationship between panel size and personal risk detection may help clinicians optimize test selection, anticipate incidental findings, and counsel patients more effectively about personal health implications identified through reproductive carrier screening.

Table

Panel	N Tested	Personal risk rate	Key genes
3-gene	386,673	1.9%	*CFTR, SMN1, FMR1*
14-gene	324, 772	2.7%	*CFTR, SMN1, FMR1, HBB, HEXA, GBA1, HBA1, HBA2, ASPA, BLM, ELP1, FANCC, MCOLN1, SMPD1*
110-gene	11,449	11.4%	Broad set of commonly screened AR/XLR genes
574-gene	7,351	14.4%	Expanded gene panel

O-87 4:15 PM Monday, October 26, 2026

LONG-READ GENOME SEQUENCING IDENTIFIES A DEEP INTRONIC PENTANUCLEOTIDE REPEAT EXPANSION IN *KATNA1* AS A NOVEL CAUSE OF RECURRENT TRIPLOIDY OF MATERNAL ORIGIN. Christina G. Tise, MD, PhD[1], Allison R. Cheney, PhD[2], Sophia M. Adelson, MS[1], Max Ezzati, MD[3], Jonathan A. Bernstein, MD, PhD[1], Stephen Montgomery, PhD[2] and Matthew Wheeler, MD, PhD[2], [1]Stanford University, Stanford, CA, [2]Stanford University, [3]Palo Alto Foundation Medical Group, Palo Alto, CA

OBJECTIVE: To identify the genetic etiology of recurrent triploidy of maternal origin (TOMO) in a healthy 39-year-old female with a normal karyotype and 14 pregnancy losses using a novel genomic research approach. The patient's most recent loss, the first pregnancy to be conceived via in vitro fertilization (IVF), was identified to have TOMO. All her remaining 6 embryos were also found to have TOMO by preimplantation genetic testing for aneuploidy (PGT-A). Family history was noncontributory and proband-only clinical exome sequencing was nondiagnostic.
MATERIALS AND METHODS: ExpansionHunter DeNovo (EHDN) was run on the proband's short-read genome sequencing (GS) data generated after informed consent and enrollment under the GREGoR Stanford IRB-approved protocol. PacBio long-read GS (LRGS) was performed in parallel. Mechanistic plausibility of the candidate gene was evaluated through literature review.
RESULTS: EHDN identified a novel heterozygous pentanucleotide repeat expansion of AAAAT in intron 2 of *KATNA1*. LRGS confirmed and estimated ~620 repeats, compared to a maximum of 14 repeats seen in 199 internal LR genomes and external control data. KATNA1, a member of the katanin family, is the primary catalytic enzyme involved in the severing and regulation of microtubules during meiosis II. Female *KATNA1* -/- mice demonstrate reduced fertility and an increase in abnormalities in meiosis II spindle morphology, including chromosome misalignment.
CONCLUSIONS: No genetic locus has been definitively linked to recurrent triploidy, particularly when due to a single parent of origin. This unique phenotype is suspected to reflect a parental, rather than fetal, genetic etiology that likely explains this patient's 13 prior naturally conceived, untested pregnancy losses. Together, with the 7 tested embryos with TOMO, this finding suggests a dominant inheritance and highly penetrant phenotype. Evaluation of the collected specimens from the participant's parents and maternal half-brother are underway, as well as successful enrollment of additional couples experiencing recurrent triploidy.
IMPACT STATEMENT: Given the role of KATNA1 in microtubule homeostasis during meiosis II, there is strong evidence in support of causality. We suspect *KATNA1* will represent the first gene associated with recurrent triploidy. The true incidence of recurrent triploidy is inevitably under-reported due to challenges obtaining genetic testing on pregnancy loss tissue and access to reproductive genetics care. This case highlights the value of LRGS, the importance of genetic testing of products of conceptions, and warrants additional studies that are currently underway.

O-88 4:25 PM Monday, October 26, 2026

LOST IN TRANSLATION: LIMITED PGT-M COUNSELING DESPITE HIGH RATES OF GENETIC COUNSELING IN PATIENTS WITH YOUNG ONSET COLORECTAL CANCER. Sarah Hmaidan, DO[1], Nicole Noto, MS-3[2], Morgan Bou Zerdan, MD[3], Roni Zemet, MD[1], Momal Sharif, PhD[4], Laura Detti, MD[5], Terri L Woodard, MD[3], Y. Nancy You, MD[6] and Laurie McKenzie, MD[3], [1]Baylor College of Medicine, Dept. of Obstetrics and Gynecology, Division of Reproductive Endocrinology & Infertility, Houston, TX, [2]Baylor College of Medicine, Houston, [3]The University of Texas MD Anderson Cancer Center, Houston, TX, [4]Baylor College of Medicine, Dept. of Obstetrics and Gynecology, Houston, [5]Baylor College of Medicine, Houston, TX, [6]The University of Texas MD Anderson Cancer Center

OBJECTIVE: Young onset colorectal cancer (YOCRC) patients with hereditary colorectal cancer syndromes are at risk of transmitting pathogenic variants to offspring, making reproductive counseling and discussion of preimplantation genetic testing for monogenic disease (PGT-M) an important component of care. Concerns regarding future childbearing and risk of transmission to offspring may influence reproductive decision-making in this population. We aimed to evaluate rates of documentation regarding PGT-M counseling among patients with YOCRC and hereditary cancer syndromes.
MATERIALS AND METHODS: A retrospective analysis was performed of 1,504 reproductive-age YOCRC patients, defined as age ≤ 45 years at diagnosis, at an NCI-designated Comprehensive Cancer Center between January 1, 2020, and May 31, 2025. Patients with confirmed pathogenic germline variants associated with hereditary colorectal cancer syndromes were included. Data abstracted included patient demographics, pathogenic variant type, and documentation of genetic and fertility preservation counseling. The primary outcome was documented PGT-M counseling. Secondary outcomes included rates of genetic and fertility preservation counseling. Descriptive statistics and group comparisons were performed using Fisher's exact test.
RESULTS: Among patients with YOCRC, 10% (n=152) had a confirmed hereditary cancer syndrome, with a median age at diagnosis of 39 years (range 19-45). Specific syndromes identified were Lynch syndrome 39% (n=59), familial adenomatous polyposis (FAP) in 13% (n=19), and other pathogenic variants in 49% (n=74). Overall, 80.3% (n=122) of patients received genetic counseling regarding hereditary cancer risk and 30.3% (n=46) received fertility preservation counseling. However, only 7.9% (n=12) had documented counseling regarding PGT-M. Rates of PGT-M counseling were low across syndrome types (11.9% in Lynch, 10.5% in FAP, and 4.1% in other pathogenic variants). There were no significant differences in receipt of PGT-M counseling by age, sex, ethnicity, or cancer stage.
CONCLUSIONS: Ten percent of patients with YOCRC had a confirmed hereditary cancer syndrome. Despite high rates of genetic counseling, documented PGT-M counseling remains low in this population, highlighting a gap between genetic and reproductive counseling. While patients are appropriately identified as having hereditary cancer syndromes, this is not consistently translated into discussion of future reproductive options, including PGT-M. Although some discussions may have occurred without adequate documentation, the low observed rate suggests a gap in counseling and/or documentation of these discussions.
IMPACT STATEMENT: YOCRC patients with hereditary colorectal cancer syndromes are at risk of transmitting pathogenic variants to offspring, yet very few have documented counseling regarding PGT-M. These findings highlight the need for improved integration of reproductive counseling into oncologic and genetic care, as well as consistent documentation of these discussions.

O-89 4:35 PM Monday, October 26, 2026

RETHINKING EUPLOIDY: IS DIPLOIDY SUFFICIENT FOR IMPLANTATION? A UNIFIED SNP-BASED AND MULTI- OMICS APPROACH TO PGT. SIjia Lu, Ph.D[1], Julia Santos, MS[2], Tim Chen, Ph.D.[3], Taoli Ding, PhD[4], Tuan Li, MS[5] and Yangyun Zou, Ph.D[1], [1]Yikon Genomics Co., Ltd., [2]Yikon Genomics Co., Ltd., Shanghai, China, [3]Yikon Genomics Co. Ltd., Hsinchu, Taiwan, [4]Yikon Genomics Co, Ltd., Shanghai City, Shanghai City, China, [5]Yikon Genomics Co., Ltd, Suzhou, China

OBJECTIVE: A substantial proportion of euploid embryos still fail to implant or result in miscarriage. This discrepancy underscores inherent limitations of standard Genetic Testing for Aneuploidy (PGT-A), including an inability to detect ploidy abnormalities, and insufficient resolution for small copy number variants (CNVs) associated with pathogenic microdeletion/microduplication syndromes. Furthermore, the frequent detection of mosaic CNVs introduces clinical ambiguity and complicates patient counseling. To address these gaps, we developed the PGT-A Upgrade.
MATERIALS AND METHODS: The PGT-A Upgrade platform was developed by incorporating single nucleotide polymorphism (SNP) genotyping data into conventional

PGT-A workflows, coupled with custom artificial intelligence (AI) algorithms for CNV calling, ploidy analysis, and false mosaicism filtering. A retrospective multicenter study was conducted on 40,849 embryos from 77 reproductive centers. Trophectoderm biopsies were subjected to whole-genome amplification followed by low-pass sequencing and SNP genotyping. AI-based models were trained to classify mosaic CNVs with reduced ambiguity. A separate validation subset of 131 embryos at known risk for CNV syndromes was analyzed to determine diagnostic accuracy.
RESULTS: This approach enables reliable detection of heteroploidy (including uniparental disomy [UPD] and triploidy), identification of 42 clinically relevant CNV syndromes (33 microdeletions, 9 microduplications) below 4 Mb, and refined discrimination of false mosaicism. A retrospective analysis was performed on 40,849 embryos from 77 centers undergoing PGT-A Upgrade. Ploidy abnormalities (UPD or triploidy) were identified in 1.37% (559/40,849) of embryos, of which 63% (354/559) were triploid. These abnormalities, typically leading to implantation failure, are not reported by basic PGT-A. The overall mosaicism rate was 11.98% (4,895/40,849). Leveraging AI algorithms reduced the ambiguous mosaic call rate to approximately 6%, while maintaining a false-negative rate below 5% for true mosaic CNVs. In a subset of 131 embryos at risk for CNV syndromes, detection of microdeletions and microduplications (<4 Mb) achieved 100% sensitivity and specificity.
CONCLUSIONS: Standard diploidy assessment is insufficient for implantation prediction. PGT-A Upgrade improves detection of triploidy, UPD, small CNVs, and true mosaicism, reducing diagnostic uncertainty and better identifying viable embryos.
IMPACT STATEMENT: By reducing diagnostic uncertainty and enhancing the identification of truly viable embryos, PGT-A Upgrade represents a significant advancement toward more comprehensive preimplantation genetic assessment and improved reproductive outcomes.

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PRECONCEPTION EXPANDED CARRIER SCREENING IN THE REAL WORLD: COMPLEX RESULTS DRIVING REFERRAL TO A HIGH-COMPLEXITY REPRODUCTIVE GENETICS TELEMEDICINE PRACTICE.
Mili Thakur, M.D., FACOG, FACMG and Myra Thakur, NA, Genome Ally P.C., Grand Rapids, MI

OBJECTIVE: To characterize patients referred for carrier screening interpretation to a high-complexity reproductive genetics practice and define recurring clinical and counseling challenges in expanded carrier screening.
MATERIALS AND METHODS: We performed a retrospective cohort study of consecutive telemedicine consultations from January 2024 to March 2026 in a national reproductive genetics practice led by a physician triple-boarded in obstetrics/gynecology, reproductive endocrinology and infertility, and medical genetics. The physician was licensed in 26 states and evaluated individuals and couples with reproductive genetic indications referred by fertility practices. Data collected included referral reason, carrier screening results, disorder category, and counseling challenges.
RESULTS: Among 593 patients evaluated, 115 (19.4%) were referred for carrier screening interpretation and counseling. Most had prior laboratory-based genetic counseling but required additional physician-level review. Recurrent challenges in expanded carrier screening were identified. Thirteen cases involved congenital adrenal hyperplasia with ongoing uncertainty in clinical decision-making. Seven involved Alport syndrome with autosomal dominant risk and variable penetrance; 5/7 patients had hematuria or proteinuria prompting follow-up, revealing unexpected personal disease risk. Twenty-five cases involved low-penetrance conditions, including G6PD (n=12), HFE hemochromatosis (n=10), alpha-1 antitrypsin deficiency (n=3), Factor V Leiden (n=2), prothrombin thrombophilia (n=1), and ATM heterozygosity (n=2), including symptomatic individuals. Thirteen involved X-linked conditions affecting reproductive risk interpretation and PGT-M decisions. One case involved Ehlers-Danlos syndrome type VII, and two males had incidental asymptomatic findings. Additional complex cases included four patients with two variants in the same gene with unknown phase (PKU and POLG), and four couples where both partners were possible silent spinal muscular atrophy carriers and six donor gamete discordance cases due to mismatched screening panels or residual risk estimates. Common themes included unexpected health implications, penetrance uncertainty, inconsistent reporting, difficulty with PGT-M decisions, and post-test counseling gaps
CONCLUSIONS: Nearly one in five referrals to a specialized reproductive genetics practice were for carrier screening interpretation despite prior counseling, underscoring persistent complexity in expanded carrier screening. Variably penetrant dominant conditions, low-risk susceptibility alleles, X-linked findings, phase uncertainty, silent carrier states, and donor-recipient discordance were key challenges.
IMPACT STATEMENT: Expanded carrier screening increasingly identifies findings beyond traditional recessive reproductive risk. Refinement of panel design, clearer reporting, stronger pretest counseling, and access to advanced post-test reproductive genetics expertise may improve utilization, reduce confusion, and support more precise reproductive decision-making.
SUPPORT: No financial disclosure

ORAL ABSTRACT SESSION: ENDOMETRIOSIS & ADENOMYOSIS

O-91 3:45 PM Monday, October 26, 2026

REPRODUCIBILITY OF A MECHANICALLY INDUCED MURINE ADENOMYOSIS MODEL FOR TRANSLATIONAL THERAPEUTIC STUDIES.
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OBJECTIVE: To validate and replicate a published murine model of adenomyosis to establish its suitability for ongoing translational therapeutic studies.
MATERIALS AND METHODS: We studied the Elsherbini 2022 model. All procedures were approved by the institutional IACUC. Female BALB/c mice (6–8 weeks; n=5) underwent laparotomy with mechanical disruption of one uterine horn using a 30-gauge needle (100 punctures/cm), with the contralateral horn as control. Mice were sacrificed at postoperative day 14 (D14, n=2) and day 60 (D60, n=3), with one animal loss during follow-up. Uteri were harvested, fixed, paraffin-embedded, and stained with hematoxylin and eosin. Total gland counts (endometrial plus myometrial) and myometrial gland counts were quantified. Uterine horn weight and length were recorded at harvest. Groups were compared using Wilcoxon rank-sum testing ($p<0.05$).
RESULTS: Mechanical injury reproducibly induced histologic features consistent with adenomyosis, with progressive disease over time. Myometrial gland counts increased significantly from D14 to D60 (51.5 vs. 127.5, p=0.009) with total gland counts showing s similar trend (23.0 vs. 58.5, p=0.038). Although differences between injured and control horns did not reach statistical significance, consistent directional increases in glandular burden were observed. These findings replicate previously reported results, supporting reproducibility.
CONCLUSIONS: This study confirms the reproducibility of a mechanically induced murine model of adenomyosis, demonstrating consistent histologic progression over time.
IMPACT STATEMENT: This validated model provides a translational platform for ongoing studies in our laboratory investigating therapeutic strategies for adenomyosis.
SUPPORT: The authors did not receive support from any organization for the submitted work and no funding was received to assist with the preparation of this manuscript. The authors have no relevant financial or non-financial interests to disclose.

O-92 3:55 PM Monday, October 26, 2026

IMMUNO-METABOLIC ROLE OF ADIPONECTIN IN A MOUSE MODEL OF ENDOMETRIOSIS.
Ramanaiah Mamillapalli, Ph.D.[1], Weihong Li, MD, PhD[1], Nimisha Gawde, MD[2], Karthik Pyneni, BS[1], Shant Apelian, MD[3] and Hugh S Taylor, M.D.[4], [1]Yale university School of Medicine, New Haven, CT, [2]Yale University School of Medicine, New Haven, CT, [3]Yale School of Medicine, New Haven, CT, [4]Yale University, New Haven, CT

OBJECTIVE: Endometriosis is a chronic inflammatory disorder that affects nearly 10% of reproductive age women, causing chronic pelvic pain and infertility. It is associated with low body mass index (BMI), altered adipocyte metabolism and immune–metabolic dysfunction. Adiponectin (ADPN) is an adipose-derived cytokine (adipokine) with anti-inflammatory, immunomodulatory, and metabolic regulatory properties. It functions as a mediator of immune–metabolic regulation. In this study, we describe the effects of adiponectin on endometriosis using a murine model.
MATERIALS AND METHODS: Endometriosis was induced in female C57BL/6 mice (6–8 weeks) using a syngeneic model. After four weeks to establish lesions, mice were then randomized to receive recombinant adiponectin (20 µg/kg/day) or phosphate-buffered saline (PBS) via ALZET osmotic pumps implanted subcutaneously below the right scapula (n = 12/group). Following four weeks of treatment, mice were euthanized, lesions were measured, assigned attachment scores and collected for further analysis. Tissues were fixed, paraffin-embedded, sectioned, and stained with hematoxylin and eosin for histological evaluation. Immunohistochemistry (IHC) was performed using antibodies against CD3, CD4, CD8, AdipoR1, AdipoR2, and GLP-1R, with staining quantified using H-scores. The expression of IL-6, TNF-α, Igfbp1, Mrc1, Cyp2r, Fabp4 and Rock2 expression was determined by RT-qPCR, IHC and western blot analysis.
RESULTS: ADPN treatment resulted in a significant increase in endometriotic lesion volume compared with PBS-treated controls (1.63-fold increase; $p = 0.049$). Immunohistochemical analyses revealed a reduction in immune cell infiltration ($CD3^+$, $CD4^+$, and $CD8^+$ cells) in the ADPN-treated group compared with controls, with the greatest decrease observed in $CD8^+$ T cells (5.7-fold reduction; $p = 0.007$). AdipoR2 expression was significantly reduced in the ADPN-treated group compared with controls (mean ± SEM: 165 ± 8.6 vs 121.25 ± 12.33; $p = 0.01$). In contrast, the expression levels of AdipoR1 and GLP-1R were not significantly altered by ADPN treatment. We also found differential expression of genes downstream of AdipoR2 involved in inflammation and metabolism.
CONCLUSIONS: These findings indicate that adiponectin treatment exacerbates endometriotic lesion growth in this mouse model. Notably, adiponectin treatment was associated with a marked reduction in immune cell infiltration within the lesions, particularly a significant decrease in $CD8^+$ T cells. Together, these results suggest that adiponectin may promote endometriosis progression by modulating the immune microenvironment, potentially impairing cytotoxic immune responses and facilitating lesion expansion.
IMPACT STATEMENT: Adiponectin worsens endometriosis severity through immune modulation. These findings further add to the concept of a close link between endometriosis, adiposity and immunity.

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SYSTEMIC LEUKOCYTE EPIGENOMIC REPROGRAMMING IN ENDOMETRIOSIS.
E Cansu Cevik, M.D.[1] and Hugh S Taylor, M.D.[2], [1]Yale School of Medicine, [2]Yale University, New Haven, CT

OBJECTIVE: Endometriosis has traditionally been viewed as a localized pelvic inflammatory disorder; however, accumulating evidence supports its classification as a chronic systemic disease characterized by sustained immune dysregulation. While epigenetic alterations in eutopic and ectopic endometrium have been previously

described, persistent DNA methylation changes in circulating immune cells have not been examined.
MATERIALS AND METHODS: We performed genome-wide enzymatic methyl-sequencing on circulating leukocytes from reproductive-aged women with surgically confirmed endometriosis and unaffected controls. Differentially methylated CpG sites were identified using logistic regression with false discovery rate correction ($q < 0{\cdot}01$) and ≥ 25% methylation difference thresholds. Gene-level aggregation and pathway enrichment analyses were conducted using Kyoto Encylopedia of Genes and Genomes, Gene Ontology Biological Processes, and Reactome databases. High-confidence protein–protein interaction networks were constructed using STRING.
RESULTS: Peripheral leukocytes from women with endometriosis exhibited extensive epigenomic remodeling, with approximately 176,000 significantly altered CpG sites corresponding to 3,600 genes. Immune-focused enrichment analyses demonstrated overrepresentation of pathways involved in antigen presentation, T-cell activation, cytokine signaling, and inflammatory response programs. Differential methylation affected multiple cytokine and immune regulatory loci central to endometriosis biology, including IL6, TNF, IL1B, VEGF family members, and components of the IL-12/IFN-γ axis. Network analysis revealed tightly interconnected signaling modules centered on NF-κB, JAK/STAT, MAPK, and PI3K–mTOR pathways, consistent with coordinated regulation of leukocyte activation and inflammatory signaling. These patterns differ from tissue-based reports of transcriptional activation and instead support the presence of stable systemic immune epigenetic remodeling in circulating leukocytes.
CONCLUSIONS: Endometriosis is associated with widespread DNA methylation remodeling in circulating leukocytes, with enrichment of genes regulating cytokine signaling, immune activation, and inflammatory pathways. These findings suggest that endometriosis induces durable epigenetic programming of peripheral immune cells, contributing to persistent systemic inflammation beyond the endometriosis lesion or pelvic environment. Epigenetic programing of immune response may explain persistent systemic inflammation even after treatment of endometriosis.
IMPACT STATEMENT: Endometriosis is marked by durable systemic immune epigenetic reprogramming that extends beyond localized pelvic pathology. Genome-wide leukocyte DNA methylation remodeling strengthens the view of endometriosis as a systemic inflammatory disease. Epigenetic reprogramming of peripheral immune cells may help sustain systemic inflammation even after treatment of endometriotic lesions.
SUPPORT: No financial support was received for this study.

O-94 4:15 PM Monday, October 26, 2026

ALTERED miRNA CARGO IN EXTRACELLULAR VESICLES FROM THE EUTOPIC ENDOMETRIUM DURING GESTATION MAY UNDERLIE ADVERSE PREGNANCY OUTCOMES IN WOMEN WITH ENDOMETRIOSIS.
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OBJECTIVE:
Endometrial-embryo communication mediated by extracellular vesicles (EVs) is essential for pregnancy development and may be disrupted in endometriosis due to altered EV cargo, contributing to pregnancy complications. This study investigated whether the miRNA cargo of endometrial EVs is altered during early pregnancy and evaluated its functional impact using a gestational endometriosis organoid-based co-culture model that overcomes ethical limitations of obtaining endometrial biopsies from pregnant women.
MATERIALS AND METHODS: Endometrial organoids were derived from eutopic endometrial biopsies of infertile women with stage III–IV endometriosis and fertile healthy women [18–40 years old, BMI ≤ 30 kg/m²] (n=15/group) and hormonally differentiated into a gestational stage. EVs were isolated from conditioned medium and miRNAs were extracted and analyzed by miRNA-seq. Target genes and functional enrichment were analyzed using mirDIP, miRTarBase, and g:Profiler. Effects of altered EV miRNAs on endometrial-embryo interactions was assessed by qPCR using co-culture systems of endometrial organoids with human endometrial stromal cells (hESCs) or embryonic JAR cells.
RESULTS:
EVs were successfully isolated. miRNA-seq identified 8 differentially expressed miRNAs (FDR<0.05), 6 downregulated (miR-1290, miR-1246, miR-320d, miR-4516, miR-12136, miR-3065-5p) and 2 upregulated (miR-191-5p, miR-335-5p), targeting 3,964 genes. GO analysis revealed 789 biological processes (FDR<0.05) related to embryo–endometrium communication, immunity, angiogenesis, and epithelial–mesenchymal transition (EMT). KEGG analysis identified 32 deregulated pathways (FDR<0.05), including PI3K-Akt signaling associated with preeclampsia. Representative target genes were selected based on their roles in embryo–endometrium communication (JAR cells), EMT in stromal cells, or both processes in endometrial organoids. In gestational epithelial endometriosis organoids, IGF2, NR2F2, WASF3 and RAC1 were upregulated, and LIF and PTK2B downregulated. In hESC, the EMT gene regulators SFRP1, CDC42, RAC1 and WASF3 were upregulated, while expression of adhesion-related gene PTK2B was downregulated. In JAR cells, genes associated with oxidative stress defense as NR2F2 and IGF2 were upregulated, whereas genes involved in trophoblast differentiation as MDFI, SP3, and RDH10 were downregulated. These changes were consistent with the inverse expression of their regulatory miRNAs in EVs.
CONCLUSIONS:
Endometrial EVs from women with endometriosis carry an altered miRNA profile that modulates gene expression in embryonic and endometrial cells, potentially impairing embryo–maternal communication and the endometrium's capacity to support early pregnancy, contributing to adverse pregnancy outcomes.
IMPACT STATEMENT:: Our study provides new insights into the molecular pathways underlying pregnancy-related complications in endometriosis and establishes a basis for developing targeted therapies, addressing a previously understudied area due to limited access to endometrial samples during gestation.
SUPPORT: FI22/00102; FPU21/01178; CP20/00120; CD23/00157; PI21-00184;CD24/00184
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THE IMPACT OF SUPRAPHYSIOLOGICAL ESTROGEN LEVELS ON ENDOMETRIOTIC LESION VOLUME DURING OVARIAN STIMULATION: A PROSPECTIVE STUDY.
Ayse Seyhan, M.D.[1], Irem Usta Korkut, M.D.[2], Ece Aksakal, M.D.[3], Sinem Ertas, MD, Assoc.Prof.[4] and Cumhur Bulent Urman Prof, MD[3], [1]Amerikan Hastanesi, Istanbul, Turkey, [2]AMERICAN HOSPITAL, [3]American Hospital, Istanbul, Turkey, [4]AMERIKAN HASTANESİ, ISTANBUL, Turkey

OBJECTIVE: Endometriosis is estrogen-dependent, raising concern that supraphysiological estradiol during controlled ovarian stimulation (COS) for IVF may promote lesion progression. Prospective volumetric data are scarce. Using paired three-dimensional (3D) ultrasound with Virtual Organ Computer-aided Analysis (VOCAL) and IDEA criteria, performed by a single operator, we quantified changes in endometrioma and deep endometriotic (DE) nodule volumes from stimulation day 1 to the trigger day.
DESIGN: Prospective observational cohort study at a single tertiary IVF center.
MATERIALS AND METHODS: Women with confirmed endometriomas and/or DE nodules undergoing COS for IVF/ICSI underwent paired 3D transvaginal ultrasound on stimulation day 1 and trigger day. Volumes were measured with VOCAL (30° rotation step); DE nodules characterized per IDEA criteria. Primary outcomes (endometrioma, uterosacral ligament [USL], and rectosigmoid [RS] nodule volumes) were analyzed with the Wilcoxon signed-rank test ($p < 0.05$).
RESULTS: Twenty women with 23 endometriomas and 31 DE nodules (16 USL, 15 RS) were included. Mean age 37.2 ± 3.4 years; total gonadotropin 3,818 ± 982 IU; median peak estradiol 1,700 pg/mL; follicles >14 mm 6 (1–11); cumulus–oocyte complexes 6 (1–17); MII oocytes 4 (1–13).Median endometrioma volume increased from 19.25 cm³ (IQR 5.7–21.5) to 20.00 cm³ (IQR 8.4–22.0) ($Z = –3.616$, $p < 0.001$). USL volume changed from 0.25 cm³ (IQR 0.20–0.48) to 0.27 cm³ (IQR 0.20–0.64) ($p = 0.42$); RS volume changed from 0.55 cm³ (IQR 0.35–1.60) to 0.60 cm³ (IQR 0.48–1.60) ($p = 0.04$).
CONCLUSIONS: Despite supraphysiological estradiol exposure, 3D volumetric assessment demonstrated only minimal short-term changes in endometriotic lesions. Although endometrioma and RS nodule volumes increased statistically, the absolute differences were small (≈0.75 cm³ and ≈0.05 cm³) and below any clinically relevant threshold; USL nodules showed no change. A single IVF cycle does not appear to drive clinically meaningful progression of endometriomas or DE nodules, directly informing pre-IVF counseling and supporting the safety of standard COS in women with endometriosis.
IMPACT STATEMENT: Concerns that supraphysiological estradiol during IVF stimulation accelerates endometriotic lesion growth are not supported by these prospective short-term volumetric data. The statistically significant volume changes detected in endometriomas and rectosigmoid nodules are too small to be clinically meaningful, providing reassurance for women with endometriosis and their clinicians that a single controlled ovarian stimulation cycle is unlikely to drive measurable disease progression. These findings support shared decision-making and may help reduce hesitation around IVF in this population.
SUPPORT: N/A

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OPTIMISING LIVE BIRTH IN ENDOMETRIOSIS: AN UMBRELLA REVIEW OF SURGICAL, MEDICAL, AND ART STRATEGIES.
Dr. Yusuf Beebeejaun, MRCOG MHDL MBBS BSc(Hons)[1], Orla Power, MBBChBAO[2], Arjun Deshpande, N/A[3] and Sesh K Sunkara, MD, FRCOG[4], [1]IVI RMA UK, London, United Kingdom, [2]Cork, T12 R721, Ireland, [3]Barts and The London School of Medicine, [4]King's College London, London, United Kingdom

OBJECTIVE:
To evaluate the comparative effectiveness of surgical, medical, and assisted reproductive technology (ART) strategies on live birth and reproductive outcomes in women with endometriosis.
MATERIALS AND METHODS:
An umbrella review of systematic reviews and meta-analyses was conducted in accordance with PRISMA guidance and prospectively registered. MEDLINE, Embase, Cochrane Database of Systematic Reviews, and Epistemonikos were searched from inception to August 2025. Eligible reviews assessed fertility-optimising interventions in women with endometriosis undergoing ART. Outcomes included live birth rate (LBR), clinical pregnancy rate (CPR), miscarriage, implantation, and oocyte yield. Methodological quality was appraised using AMSTAR-2. Where overlap existed, the most comprehensive and methodologically robust meta-analyses were prioritised. Effect

estimates were reported as odds ratios (OR) or mean differences (MD) with 95% confidence intervals (CI).

RESULTS:
Thirty-five meta-analyses contributed over 150 pooled outcomes across pretreatment, ART protocol, and IVF outcome domains. Surgical management of ovarian endometriomas prior to ART was not associated with improved LBR (OR 0.91, 95% CI 0.63–1.30) or CPR (OR 0.97, 95% CI 0.78–1.20) and was associated with reduced ovarian reserve; bias-adjusted analyses suggested a potential reduction in LBR (OR 0.53, 95% CI 0.33–0.86). Non-excisional approaches showed no benefit. In contrast, surgery for deep infiltrating endometriosis was associated with higher LBR (OR 2.22, 95% CI 1.42–3.46), although evidence was observational. Hormonal pretreatment with GnRH agonists did not significantly improve CPR (RR 1.13, 95% CI 0.91–1.41), and evidence for LBR was low certainty. Frozen embryo transfer was associated with higher LBR (OR 1.53, 95% CI 1.13–2.08) and lower miscarriage (OR 0.70, 95% CI 0.50–0.97) compared with fresh transfer. Overall, IVF outcomes in women with endometriosis were comparable to controls despite reduced oocyte yield (MD −1.59, 95% CI −2.25 to −0.94).

CONCLUSIONS:
ART-based strategies, particularly frozen embryo transfer, are associated with improved live birth outcomes in endometriosis, whereas routine surgical and prolonged medical pretreatment strategies provide limited benefit and may adversely affect ovarian reserve.

IMPACT STATEMENT:
These findings support prioritisation of ART optimisation over routine surgical or suppressive approaches and highlight the need for individualised, fertility-focused management pathways in endometriosis to maximise live birth while minimising treatment-related harm.

SUPPORT: Nil.

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CHRONIC EXPOSURE TO ENDOMETRIOSIS IMPAIRS PREGNANCY OUTCOMES THROUGH DISRUPTION OF PLACENTAL STRUCTURE: A COMPREHENSIVE ANALYSIS USING A PREGNANCY MOUSE MODEL.
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OBJECTIVE:
To establish a novel mouse model mimicking chronic exposure to endometriosis before pregnancy and evaluate its impact on perinatal outcomes and placental structure, with focus on maternal aging and junctional zone integrity.

MATERIALS AND METHODS:
Endometriosis was induced in female BALB/c mice by intraperitoneal injection of minced homologous uterine tissue; controls received vehicle. Mating was initiated either 1 day (YOUNG) or 43 days (AGED) after induction and repeated every 4 days for 6 weeks. Dams were sacrificed at 18 days post coitum. Resorptions, litter size, fetal weight (FW), preterm labor, and endometriotic lesion burden were assessed. Placentas from the AGED cohort were stained with hematoxylin and eosin and analyzed using ImageJ. Decidual and labyrinth thickness, junctional zone area (Jz-area), and disrupted junctional zone ratio (JzI/Jz) were measured. Wilcoxon and log-rank tests were used; $p<0.05$ was significant.

RESULTS:
In the YOUNG model, FW and resorptions were comparable between endometriosis and control groups. In the AGED model, endometriosis significantly reduced FW compared with controls (953.8 ± 71.6 vs. 1044.8 ± 111.6 mg, $p<0.05$) and increased resorptions (2.4 ± 1.3 vs. 1.7 ± 1.4, $p<0.05$). FW was also lower in AGED endometriosis mice than in YOUNG endometriosis mice (953.8 ± 71.6 vs. 1059.5 ± 83.1 mg, $p<0.05$). Preterm labor occurred only in endometriosis groups. Placental analysis showed no significant differences in decidual or labyrinth thickness. However, Jz-area was reduced in AGED endometriosis placentas compared with controls (0.8 ± 0.1 vs. 1.1 ± 0.1 mm², $p<0.05$), while JzI/Jz was increased (0.10 ± 0.04 vs. 0.03 ± 0.03, $p<0.05$), indicating junctional zone disruption.

CONCLUSIONS:
Chronic exposure to endometriosis, particularly with maternal aging, impairs pregnancy by reducing fetal growth and increasing resorptions. These outcomes are associated with disruption of placental junctional zone architecture, suggesting a potential mechanism for endometriosis-related fetal growth restriction.

IMPACT STATEMENT:
This model links chronic endometriosis exposure to fetal growth restriction through placental structural disruption and provides a platform for mechanistic and therapeutic studies.

ORAL ABSTRACT SESSION: INFERTILITY (1 OF 3)

O-98 3:45 PM Monday, October 26, 2026

HOW DO FRESH, EPIDIDYMAL, AND TESTICULAR SPERM SAMPLES PERFORM FOR THE MOST SEVERE CASES OF OLIGOSPERMIA?
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OBJECTIVE:
To evaluate euploidy rates and pregnancy outcomes after using fresh ejaculated, aspirated epididymal, and testicular biopsy sperm in cycles with the most severe cases of male factor infertility (defined in this study as a pre-processing sperm concentration of ≤1 million/ml).

MATERIALS AND METHODS:
A retrospective cohort data analysis was performed at a single, academically affiliated infertility center in the U.S. from January 2014 to December 2024. Included cycles were fresh autologous oocyte retrievals involving intra-cytoplasmic sperm injection (ICSI) and preimplantation genetic testing for aneuploidy (PGT-A), and had a pre-processing sperm concentration of ≤1 million/ml. ICSI was performed with either fresh ejaculated (FE), aspirated epididymal (AE), or testicular biopsy (TB) sperm samples (fresh or frozen). The primary outcome was embryo euploidy rate per blastocyst biopsied, and the secondary outcome was live birth rate (LBR) after euploid frozen blastocyst transfer. We used multiple imputation to account for missing data. Patient and cycle characteristics were compared across groups using Welch's one-way analysis of variance to account for unequal variances. Pregnancy outcomes were evaluated using generalized estimating equations with clustering by patient ID to account for repeated cycles, adjusting for female age, BMI, gravidity, AMH, female infertility diagnosis, and male age.

RESULTS:
A total of 486 cycles were included (Table 1). Regardless of which sperm source was used, there were no statistically significant differences in cycle outcomes or LBR (Table 1).

Table 1. Cycle characteristics by sperm source used

	FE	AE	TB	p-value
Number of Cycles	263	54	169	-
Female Age	36.2	36.7	36.7	0.37
Oocytes Retrieved[a]	16.6	16.0	16.8	0.82
Fertilization Rate (per oocyte retrieved)[b]	55%	60.5%	57.3%	0.20
Blastulation Rate (per 2PN)[b]	68.1%	67.8%	64.9%	0.20
Blastocysts Biopsied[a]	3.7	4.0	3.8	0.77
Euploid Embryos[a]	2.0	2.3	1.9	0.55
Proportion of Euploid Embryos (per blastocyst biopsied)[b]	51.4%	56.2%	49.5%	0.18
LBR[b]	49.2%	49.2%	54.1%	See footnote[c]

[a]reported as mean
[b]reported as percentage
[c]Adjusted OR (95% CI) for FE vs EA sperm was 1.0 (0.57,1.76). Adjusted OR (95% CI) for FE vs TB sperm was 1.20 (0.81,1.77).

CONCLUSIONS:
In cycles with severe oligospermia (pre-processing sperm ≤1 million/ml), AE and TB samples perform similarly to FE samples with regards to fertilization, blastulation, euploidy rate, and LBR.

IMPACT STATEMENT:
Epididymal and testicular sperm samples are thought to have improved outcomes from reduced DNA fragmentation. For the most severe cases of male factor infertility, EA and TB samples did not offer benefit compared to FE sperm.

O-99 3:55 PM Monday, October 26, 2026

GESTATIONAL AGE-SPECIFIC STILLBIRTH RISK ASSOCIATED WITH INFERTILITY TREATMENT.
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OBJECTIVE: To characterize gestational age (GA)–specific stillbirth risk associated with assisted reproductive technology (ART) and non–ART infertility treatment and to evaluate whether maternal comorbidities modify these associations.

MATERIALS AND METHODS: We conducted a retrospective cohort study of 30,416,952 singleton births in the United States (2014–2022) using the National Center for Health Statistics vital statistics databases (natality, fetal death, and infant files). Exposures were ART and non–ART infertility treatment versus no treatment. The primary outcome was stillbirth (≥20–41 weeks). The secondary outcome was perinatal death. Covariates were restricted to pre–pregnancy characteristics: maternal age, body mass index, race and ethnicity, education, parity, cigarette smoking, chronic hypertension, and pregestational diabetes.
Cox proportional hazards models and Royston-Parmar flexible parametric survival models with time–varying treatment effects were used to estimate GA–specific adjusted hazard ratios (aHRs) using a fetus–at–risk framework. Stratified analyses were performed by advanced maternal age, obesity, chronic hypertension, pregestational diabetes, and a low–risk cohort.

RESULTS: Among the 288,871 ART pregnancies (1,675 stillbirths; 5.80/1,000), 184,392 non–ART pregnancies (1,063 stillbirths; 5.77/1,000), and 29,943,689 untreated pregnancies (132,734 stillbirths; 4.43/1,000), the time–varying model fit significantly better than the proportional hazards model ($p<0.001$). ART–associated stillbirth risk was highest at 20 weeks (aHR 1.76, 95% CI 1.53–2.02), declined to a nadir at 32 weeks (aHR 0.93, 95% CI 0.81–1.06), and increased again at term (aHR 1.12, 95% CI 1.02–1.23). Non–ART treatment demonstrated a similar but attenuated pattern (aHR 1.35 at 20 weeks– 1.06 at term). Among patients with comorbidities, both treatment groups demonstrated attenuation towards protective associations at later GAs. In a low–risk

cohort (excluding any comorbidity), both ART (aHR 1.25–1.42) and non–ART (aHR 1.23–1.32) were associated with persistently elevated stillbirth risk throughout pregnancy, without a protective nadir. Both ART (aHR 1.40, 95% CI 1.34–1.47) and non–ART (aHR 1.26, 95% CI 1.19–1.33) were associated with an increased risk of perinatal death compared with no treatment.
CONCLUSIONS: Parallel GA–specific risk patterns observed for ART and non–ART treatment suggests that the underlying subfertility, rather than the ART procedures alone, may drive excess stillbirth risk compared with untreated pregnancies. Stillbirth risk is non proportional across gestation and modified by maternal comorbidities, supporting a potential role for antenatal fetal surveillance in risk reduction.
IMPACT STATEMENT: Low risk subfertile patients had a persistent 23–42% increased risk of stillbirth compared with untreated pregnancies. These findings support subfertility as an independent risk factor for stillbirth and highlight the need for studies evaluating whether targeted antenatal fetal surveillance can mitigate this risk.
SUPPORT: None
REFERENCES:
1. Sarmon KG, Eliasen T, Knudsen UB, Bay B. Assisted reproductive technologies and the risk of stillbirth in singleton pregnancies: a systematic review and meta-analysis. Fertil Steril 2021;116:784–92

O-100 4:05 PM Monday, October 26, 2026

SEVERE UTERINE HYPOPLASIA IN PURE 46,XX GONADAL DYSGENESIS: LONG-TERM ESTRADIOL THERAPY ENABLING EMBRYO TRANSFER.
Gabriela Bellini De Souza, M.D., Eliane Lima, M.D., Helena Dos Santos, M.D., Paulo Bianchi, M.D., M.SC., Edmund Baracat, M.D. Ph.D., José Maria Soares Júnior, MD PhD and Dr. Pedro AA Monteleone, M.D., Ph.D, Disciplina de Ginecologia, Faculdade de Medicina da USP, São Paulo, Brazil

OBJECTIVE:
To report uterine development, endometrial response, and reproductive outcomes after estradiol therapy in pure 46,XX gonadal dysgenesis with severe uterine hypoplasia.
MATERIALS AND METHODS:
A 33-year-old woman presented with primary amenorrhea, absent secondary sexual characteristics, and infertility. Parental consanguinity and a similarly affected sister suggested a probable genetic etiology. Hormonal evaluation showed high follicle-stimulating hormone levels on two occasions (66.9 and 85 mIU/mL) and low estradiol (<24 pg/mL). Initial ultrasound showed a uterine length of 3.2 cm, volume of 6 cm3, endometrial thickness of 2.0 mm, and ovaries measuring 0.7 cm3 each. The karyotype was 46,XX. Hormonal replacement therapy (HRT) was started, and after 9 months of continuous estradiol valerate and cyclic progesterone, uterine length increased to 6.45 cm and volume to 34 cm3, with withdrawal bleeding. Donor-oocyte in vitro fertilization with a 25-year-old donor yielded 9 mature oocytes and 6 blastocysts. Endometrial preparation for embryo transfer included oral estradiol valerate 2 mg three times daily for 12-15 days, followed by micronized vaginal progesterone 300 mg every 12 hours for 5 days before embryo transfer. Endometrial thickness reached 8.0-8.8 mm with a trilaminar pattern. Informed consent was obtained.
RESULTS:
To date, 3 single frozen embryo transfers have been performed (blastocysts graded 3AA, 3AB, and 4AA) resulting in 2 biochemical pregnancies (peak beta-human chorionic gonadotropin [βhCG] levels of 241 and 459 mIU/mL) and one anembryonic pregnancy (βhCG 4887 mIU/mL), without an ongoing pregnancy. Preimplantation genetic testing for aneuploidy (PGT-A) was not performed.
CONCLUSIONS:
Pure 46,XX gonadal dysgenesis is rare and, as gonadal failure occurs before puberty, is associated with prolonged hypoestrogenism and severe uterine underdevelopment. Estradiol-based therapy enabled relevant uterine growth, withdrawal bleeding, trilaminar endometrial development and embryo transfer. Although an embryonic factor cannot be definitively excluded, the early losses after transfer of 3 good-quality blastocysts raise the hypothesis that estrogen-driven anatomical growth may not fully restore functional uterine competence in a severely hypoplastic uterus. Literature on the subject is scarce and mainly comprises case reports. A recent Cochrane review shows a volumetric uterine response to HRT; however, reproductive outcomes were not assessed. Beyond uterine volume and endometrial thickness, prolonged hypoestrogenism might affect endometrial programming, vascular remodeling, progesterone responsiveness, and implantation-window synchronization, impairing embryo implantation and/or early pregnancy development.
IMPACT STATEMENT:
This rare case highlights an important counseling point in pure 46,XX gonadal dysgenesis: estradiol therapy can restore uterine size and allow embryo transfer, but sustained pregnancy may depend on functional uterine and endometrial recovery, not only anatomical growth. Without PGT-A, embryo ploidy uncertainty should be considered alongside possible persistent uterine-endometrial limitations.
SUPPORT: This case report received no external financial support, funding, or sponsorship.
REFERENCES:
Craciunas L, Zdoukopoulos N, Vinayagam S, Mohiyiddeen L. Hormone therapy for uterine and endometrial development in women with premature ovarian insufficiency. Cochrane Database of Systematic Reviews 2022, Issue 10. Art. No.: CD008209. DOI: 10.1002/14651858.CD008209.pub2. Accessed 28 April 2026.

O-101 4:15 PM Monday, October 26, 2026

TWO-DIMENSIONAL AREA-TO-PERIMETER RATIO OF THE CORONAL UTERINE CAVITY AS A PROXY FOR 3D GEOMETRY: A REPRODUCIBLE MARKER ASSOCIATED WITH LIVE BIRTH AFTER FROZEN-THAWED BLASTOCYST TRANSFER.
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OBJECTIVE: To evaluate the reproducibility and clinical association of a novel area-to-perimeter (A/P) ratio derived from a predefined fundal uterine cavity region on three-dimensional transvaginal ultrasound (3D-TVS) in women undergoing frozen-thawed single blastocyst transfer.
MATERIALS AND METHODS: This retrospective cohort study included 344 women (age 20–40 years) undergoing frozen-thawed transfer of a high-quality single blastocyst. 3D-TVS was performed during the luteal phase before transfer. In the coronal plane, a standardized fundal region (extending 10 mm laterally and 20 mm inferiorly from the fundal midpoint) was delineated, and the A/P ratio was calculated. Reproducibility was assessed in an independent dataset (n=62) using intraclass correlation coefficients (ICC) and Bland-Altman analysis. Primary outcome was live birth; secondary outcome was clinical pregnancy. Multivariable logistic regression and receiver-operating-characteristic (ROC) analysis were performed. A sensitivity analysis excluded women with recognized congenital uterine anomalies (n=33).
RESULTS: The A/P ratio showed excellent intraobserver (ICC=0.947; 95% CI, 0.913–0.967) and interobserver (ICC=0.968; 95% CI, 0.948–0.981) reproducibility with no systematic bias. Mean A/P ratio was 0.42±0.06 (range: 0.23–0.58). Higher A/P ratio was independently associated with improved outcomes: per standard-deviation increase, fully adjusted odds ratio (OR) was 1.52 (95% CI, 1.18–1.98; P=0.001) for clinical pregnancy and 1.96 (95% CI, 1.45–2.63; P<0.001) for live birth. ROC analysis showed modest discriminative ability (clinical pregnancy: AUC=0.63; live birth: AUC=0.67). Using an exploratory threshold of 0.45, women with A/P≥0.45 had significantly higher adjusted odds of clinical pregnancy (OR=2.47; 95% CI, 1.50–4.07) and live birth (OR=4.22; 95% CI, 2.51–7.11) versus A/P<0.45 (live birth rate: 53.3% vs 20.5%). Findings remained consistent after exclusion of women with recognized uterine anomalies (adjusted OR for live birth per SD: 1.97; 95% CI, 1.53–2.53).
CONCLUSIONS: A 3D-TVS–derived A/P ratio of a standardized fundal uterine cavity region is a highly reproducible geometric marker independently associated with clinical pregnancy and live birth after frozen single-blastocyst transfer. The association persisted in women without classified uterine anomalies, supporting its relevance across the full morphologic spectrum. Discriminative ability was modest, and external validation is required before clinical implementation.
IMPACT STATEMENT: Current uterine classification systems assign categorical diagnoses but do not provide a continuous metric for quantifying subtle upper cavity narrowing. This reproducible A/P ratio offers a practical quantitative adjunct to conventional morphologic frameworks, potentially identifying clinically relevant cavity geometry—particularly in borderline cases—that may influence implantation outcomes after frozen blastocyst transfer.

O-102 4:25 PM Monday, October 26, 2026

REPRODUCTIVE OUTCOMES AFTER EMPIRICAL ANTIBIOTICS FOR HYSTEROSCOPIC ENDOMETRIAL MICROPOLYPS WITH CD138(-). Yutong Wang, Doctor[1] and Jintao Peng, Dr[2], [1]The Sixth Affiliated Hospital, Sun Yat-sen University, Guangzhou City, Guangdong Province, China, [2]The sixth affiliated hospital of Sun Yat-sen university, Guangzhou, China

OBJECTIVE: To determine whether empirical antibiotic treatment improves clinical pregnancy and live birth rates in infertile women with isolated endometrial micropolyps—a recognized hysteroscopic feature of chronic endometritis (CE)—and negative CD138 (syndecan-1) immunohistochemical staining.
MATERIALS AND METHODS: This retrospective cohort study enrolled 523 infertile women aged 20–40 years who underwent hysteroscopy with endometrial biopsy for CD138 immunohistochemistry prior to frozen embryo transfer (FET). Micropolyps—an established hysteroscopic CE criterion—were the sole abnormal finding; other inflammatory features (stromal edema, hyperemia, petechiae, or strawberry endometrium) were absent, and CD138 staining was negative in all cases. Patients received no antibiotics (n=332) or empirical doxycycline plus metronidazole (both 14-day BID regimens) post-hysteroscopy (n=191). Primary outcomes were clinical pregnancy and live birth rates. Propensity score overlap weighting (OW) balanced covariates including age, BMI, anti-Müllerian hormone, FSH, infertility type and duration, embryo type, and number transferred. Weighted Poisson regression estimated risk ratios (RR) and linear probability models estimated risk differences (RD), both with 95% CIs. Sensitivity analyses included inverse probability weighting, 1:1 propensity score matching, and multivariable regression. E-values assessed robustness to unmeasured confounding.
RESULTS: After OW, all covariates were well-balanced (SMD <0.1). Antibiotic treatment was associated with significantly reduced clinical pregnancy rates (48.6% vs. 61.6%; RR: 0.79, 95% CI: 0.67–0.93; RD: −0.130, 95% CI: −0.219 to −0.041) and live birth rates (39.2% vs. 53.0%; RR: 0.74, 95% CI: 0.60–0.91; RD: −0.138, 95% CI: −0.227 to −0.050). Results were consistent across all sensitivity analyses. E-values of 1.85 and 2.04 indicated moderate robustness to unmeasured confounding.
CONCLUSIONS: Despite micropolyps being a recognized hysteroscopic CE criterion, their presence without CD138-confirmed plasma-cell infiltration was not associated with antibiotic benefit; instead, treatment was associated with reduced pregnancy and live birth rates. These findings argue against empirical antibiotics when histologic CE evidence is absent.
IMPACT STATEMENT: This study demonstrates that micropolyps alone—without CD138-confirmed CE—do not justify empirical antibiotics, supporting a more precise diagnostic framework. Reserving treatment for histologically confirmed cases may

protect reproductive tract microbiome homeostasis, improve ART outcomes, and advance antimicrobial stewardship.

O-103 4:35 PM Monday, October 26, 2026

EARLY FETAL HEART RATE IN IN VITRO FERTILIZATION: ESTABLISHING REFERENCE RANGES AND RISK PREDICTION FOR PREGNANCY LOSS. Laura X Zalles, M.D.[1], Kerry S.J. Flannagan, PhD[2], Kamilah Tebeau, MD[3], Michael Vance Homer, M.D.[4], Luis R Hoyos, M.D.[5], Meike L Uhler, MD[6], Phillip A Romanski, M.D., M.SC.[7] and Cassandra Roeca, M.D.[3], [1]University of Colorado, Denver, CO, [2]US Fertility, Rockville, MD, [3]University of Colorado School of Medicine, Aurora, CO, [4]Reproductive Science Center, [5]IVF Florida, [6]Fertility Centers of Illinois, Chicago, IL, [7]Reproductive Medicine Associates of New York, New York, NY

OBJECTIVE: To define observed fetal heart rate (FHR) reference ranges at 6–9 weeks' gestational age (GA) after embryo transfer (ET) and assess their predictive value for pregnancy loss.
MATERIALS AND METHODS: Retrospective cohort of 54,395 singleton pregnancies from fresh or frozen ET (with and without PGT-A) from 2015–2024. FHR was stratified by GA to compare live birth vs clinical pregnancy loss ranges, with a sub-analysis of euploid frozen ETs. AUC was calculated by GA. Using 75/25 training/test splits, loss-based FHR percentiles (10th, 50th, 90th) and corresponding sensitivity, specificity, and positive predictive value (PPV) were derived.
RESULTS: Mean age of oocyte was 33.1 years and mean age at ET was 35.7 years; mean body mass index was 26.4 kg/m2. Fresh ET comprised 19.6% of cycles, and 50.7% of frozen ET utilized PGT-A. FHR distributions (mean ± SD) for live birth vs clinical pregnancy loss were: 6-6w6d GA 119.6 ± 9.9 vs 111.9 ± 16; 7-7w6d GA 143.7 ± 14.2 vs 121.2 ± 27.2; 8-8w6d GA 170.6 ± 9.1 vs 152.6 ± 34.6; 9-9w6d GA 174.8 ± 8.6 vs 168.4 ± 27 (all $p < 0.0001$). Table 1 summarizes sensitivity, specificity, and PPV across percentile FHR thresholds among clinical losses by GA. Of PGT-A frozen ET cycles, FHR distributions for live birth vs clinical pregnancy loss were: 6-6w6d GA 120.1 ± 9.8 vs 111.7 ± 16.6; 7-7w6d GA 144.3 ± 14.2 vs 123.6 ± 26.6; 8-8w6d GA 171 ± 9.2 vs 158.7 ± 31; 9-9w6d GA 173.9 ± 9.2 vs 169.5 ± 25.3 (all $p < 0.0001$, except 9-9w6d $p=0.06$).
CONCLUSIONS: FHR demonstrated the greatest ability to predict pregnancy loss at 7–7w5d GA (AUC 0.75), with lower predictive performance at 6–6w5d (AUC 0.66) and 8–8w5d (AUC 0.65). By ≥9 weeks GA, FHR was no longer predictive of live birth (AUC 0.50). A fetal heart rate at or below the 10th percentile among losses has high specificity for clinical pregnancy loss. Between 7w0d and 8w6d, a fetal heart rate at or below the 10th percentile among losses has a PPV of 96-100% for clinical pregnancy loss. Fetal heart rates in the 90th percentiles among losses had low PPV for clinical pregnancy loss.
IMPACT STATEMENT: This is the first study to establish FHR reference ranges for early IVF pregnancies and to report values with high specificity and PPV for clinical pregnancy loss. Prior studies focused on spontaneously conceived pregnancies and low FHR thresholds. Among loss-based FHR quantiles, PPV was only high at low sensitivity. These data may aid provider and patient counseling.

GA	Percentile	FHR (bpm)	Sensitivity (%)	Specificity (%)	PPV (%)
6w0d - 6w6d	10th	91	0.117	0.994	0.634
	50th	114	0.491	0.744	0.150
	90th	127	0.897	0.177	0.091
7w0d - 7w6d	10th	82	0.100	1.000	0.96796
	50th	125	0.524	0.892	0.324
	90th	155	0.922	0.223	0.105
8w0d - 8w6d	10th	88.7	0.098	1.000	1.000
	50th	167	0.575	0.685	0.091
	90th	180	0.881	0.101	0.051
9w0d - 9w6d	10th	155.5	0.122	0.973	0.145
	50th	175	0.533	0.475	0.037
	90th	186	0.911	0.044	0.035

SUPPORT: No financial support was used for this study

O-104 4:45 PM Monday, October 26, 2026

CYCLE CANCELLATION VERSUS PROCEEDING WITH TRANSFER IN THIN ENDOMETRIUM: A PROPENSITY-MATCHED ANALYSIS OF FIRST EUPLOID FROZEN EMBRYO TRANSFER CYCLES. Amanda D Kadesh, M.D., M.S.[1], Prof. Erkan Kalafat, M.D. M.Sc[2], Christine V Whitehead, MS, BSN, RN[3], Marie D Werner, B.A., H.C.L.D, M.D.[1], Juan Antonio Garcia-Velasco, M.D., PH.D.[4], Baris Ata, M.D., M.SC.[5] and Emre Seli, M.D.[3], [1]IVIRMA Global Research Alliance, IVIRMA New Jersey, Basking Ridge, NJ, [2]Koc University School of Medicine, Istanbul, Turkey, [3]IVIRMA Global Research Alliance, RMA New Jersey, Basking Ridge, NJ, [4]IVI RMA Madrid, Madrid, Madrid, Spain, [5]Atasehir, Turkey

OBJECTIVE: In frozen embryo transfer (FET) cycles, treatment is often canceled at progesterone initiation when the endometrial lining is deemed suboptimal, with the expectation that a subsequent attempt may improve thickness and pregnancy outcomes. In this study, we compared outcomes between patients who proceeded with transfer despite a thin endometrium and those whose cycles were canceled and subsequently reattempted.
MATERIALS AND METHODS: Retrospective cohort of first autologous FET cycles (January 2018–December 2025). Patients with cycle cancellation for endometrium-related reasons (cycle cancellation group) were compared with those proceeding to transfer despite endometrial thickness (ET) <7 mm at progesterone start (immediate transfer group). Propensity score matching (up to 1:2) was performed within exact strata of stimulation protocol, ET category, and blastocyst morphology. Live birth (LB) was modeled with modified Poisson regression using cluster-robust standard errors on matched sets; multinomial regression compared all outcome categories with LB as reference.
RESULTS: Of 16,886 first transfer attempts, 635 (3.8%) had ET <7 mm at progesterone initiation; 413 proceeded with transfer and 222 (35.0%) were canceled. Of 188 cancellations for endometrium-related reasons, 162 (86.2%) underwent FET after ≥1 cancellation, while 26 (13.8%) never achieved transfer. Most reattempts followed programmed cycles (151/162, 93.2%). At subsequent transfer, 61/162 (37.7%) achieved ET ≥7 mm, while 62.3% remained <7 mm. Propensity score matching yielded 88 cancellation and 138 immediate transfer patients, with all standardized mean differences <0.10. In the matched cohort, the cancellation group had higher ET at transfer versus their initial canceled cycle (median 6.7 vs 6.0 mm, $p<0.001$) and versus the immediate transfer group (6.7 vs 6.2 mm, $p<0.001$). Crude live birth rates were 61.4% vs 51.4% in the cancellation and immediate transfer groups, respectively (aRR 1.22, 95% CI 0.84–1.74, $p=0.103$). Cancellation was associated with higher likelihood of pregnancy (77.3% vs 64.5%; RR 1.21, 95% CI 1.03–1.43, $p=0.020$). Among programmed cycle patients, switching to natural/stimulation protocols after cancellation was associated with thicker ET, higher pregnancy and live birth, versus immediate transfer (median ET 6.8 vs 6.2 mm; pregnancy 72.5% vs 66.1%; live birth 60.8% vs 52.4%). Those re-attempting on the same programmed protocol showed similar gains versus immediate transfer (median: 6.7 vs 6.2 mm; 83.3% vs 66.1%; 60.0% vs 52.4%).
CONCLUSIONS: In patients with thin endometrium at progesterone start, canceling and reattempting FET was associated with significantly improved ET and likelihood of pregnancy. While there was no statistically significant difference in LB, a 10% effect size suggests possible clinical relevance. Notably, 14% of patients in the cancellation group did not ultimately undergo an embryo transfer.
IMPACT STATEMENT: This study suggests that a cancel-and-reattempt strategy may improve endometrial thickness and pregnancy outcomes in patients with thin endometrium undergoing FET.

ORAL ABSTRACT SESSION: ART – ARTIFICIAL INTELLIGENCE (AI)

O-105 3:45 PM Monday, October 26, 2026

OPTIMAL MORPHOKINETIC TIME WINDOWS ARE ASSOCIATED WITH EUPLOIDY AND CLINICAL PREGNANCY AND ALIGN WITH ARTIFICIAL INTELLIGENCE (AI)-BASED EMBRYO ASSESSMENT. Carlos A. Guerrero, Ph.D., HCLD., ELD., CC[1], Christina Wright, B.S.[1], Daniel Skora, M.D.[1], Satin S Patel, M.D.[1], Rebecca A. Chilvers, M.D.[1], Jerald S Goldstein, M.D.[1], Assaf Ben-Meir, MD.[2], Tom L Wilkinson, BSc, MSc, MBA[2] and Pedro Pini, M.D.[2], [1]Fertility Specialists of Texas, Plano, TX, [2]Fairtility Ltd, Tel Aviv, Israel

OBJECTIVE: To evaluate whether optimal morphokinetic time windows are associated with euploidy and clinical pregnancy, and whether embryos developing within these optimal windows exhibit higher AI-based embryo assessment scores.
MATERIALS AND METHODS: This retrospective single clinic study analyzed embryos cultured in time-lapse incubators with a third-party AI software between 2024 and 2026. Ploidy analysis included biopsied embryos (n=1,298) with preimplantation genetic testing for aneuploidy (PGT-A), while clinical pregnancy analysis included transferred embryos with known clinical pregnancy outcomes (n=164). Morphokinetic parameters included cc2 (time between t2 to t3), cc3 (t3 to t5), s2 (t3 to t4), s3 (t5 to t8), and time to blastulation (tPNf to tB). For each parameter and outcome, embryos were divided into quartiles, and the quartile with the highest outcome rate was defined as the optimal window. Outcomes and AI-derived embryo quality scores (ranging 1-10) were compared between embryos inside versus outside these optimal ranges using chi-square and Welch t-tests.
RESULTS: Optimal time to blastulation [between 62.7–78.0 hours from tPNf to tB] was strongly associated with euploidy and clinical pregnancy rates. Embryos within this optimal window demonstrated higher euploidy rates (68.0% [221/325] vs 58.0% [564/973], $p=0.002$) and higher clinical pregnancy rates (73.2% [30/41] vs 53.7% [66/123], $p<0.05$). These embryos also showed significantly higher AI-based scores in both ploidy (9.5 vs 6.6, $p<0.001$) and clinical cohorts (9.8 vs 7.3, $p<0.001$).
Optimal early cleavage synchrony (s3) (between 1.0–3.0 hours for ploidy; 1.0–2.0 hours for clinical pregnancy) was also associated with improved embryo competence. Within this optimal windows, euploidy rates were higher (65.0% [234/360] vs 58.5% [553/946], $p=0.036$), and AI-based scores were significantly increased (8.3 vs 7.0, $p<0.001$). In addition, a non-significant increase in clinical pregnancy was observed (65.9% [27/41] vs 56.1% [69/123], $p=0.36$) together with an increase in the AI score (8.6 vs 7.7, $p=0.08$)
Other morphokinetic parameters (cc2, cc3, s2) did not demonstrate statistically significant associations with euploidy or clinical pregnancy.
CONCLUSIONS: Optimal morphokinetic time windows, particularly faster time to blastulation and early cleavage synchrony, are associated with improved euploidy and clinical rates. Embryos developing within these optimal ranges consistently demonstrate higher AI-based assessment scores.

IMPACT STATEMENT: Identification of optimal morphokinetic windows provides a simple, biologically grounded framework for embryo selection and supports the integration of AI-based assessment to enhance objective identification of embryos with higher developmental potential.
SUPPORT: None.

O-106 3:55 PM Monday, October 26, 2026

MENOTIME: A VALIDATED MACHINE LEARNING MODEL FOR TIME-TO-MENOPAUSE PREDICTION AND OVARIAN BIOLOGICAL AGE ASSESSMENT. Marie Humbert-Droz, PhD[1], Kiran Kumar, BS[2] and Veronica Donato, PhD, MMSCI[3], [1]Founding Engineer, CA, [2]San Diego, CA, [3]Research & Scientific Communications Lead

OBJECTIVE: To develop and validate MenoTime, a machine learning model predicting time to natural menopause (TTM) using hormonal and demographic biomarkers, and to evaluate its precision as a standardized ovarian aging assessment in clinical practice and research.
MATERIALS AND METHODS: The MenoTime baseline model was trained on a proprietary harmonized clinical dataset, rebalanced to include approximately 40% hormone users to ensure representation across the menopausal transition spectrum. The primary outcome was TTM in days, right-censored for women who had not yet reached natural menopause at the time of data collection. A hybrid survival model was developed combining two gradient-boosted survival trees using IPCWLS and CoxPH components, blended linearly across predicted time horizons. Input features included FSH, estradiol, AMH, age, BMI, menopause status, hormone use category, race/ethnicity, and smoking status. Age-stratified normative hormone deviation features were derived from population reference curves to capture individualized hormonal trajectories. Model performance was evaluated using 5-fold cross-validation, bootstrap resampling (n=500), and a held-out external test set (n=398).
RESULTS: The hybrid model achieved a concordance index of 0.756 (95% CI: 0.748-0.780) in cross-validation and 0.742 on the external test set, confirming generalizability across independent data. Mean absolute error was 571 days overall and 438 days at the 5-year prediction horizon, demonstrating clinically meaningful precision for medium-term menopause timing. Calibration slope was 1.028, indicating near-ideal average calibration with minimal systematic bias. Bootstrap resampling confirmed a noise floor of 0.45 years, establishing the model's reproducibility threshold and supporting its suitability as a sensitive and stable measurement tool across diverse patient profiles.
CONCLUSIONS: MenoTime demonstrates robust predictive validity and clinical feasibility for ovarian aging assessment across naturally cycling and hormone-using women. Its strong generalizability, calibration, and reproducibility support deployment as a standardized, objective endpoint in reproductive medicine clinical trials and longitudinal research programs targeting menopause-related outcomes.
IMPACT STATEMENT: Clinicians and researchers have lacked a reliable way to quantify ovarian aging from a single serum assessment, limiting proactive care to markers such as cycle changes or infertility. MenoTime overcomes this gap by converting routine laboratory and demographic data into an individualized estimate of time to natural menopause, enabling earlier and more precise fertility counseling, personalized timing of egg freezing or family planning, and proactive management of cardiometabolic, skeletal, and menopausal health risks linked to ovarian aging.
SUPPORT: This study was self-funded by Timeless Biotech.

O-107 4:05 PM Monday, October 26, 2026

FROM PREDICTION TO CLINICAL IMPACT: EVALUATING THE CLINICAL UTILITY OF AN AI-BASED EMBRYO RANKING SYSTEM VERSUS SENIOR EMBRYOLOGIST GRADING. Mohsen Bahrami, Ph.D.[1], Banafsheh Nikmehr, Ph.D.[2], Berk Timothy Yalcinkaya, B.S. Candidate[3], Ayse Kose Vuruskan, M.D.[2], Burak S Yalcinkaya, J.D.[4], Marlane Angle, PH.D.[5], Anuradha Koduru, M.D., M.S.[4] and Tamer M Yalcinkaya, M.D.[4], [1]Wake Forest School of Medicine, [2]Carolinas Fertility Institute, Charlotte, NC, [3]Stanford University, Stanford, CA, [4]Carolinas Fertility Institute, Winston Salem, NC, [5]Carolinas Fertility Institutes, Winston Salem, NC

OBJECTIVE: Artificial intelligence (AI) is increasingly used to identify the most viable embryos and improve IVF outcomes. In this study, using a large time-lapse imaging (TLI) data of transferred embryos with known outcomes, we compared rankings from five senior embryologists who used the Gardner grading system with the rankings generated by a fully automated AI system to determine if AI-based ranking is associated with improved clinical outcomes.
MATERIALS AND METHODS: We used 15,573 multi-focus TLI files from 5,191 transferred embryos from 3,156 patients to develop a fully automated AI system comprising several deep learning models and compared its performance with senior embryologists. The data was consecutively collected at Carolinas Fertility Institute (CFI) in Winston-Salem, NC, between 2018 and 2024. The AI system was trained to predict clinical intrauterine pregnancy, fetal heart pregnancy, and live birth. In a parallel analysis, a machine learning model was trained using embryologists' grades from the same dataset to predict these outcomes. Performance was evaluated on a holdout test set not used during any training stage. To compare rankings, 1,000 simulated patients were created by randomly assigning 2-12 embryos to each patient. Embryos within each simulated patient were ranked based on scores from both models. The proportion of top-ranked embryos resulting in each outcome was then compared between the two using Wilcoxon signed-rank tests. To further assess clinical utility, time to pregnancy (TTP; cycles to pregnancy) was calculated from the AI-derived rankings among actual patients (no simulated patients) in the test set with at least two transfers and different outcomes and compared with the observed TTP. To avoid bias from a single split, 10-fold cross-validation (train/test: 90/10) was performed, and average test performance is reported.
RESULTS: The AI system significantly improved rankings across all three IVF outcomes. Among simulated patients, top-ranked embryos selected by the AI system was associated with higher rates of clinical intrauterine pregnancy (77% vs. 69%), fetal heart pregnancy (73% vs. 65%), and live birth (66% vs. 61%) when compared with embryologist-based rankings (all $p<0.01$).AI-derived rankings significantly reduced TTP for clinical intrauterine pregnancy (1.62 vs. 1.96), fetal heart pregnancy (1.68 vs. 2.02), and live birth (1.88 vs. 2.11) as well, all with $p<0.01$.
CONCLUSIONS: Comparing with evaluations by embryologists, a fully automated AI system using TLI data can significantly improve embryo ranking, leading to higher rates of clinical intrauterine pregnancy, fetal heart pregnancy, and live birth, and reduce time to pregnancy.
IMPACT STATEMENT: Despite growing interest in using AI for embryo selection, evidence regarding its true clinical utility and impact remains mixed. To our knowledge, this study is the largest study to directly compare AI-based embryo ranking with senior embryologist evaluation across three key clinical IVF endpoints. Consistent improvements with AI across all three endpoints demonstrate that integrating novel AI systems into clinical decision-making can improve outcomes in IVF procedures.

O-108 4:15 PM Monday, October 26, 2026

AN ARTIFICIAL INTELLIGENCE-BASED OOCYTE ALLOCATION SYSTEM ENABLES PROBABILITY-BASED DONOR OOCYTE ALLOCATION AND OUTPERFORMS RANDOM DISTRIBUTION OF THE SAME COHORT. Lucía Murria, PhD Student[1], Lorena Bori Arnal, PhD[1], Carla Giménez, MSc[1], Ana Cristina Cobo, PhD[2] and Marcos Meseguer, PhD[2], [1]IVI Foundation, Instituto de Investigación Sanitaria La Fe (IIS La Fe), Valencia, Spain, Valencia, Spain, [2]IVIRMA Global Research Alliance, IVIRMA Valencia, Valencia, Spain

OBJECTIVE:
In donor oocyte programs, the number of oocytes assigned per recipient is typically determined empirically, ranging from 6 to 12 oocytes depending on the program. We investigated whether an AI-based oocyte competence model (ROSE) can transform this empirical assignment into a probability-based decision, allowing programs to choose the trade-off between oocytes assigned and probability of obtaining at least one usable blastocyst, and whether ROSE-guided allocation outperforms random selection.
MATERIALS AND METHODS:
This retrospective single-centre study consisted of 36,457 oocytes from 3,177 donor cycles cultured in time-lapse incubators (EmbryoScope, Vitrolife) after ICSI. ROSE is an AI-based tool that scores individual oocyte competence and allocates oocytes into fixed-size groups with balanced predicted probability of the target outcome. Fixed-size group configurations of 4, 6 and 7 oocytes were analysed. For each configuration we reported ROSE's mean predicted probability of obtaining ≥1 usable blastocyst, the observed precision (proportion of groups achieving the target), and the absolute benefit over random allocation expressed as number needed to treat (NNT). Performance against 300 random allocations of the same oocytes into groups of identical size within each cycle was assessed. P-values were computed by permutation.
RESULTS:
ROSE allowed donor programs to select group size based on a target probability of ≥1 usable blastocyst rather than empirical assumptions. Among the configurations analysed, 4-oocyte groups achieved an observed precision >85% (predicted 92.2%, observed 87.7%); 6-oocyte groups achieved >90% (predicted 97.9%, observed 94.0%); and 7-oocyte groups achieved >95% (predicted 98.9%, observed 95.6%). Across all configurations, ROSE outperformed random allocation: 87.7% vs 85.7% in 4-oocyte groups, 94.0% vs 92.8% in 6-oocyte groups, and 95.6% vs 94.4% in 7-oocyte groups ($p=0.003$ for all), corresponding to one additional successful group per 51 (4-oocyte), 82 (6-oocyte), and 84 (7-oocyte) allocations. ROSE outperformed random allocation in all 300 random allocations across every configuration tested ($p<0.05$).
CONCLUSIONS:
AI-based oocyte allocation transforms an empirical assignment into a probability-based decision, allowing each donor program to align oocyte allocation with its preferred risk-efficiency trade-off. At any matched fixed group size, ROSE systematically outperforms random allocation of the same cohort, confirming that the advantage originates from AI-based oocyte selection rather than group-size reduction alone. These findings support ROSE as a tool for individualized donor oocyte allocation across diverse clinical settings.
IMPACT STATEMENT:
By converting empirical oocyte assignment into a probability-based decision, ROSE enables donor programs to align allocation with their preferred risk-efficiency balance and patient-specific goals. The consistent advantage of ROSE over random allocation at matched group size confirms that this improvement reflects genuine AI-based oocyte selection, supporting a shift from random to competence-based allocation across donor programs of varying intensity.

O-109 4:25 PM Monday, October 26, 2026

BEYOND INDIVIDUAL FEATURES: DYSMORPHISM COMBINATIONS EXPLAIN AI-DERIVED OOCYTE QUALITY SCORES. Lucía Murria, PhD Student[1], Erin Mackenzie, MSc[2], Krizia Mendoza, B.S.[1], Anabella Marconetto, PhD Student[1], Isabel Puerta Vega, MSc[1], Andrea Sánchez Freire, MSc[1], Michelle Morgovsky, MHSc[1] and Jullin Fjeldstad, BSc, MSc[1], [1]Future Fertility, Toronto, ON, Canada, [2]Toronto, ON, Canada

OBJECTIVE:
To explore how oocyte dysmorphism combinations relate to an AI-derived quality score, providing insight into morphological assessment and AI model interpretability.
MATERIALS AND METHODS:

This retrospective dataset included 1,813 metaphase II oocytes from 259 IVF patients (27-47 years) analyzed by an AI tool generating a MAGENTA score (MS; 0-10), reflecting predicted blastocyst development probability. 5 embryologists annotated each oocyte using 25 predefined dysmorphisms, classified as "negative" (lower MS) or "positive" (higher MS) via multivariable linear regression. Oocytes were stratified into 4 dysmorphic profiles using a median-based threshold (low: 0–1, high: ≥2 dysmorphisms): Neg-Low/Pos-Low, Neg-Low/Pos-High, Neg-High/Pos-High, and Neg-High/Pos-Low. Blastocyst rate and MS were compared across profiles in age-adjusted models, with Neg-Low/Pos-Low as reference. Intra-patient dysmorphism clustering and associations with maternal age were also examined.

RESULTS:

Oocytes forming blastocysts had significantly higher MS (5.92±2.69 vs 4.62±2.95, $p<0.05$). Oocytes free of dysmorphisms had the highest MS (6.3) and blastocyst rates (57%). Each additional dysmorphism per oocyte reduced the score by 0.20 points ($p<0.001$). Individually, 8 dysmorphisms reduced ("negative") and 3 increased ("positive") MS ($p<0.001$). Negative dysmorphism burden was the primary outcome driver; oocytes with low negative burden showed similar MS and blastocyst rates regardless of positive burden (Neg-Low/Pos-Low: 6.14, 57.4%; Neg-Low/Pos-High: 6.28, 46.5%; $p>0.05$).

In age-adjusted regression models, both high negative burden groups showed lower MS (Neg-High/Pos-Low: 3.49, β=-2.47; Neg-High/Pos-High: 5.11, β=−0.86, both $p<0.05$) and reduced blastulation (Neg-High/Pos-Low: OR=0.47; Neg-High/Pos-High: OR=0.51, both $p<0.01$) compared to Neg-Low/Pos-Low; the predominantly positive profile (Neg-Low/Pos-High) did not differ from reference. Maternal age was independently associated with both outcomes for all models (β=−0.11/year for MS, OR=0.95/year for blastulation, both $p<0.001$). Several dysmorphisms showed intra-patient clustering beyond chance (enrichment up to 4.89x), suggesting patient-level structural phenotypes. Age was independently associated with zona pellucida (ZP) dysmorphisms; with thick ZP correlated with younger maternal age and thin ZP with advanced age (thick: β=−1.94; thin: β=+1.04; BH-adjusted $p<0.05$).

CONCLUSIONS:

Individual dysmorphisms show limited predictive value, but their combination — particularly the burden of features associated with lower AI-predicted quality — significantly impacts developmental outcomes independently of maternal age. These findings suggest that AI-based scoring captures morphological dysmorphisms that only become clinically meaningful in aggregate.

IMPACT STATEMENT:

This work advances the interpretability of AI-based oocyte assessment by linking embryologist annotations to model predictions, supporting the use of AI tools to translate complex morphological patterns into actionable clinical information.

O-110 4:35 PM Monday, October 26, 2026

BLASTOCYST CYTOPLASMIC MOTION ANALYSIS REVEALS ASSOCIATIONS WITH IMPLANTATION OUTCOMES ACROSS TWO IVF CENTERS. Cara Wessels, PH.D.[1], Dara S Berger, PhD, MPH, MS[2], Thomas Nguyen, MS[3], Claire Porter, BS[4] and Eduardo Kelly[5], [1]Viable Biosciences, Dripping Springs, TX, [2]University of Pennsylvania, Philadelphia, PA, [3]University of Pennsylvania Penn Fertility Care, Philadelphia, PA, [4]Women's Specialty and Fertility Center, Clovis, CA, [5]BMT Management, LLC, Clovis

OBJECTIVE: To determine whether acute cytoplasmic activity measured from short real-time blastocyst videos is associated with implantation outcomes and reproducible across independent IVF centers.

MATERIALS AND METHODS: Retrospective multi-center cohort of human blastocysts (n=123) from two IVF centers. Short, 30-second videos of human blastocysts were recorded during routine laboratory handling using standard inverted microscopes and digital cameras. Graphic imaging techniques like background subtraction were used to quantify cytoplasmic activity by measuring frame-to-frame pixel changes and mapping blastocyst activity as time-series waveforms. Analysis evaluated features of these line plots, including mean activity, variability (SD), burst activity, and temporal instability. Pregnancy outcomes were determined by bHCG >=5 or ultrasound. Statistical comparisons used Welch t-test ($p<0.05$).

RESULTS: Of 123 blastocysts, 71 resulted in pregnancy and 52 did not. Of the 123 blastocysts transferred, 116 were frozen/thawed and 7 were fresh embryos. Blastocysts that resulted in unsuccessful cycles showed significantly elevated cytoplasmic activity and greater temporal instability compared with blastocysts from successful cycles, which exhibited more coordinated and stable activity. Burst activity, variability, and valley prominence were the most discriminatory features, with significantly higher values in unsuccessful cycles ($p<0.05$). We hypothesize these fluctuations may reflect mitochondrial stress, disrupted cytoskeletal conditions, or metabolic instability associated with reduced competence. This hypothesis is supported by prior bovine studies where elevated acute dynamic activity was also associated with reduced implantation. Importantly, these signatures remained consistent across both IVF centers despite differences in imaging hardware.

Metric	Pregnancy	Non-Pregnancy	p-value
Mean Activity	0.56	0.65	>0.05
Burst Count (per 30s video)	6.82	7.75	<0.05
Variability (SD)	0.49	0.69	<0.05
Valley Prominence	0.45	0.70	<0.05

CONCLUSIONS: These findings suggest that implantation potential may be linked to a blastocyst's ability to maintain coordinated intracellular homeostasis during in vitro development. Quantification of real-time cytoplasmic dynamics may provide a novel approach for identifying stress-associated phenotypes undetectable through conventional static morphology assessment alone.

IMPACT STATEMENT: Brief real-time blastocyst videos acquired using standard laboratory equipment contain biologically meaningful signals associated with implantation potential. This scalable non-invasive approach may provide a clinically deployable framework for blastocyst selection while offering new insight into blastocyst physiology and developmental competence.

O-111 4:45 PM Monday, October 26, 2026

TOWARDS PRECISION STIMULATION FOR POOR RESPONDERS: DATA-DRIVEN STRATIFICATION OF DUAL OVARIAN STIMULATION CANDIDATES. Ihor Pachkiv, Cand. med.[1], Roman Lytvynenko, M.D.[2] and Olha Romanova, MD[2], [1]M Kyiv, Ukraine, [2]Reprolife Clinic Ukraine, Kyiv, Ukraine

OBJECTIVE:

To determine whether machine learning–derived phenotypes based on baseline characteristics can identify poor responder patients most likely to benefit from dual ovarian stimulation (DuoStim)

MATERIALS AND METHODS:

Poor ovarian responders represent a heterogeneous population with limited oocyte yield and variable response to stimulation. Dual ovarian stimulation (DuoStim) can increase cumulative oocyte numbers within a single cycle, but no established criteria reliably identify patients who benefit.

This retrospective single-centre exploratory study included 70 POSEIDON-defined poor responders undergoing DuoStim between 2024 and 2026. Baseline variables included demographics (age, BMI), hormonal profiles (FSH, LH, AMH), ovarian reserve markers (AFC), and reproductive history (prior IVF attempts, endometrial thickness).

Exploratory data analysis, unsupervised clustering, and supervised machine learning were applied to baseline characteristics. K-means clustering identified candidate phenotypes, and Random Forest models predicted clinically meaningful benefit from second stimulation. Continuous variables were scaled and categorical variables one-hot encoded. Model performance was assessed using 5-fold cross-validation and standard classification metrics.

RESULTS:

Unsupervised clustering identified four distinct phenotypes with markedly different second-stimulation mature oocyte yields, including subgroups with high benefit and consistently poor response, supporting biological heterogeneity among poor responders.

Supervised models predicted dual stimulation benefit with strong performance (F1-score 0.92; AUC 0.88), indicating a robust predictive signal despite the modest sample size.

Feature importance ranked prior IVF attempts, AMH, and BMI as the strongest predictors. Regression models for exact oocyte yield showed weaker performance, suggesting binary decision-support may be more clinically applicable.

Although model performance and phenotype separation argue against pure chance, results are limited by sample size and class imbalance. Recruitment is ongoing, and additional endpoints including embryo development, pregnancy, and live birth are being collected. Multi-centre validation is planned.

CONCLUSIONS:

Poor responders are not a homogeneous group, and baseline clinical and hormonal characteristics can be used to identify distinct phenotypes with differential benefit from dual stimulation. Machine learning models demonstrate promising ability to predict which patients may benefit from DuoStim prior to treatment initiation.

Limitations include retrospective design, single-centre setting, small sample size, and lack of external validation. Prospective, multi-centre studies are required to confirm reproducibility and determine whether phenotype-based selection improves clinical outcomes.

IMPACT STATEMENT:

Data-driven stratification may enable a precision stimulation approach in poor responders by identifying patients most likely to benefit from DuoStim, potentially improving efficiency in POR stimulation.

ORAL ABSTRACT SESSION: RANDOMIZED CONTROL TRIALS

O-112 11:15 AM Tuesday, October 27, 2026

SERENE: SAFETY AND CONTRACEPTIVE EFFICACY OF RELUGOLIX COMBINATION THERAPY IN PATIENTS WITH UTERINE FIBROIDS OR ENDOMETRIOSIS AT RISK OF PREGNANCY. Sarita Sonalkar, MD, MPH[1], Andrea S Lukes, MD, MHSc[2], Winifred Soufi, Ph.D[3], Yvette Maechelle Poindexter, MD FACOG MBA[4], Christine Schwall-Pecci, PhD[5], Aanika Das, PharmD, BCPS[5], Graziella Soulban, Ph.D[5], Dongmei Zhai, Ph.D[5] and Alexander Solyom, MD[5], [1]University of Pennsylvania, Philadelphia, PA, [2]Carolina Women's Research and Wellness Center, Durham, NC, [3]Women's Health Associates Group, Atlanta, [4]Stephen F Austin Community Health Network, Alvin, TX, [5]Sumitomo Pharma America

OBJECTIVE: Relugolix in combination with estradiol and norethindrone acetate (relugolix combination therapy; relugolix CT) is approved for managing symptoms of uterine fibroids (UF) and endometriosis (EM). Following demonstration of ovulation inhibition of relugolix CT in healthy participants aged 18–35 years, the SERENE study evaluated the contraceptive efficacy of relugolix CT in patients receiving treatment for these indications.

MATERIALS AND METHODS: SERENE (NCT04756037) was a Phase 3, open-label, single-arm study in patients aged 18–50 years with UF or EM, with regular menstrual cycles and at risk for pregnancy who relied solely on once-daily relugolix CT as contraception for up to 1 year (13 consecutive 28-day treatment cycles). The primary

efficacy endpoint was the at-risk Pearl Index (PI)—defined as the number of on-treatment pregnancies per 100 patient-years of treatment during cycles at-risk of pregnancy (ie, without other contraceptive use and with occurrence of vaginal intercourse)—in the population of patients with ≥1 at-risk treatment cycle, with additional analyses by age (≤35 and >35 years) and body mass index (BMI; <30 and ≥30 kg/m^2). Secondary endpoints included modified at-risk PI, gross PI (ie, real-world use), method failure PI (ie, perfect use), and cumulative 1-year pregnancy rate. Discontinuation rate and safety data were collected.
RESULTS: Of 1164 enrolled patients, 1125 received treatment. Mean (standard deviation) age was 38.6 (6.77) years, mean BMI was 30.8 (6.83) kg/m^2, and 51.1% were Black or African American. The primary endpoint, at-risk PI (95% confidence interval, CI), was 1.27 (0.55–2.50). At-risk PIs (95% CI) were 2.65 (0.86–6.18) for patients aged ≤35 years and 0.68 (0.14–1.99) for those >35 years; 1.61 (0.52–3.75) for those with BMI <30 kg/m^2 and 0.94 (0.19–2.75) for those ≥30 kg/m^2. Secondary endpoints supported the primary endpoint: modified at-risk, gross, and method-failure PIs (95% CI) were 1.10 (0.47–2.16), 1.04 (0.45–2.06), and 0.64 (0.13–1.88), respectively. Eight pregnancies in the overall population contributed to a 1-year pregnancy rate of 1.2%; of these, three pregnancies occurred in the population with perfect use. A total of 497 (42.7%) completed all 13 treatment cycles, while 628 patients (54.0%) discontinued; the most common reason for discontinuation was bone loss >3%, which met the protocol-specified threshold for withdrawal (n=193, 16.6%). Bone mineral density results were consistent with the known profile of relugolix CT, and no new safety signals were identified.
CONCLUSIONS: Once-daily relugolix CT has contraceptive efficacy in patients treated for symptoms of UF or EM, with safety consistent with its established safety profile.
IMPACT STATEMENT: The contraceptive efficacy demonstrated in this study indicates that back-up non-hormonal contraception may not be required after the first month of treatment in patients with UF or EM receiving relugolix CT.

O-113 11:27 AM Tuesday, October 27, 2026

ORAL ESTRADIOL DOSE FOR ENDOMETRIAL PREPARATION IN PROGRAMMED FROZEN EMBRYO TRANSFER CYCLES: A DOUBLE-BLIND RANDOMIZED COMPARATIVE CLINICAL TRIAL COMPARING 8 MG AND 12 MG ON CLINICAL PREGNANCY RATE. Ahmed Mahmoud Emam Ahmed, MD[1], Maged Almohamady, MD[2], Radwa Mohamed Fahmy, MD[1], Ahmed N Afifi, MD[3], Fatma Mohamed Atta, MD[1] and Mona Moghazy Salman, MD[1], [1]Faculty of Medicine- Cairo University, [2]Faculty of Medicine- Cairo University, Cairo, Egypt, [3]Cairo, Cairo, Egypt

OBJECTIVE: To compare oral estradiol valerate 8 mg/day versus 12 mg/day for endometrial preparation in programmed hormone replacement frozen embryo transfer (HRT-FET) cycles, with clinical pregnancy as the primary outcome.
MATERIALS AND METHODS: This multicenter, double-blind, placebo-controlled randomized comparative trial was conducted at two tertiary centers from April 2022 to April 2025, with live-birth follow-up completed in January 2026. Women aged 18–40 years undergoing their first autologous programmed HRT-FET cycle with vitrified-warmed day-5 blastocysts were randomized 1:1 to oral estradiol valerate 8 mg/day (n=425) or 12 mg/day (n=425). All participants received six identical tablets daily using matched placebo tablets to maintain blinding. Progesterone was initiated when endometrial thickness was ≥7 mm and serum progesterone was <1.0 ng/mL. The primary outcome was clinical pregnancy, defined as visualization of one or more gestational sacs at 6–8 weeks. Secondary outcomes included endometrial thickness, cycle cancellation, biochemical pregnancy, ongoing pregnancy, miscarriage, live birth, and treatment-related symptoms. Analysis was performed by intention to treat, with prespecified per-protocol and baseline-adjusted logistic regression sensitivity analyses.
RESULTS: Baseline demographic, infertility-related, endocrine, ovarian reserve, and embryo-origin characteristics were comparable between groups. In the intention-to-treat analysis, clinical pregnancy did not differ significantly between the 8 mg and 12 mg groups (37.2% vs 38.4%; risk ratio 1.03, 95% CI 0.87–1.23; absolute risk difference 1.2%, 95% CI -5.3% to 7.7%). Findings were consistent in the baseline-adjusted model (adjusted OR 1.06, 95% CI 0.80–1.40) and per-protocol analysis (38.3% vs 40.0%; adjusted OR 1.09, 95% CI 0.82–1.45). The 12 mg regimen produced higher peak estradiol levels (465.81 ± 117.03 vs 326.95 ± 91.22 pg/mL; P<0.001) and slightly greater endometrial thickness at progesterone initiation (9.09 ± 1.02 vs 8.72 ± 0.97 mm; P<0.001). However, biochemical pregnancy, ongoing pregnancy, miscarriage, live birth, cycle cancellation, implantation, and neonatal outcome distribution were not significantly different. Headache, breast tenderness, bloating, mood changes, and nausea were more frequent with 12 mg.
CONCLUSIONS: Increasing oral estradiol valerate from 8 mg/day to 12 mg/day in programmed HRT-FET cycles increased estradiol exposure and produced a small increase in endometrial thickness, but did not improve clinical pregnancy or live birth and was associated with more treatment-related symptoms.
IMPACT STATEMENT: These findings do not support routine escalation to 12 mg/day oral estradiol for programmed HRT-FET preparation and favor using the lower effective dose to reduce treatment burden without compromising reproductive outcomes.

O-114 11:39 AM Tuesday, October 27, 2026

ENDOMETRIAL RECEPTIVITY TESTING (ERT) - GUIDED PERSONALIZED EMBRYO TRANSFER (PET) VS STANDARD EMBRYO TRANSFER (SET) FOR RECURRENT IMPLANTATION FAILURE (RIF) IN EUPLOID EMBRYO TRANSFERS: A RANDOMIZED CLINICAL TRIAL (RCT). Yao Lu, M.D., Yaqiong He, Ph.D., Jiaan Huang, M.D. and Yun Sun, M.D., Ph.D., Ren Ji Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China

OBJECTIVE:
To determine whether ERT-guided pET improves live birth rate (LBR) compared with sET in patients with RIF undergoing frozen-thawed euploid blastocyst transfer.
MATERIALS AND METHODS:
This single-blind, parallel-group RCT was conducted at an academic fertility center in China. Women aged 20–39 years with RIF (≥3 failed good-quality embryo transfers or ≥2 failed euploid blastocyst transfers) planning frozen-thawed euploid blastocyst transfer after preimplantation genetic testing for aneuploidy (PGT-A) were enrolled and randomly assigned 1:1 to ERT-guided pET or sET. The pET group underwent ERT using RNA sequencing of endometrial biopsies, with transfer timing adjusted according to results; the sET group underwent transfer at the standard P+5 timing without ERT. Participants remained unaware of group assignment and ERT results, whereas treating physicians could not be blinded due to intervention nature. The primary outcome was LBR. Secondary outcomes included biochemical pregnancy, clinical pregnancy, implantation, ongoing pregnancy, and pregnancy loss rates. The primary analysis followed intention-to-treat principles.
RESULTS:
Among 133 randomized women, live birth occurred in 37.9% (25/66) in the pET group versus 41.8% (28/67) in the sET group (absolute difference [AD], −3.0%; 95% CI, −20.5% to 12.7%; relative ratio [RR], 0.91; 95% CI, 0.60 to 1.38; P = .65). Per-protocol (LBR: 39.1% [25/64] vs 43.3% [26/60]; AD, −4.3%; 95% CI, −21.6% to 13.1%; RR, 0.90; 95% CI, 0.59 to 1.37) and per-treatment (LBR: 39.1% [27/69] vs 43.3% [26/60]; AD, −4.2%; 95% CI, −21.2% to 12.8%; RR, 0.90; 95% CI, 0.60 to 1.36) results were consistent with the primary ITT analysis. No statistically significant between-group differences were observed in biochemical pregnancy, clinical pregnancy, implantation, ongoing pregnancy, or pregnancy loss rates.
CONCLUSIONS:
Among patients with RIF undergoing euploid blastocyst transfer, ERT-guided pET did not significantly improve LBR compared with sET. These findings do not support the routine clinical use of ERT for embryo transfer timing in this population.
IMPACT STATEMENT:
This randomized clinical trial provides high-quality evidence that ERT-guided pET does not improve live birth rates in euploid embryo transfer for RIF, clarifying clinical practice and helping reduce unnecessary interventions in assisted reproductive technology.
SUPPORT: This study was supported by the National Key R&D Program of China [2023YFC2705501, 2023YFC2705500, 2019YFA0802604], National Natural Science Foundation of China [82130046, 82320108009, 82501995], Innovative research team of high-level local universities in Shanghai [SHSMU-ZLCX20210200, SHSMU-ZLCX20210201, SSMU-ZLCX20180401], Shanghai leading talent program, Shanghai Jiao Tong University School of Medicine Affiliated Renji Hospital Clinical Research Innovation Cultivation Fund Program [RJPY-DZX-003, LYPY-QN-01], Science and Technology Commission of Shanghai Municipality [23Y11901400], Shanghai's Top Priority Research Center Construction Project [2023ZZ02002], and partially supported by SJTU Kunpeng & Ascend Center of Excellence. The funders had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

O-115 11:51 AM Tuesday, October 27, 2026

LETROZOLE AND INFERTILITY AMONG MALES WITH SPERMATOGENIC FAILURE: A RANDOMIZED CLINICAL TRIAL. Yifan Sun, PhD[1], Chencheng Yao, PHD and MD[2], Gang Liu, MD[3], Zheng Li, MD[3], Xiaoyu Yang, MD[4], Fujun Zhao, MD[2], Zheng Li, MD[2] and Peng Li, MD[2], [1]Shanghai General Hospital, Shanghai, Shanghai, China, [2]Shanghai General Hospital, Shanghai Jiao Tong University School of Medicine, China, [3]The Reproductive Hospital of Guangxi Zhuang Autonomous Region, China, [4]The First Affiliated Hospital of Nanjing Medical University, China

OBJECTIVE: To evaluate the efficacy and safety of letrozole for improving sperm concentration categories in men with spermatogenic failure (SPGF).
MATERIALS AND METHODS: This multicenter, open-label, assessor-blinded randomized clinical trial was conducted at 10 male infertility centers in China from July 2023 to March 2024. Men aged 22-50 years with SPGF, defined as nonobstructive azoospermia (NOA), cryptozoospermia, or severe oligozoospermia, were randomized 1:1 to letrozole 2.5 mg daily plus vitamins C and E (100 mg daily each) or vitamins C and E alone for 3 months. The primary outcome was upgrade in World Health Organization sperm concentration category (WHO-SCC) at month 3. Secondary outcomes included ordinal WHO-SCC grade, Dutch Society of Obstetrics and Gynaecology total motile sperm count category (NVOG-TMSCC) upgrade, semen parameters, reproductive hormones, and adverse events. The intention-to-treat primary analysis imputed missing outcomes as nonresponse and used a Cochran-Mantel-Haenszel test stratified by baseline WHO-SCC; ordinal WHO-SCC distribution was assessed with proportional-odds regression.
RESULTS:
Among 296 randomized men (mean [SD] age, 30.2 [3.9] years; 218 [73.6%] with NOA), 247 (83.4%) completed the trial. WHO-SCC upgrade occurred in 21/147 men (14.3%) with letrozole vs 8/149 (5.4%) with control (risk difference [RD], 9.2%; 95% CI, 2.5%-15.8%; *P*=.01). Letrozole increased the odds of achieving a better WHO-SCC grade (common odds ratio, 2.65; 95% CI, 1.28-5.47; *P*=.008). NVOG-TMSCC upgrade was also higher with letrozole (6/147 [4.1%] vs 1/149 [0.7%]; RD, 4.3%; 95% CI, 1.1%-7.5%; *P*=.03). In prespecified exploratory subgroup analyses, WHO-SCC upgrade benefit was also observed among men with baseline testosterone/estradiol ratio ≥10 (20/109 [18.3%] vs 6/102 [5.9%]; RD, 12.5%; 95% CI, 3.9%-21.0%). Median sperm concentration, total sperm number, and total motile sperm count remained 0 in both groups at month 3. Letrozole increased serum gonadotropins, testosterone, and the testosterone/estradiol ratio and decreased estradiol (all *P*<.001). No treatment-related

serious adverse events occurred. Decreased libido (12.2% vs 5.4%; *P*=.04) and low-grade proteinuria (14.3% vs 6.0%; *P*=.02) were more frequent with letrozole.
CONCLUSIONS: In this randomized clinical trial, letrozole improved sperm concentration and total motile sperm count categories in men with SPGF, with no treatment-related serious adverse events.
IMPACT STATEMENT: Letrozole may offer an option to downstage infertility severity and potentially enable less invasive reproductive management for men with SPGF.
SUPPORT: The trial was supported by National Key R&D Program of China (grant number 2022YFC2702701), Shanghai Science and Technology Innovation Action Plan (24Y12800702), Natural Science Foundation of Shanghai (25ZR1401300), Shanghai Hospital Development Center Foundation (SHDC12023121), National Natural Science Foundation of China (82171597), Natural Science Foundation of Guangxi Zhuang Autonomous Region (2025GXNSFAA069730).

O-116 12:03 PM Tuesday, October 27, 2026

A BIODEGRADABLE INTRAUTERINE HYDROGEL SPACER (JUVEENA™) IMPROVES ADHESION OUTCOMES FOLLOWING HYSTEROSCOPIC ADHESIOLYSIS: RESULTS FROM A RANDOMIZED CONTROLLED TRIAL.
Christina A Salazar, MD, MSc[1], Heather Gibson Huddleston, M.D.[2], Bala Bhagavath, MD[3], Pietro Bortoletto, MD, MSc[4], Charles E. Miller, MD[5], Rebecca Flyckt, M.D.[6], Ian Bruce Feldberg, BEng (Hons)[7] and Malcolm G Munro, MD, FRCSC, FACOG, FRCOG (ad eundem)[8], [1]Austin, TX, [2]University of California, San Francisco, San Francisco, CA, [3]University of Wisconsin, Madison, Middleton, WI, [4]Terra Fertility, Dedham, MA, [5]Rosalind Franklin University of Medicine and Science (Professor), North Chicago, IL, [6]University Hospitals Fertility Center/Case Western Reserve University, Beachwood, OH, [7]Sudbury, MA, [8]UCLA, Los Angeles, CA

OBJECTIVE: To evaluate the effectiveness of a biodegradable in situ-forming intrauterine hydrogel spacer with a prolonged residence time for reducing recurrent intrauterine adhesions after hysteroscopic adhesiolysis.
MATERIALS AND METHODS: Randomized, multicenter, subject- and evaluator-blinded trial conducted across fifteen academic and community-based gynecologic surgery centers in the United States. Of 238 potential participants between August 2022 and January 2025, 67 women in the adhesiolysis subgroup with moderate-to-severe intrauterine adhesions by March classification were randomized 2:1 after completion of adhesiolysis to receive Juveena™ hydrogel spacer, and 35 to the control arm which received no intrauterine barrier. Prespecified subgroup analysis were performed.
RESULTS: The primary endpoint was absence of intrauterine adhesions (IUAs) at second-look hysteroscopy (SLH). Analyses were performed in the modified intention-to-treat population and supported in the full analysis set and per-protocol populations. In the modified intention-to-treat cohort of adhesiolysis participants, the absence of IUAs at SLH was higher with Juveena than with control (60.3% [38/63] vs 32.3% [10/31]; p=0.015; OR 3.19, 95% CI 1.29–7.90). Severe IUAs at SLH were less frequent in the Juveena arm (6.3% vs 32.3%; p=0.002; OR 0.14, 95% CI 0.04–0.50). In a post-hoc responder analysis, the rate of at least 2-category improvement in adhesion severity was higher with Juveena (66.7% vs 32.3%; p=0.002; OR 4.20, 95% CI 1.68–10.51). Findings were consistent across supportive analysis populations.
CONCLUSIONS: Among patients undergoing hysteroscopic adhesiolysis, use of a biodegradable in situ-forming intrauterine hydrogel spacer with a 2–3-week residence time was associated with higher rates of adhesion-free status at second-look hysteroscopy and lower rates of severe residual adhesions. These findings support a clinically meaningful benefit in a high-risk population.
IMPACT STATEMENT: This multicenter randomized trial provides high quality evidence that a biodegradable intrauterine hydrogel spacer with a prolonged residence time is an effective adjuvant therapy for reducing the recurrence and severity of intrauterine adhesions post adhesiolysis.
SUPPORT: Rejoni, Inc. funded the study and contributed to the study design and regulatory oversight. Independent investigators performed data collection and an external contract research organization performed statistical analyses.

ORAL ABSTRACT SESSION: MENTAL HEALTH & PSYCHOSOCIAL

O-117 11:15 AM Tuesday, October 27, 2026

SEXUAL FUNCTION IN WOMEN WITH INFERTILITY: IS THERE AN ASSOCIATION WITH FERTILITY TREATMENT FAILURE OR INFERTILITY DURATION? Rebecca Eckler, M.D.[1], Jessica Lu, DEC[2], Lori Brotto, Ph.D., R. Psych.[3], Dalia Limor Karol, M.D.[1], Vincent Nguyen, M.D.[1] and Michael H. Dahan, M.D.[1], [1]Division of Reproductive Endocrinology and Infertility, McGill University Health Centre, Montreal, Canada, [2]McGill University, [3]University of British Columbia, Vancouver, BC, Canada

TITLE: Sexual Function in Women with Infertility: Is There an Association with Fertility Treatment Failure or Infertility Duration?
OBJECTIVE: To evaluate sexual function in women with infertility and assess associations with infertility duration and number of unsuccessful fertility treatments.
MATERIALS AND METHODS: This prospective study included women with infertility attending a university reproductive center between February and April 2026 who completed an anonymous questionnaire incorporating the validated Female Sexual Function Index (FSFI). Associations between infertility duration or number of unsuccessful fertility treatments and sexual outcomes were assessed using Pearson correlation analyses, with partial correlations adjusting for participant age, partner age, body mass index, and number of previous live births. Data are presented as mean ± SD. (ClinicalTrials.gov Identifier: NCT07376109)
RESULTS: A total of 149 questionnaires were collected, of which 127 participants met inclusion criteria. Female age was 35.9 ± 4.7 years, male age 37.8 ± 5.6 years, BMI 25.8 ± 6.0 kg/m², and duration of infertility 6.8 ± 6.8 years. Participants reported 1.4 ± 2.0 prior pregnancies and 0.4 ± 0.6 live births. Mean FSFI total score was 25.6 ± 8.0, with 42.7% scoring below the established FSFI cutoff (≤26.55), a validated threshold used to screen for sexual dysfunction. No associations were observed between infertility duration and FSFI total score (r = −0.06, 95% CI −0.26 to 0.15), including after adjustment (adjusted r = −0.06, p = 0.63), or across domain scores (desire, arousal, lubrication, orgasm, satisfaction, and pain). In contrast, a greater number of unsuccessful fertility treatments, defined as prior fertility treatments not resulting in pregnancy (including IUI and IVF-based treatments), was associated with lower overall sexual function (r = −0.34, 95% CI −0.51 to −0.15). Consistent negative associations were observed across all FSFI domains: desire (r = −0.30, 95% CI −0.47 to −0.12), arousal (r = −0.25, 95% CI −0.43 to −0.06), lubrication (r = −0.34, 95% CI −0.51 to −0.15), orgasm (r = −0.25, 95% CI −0.43 to −0.06), satisfaction (r = −0.34, 95% CI −0.51 to −0.15), and pain (r = −0.28, 95% CI −0.46 to −0.09). The strongest domain-level associations were observed for lubrication and satisfaction. At the item level, greater treatment failure was most strongly associated with lower satisfaction with sexual relationship (r = −0.34, 95% CI −0.52 to −0.17), difficulty maintaining lubrication (r = −0.34, 95% CI −0.52 to −0.15), and increased discomfort during vaginal penetration (r = −0.32, 95% CI −0.49 to −0.13).

CONCLUSIONS: Sexual difficulties are common among women with infertility and, while not associated with infertility duration, are associated with a greater number of unsuccessful fertility treatments.
IMPACT STATEMENT: These findings highlight a substantial burden of sexual problems among women with infertility. Failed fertility treatment, rather than infertility duration, was associated with poorer sexual function, underscoring the need to integrate sexual health into fertility care management.
SUPPORT: None

O-118 11:25 AM Tuesday, October 27, 2026

A SHIFT TOWARD TRANSPARENCY: OPEN-ID DONORS, PREGNANCY TRACKING, AND FAMILY LIMITS AMONG U.S. SPERM BANKS. Marissa G Holden, MD, Alyssa K Kosturakis, MD, MS, Elyse Ikemiya, BS, Jessica L Chan, M.D., Margareta D. Pisarska, M.D. and Erica T Wang, M.D., Cedars-Sinai Medical Center, Los Angeles, CA

OBJECTIVE:
The American Society for Reproductive Medicine (ASRM) supports disclosure of donor conception and donor characteristics to offspring to promote identity development and autonomy among donor-conceived people (DCP). Preference for open-identity (Open-ID) donors has increased. In the 2020 We Are Donor Conceived Survey, 81% of respondents support abolishing nonidentified donation. The objective of this study was to evaluate transparency of U.S. FDA-registered sperm banks by searching publicly available website information regarding donor identification, pregnancy tracking, and family building units.
MATERIALS AND METHODS:
The FDA tissue establishment registry was used to identify a list of U.S.-based establishments providing commercially available donor sperm. Two independent reviewers extracted website data on donor identification, family building units, and pregnancy tracking; discrepancies were resolved by a third reviewer. Open-ID donors were defined as donors who agree to release identifying information to offspring at 18 years of age. Pregnancy tracking was defined as either active monitoring of pregnancies or reliance on self-reported births. Policies not disclosed were categorized as no tracking. Descriptive statistics were performed.
RESULTS:
Of 378 U.S. FDA-registered tissue establishments, 19 were commercially available sperm banks. Overall, 94.7% (18/19) offered an Open-ID donor option. Four sperm banks were exclusively Open-ID, and one sperm bank offered exclusively nonidentified donors. U.S.- specific family building limits of ≤25 families were reported by 52.6% (10/19) of sperm banks and 15.8% (3/19) had stricter limits of ≤10 families. Almost one-third (31.6 %, 6/19) did not disclose specific family building limits and one sperm bank had no limit. About a quarter (26.3%, 5/19) of sperm banks also described geographic restrictions on family building limits. Pregnancy tracking was documented by 89.5% (17/19) of programs, although methods of tracking varied and often relied on self-reporting.
CONCLUSIONS:
Nearly all U.S sperm banks offer an Open-ID donor option, but few require donors to be Open-ID. The majority of sperm banks track pregnancy outcomes. However, disclosed family building units were highly variable ranging from ≤10 families per donor to no stated limit. While these findings suggest a shift toward increased transparency for donor-conceived people the publicly available information across sperm bank websites needs to be more standardized.
IMPACT STATEMENT:
Commercial sperm banks in the U.S. are supporting transparency for DCP through donor identification, pregnancy tracking, and family building limits.

O-119 11:35 AM Tuesday, October 27, 2026

END-OF-TREATMENT NEEDS OF WOMEN WHO REMAIN CHILDLESS AFTER FERTILITY TREATMENT: A CROSS-SECTIONAL STUDY. Alexandra M Herweck, MD, MPH[1], Lana Manikowski, BS[2] and Susan C. Klock, PhD[3], [1]Northwestern University Feinberg School of Medicine, Chicago, [2]Chicago, IL, [3]Northwestern University, Feinberg School of Medicine, Chicago, IL

OBJECTIVE: To characterize the communication, emotional support, and follow-up needs of women whose fertility treatment ended without a live birth and who remain childless, and to identify gaps in shared decision-making, psychosocial support, and transition planning to inform structured end-of-treatment care protocols.
MATERIALS AND METHODS: A cross-sectional online survey was distributed through social media and infertility-focused online communities. Eligible participants were adult women who had discontinued fertility treatment without a live birth and were not currently pregnant, parenting, or in treatment. The instrument captured demographics, treatment history, end-of-treatment communication, follow-up experiences, and three validated measures: the Hospital Anxiety and Depression Scale (HADS), the Satisfaction with Life Scale (SWLS), and the 9-item Shared Decision-Making Questionnaire (SDM-Q-9, 0–100). Descriptive statistics, HADS clinical-range categorization, and Pearson correlations were calculated. Recruitment is ongoing.
RESULTS: To date, 44 participants have completed the survey (mean age 43.7 years, 81.8% White, 63% 3 – 10+ y post treatment). Per standard HADS cutoffs, 46.5% scored in the clinical range for anxiety and 16.3% in the borderline range (62.8% combined); only 11.6% scored clinical for depression. Mean SWLS was 17.6 (SD 7.3, slightly-dissatisfied range). Mean SDM-Q-9 was 47.3 (SD 27.4); higher SDM-Q-9 was associated with higher life satisfaction (r=0.35, p=0.027). 38.6% reported ending treatment due to emotional strain. End-of-treatment care gaps were notable: 81.8% reported no clinic outreach after results were shared, although 72.1% would have wanted a check-in. Mental-health resources were offered to 13.6%, and childless-life-specific resources to only 1 participant (2.3%), though 83.7% would have wanted such support. Interest in a structured post-treatment program was nearly universal (74.4% yes, 23.3% maybe; 97.7% open). Most-endorsed support modalities were support groups for childless patients (88.6%), peer connection/mentorship (84.1%), individual counseling (81.8%), and online resources (77.3%).
CONCLUSIONS: Women who completed fertility treatment without having a live birth reported clinically significant levels of anxiety. Most participants did not receive, but would have wanted, post-treatment psychological support from their clinical team.
IMPACT STATEMENT: Despite high rates of clinically significant anxiety and a near-universal desire for post-treatment support, women who remain childless after fertility treatment are largely discharged from REI care without follow-up, mental health referral, or resources tailored to childless living. These findings identify a critical gap in current practice and underscore the need for structured end-of-treatment care pathways within fertility clinics.
SUPPORT: None.

O-120 11:45 AM Tuesday, October 27, 2026

COMMUNICATION AFTER IVF FAILURE: EFFECTS OF VERBAL AND PARAVERBAL DELIVERY ON PATIENT TRUST AND TREATMENT CONTINUATION. Clayton Brigance, PhD, Shiloh Counseling LLC, Ballwin, MO

OBJECTIVE: To examine how physician verbal communication and paraverbal delivery influence patient trust and treatment continuation following unsuccessful IVF outcomes, and to test whether these effects operate through perceived empathy and vary by fertility distress.
MATERIALS AND METHODS: Adults with a history of fertility treatment (N = 264) participated in a randomized 2 × 2 video vignette in which physician communication following failed IVF was manipulated by verbal style (clinical vs emotionally attuned) and paraverbal delivery (warm vs flat). Participants completed the Consultation and Relational Empathy Measure, Wake Forest Physician Trust Scale, and FertiQoL, along with a continuation intent composite. Data were analyzed using structural equation modeling (SEM) to test a moderated mediation framework in which communication condition predicted perceived empathy, which in turn predicted physician trust and continuation intent. FertiQoL was modeled as a moderator of the path from communication condition to perceived empathy. Model fit was evaluated using standard indices (CFI, TLI, RMSEA), and indirect effects were tested using bootstrapped confidence intervals (5,000 resamples).
RESULTS:
The model showed good model fit (CFI = .96, TLI = .95, RMSEA = .05). Both emotionally attuned wording ($\beta = .42$, $p < .001$) and warm delivery ($\beta = .47$, $p < .001$) significantly predicted higher perceived empathy. A significant interaction between verbal and paraverbal communication ($\beta = .18$, $p = .02$) indicated that empathy was highest in the attuned + warm condition.
Perceived empathy strongly predicted physician trust ($\beta = .53$, $p < .001$) and continuation intent ($\beta = .56$, $p < .001$). The indirect effects of communication condition on trust through empathy were significant, supporting mediation.
Moderation analyses revealed that the effect of communication condition on perceived empathy was significantly stronger among participants with lower FertiQoL scores ($\beta = -.21$, $p = .01$).
Participants exposed to attuned/warm communication reported the highest trust (M = 4.63) and continuation intent (M = 5.92), whereas those in the clinical/flat condition reported the lowest (M = 3.42 and 4.31, respectively; $p < .001$).
CONCLUSIONS: Physician communication following unsuccessful IVF outcomes exerts significant effects on patient trust and treatment continuation through perceived empathy. Both verbal and paraverbal elements independently and interactively shape these outcomes, with stronger effects observed among patients experiencing greater fertility-related distress. These findings highlight perceived empathy as critical in patient response to difficult medical communication.
IMPACT STATEMENT: This study provides experimental, model-based evidence that both the content and delivery of physician communication influence patient trust and engagement after IVF failure. Incorporating structured communication training that emphasizes emotional attunement and delivery style may improve patient-centered care and retention in fertility treatment, particularly for patients with elevated infertility-related distress.
SUPPORT: This study was fully funded by Shiloh Counseling LLC. No external funding sources, grants, or sponsorships were received for the design, conduct, analysis, or reporting of this research.
The investigators report no financial relationships, conflicts of interest, or commercial affiliations that could be perceived as influencing the results or interpretation of this study.

O-121 11:55 AM Tuesday, October 27, 2026

UNIVERSAL MENTAL HEALTH SCREENING IN FERTILITY CLINICS: A REVIEW OF SCREENING INSTRUMENTS, IMPLEMENTATION MODELS, AND CLINICAL OUTCOMES. Hana Ahmed, MD, Southern Illinois University, Springfield, IL

OBJECTIVE:
Despite growing recognition that mental health services should be standard of care in fertility clinics, no consensus exists on screening protocols, and fewer than 25% of patients utilize available services. This review compares validated screening instruments, implementation models, and their downstream effects on referral rates, treatment adherence, and patient outcomes in reproductive endocrinology and infertility (REI) settings.
MATERIALS AND METHODS:
A structured literature review was conducted using PubMed, PsycINFO, and the Cochrane Library through April 2026. Search terms included infertility, mental health screening, depression screening, anxiety screening, PHQ-9, GAD-7, FertiQoL, and fertility clinic. Inclusion criteria were validation studies of screening instruments in infertility populations, studies reporting screening implementation outcomes, and clinical guidelines addressing psychosocial assessment. Data were extracted on instrument psychometric properties, screening uptake, referral rates, and patient outcomes. Narrative synthesis was performed.
RESULTS:
Up to 40% of infertile women meet criteria for a psychiatric diagnosis, with depression prevalence reaching 39.1% in women and 15.3% in men, yet only 6.7-21% seek psychiatric care. Only 28% of reproductive specialists formally screen for depression or anxiety, with barriers including time constraints and unfamiliarity with treatment recommendations. Among validated instruments, the Patient Health Questionnaire-9 (PHQ-9) and PHQ-2 demonstrate good reliability and convergent validity with anxiety metrics in infertility populations. The Fertility Quality of Life (FertiQoL) tool is the most widely used fertility-specific quality-of-life instrument, with satisfactory reliability and cross-cultural validity. The SCREENIVF, a validated pre-IVF emotional risk screening tool, achieved 78-80% uptake in clinical implementation, with one-third of respondents identified as at-risk; however, 46% of at-risk patients cited travel distance as a barrier to accessing psychological help. Integrated behavioral health models, ranging from co-located to fully embedded care, may address access barriers by delivering screening and intervention within the fertility clinic itself. When psychological interventions are delivered to screened populations, meta-analytic evidence supports improved pregnancy rates and reduced treatment discontinuation.
CONCLUSIONS:
Validated, brief screening tools exist for routine use in fertility populations, but implementation remains inconsistent. Universal screening at treatment initiation with repeat assessment at key inflection points, combined with embedded referral pathways, represents the most evidence-supported approach to closing the gap between distress prevalence and service utilization.
IMPACT STATEMENT:
Establishing standardized mental health screening protocols in fertility clinics would enable systematic identification of at-risk patients, improve service utilization, and potentially reduce treatment discontinuation, representing a critical step toward making psychological care standard in REI practice.

O-122 12:05 PM Tuesday, October 27, 2026

THE CASCADE OF ATTRITION: PSYCHOLOGICAL DISTRESS TO SERVICE UTILIZATION IN FERTILITY CLINICS ACROSS INTERNATIONAL REGULATORY CONTEXTS. Hana Ahmed, MD, Southern Illinois University, Springfield, IL

OBJECTIVE:
Psychological distress affects nearly half of assisted reproductive technology (ART) patients, yet mental health service utilization remains low worldwide. This review maps the cascade of attrition from distress prevalence to screening uptake to help-seeking intent to service utilization across international regulatory contexts.
MATERIALS AND METHODS:
A structured literature review was conducted using PubMed, PsycINFO, and the Cochrane Library through April 2026. Search terms included infertility, psychological distress, screening, mental health utilization, SCREENIVF, counseling uptake, and major regulatory bodies. Studies reporting quantitative data at one or more cascade stages in fertility populations were included. Data were extracted on distress prevalence, screening rates, help-seeking intent, and service uptake, with narrative synthesis organized by cascade stage.
RESULTS:
Stage 1, Distress Prevalence: A meta-analysis of 16,042 ART patients found anxiety prevalence of 48% and depression 36%. In Sweden, 31% of IVF patients met criteria for a DSM-IV psychiatric diagnosis.

Stage 2, Screening Uptake: The validated SCREENIVF tool achieved 78–80% completion in a European clinic, though routine screening is not standard in most settings.
Stage 3, Help-Seeking Intent: Among patients identified as at risk by SCREENIVF, only 21% planned to seek professional help. Barriers included distance, cost, stigma, and lack of awareness.
Stage 4, Service Utilization: In the US, where mental health professionals are recommended but not mandated, 21% of women and 11% of men received services, with 10–34% uptake when available. In Sweden, only 21% of patients with a psychiatric diagnosis received treatment. In New Zealand, only 30% of patients discontinuing IVF due to distress used publicly funded counseling. In the UK, counseling is mandated, yet uptake remains low, with no reported national rate. In Switzerland, proactively offering a pre-IVF session led to 79% acceptance, suggesting that such a delivery model substantially influences uptake.
CONCLUSIONS:
A consistent cascade of attrition exists across regulatory contexts: approximately half of ART patients experience significant distress, but fewer than 1 in 4 receive psychological care. The steepest drop occurs not at the point of service availability but at the point of intending to seek help, suggesting that how care is delivered matters more than whether it exists. Mandating availability, as in the UK, does not reliably translate to uptake. Proactive embedded models, as demonstrated in the Swiss trial, substantially narrow this gap regardless of regulatory context.
IMPACT STATEMENT:
The critical bottleneck in psychosocial care for ART patients is not availability but architecture. Passive referral models, cost-saving as they may be, preserve the very step where the greatest attrition occurs: help-seeking. Embedding mental health services directly into the clinical workflow eliminates that step entirely. Standardized utilization metrics and investment in embedded delivery models are needed to close the gap between distress prevalence and care received.

ORAL ABSTRACT SESSION: BUSINESS OF MEDICINE

O-123 11:15 AM Tuesday, October 27, 2026

ECONOMIC EVALUATION OF THE FIIX STUDY: A MULTICENTRE, NON-INFERIORITY, RANDOMIZED CONTROLLED TRIAL COMPARING IN VITRO FERTILISATION (IVF) TO INTRAUTERINE INSEMINATION WITH OVARIAN STIMULATION (IUI-OS) IN COUPLES WITH UNEXPLAINED INFERTILITY.
Karyn Anderson, MBChB MPH[1], Lucy Prentice, MBChB FRANZCOG MrMED[1], Cynthia Farquhar, FRANZCOG FRCOG MD MPH[1], Lynn C Sadler, MBChB MPH[2], Sarah Lensen, PhD[3], Melissa Anne Vercoe, BA[2], Georgina M Chambers, PhD[4] and Richard Edlin, PhD[1], [1]University of Auckland, Auckland, New Zealand, [2]Te Whatu Ora | Health New Zealand, Auckland, New Zealand, [3]University of Melbourne, Victoria, Australia, [4]National perinatal Statistics Unit, CBDRH Level 2, AGSM Building, Kensington, NSW, Australia

OBJECTIVE:
To determine the cost-effectiveness of two programmes of fertility treatment in couples with unexplained and poor prognosis for natural conception: 4 cycles of intrauterine insemination with ovarian hyperstimulation (IUI-OS) followed by 2 cycles of in vitro fertilisation (IVF) compared to 2 cycles of IVF.
MATERIALS AND METHODS:
Cost-effectiveness analysis from a public healthcare perspective of a multicentre, pragmatic, non-inferiority, randomised controlled trial conducted in New Zealand among patients eligible for fully public funded fertility treatments. Cost-effectiveness is presented at two timepoints: 7 months (allowing reasonable time to complete 4 IUI cycles or 1 IVF cycle); and 20 months (allowing reasonable time to complete the full programme of treatment). Direct medical costs (2025 NZD) from randomisation to hospital discharge following pregnancy outcome were estimated using national cost data and published literature. Discounting was applied at 3.5% per year. Incremental Cost-Effectiveness Ratios were calculated (ICER) based on Cumulative Live Birth Rate (CLBR) per patient. A sensitivity analysis limited to costs associated with fertility treatment and any complications was performed.
RESULTS:
A total of 737 couples were randomized; 365 to IUI-OS pre-treatment and 372 to standard care. Disruptions due to COVID-19 resulted in 151 patients being excluded (equally distributed across arms). One participant, in the IVF group, withdrew consent for use of any data and was removed from the trial.
At 7 months, CLBR was 31% (89/288) in the IUI-OS arm and 55% (164/297) in the IVF arm (adjusted risk difference −23 percentage points; 90% CI −30 to −17). The mean costs per couple were $10,997 NZD for the IUI-OS arm and $23,590 for the IVF arm.
At 20 months, CLBR was 72% (208/288) in the IUI-OS arm and 70% (207/297) in the IVF arm (adjusted risk difference 3 percentage points; 99% CI -6 to 13), including five ongoing pregnancies assumed to lead to a live birth. The mean costs per couple were $30,010 for the IUI-OS arm and $29,239 for the IVF arm. Overall, IUI-OS leads to more births than IVF at this timepoint but at a higher cost; hence each additional live birth costs an average of $24,193 extra.
In a sensitivity analysis limited to fertility treatment and its complications (costs associated with birth or pregnancy loss excluded), at 7 months, costs per couple were $4,103 for the IUI-OS arm and $11,040 for the IVF arm. At 20 months, the mean costs per couple were $12,569 for the IUI-OS arm and $13,981 for the IVF arm. In this case, IUI-OS prior to IVF leads to slightly more births than IVF at a lower cost.
CONCLUSIONS:
Initial treatment with IUI-OS followed by IVF where necessary is associated with a non-significant increase in cumulative live birth rate than initial treatment with IVF. IUI-OS is associated with lower treatment costs but slightly higher overall costs (largely due to additional live births).
IMPACT STATEMENT:
In addition to the clinical findings (presented in another abstract), the FIIX Study provides economic data for designing the most cost-effective public funded programmes of fertility treatment.
SUPPORT: The FIIX trial was funded by a New Zealand Health Research Council (HRC) project grant, as well as additional funding from the A+ Trust, Auckland Medical Research Fund (AMRF), and the Lotteries Commission.

O-124 11:25 AM Tuesday, October 27, 2026

A COST ANALYSIS OF LIVE BIRTHS WITH AND WITHOUT PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY.
Dr. Carolyn Robb, MD, MPH[1], Elizabeth Bier, BA[2], Gabrielle Dayan, BS[1], Keelyn Foley, BS[3], Emily Chen, BS[1] and Martin D Keltz, M.D.[4], [1]New York Medical College School of Medicine, NY, [2]Albert Einstein College of Medicine, [3]Amawalk, NY, [4]Medical Director Reproductive Endocrinology WESTMED Reproductive Services, Westchester Medical Center, Professor of OBGYN New York Medical College, Purchase

OBJECTIVE: In the ongoing debate regarding the role of preimplantation genetic testing for aneuploidy (PGT-A), efficacy and cost are the primary concerns. We aimed to evaluate cost per live birth in PGT-A tested versus untested embryo transfer cycles stratified by age groups.
MATERIALS AND METHODS: This retrospective cohort study included all SART reported embryo transfer cycles that resulted in a live birth (N=937) from January 2015–January 2025 at a single fertility center. Cycles were categorized as PGT-A tested (N=722) or untested (N=215). Cost was calculated by assigning the full self-pay costs of monitoring, blood testing, average medication use, fresh transfer cycles with embryo freeze, freeze all cycles with and without PGT-A, PGT-A charges, and full self-pay embryo transfer cycle costs. Outcomes included mean cost per live birth achieved, number of retrievals per live birth, number of embryo transfers per live birth, miscarriage rate, and twin birth rate. Cumulative live birth (CLB)-adjusted cost was calculated as mean total cost per live birth divided by CLB rate (CLBR), incorporating successful and unsuccessful transfers. Analyses were performed for all ages and stratified by age <35, 35–40, and >40 years using t-tests and Chi square with $p<0.05$ considered statistically significant.
RESULTS: Overall, PGT-A cycles were associated with higher cost per individual live birth ($29,246.95 vs $22,121.40, $p<0.0001$), with more retrievals (1.44 vs 1.20, $p<0.0001$), fewer embryo transfers (1.39 vs 2.34, $p<0.0001$), and higher CLBR (67.9% vs 54.8%, $p<0.001$). CLB-adjusted costs were not significantly different between groups ($43,104.61 vs $40,339.02, $p=0.435$). PGT-A was associated with far lower miscarriage (10.2% vs 22.4%, $p<0.0001$) and twin birth rates (2.9% vs 14.0%, $p<0.0001$).
Among patients <35 years, PGT-A lead to similar cost per live birth ($26,088.41 vs $23,200.00, $p=0.090$) with similar CLBR (74.7% vs 71.8%, $p=0.649$) and similar CLB-adjusted calculations ($34,904.49 vs $32,323.60, $p=0.281$). In patients 35–40 years, PGT-A lead to higher cost per live birth ($29,808.73 vs $20,172.41, $p<0.0001$) higher CLBR (68.6% vs 56.5%, $p=0.012$), and higher CLB-adjusted calculations ($43,428.30 vs $35,727.05, $p=0.008$). Among patients >40 years, PGT-A lead to higher cost per live birth ($38,584.51 vs $25,450.00, $p=0.010$), but far higher CLBR (62.1% vs 24.1%, $p<0.0001$) leading to far lower CLB-adjusted cost per live birth ($62,127.60 vs $105,435.71, $p=0.019$). PGT-A halved miscarriage rates (<35: 8.8% vs 18.9%; 35–40: 10.1% vs 24.1%; >40: 16.3% vs 35.0%) and nearly eliminated twin birth rates (<35: 2.5% vs 13.2%; 35–40: 3.5% vs 17.2%) across age groups.
CONCLUSIONS: Overall, the CLB-adjusted costs per live birth were the same with or without PGT-A. PGT-A did not add significant cost per live birth for patients under 35, but did add cost for patients over 35. When adjusted for CLBR, PGT-A reduced the cost per live birth in patients over 40.
IMPACT STATEMENT: Given the comparable cost per live birth, the reassurance of transferring a euploid embryo, significantly lower miscarriage and twin birth rates, and the option for family balancing, PGT-A should be offered to all IVF patients, including those under 35.

O-125 11:35 AM Tuesday, October 27, 2026

NOT JUST AT THE GROCERY STORE: RISING COSTS OF DONOR EGGS IN THE UNITED STATES.
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OBJECTIVE: The use of donor eggs is increasing, coinciding with rising age at first birth, legalization of same sex marriage, and increasing single parents by choice. Unlike donor sperm banks which have fully transparent pricing listed on their websites, accessing costs for donor eggs frequently requires establishing care with a fertility clinic or direct engagement with a bank representative. Donor sperm costs have significantly increased over time, but changes in cost of donor eggs have not been described (1). The objective of this study is to describe historical and contemporary costs of frozen donor eggs in the United States (US).
MATERIALS AND METHODS: A cross-sectional study of frozen donor egg cost was performed using data from five of the largest US donor egg banks, obtained through websites or direct communication with the bank. Cost of single eggs, single and double embryo guarantee, and live birth guarantee packages were examined. Package components including number of eggs included and whether embryology fees were included in the quoted price was also recorded. Historical costs from 2018-2026 were directly provided by one bank. Descriptive statistics were performed.

RESULTS: Four banks offered a single embryo guarantee package with cohort sizes ranging from five to eight eggs. The single embryo guarantee was the least expensive package at an average cost of $21,451 (range: $19,890-$23,903). Four banks offered a two embryo guarantee: two banks' prices included embryology costs in their quotes and the other two banks' prices did not. Surprisingly, the two banks that included embryology costs had a lower average package price ($26,025, range: $23,000-$29,050) than banks that did not include embryology costs ($35,470, range: $34,990-$35,950). Three banks offered live birth guarantee packages including four to six cohorts of eggs. These live birth guarantee packages did not include embryology costs and averaged $47,913 (range: $37,800-$65,750). Longitudinal data from one bank demonstrated that single embryo guarantee prices have increased over 53%, rising from $15,000 in 2018 to $29,050 in 2026, with 23% of that increase occurring in the last two years. Single egg cost increased 117% from 2018 to 2026, now $4,380 including thaw media and shipping, from a flat rate of $2,025 in 2018.
CONCLUSIONS: The cost of frozen donor eggs is substantial and rising. Quoted prices are often not directly comparable across banks due to heterogeneity in packages. Patients pursuing a single donor egg cycle can anticipate spending over $20,000 before accounting for medications and clinic visits making it cost prohibitive for most individuals, especially those who desire multiple children.
IMPACT STATEMENT: The cost of donor eggs is increasing. As use of donor eggs grows, providers must be prepared to counsel patients on the expected financial burden to aid in informed decision-making.
REFERENCES:
Hobbs CL, Martin CE. COST OF DONOR SPERM IN THE UNITED STATES: A HISTORICAL AND CONTEMPORARY ANALYSIS. Fertil Steril 2025;124(6):e5.

O-126 11:45 AM Tuesday, October 27, 2026

ASYMMETRIC PRICING IN THE U.S. SURROGACY MARKET: COSTS, COMPENSATION, AND GAPS IN TRANSPARENCY. Yinny Chan, MD, MS[1], Gabriella V Kochavi, M.D.[2], Pia Luthra, M.S.[3], Anna Sosa, B.S.[4], Miriam Tarrash, MD[5], Dr. Cory B French, MD[6], Mary E. Rausch, M.D.[5], Alexandra Peyser, MD[5], Tomer Singer, MD[7] and Dr. Randi H Goldman, MD, MBA[2], [1]Northwell Health, New Hyde Park, [2]Northwell, New Hyde Park, NY, [3]Touro College of Osteopathic Medicine, New York, NY, [4]Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, Hempstead, NY, [5]Northwell Health Fertility, Manhasset, NY, [6]Northwell Health Fertility, Manhasset, [7]Northwell Health Fertility, New York, NY

OBJECTIVE: In the United States (US), gestational surrogacy operates within a state-specific and economically opaque environment. This study aims to assess intended parent (IP) costs, gestational carrier (GC) compensation, and transparency and variability of pricing across agencies.
MATERIALS AND METHODS: We conducted a cross-sectional analysis of 128 GC agencies in the US. Agencies were identified by querying "surrogacy agency" with each state name. The agencies from the first two pages of search results were included to model how IPs and GCs may research agencies. Publicly available website data were collected, including IP costs (base cost, agency fee, medical expenses, insurance, legal fees, background checks, etc.) and GC compensation (base pay, cycle-related payments, allowances, compensation for complications, etc.). The remaining information was obtained through phone calls and emails with agency representatives. Transparency was defined as whether these variables were listed on the agency website. Paired comparisons of disclosure rates were performed using McNemar's test. Variability in pricing was assessed using coefficients of variation and Levene's test for equality of variance.
RESULTS: The average minimum first-time GC base pay was $54,589 (Median: $55,000; Range: $40,000 – $80,000). The average minimum IP base cost was $142,374 (Median: $150,000; Range: $25,000 – $212,000). GC base compensation was more frequently disclosed than IP base costs (72% vs 54%, p=0.002). Among 86 agencies reporting both values, IP base costs demonstrated significantly greater variability than GC base compensation (CV 22.2% vs 14.7%; Levene's $F = 55.32$, $p < 0.001$), despite intended parents being charged an average of $89,320 more per contract.
Compensation for pregnancy-related complications was infrequently reported; only 52 (40.6%) agencies publicly listed cesarean section compensation, and 30 (23.4%) listed hysterectomy compensation. Reimbursement for complications was mostly obtained through direct communication with agency representatives. The average compensation for losing a reproductive organ was $7,493 (median: $5,000; range: $2,500 - $20,000) for a hysterectomy, $3,087 (median: $2,500; range: $500 - $10,000) for a salpingectomy, and $3,255 (median: $2,500; range: $500 - $10,000) for an oophorectomy.
CONCLUSIONS: The US surrogacy market exhibits asymmetric pricing, with IP costs showing significantly greater variability than GC compensation, alongside substantial gaps in transparency. Compensation for GCs, particularly for pregnancy-related complications, is often not publicly available.
IMPACT STATEMENT: Greater transparency may enable both GCs and IPs to make more informed decisions when selecting an agency. These findings also underscore the ethical challenges in assigning monetary value to pregnancy and its associated medical risks.

O-127 11:55 AM Tuesday, October 27, 2026

IS PGT-A COST-EFFECTIVE IN IVF? AN AGE-STRATIFIED ANALYSIS FROM A PUBLIC HEALTHCARE MODEL. Dr. Yusuf Beebeejaun, MRCOG MHDL MBBS BSc(Hons)[1], James Michael Niall Michael Niall Duffy, BSc (Hons) MB ChB MRes DPhil MRCOG PG Dip PG Cert HCL[2], Anastasia Mania, B.A., B.SC.[3] and Sesh K Sunkara, MD, FRCOG[4], [1]IVI RMA UK, London, United Kingdom, [2]London, AL, [3]Esher, Surrey, United Kingdom, [4]King's College London, London, United Kingdom

OBJECTIVE:
To evaluate the cost-effectiveness of preimplantation genetic testing for aneuploidy (PGT-A) in an in vitro fertilization (IVF) model from a publicly funded healthcare perspective and to assess whether economic value varies by maternal age.
MATERIALS AND METHODS:
A decision-analytic model was developed from a healthcare payer perspective. Two strategies were compared: (1) standard IVF with morphological embryo selection and sequential embryo transfer, and (2) IVF with trophectoderm biopsy, PGT-A, and single euploid embryo transfer followed by frozen embryo transfer as required. Costs included PGT-A testing, biopsy, cryopreservation, embryo transfer procedures, and miscarriage management. Effectiveness inputs were derived from randomized trials and cohort studies and used to estimate expected embryo transfers and failed transfer events per live birth. Analyses were stratified by maternal age (<38 vs ≥38 years), with deterministic sensitivity analyses across plausible effectiveness estimates.
RESULTS:
In patients aged <38 years, PGT-A was associated with modest reductions in failed embryo transfers (0.2–0.4 per patient) and limited downstream cost offsets of approximately $400–$650 per patient, driven primarily by small reductions in miscarriage-related care and transfer procedures. These savings did not offset additional testing and laboratory costs, resulting in a net increase in healthcare expenditure of approximately $3,800–$4,500 per patient.
In patients aged ≥38 years, larger reductions in failed transfers (0.5–0.8 per patient) and greater decreases in miscarriage-related costs ($1,100–$1,800 per patient) were observed. However, total costs remained higher with PGT-A, with an incremental increase of approximately $2,300–$3,100 per patient in the base-case analysis. Cost neutrality was achieved only under optimistic assumptions of substantially greater reductions in failed transfers and miscarriage events.
CONCLUSIONS:
PGT-A is not cost-effective in patients under 38 years and remains unlikely to be cost-effective in older patients within a publicly funded IVF model.
IMPACT STATEMENT:
Routine use of PGT-A cannot be economically justified in publicly funded healthcare systems; selective use in carefully defined subgroups may represent a more efficient allocation of limited resources.
SUPPORT: Nil to declare.

O-128 12:05 PM Tuesday, October 27, 2026

COMPARATIVE FINANCIAL CONTRIBUTION OF MIGS AND REI SURGEONS IN ACADEMIC AND PRIVATE PRACTICE: A MODELING ANALYSIS INCORPORATING IVF VOLUME AND DOWNSTREAM FERTILITY RETENTION. Christopher Ke Arkfeld, MD[1], Stylianos Vagios, MD[1], Alexandra Regan, MD[2] and Dr. John C Petrozza, MD[3], [1]Massachusetts General Hospital Fertility Center, Massachusetts General Hospital and Harvard Medical School, Boston, MA, [2]University of Nebraska Medical Center, Omaha, NE, [3]Fertility Centers of New England, Reading, MA

OBJECTIVE:
To develop a financial model comparing the annual practice revenue generated by Minimally Invasive Gynecologic Surgeons (MIGS) and Reproductive Endocrinology and Infertility (REI) surgeons, specifically incorporating the impact of downstream fertility retention.
MATERIALS AND METHODS:
Design: A comparative financial modeling analysis based on typical U.S. practice patterns, published productivity benchmarks, and a survey of reproductive surgeons. Two clinical models (academic and private practice) were constructed. The MIGS model included high-volume operating room (OR) activity (2 days/week) focusing on hysterectomy and endometriosis excision. The REI model included lower OR volume (1 day/week) focused on complex laparoscopy (e.g., myomectomy) and operative hysteroscopy alongside IVF cycles and downstream fertility retention. IVF volume was modeled from 100-400 cycles/year. Retention was defined as surgical patients continuing treatment within the same practice, with a subset proceeding to IVF.
RESULTS:

- **Annual Revenue Generation:** In the academic model, the REI surgeon generated $3.99 million annually compared to $1.54 million for the MIGS surgeon.
- **Private vs. Academic:** Private practice REI surgeons generated an estimated $6.5 million annually, exceeding academic REI revenue by 60–80% due to higher IVF volume and full capture of laboratory revenue.
- **Downstream Retention:** This factor contributed an additional $600,000 annually in academic settings and $1.50 million in private settings.
- **Survey Findings:** Among surveyed reproductive surgeons, a median of 90% of surgical patients remained in-practice for subsequent fertility treatment.
- **Primary Drivers:** Across all modeled IVF volumes (100-400 cycles/year), REI revenue consistently exceeded MIGS revenue, driven primarily by IVF cycles.

•	MIGS Academic	MIGS Private	REI Academic	REI Private
OR revenue	$1.15M	$1.30M	$0.48M	$0.30M

Clinic revenue	$0.39M	$0.50M	$0.91M	$1.20M
IVF revenue	–	–	$2.00M	$3.50M
Downstream retention	–	–	$0.60M	$1.50M
Total revenue	$1.54M	$1.80M	$3.99M	$6.50M

CONCLUSIONS:
REI surgeons who perform complex laparoscopy and provide comprehensive infertility care generate substantially greater annual practice revenue than MIGS surgeons, even with less scheduled OR time due to downstream fertility retention. These findings suggest that for practices offering ART, strategic recruitment of REI surgeons may offer a more favorable return on investment while maintaining surgical access.
IMPACT STATEMENT:
REI is a surgical subspecialty; reproductive surgeons generate higher revenue than MIGS specialists despite utilizing less operating room time. This financial performance is driven by a unique "OR-to-IVF" pipeline, where surgery is a gateway to high-value downstream fertility retention.

ORAL ABSTRACT SESSION: ACCESS TO CARE

O-129 11:15 AM Tuesday, October 27, 2026

PATHWAYS TO FIBROID DIAGNOSIS AND CARE AMONG BLACK AND WHITE WOMEN WITH DOCUMENTED HEAVY MENSTRUAL BLEEDING: A STATE-WIDE CLAIMS-BASED ANALYSIS. Marissa Ghant, MD[1], Felix Valbuena Jr., M.D.[2], Xiaosong Zhang, MS[1], Tanika Gray Valbrun, BS[3], Ganesa R Wegienka, PhD, MS[4], David R Williams, PhD, MPH[5], Wan-Ting K. Su, PhD, MS[4], Erica E. Marsh, MD, MS[1] and Vanessa Dalton, MD, MPH[1], [1]University of Michigan, Ann Arbor, MI, [2]Community Health and Social Services (CHASS) Center, Detroit, MI, [3]The White Dress Project, Lithia Springs, GA, [4]Henry Ford Health System, Detroit, MI, [5]Harvard University, Boston, MA

OBJECTIVE: Uterine fibroids are the most common benign gynecologic tumor, and there are well-documented racial differences in treatment patterns and outcomes. However, the drivers of these disparities are poorly understood. The objective of this study was to examine care pathways among Black and White women presenting with heavy menstrual bleeding (HMB), a common symptom in women with fibroids.
MATERIALS AND METHODS: We conducted a retrospective cohort study of 32,634 Black and White Medicaid beneficiaries aged 18-55 years with fibroids and ≥3 years of continuous enrollment between 2016 and 2022. Administrative claims (e.g., ICD-10 and CPT codes) were used to identify fibroid diagnosis and to characterize health service usage patterns (office and emergency room visits), as well as documented anemia, transfusions and diagnostic testing (e.g. imaging or procedure) in the 12 months before fibroid diagnosis. Racial differences in HMB, anemia, transfusion, and care use were summarized using Cohen's h, with |h|≥0.20 indicating a clinically meaningful difference. Among women with ≥1 HMB encounter, time to diagnostic testing within 90 days was compared by race using age-adjusted Cox regression, with censoring at Medicaid disenrollment or end of follow-up. Age-stratified models assessed effect modification across the 18-29, 30-39, 40-49, and 50-55 year groups.
RESULTS: Documented HMB was common in both Black and White women in the year prior to fibroid diagnosis. While prevalence was modestly higher among White women (64.2% vs. 59.3%), the effect size was small (Cohen's h=-0.103). Black women were more likely than White women to have documented anemia (30.1% vs. 21.1%, Cohen's h=0.206), to undergo transfusions (2.8 versus 1.1, Cohen's h=0.123) and to have an emergency room visit (64.7% vs. 53.8%, Cohen's h=0.223). Compared with White women with HMB, Black women with HMB were less likely to have a diagnostic test within 90 days following the first observed HMB-related encounter (HR=0.90, CI: 0.88-0.97). This difference was driven largely by women aged 40-49 years (HR=0.89, CI: 0.84-0.95).
CONCLUSIONS: Among Michigan Medicaid beneficiaries diagnosed with fibroids, Black and White women had similarly high rates of documented HMB in the year before diagnosis. However, Black women experienced greater morbidity and acute care use, including higher rates of anemia, transfusion, and emergency room visits. Despite this greater disease burden, Black women with HMB were less likely to receive diagnostic testing within 90 days after an initial HMB-related encounter, with the disparity concentrated among women aged 40-49 years. These findings suggest that differences in pre-diagnosis evaluation and care escalation may contribute to observed racial inequities in fibroid-related outcomes.
IMPACT STATEMENT: Racial differences in fibroid outcomes may be driven in part by differences in early recognition and diagnostic workup of HMB. Targeted interventions to standardize diagnostic evaluation of HMB patients and improve prompt access to appropriate outpatient care could reduce morbidity and acute care utilization.

O-130 11:25 AM Tuesday, October 27, 2026

MAPPING FERTILITY GRANT PROGRAMS ACROSS THE UNITED STATES AND DEVELOPMENT OF AN ACCESSIBLE ONLINE DATABASE. Matthew Grande, MD[1], Sarah C Cromack, MD[2], Preeta A Kamat, BA[3], Dr. Olamide O Akin-Olugbade, MD[1,4], Zach French, JD[5], Hana Ahmed, MD[6], Onyinye Ohamadike, MD[4], Elena Hogenesch, MD, MSCR[7] and Eve C Feinberg, M.D.[3], [1]Northwestern McGaw Medical Center, Chicago, [2]Emory University, Brookhaven, GA, [3]Northwestern University Feinberg School of Medicine, Chicago, IL, [4]Northwestern University, Chicago, IL, [5]The Surrogacy Foundation, GA, [6]Southern Illinois University, Springfield, IL, [7]University of California, San Francisco School of Medicine, San Francisco, CA

OBJECTIVE:
To update the current landscape of U.S.-based organizations offering fertility grants, characterize their eligibility requirements, and quantify the scope of financial support available to patients pursuing fertility care. Additionally, to compile this updated database into a publicly accessible online platform that equips both patients and physicians with a tool to identify available fertility grants.
MATERIALS AND METHODS:
We conducted a cross-sectional study between October 2023 and February 2024 using a systematic online search of Google, GuideStar, Facebook, and Instagram to identify U.S.-based organizations providing financial assistance for family building. Inclusion criteria required active grants in 2023; international-only or inactive organizations were excluded. We abstracted publicly available data on eligibility criteria (e.g., age, geography, income, marital status, diagnosis). Once compiled, we developed a centralized database that served as the foundation for a digital chatbot to provide direct information to patients or providers about fertility grants in the United States (https://www-dev.thesurrogacyfoundation.org/help/). This tool was built using the fertility organization data that was manually collected, utilizing AI to further investigate these organizations and pull additional data from their respective websites, and back-checking the information for errors Once compiled in the chatbot, each organization will receive a scheduled, quarterly survey for any updates about their organization to ensure the database remains as current as possible.
RESULTS:
We identified 60 active organizations, representing a nearly 50% increase from 37 reported previously. While some organizations closed during the COVID-19 pandemic, 23 new organizations emerged. Eligibility criteria were highly variable; 59 of 60 organizations required at least one application criterion. Age restrictions were most common (n=27; upper limit 40-45), while 6 organizations required AMH thresholds (mean minimum 0.5-1). Non-medical criteria (e.g., income, geography, marital status) were more common than medical criteria. Fewer organizations explicitly included single individuals, LGBTQ+ patients, or BIPOC populations. Additionally, organizations were more commonly located in states with existing insurance mandates, highlighting persistent geographic disparities.
CONCLUSIONS:
Although the number of fertility grant organizations has increased, disparities persist, particularly for underrepresented populations and individuals in states without insurance mandates. Centralizing and digitizing access to these resources may improve navigation and utilization.
IMPACT STATEMENT:
This study provides an updated, comprehensive resource of fertility grant funding organizations and introduces a novel digital tool that translates these findings into accessible, actionable, and personalized support. By creating an easily accessible regularly updated database, this approach has the potential to improve access to fertility care.

O-131 11:35 AM Tuesday, October 27, 2026

GEOGRAPHIC ACCESS AND ONCOFERTILITY CARE: LONGER TRAVEL TIME TO FERTILITY CENTERS IS ASSOCIATED WITH LOWER RATES OF GOAL-CONCORDANT CARE. Keri A Tomechko, BS[1], Kelly Michelle Chacon, MD[1], Vaibhavi Patankar, BS[2], Dunay Bach, BA[1], Ricardo Enrique Flores Ortega, MPH[1], Jingjing Zou, PhD[1], Blanca E Equihua-Felix, MD, MSc[1], Rebecca A Kolodner, MD[1], Sally A. D. Romero, PhD, MPH[1] and Irene Su, MD, MSCE[1], [1]University of California San Diego, La Jolla, CA, [2]University of California San Diego, San Diego, CA

OBJECTIVE: To examine the association between travel time to fertility centers and receipt of goal-concordant oncofertility care among patients newly diagnosed with cancer, and whether eligibility under California's Senate Bill 600 (SB600) fertility preservation insurance mandate modifies this relationship.
MATERIALS AND METHODS: This retrospective cohort study included patients aged ≤42 years (female) or ≤49 years (male) newly diagnosed with cancer at an NCI-designated Comprehensive Cancer Center between October 2021 and October 2024. As a proxy for geographic access, vehicular travel time from each participant's residence to the nearest fertility or andrology center was estimated using ArcGIS Pro with StreetMap Premium. When full addresses were unavailable, zip code centroids were used. Goal-concordant oncofertility care was determined by medical record review and defined as receipt of counseling, referral, consultation, and/or fertility preservation services aligned with patient goals. Associations between travel-time quartiles and goal-concordant oncofertility care were assessed using log-binomial regression to calculate prevalence ratios (PRs) and 95% confidence intervals (CIs) and were adjusted for primary language, cancer stage, and cancer type. Effect modification by SB600 eligibility was tested using Poisson regression with robust standard errors to estimate prevalence ratios.
RESULTS: Among 501 patients (median age 36 [IQR 30–41]; 60% female; 49% White; 58% non-Hispanic), median travel time to the nearest fertility center was 18.4 minutes (IQR 10.3–28.1). Overall, 59% received goal-concordant oncofertility care. Compared to patients in the shortest travel time quartile (Q1 <10 min), those in Q2 (10–18 min; aPR 0.83, 95% CI 0.70–0.99), Q3 (18–28 min; aPR 0.81, 95% CI 0.68–0.97), and Q4 (>28 min; aPR 0.83, 95% CI 0.70–0.98) were significantly less likely to receive goal-concordant oncofertility care. SB600 eligibility did not modify this association (p = 0.15).
CONCLUSIONS: Longer travel time to fertility centers is independently associated with lower receipt of goal-concordant oncofertility care, indicating that even in a metropolitan setting, geographic access remains a critical barrier that is not mitigated by insurance coverage.
IMPACT STATEMENT: These findings underscore the need for future interventions to address structural barriers, e.g. telehealth fertility counseling, decentralized fertility

preservation services, and targeted transportation or lodging support, to ensure equitable reproductive care access for young cancer patients.
SUPPORT: This work was funded by research grants from the Robert Wood Johnson Foundation Grant (119562, 80682), the National Institutes of Health/National Cancer Institute (R01CA271104, R21CA271184, U54CA285117, and U54CA285115), and the National Institutes of Health / National Center for Research Resources (UM1TR005449), the National Institutes of Health training grant (T32 HD007203), and Curebound Pedal the Cause. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

O-132 11:45 AM Tuesday, October 27, 2026

LIMITED IVF INSURANCE COVERAGE IS ASSOCIATED WITH INCREASED UTILIZATION OF PREIMPLANTATION GENETIC TESTING.
Brianna C Borger, BS[1], Alexandra M Herweck, MD, MPH[2], Ecem Esencan, M.D.[3], Riley Bonaccorsi, BA, MA[4], Joan K. Riley, HCLD, PhD[1], Emily S Jungheim, M.D., M.S.[5] and Jessica R Walter, MD, MSCE[5], [1]Northwestern University, Chicago, IL, [2]Houston, TX, [3]Northwestern University, Feinberg School of Medicine, Chicago, IL, [4]Research Study Coordinator, Chicago, IL, [5]Northwestern University Feinberg School of Medicine, Chicago, IL

OBJECTIVE: Insurance mandates expand access to IVF; however, substantial variation in coverage design persists. The impact of insurance structure, including restrictions on cycle number or financial limits, on patient decision-making around preimplantation genetic testing (PGT), remains unclear. Given this, we evaluated the association between IVF insurance coverage structure and PGT utilization in patients undergoing their first IVF cycle.
MATERIALS AND METHODS: This is a cross-sectional study of individuals participating in the **PRO**spective study of **M**others' and **I**nfants' **S**ocial and **E**pidemiologic determinants of health (PROMISE) cohort, a prospective study of people undergoing their first cycle of IVF at an academic center in Illinois. All patients underwent standardized review of primary insurance by financial counselors, documenting Illinois state mandate status, IVF coverage, plan details, and deductible when applicable. Insurance plans were categorized into three groups based on IVF access: no coverage, restricted coverage (lifetime cycle or financial limits), and comprehensive coverage (annual or unlimited cycle-based coverage). The primary outcome was PGT utilization. Multivariable logistic regression was used to assess the association between coverage type and PGT utilization, adjusting for age, AMH, and BMI.
RESULTS: In our cohort of 208 patients, 23 (11%) had no IVF insurance coverage, 104 (50%) had restricted coverage, and 81 (39%) had comprehensive coverage. PGT utilization was 52% among patients with no coverage, 72% in the restricted group, and 57% among those with comprehensive coverage (p=0.058). There were no differences across coverage groups in age, BMI, ovarian reserve (AMH, AFC), IVF response (oocytes retrieved, blastocyst yield), race, or socioeconomic status as measured by Area Deprivation Index. Among patients with IVF coverage and complete data on PGT use (n=168), PGT utilization was significantly higher in those with restricted compared to comprehensive coverage (p=0.039). Grouping patients with no or restricted coverage together, PGT utilization remained higher among patients with limited coverage compared to comprehensive coverage, but was not statistically significant (adjusted OR 0.58, 95% CI 0.31–1.09, p=0.09). In multivariable analysis limited to patients with IVF coverage and adjusting for age, AMH, and BMI, restricted coverage remained independently associated with increased PGT utilization (OR 2.10, 95% CI 1.07–4.12, p=0.030).
CONCLUSIONS: Among patients with IVF insurance coverage, restricted benefits are associated with increased PGT use, independent of age and ovarian reserve, suggesting variation in insurance design may influence patient decision-making independent of biologic prognosis; patients facing limited IVF coverage may pursue strategies perceived to optimize per-cycle success.
IMPACT STATEMENT: As insurance mandates expand nationally, the structure of IVF coverage may shape how patients utilize adjunct technologies like PGT. These findings underscore the need for policymakers, payers, and clinicians to consider how cycle limits and financial caps influence treatment decisions.

O-133 11:55 AM Tuesday, October 27, 2026

COSTS ASSOCIATED WITH HEALTH INSURANCE COVERAGE FOR IN VITRO FERTILIZATION (IVF) FROM THE PERSPECTIVE OF EMPLOYERS.
James M. Dupree, M.D., M.P.H[1], Phyllis Yan, B.S., M.A.[1], Rodney L. Dunn, B.A., M.S.[2], David Suh, MPH[2], Brandon T Swinney, MPH[1], Edward C Norton, A.B., Ph.D[2], Vanessa Dalton, MD, MPH[2], Erica E. Marsh, MD, MS[2], Marissa Steinberg Weiss, M.D., M.SC.[3] and Anjelica Gangaram, Ph.D[2], [1]Michigan Medicine, Ann Arbor, MI, [2]University of Michigan, Ann Arbor, MI, [3]University of Pennsylvania, Philadelphia, PA

OBJECTIVE: The most common question employers have when they consider providing health insurance coverage for in vitro fertilization (IVF) to their employees is: how much will it cost? Our objective was to analyze the per-member-per-month (PMPM) costs, from the employer's perspective, associated with IVF in a nationwide sample of people with employer-sponsored insurance coverage.
MATERIALS AND METHODS: Using Optum's de-identified Clinformatics® Data Mart Database data from 2013 to 2020, we identified employers that covered IVF and all beneficiaries covered by those employers. Then, we used paid claims for oocyte retrievals or embryo transfers to identify women aged 21-44 years old with ≥1 IVF cycle. For each employer, we summed the amount paid by the employer (for self-insured employers) or the payer (for fully insured employers) for IVF cycles, including IVF prescriptions. Mean PMPM costs for IVF were calculated for all employers, for self-insured vs. fully insured employers, and for employers of different sizes. We excluded employers in years they had <10 beneficiaries and excluded oocyte retrievals performed for fertility preservation. All costs were inflation-adjusted to 2025 dollars.
RESULTS: We identified 5,069 employers that covered IVF and 22,758 patients who underwent IVF at these employers. For all employers, the PMPM costs associated with IVF were $1.12 [95% confidence interval (CI): $1.02-1.21]. Self-insured and fully insured employers had PMPM costs for IVF of $0.88 (95% CI: $0.77-0.98) and $1.60 (95% CI: $1.42-1.79), respectively. Smaller employers had higher PMPM costs for IVF (**Table**).
CONCLUSIONS: We found that employers covering IVF for their employees spend approximately $1.12 PMPM for IVF services. For fully insured employers, these IVF PMPM costs represent about 0.3% of employers' total monthly PMPM premium costs (1). Larger and self-insured employers had lower PMPM costs than smaller and fully insured employers, likely because the IVF costs could be spread among a larger employee population.
IMPACT STATEMENT: Employers interested in adding IVF coverage to their health plans, and policymakers considering state IVF coverage mandates, commonly want estimates for the costs they could incur for IVF coverage. Our findings will, for the first time, give employers and other policymakers nationwide data they can use to guide decisions about adding insurance coverage for IVF as a means of expanding access to this important infertility treatment.

Table: PMPM employer costs for IVF (95% CI), by employer size

	10-49	50-99	100-499	500-999	≥1000
PMPM costs for IVF	$19.99 ($18.34-21.64)	$8.96 ($8.10-9.81)	$3.69 ($3.46-3.92)	$1.99 ($1.82-2.16)	$0.92 ($0.82-1.02)

SUPPORT: Eunice Kennedy Shriver National Institute of Child Health & Human Development - 1R01HD103603
REFERENCES:
(1) How ACA Marketplace costs compare to employer-sponsored health insurance. Peterson-KFF Health System Tracker. Accessed April 28, 2026. https://www.healthsystemtracker.org/brief/how-aca-marketplace-costs-compare-to-employer-sponsored-health-insurance/

O-134 12:05 PM Tuesday, October 27, 2026

EMPLOYER-SPONSORED FERTILITY BENEFIT COVERAGE AMONG 100 LARGE SELF-FUNDED EMPLOYERS IN THE UNITED STATES.
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OBJECTIVE: Employers have increasingly begun offering in vitro fertilization (IVF) coverage as a component of their employee benefits packages. However, little is known about the structure and design of these benefits that powerfully shape patient access to care. Our objective was to characterize the landscape of employer-sponsored fertility benefits among a national sample of 100 large self-funded employers in the United States covering 24.6 million total lives.
MATERIALS AND METHODS: Expert analysts qualitatively coded self-funded employer health insurance documents obtained from Leverage Global Consulting. We created variables for key fertility-related benefits, including coverage for infertility evaluation, treatment of underlying conditions contributing to infertility, IVF, intrauterine insemination (IUI), and fertility medications. Each variable was coded to indicate whether the benefit was covered, excluded, or not mentioned in each insurance plan. We used descriptive statistics to define the prevalence of each benefit variable across employer plans.
RESULTS: We found substantial variation in fertility benefit coverage within the sample (Table). Most plans explicitly cover infertility evaluations (89%) and treatment of underlying conditions (60%). Sixty percent of plans, representing over 15 million covered lives, offer IVF coverage. However, just over half of plans offer coverage for IUI (54%) and fertility medications (53%). Notably, about one-third of plans explicitly exclude coverage for IVF (32%) and IUI (31%).
CONCLUSIONS: There is marked heterogeneity in employer-sponsored fertility benefits among large self-funded employers, with no consistent standard for coverage across key domains of fertility care. Overall, while a majority of plans offer comprehensive fertility benefits, including IVF and fertility medications, others provide more limited coverage restricted solely to diagnostic evaluation or select services treating underlying conditions.
IMPACT STATEMENT: This study provides the largest known systematic characterization of real-world employer-sponsored fertility benefits, offering critical insight into variability that may influence access to care. Since the employers in our study are self-funded, they are not subject to state mandates for IVF coverage. As self-funded companies continue to expand access to IVF coverage, more targeted advocacy to these employers and federal policymakers is required to achieve complete patient access.
Table: Percent of Self-Funded Employer Plans Covering, Excluding, or Not Mentioning Fertility Benefits (n=100)

Fertility benefits	Covered	Excluded	Not mentioned
Infertility evaluation	89	4	7
Treatment of underlying conditions	60	7	33
IVF	60	32	8
IUI	54	31	15

Fertility medications	53	29	18

SUPPORT: Funding to support this work came from the R01HD113625 from the National Institute of Health. C.A., P.Y., J.M.D., and A.K. receive grant funding from the National Institute of Health (R01HD113625).

ORAL ABSTRACT SESSION: ART (1 OF 3)

O-135 11:15 AM Tuesday, October 27, 2026

COMPARABLE OBSTETRIC AND PERINATAL OUTCOMES AFTER PROGESTIN-PRIMED OVARIANSTIMULATION AND GnRH ANTAGONIST.

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OBJECTIVE: Progestin-primed ovarian stimulation (PPOS) has emerged as a patient-friendly alternative to GnRH antagonist protocols for the prevention of premature LH surge during controlled ovarian stimulation (COS). Its oral administration and cycle scheduling flexibility offer practical advantages for both patients and clinicians. Previous studies have reported comparable embryological and clinical outcomes between PPOS and antagonist regimens; however, evidence regarding subsequent obstetric and perinatal safety remains limited. This study aimed to evaluate whether pregnancies resulting from PPOS cycles are associated with adverse obstetric or perinatal outcomes compared with those resulting from GnRH antagonist cycles.
MATERIALS AND METHODS: This retrospective single-center cohort study included 347 live births resulting from deferred embryo transfers performed after IVF cycles conducted between January 2022 and December 2023. Patients underwent COS using either a PPOS protocol (n=141) or a GnRH antagonist protocol (n=206), according to physician preference, and were compared with respect to obstetric and perinatal outcomes. Core perinatal data (mode of delivery, gestational age and birthweight) were available for all live births, while extended obstetric and perinatal outcomes were obtained through structured parental questionnaires, with responses available for 144 live births. Outcomes were assessed via modified Poisson regression with robust variance estimate adjusted for maternal age, BMI, oocyte origin (autologous or donor), endometrial preparation, endometrial thickness, PGT-A, day of embryo transfer (day-5 or day-6) and multiple pregnancies.
RESULTS: No significant differences were observed between PPOS and GnRH antagonist in key obstetric and perinatal outcomes: preterm birth (aRR 1.01 95% CI 0.64-1.56), macrosomia (aRR 0.53 95% CI 0.09-3.09), preeclampsia (aRR 0.48 95% CI 0.22-1.85), mode of delivery (aRR 0.99 95% CI 0.92-1.06) and postpartum complications (aRR 2.36 95% CI 0.84-6.64). Additionally, maternal pregnancy complications, including gestational hypertension, gestational diabetes mellitus, placenta previa, placental abruption and premature rupture of membranes did not differ significantly between groups. Congenital malformations and low birthweight were rare in both groups, precluding robust adjusted comparisons.
CONCLUSIONS: Pregnancies resulting from PPOS cycles demonstrated obstetric and perinatal outcomes comparable to those from GnRH antagonist protocols, supporting maternal and neonatal safety of PPOS in this cohort. Prospective randomized studies are warranted to confirm these findings.
IMPACT STATEMENT: These data support the obstetric and perinatal safety of PPOS, reinforcing its use as a practical and patient-friendly alternative to GnRH antagonist protocols in IVF programs using deferred embryo transfer strategies.

O-136 11:25 AM Tuesday, October 27, 2026

FRESH DONOR OOCYTE SHARING IS ASSOCIATED WITH HIGHER BLASTOCYST EFFICIENCY AND LOWER COST PER EMBRYO THAN FROZEN–THAWED OOCYTE CYCLES.

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OBJECTIVE: To compare blastocyst efficiency per oocyte and cost per viable blastocyst between fresh and frozen–thawed donor oocytes in a contemporary donor program, and to evaluate the impact of oocyte source and sharing model on treatment affordability.
MATERIALS AND METHODS: We performed a retrospective cohort analysis of deidentified donor oocyte IVF cycles from 2022–2025 at a single donor egg & embryo program offering traditional and shared fresh egg cycles as well as frozen-thawed egg cycles.
To minimize confounding from inflation and price variation across years, all cycle-level economic outcomes were standardized to 2026 US dollars using a uniform fee schedule. This approach ensured that differences in cost per viable blastocyst reflected biological efficiency rather than year-to-year pricing changes.
Primary outcome: Viable blastocysts per oocyte
Secondary outcome: Cost per viable blastocyst (2026 USD)
Group comparisons were performed using two-sample t-tests. Multivariable linear regression was used to evaluate predictors of blastocyst yield per oocyte. Statistical analyses were performed using Microsoft Excel.
RESULTS: A total of 104 cycles were included: 68 fresh cycles (traditional and shared) and 36 frozen–thawed cycles.
Fresh cycles produced significantly more viable blastocysts per oocyte than frozen–thawed cycles: 0.39 ± 0.19 (95% CI 0.34–0.43) vs 0.28 ± 0.20 (95% CI 0.21–0.34); p = 0.006
Cost per viable blastocyst (2026 USD) was substantially lower for fresh cycles, with traditional fresh at $6946 and shared fresh at $8936, compared with $15,864 for frozen-thawed egg lots.
Multivariable regression demonstrated that fresh oocytes were independently associated with increased blastocyst yield (+0.142 blastocysts per oocyte; p = 0.002), after controlling for oocyte number and semen quality.
This corresponds to approximately one additional blastocyst in a typical 6-8 oocyte cohort.
The overall model was statistically significant (p = 0.016).
CONCLUSIONS: Fresh donor oocyte cycles demonstrated higher biological efficiency and substantially lower cost per viable blastocyst than frozen-thawed cycles. Standardizing costs to a single reference year improves comparability and underscores the economic advantage of fresh donor egg sharing programs.
IMPACT STATEMENT: Fresh donor egg sharing provides greater biological efficiency and lower cost per embryo, while frozen egg banking enables distribution across time and location. Programs that combine real-time fresh egg sharing with selective cryopreservation may optimize efficiency, flexibility, and patient access.

O-137 11:35 AM Tuesday, October 27, 2026

PREGNANCY OUTCOMES WITH THE TRANSFER OF POOR-QUALITY AND SLOW-GROWING EMBRYOS.

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OBJECTIVE: Slow-growing and poor-quality embryos are often presumed to have low reproductive potential, leading some fertility centers to forgo their cryopreservation and transfer. The objective of this study is to report on clinical pregnancy (CPR) and live birth rates (LBR) from poor-quality and slow-growing embryos.
MATERIALS AND METHODS: We performed a retrospective cohort study utilizing the Society for Assisted Reproductive Technology Clinic Outcomes Reporting System from a single academic center. Frozen embryo transfers reported 2019-2024 were included. Cycles utilizing cleavage stage embryos, donor oocytes, donor embryos, or transfer of >1 embryo were excluded. Embryo morphology and day of vitrification (D5, D6, or D7) were confirmed by chart review. The laboratory utilized modified Gardner embryo grading system, with inner cell mass (ICM) and trophectoderm (TE) graded A to D; A–D signify good, fair, poor quality and degenerate. Generalized linear mixed models adjusted for age, BMI, and past live birth were used to evaluate associations with clinical pregnancy and live birth; adjusted odds ratio (OR) and 95% confidence intervals (CI) are reported.
RESULTS: 1604 frozen embryo transfers met inclusion criteria: 1206 were D5, 368 were D6, and 30 were D7. Morphology was classified as “Poor” if either the TE or ICM received a grade of C (n=201); all remaining embryos were classified as “Good/Fair.” The CPR was 57% for Good/Fair embryos versus 40% for Poor embryos (OR 0.61, 95% CI 0.42–0.89), while LBR were 49% and 32%, respectively (OR 0.62, 95% CI 0.42–0.90). Later blastulation was associated with poorer outcomes: CPR were 57% for D5, 48% for D6, and 37% for D7 embryos (D5 vs D6 OR 0.72, 95% CI 0.54–0.96; D5 vs D7 OR 0.42, 95% CI 0.17–1.0). A similar pattern was observed for live birth rates, which were 49% for D5, 40% for D6, and 27% for D7 embryos (D5 vs D6 OR 0.33, 95% CI 0.12–0.91; D5 vs D7 OR 0.69, 95% CI 0.52–0.93). Cycles were analyzed according to embryo PGT-A status. Poor morphology was associated with lower CPR among untested embryos (OR 0.51, 95% CI 0.28–0.91), while morphology was not predictive in euploid embryos. In euploid transfers, delayed blastulation remained associated with reduced CPR (D5 vs D6: 61% vs 51%; OR 0.67, 95% CI 0.47–0.99) and LBR (53% vs 43%; OR 0.68, 95% CI 0.46–0.99).
CONCLUSIONS: Compared with Good/Fair-quality and faster growing embryos, Poor-quality and slow-growing embryos were associated with lower CPR and LBR overall, with delayed blastulation continuing to be associated with poorer outcomes even among euploid embryos.
IMPACT STATEMENT: This study uniquely evaluates outcomes of both slow-growing and poor-quality embryos, addressing a gap in U.S. data. This study provides outcomes rates for slow-growing and poor-morphology embryos that can be incorporated into counseling and help guide expectations for live birth and decisions about additional retrievals. Despite lower LBR by morphology, euploid poor-morphology embryos demonstrated overall reasonable live birth outcomes, supporting their consideration for transfer.
SUPPORT: A portion of this project was supported by the Johns Hopkins Department of Gynecology and Obstetrics Kelly Society.

O-138 11:45 AM Tuesday, October 27, 2026

CLOMIPHENE CITRATE ADJUVANT USE IN RECOMBINANT FSH-BASED OOCYTE DONOR STIMULATION IS NOT ASSOCIATED WITH IMPROVED OOCYTE YIELD AND IS ASSOCIATED WITH HIGHER GONADOTROPIN USE.

Felipe López Zúñiga, M.D.[1], Genaro García Villafana, M.D.[2], José Iram Obeso-Montoya, M.D.[3], Ashanti Edith Aguilar, MD[4], Julio César Rosales, M.D.[3], Marianna Pérez-Vargas, M.D.[5] and Mario Alberto Garza-Garza, M.D., M.Sc.[2], [1]Guadalupe, NL, Mexico, [2]IECH - Fertility Center, Monterrey, NL, Mexico, [3]IECH, Monterrey, NL, Mexico, [4]IECH, MONTERREY, NL, Mexico, [5]Monterrey, NL, Mexico

OBJECTIVE:
Clomiphene citrate (CC) is sometimes added to gonadotropin stimulation under a "gonadotropin-sparing" rationale. We evaluated whether adjuvant CC in recombinant FSH-based stimulation improves oocyte yield, gonadotropin efficiency, or embryologic outcomes in oocyte donors.

MATERIALS AND METHODS:
Single-center retrospective cohort of consecutive oocyte donor cycles (2022-2026). Donors were 18-30 years old with anti-Mullerian hormone (AMH) ≥1.25 ng/mL. To reduce confounding by gonadotropin class, the analysis was restricted to recombinant FSH-based cycles, with or without recombinant LH; HMG-only cycles were excluded. The exposure was CC 100 mg/day during stimulation versus no CC. The primary outcome was the number of MII oocytes. Secondary outcomes included total oocytes, %MII, total gonadotropin dose, stimulation duration, MII per 1000 IU, and, in fresh cycles, fertilization, blastulation, and good-quality blastocyst rates. Continuous outcomes were modeled with multivariable linear regression adjusting for age, AMH, antral follicle count (AFC), body mass index (BMI), and oral contraceptive pretreatment; embryologic rates were modeled with binomial generalized linear models on event/trial counts. Inverse-probability-of-treatment weighting (IPTW) and a first-cycle-only restriction were used as sensitivity analyses.
RESULTS:
Among 160 cycles from 57 donors, 92 received CC and 68 did not. CC+ donors had higher AFC, BMI, and age at baseline. After adjustment, CC was not associated with total oocytes (Δ −0.7, 95% CI −3.5 to +2.0), MII oocytes (Δ −1.3, −3.8 to +1.1), or %MII (Δ −0.01, −0.06 to +0.03); confidence intervals excluded large clinically meaningful improvements. CC was associated with higher total gonadotropin dose (+203 IU, 95% CI +45 to +361), longer stimulation (+0.4 days), and lower MII yield per 1000 IU (−1.3). In fresh cycles (n=82), CC was not associated with fertilization (aOR 1.06, 0.59-1.90), blastulation (aOR 0.99, 0.74-1.33), or good-quality blastocyst rates (aOR 0.76, 0.38-1.53), although precision was limited. Sensitivity analyses were directionally consistent.
CONCLUSIONS:
Adjuvant CC in recombinant FSH-based oocyte donor stimulation was not associated with improved oocyte yield, maturation, or embryologic outcomes. Contrary to its proposed gonadotropin-sparing rationale, CC use was associated with higher gonadotropin exposure and lower stimulation efficiency. These findings provide no signal that supports the routine adjuvant use of CC in oocyte donor stimulation.
IMPACT STATEMENT:
In oocyte donors with adequate ovarian reserve, adjuvant CC does not improve ovarian response and may increase gonadotropin requirements. These results challenge the gonadotropin-sparing rationale for CC use in this population and inform protocol selection in oocyte donation programs.

O-139 11:55 AM Tuesday, October 27, 2026

DOES FASTER LIVE BIRTH JUSTIFY HIGHER COST? AN AGE-STRATIFIED COST-EFFECTIVENESS ANALYSIS OF IUI, IVF, AND PGT-A IN UNEXPLAINED INFERTILITY. Joanna Khalifeh, MD[1], Anastasia Mania, B.A., B.SC.[2], Shalini Rasaily, MSc[2], Sesh K Sunkara, MD, FRCOG[3] and Dr. Yusuf Beebeejaun, MRCOG MHDL MBBS BSc(Hons)[4], [1]Kings Fertility, London, United Kingdom, [2]King's Fertility, London, United Kingdom, [3]King's College London, London, United Kingdom, [4]IVI RMA UK, London, United Kingdom

OBJECTIVE:
To evaluate the cost-effectiveness of intrauterine insemination (IUI), in vitro fertilization (IVF), and preimplantation genetic testing for aneuploidy (PGT-A) in unexplained infertility using time to live birth as a patient-centered effectiveness outcome.
MATERIALS AND METHODS:
A decision-analytic cost-effectiveness model was developed using time-to-live birth estimates derived from a cohort of 1,020 women (2,065 cycles) undergoing IUI, IVF, or IVF with PGT-A between 2017 and 2025. A healthcare payer perspective was adopted. Costs included treatment cycles, embryo transfer procedures, cryopreservation, and miscarriage-related care. Effectiveness was defined as time to live birth and probability of live birth within three treatment attempts. Incremental cost-effectiveness ratios (ICERs) were estimated. Analyses were stratified by maternal age (≤35, 35–39, ≥40 years), with deterministic sensitivity analyses across plausible cost and effectiveness assumptions.
RESULTS:
IUI was the lowest-cost strategy across all age groups but was associated with the longest time to live birth, resulting in reduced overall treatment efficiency. IVF increased total costs but reduced time to live birth compared with IUI, representing a moderate cost–effectiveness trade-off. PGT-A incurred the highest upfront costs but achieved the shortest time to live birth across all age groups.
Modelled downstream cost offsets increased with age. In women ≤35 years, savings were limited ($500–$1,200 per patient), reflecting modest reductions in failed transfers and miscarriage-related care. In women aged 35–39 years, savings increased to approximately $1,200–$2,500 per patient. In women ≥40 years, the largest offsets were observed ($2,500–$4,500 per patient), driven by fewer unsuccessful transfers, reduced miscarriage-related care, and shorter time to live birth.
Despite these offsets, PGT-A remained more costly overall and was not cost-effective in women <38 years. In women ≥38 years, the economic profile improved but approached cost-effectiveness only under assumptions of substantial reductions in failed transfers and miscarriage.
CONCLUSIONS:
While PGT-A reduces time to live birth, it is associated with higher costs and is not cost-effective in younger women, with economic value improving but remaining uncertain in older age groups.
IMPACT STATEMENT:
Integrating time to live birth into cost-effectiveness models provides a clinically meaningful framework for evaluating fertility treatment strategies and supports age-stratified, value-based decision-making in unexplained infertility.
SUPPORT: No financial disclosure

REFERENCES:
Nil.

O-140 12:05 PM Tuesday, October 27, 2026

BEYOND AGENCY RECORDS: STANDARDIZED DIRECT INTAKE IMPROVES DETECTION OF RISK FACTORS IN GESTATIONAL CARRIER SCREENING. Victoria Lazarov, MD[1], Tamar Alkon-Meadows, MD[2], Hajer Naveed, BA[1], Rebecca Zhuo, MD[1], Shawn Kripalani, MD, MS[1], Isabelle Kate Levin, BA[3], Joseph A. Lee, BA[4], Atoosa Ghofranian, M.D.[1], Alan B. Copperman, MD[5] and Eric Flisser, M.D.[6], [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]Reproductive Medicine Associates of New York, New York, NY, [3]Sidney Kimmel Medical College at Thomas Jefferson University, Philadelphia, NY, [4]RMANY || US Fertility, New York, NY, [5]Reproductive Medicine Associates of New York LLP, New York, NY, [6]Reproductive Medicine Associates of NY, LLP, New York, NY

OBJECTIVE: Gestational carriers (GCs) require comprehensive medical and psychosocial screening prior to participation in third-party reproduction; however, screening often relies on agency-submitted records that may be incomplete or inconsistently reported. Whether a standardized direct intake process can reduce information gaps and improve identification of clinically relevant risk factors remains unclear. This study evaluates whether a standardized fertility clinic intake form enhances capture of key risk factors and prior gestational carrier outcomes compared with agency-submitted records alone.
MATERIALS AND METHODS: This retrospective cohort study was conducted at an urban academic center and evaluated electronic medical record documentation from prospective GC applicants between April 2024 and August 2025. A standardized direct intake form developed at the study site was provided to surrogacy agencies to supplement routine applications. Seventy-eight clinical variables across seven domains, including demographics, obstetric complications, medical conditions, social history, and prior gestational carrier cycle outcomes, were assessed for documentation completeness. Completion rates were compared between applicants screened with versus without the standardized intake form using Chi-square and Fisher's exact testing, as appropriate.
RESULTS: Eighty-nine GC candidates were included: 42 screened with the structured intake form and 47 controls. Standardized direct intake improved capture of key variables, including race (84% vs. 54%, p=0.005) and THC use (100% vs. 70%, p=0.0001). Documentation of prior GC cycle outcomes was also more complete with direct intake (100% vs. 80%, p=0.003), including obstetric complications, postpartum depression, preterm birth, and neonatal complications. In contrast, no differences were observed in general obstetric, reproductive, or medical history documentation. Key social and preventive health variables, including vaccination history, relationship status, and education, remained incompletely captured in both groups.
CONCLUSIONS: Standardized direct intake improves capture of clinically relevant risk factors and prior gestational carrier outcomes compared with agency-submitted records alone. Persistent gaps in select domains suggest agency documentation alone may be insufficient for comprehensive screening. Incorporation of a standardized intake process may strengthen screening quality, informed decision-making, and patient safety in third-party reproduction.
IMPACT STATEMENT: Standardized direct intake may represent a scalable quality-improvement strategy that supports clinical due diligence, reduces information gaps, improves risk disclosure, and promotes safer, more standardized gestational carrier screening.

ASRM RESEARCH INSTITUTE PRESENTS (1 OF 2)

O-141 11:25 AM Tuesday, October 27, 2026

IMPROVING TREATMENT OF RADIATION-INDUCED PREMATURE OVARIAN INSUFFICIENCY AFTER CERVICAL CANCER: A PRACTICE QUALITY IMPROVEMENT INITIATIVE. Emily Elizabeth Smith, MSN, WHNP-BC, CRNP[1], Jonathan Heintz, MS Statistics, BSEd Mathematics[2], Arina Chesnokova, M.D., M.P.H., M.S.H.P.[1] and Neil K. Taunk, MD[1], [1]Penn Medicine, Philadelphia, PA, [2]Perelman School of Medicine, Philadelphia, PA

OBJECTIVE:
Curative-intent pelvic radiation for cervical cancer causes premature ovarian insufficiency (POI) in premenopausal patients. Despite evidence-based recommendations for hormone replacement therapy (HRT) to treat POI, prior studies have shown low HRT use among cervical cancer survivors, particularly those treated with radiation. This study evaluates the impact of practice quality improvement (PQI) initiative within a radiation oncology department on the rates of HRT prescriptions, POI documentation, and counseling.
MATERIALS AND METHODS:
A retrospective chart review was conducted on premenopausal patients aged ≤50 years who received curative-intent radiation for cervical cancer at a single institution from 2018 – 2024. Rates of POI-related counseling and HRT prescriptions were evaluated before and after a PQI intervention targeting POI treatment. HRT prescriptions were stratified by physiologic sex steroid replacement regimens (PSSRR), defined as ≥0.1 mg/day transdermal or ≥2 mg oral 17β-estradiol, vs. other regimens, including oral contraceptives and non-replacement doses of physiologic sex steroid regimens. Binary outcomes were analyzed using generalized estimating equations.
RESULTS:
Sixty patients met inclusion criteria. Patients seen after PQI intervention had 2.1 times higher odds of receiving any HRT prescription, PSSRR or non-PSSRR, than patients seen before PQI intervention (OR = 2.09, p = 0.015). PSSRR prescriptions increased from 3.4% pre-intervention to 57.7% post-intervention, with 80.7% of patients seen by an

advanced practice provider (APP) receiving PSSRR. POI documentation increased from 48.3% to 80.8% and inclusion on the problem list increased from 6.9% to 34.6%. High-quality POI counseling improved from 6.9% to 44.2%, and high-quality HRT counseling improved from 0.0% to 46.2%.
CONCLUSIONS:
The radiation oncology department-based PQI initiative significantly improved documentation, counseling, and PSSRR prescriptions for cervical cancer survivors.
IMPACT STATEMENT:
This practice quality improvement initiative shows that rates of POI treatment can be improved. These findings highlight a scalable, systems-level intervention that meaningfully improves survivorship care for patients with cervical cancer, addressing a critical gap in the management of treatment-induced POI and promoting long-term health and quality of life. Further, as the role of APPs in oncology survivorship care grows, our findings underscore their potential leadership in addressing major survivorship issues, such as POI.
SUPPORT: This award is made possible by an educational grant from EMD Serono to the ASRM Research Institute. This award was granted to Emily Smith.

O-142 11:35 AM Tuesday, October 27, 2026

BEYOND AGE: FOLLICULAR FLUID miRNA PROFILING REVEALS PROGRESSIVE AND DOR-SPECIFIC MOLECULAR SIGNATURES IN DIMINISHED OVARIAN RESERVE. Shruti Agarwal, DO[1], Mishfak A.M Mansoor, Ph D[2], Md Tanjim Alam, MS[2], Augusto Schneider, Ph D[3], Jeffrey B. Mason, B.S., M.S., Ph.D.[4], Ou Zhang, MBBS., PhD[5], Joseph M Dhahbi, MD, PhD[5], Mark P Trolice, MD, MBA[6], Laurel Stadtmauer, MD, PHD[7] and Michal Masternak, Ph D[2], [1]UCF HCA Consortium of Greater Orlando, Orlando, FL, [2]UCF Burnett School of Biomedical Sciences - College of Medicine, Orlando, FL, [3]Faculdade de Nutrição, Universidade Federal de Pelotas, Pelotas, RS, Brazil, [4]Utah State University, Logan, UT, [5]California University of Science and Medicine, San Bernardino, CA, [6]University of Central Florida College of Medicine; Founder/Director, The IVF Center, Winter Park, FL, [7]UCF-HCA Consortium of Greater Orlando

TITLE: Beyond Age: Follicular Fluid miRNA Profiling Reveals Progressive and DOR-Specific Molecular Signatures in Diminished Ovarian Reserve
OBJECTIVE: To define the follicular fluid microRNA (miRNA) expression profile across three age-stratified groups and to identify specific miRNAs associated with diminished ovarian reserve (DOR) independent of chronological aging.
MATERIALS AND METHODS: This prospective cohort study enrolled 22 women undergoing in vitro fertilization (IVF): young normal ovarian reserve (Young-NOR; age <31 years, n=9), older normal ovarian reserve (Old-NOR; age >38 years, anti-Müllerian hormone (AMH) ≥1.0 ng/mL, n=8), and DOR (age >38 years, AMH <1.0 ng/mL, n=5). Follicular fluid was collected at oocyte retrieval. Small RNA sequencing was performed on exosomal RNA from the 22 follicular fluid samples; reads were analyzed using miRDeep2 for miRNA quantification. Differential expression analysis used edgeR with trimmed mean of M-values normalization across three contrasts: Old-NOR vs Young-NOR, DOR vs Old-NOR, and DOR vs Young-NOR (false discovery rate (FDR) <0.05, |log2 fold change (log2FC)| ≥log2(1.5), minimum counts per million (CPM) ≥1). Differentially expressed miRNAs were organized into Venn-defined intersection subsets to distinguish aging-specific, DOR-specific, and trajectory-based regulatory patterns. Spearman rank correlation was used to assess associations between clinical variables. Validation and mechanistic follow-up studies are currently underway.
RESULTS: Forty-three candidate miRNAs were identified across all contrasts. Venn-defined subsets revealed seven biologically distinct regulatory programs: 14 miRNAs specific to normal aging, 7 specific to DOR beyond age, 9 reflecting loss of the youthful follicular-fluid state, 6 showing non-linear age-sensitive remodeling, 5 representing a shared non-youthful signature, 1 selectively elevated in DOR, and 1 showing progressive decline across all three states. This final miRNA, hsa-miR-122-5p, was the only candidate FDR-significant in all three contrasts (Old-NOR vs Young-NOR: log2FC=−2.47, FDR=0.006; DOR vs Old-NOR: log2FC=−2.66, FDR=0.048; DOR vs Young-NOR: log2FC=−5.13, FDR=0.003), confirming a stepwise gradient: Young-NOR > Old-NOR > DOR. AMH correlated with oocytes retrieved (r=0.80, p<0.001) and embryo yield (r=0.59, p=0.010). No intrauterine pregnancies occurred in the DOR group.
CONCLUSIONS: A Venn-based intersection framework identifies seven distinct miRNA regulatory programs in follicular fluid, demonstrating that DOR involves aging-specific, DOR-specific, and shared molecular alterations rather than simply accelerated aging. hsa-miR-122-5p shows progressive FDR-significant downregulation across all three ovarian states, confirming its role as a high-priority DOR candidate biomarker.
IMPACT STATEMENT: Identifying distinct miRNA regulatory programs that separate DOR from normal reproductive aging may advance understanding of the molecular pathogenesis of diminished ovarian reserve and provide a framework for discovering novel biomarkers and therapeutic targets to improve IVF outcomes in this challenging population.
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O-143 11:45 AM Tuesday, October 27, 2026

BREAKING BARRIERS TO FERTILITY PRESERVATION (FP): A COMPREHENSIVE STUDY OF DIVERSE CANCER PATIENTS. Staci J Marbin, MD[1], Keya Ganatra, MD[2], Bibiana Escobar, BS[3], Sunwoo Han, Ph.D.[3], Md Ariful Hoque, Ph.D.[4] and Pasquale Patrizio, MD, MBE, HCLD, FACOG[2], [1]Uhealth Fertility Center - University of Miami Hea, Miami, FL, [2]University of Miami, Miller School of Medicine, Miami, FL, [3]University of Miami, [4]Miami, FL

OBJECTIVE: Identify barriers to FP among cancer patients at a university-based, National Cancer Institute-designated Center.
MATERIALS AND METHODS: Reproductive Endocrinology and Infertility (REI) referrals were retrospectively reviewed for patients 18 to 45 years old from January 2023 to July 2025. Structured interviews with a subset of 40 patients elicited qualitative insights into barriers to and adequacy of FP counseling. Descriptive statistics were used to summarize patient demographics and barriers to FP. Two independent groups were compared using Wilcoxon rank-sum test for continuous variables and Fisher's exact test for categorical variables, while logistic regressions were used to evaluate associations between barriers and REI consult completion. Secondary analyses assessed attrition across stages of care.
RESULTS: Among 297 referred patients, 69% (n=205) were newly diagnosed and 31% (n=92) were referred after cancer treatment. Post-treatment referrals were significantly older (mean age 35.9 vs. 33.7 years, p=0.006), with no significant differences in race, ethnicity, marital status, or insurance characteristics. Among the 205 new diagnoses, 54% (n=111) completed REI consults while 46% (n=94) did not. Only 21% (n=43) referred to REI completed FP, where 74% (n=32) were insured. In univariable logistic regressions for REI consult completion, lack of insurance coverage was independently associated with higher odds of failing to complete consultation compared to uninsured patients (OR=2.38, p=0.022), while other risk factors were not significant. Secondary analyses compared patients never seen by REI vs. those completing initial consults but not FP. Attrition occurred at multiple stages due to treatment urgency (24% vs. 34%), disinterest or completed family building (24% vs. 15%), and financial concerns (13% vs. 12%) (all p >.05).
Among our interview cohort (n=40), only 19 (79%) recalled counseling by oncologists about impact of cancer therapy on fertility, with specific counseling reported less consistently: 46% (n=1) recalled discussions of ovarian suppression, of whom 64% (n=7) utilized GnRH agonists, 8 (33%) were counseled on oocyte cryopreservation, of whom 63% (n=5) completed FP, and only 58% (n=14) were informed of financial assistance programs.
CONCLUSIONS: Almost half of newly diagnosed cancer patients deferred REI consultation despite referral, primarily due to financial barriers, medical urgency, and patient-centered factors. Insurance status was the primary modifiable factor associated with access, while race and ethnicity were not significant. Delayed referrals further contribute to attrition, with many patients lacking comprehensive REI counseling by Oncologists, leading to missed opportunities for FP.
IMPACT STATEMENT: Targeted interventions improving financial barriers and coordination with oncologists are essential to optimizing timely access to FP and preserving family building options.

O-144 11:55 AM Tuesday, October 27, 2026

DECISIONAL REGRET REGARDING PRE-OPERATIVE FERTILITY PRESERVATION CHOICES AFTER GENDER-AFFIRMING SURGERY IN TRANSGENDER MEN/NON-BINARY PERSONS: A MULTI-CENTER, MIXED-METHODS STUDY. Austin Johnson, M.D.[1], Mindy Pike, PhD[2] and Ginny L Ryan, MA, MD[1], [1]University of Washington, Seattle, WA, [2]University of Washington, WA

OBJECTIVE: Investigate the prevalence and severity of decisional regret (DR) related to pre-operative fertility preservation (FP) decisions in transgender/non-binary (TGNB) men/persons following gender-affirming surgery (GAS)/removal of reproductive organs. Identify factors associated with the development and severity of DR.
MATERIALS AND METHODS: Multi-center, cross-sectional, mixed-methods study across six US medical centers between March 2023-February 2026. All participants completed an online survey and a subset partook in semi-structured interviews assessing pre-/post-operative family-building desires and fertility and FP counseling experiences. DR was measured using the Decisional Regret Scale (DRS). We examined the relationship between risk factors and DR using a two-part model, with logistic regression estimating the probability of any DR and linear regression modeling DR severity among those reporting regret.
RESULTS: 254 of 617 eligible participants completed the survey (response rate: 41.2%). 57% (n=145) of participants reported no DR regarding pre-operative FP decisions following surgery. Mild DR was reported by 22% (n=57) and moderate to severe DR by 21% (n=52) of participants. In the two-part model, among participants experiencing DR, higher DRS scores were associated with longer time since surgery (β=3.16, 95% CI: 1.53, 4.79) and patient-reported importance of future fertility prior to (β=20.53, 95% CI: 9.35-31.70) and after surgery (β=26.21, 95% CI: 18.62-33.80). Participant-perceived inadequacy of pre-operative future fertility and FP options counseling were associated with both higher odds of any DR (aOR=3.8, 95% CI: 1.4, 10.3; aOR=5.7, 95% CI: 2.7, 11.8, respectively) and higher DR severity among those with regret (aβ=27.04, 95% CI: 17.67, 36.42; aβ=16.19, 95% CI: 8.07, 24.31, respectively). 22 participants were purposefully sampled and interviewed prior to thematic saturation. Key themes among those experiencing DR included inadequate pre-operative counseling regarding FP options, evolving family-building desires following surgery, and cost as a barrier to pursuing FP treatment.
CONCLUSIONS: Among TGNB persons having previously undergone GAS/removal of reproductive organs, DR (ranging from mild to severe regret) regarding pre-operative FP choices was reported by 43% of participants. Among those experiencing DR, longer time since surgery, pre- and post-operative importance of future fertility, and patient-perceived inadequate receipt of pre-operative fertility counseling were significantly associated with higher DRS scores.
IMPACT STATEMENT: This study represents one of the largest and first multi-site study to report the prevalence of DR regarding FP choices specifically among TGNB

persons following GAS/removal of reproductive organs. As rates of future fertility discussions and referral to REI continue to vary among TGNB persons undergoing GAS, this study highlights the importance of comprehensive pre-operative fertility counseling in order to provide patient-centered, gender-affirming care, reduce possible future decisional regret, and provide equitable access to family building options.
SUPPORT: Funding provided by ASRM Research Institute (Diversity Fellowship Research Award)

O-145 12:05 PM Tuesday, October 27, 2026

THE IMPACT OF LANGUAGE CONCORDANCE ON FERTILITY WORK-UP COMPLETION AND PATIENT-PROVIDER TRUST. Aileen Portugal, MD[1] and Patricia T Jimenez, B.A., M.D.[2], [1]Washington University in St Louis, [2]Washington University In St. Louis, Saint Louis, MO

OBJECTIVE: Effective communication is critical in fertility care, where timely completion of diagnostic evaluation is essential for treatment progression. Language discordance may introduce barriers to patient understanding and care navigation. We sought to determine whether language concordance between Spanish-speaking patients and providers improves time to completion of infertility work-up and patient-reported trust and communication.
MATERIALS AND METHODS: This prospective randomized controlled pilot study included Spanish-speaking patients undergoing initial fertility evaluation at a single academic center. Following informed consent, patients were randomized to receive care from a Spanish-speaking physician (language-concordant) or interpreter-mediated communication (standard of care). The primary outcome was time from initial consultation to completion of clinically indicated diagnostic testing within 90 days. Secondary outcomes included patient trust and communication, measured using a validated Health Care Relationship (HCR) trust scale, and patient-reported comfort metrics. Continuous variables were compared using Wilcoxon rank-sum tests with Holm correction for multiple comparisons and categorical variables using Fisher's exact tests.
RESULTS: Sixteen patients were included (n=8 per group). There was no statistically significant difference in time to completion of infertility work-up between groups (median 35 vs 39 days, p=0.708). All patients in the language-concordant group completed laboratory testing on the day of their initial visit (7/7, 100%) compared to 57.1% (4/7) in the standard care group (p=0.075). Language-concordant care was associated with significantly higher patient trust, with median HCR scores of 52.0 [51.5–52.0] compared to 40.0 [37.5–45.0] in the standard care group (p=0.014). Patients in the language-concordant group consistently reported high comfort when discussing sensitive fertility topics, with greater variability observed in the standard care group.
CONCLUSIONS: While language concordance was not associated with differences in overall time to completion of infertility work-up, it was associated with significantly improved patient trust, communication, and early engagement in fertility care.
IMPACT STATEMENT: Language concordance represents a modifiable factor that may improve communication and strengthen the patient-provider relationship in fertility care. These findings, while focused on Spanish-speaking patients, support efforts to increase linguistic diversity in the reproductive healthcare workforce to enhance patient-centered care for patients with limited English proficiency.

ORAL ABSTRACT SESSION: ART (2 OF 3)

O-146 1:30 PM Tuesday, October 27, 2026

DOES OVARIAN STIMULATION WITH LETROZOLE IMPROVE OUTCOMES WITH DONOR SPERM INSEMINATION AS COMPARED TO NATURAL CYCLE IUI, IN WOMEN THAT ARE NOT INFERTILE? Vincent Nguyen, M.D., Ido Feferkorn, MD and Michael H. Dahan, M.D., Division of Reproductive Endocrinology and Infertility, McGill University Health Centre, Montreal, Canada

OBJECTIVE: To determine if patients using donor sperm have improved pregnancy rates with the addition of super-ovulation intra-uterine insemination (SO-IUI) with letrozole when compared to unmedicated therapeutic donor insemination (TDI).
MATERIALS AND METHODS: Among 5945 IUI cycles performed between January 2017, to December 2020, 397 cycles using donor sperm were identified and included for analysis in this retrospective cohort study. Data included single women and same sex female couples and were therefore not infertile. The study group was comprised of patients using letrozole SO-IUI and the control group undergoing unmedicated TDI. Cycles using gonadotropins were excluded. Natural unmedicated TDI may have undergone hCG trigger for timing. The primary outcome was pregnancy rate. Baseline and cycle characteristics between the two groups were compared. A multivariate logistic regression model was applied to the primary outcome adjusting for age and total motile sperm post-wash to see if letrozole use predicated pregnancy rates. Data is presented as percentages or mean±SD.
RESULTS: Among the 397 cycles, 249 underwent SO-IUI with letrozole and 148 underwent unmedicated TDI. The number of dominant follicles >14mm was higher in the SO-IUI group (1.54±0.72) compared to the unmedicated group (1.06±0.29) ($p < 0.001$). The last measured endometrium was thinner in the SO-IUI group compared to the unmedicated group (7.9 vs. 8.5mm, $p = 0.002$). The remaining baseline patient and cycle characteristics between the study and control groups were comparable, including age (36.5±4.3 vs. 35.9±4.3) and total motile sperm (TMS) post-wash (13.3±6.3 million vs. 13.1±7.1 million). The pregnancy rate was 13.25% (33/249) in the SO-IUI group and 12.16% (18/148) in the unmedicated TDI group ($p = 0.75$). When performing multivariate logistic regression controlling for female age and TMS post-wash, the use of letrozole did not increase pregnancy rates (aOR 0.91, 95% CI 0.49 – 1.69).
CONCLUSIONS: In women that are not infertile, pregnancy rates are similar between SO-IUI with letrozole and unmedicated IUI cycles using donor sperm.
IMPACT STATEMENT: In the absence of anovulatory infertility, super-ovulation with oral agents does not appear to improve odds of pregnancy among IUI cycles using donor sperm and may unnecessarily increase the risk of multiple gestation.

O-147 1:40 PM Tuesday, October 27, 2026

THE VALUE OF WAITING: CLINICALLY RELEVANT REPRODUCTIVE POTENTIAL OF DAY 7 EMBRYOS. Marcela Calonge, M.S., M.H.A.[1], Andres Reig, M.D.[2], Nicolas Garrido Puchalt, PhD[3] and Jason M Franasiak, H.C.L.D, M.D.[4], [1]IVIRMA Global Research Alliance, RMA Northern California, San Francisco, CA, [2]Basking Ridge, NJ, [3]IVIRMA Global Research Alliance, IVI Foundation, Instituto de Investigación Sanitaria La Fe (IIS La Fe), Valencia, Spain, [4]IVIRMA Global Research Alliance, RMA New Jersey, Marlton, NJ

OBJECTIVE:
To assess and compare the reproductive outcomes of Day 7 (D7) embryos versus Day 5 (D5) and Day 6 (D6) embryos.
MATERIALS AND METHODS:
Observational retrospective multicenter study of 5 IVF programs, including patients that underwent an ICSI cycle with preimplantation genetic testing for aneuploidy (PGT-A) between January 2022 and October 2024. Patients who underwent a single embryo transfer (SET) cycle between February 2022 and September 2024 were included in the per-transfer analysis. Exclusion criteria included the use of frozen–thawed oocytes, oocyte donor cycles, cycles without blastocysts and cycles involving more than 1 embryo transferred.
The main outcome measured was live birth rate (LBR) per SET for embryos cultured to - and biopsied and cryopreserved on – days 5, 6, and 7 (D5, D6, D7, respectively). Secondary outcomes were whole chromosome aneuploidy (WCA) rate, clinical pregnancy rate (CPR) and average birthweight (BW) and gestational age (GA) at delivery. Statistical analyses were conducted with Chi-square test and logistic regression methods adjusting for maternal age and embryo quality.
RESULTS:
A total of 16,196 ICSI cycles from 11,916 patients met the study inclusion and exclusion criteria. After culturing all fertilized oocytes, 75,389 blastocysts were suitable for biopsy and cryopreservation. Among blastocysts suitable for biopsy and cryopreservation, 24.3% (n=18,288) were biopsied on D5, 65.1% (49,076) on D6, and 10.6% (8025) on D7**.** WCA rate increased with every additional day of culture (mean [95%CI] for D5: 20.8% [20.2 – 21.4], D6: 33.7% [33.2 – 34.1], D7: 48.2% [47.1- 49.3]; p>0.0001).
A total 10454 euploid frozen SETs belonging to 7918 patients were performed during the time of the study.
A significant association was found between the day of embryo development and the CPR. D5 embryos had a higher CPR than D6 embryos (75.36% vs 66.83%, p<0.0001). Similarly, D6 embryos had a higher CPR when compared to D7 (66.83% vs 31.22%, p <0.0001). This remained true after adjusting for possible confounders (aOR=1.376; 95%CI:1.240-1.527; p<0.0001 and adjOR=0.193;95%CI 0.138-0.270; p<0.0001 for D5 vs D6 and D7 vs D6, respectively). The same pattern was found for LBR. D5 embryos had higher LBR when compared to D6 (65.49% vs 57.21%; p <0.0001). Similarly, D6 embryos had a higher LBR when compared to D7 (57.21% vs 23.69%, p <0.0001).
As for obstetrical outcomes, no statistically significant differences were observed between the study cohorts when comparing average gestational ages at delivery (D5 38.81 ± 2.07 weeks, D6 38.77 ± 1.94 weeks and D7 38.39 ± 1.67 weeks, p = 0.39) or average reported birth weights at delivery (D5 3273.91 ± 564.36 grams, D6 3286.51 ± 571.80 grams and D7 3261.17 ± 574.29 grams, p= 0.70).
CONCLUSIONS:
While D7 embryos overall showed lower reproductive potential than D5 and D6 embryos, their neonatal outcomes were comparable. Therefore, they represent a relevant contribution to a patient's embryo pool and should not be discarded.
IMPACT STATEMENT: D7 blastocysts exhibit non-negligible live birth rates and have comparable neonatal outcomes to D5 and D6 embryos, which challenges the predominant practice of ending culture before D7.

O-148 1:50 PM Tuesday, October 27, 2026

FROM REQUEST TO CONNECTION: ADULT DCP CONTACT REQUESTS IN A GAMETE BANK DATASET - REQUEST TRENDS, DONOR RESPONSIVENESS, AND CONNECTION OUTCOMES. Kathryn Lockwood, M.S.[1], Jessica Park, MS, CGC[1], Kara Baldwin, MS, CGC[2], Tristyn Pitts, BA[1] and Eileen Tyler, BS[1], [1]California Cryobank by CooperSurgical Inc, Los Angeles, CA, [2]California Cryobank and Donor Egg Bank USA by CooperSurgical Inc, Los Angeles, CA

OBJECTIVE: As more donor-conceived persons (DCPs) reach adulthood and disclosure expectations evolve, this study evaluated donor–DCP connection efforts within a large U.S. sperm bank. We assessed contact request patterns, donor responsiveness (including among anonymous donors), and the effectiveness of established contact processes.
MATERIALS AND METHODS: A retrospective review was conducted of adult DCP contact requests (≥18 years) submitted to a large U.S. sperm bank between January 2020 and March 2026. The program verified DCP identity and donor information, conducted multiple donor outreach attempts using various methods, and facilitated mediated correspondence through the bank or direct contact by mutual consent. Variables analyzed included donor verification status, request volume, number of donors, donor program type (anonymous or open), outreach methods, donor responsiveness, and connection outcomes. Trends were described using averages.
RESULTS:

A total of 369 adult DCP contact requests were submitted, representing 267 sperm donors who donated between 1979-2004. Most donors were recruited under anonymous terms (82.8%), while 17.2% participated in an open-donor program, indicating prior agreement to at least one form of communication with adult DCPs upon request. DCP identity was verified for 299 requests through records, with paternity testing performed in 7 cases. The bank successfully reached 196 donors (73.4%), including 171 anonymous donors (77.4%). Outreach via email (37.2%) and certified letter (30.6%) were most effective. Among donors reached, 157 (80.1%) expressed openness to contact, including 131 anonymous donors (76.6%), while only 39 donors (19.9%) declined contact. Following donor outreach, 91 DCPs (58.0%) proceeded with indirect communication via letter exchange through the bank while 70 donors (44.6%) consented to direct contact with the requesting DCP.
At the request level, 237 cases (64.2%) reflected mutual contact interest, with 151 DCPs (63.7%) electing to send a letter and 95 requests (40.1%) resulting in permission for direct contact.
CONCLUSIONS:
As more DCPs reach adulthood and seek information and connection, structured donor–DCP contact programs play a critical role in facilitating respectful, effective communication.
In this large dataset, most donors, including those recruited as anonymous, were open to contact, suggesting that donor willingness may evolve over time, and that legacy anonymity does not preclude meaningful connection when appropriately facilitated. The high rates of donor outreach success observed underscore the value of established, intermediary-led contact programs within gamete banks. By supporting donor autonomy, managing expectations, and offering flexible communication pathways, these programs provide an essential framework as identity-disclosure requirements and demand for connection increase.
IMPACT STATEMENT: This study shows that structured donor–DCP contact programs enable meaningful connection, demonstrating that most donors recruited anonymously are receptive to contact as DCPs reach adulthood and identity-disclosure expectations evolve.

O-149 2:00 PM Tuesday, October 27, 2026

VANISHING TWIN SYNDROME: RISKS OF ADVERSE PERINATAL OUTCOMES WHEN PLURALITY AT CONCEPTION IS GREATER THAN PLURALITY AT BIRTH. Barbara Luke, ScD, MPH[1], Melissa A Richard, PhD[2], Valerie L Baker, M.D.[3], Katherine E Cameron, M.D.[4], Michael L. Eisenberg, M.D.[5] and Philip J Lupo, PhD, MPH[6], [1]Michigan State University, East Lansing, MI, [2]Baylor College of Medicine, Houston, TX, [3]10751 Falls Road, Lutherville, MD, [4]Johns Hopkins University School of Medicine, Baltimore, MD, [5]Stanford University School of Medicine, Stanford, CA, [6]Emory University, GA

OBJECTIVE: As the result of national guidelines for in vitro fertilization (IVF), the number (#) of embryos transferred (ET) has been steadily falling, but single ET is still not universally applied. As the number of ETs is strongly related to fetal heart beats (FHB) at conception, we evaluated the effects of plurality at conception (as #FHB) versus plurality at birth, on adverse perinatal outcomes, separately among singletons and twin births.
MATERIALS AND METHODS: Live births from IVF during 2004-18 in NY, MA, NC, and TX were linked to the Society for Assisted Reproduction Clinic Outcomes Reporting System and grouped as #FHB=#Born (group 1, reference) or #FHB>#Born (group 2), separately for singletons and twins. Only the first twin was included in the analyses. Birthweight, length of gestation, and birthweight-for-gestation (as birthweight Zscore) as mean and standard deviation were compared between groups using Student's t-test. Preterm (<37 weeks), small-for-gestation (SGA) birthweight (Zscore <-1.28), and placental complications (abruptio placenta, placenta previa, or other excessive bleeding) were modeled using logistic regression, adjusted for gravidity, parity, parental ages, state of oocytes/embryos, #ET, and year of birth as adjusted odds ratios (AOR) and 95% confidence Intervals (CI) using IBM SPSS, version 29.0.
RESULTS: There were 154,998 live births, including 94,857 singletons (group 1: 88,799, group 2: 6,058) and 60,141 twins (group 1: 56,951, group 2: 3,190). The table shows the results; all analyses were significant, and one was near-significant (REF is reference group). Plurality greater at conception than at birth was associated with reductions in birthweight, gestation, and birthweight Zscore, and increased risks for preterm birth, SGA , and placental complications.
CONCLUSIONS: When plurality at conception is greater than at birth it is associated with substantial reductions in fetal growth and gestation, as well as greater risks for placental complications, which is a novel new finding.
IMPACT STATEMENT: This analysis adds to the literature supporting the transfer of as few embryos as possible while balancing the chances of a live birth with the potential risks of adverse outcomes.

	Group	%	Singletons	%	Twins
Birthweight	1	Ref	3,291 (604)	Ref	2,377 (592)
(grams)	2		3,140 (662)		2,263 (658)
Gestation	1	Ref	38.5 (2.2)	Ref	35.3 (2.9)
(weeks)	2		38.1 (2.5)		34.9 (3.4)
Birthweight	1	Ref	0.04 (0.97)	Ref	-0.59 (0.87)
Zscore	2		-0.14 (0.99)		-0.65 (0.92)
Preterm	1	10.9	Ref	58.9	Ref
	2	14.5	1.35 (1.24-1.47)	61.4	1.13 (1.04-1.22)
SGA	1	7.9	Ref	20.3	Ref
	2	11.3	1.45 (1.30-1.57)	24.0	1.20 (1.09-1.32)
Placental	1	6.3	Ref	7.2	Ref
Complications	2	8.3	1.33 (1.07-1.65)	9.8	1.32 (0.99-1.76)

SUPPORT: This analysis was supported by NIH grant R01 HD112081.

O-150 2:10 PM Tuesday, October 27, 2026

POTENTIAL ROLE OF UTERINE AGING IN LIVE BIRTH OUTCOMES IN DONOR OOCYTE EMBRYO TRANSFER CYCLES. Ecem Esencan, M.D.[1], Alexandra M Herweck, MD, MPH[2], Samantha McLean, MD[3], Joan K. Riley, HCLD, PhD[4], Jessica R Walter, MD, MSCE[3] and Emily S Jungheim, M.D., M.S.[3], [1]Northwestern University, Feinberg School of Medicine, Chicago, IL, [2]Northwestern University Feinberg School of Medicine, Obstetrics and Gynecology, Reproductive Endocrinology and Infertility, Chicago, IL, [3]Northwestern University Feinberg School of Medicine, Chicago, IL, [4]Northwestern University, Chicago, IL

OBJECTIVE: To isolate the independent contribution of uterine aging to reproductive outcomes by evaluating the effect of recipient age on live birth in donor oocyte embryo transfer cycles, where embryo quality is controlled by virtue of donor origin.
MATERIALS AND METHODS: Retrospective cohort study of donor oocyte embryo transfer (ET) cycles performed at a single academic fertility center between 01/01/2021–07/01/2025, restricted to first cycle per patient during this timeframe (N=279; 209 fresh, 70 frozen ETs). Exclusion criteria included gestational carrier use, uterine factor infertility or anomaly, hydrosalpinx, and multiple gestations. Recipients were stratified by age (≤40, 41–44, 45–47, ≥48; mean 41.7 years, SD ±5.3, range 27-56). Primary outcome was live birth rate (LBR). Multivariable logistic regression adjusted for cycle type (fresh vs. frozen), BMI category, endometrial thickness (<7mm vs. ≥7mm), prior pregnancy, and prior frozen embryo transfer. A prespecified subanalysis of frozen donor cycles examined PGT-A use. Sensitivity analyses used continuous age, restriction to recipients <48, and exclusion of endometrial thickness due to documentation variability.
RESULTS: Overall LBR was 31.2% (87/279). Unadjusted LBRs were 31.1%, 34.4%, 31.0%, and 21.4% across age groups (≤40, 41-44, 45-47, ≥48). After multivariable adjustment, recipients aged ≥48 had significantly lower odds of live birth versus ≤40 (aOR 0.27, 95% CI 0.09-0.84, p=.023). The flatness of outcomes across recipients ≤47 was confirmed in a restricted analysis (omnibus p=.431), supporting a threshold rather than continuous age effect. Fresh ET cycles, which included both frozen and freshly retrieved donor oocytes (29/209 used fresh oocytes), were associated with higher odds of live birth than frozen ET cycles (aOR 2.63, 95% CI 1.33–5.20, p=.006). Prior pregnancy was inversely associated with live birth (aOR 0.46, 95% CI 0.22–0.95, p=.036). The ≥48 effect was directionally consistent across all sensitivity analyses, with a stronger signal observed for clinical pregnancy (aOR 0.23, 95% CI 0.07-0.72, p=.011). In the frozen ET cycle PGT-A subanalysis (N=70), LBRs were 40.9% vs. 25.0% with and without PGT-A; adjusted PGT-A effect was directionally favorable but non-significant (aOR 2.22, 95% CI 0.63–7.79, p=.214).
CONCLUSIONS: In donor oocyte cycles where embryo quality is controlled by donor origin, recipient age exerts an independent and clinically meaningful effect on live birth. LBRs are preserved through age 47 and decline sharply at ≥48, implicating the aging uterus rather than embryo quality as the operative mechanism. The age effect was observed regardless of PGT-A status, supporting a uterine rather than embryonic origin of this decline and aligning with emerging evidence that endometrial receptivity may deteriorate independently of oocyte aging.
IMPACT STATEMENT: In donor oocyte cycles controlling for embryo quality, recipient age ≥48 is independently associated with substantially lower live birth odds (aOR 0.27), an effect observed regardless of PGT-A status, implicating uterine aging as a clinically significant and distinct barrier to reproductive success.

O-151 2:20 PM Tuesday, October 27, 2026

MORE ISN'T ALWAYS BETTER: INCREASED CORPORA LUTEA (CL) IN FROZEN EMBRYO TRANSFER (FET) CYCLES ARE LINKED TO WORSE LIVE BIRTH AND DELIVERY OUTCOMES. Amanda D Kadesh, M.D., M.S.[1], Christine V Whitehead, MS, BSN, RN[2] and Kassie Jean Bollig, M.D., M.S.C.E.[2], [1]IVIRMA Global Research Alliance, IVIRMA New Jersey, Basking Ridge, NJ, [2]IVIRMA Global Research Alliance, RMA New Jersey, Basking Ridge, NJ

OBJECTIVE: Previous literature has shown that FET cycles in which a CL is present have lower risks of hypertensive disorders of pregnancy. However, when multiple CLs are present, it is currently unknown whether supraphysiologic levels of reproductive hormones may have a negative impact on pregnancy outcomes. The purpose of this study was to evaluate whether the number of CLs present at the time of FET has an impact on pregnancy outcomes.
MATERIALS AND METHODS: This multicenter retrospective cohort study evaluated patients at fertility clinics in 5 states undergoing an autologous single euploid FET between 2019 through 2024. Stimulated FET cycles included the use of Letrozole, Clomid, or injectable gonadotropins for ovarian stimulation. PGT-SR/M, third party (donor gametes or gestational carrier), and uterine anomalies cases were excluded. The number of mature follicles (>15mm) present at time of trigger/ovulation were utilized as a proxy for number of CLs. Five groups were included: Control 1) cryo-stimulated cycle with 1 CL; Control 2) cryo-natural cycle with 1 CL; Group 3) 2 CLs; Group 4) 3 CLs; Group 5) ≥4 CLs. The primary outcome was live birth. Secondary outcomes included pregnancy loss, biochemical pregnancy, clinical pregnancy, gestational age, and birth

weight. ANOVA and Pearson's Chi-Square were used for bivariate comparisons as appropriate. Multivariate logistic and linear regressions were performed adjusting for age, BMI, transfer year, and parity.
RESULTS: 2,564 modified-natural FET cycles and 629 stimulated FET cycles were included. Patients undergoing stimulated cycles had a higher AMH (p<0.001) and were more likely to have a diagnosis of anovulation. Live birth rate decreased with increasing number of CLs (67.83% in modified-natural cycle with 1 CL; 65.68% in stimulated cycle with 1 CL; 65.88% with 2 CLs; 55.93% with 3 CLs; 58.33% with ≥4 CLs). In adjusted analysis, those with ≥4CLs had a lower probability of live birth (aOR 0.855, p=0.01 (Control 1 reference); aOR 0.535, p=0.04 (Control 2 reference)). Biochemical and clinical pregnancy rate also decreased with increasing number of CLs. In adjusted analyses, those with ≥4CLs had a significantly lower probability of biochemical (aOR 0.481, p=0.02 (Control 1 reference); aOR 0.504, p=0.04 (Control 2 reference)) and clinical pregnancy (aOR 0.466, p=0.01 (Control 1 reference); aOR 0.527, p=0.04 (Control 2 reference)). In those with a live birth, as number of CLs increased, the gestational age at time of delivery decreased and birth weight decreased. After adjusting for age and BMI, those with 3 and ≥4CLs had significantly lower birth weight and age at delivery.
CONCLUSIONS: In those undergoing a modified-natural or stimulated FET cycle, live birth, gestational age at delivery, and birth weight decreased when higher number of corpora lutea were present.
IMPACT STATEMENT: The supraphysiologic hormone milieu resulting from increased corpora lutea in natural or stimulated FETs may approach an environment similar to fresh ETs, resulting in lower rates of live birth, gestational age at delivery, and birth weight.

O-152 2:30 PM Tuesday, October 27, 2026

ASSOCIATION BETWEEN GRANULOSA CELL GONADOTROPHIN RECEPTOR LEVELS AND OVARIAN RESPONSE FOR WOMEN WITH NORMAL OVARIAN RESERVE MARKERS. Zhala Suleymanova, MD, OB-GYN Specialist[1], Isil Kasapoglu, MD, Professor[2], Kiper Aslan, Assoc. Prof[3], Cihan Cakir, M.D., PhD.[3], Selen Mutlu, Phd.[3] and Gurkan Uncu, Prof.[3], [1]BURSA, Turkey, [2]Uludag University School of Medicine, Department of Obstetrics and Gynecology, Bursa, Turkey, [3]Bursa Uludag University Faculty of Medicine, Bursa, Turkey

OBJECTIVE:
To evaluate whether the follicle stimulating hormone receptor (FSHR) and luteinizing hormone receptor (LHR) expressions of granulosa cells, differ between patients with normo and unexpected poor response among women with normal ovarian reserve markers.
MATERIALS AND METHODS:
This prospective case–control study was conducted with 66 women who underwent ICSI cycles. All patients included, were expected to be normoresponders according to their ovarian reserve markers (AMH ≥1.2 ng/mL and AFC ≥10). At the end of the stimulation with FSH monotheraphy, patients were divided into two groups acording to their retrieved oocyte numbers as Group 1 unexpected poor response (≤9 oocyte) and Group 2 normoresponders (>10 oocyte) respectively. Granulosa cells collected and preserved during oocyte pickup procedure, were evaluated for FSH and LH receptor expressions by ELİSA. Baseline characteristics, granulosa cell receptor levels, embryological and clinical outcomes of each group were compared. Statistical analyses included group comparisons, correlation analyses, receiver operating characteristic (ROC) curve analysis, and multivariate negative binomial regression.
RESULTS:
Median Age (30.4 vs. 29.5; p=0.239) and BMI (24.9 vs. 24.4; p=0.592) were similar between groups. Baseline AMH (2.01 vs. 3.26; p=0.002) and AFC (11 vs. 15; p=0.003) were lower in group 1. FSHR levels did not differ between groups (p=0.971), whereas LHR levels were significantly higher in group 1 patients (p=0.005). Total gonadotropin doses (2475 IU vs. 2250 IU; p=0.028) were significantly higher in poor responders, indicating an increased gonadotropin requirement. LHR levels were negatively associated with the number of small antral follicles (<5 mm) (p=0.004), while FSHR levels showed a negative correlation with the number of larger antral follicles (>10 mm) (p=0.044), suggesting a role of receptor expression in follicular development dynamics. LHR levels discriminated poor ovarian response with moderate accuracy (AUC=0.702; p=0.002), yielding 57.6% sensitivity and 84.9% specificity at a cutoff value of >6.35 ng/mL. In a multivariate analysis adjusted for age, BMI, AMH, and gonadotropin dose, LHR remained an independent predictor of MII oocyte number (IRR 0.73; p<0.001), corresponding to a 27% decrease in MII oocytes per unit increase in LHR.
CONCLUSIONS: Increased granulosa cell LHR expression is independently associated with reduced ovarian response and lower mature oocyte yield in unexpected poor response patients. Dysregulated LH signaling may contribute to unexpected poor ovarian response beyond conventional ovarian reserve markers such as AMH and AFC.
IMPACT STATEMENT:
Unexpected poor responders are an important group of patients in clinical practice. The exact cause of the poor ovarian response is not properly understood but gonadotropin receptor expression can be a plausible explanation.
SUPPORT: No external financial support was received for this study; all expenses were covered by the author.
REFERENCES:
Alviggi C, Andersen CY, Buehler K, Conforti A, De Placido G, Esteves SC, et al. A new more detailed stratification of low responders to ovarian stimulation: from a poor ovarian response to a low prognosis concept. Fertility and Sterility. Elsevier Inc.; 2016. p. 1452–3. doi:10.1016/j.fertnstert.2016.02.005

ORAL ABSTRACT SESSION: PRE-CLINICAL & BASIC RESEARCH (1 OF 2)

O-153 1:30 PM Tuesday, October 27, 2026

STABLE EPIGENETIC FOOTPRINT FOLLOWING TROPHECTODERM BIOPSY FROM EMBRYO TO TERM. Kerri A Bochantin-Winders, PhD[1], Michelle M Denomme Tignanelli, PhD[2], Blair R McCallie, PhD[1], Jason Wilson, PhD[1], Keelee J McCarty, PhD[1], Cameron M Hebert, BSc[1], Jennifer M Hamm, MS[3], William B Schoolcraft, M.D.[4] and Mandy Katz-Jaffe, PhD[4], [1]CCRM Research, Lone Tree, CO, [2]Colorado Center For Reproductive Medicine, Lone Tree, CO, [3]CCRM Colorado, Lone Tree, CO, [4]CCRM Fertility, Lone Tree, CO

OBJECTIVE: Preimplantation genetic testing (PGT) utilizes a biopsy of the trophectoderm (TE), the early cell lineage that gives rise to the placenta. Previous studies have demonstrated a negligible impact of TE biopsy on the developmental potential of a blastocyst. Ensuring continual efficacy at the molecular level throughout the entire pregnancy is essential. This study aimed to analyze the methylome of biopsied and non-biopsied blastocysts from the preimplantation stage through pregnancy.
MATERIALS AND METHODS: Cryopreserved, age- and grade-matched human blastocysts (mean age 32.1 ± 1.4 years; day 5, Grade ≥4BB) were donated with consent and IRB approval: euploid biopsied (BX; n=14) and non-biopsied (No-Bx; n=14). A portion of No-Bx DNA was used to identify euploid status. Blastocysts underwent pyrosequencing for imprinted methylation (Qiagen; n=8/group; p<0.05) or were mechanically separated into inner cell mass (ICM) and TE (n=6/group/lineage) for whole-genome bisulfite sequencing (WGBS; Zymo Research; FDR≤0.05). Using a murine model, in-vivo E4 blastocysts were flushed from superovulated BDF-1 donors and either biopsied (BX; n=24) or not biopsied (No-Bx; n=24), prior to the transfer into separate uterine horns of pseudopregnant recipients. At E12.5 and E19, fetal and placental measurements were recorded, and placental DNA (n=12/group) collected for pyrosequencing (Qiagen) and microarray (Illumina; FDR≤0.05.). Data were analyzed by Wilcox test, Chi-square test, Fisher's Exact Test, or paired t-test where appropriate (p≤0.05).
RESULTS:
In human blastocysts, imprinted regions had similar methylation patterns between BX and No-Bx blastocysts (H19, KCNQ1OT1, MEST, SNRPN, PEG3, PLAGL1; avg. = 37.4% BX vs. 37.3% No-Bx; ns). Moreover, WGBS analysis of the separated ICM and TE observed negligible differentially methylated CpGs (DMCs) between BX and No-Bx blastocysts (ICM: 0.075% DMCs; TE: 0.018% DMCs). Mouse blastocysts had comparable implantation rates, fetal weights and placenta weights at both gestational time points (ns). Embryonic placental DNA methylation analysis observed zero DMCs at E12.5 and only one significant DMC out of 265,480 CpGs evaluated at E19 (p<0.01). Like the preimplantation blastocyst, no differences in placental imprinted methylation (H19, Kcnq1ot1, Mest, Snrpn, Peg3, Gnas, Dlk1) were observed at both pregnancy time points (E12.5: avg. = 34.8% BX vs. 35.6% No-Bx, ns; E19: avg. = 36.7% BX vs. 36.5% No-Bx; ns). Pathway analysis in both methylome investigations did not reveal any enriched KEGG pathways, indicating no biological significance of TE biopsy on embryonic or placental function.
CONCLUSIONS: This novel study analyzed the embryonic methylome of biopsied and non-biopsied blastocysts from preimplantation through late-term pregnancy. In both human and murine models, the similarity in methylation patterns between groups throughout embryo development demonstrates no biologically significant effect of biopsy on reproductive outcomes, reiterating its efficacy for IVF patients.
IMPACT STATEMENT: TE biopsy is not associated with methylation alterations during embryo development through pregnancy supporting its use in infertility treatment.
SUPPORT: None.
REFERENCES:
None.

O-154 1:40 PM Tuesday, October 27, 2026

STEM CELL THERAPY IN BOVINE OOCYTES PROVIDES A TRANSLATIONAL MODEL FOR IMPROVING HUMAN IN VITRO EMBRYO PRODUCTION. Edson Guimarães Lo Turco, PhD[1], Júlia Gleyci Soares Gleyci Soares de Carvalho, PhD[1], Anna Virginia Pike, BSC[1], Fernanda Cordeiro, Ph.D.[2], Pietro Sampaio Baruselli, PhD[3], Letícia Dall'Oglio Whitaker, MD[4] and Prof. Fernando Prado Ferreira, MD, PhD, MBA[5], [1]Sao Paulo Federal University, Sao Paulo, Brazil, [2]ESPOL Polytechnique University, Guayaquil, Guayas, Ecuador, [3]São Paulo University, São Paulo, SP, Brazil, [4]Neo Vita Clinic, São Paulo, Brazil, [5]Neo Vita Reprodução Humana, São Paulo, SP, Brazil

OBJECTIVE:
To evaluate the therapeutic potential of adipogenic mesenchymal stem cells (MSCs) in ovarian function and reproductive outcomes, such as oocyte retrieval and embryo development.
MATERIALS AND METHODS:
This is a case-control study that included 27 Nelore cows. All animals were synchronized for follicular growth with an intravaginal progesterone device. Next, the cows were randomly assigned to three groups: controls (n=7, without MSC therapy); MSC1 (n=10, MSCs therapy in one ovary), and MSC2 (n=10, MSCs therapy in both ovaries). The MSCs were characterized by flow cytometry with CD44 and CD29 as positive markers and CD18 and CD45 as negative markers. Follicular aspirations and embryo productions were performed over 180 days on days 30, 60, 90, 120, 150 and 180. After repeated follicle aspirations, the data were analyzed as time-repeated measures using the generalized linear model's (GML) procedure of statistical analyses.
RESULTS:

Flow cytometry confirmed the mesenchymal phenotype with high CD44 (93.2%) and CD29 (98.4%), and a high percentage of cells do not express negative markers (CD18: 96% and CD45: 99.4%). Primary outcomes measured were number of follicles, oocyte retrieval, viable oocytes, embryos cleavage, blastocysts, and hatched blastocysts rates. Cows receiving MSCs (MSC1 and MSC2) showed less reduction in follicular aspirates over time compared to controls. Additionally, there was a significant increase in the number of follicles aspirated (controls=25.7, MSC1=31.8, MSC2=28.8, P=0.001), oocyte retrieval (controls=15.6, MSC1=19.4, MSC2=19.2, P=0.001), number of viable oocytes (controls=9.5, MSC1=12.4, MSC2=13.0, P=0.001), number of embryos per oocyte retrieved (controls=5.3, MSC1=7.6, MSC2=6.2, P=0.001), blastocyst rate (controls=33.8%, MSC1=39.2%, MSC2=32.3%, P=0.001), and number of hatched blastocysts (controls=4, MSC1=6.2, MSC2=4.9, P=0.001).
CONCLUSIONS:
The results of this animal model study support the potential of stem cell–based approaches in reproductive medicine. The ability to increase oocyte/embryo production has important economic implications for animal production systems and provides a strong foundation for future translational research in ovarian function restoration and fertility treatments for humans.
IMPACT STATEMENT:
MSC ovarian therapy enhances oocyte competence and embryo development, supporting its use to improve ovarian function and reproductive outcomes.
SUPPORT: Nothing to disclose.

O-155 1:50 PM Tuesday, October 27, 2026

RECRUITMENT AND ACTIVATION OF ENDOMETRIAL B CELLS IN CHRONIC ENDOMETRITIS AND THEIR IMPACT ON ENDOMETRIAL RECEPTIVITY. Ruiying Wang, M.D[1] and Wei Huang, M.D., PH.D.[2], [1]Chengdu City, Sichuan Province, China, [2]West China Second University Hospital of Sichuan University, Chengdu,Sichuan, China

OBJECTIVE: Chronic endometritis (CE) is a persistent inflammatory condition, strongly associated with recurrent reproduction failure and infertility. This study aims to reveal the characteristics of endometrial microenvironment disorders in CE, investigate the immunological drivers of B cell infiltration and elucidate the molecular mechanisms by which B cells affect endometrial receptivitythrough integrated multi-omics analysis and in vitro validation.
MATERIALS AND METHODS: Integrated single-cell RNA sequencing (scRNA-seq) and spatial transcriptomics (Stereo-seq) were performed on endometrial tissues from CE and control patients. CellChat was used for cell communication prediction. Relevant cells in Stereo-seq were defined by combining single-cell annotation and gene set scoring thresholds to calculate spatial distances and compare the gene expressions. Flow cytometry detected changes in activation markers and the chemotactic receptor CCR7. The expression and cellular source of CCL21 were verified. A Transwell system with recombinant human CCL21 and CCR7 inhibitors to evaluate B cell migration rates. We developed a co-culture system of B cells and endometrial epithelial organoids to assess expressions of LIF. Secreted cytokines were screened by ELISA.
RESULTS:
ScRNA-seq revealed CE epithelial cells exhibited significantly decreased receptivity scores. The CE immune microenvironment showed increase in B cells and mast cells, alongside pro-inflammatory polarization of Th17 and M1 macrophages. CCL21-CCR7 axis as a dominant recruitment signal from lymphatic endothelial cells to B cells. Spatial analysis demonstrated that the probability of B cell presence was highest in close proximity to $CCL21^+$ endothelial cells. Epithelial cells located near B cells exhibited the lowest receptivity scores. We confirmed a significantly higher proportion of $CD69^+$, $CD86^+$, and $CCR7^+$ B cells in the CE proliferative phase. CCL21 expression was elevated in CE endothelial cells. CCL21 exerted a concentration-dependent recruitment effect on B cells, which was significantly suppressed by CCR7 inhibitors. Indirect co-culture with B cells inhibited expression of LIF in organoids. ELISA identified MIF as the predominant B cell secretory product. B cells were found to downregulate p53 and LIF protein levels; these inhibitory effects were reversed by p53 activators, while MIF antagonism (ISO-1) significantly recovered p53 expression.
CONCLUSIONS: This study demonstrates that CE represents a systemic disorder of cell differentiation and immunomodulatory functions in the endometrial microenvironment, accompanied by persistent impairment of epithelial receptivity. Key pathological features include the abnormal accumulation of B cells. CCL21-CCR7 axis drives B cell recruitment and B cells potentially regulate epithelial receptivity via the MIF-p53-LIF axis.
IMPACT STATEMENT: This study provides a new perspective for understanding the reproductive disorders caused by CE and provides a solid theoretical basis for developing immunomodulatory treatments and increasing embryo implantation rates.

O-157 2:00 PM Tuesday, October 27, 2026

SPATIAL REPROGRAMMING OF STEROIDOGENESIS AND GONADOTROPIN SIGNALING IN THE AGING MURINE OVARIAN FOLLICLE. Cameron M Hebert, BSc[1], Michelle M Denomme Tignanelli, PhD[1], Heather Jacobs, MS[1], Ye Yuan, PH.D.[1], William B Schoolcraft, M.D.[2] and Mandy Katz-Jaffe, PhD[2], [1]CCRM Research, Lone Tree, CO, [2]CCRM Fertility, Lone Tree, CO

OBJECTIVE: Ovarian aging is a major cause of female infertility, characterized by progressive declines in oocyte quantity and quality that severely limit reproductive success. While molecular alterations within the follicular microenvironment are implicated in aging, the cell-type specific origins of these changes remain poorly understood. Here, the aim was to identify key compartment-based alterations during follicular aging to uncover biomarkers for reproductive decline.
MATERIALS AND METHODS: Spatial single-cell transcriptomics (Xenium; 10X Genomics) was performed on whole ovaries from young (3-4 months) and aged (15 months) CD-1 outbred females (n=5 per group). Within each follicular cell type, differentially expressed genes were defined as p-adjusted<0.05. Immunohistochemistry (IHC) on ovarian sections from additional young and aged females (n=4 per group) underwent semi-quantitative spatial analysis for each mature follicle using ImageJ (Fiji). Statistical analysis was performed by Student's t-test ($p<0.05$).
RESULTS: Spatial single-cell transcriptomic analysis revealed age-associated reorganization of steroidogenic enzymes and gonadotropin receptor expression across follicular cell types, with concordant protein-level changes. *Star* was broadly upregulated with aging across all compartments: mural granulosa (log2FC = 1.64; padj<0.05), cumulus cells (log2FC = 0.80; padj<0.05), theca interna (log2FC = 0.70; padj<0.05) and externa (log2FC = 0.59; padj<0.05). All cell types were confirmed by increased STAR protein expression (mural granulosa: $p = 0.015$; cumulus: $p = 0.036$; theca: $p = 0.023$), consistent with a global compensatory response to reduced steroidogenic efficiency. In contrast, CYP11A1 exhibited age-related spatial redistribution from theca to granulosa ($p = 0.003$), indicating a reversal of the expected steroidogenic compartment. This aligned with transcriptomic data showing increased *Cyp11a1* in mural granulosa (log2FC = 0.96; padj<0.05) and decreased expression in theca interna (log2FC = -0.39; padj<0.05) and externa (log2FC = -0.43; padj<0.05). LHCGR similarly shifted with aging from outer to inner compartments ($p = 0.024$), with *Lhcgr* upregulation in cumulus (log2FC = 1.96; padj<0.05) and mural cells (log2FC = 0.29), and downregulation in theca interna (log2FC = -1.06; padj<0.05) and externa (log2FC = -1.39; padj<0.05), reflecting adaptive reallocation of gonadotropin receptor responsiveness.
CONCLUSIONS: This study utilizing spatial single-cell transcriptomics and resultant protein-level translation would not be possible with bulk analyses. We identified that ovarian aging is characterized by cell type-specific reprogramming of gonadotropin signaling and steroidogenic pathways. The spatial shift toward the inner granulosa compartments likely reflect compensation for declining endocrine function in the aging follicle, providing a spatial mechanism that may contribute to reduced reproductive competence with age.
IMPACT STATEMENT: Spatial identification of both transcription and protein expression across follicular cell types offers new insights into mechanisms underlying reduced oocyte quality with reproductive aging.
SUPPORT: None.
REFERENCES:
None.

O-158 2:10 PM Tuesday, October 27, 2026

A 3D HUMAN ENDOMETRIAL MODEL REVEALS PROGENITOR STATE RETENTION AND TRANSCRIPTIONAL VULNERABILITY IN MALIGNANT TROPHOBLAST. Magdalena Ladron De Guevara, D.V.M., M.Sc., Ph.D., Stanford, CA

OBJECTIVE:
To establish a 3D human model of malignant trophoblast and determine whether its interactions with the endometrium are governed by state-specific alterations in lineage composition, proliferative scaling, and transcriptional dependency rather than increased growth alone.
MATERIALS AND METHODS:
Human endometrial assembloids were generated using primary stromal cells embedded in extracellular matrix with a top epithelial layer and hormonal stimulation (estrogen, progesterone, cAMP). Healthy trophoblast and JEG-3 choriocarcinoma cells were introduced into the stromal compartment, where they formed spherical organoids. Trophoblast populations were assessed by immunofluorescence (GATA3, TP63, Ki67) and hCG secretion. Cell counts and lineage ratios were analyzed using Welch's t-tests and Mann–Whitney U tests. Linear models with interaction terms were used to evaluate scaling relationships with cyst size and distinguish size-dependent from intrinsic differences. Differential sensitivity to transcriptional perturbation was assessed using Treatment × Marker interaction models. Transcriptional stress was induced using actinomycin D under continuous and 24-hour pulse conditions. Nascent transcription is being assessed using 5-ethynyluridine (EU) incorporation.
RESULTS:
Malignant trophoblast formed larger cysts, exhibited elevated hCG secretion, and showed disproportionate expansion of $TP63^+$ progenitor-like cells and increased proliferation ($Ki67^+$). Importantly, scaling analysis demonstrated that TP63 enrichment remained significant independent of cyst size, indicating intrinsic differences in lineage composition. In contrast, proliferation exhibited altered scaling, with Ki67 increasing more rapidly with cyst size in malignant trophoblast. Under transcriptional perturbation, malignant trophoblast displayed dose-dependent reductions in cyst size and lineage-marker ratios. Notably, $TP63^+$ progenitor-like cells exhibited significantly greater sensitivity to transcriptional inhibition compared to $GATA3^+$ trophoblast identity (interaction $p<0.001$), indicating state-specific vulnerability to transcriptional stress.
CONCLUSIONS:
Malignant trophoblast is characterized by size-independent expansion of progenitor-like states and altered proliferative scaling, coupled with increased dependence on active transcriptional programs. These features confer selective sensitivity to transcriptional perturbation and suggest context-dependent regulation within the microenvironment.
IMPACT STATEMENT:
This work identifies transcriptional dependency as a key feature of trophoblast malignancy and establishes a human 3D endometrial platform to dissect lineage-specific vulnerabilities and inform therapeutic strategies in gestational trophoblastic disease.

O-159 2:20 PM Tuesday, October 27, 2026

MODELING HUMAN IMPLANTATION AND EARLY EMBRYO-ENDOMETRIAL CROSSTALK *IN VITRO* USING A 3D RECEPTIVE ENDOMETRIAL SCAFFOLD. Matteo Molè, PhD[1] and Francisco Dominguez, Ph.D.[2], [1]Palo Alto, CA, [2]Fundacion IVI INCLIVA, valencia, Spain

OBJECTIVE:
Failures in embryo implantation and early placental development are major causes of infertility and in vitro fertilization (IVF) failure, yet the underlying mechanisms remain poorly understood due to the inaccessibility of these stages *in vivo*. Existing *in vitro*culture systems often lack the appropriate endometrial environment, limiting developmental potential. The objective of this study is to develop a 3D *in vitro* model containing primary uterine cells to support advanced human embryo implantation and to characterize the molecular dialogue between the invading conceptus and the receptive endometrium.
MATERIALS AND METHODS:
We developed a cell-engineered receptive endometrial scaffold technology (CREST) utilizing primary human endometrial epithelial and stromal cells. Surplus human blastocysts (n=86) and stem cell-derived blastoids were cultured on the hormone-stimulated endometrial scaffolds for up to 14 days post-fertilization. Trophoblast development and placental morphogenesis were assessed via immunofluorescence microscopy. Single-cell RNA-sequencing was performed on day-14 implantation sites (n=17) to comprehensively investigate embryo-endometrial crosstalk.
RESULTS:
The CREST platform supported human embryo implantation with a 60% success rate, demonstrating significantly higher rates of attachment and organized spatial development compared to 2D and 3D acellular conditions. By day 14 post-fertilization, embryos exhibited clear compartmentalization of epiblast, hypoblast, and trophoblast lineages. We observed the formation of advanced placental structures previously unseen *in vitro*, including cytotrophoblastic columns, trabeculae, and the early stages of the cytotrophoblastic shell. Single-cell transcriptomic profiling identified specific ligand-receptor pairs between trophoblast subtypes (extravillous and syncytiotrophoblast) and endometrial cells. Pharmacological inhibition of AXL signaling resulted in a significant defect in trophoblast outgrowth, establishing a functional requirement for this crosstalk in early post-implantation development.
CONCLUSIONS:
The CREST 3D *in vitro* model successfully recapitulates key milestones of early human placentation by providing a supportive and physiologically relevant endometrial environment. By identifying and functionally validating critical molecular pathways governing the embryo-endometrial dialogue, this platform offers a novel opportunity to investigate the etiologies of implantation failure and placentation disorders.
IMPACT STATEMENT:
This work introduces a scalable, patient-specific model to investigate the etiologies of implantation failure and early pregnancy loss major hurdles in reproductive medicine. By identifying the critical signaling dialogue between the embryo and the endometrium, this platform offers a transformative tool for developing targeted interventions to improve clinical IVF success rates and maternal-fetal health outcomes.

ORAL ABSTRACT SESSION: BENIGN GYNECOLOGICAL DISEASE

O-160 1:30 PM Tuesday, October 27, 2026

ULTRASOUND BASED FIBROID INCIDENCE AMONGST REPRODUCTIVE AGED LATINAS: FINDINGS FROM THE ELLAS STUDY. Marissa Ghant, MD[1], Felix Valbuena Jr., M.D.[2], Richard L. Bryce, DO[2], Esperanza Igram, MPH[1], Gina Aliste, AS[1], Ganesa R Wegienka, PhD, MS[3], Mercedes R Carnethon, PhD[4], Lisa M. Neff, MD[4], Donna D Baird, PH.D., M.P.H[5] and Erica E. Marsh, MD, MS[1], [1]University of Michigan, Ann Arbor, MI, [2]Community Health and Social Services (CHASS) Center, Detroit, MI, [3]Henry Ford Health System, Detroit, MI, [4]Northwestern University, Chicago, IL, [5]National Institute of Environmental Health Sciences, NIH, Durham, NC

OBJECTIVE: Uterine Fibroids (UF) are the most common tumor in reproductive-aged women and are the leading cause of hysterectomy in the United States. Despite their prevalence and public health impact, there is very little data on their true incidence. Our goal was to determine the incidence of UF using ultrasound and identify factors associated with incident UF in a longitudinal cohort of Latina/Latinx (LLX) females enrolled in the Environment, Leiomyomas, Latinas, and Adiposity Study (ELLAS).
MATERIALS AND METHODS: ELLAS is a 5-year, community based participatory research (CBPR) study of LLX females aged 21-50 residing in Southeast Michigan. Participants completed two study visits (baseline and follow-up) that included transvaginal ultrasounds (plus abdominal ultrasound if needed) to detect UF ≥0.5cm in diameter, surveys (in English or Spanish) and anthropometric measurements. The incidence analysis included 433 participants without UF at Visit 1. Incidence was summarized overall and by follow-up time (months between visits). Data were analyzed using chi-square, Kruskal-Wallis, and Mantel-Haenszel tests. Age-adjusted logistic regression models were used to evaluate factors associated with incident UF.
RESULTS: Among 433 participants without UF at Visit 1, 70 (16.2%) had ultrasound-confirmed UF by Visit 2, conducted 23-49 months after Visit 1. The mean age of all participants was 37.4 years (SD 6.63; range 21-50). Participants with incident UF were older on average (mean 39.6 ± 5.5 vs 37.0 ± 6.8 years; $p<0.05$). Compared with those aged 21–30, participants aged 41–50 had higher odds of incident UF (OR 3.50; 95% CI 1.40–8.76; $p<0.05$). When adjusted for age, gravidity ≥1 was associated with lower odds of incident UF compared to gravidity of 0 (OR = 0.32; 95% CI 0.11–0.93; $p<0.05$), and history of ≥1 live birth was associated with lower odds of incident UF compared to 0 live births (OR = 0.30; 95% CI 0.11–0.78; $p<0.05$). BMI, education, income, insurance, acculturation (using more Spanish versus English), health literacy and current hormonal contraception use were not significantly associated with incident UF after adjusting for age.
CONCLUSIONS: This community-engaged, longitudinal cohort study is the first of its kind to establish the incidence of ultrasound-confirmed UF among LLX females, an underrepresented population in UF research. These data also identify parity as inversely associated with incident UF, consistent with prior evidence. Conversely, several other health and sociodemographic factors often hypothesized to influence UF risk were not significantly associated with incident UF. Together, these findings provide a foundation for understanding UF incidence and associated risk factors in LLX females and support future studies comparing UF incidence across populations.
IMPACT STATEMENT: This study provides the first ultrasound-confirmed UF incidence data in LLX females, addressing a critical knowledge gap in this population. Results can be used for tailored screening, management and counseling for this understudied population.

O-161 1:40 PM Tuesday, October 27, 2026

MACHINE LEARNING-BASED ENDOMETRIOSIS RISK STRATIFICATION USING SELF-REPORTED DATA FROM THE LUCY MHEALTH APPLICATION. Dora Balogh[1], Lili Sebok, BSc[2], Boglarka Dorottya Kovats, BSc[2], Peter Antal, PhD[3], Attila Bokor, PhD[4] and Dora Balogh[1], [1]Research Fellow, [2]Researcher, [3]Associate Professor, [4]Associate Professor, Budapest, Budapest, Hungary

OBJECTIVE:
To assess whether self-reported mHealth data from the Lucy application can support AI-based endometriosis risk stratification, providing a basis for earlier disease identification in a condition strongly associated with infertility and impaired quality of life.
MATERIALS AND METHODS:
Lucy is a menstrual tracking platform where users log cycle parameters, diagnoses, and pain symptoms. Anonymized data from 2,056 Lucy users were analyzed within the FEMaLe (Horizon 2020) project. The endometriosis group comprised 860 women with a self-reported medical diagnosis of endometriosis. The 1,196 controls were carefully defined to exclude conditions with overlapping symptom profiles, including ovarian cysts, IBS, autoimmune disease, and pelvic inflammatory disease. Machine learning algorithms (Logistic Regression, SVM, Decision Tree, AdaBoost, Random Forest, XGBoost, Naïve Bayes, TAN) were applied. Model robustness was validated by 5-fold cross-validation. The study is registered on ClinicalTrials.gov (NCT06147687).
RESULTS:
The Random Forest model outperformed all other algorithms, achieving AUC 0.80, accuracy 0.74, precision 0.72, recall 0.78, and F1-score 0.75. Feature importance and SHAP-based explainability identified pelvic pain, defecation pain, intermenstrual bleeding, urination pain, and spotting as the strongest predictors, consistent with the established clinical presentation of endometriosis. These findings confirm that user-recorded symptom diary entries provide a reliable and clinically meaningful basis for automated risk estimation.
CONCLUSIONS:
Self-reported mHealth data are reliable and structurally consistent with the clinical presentation of endometriosis. An AI-based decision support system integrated into the Lucy application could serve as a digital triage tool, enabling proactive, non-invasive screening with the potential to shorten the diagnostic pathway. Prospective validation is warranted to confirm clinical utility and generalizability.
IMPACT STATEMENT:
Endometriosis affects an estimated 190 million women worldwide and is associated with infertility, chronic pelvic pain, and severely diminished quality of life, yet diagnostic delay is 4 to 11 years. This diagnostic gap directly worsens reproductive outcomes and prolongs unnecessary suffering. Our study demonstrates that patient-generated mHealth data can power clinically meaningful AI risk models without additional clinical infrastructure. As mHealth applications are widely accessible and cost-free to the end user, an app-integrated screening tool could enable earlier specialist referral at scale, potentially improving the quality of life for millions of women.
SUPPORT: This study was funded by the Finding Endometriosis using Machine Learning (FEMaLe) project, funded by the European Union's Horizon 2020 Research and Innovation Programme (grant number 101017562) and by the János Bolyai Research Scholarship of the Hungarian Academy of Sciences (BO/00147/25/5).

O-162 1:50 PM Tuesday, October 27, 2026

ANGIOTENSIN TARGETING ANTIHYPERTENSIVE USE REDUCES UTERINE FIBROID INCIDENCE IN HYPERTENSIVE WOMEN. Abigail Combs, MD[1], Alvina Pan, BS[2] and Mostafa A Borahay, MD, PhD[2], [1]Baltimore, MD, [2]Johns Hopkins University School of Medicine, Baltimore, MD

OBJECTIVE:
Clinical and preclinical data suggest that the angiotensin may contribute to fibroid pathogenesis, which could explain the association between hypertension and fibroid development. The objective of this study is to evaluate the association between renin–angiotensin–aldosterone system (RAAS) targeted antihypertensive therapy and incident uterine fibroid development in a hypertensive population.
MATERIALS AND METHODS:
Using the TriNetX platform, a global health research network providing real-world data from over one hundred healthcare organizations and several million patients, two cohorts were constructed including females aged 18–50 years with hypertension (ICD-10) and at least one healthcare encounter during the baseline period. The index event was initiation of an angiotensin-converting enzyme inhibitor (ACE-I) or angiotensin receptor blocker (ARB) for the RAAS cohort and a thiazide diuretic or calcium channel blocker for the non-RAAS cohort.

Patients with alternative indications for ACE-I or ARB use, prior exposure to comparator medications, or a diagnosis of uterine fibroids before the index event were excluded. A three-year lookback period was used to apply exclusion criteria.
Cohorts were balanced using 1:1 propensity score matching based on age, race/ethnicity, obesity, diabetes, hyperlipidemia, gynecologic conditions associated with increased fibroid detection, other antihypertensive medication use, and additional comorbidities relevant to treatment selection.
Time-to-event analysis evaluated incident fibroid diagnosis beginning one year after the index prescription until 15 years post-index. A sensitivity analysis was performed restricting the cohort to patients of Black race.
RESULTS:
Using these inclusion and exclusion criteria, there were 170,707 patients in the RAAS cohort and 289,057 in the non-RAAS cohort. After matching, 139,951 patients remained in each cohort.
After matching (n=139,951 per cohort), RAAS blockade was associated with a lower cumulative incidence of fibroid diagnosis compared with the non-RAAS group (10.26% vs 15.32%; log-rank p<0.0001), with a hazard ratio (HR) of 0.80 (95% CI 0.76–0.84).
Among patients of Black race (n=22,240 per cohort), RAAS blockade was associated with a lower cumulative incidence (16.8% vs 34.2%; log-rank p<0.0001) and lower hazard of fibroid diagnosis (HR 0.74, 95% CI 0.66–0.82).
CONCLUSIONS:
RAAS blockade was associated with a lower rate of fibroid development among hypertensive patients compared with non-RAAS therapy. This association was more pronounced among patients of Black race.
IMPACT STATEMENT:
RAAS-targeting antihypertensive therapy may reduce fibroid development, particularly among Black patients. Further understanding of the interaction of hypertension and fibroid pathogenesis may lead to alternative therapy for fibroid prevention and treatment.
REFERENCES:
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Combs AL, et al. Angiotensin II drives proliferation and extracellular matrix deposition in human uterine fibroid cells in vitro. F S Sci. 2026 Mar;7:172-183. PMID: 41391548;

O-163 2:00 PM Tuesday, October 27, 2026

MED12 MUTATION-DRIVEN CDK8/19 KINASE DYSFUNCTION DRIVES UTERINE LEIOMYOMA GROWTH THROUGH DECREASED PROGESTERONE RECEPTOR PHOSPHORYLATION AND SUBSEQUENT DEGRADATION. Aryana Famili-Youth, BS[1], Sierra Hathaway, BS[2], Thomas G Boyer, Ph.D.[3], Ping Yin, M.D., PhD[1] and Serdar E Bulun, MD[4], [1]Northwestern University Feinberg School of Medicine, Chicago, IL, [2]University of Texas Health Science Center at San Antonio, [3]Department of Molecular Medicine, University of Texas Health Science Center at San Antonio, San Antonio, TX, [4]Northwestern University Feinberg School of Medicine

OBJECTIVE: Uterine leiomyomas (LMs) with MED12 mutations (mut-MED12) aberrantly accumulate Progesterone Receptor-A (PR-A) protein, yet the mechanism and its downstream consequences remain poorly understood. Decreased CDK8/19 kinase activity is the only known biochemical alteration in mut-MED12 LMs. One mechanism by which this kinase regulates transcription factor (TF) activity is by phosphorylating TFs to trigger their degradation. This study aims to investigate whether mut-MED12-associated CDK8/19 activity deficiency alters PR-A phosphorylation status and its downstream molecular and cellular consequences.
MATERIALS AND METHODS: We utilized wild-type (wt)-MED12 and mut-MED12 LM and matched myometrium (MyoF, which always express wt-MED12) tissues to probe the differential phosphorylation sites between them. To investigate whether specific PR phosphorylation sites regulates downstream ubiquitination and degradation, we overexpressed either wt or serine-to-alanine-mutated (i.e. non-phosphorylatable) PR-A in primary MyoF and an immortalized human uterine smooth muscle (hUtSM) cell line carrying an LM-relevant mut-MED12 to assess ubiquitination and degradation of PR upon treatment with progesterone (P4).
RESULTS: We found that PR-A phosphorylation at serine 400 (S400) is markedly reduced in mut-MED12 LM compared with wt-MED12 LM and matched MyoF tissues, whereas total PR-A levels are increased in mut-MED12 LM. In wt-MED12 hUtSM cells, P4 treatment robustly induced PR-A S400 phosphorylation, accompanied by a significant reduction in total PR-A levels. In contrast, mut-MED12 (CDK8/19 kinase deficient) hUtSM cells showed minimal S400 phosphorylation and no significant change in total PR-A levels following P4 treatment. Notably, expression of S400Ala PR-A mutant in wt-MED12 hUtSM cells or primary MyoF cells recapitulated the sustained total PR-A levels observed in mut-MED12 cells, suggesting a causal link between phosphorylation at S400 by CDK8/19 kinase and PR turnover. In a pilot kinase assay, the human CDK8 Kinase Module robustly and specifically phosphorylated PR at S400. CDK8/19 inhibitor treatment blocked P4-induced PR-A S400 phosphorylation and its degradation, confirming CDK8/19 kinase-dependent PR phosphorylation at this residue. In mut-MED12 cells, this effect was attenuated, consistent with impaired CDK8/19 activity. Furthermore, we demonstrated that decreased PR-A degradation was associated with reduced ubiquitination. We are characterizing mut-MED12-linked PR-A driven pathways using RNA-seq and subsequent downstream functional assays.
CONCLUSIONS: Decreased mut-MED12-mediated CDK8/19 activity decreases P4-induced PR-A S400 phosphorylation and its degradation, which may result in an aberrantly overactive PR-A signaling program that drives uterine LM pathology.
IMPACT STATEMENT: This study elucidates the fundamental mechanisms through which mut-MED12-driven CDK8/19 deficiency governs P4/PR signaling pathways underlying LM growth. We aim to identify compelling candidates for precision therapeutics, advancing toward treatments that are effective and well-tolerated to address a critical unmet need in treatment of uterine LMs.

O-164 2:10 PM Tuesday, October 27, 2026

FROM GENE DYSREGULATION TO FUNCTIONAL RESCUE: A BIOENGINEERED HYDROGEL STRATEGY IN ENDOMETRIOSIS 3D *IN VITRO* MODEL. Marcos Agustina-Hernández, MSc[1], Alba Bas-Rivas, M.Sc.[1], Clara Bueno Fernandez, PhD[2], Paula Alonso-Frías, MSc[2], Nadaya Corpas, MSc[2], Mónica Romeu, MD, PhD[3], Amparo Galán Albiñana, Ph.D.[4], Antonio Pellicer, Ph.D. M.D.[2], Hortensia Ferrero, Ph.D.[1] and Irene Cervello, PhD[2], [1]IVIRMA Global Research Alliance, IVI Foundation, Instituto de Investigación Sanitaria La Fe (IIS La Fe), Valencia, Spain, Valencia, Spain, [2]IVIRMA Global Research Alliance, IVI Foundation, Instituto de Investigación Sanitaria La Fe (IIS La Fe), Valencia, Spain, [3]Obstetrics and Gynecology Service, La Fe University Hospital, Valencia, Spain., [4]University of Valencia, Valencia, Spain

OBJECTIVE: Endometriosis is a chronic disease characterized by the presence of endometrial-like tissue outside the uterus, causing pain and infertility, with limited therapeutic options due to the lack of physiologically relevant models. Endometrial organoids have emerged as a robust in vitro system recapitulating tissue-specific features. Increasing evidence highlights the extracellular matrix (ECM) as a key regulator of cell behavior, mechanotransduction, inflammation, and tissue remodeling in this disease. Here, we explore the potential of an ECM based on decellularized porcine uterus-derived hydrogel (HG) as a biomimetic milieu to modulate endometriotic organoid transcriptome, assessing its therapeutic potential.
MATERIALS AND METHODS: Biopsies of eutopic endometrium from women with endometriosis and healthy controls (n=6/group) were obtained by hysteroscopy to establish organoid models as previously described (ENDOorg and CONTROLorg). Inclusion criteria: women aged 18–40 years with BMI≤30 kg/m², diagnosed with stage III–IV endometriosis or without uterine pathology. Four conditions were evaluated: (i) CONTROLorg with standard expansion medium (ExM), (ii) CONTROLorg + HG (0.1 mg/mL), (iii) ENDOorg with ExM, and (iv) ENDOorg + HG (0.1 mg/mL). After 14 days, RNA was extracted and gene expression analyzed by RT-qPCR using a senescence-associated array (84 genes) and 14 genes related to endometrial function and endometriosis (proliferation, inflammation, senescence). Additionally, network analysis integrating HG-derived proteins and differentially expressed genes was performed using STRING.
RESULTS: A total of 43 dysregulated genes were identified in ENDOorg vs CONTROLorg. HG supplementation restored the expression of 19 genes (p<0.05) towards a healthy-like profile, including proliferation (MYC, CCND1, MAP2K1, TBX2, PI3KCA, GSK3B), inflammation (NFKB1, CALR, IRF7), senescence (ATM, RB1, TERF2, BMI1, MORC3), invasiveness (PLAU), and endometrial function (PAEP, IGF1, ALDH1A3, PRB). Interaction analysis revealed functional connectivity between HG-derived proteins and differentially expressed genes (PPI enrichment p<1.0e-16), highlighting mechanotransduction-related pathways including PI3K–AKT, Hippo, Rap1, oxytocin signaling, and focal adhesion.
CONCLUSIONS: These findings show that endometrial ECM-based HG reverses the aberrant gene expression profile of ENDOorg, highlighting the importance of a healthy biomimetic microenvironment in pathology. Integrative proteomic and network analyses suggest that HG-derived ECM components reprogram key pathways involved in proliferation, inflammation, and mechanotransduction. Together, this supports the relevance of the microenvironment in endometriosis and the therapeutic potential of ECM-based HG.
IMPACT STATEMENT: Restoring the pathological microenvironment using uterus-derived hydrogel may reprogram endometrial phenotypes in the eutopic endometrium of women with endometriosis. These findings support the development of new therapies, although further studies are needed to validate their translational and clinical applicability.
SUPPORT: This research was funded by the Spanish Ministry of Science,Innovation, and Universities (FPU23/01831 [M.A.-H.],CNS2024-154767 [I.C.]), the Generalitat Valenciana(CIACIF/2024/537 [P.A-F.]; CIACIF/2024/314[N.C.]) and by theMICIU/AEI/https://doi.org/10.13039/501100011033 and FSE+(PID2024-163068OB-I00 [I.C.]), Fundació La Marató 3cat (12/C/2024 [I.C.]) and by Instituto de SaludCarlos III through the project "CD25/00194" (Co-funded byEuropean Social Fund"Investing in your future“ [C.B-F]).

O-165 2:20 PM Tuesday, October 27, 2026

SINGLE-CELL SPATIAL ANALYSIS OF UTERINE FIBROID REVEALS DISTINCT MACROPHAGE NICHES AND VASCULAR-HYPOXIA DISRUPTION. Alvina Pan, BS[1], Maria Szubert, MD, PhD[2], Bronwyn S Bedrick, MD, MSCI[3], Valentina Vanos, MSPH[4], Won Jin Jin Ho, MD[1], Alexander Xu, Ph.D.[5], Erika Moore, Ph.D.[5] and Mostafa A Borahay, MD, PhD[2], [1]Johns Hopkins University School of Medicine, [2]Johns Hopkins University School of Medicine, Baltimore, MD, [3]Johns Hopkins University, Baltimore, MD, [4]Johns Hopkins Bloomberg School of Public Health, [5]University of Maryland, College Park

OBJECTIVE:
Uterine fibroids are characterized by extensive fibrosis and aberrant vasculature. Macrophages are implicated as key drivers of both processes, yet their spatial organization, functional states, and interactions with vasculature and stromal cells in fibroid tissue remain undefined. We applied imaging mass cytometry to map macrophage spatial niches in fibroid versus matched myometrium.
MATERIALS AND METHODS:

Paired fibroid and myometrium samples from 13 patients undergoing hysterectomy for symptomatic fibroids were analyzed by imaging mass cytometry (Hyperion) using a 53-marker panel including immune lineage, macrophage polarization (CD68, CD163, CD206, CD86, ARG1, IL-10), stromal (αSMA, FAP, vimentin, collagen), vascular (CD31, podoplanin), hypoxia (HIF-1α, Glut1), and signaling (pSTAT3, IL-6, CXCL12) markers. Across 78 regions of interest, DeepCell segmentation yielded ~590,000 single cells. FlowSOM clustering on lineage markers identified 10 cell populations including four macrophage subtypes (M1-like, M2-like, M2a-like, M2c-like). Spatial analyses included nearest-neighbor distances, paracrine signaling gradients, and HIF-1α/Glut1 co-expression-based hypoxia state mapping. Spatial metrics were calculated per ROI as median values, then compared using linear mixed-effects models with patient as random effect to account for paired design (n=78 ROIs from 13 patients); p-values were adjusted using Benjamini-Hochberg correction.

RESULTS:

Fibroids showed four-fold reduced vessel density compared to myometrium, with 53% of fibroid cells positioned >50μm from any vessel versus 10% in myometrium ($p<0.001$). All macrophage subtypes showed 2.4-fold reduced perivascular positioning in fibroid ($p<0.001$). M2a-like macrophages localized closer to myofibroblasts in fibroid (median 28.8 vs 38.8μm, $p<0.001$). pSTAT3+ stromal cells localized closer to IL-6+ macrophages than pSTAT3- cells (median 65 vs 91μm, $p<0.001$), with steeper marker intensity-distance gradients in fibroid. HIF-1α and Glut1 co-expression mapping identified two spatially distinct hypoxia states: HIF-1α$^+$/Glut1$^+$ cells clustered perivascularly, while HIF-1α$^-$/Glut1$^+$ cells localized to avascular zones (median 58 vs 26μm from vessels, $p<0.001$). M2a-like macrophages were 1.7-fold enriched in HIF-1α$^-$/Glut1$^+$ zones. Macrophages in HIF-1α$^+$/Glut1$^+$ zones showed elevated ARG1, IL-6, and Ki67 expression.

CONCLUSIONS:

Uterine fibroids demonstrate spatially heterogeneous macrophage organization linked to vascular depletion and altered hypoxia distribution. Macrophages in perivascular versus avascular zones show distinct subtype composition and functional states, while IL-6/STAT3 paracrine fibrotic signaling between macrophages and stromal cells remains active in fibroid tissue.

IMPACT STATEMENT:

This single-cell spatial characterization of fibroid tissue defines macrophage-vascular-hypoxia interactions in fibroid pathobiology and identifies cellular niches and signaling axes as potential therapeutic targets for uterine fibroid disease, a leading indication for hysterectomy in reproductive-aged women.

O-166 2:30 PM Tuesday, October 27, 2026

EVALUATING THE ASSOCIATION OF OBESITY WITH ANTI-MÜLLERIAN HORMONE LEVELS IN PATIENTS WITH AND WITHOUT POLYCYSTIC OVARY SYNDROME.

Alexandra Conry, MD[1], Kaleb A Noruzi, MD[2] and William H Kutteh, MD, PhD, HCLD[3], [1]University of South Carolina School of Medicine Greenville, [2]University of Tennessee Health Science Center, Memphis, [3]University of Tennessee Health Sciences Center, Memphis, TN

OBJECTIVE:

To evaluate the association between obesity and anti-Müllerian hormone (AMH) levels in patients with and without polycystic ovary syndrome (PCOS), and to determine whether obesity modifies the relationship between PCOS status and AMH.

MATERIALS AND METHODS:

A retrospective cohort study was performed using data from patients undergoing infertility evaluation at a tertiary reproductive endocrinology practice. Patients were categorized by PCOS status and obesity status. Obesity was defined as body mass index (BMI) >29.99 kg/m2. AMH values were log-transformed (LNAMH) to account for non-normal distribution. Four groups were analyzed: non-PCOS non-obese, non-PCOS obese, PCOS non-obese, and PCOS obese. Univariate analysis of variance was performed to evaluate the independent effects of PCOS, obesity, and their interaction on LNAMH while adjusting for age. Estimated marginal means and Bonferroni-adjusted pairwise comparisons were calculated. Statistical significance was defined as $p<0.05$.

RESULTS:

A total of 218 patients with complete AMH data were included. Mean AMH levels were 2.64±2.76 ng/mL in non-PCOS non-obese patients, 2.71±3.43 ng/mL in non-PCOS obese patients, 7.47±6.50 ng/mL in PCOS non-obese patients, and 5.04±3.55 ng/mL in PCOS obese patients. Adjusted LNAMH means were 0.505 (95% confidence interval [CI] 0.282-0.728), 0.559 (95% CI 0.300-0.818), 1.651 (95% CI 1.356-1.946), and 1.293 (95% CI 1.054-1.531), respectively. PCOS status was independently associated with significantly higher AMH levels ($F=51.847$, $p<0.001$), while increasing age was associated with lower AMH levels ($F=14.349$, $p<0.001$). Obesity was not independently associated with LNAMH ($F=1.393$, $p=0.239$). Although obese patients with PCOS demonstrated lower adjusted LNAMH levels compared with non-obese patients with PCOS, the interaction between obesity and PCOS status was not statistically significant ($F=2.537$, $p=0.113$). Pairwise comparisons demonstrated significantly higher LNAMH levels in patients with PCOS compared with non-PCOS patients regardless of obesity status (all $p<0.001$).

CONCLUSIONS:

PCOS was independently associated with significantly elevated AMH levels after adjustment for age, whereas obesity was not independently associated with AMH. Although obese patients with PCOS demonstrated lower AMH levels compared with non-obese patients with PCOS, obesity did not significantly modify the relationship between PCOS and AMH.

IMPACT STATEMENT:

These findings support the concept that elevated AMH in PCOS primarily reflects underlying ovarian dysfunction rather than obesity-related metabolic status. Improved understanding of the relationship between obesity and ovarian reserve markers may help refine interpretation of AMH in infertility evaluation and PCOS phenotyping.

ORAL ABSTRACT SESSION: TECHNOLOGY & INNOVATION (2 OF 2)

O-167 1:30 PM Tuesday, October 27, 2026

USING LARGE-SCALE DATA TO CREATE TRANSPARENT PREDICTIVE DIAGNOSTIC ALGORITHMS FOR NINE FEMALE REPRODUCTIVE HEALTH CONDITIONS.

Natalie Getreu, BSc, MSc, PhD[1], James Bailey, BSc (hons), MBBS, PhD, MRCGP, DFSRH[2], George Adams, MBChB (MD), PhD, MSc (Stat.), MSc (Epid.), MSc (Comp.Sci.), MSci (Biochem.), GradStat, MRCP, FRCPath, ARCS[2], Lorna Brightmore, PhD, MMATH (Hons)[2] and Helen C O'Neill, B.SC., M.SC., PH.D.[2], [1]London, United Kingdom, [2]Hertility Health, London, United Kingdom

OBJECTIVE: To develop and validate a three-layer Bayesian network for prediction of nine conditions affecting reproductive health from at-home hormone tests, self-reported symptoms, and demographics, within the regulated medical device framework of Hertility Health's Gyn-AI™ programme.

MATERIALS AND METHODS: A hybrid Bayesian network reflecting causal associations was trained on data from 48,321 women who completed an online health assessment and at-home blood tests measuring up to 10 hormones. Nine conditions were modelled: endometriosis, pelvic pathology, PCOS, hypothalamic amenorrhoea, perimenopause, menopause, POI, hypo- and hyperthyroidism, benchmarked against clinician-confirmed diagnosis. Layer one was a Bayesian logistic regression trained via Markov chain Monte Carlo with informative priors encoding epidemiological prevalence. Layer two specified conjugate class-conditional distributions: Beta-binomial for binary symptoms, Dirichlet-Multinomial for categorical, Normal-Inverse-Gamma for continuous blood tests, yielding closed-form log-likelihood ratios. Layer three combined these via Bayes' rule on the odds scale, propagating full posterior uncertainty. Predictions were generated after initial assessment and after the blood test. Performance was evaluated on a held-out set (n=32,873) with external validation on an Irish cohort (n=1,245) and a sub-cohort on hormonal contraception (n=5,805), aligned with TRIPOD+AI guidelines.

RESULTS: Validation discrimination ranged from AUC 0.89 for PCOS to 0.997 for menopause. Endometriosis (n=4,505), PCOS (n=9,252), and pelvic pathology (n=11,158) were the most common diagnoses with AUCs of 0.97, 0.92, and 0.89. No significant accuracy drop was seen without blood tests for endometriosis or pelvic pathology; PCOS was moderately reduced (AUC 0.82). Calibration was consistent across deciles. Discrimination was preserved for women on hormonal contraception (endometriosis 0.97, pelvic pathology 0.91, PCOS 0.85) and the Irish cohort (0.98, 0.92, 0.88).

CONCLUSIONS: A clinically informed Bayesian network trained on proprietary data from an online health assessment and at-home hormonal tests delivered strong discrimination and calibration across nine conditions impacting reproductive health. Performance held in external validation and subgroups on hormonal medication, providing human-interpretable probability estimates with credible intervals.

IMPACT STATEMENT: This work yields predictive models that outperform benchmarks trained on publicly available data while maintaining transparency. The Gyn-AI™ system provides a template for rigorous, accurate diagnosis and risk stratification in reproductive healthcare.

SUPPORT: n/a

O-168 1:40 PM Tuesday, October 27, 2026

HOW DOES CHATGPT ANSWER COMMON PATIENT QUESTIONS ABOUT ASSISTED REPRODUCTIVE TECHNOLOGY? A COMPARATIVE ANALYSIS WITH ESTABLISHED PATIENT EDUCATION MATERIALS.

Nicole Mercado Fischer, MD, MPH[1], Aja Pollard, MD[1], Alicia S Liu, M.D.[2] and Katie Schmiech, M.D.[1], [1]University of Pittsburgh Medical Center, Pittsburgh, PA, [2]Pittsburgh, PA

OBJECTIVE: To evaluate the accuracy, completeness, clarity, safety, and quality of ChatGPT responses to common assisted reproductive technology (ART) questions and compare them with patient educational materials using predefined checklists.

MATERIALS AND METHODS: Three ART domains were selected: in vitro fertilization (IVF) success by age, IVF process, and IVF risks. For IVF success, ChatGPT estimates for ages 20–45 were compared with data from the Centers for Disease Control and Prevention (CDC) and the Society for Assisted Reproductive Technology (SART) (2022–2023). For IVF process and risks, two prompt styles (generic and conversational) were submitted in three independent sessions, yielding 12 responses. Comparator materials were obtained from the American Society for Reproductive Medicine (ASRM) (ReproductiveFacts.org). Readability was assessed using Flesch-Kincaid grade level. Four physician reviewers scored responses using 5-point Likert scales. Outcomes included physician-rated scores, adherence to a checklist of essential concepts (%), and binary flags for misinformation, unsupported claims, lack of reference to reputable sources, and recommendation to consult a fertility specialist.

RESULTS: Twelve ChatGPT responses and 2 ASRM patient education documents were analyzed. ChatGPT responses showed high clarity comparable to ASRM materials (4.6±0.3 vs 4.6±0.5), but lower accuracy (4.0±0.4 vs 5.0±0.0), completeness (3.4±0.5 vs 4.9±0.1), safety (2.9±0.6 vs 4.9±0.1), and quality (3.4±0.4 vs 5.0±0.0). Checklist adherence was slightly lower (94% vs 100%). ChatGPT responses had lower reading level (9.1 vs 11.7). Unsupported claims were present in 50% of ChatGPT responses vs 0% of ASRM materials, no ChatGPT responses included references, and only one recommended consultation with a fertility specialist. For IVF success, estimates were consistent with CDC/SART data across most ages (23/26, 88%), with overestimation at age 35 (~5–10%) and underestimation at ages 37 and 40 (~5–10%).

CONCLUSIONS: ChatGPT provides generally accurate and readable responses but shows lower completeness, less risk communication, and frequent unsupported claims compared with established resources.
IMPACT STATEMENT: Artificial intelligence tools may improve access to reproductive health information; however, incomplete coverage and unsupported claims highlight the need for integration with authoritative sources.

Outcome	ChatGPT	ASRM	Interpretation
Accuracy	4.0 ± 0.4	5.0 ± 0.0	Lower
Completeness	3.4 ± 0.5	4.9 ± 0.1	Lower
Clarity	4.6 ± 0.3	4.6 ± 0.5	Comparable
Safety	2.9 ± 0.6	4.9 ± 0.1	Lower
Quality	3.4 ± 0.4	5.0 ± 0.0	Lower
Checklist (%)	94%	100%	Slightly lower
Readability	9.1	11.7	More readable
Unsupported claims	50%	0%	More frequent
Misinformation	4%	0%	Rare

O-169 1:50 PM Tuesday, October 27, 2026

STANDARDISING PELVIC ULTRASOUND ASSESSMENT WITH A MODULAR AI PIPELINE FOR AUTOMATED MORPHOLOGICAL MEASUREMENT. George Adams, MBChB (MD), PhD, MSc (Stat.), MSc (Epid.), MSc (Comp.Sci.), MSci (Biochem.), GradStat, MRCP, FRCPath, ARCS[1], Natalie Getreu, BSc, MSc, PhD[2], Lorna Brightmore, PhD, MMATH (Hons)[1] and Helen C O'Neill, B.SC., M.SC., PH.D.[1], [1]Hertility Health, London, United Kingdom, [2]London, United Kingdom

OBJECTIVE: Pelvic ultrasound is fundamental to gynaecological assessment, yet its utility is constrained by substantial interobserver variability, operator dependency, and a global shortage of trained sonographers. Growing diagnostic backlogs and inequitable access to specialist expertise demand scalable, standardised solutions. We present a modular deep learning pipeline for automated extraction of quantitative morphological measurements from pelvic ultrasound DICOM images, designed to democratise and standardise gynaecological imaging assessment.
MATERIALS AND METHODS: A retrospective study of anonymised pelvic ultrasound DICOM images was conducted using data from Hertility Health. The pipeline comprised five sequential stages: image classification (ResNet-50 CNN; n=7,721 images across five anatomical categories), laterality detection, biplane view identification, ovarian object detection (YOLOv5; n=5,496 annotated images, 25,942 follicle and 6,896 ovary regions), and semantic segmentation (two U-Net/ResNet-34 models; n=807 annotated images). Ellipse fitting applied to segmentation contours, calibrated via DICOM pixel spacing, extracted endometrial thickness, ovary volume, and uterus volume. End-to-end evaluation in 100 patients compared automated outputs against manual-caliper and manual-contour reference standards using Pearson r and Lin's CCC.
RESULTS: The classification model achieved AUC 0.90-1.00 across five categories. Biplane classifier AUC=0.96. Object detection yielded mAP@0.5=0.809 (follicle AUC=0.980; ovary AUC=0.777). Segmentation Dice scores were 0.899 (uterus-endometrium) and 0.856 (ovary-follicle), with validation scores of 0.918 and 0.834 respectively. Automated endometrial thickness approached inter-method human agreement (model vs caliper: r=0.69, CCC=0.53; manual vs manual: r=0.64, CCC=0.60). Ovary volume concordance with manual-contour references (r=0.64, CCC=0.56) was comparable to inter-method human variability (r=0.60, CCC=0.60).
CONCLUSIONS: This modular AI pipeline delivers robust, reproducible automated measurement of key gynaecological parameters from routine pelvic ultrasound, with end-to-end performance approaching the level of variability observed between experienced human annotators. The pipeline's scalable, hardware-agnostic architecture enables standardised analysis across diverse clinical settings, supporting equitable access to high-quality gynaecological imaging without dependence on specialist operator availability.
IMPACT STATEMENT: Operator dependency and interobserver variability represent critical barriers to consistent, scalable gynaecological ultrasound assessment globally. This pipeline demonstrates that modular deep learning can automate structured morphological measurement from real-world pelvic ultrasound data, offering a practical foundation for addressing diagnostic backlogs, supporting longitudinal disease monitoring, and enabling large-scale reproductive health research.
SUPPORT: HON and NG are co-founders of Hertility Health Ltd. HON, NG, GA and LB are all employees of and have options in Hertility Health Ltd.

O-170 2:00 PM Tuesday, October 27, 2026

BIOSIMILAR VS. REFERENCE R-FSH: CAN WE EXPECT EQUIVALENT OUTCOMES IN EGG DONATION WHEN EVALUATED THROUGH AI-BASED EMBRYOLOGY AND TIME-TO-LIVE BIRTH SURVIVAL ANALYSIS? Tania Carrión Sisternas, PhD Student[1], Ander Sáez, MSc[2], Salma Rivera, MSc[3], Lorena Bori Arnal, PhD[4], Jose Bellver, Prof. PhD[5] and Marcos Meseguer, PhD[6], [1]Valencia, Spain, [2]CEMP & IVIRMA Global Research Alliance, IVIRMA Valencia, [3]IVIRMA Global Research Alliance, IVIRMA Las Palmas, Las Palmas, Spain, [4]IVI Foundation, Instituto de Investigación Sanitaria La Fe (IIS La Fe), Valencia, Spain, Valencia, Spain, [5]IVI VALENCIA, Valencia, Spain, [6]IVIRMA Global Research Alliance, IVIRMA Valencia, IVI Foundation, La Fe Health Research Institute, Valencia, Spain

OBJECTIVE: To assess the biological and clinical equivalence between biosimilar and reference recombinant FSH (r-FSH) in oocyte donation cycles, integrating artificial intelligence (AI)-based evaluation of oocyte and embryo quality, morphokinetics, and cumulative outcomes through time-to-live birth (TTLB) analysis.
MATERIALS AND METHODS:
Retrospective cohort study including oocyte donation cycles performed between 2015 and 2021, stimulated with biosimilar or reference r-FSH using GnRH antagonist (GnRH-a) or progestin-primed ovarian stimulation (PPOS) protocols. Oocyte quality and predicted euploidy probability were evaluated using MAGENTA IVF, and embryo quality using iDAScore v2 while morphokinetics were extratcted form time-lapse systems. Comparisons were performed using Student's *t*-test and chi-square test, followed by multivariable models adjusted for age, BMI, total FSH dose, and stimulation protocol (GnRH-a vs PPOS), including a protocol×FSH interaction term. Intra-donor correlation was accounted for using Generalized estimating equations (GEE). TTLB was analyzed with Kaplan–Meier curves and Cox models. Sensitivity analyses were performed in i) 2017–2018 period, ii) SET cycles within 2017–2018 and iii) through year-stratified models.
RESULTS:
A total of 567 cycles with reference r-FSH and 1,810 with biosimilar were included. The number of mature oocytes (21.6 vs 20.4) was higher in biosimilar group, association confirmed in adjusted models (B=1.19; p=0.032). MAGENTA score was slightly higher in the biosimilar group (5.53 vs 5.28; p<0.001), with a small effect size (d=0.094), remaining significant in multivariable analyses (linear regression: B=0.24, p=0.034; GEE: B=0.244, p=0.034). No differences were observed in predicted euploidy, fertilization rate, morphokinetics and usable blastocyst rate. iDAScore v2 showed no significant differences, confirmed in GEE model (B=0.329; p=0.059). Clinical outcomes were comparable, including pregnancy (OR=1.108; p=0.324), implantation (OR=1.025; p=0.830), and live birth rates (OR=1.108; p=0.308), confirmed in GEE models. Similarly, biosimilar r-FSH did not modify the TTLB in any cohort. Kaplan–Meier curves were superimposable ($p = 0.94$ for 2017–2018; $p = 0.92$ overall), with adjusted Cox models confirming no effect for FSH type (HR: 1.02, $p = 0.83$). SET sensitivity analyses corroborated these findings ($p = 0.9$), and year-stratified models showed consistent performance over time ($p > 0.2$
CONCLUSIONS:
Biosimilar r-FSH is clinically and biologically equivalent to the reference product. Despite a slightly higher oocyte yield, AI-driven analysis and morphokinetics confirmed no differences in embryo quality. Superimposable TTLB curves and identical live birth rates prove that both drugs offer the same efficacy regardless of the stimulation protocol.
IMPACT STATEMENT:
By integrating AI-driven quality assessment and TTLB analysis, we demonstrate that biosimilars offer equivalent biological efficacy and clinical success, supporting their use as a cost-effective strategy without compromising oocyte quality or delivery outcomes.
SUPPORT: This study was funded by the Instituto de Salud Carlos III (ISCIII) (PI24/00755) and the Generalitat Valenciana (CIACIF2023/517).

O-171 2:10 PM Tuesday, October 27, 2026

CROSS DATASET ANALYSIS OF RNA VELOCITY IN NORMAL AND ARRESTED HUMAN PREIMPLANTATION EMBRYOS. Eitan Lenga, Bachelor of Health Sciences (in progress)[1], Stewart Russell, PhD[2] and Matthew Shen, Incoming freshman at University of Pennsylvania[2], [1]North York, ON, Canada, [2]Wilfrid Laurier University, Waterloo, ON, Canada

OBJECTIVE: Determine whether RNA velocity can robustly recover developmental transcriptional directionality in early human preimplantation embryos and assess how reliably velocity metrics behave within and across published single-cell RNA sequencing datasets, including cleavage-stage embryo arrest.
MATERIALS AND METHODS: A standardized RNA-velocity workflow adapted for plate-based Smart-seq2 data was implemented across 4 human embryo single-cell RNA sequencing datasets. For each dataset, raw reads underwent quality control, STAR alignment, and generation of spliced/unspliced count layers with velocyto. Velocities were inferred with scVelo (stochastic mode) following filtering, normalization, selection of highly variable genes, and PCA/neighborhood graph construction. In total, we analyzed 2,091 normally developing cells and 167 cleavage-stage arrested cells. Velocity confidence and velocity length were summarized within each dataset and compared across developmental groups and arrest annotations.
RESULTS: RNA velocity consistently recovered coherent stage-associated structure within each dataset and produced interpretable velocity fields in both normally developing and arrested embryos. In Petropoulos 2016, lineage-resolved structure was biologically coherent, separating trophectoderm from inner cell mass and resolving epiblast versus hypoblast trajectories. Velocity confidence remained high across datasets, consistent with stable local directionality despite differences in sequencing depth and sampling. However, absolute velocity-length magnitudes varied substantially between datasets, indicating that cross-dataset comparisons of velocity length are strongly influenced by technical factors (e.g., read depth and spliced/unspliced ratios) and require additional normalization.
CONCLUSIONS: A single standardized pipeline yields consistent within-dataset developmental directionality from RNA velocity, while highlighting that absolute velocity magnitudes are not directly comparable across studies without technical normalization.
IMPACT STATEMENT: This work provides a reproducible RNA-velocity framework for early human embryo transcriptomes and supports within-dataset velocity directionality and confidence as practical tools for interpreting developmental progression and embryo arrest phenotypes. RNA velocity furthers our understanding of embryo arrest and serves as a tool for understanding developmental outcomes.

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Guo et al., 2025 (https://doi.org/10.1016/j.devcel.2024.12.031)
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O-172 2:20 PM Tuesday, October 27, 2026

COMPARATIVE PERFORMANCE OF LARGE LANGUAGE MODELS IN STANDARDIZED OUTPATIENT REI CASES: AN ASSESSMENT OF CONCORDANCE WITH ASRM RECOMMENDATIONS AND DIFFERENCES UNDER CLINICIAN-STYLE PROMPT. Tracy Falodun, M.D.[1], Dr. Cory B French, MD[2] and Alexandra Peyser, MD[3], [1]Department of OBGYN, North Shore University Hospital/Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, Manhasset, NY, [2]New York, NY, [3]Northwell, New Hyde Park, NY

OBJECTIVE: To compare the concordance of ChatGPT 5.3, Gemini 3 Flash, and Microsoft Copilot with ASRM-based recommendations in standardized outpatient reproductive endocrinology and infertility (REI) scenarios, and to assess whether patient-style versus clinician-style prompting affects model performance.
MATERIALS AND METHODS: This was an experimental/exploratory benchmarking study using 20 standardized fictional outpatient REI cases. Each case was submitted to ChatGPT 5.3, Gemini 3 Flash, and Microsoft Copilot using 2 prompt styles: patient-style and clinician-style, generating 120 total responses. Outputs were scored against a predefined ASRM-based rubric using a 3-point scale per item (0 = absent/incorrect, 1 = partially correct or vague, 2 = explicit and correct). Case performance was standardized as concordance percentage. Nonparametric analyses were performed using Friedman tests for overall and grouped comparisons and Wilcoxon signed-rank tests for paired prompt-style and post hoc model comparisons, with Bonferroni correction applied to clinician-style pairwise testing. Outputs were also evaluated for correctness, defined as the proportion of rubric elements scored as fully correct (score = 2), and average correctness was calculated for each model across all cases and prompt conditions.
RESULTS: Concordance differed significantly across the 6 model-prompt conditions overall (Friedman test, $\chi^2(5) = 13.47$, $p = 0.019$). Within-model comparisons showed no significant difference between patient-style and clinician-style prompting for ChatGPT 5.3 ($W = 37$, $n = 12$), Gemini 3 Flash ($W = 1$, $n = 5$), or Microsoft Copilot ($W = 25$, $n = 10$). Among patient-style prompts, concordance did not differ significantly across models (Friedman test, $\chi^2(2) = 2.58$, $p = 0.28$). Among clinician-style prompts, concordance differed significantly across models (Friedman test, $\chi^2(2) = 8.73$, $p = 0.013$). Post-hoc Wilcoxon testing showed Gemini 3 Flash had significantly higher concordance than both ChatGPT 5.3 ($W = 0$, $n = 11$) and Microsoft Copilot ($W = 2$, $n = 11$) after Bonferroni correction, while ChatGPT 5.3 and Microsoft Copilot did not differ significantly ($W = 16$, $n = 10$). In addition, across all responses, Gemini 3 Flash demonstrated the highest average correctness (95.7%), compared with Microsoft Copilot (88.5%) and ChatGPT 5.3 (83.4%)
CONCLUSIONS: Performance varied across ChatGPT 5.3, Gemini 3 Flash, and Microsoft Copilot, but prompt style alone did not significantly change concordance within individual models. Gemini 3 Flash demonstrated higher concordance with ASRM-based recommendations on standardized REI scenarios than both ChatGPT 5.3 and Microsoft Copilot.
IMPACT STATEMENT: There is significant heterogeneity in the performance of large language models when addressing fertility-related concerns, particularly when questions are framed in a clinician-style format. These findings highlight the need for careful evaluation of model-specific performance before large language models are used as adjunctive tools in fertility education or counseling

O-173 2:30 PM Tuesday, October 27, 2026

A MULTIDIMENSIONAL ENDOMETRIAL RECEPTIVITY FRAMEWORK PREDICTS IMPLANTATION OUTCOMES BEYOND WOI TIMING. Tim Chen, Ph.D.[1], SIjia Lu, Ph.D[2], Jingjing Chen, M.D., Ph.D.[3], Tianli Yang, Ph.D.[4], Yangyun Zou, Ph.D[2], Wan Jin, Ph.D.[5] and Yuanyuan Zhang, Ph.D.[6], [1]Yikon Genomics Co. Ltd., Hsinchu, Taiwan, [2]Yikon Genomics Co., Ltd., [3]Xiangya Hospital, Changsha, China, [4]Xiangya Hospital of Central South University, [5]Yikon Genomics Co., Ltd, Suzhou, China, [6]Yikon Genomics Co. Ltd.

OBJECTIVE: To evaluate whether epithelial composition and immune balance improve stratification of implantation outcomes beyond window of implantation (WOI) timing in patients undergoing RNA-seq-based endometrial receptivity testing (rsERT).
MATERIALS AND METHODS: In this prospective observational ESSENCE cohort, bulk endometrial RNA-seq profiles from 816 individuals undergoing rsERT were analyzed. Participants were randomly assigned to a development cohort (n=572) and an independent validation cohort (n=244). WOI status was inferred using a locked rsERT model, followed by personalized embryo transfer. Single-cell reference-based deconvolution was used to estimate endometrial cell-type fractions, focusing on unciliated epithelium. Immune status was classified using four directional ratios: Th1/Th2, Treg/Th17, M1/M2, and uNK1/uNK3. Thresholds for epithelial insufficiency and excessive pro-inflammatory skew were derived in the development cohort and applied unchanged to validation. Outcomes were clinical pregnancy and live birth.
RESULTS: Despite WOI-guided personalized embryo transfer, the clinical pregnancy rate was 48.4%, indicating that timing alone may not fully capture endometrial receptivity. We examined epithelial composition and immune balance as two complementary dimensions for profiling endometrial function. Consistent with known endometrial biology, single-cell-informed deconvolution showed that unciliated epithelium was the dominant mid-secretory compartment. Higher unciliated epithelial fraction was associated with a stepwise increase in clinical pregnancy in both the development and validation cohorts ($p<0.01$ each), whereas reduced unciliated epithelium identified an epithelial-insufficient state associated with lower clinical pregnancy ($p<0.01$) and live birth ($p<0.05$) rates. This epithelial-insufficient state suggested a functionally compromised endometrium characterized by weakened cellular support critical for implantation. Given that implantation requires finely regulated immune signaling and that excessive pro-inflammatory activation may contribute to implantation failure or pregnancy loss, we further evaluated immune balance across four directional axes. Failed implantation cycles showed consistent excessive pro-inflammatory skew across Th1/Th2, Treg/Th17, M1/M2, and uNK1/uNK3 axes ($p<0.01$ each). Pregnancy outcomes declined stepwise as the number of pro-inflammatory axes increased, supporting a cumulative inflammatory burden model. Together, integration of epithelial composition and immune balance improved stratification of implantation failure beyond WOI timing alone.
CONCLUSIONS: Endometrial receptivity is multidimensional rather than timing-only. Reduced unciliated epithelium and pro-inflammatory skew were associated with poorer pregnancy outcomes.
IMPACT STATEMENT: Integrating epithelial and immune features into rsERT may improve identification of patients at risk for implantation failure after WOI-guided embryo transfer and inform personalized endometrial interventions.

ASRM RESEARCH INSTITUTE PRESENTS (2 OF 2)

O-174 1:30 PM Tuesday, October 27, 2026

THE ASSOCIATIONS OF DEMOGRAPHIC AND LIFESTYLE CHARACTERISTICS WITH MICROPLASTIC CONCENTRATIONS IN SEMEN. Audrey J Gaskins, ScD[1], Phoebe Fowler, B.S.[2], Ethan J Kearns, B.S.[3], Parth Jariwala, M.P.H[2], Christian D Freeman, Ph.D.[4], Douglas I. Walker, PhD[2] and Akanksha Mehta, MD, MS[3], [1]Emory University Rollins School of Public Health, Department of Epidemiology, Atlanta, GA, [2]Emory University Rollins School of Public Health, Atlanta, GA, [3]Emory University School of Medicine, Department of Urology, Atlanta, GA, [4]Emory University Rollins School of Public Health, Gangarosa Department of Environmental Health, Atlanta, GA

OBJECTIVE: To describe the variability of microplastics in human semen and to evaluate their associations with demographic and lifestyle characteristics.
MATERIALS AND METHODS: Our study recruited 48 men presenting for infertility evaluation at Emory Urology (2023-2024). Men provided a single semen sample in a sterile glass cup and completed a questionnaire about demographics and lifestyle characteristics over the preceding 3 months. Semen samples were analyzed for microplastics using an analytical workflow based on pyrolysis with gas-chromatography and high-resolution mass spectrometry to detect twelve specific polymers: acrylonitrile butadiene styrene (ABS), nylon 6 (N6), nylon 66 (N66), polycarbonate (PC), polyethylene (PE), polyethylene terephthalate, poly(methyl methacrylate) (PMMA), polypropylene, polystyrene, polyurethane (PU), polyvinyl chloride (PC), and styrene-butadiene rubber. Multivariable linear regression models were used to evaluate factors associated with seminal microplastic concentrations, with results presented as adjusted mean differences (aMDs) and 95% confidence intervals (CIs).
RESULTS: Study participants were, on average, 35.9 (SD: 4.6) years old, with a BMI of 28.2 (SD: 6.5) kg/m^2. The majority (66%) identified as a racial minority. The detection rate of microplastics in semen ranged from 6% for PMMA to 100% for ABS, N6, PC, and PU. The most abundant seminal microplastic was PE with median (interquartile range) concentration of 2.7 µg/g (5.6). E-cigarette use was associated with higher seminal N66 (aMD: 1.3 95% CI 0.5-2.1) and PU (aMD: 0.8 95% CI 0.2-1.4) microplastic concentrations. Most plastic use behaviors were positively associated with seminal PE microplastic concentrations including use of plastic cups for drinking, plastic tableware for eating, plastic wrapped foods for eating, and plastic wrap and plastic bags for food storage. For example, men who stored food in plastic wrap more than two times a week had, on average, 7.4 µg/g (95% CI 2.8-12.0) higher seminal microplastic concentrations of PE compared to men who did this less than once per month. Age, BMI, education, race, ethnicity, and income had little to no observed associations with seminal microplastic concentrations.
CONCLUSIONS: Our results highlight the prevalence of microplastics in human semen and suggest that e-cigarette and common plastic use behaviors may be important determinants of seminal microplastic concentrations
IMPACT STATEMENT: This is the first US study applying a high-precision analytical workflow to accurately detect microplastics in human semen and identify specific lifestyle behaviors that may contribute to their abundance.
SUPPORT: This study was funded in part by a grant from Legacy in partnership with the American Society for Reproductive Medicine.

O-175 1:40 PM Tuesday, October 27, 2026

NON-OBESE WHITE HISPANIC WOMEN WITH PCOS HAVE HIGHER LEVELS OF CRP. Alyssa K Kosturakis, MD, MS[1], Marissa G Holden, MD[2], Allynson Novoa, BS[1], Erica T Wang, M.D.[1], Ricardo Azziz, M.D., M.P.H, M.B.A.[3], Margareta D. Pisarska, M.D.[1] and Jessica L Chan, M.D.[1], [1]Cedars-Sinai Medical Center, Los Angeles, CA, [2]Cedars Sinai, Los Angeles, CA, [3]UAB

OBJECTIVE: Ethnic disparities have been described in polycystic ovary syndrome (PCOS), with Hispanic patients exhibiting greater insulin resistance and higher inflammatory burden, contributing to increased cardiometabolic risk. Elevated C-reactive protein (CRP) has been associated with metabolic syndrome in Hispanic patients with PCOS (1). The objective was to compare cardiometabolic biomarkers in an age- and BMI-matched cohort of White Hispanic (WH) and White non-Hispanic (WNH) patients

with PCOS. We hypothesized that WH patients would exhibit a less favorable cardiometabolic biomarker profile compared with WNH patients.
MATERIALS AND METHODS: We identified 40 age- and BMI-matched patients with well-phenotyped PCOS, including 20 WNH and 20 WH individuals with frozen plasma available for analysis. Patients were from a larger prospective cohort of 387 WNH and 145 WH women residing in Los Angeles who met NIH criteria for PCOS. Consecutive matching began with the lowest BMI WH patient and proceeded sequentially. A subgroup analysis of 12 WNH and 12 WH patients with BMI <26 kg/m^2 was performed to minimize confounding from adiposity. Demographic data, androgen levels, and 2-hour oral glucose tolerance tests (OGTT) were collected. Continuous variables were compared using paired *t* tests or Wilcoxon rank-sum tests, as appropriate. Peripheral blood samples were analyzed for 10 metabolic biomarkers (adiponectin, ApoA1, ApoC3, clusterin, CRP, DPPIV, NGAL/LCN2, RBP4, sex hormone–binding globulin (SHBG), and soluble transferrin receptor-1 (sTfR-1) using the MSD U-Plex Metabolic Combo 2 panel. Analyte concentrations were calculated using MSD Workbench 4.0 software.
RESULTS: WH and WNH were age- and BMI matched and thus, had similar baseline characteristics including, age (27.8±4.5 vs 27.7±4.5yrs), BMI (25.5±3.9 vs 25.7±4.0 kg/m^2)(all *P* values >0.05). OGTT data revealed comparable glucose and insulin levels between WH versus WNH cohorts respectively (fasting insulin: 13.4±16.2 vs 10.9±11.7 IU, *P*=0.5; 1-hr insulin: 80.1±56.3 vs 123.2±147.7 IU, P= 0.9; 2-hr insulin: 61.7±69.9 vs 79.2±128.6 IU, *P=0.9*). No significant differences were observed in levels of any of the analytes. However, among the subgroup of patients with BMI <26 kg/m^2, CRP levels were significantly higher in WH compared to WNH patients (median 4.1E+6, 95% CI 7.3E+5—1.5E+7 vs 7.7E+5, 95% CI 4.0E+5—2.9E+6 pg/mL, *W*=72, *P*=0.002).
CONCLUSIONS: Despite similar age, BMI, and insulin values, WH patients with PCOS had higher CRP levels in a subset of patients with BMI <26. Other cardiometabolic biomarkers did not differ by BMI or ethnicity. Longitudinal studies with larger sample sizes are needed to determine whether elevated CRP levels confer an increased risk for future insulin resistance or metabolic syndrome in WH patients with normal or mildly elevated BMIs.
IMPACT STATEMENT: Elevated CRP levels in Hispanic patients with PCOS, despite age and BMI matching, suggest early inflammatory differences that may precede metabolic dysfunction and warrant further investigation as a potential early marker of cardiometabolic risk in non-obese patients.
REFERENCES:
1. Rao HC, Meyer ML, Kominiarek MA, Daviglus ML, Gallo LC, Cordero C, et al. Polycystic Ovary Syndrome, Metabolic Syndrome, and Inflammation in the Hispanic Community Health Study/Study of Latinos. J Clin Endocrinol Metab 2024;110(5):1384–97.

O-176 1:50 PM Tuesday, October 27, 2026

DEFINING CHRONIC ENDOMETRITIS-INDUCED ENDOMETRIAL ALTERATIONS AND EXPLORING MENSTRUAL EFFLUENT AS A NON-INVASIVE TOOL TO STUDY CHRONIC ENDOMETRITIS.
Christine Metz, PhD[1], Miriam Tarrash, MD[2], Madeline Bright, BS[1], Stephanie Busch, BS[1], Andrew A Shih, PhD[3] and Dr. Randi H Goldman, MD, MBA[4], [1]Northwell, New Hyde Park, NY; Feinstein Institutes for Medical Research, Manhassett, NY; Zucker School of Medicine, Uniondale, NY, [2]Northwell Health, Manhasset, NY, [3]The Feinstein Institutes For Medical Research, Manhasset, NY, [4]Northwell, New Hyde Park, NY

OBJECTIVE: Chronic endometritis (**CE**) is a persistent inflammation of the endometrium, typically associated with microbial infections. While CE has been implicated in the etiology of infertility and embryo implantation failure, exactly how CE affects the endometrium and fertility is poorly understood. The purpose of this study is to better define CE-induced endometrial alterations and to explore menstrual effluent (**ME**, shed endometrium) as a non-invasive alternative to endometrial biopsies (**EBs**) for studying and possibly diagnosing CE.
MATERIALS AND METHODS: Female patients (18-40 years) were consented and enrolled in the ENDO-BIO study (IRB #24-0270) if they met study criteria as either **1**) patients with unexplained infertility and suspected CE (undergoing an endometrial biopsy [EB], as part of their clinical workup)(n=14) or **2**) healthy controls (egg donors and willing to provide an EB)(n=12). Participants also provided ME samples. Patients with infertility and CE-positive results were treated with antibiotics and re-biopsied (standard care to confirm CE-negative) and provided a second ME sample. EBs and ME-tissues were rapidly fixed using 10x GEMx-Flex kits and 4%PFA and processed for single-cell RNA sequencing (**scRNAseq,** 10x Genomics). Endometrial stromal cells (**eSCs**) were isolated from EBs and ME and cultured for downstream functional assays (proliferation and decidualization assays ± microbial PAMPs [pathogen-associated molecular patterns produced by CE-related bacteria, e.g., lipopolysaccharide or LPS]). Decidualization responses by ME-eSCs from infertility cases and controls were compared.
RESULTS: Analysis of scRNAseq data using endometrial atlases revealed cell cluster-based identification of both immune and non-immune cells and associated marker genes. Up to 16 distinct clusters were found, including B cell subsets and plasma cells (diagnostic for CE). Complete analyses of scRNAseq data continue. ME-derived eSCs express TLRs that interact with PAMPs implicated in CE (e.g., TLR4, which binds LPS from *E coli*). Treatment of ME-eSCs from healthy controls with various PAMPs showed altered eSC proliferation and decidualization responses *in vitro*.
CONCLUSIONS: scRNAseq profiles reveal diverse populations of endometrial cells and gene expression patterns suggestive of CE, providing potential 'diagnostic' biomarkers to verify in follow-up studies. Functional cell-based assays of ME-derived endometrial stromal cells provide a non-invasive model system for studying CE and CE-related fertility.
IMPACT STATEMENT: A more comprehensive understanding of the cellular and molecular phenotypes of the endometrium using EBs and ME from infertile patients with CE (vs. healthy controls) will likely lead to improved understanding of CE and earlier, non-invasive diagnostics for these patients. ME-eSCs provide a non-invasive source of endometrial cells for studying endometrial receptivity, function, and decidualization in the setting of CE.
SUPPORT: ASRM Research Grant: Investigation of Undiagnosed Infertility May 2024; Katz Institute of Women's Health (Northwell) award.

O-177 2:00 PM Tuesday, October 27, 2026

IN VITRO FERTILIZATION ALTERS PLACENTAL RENIN-ANGIOTENSIN SYSTEM GENE EXPRESSION AT MID-GESTATION IN A MOUSE MODEL.
Lisa Vrooman, PH.D.[1], Helen Castillo-Madeen, BA, MNS[2], Terry Morgan, MD, PhD[3], Benjamin A Garcia, Ph.D.[4], Eric A Rhon-Calderon, Ph.D[5], Desmond C. Willson, B.S.[1], Gracelyn M. Fine, B.S.[1], Josue Baeza, Ph.D.[5] and Don Conrad, PhD[2], [1]Division of Reproductive and Developmental Sciences, Oregon National Primate Research Center, Oregon Health & Science University, Beaverton, OR, [2]Division of Genetics, Oregon National Primate Research Center, Oregon Health & Science University, Portland, OR, [3]Oregon Health Sciences University, Portland, OR, [4]6., Department of Biochemistry and Molecular Biophysics, Washington University St. Louis, St. Louis, MO, [5]Epigenetics Institute, Department of Cell and Developmental Biology, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA

OBJECTIVE: To test the hypothesis that the placental renin-angiotensin system is significantly affected by IVF procedures using a mouse model.
MATERIALS AND METHODS: Pseudo-bulk DESeq2 analysis of spatial transcriptomic data as well as proteomics analysis by data-independent acquisition mass spectrometry was performed on mid-gestation (embryonic day 11.5) mouse placentas generated by conventional IVF or spontaneous conception (n=3-5 concepti per group). To determine if placental prolyl endopeptidase (PREP) function is essential to development, we generated a placental-specific PREP loss-of-function (knockout) mouse (n= 4 litters).
RESULTS: Significant downregulation of *Ace* (padj <0.05) and *Ace2* (padj < 0.05) was observed in the IVF group compared to the spontaneously conceived group. The remaining RAS genes (*Ren1, Agt, Prep, Agtr1a*, *Agtr1b*, *Agtr2*, *Mas1*) showed a consistent but non-significant trend (padj>0.05) toward reduced expression in IVF placentas. At the protein level, we observed significant reduction in ACE and PREP proteins (padj < 0.05) and a non-significant trend (padj>0.05) toward reduced ACE2 abundance in IVF placentas. We confirmed that the global knockout mouse of PREP is embryonic lethal and further demonstrated that condition ablation of PREP in the placenta results in similar embryonic lethality prior to mid-gestation.
CONCLUSIONS: Adverse outcomes observed with IVF procedures may be caused in part by disruption of the placental renin-angiotensin pathway.
IMPACT STATEMENT: Interventions aimed at stabilizing the placental renin-angiotensin pathway may be useful to IVF patients.
SUPPORT: This work was supported by the ASRM/Maya's Wings Foundation grant (LAV), ONPRC/OHSU startup funds (LAV), NIH grant R01NS111997 (BAG) and U24HG012483 (DFC).

ORAL ABSTRACT SESSION: GLOBAL HEALTH

O-178 3:45 PM Tuesday, October 27, 2026

AVAILABILITY WITHOUT ACCESS: GLOBAL DISPARITIES IN PUBLIC ART COVERAGE ACROSS WORLD HEALTH ORGANIZATION REGIONS.
Yinny Chan, MD, MS[1], Elizabeth Weber, BS[2], Catherine Dalton, MS[3] and Avner Hershlag, M.D.[4], [1]Northwell, New Hyde Park, NY, [2]Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, Hempstead, NY, [3]Independent Statistician, [4]Island Fertility, The Renaissance School of Medicine at Stony Brook University, Commack, NY

OBJECTIVE: To evaluate the availability of assisted reproductive technology (ART) and whether the extent of publicly funded ART coverage differs across World Health Organization (WHO) regions.
MATERIALS AND METHODS: A cross-sectional analysis was conducted across all countries to assess the availability of ART. A composite score was developed to quantify the extent of publicly funded ART coverage. Our three key domains were (1) coverage structure, including financing model and national coverage level; (2) scope of benefits, including coverage of donor gametes, PGT-M, gamete cryopreservation, medications, and cycle limits; and (3) access within the funded system, including eligibility restrictions such as age limits, marital status, income, clinic type, and waiting periods. Differences in coverage scores across WHO regions were assessed using the Kruskal–Wallis test, with post-hoc pairwise comparisons using Dunn tests with Bonferroni correction.
RESULTS: ART availability varied across different WHO regions and the extent of coverage from publicly funded ART differed significantly across regions ($\chi^2(5)=17.00$, p=0.005). Notably, regions with the greatest ART availability did not demonstrate the greatest coverage level.
Europe: ART was widely available (n=53, 100% of region), with near-universal public funding (n=47, 87.8%). Average coverage scores were among the highest (median 31; mean 31.70±14.28).
Western Pacific: Despite fewer ART-providing countries (n=17, 63% of the Western Pacific), this region demonstrated the most comprehensive funding among participating countries (n=11, 65%), achieving the highest coverage scores (median 39; mean 39.18±14.28). Post-hoc analysis revealed that Western Pacific countries had significantly higher coverage scores than Eastern Mediterranean countries (p=0.002).

Americas: ART services were present in 27 countries (77% of the Americas), but only 7 (20%) offered public funding. Coverage was inconsistent (median 29; mean 29.57±17.66) and intermediate among other WHO regions.
South-East Asia: ART availability was available in 80% of South-East Asia, however, very few countries had coverage (n=3, 27%), and coverage offered was intermediate range (median 29; mean 29.33±19.61).
Eastern Mediterranean: ART exists (n=21, 95%), but is largely unsupported financially (n=6, 28.6%), with the lowest coverage scores observed (median 21; mean 21.67±18.45).
Africa: A critical access gap persists, although ART services were reported in 28 countries (60.9%), only 1 country (2.2%) provides public funding.
CONCLUSIONS: The primary global inequity in ART is not the presence of technology, but the absence of financial access. Availability without coverage creates a two-tiered system in which ART remains functionally inaccessible in large parts of the world.
IMPACT STATEMENT: Policies that expand ART infrastructure without addressing affordability risk worsening global reproductive inequities. Public coverage, not technological capacity, emerges as the critical determinant of equitable access to fertility care.

O-179 3:55 PM Tuesday, October 27, 2026

WHEN EGG FREEZING ISN'T AN OPTION: REPRODUCTIVE TIMING, POLICY CONSTRAINTS, AND ATTITUDES TOWARD OOCYTE CRYOPRESERVATION AMONG UNMARRIED WOMEN IN CHINA. Yinny Chan, MD, MS[1], Ashley Sacks, M.D.[2], Hanwen Yang, MD[3], Catherine Dalton, MS[4] and Avner Hershlag, M.D.[5], [1]Northwell, New Hyde Park, NY, [2]Northwell Health, New Hyde Park, [3]Tufts University School of Medicine, Boston, MA, [4]Independent Statistician, [5]Island Fertility, The Renaissance School of Medicine at Stony Brook University, Commack, NY

OBJECTIVE: Elective oocyte cryopreservation (OC) has expanded globally as a strategy to mitigate age-related fertility decline. In China, however, OC is restricted to married women due to government concerns about delayed childbearing, non-traditional family structures, and persistently low fertility rates. We aimed to evaluate attitudes toward OC among unmarried women in China, identify drivers of delayed childbearing, and assess whether access to OC may influence reproductive timing.
MATERIALS AND METHODS: An anonymous cross-sectional survey was administered on Credamo, an online research platform in China. Inclusion criteria were unmarried, childless women aged 18 – 40 residing in mainland China. Participants who failed attention checks were excluded. Responders received nominal compensation (2 CNY=0.29 USD). Chi-square and Fisher's exact tests were used.
RESULTS: A total of 1,042 respondents were included. The cohort was predominantly aged 18 – 29 (90.2%), educated (88.4% bachelor's degree or higher), and without a partner (67.9%).

1. **Delayed childbearing is the norm, not the exception:** 78.1% reported that they were expecting to have children later than originally planned.
2. **Structural, not biological drivers, dominate delay:** Primary drivers were financial constraints (36.1%) and lack of personal readiness (35.3%), followed by career/education (15.1%) and relationship factors (13.4%).
3. **Strong support for access despite legal restrictions:** 73.0% supported legalization of OC for unmarried women, and 62.4% would consider OC if permitted.
4. **Interest in OC reflects life stage and stability:** Women aged 25 – 34 were more likely than those aged 18 – 24 to report that they would consider freezing their eggs (p=0.006), and full-time employed women were more likely than other employment groups to do so (p=0.025).
5. **Motivation matters and reveals different patient archetypes:** Women who cited personal readiness factors (i.e. uncertainty about having children) as their primary reason for delaying childbearing were less likely to be interested in freezing their eggs (p=0.023). The leading motivation for OC was concern about age-related fertility decline (60.0%), followed by financial/career (30.3%) and partner-related factors (28.7%).
6. **Access to OC is not perceived as a driver of further delay:** Among those willing to consider OC, 53.6% reported that access would not impact their timing of childbearing.

CONCLUSIONS: In a setting where OC is legally inaccessible to unmarried women, delayed childbearing is already widespread and driven primarily by structural and social factors rather than access to reproductive technology. Interest in OC reflects attempts to manage, rather than extend, reproductive timelines. These findings suggest that restriction of OC does not address the underlying causes of delayed childbearing.
IMPACT STATEMENT: Unmarried women in China are already delaying childbearing independent of OC access, and most do not view OC as a means to postpone reproduction further. Instead, OC can be a compensatory tool in response to financial, social, and relational constraints. Restricting access may therefore limit reproductive autonomy without achieving demographic goals.

O-180 4:05 PM Tuesday, October 27, 2026

NATIONAL FERTILITY AWARENESS AND OVARIAN RESERVE KNOWLEDGE IN ARGENTINA: A CROSS-SECTIONAL SURVEY OF WOMEN AGED 20–40. Adan Nabel, MD[1], Melina Schapira, MD[2] and Felicitas Azpiroz, MSc, PhD[3], [1]Cegyr, Buenos Aires, Argentina, [2]CEGYR Eugin Group, Caba, Argentina, [3]Barcelona, Cataluna, Spain

OBJECTIVE: To assess the prevalence and distribution of ovarian reserve (OR) knowledge and awareness of OR assessment among Argentine women aged 20–40, and to describe associations with counselling exposure and reproductive planning.
MATERIALS AND METHODS: Nationwide cross-sectional online survey of 1,118 women aged 20–40 without children in Argentina (August–September 2025). Participants were recruited from all Argentine regions and socioeconomic strata. Structured items assessed perceived timing of fertility decline, OR awareness, awareness of OR testing, information sources, counselling history, and reproductive timing intentions. Analyses were descriptive and age-stratified (20–29, 30–34, 35–40), with exploratory comparisons by socioeconomic indicators. AI-assisted probing of open-ended audio responses contextualised common misunderstandings.
RESULTS: Awareness of OR assessment was limited: 55% reported not knowing that OR tests exist and >60% lacked basic understanding of OR. Although 67% had heard of fertility decline, timing knowledge was inconsistent: 31–38% believed fertility decline becomes relevant only after age 40, and open-ended responses frequently described reproductive ageing as a sudden change occurring after 40. Misconceptions extended beyond timing, with many participants reporting that a healthy lifestyle could prevent age-related fertility decline. Responses suggested a mismatch between perceived fertility "safety" and intended timing for motherhood. Many women described feeling biologically safe until the late 30s and reported preferred ages for motherhood beyond the biologically optimal fertile window. Misconceptions were more frequent among women aged 20–29, who also reported high rates of postponement despite being furthest from anticipated childbearing. Clinical discussion was uncommon: 80% reported never discussing future fertility with a clinician, >65% relied primarily on social media, and only 5% reported pursuing fertility counselling. Forty-three percent reported postponement or uncertainty about motherhood. The consistency across knowledge indicators and the sample size suggest sampling variation alone is unlikely to explain the findings.
CONCLUSIONS: Knowledge of OR and its assessment was low across the sample, particularly among younger women. The combination of inaccurate timing beliefs, limited counselling, and non-clinical information sources points to a meaningful gap in preventive reproductive health education in Argentina.
IMPACT STATEMENT: This national survey provides the first population-level estimates of OR knowledge and assessment awareness in Argentina. Limited understanding of OR biology and testing, alongside low counselling exposure, represents a preventable gap. Integrating structured OR education into routine gynaecological care may support timely fertility planning, particularly for women in the biologically optimal age window.

O-183 4:25 PM Tuesday, October 27, 2026

GLOBAL IMPLICATIONS OF ELEVATED CESAREAN RATES IN ART: IMPACT ON SUBSEQUENT EUPLOID FET OUTCOMES. Kaitlin A Doody, M.D. and Kevin J. Doody, M.D., CARE Fertility, Bedford, TX

OBJECTIVE:
To compare cesarean section (C-section) rates after embryo transfer with U.S. national benchmarks and assess the downstream impact of index C-section on subsequent live birth rates after frozen euploid embryo transfer (FET), with relevance to rising global cesarean trends and reproductive outcomes.
MATERIALS AND METHODS:
Retrospective cohort study utilizing SART CORS data and CDC National Vital Statistics Reports analyzed delivery route of nulliparous women achieving live birth after single embryo transfer from 2016 to 2023. C-section rates were determined for live births following embryo transfer and stratified by maternal age, with comparison to CDC overall and low-risk nulliparous singleton term cephalic rates.
Nulliparous women achieving a singleton live birth after embryo transfer (index pregnancy) were categorized by delivery mode: prior vaginal (n=6,058) versus prior C-section (n=4,761). Subsequent outcomes were evaluated after FET of a euploid embryo from the same retrieval cycle. Primary outcome was live birth rate per transfer. Secondary outcomes included clinical pregnancy rate, miscarriage rates, and delivery characteristics. Adjusted risk differences accounted for confounders.
RESULTS:
C-section rates following embryo transfer of all patients averaged 49.0% (range 47.7–50.0%), markedly higher than CDC national rates of 31.5–32.6% (average gap ~17 percentage points). In the nulliparous singleton term IVF patients cesarean delivery rates were 34.9–42.0% versus CDC rates of 27.9–28.6%. Disparities persisted across all age groups.
In the cohort undergoing subsequent euploid FET:

- Live birth rate per transfer was 57.7% after prior vaginal delivery versus 55.7% after prior C-section (adjusted risk difference -1.99%, 95% CI -3.31% to -0.67%).
- Clinical pregnancy rate was 67.4% versus 64.8% (adjusted risk difference -2.55%, 95% CI -3.81% to -1.29%).
- Clinical and biochemical miscarriage rates were comparable. Subsequent C-section rate was 17.3% versus 90.1%.

CONCLUSIONS:
Cesarean delivery rates in ART pregnancies substantially exceed national benchmarks and contribute to the global escalation of C-sections, which now affect over one in five births worldwide. Even a single prior C-section is associated with a modest but

statistically significant reduction in live birth rate after subsequent frozen euploid embryo transfer from the same cycle.

IMPACT STATEMENT:
This study reveals that ART-conceived pregnancies have markedly elevated cesarean delivery rates compared to the general population and that a prior cesarean modestly but significantly reduces success rates in subsequent euploid frozen embryo transfers. These findings have important global health implications as ART utilization expands worldwide, emphasizing the urgent need for targeted interventions to reduce unnecessary cesareans in ART patients and preserve cumulative reproductive potential.

O-184 4:35 PM Tuesday, October 27, 2026

"INFERTILITY IS A WOMAN'S PROBLEM; MEN WILL NEVER CONSIDER THEMSELVES INFERTILE:" A QUALITATIVE EXAMINATION OF FACTORS THAT INFLUENCE INTENTIONS TO SEEK INFERTILITY CARE IN TWO REGIONS OF TANZANIA. Erica Sedlander, DrPH, MPH[1], Sarah Lebu, PhD[2], Lisa Richard, Masters[3], Kassim N Miraji, BA (Demography)[4], Juliet Allan Njau, MPH[5], Theodory Theonest, MA[3], Naishoki Paul Sangayon, MPH[6] and Jenny X Liu, PhD[7], [1]University of California (san Francisco), San Francisco, CA, [2]University of North Carolina, [3]Health for a Prosperous Nation (HPON), [4]University of Dar Salaam, Dar es Salaam, Ubungo, Tanzania, United Republic of, [5]Health for a Prosperous Nation (HPON), Dar es Salaam, Dar es Salaam, Tanzania, United Republic of, [6]CHRISTIAN SOCIAL SERVICES COMMISION (CSSC), DAR ES SALAAM, Tanzania, United Republic of, [7]University of California, San Francisco, San Francisco, CA

OBJECTIVE: In sub–Saharan Africa, one in six couples experience infertility, leading to significant emotional and economic consequences. One of the primary drivers of infertility in sub-Saharan Africa is sexually transmitted infections (STIs), which can be prevented through early detection and treatment. Furthermore, the standard initial infertility evaluation identifies most infertility problems. Despite this, only half of couples experiencing infertility in low-resource settings seek medical advice, often foregoing care altogether, or seeking traditional care. Our study aimed to understand men and women's intentions to seek medical care for infertility, focusing on attitudes, social norms, and perceived behavioral control.
MATERIALS AND METHODS: We conducted eight focus group discussions with men and women of reproductive age and ten in-depth interviews with healthcare providers across one urban and one rural district in Lake Zone, Tanzania. Guided by the Integrated Behavioral Model (IBM), we used vignettes to uncover social norms; discussions explored beliefs about infertility's causes, prevention, and treatment. Our team of Tanzanian and US-based researchers applied thematic analysis using Dedoose software to code transcripts, write memos, and uncover emerging themes.
RESULTS: A total of 84 participants were included in the study. Approximately half were men and half were women with average ages of 30 and 32 years, respectively. Almost a third of women and a quarter of men reported experiencing infertility or difficulty conceiving. We identified five themes that inform intentions to seek medical care for infertility. (1) normative beliefs that infertility was common in the community as most people knew someone personally who experienced infertility; (2) limited reproductive knowledge about the etiology of infertility among men and women reduced medical care seeking; (3) inequitable gender norms placed blame for infertility on women; (4) normative perceptions were that women, not men, were expected to seek medical care for infertility; and (5) traditional healers played a prominent role in infertility care, often replacing seeking care from medical providers. Some participants believed that infertility was the caused by a "curse" or it was "God's will," which then framed medical treatment as futile.
CONCLUSIONS: Infertility care-seeking in Tanzania is shaped by intersecting attitudes, gender norms, and perceived agency at multiple levels. Policies and programs that strengthen provider capacity by educating them about the etiology of infertility and subsequent steps, and normalizing couple-based infertility care are logical entry points. Given that low-cost diagnostic tests such as hormonal testing, uterine and tubal imaging, and semen analysis can diagnose most causes of infertility, developing interventions to increase medical care seeking is critical.
IMPACT STATEMENT: This is the first theory informed qualitative study to uncover multi-level factors that impact intentions to seek medical care for infertility in Tanzania. Findings can inform interventions and policies to support couples to build their families.
SUPPORT: NA
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ORAL ABSTRACT SESSION: ART – LAB

O-185 3:45 PM Tuesday, October 27, 2026

SIGNIFICANT REDUCTION IN BLASTOCYST FORMATION AND INCREASE IN ANEUPLOIDY ASSOCIATED WITH INCREASING PATERNAL AGE, DETECTED WITHIN A LARGE SAMPLE OF DONOR OOCYTE IN VITRO FERTILIZATION (IVF) CYCLES. Said T Daneshmand, MD, Kevin S Richter, BA, PhD, Rebecca Gu, MS, Hannah Crandall, BS, Priscila Cavalheiro, BA, Amanda Du, BS, Valerie A Flores, MD, Bryn E Willson, MD, Sandy Chuan, MD and Shannon Kokjohn, MSc, San Diego Fertility Center, San Diego, CA

OBJECTIVE: To evaluate fertilization outcomes and in vitro development of embryos through the blastocyst stage following intracytoplasmic sperm injection (ICSI) of mature MII oocytes, depending on the age of the male patients providing sperm for insemination, and in the absence of potentially confounding and biasing factors associated with a female partner
MATERIALS AND METHODS: All IVF cycles in which oocytes from presumably fertile donors (aged 21 to 32 years) were inseminated with sperm from male intended parents from October 2024 through January 2026 at a private center were reviewed retrospectively. Insemination was by ICSI of mature oocytes. Blastocysts underwent trophectoderm biopsy for preimplantation genetic testing for aneuploidy (PGT-A) when fully expanded, then cryopreserved for later transfer. Evaluated outcomes included confirmation of normal (2PN) fertilization, blastocyst production (grade BB or better), day of expansion (as indicated by the day of biopsy and cryopreservation), morphological grades of the inner cell mass (ICM) and trophectoderm, and ploidy. Outcomes were related to male age by linear regression analysis.
RESULTS: Male intended parents, aged 24 to 62 years (mean = 39.6, standard deviation = 6.6, median = 38.6, interquartile range = 35.0 – 42.9, interdecile range = 32.6 – 48.5), underwent 873 insemination cycles. A negative association between age and 2PN per inseminated oocyte was not statistically significant (β = -.00087, p = .27). However, the proportion of blastocysts developing per inseminated oocyte declined significantly with increasing male age (β = -.0024, p = .015, R^2 = .0068), from an estimated 47.1% for a 24-year-old down to 38.0% for a 62-year-old. Male age was not significantly related to blastocyst expansion day (β = .0024, p = .13) or frequencies of A-grade ICMs (β = -.0007, p = .62) or A-grade trophectoderms (β = -.0014, p = .31). A decline in the proportion of tested blastocysts that were euploid approached significance (β = -.0022, p = .094). A decline in the proportion of euploid blastocysts obtained per mature oocyte inseminated was clearly significant (β = -.0029, p < .001, R^2 = .013), from an estimated 34.9% for a 24-year-old down to 23.9% for a 62-year-old, a 32% relative reduction in euploid blastocyst production.
CONCLUSIONS: Increasing male age within the range studied (24 to 62 years) is associated with statistically and clinically significant declines in the proportion of mature oocytes that can develop morphologically to the blastocyst stage and the proportion of chromosomally normal (i.e., euploid) blastocysts to develop per inseminated oocyte. An increasing frequency of aneuploidy among blastocysts developing from sperm from older men may contribute to this latter trend.
IMPACT STATEMENT: Donor oocyte cycles eliminate potential confounding or bias associated with the age or infertility diagnoses of female partners, thus providing an exceptionally well-controlled model within which to study the influence of male factors on IVF treatment outcomes. Within this cohort of donor oocyte IVF cycles, there was clear evidence of a reduction in the proportion of inseminated MII oocytes developing to euploid blastocysts with advancing paternal age.

O-186 3:55 PM Tuesday, October 27, 2026

PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY (PGT-A) DOES NOT IMPROVE CUMULATIVE LIVE BIRTH RATE IN VERY ADVANCED MATERNAL AGE (≥45): A SART CORS STUDY. Akanksha Garg, MBBS, BSc[1], David Frankfurter, M.D.[2] and David B. Seifer, M.D.[1], [1]Yale School of Medicine, New Haven, CT, [2]Yale University, Orange, CT

OBJECTIVE: To assess the impact of preimplantation genetic testing for aneuploidy (PGT-A) on cumulative live birth (CLBR) in women who are 38 and older.
MATERIALS AND METHODS: A retrospective cohort study analyzing national data from the Society for Assisted Reproductive Technology Clinic Outcomes Reporting System (SART CORS) database between 2016-2023 was conducted. Patients who were ≥38 year old undergoing their first autologous in vitro fertilization stimulation cycle were included. Oocyte freezing, donor oocyte/embryos, repeat cycles and surgically retrieved sperm cycles were excluded. 30,409 patients initiated a PGT-A cycle and 33,262 initiated an IVF cycle without PGT-A. The primary outcome was CLBR stratified by patient age, and secondary outcomes included cumulative miscarriage rate per cycle initiated, (CMR), live birth rate (LBR) and miscarriage rate (MR) per embryo transfer. Multivariate logistic regression, adjusting for confounding factors, and Chi-square tests were performed using Python.
RESULTS: A total of 63,671 patients who were ≥38 years old were included from 795,073 eligible cycles. Age, Body Mass Index, serum Anti Mullerian Hormone, diagnosis of diminished ovarian reserve, use of intracytoplasmic sperm injection, and cancellation rate differed significantly between both groups. CLBR was higher in the PGT-A group in patients aged 38-44, with no difference in those ≥45.

Patient age	CLBR per cycle initiated (%)			LBR per transfer (%)		
	PGT-A	Non-PGT-A	p-value	PGT-A	Non-PGT-A	p-value
38	44.3	22.6	<0.001	51.5	34.7	<0.001
39	38.6	17.9		52.2	30.1	
40	32.7	13.3		51	25.8	
41	25.2	9.4		50.4	21.5	
42	18.6	5.7		50.3	17.7	
43	12.1	3.9		48.1	12.6	
44	6.5	2.6		45.5	10.4	
≥45	2.4	1.7	0.327	44	9.8	

When assessing initiated cycles and stratifying by age, PGT-A was associated with substantially higher CLBR through age 44, but not beyond (ages 38–40 (aOR 2.34, 95% CI 2.21–2.47), 41–42 (aOR 2.90, 95% CI 2.60–3.22), and 43–44 (aOR 2.63, 95% CI

2.13–3.26)). CLBR did not differ between groups at ≥ 45 years of age (aOR 1.09, 95% CI 0.57–2.08, p=0.79). CMR was lower and LBR per transfer was higher in the PGT-A versus non-PGT groups across all ages.
CONCLUSIONS: When adjusting for confounding factors, there is an increase in CLBR in women aged 38-44 with PGT-A. In patients ≥45 years of age, there was no difference between CLBR in PGT-A and non-PGT-A groups. As expected, the LBR was higher in all age groups for PGT-A tested euploid embryos compared to non-PGT-A tested embryos as demonstrated when assessing only embryo transfer cycles.
IMPACT STATEMENT: PGT-A testing in patients aged ≥45 does not improve CLBR but may decrease CMR. For patients aged between 38-44, PGT-A testing improves CLBR and decreases CMR.
SUPPORT: None

O-187 4:05 PM Tuesday, October 27, 2026

NOVEL POST-WARMING DIRECT HYDRATION (DH) OF HUMAN BLASTOCYSTS FOLLOWING CONVENTIONAL OR SHORT VITRIFICATION: CLINICAL OUTCOMES, MORPHOMETRICS AND COST EFFICACY.
Mitchel C. Schiewe, M.S., Ph.D.[1], Maryna Omelchenko, M.Sc.[2], Amy Jones, B.S., M.SC.[1], Samantha Quiroz, M.S.[1], Ashley Zurita, BS[1], Danielle A. Hupp, BS[1], Meredith Brower, M.D.[1], Wendy Chang, MD, REI[1], Carrie Wambach, M.D.[1] and Andy Huang, M.B.A., M.D.[1], [1]Reproductive Partners MG/FCOC, Beverly Hills, CA, [2]Reproductive Partners Medical Group/FCOC, Beverly Hills, CA

OBJECTIVE: In the last few years, we have been redefining cryobiological principles as we move from fast to fastest vitrification-warming protocols[1]. This study validates the clinical efficiency and effectiveness of post-warming direct hydration (DH) to a 1-step thawing solution (TS) of human blastocysts vitrified by either short or conventional vitrification protocols.
MATERIALS AND METHODS: Prospective FETs by odd/even days were randomly applied to human blastocysts (BL) vitrified by conventional (n=272) and short protocols (n=68) over a 7 mo period. Rapidly warmed BL were either diluted by a 1-step/1min TS (n=162) approach or DH exposure in G-MOPS (n=178). Our RPMG-BH Lab adopted short vitrification protocols (2 to 4min ES/1min VS) in June 2025 and 1-step 37°C warming in either a non-permeating solute solution (TS) or directly into isotonic medium (G-MOPS or LGH) in mid-July 2025. The latter comparison was applied to 340 FETs through December. To further validate the responsiveness of human BL to these short warming methods, 88 research/training BL were re-vitrified (rVTF) using either a 2min ES (n=39) or 4min ES (n=49) exposure and subsequently warmed by 1-step TS or DH methods and incubated in an Embryoscope over 24
hours. Time lapse imaging data and measurement tools were used to assess blastocoele cavity diameter and area +1h, +2h and +24h post-warming. The % change in BL re-expansion overtime was contrast. Chi-squared testing were performed.
RESULTS: Following a 99.5%and 100% survival following TS and DH treatments, similar outcomes were exhibited for +b-hCG (71%), implantation (68%) or ongoing clinical pregnancies (58% and 60%, respectively). Additionally, no difference was detected in the FETs involving short VTF (68% implantation). In assessing post-warming measurements of the rVTF BL model, 86% of the DH-treated and 1-step TS embryos survived, with similar re-expansion increases at +2h and +24h, more DH-BL attained an area of > 40,000 μm^3 (44% vs 16.2%; P<0.05), Using the rVTF model, fewer BL degenerated following UFV (2min ES, 7%) compared to 4 min ES exposures (16.3%). In assessing cost efficiency, the DH method eliminates the need to use a non-permeating solute kit (e.g., Fast Warm, 40ml, $1300).
CONCLUSIONS: Short vitrification and warming practices can be effectively integrated into daily clinical IVF. The flexibility between "ultra-fast" and "fast-n-furious" embryo vitrification (2 to 4 min ES dehydration and semi-equilibration, respectively) allows for the cryopreservation of 3 BL/run which increases the time efficacy of processing. Furthermore, the DH warming methods accelerate FET prep time by >5-fold and can substantially reduce lab costs ($28-34/patient). As this study validated, BL re-expansion and viability is normal, if not visually improved.
IMPACT STATEMENT: While it is somewhat surprising that conventional vitrified BL are actually not osmotically stressed by DH warming, it is completely acceptable to envision short vitrification and 37°C direct hydration as a future best practice, reducing cryoprotectant exposures while significantly enhancing both time and cost efficiency.
SUPPORT: none
REFERENCES:
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O-188 4:15 PM Tuesday, October 27, 2026

BLASTOCYST SPONTANEOUS COLLAPSE PATTERNS AND THEIR RELATION TO CLINICAL OUTCOMES.
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OBJECTIVE:
Does the transfer of blastocysts displaying total or partial spontaneous collapse (SC) events impacts the clinical outcomes in single frozen embryo transfer (FRET)?
MATERIALS AND METHODS:
Retrospective study on 1266 single-FRET from 933 patients in a private hospital during 2025. Blastocysts were classified after the time of full blastulation (tB) into no-SC (n=709), partial collapse (PC) (n=391) and total collapse (TC) (n=166). In PC the shrinkage caused the trophectoderm detachment from the ZP with a visible perivitelline space and blastocoel. In TC the blastocyst shrinkage was complete without visible blastocoel. Cases showing subtle shrinkage without detachment from the ZP were excluded.
1266 vitrified day 5 or 6 blastocysts from 673 cIVF and 593 ICSI treatments were obtained after time-lapse incubation (Embryoscope+, Vitrolife). Gardner's grading was done by experienced embryologists. Morphokinetic features were observed on EmbryoViewer.
All the FRETs were performed with a single embryo.
Time of starting blastulation (tSB), tB, positive pregnancy (PPR), clinical pregnancy (CPR), ongoing pregnancy (OPR) and miscarriage rates (MR) were recorded.
Data were analyzed with RStudio 2025.05.0+496 (Chi-square and Fisher's tests).
RESULTS:
799 blastocysts showed no-SC and 557 displayed PC/TC. Female age was similar between groups (36.5±4 vs 36.7±4.1, p=0.379). Against the odds, tSB and tB were delayed in no-SC compared to PC/TC (97.6±8.9 vs 96.9±8.7, p=0.002 and 106±9.6 vs 105.6±9.3, p=0.025), while OPR was higher in no-SC (36.2% vs 30.7%, p=0.044). Regarding collapse sub-groups, female age was younger in no-SC versus TC (36.5±4.0 vs 37.3±3.8, p=0.04). Paternal age was similar (p=0.645).
Significant differences were observed in morphokinetics: tSB and tB were delayed in the no-SC compared with PC (97.6±8.9 vs 96.6±8.9, p=0.002 and 106.0±9.6 and 104.9±9.1, p=0.003).
The PPR was significantly higher in no-SC and PC compared with TC (46.3%, 45.8% vs. 30.7%, p=0.001). Similarly, CPR and OPR were significantly lower in TC than in no-SC and PC (37.9%, 36.8% vs 22.3%, p=0.001 and 36.2%, 35.3% vs 19.9%, p=0.001). No significant differences were observed in MR before 12 weeks among the groups (2.8%, 3.3% vs 3.6%, p=0.82).
A multivariate logistic regression showed that TC embryos had a lower probability of ongoing pregnancy compared with no-SC (OR=0.44, 95%CI 0.29–0.66, p<0.01), while PC embryos did not differ (OR=0.95, 95%CI 0.73–1.24, p=0.72). Maternal age (OR=0.94, p<0.01) was associated with reduced pregnancy chances.
CONCLUSIONS:
Total collapse of the blastocyst is associated with lower pregnancy chances. When the shrinkage is limited or partial the clinical outcome is not affected.
IMPACT STATEMENT:
Collapse events in number and duration, were shown to lower pregnancy chances and are linked to aneuploidy. The simple observation of a TC may hinder the chances of OPR and is more likely to occur in older women in line with aneuploidy increase. Collapse annotation could refine better embryo selection.
SUPPORT: None

O-189 4:25 PM Tuesday, October 27, 2026

DEVELOPMENTAL COMPETENCE AND EUPLOID RATES OF BLASTOCYSTS DERIVED FROM SINGLE- OR MULTI-PRONUCLEAR ZYGOTES: A LARGE RETROSPECTIVE PGT-A STUDY.
Shimpei Mizuta, M.HS.[1], Yuna Lee, B.S.[2], Yuka Iwamoto, B.S.[3], Takumi Takeuchi, M.D., Ph.D.[4], Hidehiko Matsubayashi, M.D., Ph.D.[1] and Tomomoto Ishikawa, M.D., Ph.D.[1], [1]Reproduction Clinic Osaka, Osaka, Japan, [2]Osaka-Shi, Osaka, Japan, [3]Reproduction Clinic Osaka, Osaka-Shi, Osaka, Japan, [4]Reproduction Clinic Tokyo, Tokyo, Japan

OBJECTIVE:
Some embryos derived from abnormal fertilization, including multi-pronuclear and mononuclear (1PN) zygotes, can develop to the blastocyst stage but are often discarded. Diploid and euploid embryos have been reported from abnormal pronuclear zygotes. However, systematic data on developmental competence and euploid rates across different PN categories remain limited. Therefore, we investigated whether embryos derived from 1PN and multi-pronuclear zygotes differ in culture outcomes and euploidy.
MATERIALS AND METHODS:
This retrospective observational study included 4,532 blastocysts derived from 13,566 oocytes obtained from 2,664 PGT-A cycles performed between March 2022 and October 2025 at two institutes. Zygotes were categorized into five groups: 1PN (n=519), 2PN (n=11,652), 2.1PN (n=359), 3PN (n=768), and ≥4PN (n=268). Fertilization assessment was performed using time-lapse monitoring to ensure accurate pronuclear classification. IVF and ICSI cycles were analyzed separately. Blastocyst formation and good-quality blastocyst rates (≥G3BB on day 5) were assessed. Euploidy was determined by PGT-A using next-generation sequencing combined with single-nucleotide polymorphism (SNP) analysis. Group comparisons were performed using Fisher's exact test with P<0.05 considered significant.
RESULTS:
In IVF cycles, blastocyst rates derived from 1PN, 2PN, 2.1PN, 3PN, and ≥4PN zygotes were 19.4%, 48.0%, 27.5%, 14.4%, and 5.3%, respectively, and good-quality blastocyst rates were 8.1%, 23.5%, 12.5%, 1.5%, and 1.3%, respectively. In ICSI cycles, blastocyst rates were 5.8%, 40.0%, 26.7%, 21.2%, and 10.6%, and good-quality rates were 0.6%, 17.6%, 8.8%, 6.2%, and 2.6%, respectively. In both IVF and ICSI, 2PN zygotes showed significantly higher developmental outcomes than other groups (P<0.001). Euploid rates showed no significant differences among groups. In IVF, euploid rates were 20.0% for 1PN, 23.4% for 2PN, and 0% for 2.1PN. In ICSI, euploid rates were 0% for 1PN, 20.4% for 2PN, 7.1% for 2.1PN, 13.8% for 3PN, and 0% for ≥4PN. Haploid embryos were mainly observed in 1PN-derived blastocysts, whereas triploid embryos were more frequent in ≥3PN-derived blastocysts.
CONCLUSIONS:
Blastocysts derived from 1PN or multi-pronuclear zygotes exhibit reduced developmental potential and distinct ploidy abnormalities compared with 2PN zygotes, yet can yield euploid embryos. In this study, fertilization assessment was based on time-lapse monitoring enabling accurate pronuclear classification, and ploidy status was evaluated

using next-generation sequencing combined with SNP analysis. These findings therefore represent reliable indicators based on precise assessment. Further studies are required to clarify their clinical relevance.
IMPACT STATEMENT:
Although developmental competence is reduced, the presence of euploid embryos in blastocysts derived from abnormal pronuclear zygotes suggests potential clinical relevance. These findings indicate that abnormal fertilization should not be considered uniformly non-viable and may support more selective evaluation strategies with comprehensive chromosomal assessment.
SUPPORT: N/A
REFERENCES:
N/A

O-190 4:35 PM Tuesday, October 27, 2026

MORPHOLOGY MATTERS: HOW NORMOZOOSPERMIA AND TERATOZOOSPERMIA INFLUENCE DNA DAMAGE ACROSS AGE BOUNDARIES. Nishanth Singh, MSc[1], Vandana Hegde, M.B.B.S., MS, FRM[2], Jasmine Mithilesh Raut, MBBS, DGO, DNB, FRM[3] and Bandemegala Siddesh, Msc[4], [1]Balanagar, Telangana, India, [2]Shaikpet, Telangana, India, [3]Gachibowli, Telangana, India, [4]Hegde Fertilty, Hyderabad, India

OBJECTIVE: To evaluate whether sperm morphology influences DNA fragmentation index (DFI) differently in men aged <35 years compared with those ≥35 years, and to determine the statistical significance of this relationship.
MATERIALS AND METHODS: This retrospective study included 459 semen samples collected between January 2024 to December 2025 at a tertiary fertility center. Participants were stratified into four groups: Normozoospermic men <35 years (n=66), Teratozoospermic men <35 years (n=180), Normozoospermic men ≥35 years (n=67), and Teratozoospermic men ≥35 years (n=146). Semen analysis was performed according to WHO 2021 guidelines for morphology assessment. DNA fragmentation index (DFI) was measured using the sperm chromatin dispersion (SCD) assay. Inclusion criteria required a sperm concentration ≥1×10⁶/mL and complete clinical data. Exclusion criteria included azoospermia and prior chemotherapy exposure.
Statistical analysis was performed using two-way analysis of variance (ANOVA) to evaluate the main effects of sperm morphology and age, as well as their interaction effect on DFI. Post hoc pairwise comparisons were conducted using Tukey's test where appropriate. Data normality was assessed prior to analysis, and a p-value <0.05 was considered statistically significant.
RESULTS: Mean DNA fragmentation index (DFI) values were higher in Teratozoospermic men compared to Normozoospermic men within both age groups: 23.96 vs. 26.14 in men <35 years, and 24.41 vs. 27.06 in men ≥35 years.
Two-way ANOVA demonstrated a statistically significant main effect of sperm morphology on DFI ($p<0.001$), indicating that Teratozoospermia is associated with increased DNA fragmentation irrespective of age. The main effect of age was not statistically significant ($p=0.12$), suggesting no meaningful difference in DFI between men aged <35 years and ≥35 years. Additionally, no significant interaction between sperm morphology and age was observed ($p=0.21$), indicating that the impact of abnormal morphology on DFI is consistent across age groups.
Post hoc Tukey's analysis confirmed significantly higher DFI in Teratozoospermic men compared to Normozoospermic men within both age categories ($p<0.001$ for both comparisons), while no statistically significant differences were observed between age groups within the same morphology category.
These findings demonstrate that abnormal sperm morphology is the primary factor associated with increased DNA fragmentation, independent of paternal age.
CONCLUSIONS: Stratified analysis demonstrates that Teratozoospermia is independently associated with elevated DFI, and this relationship is not modified by age. Sperm morphology remains a stronger predictor of DNA integrity than paternal age.
IMPACT STATEMENT: Age-stratified evaluation confirms that abnormal sperm morphology is a key determinant of DNA damage irrespective of age. Routine incorporation of DFI testing in men with Teratozoospermia may enhance infertility assessment and optimize clinical decision-making in assisted reproduction.
SUPPORT: This study did not receive any specific financial support or external funding.

O-191 4:45 PM Tuesday, October 27, 2026

SRBT/SMRU ALLIANCE SURVEY ON TESTICULAR TISSUE EXTRACTION AND PROCESSING PRACTICES: SOCIETY OF REPRODUCTIVE BIOLOGISTS AND TECHNOLOGISTS (SRBT) RESULTS. Liesl Nel-Themaat, PH.D., MBA, HCLD[1], Mary Katherine Samplaski, M.D.[2], Michael L. Eisenberg, M.D.[3], Prof. Tiencheng Arthur Chang, PH.D., HCLD, ELD[4], Mitchel C. Schiewe, M.S., Ph.D.[5], Gerard Celia Jr., PH.D.[6], Marina Gvakharia, M.D., PH.D.[7], Mr. Salustiano Ribeiro, MS[8] and Scott H. Purcell, PH.D.[9], [1]Division of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gynecology, Stanford University School of Medicine, Stanford, CA, [2]Vasweb, Lutz, FL, [3]Stanford University School of Medicine, Stanford, CA, [4]University of Texas Health Science Center, San Antonio, TX, [5]Reproductive Partners MG/FCOC, Beverly Hills, CA, [6]Virginia Commonwealth University, Richmond, VA, [7]Palo Alto Medical Foundation, San Jose, CA, [8]University of California - San Francisco, San Francisco, CA, [9]VA Fertility and IVF, Charlottesville, VA

OBJECTIVE:
Testicular sperm extraction is standard in most fertility clinics, requiring close collaboration between urology and lab teams. However, standardized practice among clinics is lacking, with no universally accepted protocols. The SRBT/SMRU alliance aims to address this shortcoming by collecting data to gain a better understanding of the current landscape of testicular specimen processing practices. Data will be used to educate both societies and plan practice recommendations.
MATERIALS AND METHODS:
A survey was developed by members of the SRBT/SMRU alliance committees, specifically addressing lab and physician approaches respectively. There were 28 SRBT (Lab)-specific questions within the survey addressing lab staff experience, practice setting, types of urological samples received, assessment and processing techniques and disposition.
RESULTS:
This abstract summarizes results from 97 SRBT member responses. The Society for Male Reproductive Urology (SMRU) findings are described in a separate abstract. Among respondents, the majority (57%) had more than 20 years experience, were lab directors or supervisors (77%) and work in a private practice (69%), while the distribution of practices size and types of procedures were relatively even. The vast majority of respondents noted the lab team dissociates and searches for sperm (90% and 84%, respectively). Great variation in processing technique exists, with 40% using syringe needles, 23% surgical tools and the remainder use tissue grinders (16%), angiocath/syringe (5%) or other (16%) techniques. Searching is performed using a petri dish (65%), microscope slides (45%), fixed volume chambers (13%) or Maklers (7%), whereas searching temperature favored 37 °C (51%) over lower temperatures. Most report searching the entire specimen with great variation in minimum time spent before declaring no sperm. Thirty four percent will culture the tissue overnight for a variable length of time with 24h being most common (53%). Planned freezing of tissue is performed 57% of the time and disposition is decided by the lab staff in 51% of the time, usually on the day of the procedure (74%). Interestingly, 0% indicated that a physician exclusively decides the fate of the specimen. Only 41% of respondents stated they use a defined policy for freezing criteria. The definition of a freezable specimen varied greatly, with various combinations of number of sperm seen and motility. Surprisingly, only 22% of respondents reports yield as actual # of sperm while the rest reports sperm per high power field. Pentoxifylline is the most commonly used ancillary procedure (82%) and only 29% report subsequently using calcium ionophore for ICSI using testicular sperm.
CONCLUSIONS:
This survey confirms that processing and disposition of testicular tissue varies greatly among labs and that standardization is needed to allow comparison among peer groups and make recommendations to optimize results.
IMPACT STATEMENT:
Survey data will help the SRBT/SMRU alliance create awareness among providers of urology-based sperm extraction and processing procedures and will be used to formulate standard practice recommendations in collaboration with the ASRM Practice Committee.

ORAL ABSTRACT SESSION: GENETICS (2 OF 2)

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REBIOPSY OF EMBRYOS WITH INITIAL EUPLOID RESULTS AND DNA CONTAMINATION DETECTED USING A COMBINED NGS SNP PLATFORM AVOIDS FALSE NEGATIVE RESULTS. Angela Linville, PhD[1], Alyssa Snider, MS, CGC, PH.D[2], Refik Kayali, PH.D[3], Adedoyin Akinwole, MPH[1] and Federico Valdez Leon, MSc[4], [1]Igenomix, part of Vitrolife Group, Miami, FL, [2]Igenomix, Torrance, CA, [3]Igenomix US, Torrance, CA, [4]Miami, FL

OBJECTIVE: The presence of DNA contamination in trophectoderm biopsy samples may mask the chromosomal status of an embryo, potentially leading to inaccurate interpretation of results. External, non-embryonic DNA contamination typically originates from euploid sources such as maternal cumulus cells or, more rarely, through routine handling of the sample. When chromosome copy number variation is observed in the context of contamination, the chance of a false positive result due to aneuploid external contamination is low. In contrast, euploid results with DNA contamination detected may represent a false negative. This study evaluated the clinical benefit of rebiopsy for embryos where initial samples were euploid with DNA contamination detected.
MATERIALS AND METHODS: PGT-A testing was performed at a single reference laboratory using a combined next-generation sequencing (NGS) and single nucleotide polymorphism (SNP) platform that enables chromosomal copy number assessment and detection of DNA contamination. SNP variant allele fraction assessed for the presence of more than one genome. DNA contamination was detectable between 10 and 90% admixture levels, although whether contamination represented the major or minor fraction could not be determined. A retrospective analysis included samples initially classified as euploid with DNA contamination between January 2024 and February 2026. Embryos that underwent rebiopsy were reassessed, and concordance between initial and repeat results was evaluated.
RESULTS: DNA contamination was detected in 71 initially classified euploid samples, representing 0.1% of tested samples overall. Of these, 16 (22.5%) underwent rebiopsy. Among euploid XX embryos (n=11), 9 (82%) showed concordant results upon rebiopsy, while 2 (18%) demonstrated discordant outcomes, including one chaotic aneuploid (6+ chromosomes) and one complex aneuploid (2-5 chromosomes), both XX. Among euploid XY embryos (n=5), 3 (60%) were concordant. One embryo was reclassified as euploid XX, indicating chromosomal sex discordance, and one embryo was non-informative and excluded from analysis. Overall, 3 (20%) embryos with euploid, contaminated samples demonstrated a clinically significant change in result following rebiopsy.
CONCLUSIONS: DNA contamination in samples initially classified as euploid can lead to erroneous interpretation of chromosomal status. In this study, rebiopsy of embryos that initially had euploid, contaminated samples yielded different results in 20% of evaluable cases, indicating a subset may have discordant sex or aneuploidy, where the remainder were consistent with the first result.

IMPACT STATEMENT:
Despite its rarity, even small amounts of DNA contamination in PGT-A samples can yield euploid data that masks the chromosomal status of the embryo. These findings highlight the clinical utility of a combined NGS and SNP platform capable of detecting DNA contamination and support rebiopsy of embryos where the initial biopsy sample was found euploid with detected DNA contamination to reduce the risk of a false negative result.

O-193 3:55 PM Tuesday, October 27, 2026

APOLIPOPROTEIN E VARIANTS AND AMH TRAJECTORIES: A SECONDARY ANALYSIS OF SWAN DATA. Anat Chemerinski, MD[1], Michelle Hood, MS[2], Laura Katherine Kaizer, MPH[3], Erika P New, B.S., M.D., M.P.H[4], Joshua Johnson, Ph.D.[5], Samar R El Khoudary, PhD[6], Carol A. Derby, PhD[7], Sioban D Harlow, PhD[2], Mary D Sammel, ScD[8] and Nanette Santoro, M.D.[9], [1]Rutgers New Jersey Medical School, Newark, NJ, [2]University of Michigan School of Public Health, Ann Arbor, MI, [3]Denver, CO, [4]Virginia Commonwealth University, Richmond, VA, [5]University of Colorado Anschutz Medical Campus, Aurora, CO, [6]Virginia Commonwealth University, [7]Albert Einstein College of Medicine, Bronx, NY, [8]University of Colorado Anschutz Medical Campus, Aurora, [9]University of Colorado School of Medicine, Aurora, CO

OBJECTIVE: Apolipoprotein E (ApoE) is a polymorphic (E2, E3, E4) protein responsible for lipid trafficking and transport, lipid homeostasis, and injury repair. The APOE4 allele confers an increased risk of cardiovascular disease and Alzheimer's Disease and is present at unexpectedly high frequencies given its apparently deleterious consequences. Animal data suggest it may increase reproductive fitness. Given that ApoE plays an important role in regulating cholesterol transport into the ovarian follicle it has been postulated that the ApoE4 allele is associated with improved ovarian function. We hypothesized that ApoE4 carriers would have better ovarian reserve as measured by AMH trajectories than non carriers. Recent research has shown that AMH decline over the menopause transition separates into two distinct AMH trajectories: "Low/Slow" (L/S) referring to those with a lower starting AMH and slower decline, and "High/Steep" (H/S) referring to those with higher starting AMH and steeper decline. This study sought to evaluate the association between ApoE isoforms and AMH trajectories. We hypothesized that ApoE4 carriers (E4|E4 and E3|E4) would be more likely to follow the L/S AMH trajectory, while carriers of ApoE2 (E2|E2 and E2|E3) would be more likely to follow the H/S trajectory.
MATERIALS AND METHODS: SWAN (Study of Women's Health Across the Nation) participants with at least three AMH measurements, an observed final menstrual period, and ApoE genotyping were included in this analysis. Associations between AMH trajectory class (L/S vs H/S) and ApoE were estimated using a generalized linear regression model. Covariates included race/ethnicity, and baseline age, difficulty paying for basics, education, waist circumference, hypertension, and marital status. The model included an interaction between race/ethnicity and ApoE4 genotype.
RESULTS: 617 participants from SWAN met criteria for inclusion. APOE genotype was not associated with AMH trajectory class. Increased waist circumference was associated with increased risk of L/S AMH trajectory (RR 1.01 [1.01, 1.02], p <0.001). Sociodemographic factors including difficulty paying for basics, education, and marital status were not associated with AMH trajectory. There was not a significant race/ethnicity by APOE genotype interaction (p=0.428).
CONCLUSIONS: ApoE plays an important role in regulating cholesterol transport into the ovarian follicle. In this study we did not find evidence for an association of ApoE4 with AMH trajectory, though there was an increased risk of L/S AMH trajectory with increasing waist circumference. If this genotype is associated with reproductive fitness, it may be related to day-to-day characteristics of reproductive hormones or other reproductive factors beyond AMH trajectories.
IMPACT STATEMENT: This study did not find an association between AMH trajectory and APOE genotype but presents a framework upon which future studies may rest the examination of APOE and reproductive fitness.
SUPPORT: The Study of Women's Health Across the Nation (SWAN) has grant support from the National Institutes of Health (NIH), DHHS, through the National Institute on Aging (NIA), the National Institute of Nursing Research (NINR) and the NIH Office of Research on Women's Health (ORWH) (Grants U01NR004061; U01AG012505, U01AG012535, U01AG012531, U01AG012539, U01AG012546, U01AG012553, U01AG012554, U01AG012495, and U19AG063720). The content of this abstract is solely the responsibility of the authors and does not necessarily represent the official views of the NIA, NINR, ORWH or the NIH.

O-194 4:05 PM Tuesday, October 27, 2026

MORPHOLOGY AND BLASTULATION DAY AS PREDICTORS OF EUPLOIDY IN DIFFERENT MATERNAL AGE GROUPS. Xia Li, PhD[1], Tih Tan, M.S.[2], Jennifer Lew, BS[1], Elena Valenzuela, M.S.[1] and John Wilcox, M.D.[2], [1]HRC Fertility/Nexgenomics, Pasadena, CA, [2]HRC Fertility - Pasadena, Pasadena, CA

OBJECTIVE: To evaluate the correlation between embryo morphology and chromosomal status across different days of blastulation and blastocyst stages in patients of varying age groups.
MATERIALS AND METHODS: A retrospective analysis was conducted on 3,305 IVF cycles, comprising a total of 22,966 embryos that underwent preimplantation genetic testing for aneuploidy (PGT-A) using Next-Generation Sequencing (NGS) at our laboratory between 2024 and 2025. The study included 454 egg donation cycles with 4,912 embryos and 2,851 autologous cycles with 18,054 embryos. The mean age of patients in the autologous group was 35.9 ± 4.3. Embryo morphology was assessed using the Gardner scale, with scores provided by the IVF laboratory. Only embryos with available grading for both inner cell mass (ICM) and trophectoderm (TE) were included.
RESULTS: The overall euploidy rate across all samples was 54.2%. Euploidy rates declined with delayed blastulation, 64.6% on day 5, 48.9% on day 6, and 34.6% on day 7. Among the 22,966 embryos, 1,431 (6.2%) were stage ≤3 (early and full blastocysts), 20,389 (88.8%) were stage 4 (expanded blastocysts), and 1,146 (5.0%) were stage ≥5 (hatching and fully hatched blastocysts). Euploidy rates were 43.2% for stage ≤3, 54.3% for stage 4, and 65.7% for stage ≥5 embryos.
For egg donor cycles, the overall euploidy rate was 68.2%, with 76.7% for day 5, 63.4% for day 6, and 42.2% for day 7 embryos. Euploidy rates were higher in those graded 4AA, 4AB, or 4BA and stage ≥5, compared to those graded 4BB, 4BC, 4CB, or 4CC and stage ≤3 (Table 1). These findings indicate that expanded blastocysts with top morphology (4AA/4AB/4BA) and stages ≥5 are most likely to be euploid. Euploidy rates for embryos derived from autologous cycles on day 5 and day 6 were subsequently calculated and compared with the "best" morphology groups (Table 1).
CONCLUSIONS: Across all patient groups, selecting embryos with "best" morphology is associated with an increased likelihood of euploidy. However, patients of advanced maternal age are less likely to produce high-quality embryos overall. With high-quality embryos, euploidy rates still decline with increasing maternal age. To improve the likelihood of selecting a euploid embryo for transfer, PGT-A is strongly recommended for patients of advanced maternal age.
IMPACT STATEMENT: Using a large dataset, this study demonstrated evidence for the clinical benefit of PGT-A in patients of advanced maternal age.
Table 1:

Egg Donor Cycles Euploidy Rate%	**Stage ≤3**	**4AA**	**4AB**	**4BA**	**4BB**	**4BC/4CB/4CC**	**Stage ≥5**
Day 5	68.5	85.8	76.9	92.7	73.6	58.7	86.4
Day 6	34.3	82.3	61.75	77.2	60.6	44.9	79.3
Autologous Cycles Euploidy Rate%	**Age Groups**						
	<35	**35-37**	**38-39**	**40-41**	**>42**		
All the Samples	63.3	53.1	42.1	29.3	19.1		
Day 5	72.1	62.6	51.2	39.3	25.6		
"Best Quality" Day 5	78.4	67.8	60.9	43.3	28.7		
Day 6	58.4	48.3	38.1	24.8	16.4		
"Best Quality" Day 6	69.8	62.3	52.2	35.7	26.2		

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PREIMPLANTATION GENETIC TESTING AND REPRODUCTIVE OUTCOMES. Shu Qin Wei, MD, PhD[1], Oleksii Balva, Msc[2], Justin Tan, MD[3], Grace Tan, D Phil[4], Michael H. Dahan, M.D.[5], Mingju Cao, PhD[1] and Seang Tan, M.B.A., M.B.B.S., M.SC.[6], [1]OriginElle Fertility Clinic & Women's Health Centre, QC, Canada, [2]OriginElle Fertility Clinic & Women's Health Centre, Montreal, QC, Canada, [3]CReATe Fertility Centre, Toronto, ON, Canada, [4]Originelle Fertility Center, Montreal, QC, Canada, [5]Division of Reproductive Endocrinology and Infertility, McGill University Health Centre, Montreal, Canada, [6]Division of REI, McGill University and OriginElle Fertility Clinic and Women's Health Centre, Montreal, QC, Canada

OBJECTIVE:
Preimplantation genetic testing (PGT) is increasingly used to improve embryo selection in in vitro fertilization (IVF), yet robust population-level evidence on its real-world effectiveness and age-specific benefits remains limited. We evaluated the association between PGT and IVF outcomes in a contemporary national cohort.
MATERIALS AND METHODS:
We conducted a population-based retrospective cohort study of IVF cycles in the United Kingdom. The exposure was PGT. Primary outcomes were biochemical pregnancy, clinical pregnancy, and live birth per embryo transfer. Adjusted risk ratios (RRs) and 95% confidence intervals (CIs) were estimated using multivariable models controlling for patient age, partner age, gravidity, infertility diagnosis, treatment type, and number of prior IVF cycles. Prespecified age-stratified analyses were performed.
RESULTS:
Among 169,616 embryo transfers, live birth rates were higher with PGT compared with non-PGT cycles (36.5% vs. 23.9%). PGT was associated with increased biochemical pregnancy (RR 1.37, 95% CI 1.32–1.41), clinical pregnancy (RR 1.46, 95% CI 1.40–1.52), and live birth (RR 1.51, 95% CI 1.45–1.58). The magnitude of association increased with advancing maternal age: <35 years (RR 1.31, 95% CI 1.22–1.41), 35–39 years (RR 1.61, 95% CI 1.50–1.72), and ≥40 years (RR 2.01, 95% CI 1.80–2.24).
CONCLUSIONS: In this large population-based study, PGT was associated with significantly improved IVF outcomes, with the greatest benefit observed among women of advanced maternal age.
IMPACT STATEMENT:
These findings provide real-world evidence supporting targeted use of PGT to optimize embryo selection, improve treatment efficiency, and inform individualized patient counseling and resource allocation in IVF practice.
SUPPORT: NA.

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PAIRED HEREDITARY CANCER TESTING AND OBSTETRIC CARRIER SCREENING AT PRECONCEPTION VISITS IN A REPRODUCTIVE ENDOCRINOLOGY AND INFERTILITY (REI) SETTING: A NOVEL APPROACH.

Luiza Perez, MD[1], Audra Louise Vanroboys, MS[1], Steve Lopez, BA[2], Flora Days, MS[3], Michelle Primiano, MS[2], Ravi N Sharaf, MD, MS[2], Shayan Dioun, MD[4], Joshua Stewart, B.S., M.D.[5], Alexis P Melnick, M.D.[2,6] and Melissa K Frey, MD, MS[1], [1]Weill Cornell Medicine - New York Presbyterian, New York, NY, [2]Weill Cornell Medicine, New York, NY, [3]Myriad Genetics, Salt Lake City, UT, [4]Columbia University Irving Medical Center, New York, NY, [5]Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY, [6]Ronald O. Perlman and Claudia Cohen Center for Reproductive Medicine, New York, NY

OBJECTIVE: Most individuals with hereditary cancer predisposition are unaware of their risk, thus cannot benefit from cancer prevention or reproductive counseling. REI clinics offer a unique opportunity to integrate cancer genetics into existing care, as patients are already undergoing expanded carrier screening (CS) and the results may impact their fertility goals. Modeling studies suggest incorporating cancer susceptibility genes (e.g., BRCA1) into CS panels is cost-effective and reduces cancer-related mortality. The Feasibility of Obstetric and Cancer Universal Screening (FOCUS) study evaluates patient acceptance of hereditary cancer testing (HCT) offered concurrently with CS and characterizes the downstream implications of this combined approach.
MATERIALS AND METHODS: At an academic fertility center, patients undergoing CS with select providers are offered concomitant HCT comprised of a 63-gene panel and a validated polygenic breast cancer (BC) risk score. Elevated BC risk was defined as lifetime risk of ≥20%. Interested patients receive pre- and post-test counseling by a certified genetic counselor. The primary outcome is patient acceptance of HCT combined with CS. Secondary outcomes include genetic testing results and patient-reported outcomes (PROs - NCCN Distress Thermometer, FACToR questionnaire, and Satisfaction with Decision Scale).
RESULTS: Recruitment is ongoing. Of 74 patients approached, 70 (95%) enrolled; 53 (76%) elected HCT combined with CS. Median age was 34 years (IQR 6). Self-reported race: White (41, 59%), Asian (17, 24%), African American (6, 9%), Other/Unknown (6, 9%); 9 (13%) identified as Hispanic. Thirty-eight (54%) reported a family history of cancer, most commonly breast (15, 39%) and colorectal (10, 26%). Among 17 patients who declined HCT, reasons included concerns about insurance/genetic discrimination (7, 41%), lack of interest (5, 29%), and anxiety about results (4, 24%). Among 49 patients with available results, 2 (4%) had pathogenic variants (PV), 33 (67%) had variants of uncertain significance (VUS), and 14 (29%) had negative results. PVs were found in HOXB13 and MBD4 genes, which are associated with prostate cancer and uveal melanoma, respectively. Thirteen (27%) had elevated lifetime BC risk; all were counseled on enhanced breast screening (MRI in addition to annual mammogram). Patients with VUS will receive amended reports if variants are reclassified to PV or likely PV. PROs indicated minimal distress after pre-test counseling (median 1.8/10, IQR 3) and high satisfaction with counseling and testing decisions.
CONCLUSIONS: HCT was well accepted in the REI setting, with 76% uptake in this preliminary cohort. Detection of PVs and elevated BC risk supports the clinical utility of population-based screening and highlights the value of risk stratification beyond variant detection alone. The high VUS rate observed with a multigene panel in a diverse population warrants careful consideration for broader implementation.
IMPACT STATEMENT: This combined screening approach can expand access to precision cancer prevention, inform reproductive decision-making, and facilitate life-saving risk-reducing interventions at a population level.
SUPPORT: This study is supported by the Foundation of Women's Cancer - Laura Crandall Brown Foundation Ovarian Cancer Early Detection Research Grant

Hereditary cancer genetic testa were supported by Myriad Genetics.
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CHROMOSOMAL LANDSCAPE OF FIRST-TRIMESTER MISCARRIAGES ACROSS ART AND NATURAL CONCEPTION: IMPACT OF PGT-A EUPLOID AND MOSAIC EMBRYO TRANSFER ON ANEUPLOIDY AND PREGNANCY OUTCOMES.

Mitko Madjunkov, M.D.[1], Rina Abramov, MSc[1], Clifford Librach, MD[1] and Svetlana Madjunkova, M.D., M.SC., Ph.D.[2], [1]CReATe Fertility Centre, Toronto, ON, Canada, [2]Create Fertility Centre, Toronto, ON, Canada

OBJECTIVE: To evaluate the spectrum of chromosomal abnormalities in first-trimester products of conception (T1-POC) across different modes of conception and to assess the impact of PGT-A, including euploid and mosaic embryo transfer, on POC cytogenetic outcomes.
MATERIALS AND METHODS: This is a single-center retrospective study (Jan 2016–Jan 2026). A total of 910 T1-POC samples were analyzed (804 confirmed fetal origin and tested by NGS; 106 maternal cell contamination-MCC), including IVF with PGT-A euploid embryo transfers (E, n=282) and mosaic embryo transfers (M, n=21), IVF without PGT-A (n=147), intrauterine insemination (IUI, n=82), and natural conception (NC, n=270). Maternal and paternal DNA were used to assess MCC and confirm fetal identity using STR profiling (AmpFLSTR Identifiler kit). Whole-genome sequencing NGS (~4 million reads/sample) was performed on the Illumina platform and analyzed using NxClinical (detection threshold: ≥2 Mb; mosaicism 20–80%).
RESULTS: Distribution of fetal ploidy by method of fertility treatment/conception is presented in the results table. The mean maternal age was 38.2±4.8y, and mean gestational age at D&C was 8w5d(range 5w0d–12w6d). 47.3% POC were male and 52.7% female. 40% had abnormalities with trisomy-T16(15%) and T22 (13%), monosomy X -10%, triploidy-9% and T15 (8%). Transfer of PGT-A–euploid embryos significantly reduced the incidence of aneuploid POC compared to other groups ($p<0.001$). In contrast, mosaic embryo transfer was associated with a higher rate of confined placental mosaicism (CPM) with persistent embryonic abnormalities detected in 20% (4/20) of cases, significantly higher than other conception groups (ANOVA, p=0).

PLOIDY of POC	NATURAL (n=270)	IUI (n=82)	IVF (n=147)	IVF+PGT-A EUPLOID FET (n=282)	IVF+PGT-A MOSAIC FET (n=21)	IVF+PGT-A ABNORMAL FET (n=2)	TOTAL (n=804)
Euploid	25% (76/270)	33% (27/82)	55% (81/147)	**97.3% ** (274/282)**	81% (17/21)	0	59% (472/804)
Aneuploid	71% (191/270)	65% (53/82)	44% (65/147)	1%* (3/282)	-	100% (2/2)	40% (317/804)
Confined placental mosaicism (CPM)	1% (3/270)	2% (2/82)	1% (1/147)	1.7% (5/282)	**19%** (4/21)**	0%	2% (15/804)
*Confirmed natural conception during natural cycle ET; **p=0, ANOVA ($p<0.05$ significant)							

CONCLUSIONS: PGT-A–guided selection of euploid embryos significantly reduces aneuploidy in miscarriage tissue. Mosaic embryo transfer is associated with an increased risk of chromosomal abnormalities, supporting cautious clinical use and follow-up.
IMPACT STATEMENT: Comprehensive cytogenetic analysis of POC provides critical insight into miscarriage etiology and informs post-loss counseling. These findings reinforce the clinical value of PGT-A while underscoring the need for refined risk stratification and monitoring strategies, particularly in the context of mosaic embryo transfer.
SUPPORT: The study was supported by CReATe Fertility Centre

O-198 4:45 PM Tuesday, October 27, 2026

DECODING THE IMPACT OF DIFFERENT LEVELS AND TYPES OF MOSAIC EMBRYO TRANSFERS COMPARED WITH EUPLOID EMBRYOS DETECTED VIA PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY: A SYSTEMATIC REVIEW AND META-ANALYSIS.

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OBJECTIVE:
To evaluate reproductive outcomes following mosaic embryo transfer compared to euploid embryo transfer, with subgroup analysis based on levels of mosaicism.
MATERIALS AND METHODS:
This systematic review and meta-analysis were conducted in accordance with PRISMA guidelines and registered in PROSPERO (Registration No: CRD420251119803). A comprehensive literature search was performed in PubMed and Scopus from inception to 2025, yielding 119 records. Following screening based on predefined PICO criteria, twelve studies published between 2020 and 2025 were included. The analysis comprised 973 mosaic and 4,285 euploid embryo transfers following PGT-A using next-generation sequencing (NGS). Embryos were categorised as euploid (≤20% abnormal cells), mosaic (20-80%) and sub-grouped to low-level mosaic (20–50%), high-level mosaic (50–80%). The primary outcome was clinical pregnancy rate. Secondary outcomes comprised of ongoing pregnancy at 20 weeks/live birth rate. Data were extracted for all embryo categories and pooled using a random-effects meta-analysis model. Study quality, risk of bias, and inter-study heterogeneity were systematically assessed.
RESULTS:
A total of 12 studies comprising 5258 embryo transfers were included. Mosaic embryo transfer was associated with significantly lower clinical pregnancy rates (OR 0.43, 95% CI 0.22–0.84, $p = 0.004$; $I^2 = 94\%$) and ongoing pregnancy/live birth rates (OR 0.37, 95% CI 0.19–0.74, $p = 0.01$; $I^2 = 95\%$) compared to euploid embryos. Subgroup analysis demonstrated that low-level mosaic embryos also had reduced clinical pregnancy rates (OR 0.64, 95% CI 0.48–0.85, $p = 0.002$; $I^2 = 52\%$) and ongoing pregnancy/live birth rates (OR 0.58, 95% CI 0.41–0.82, $p = 0.002$; $I^2 = 71\%$) compared to euploid embryos. High-level mosaic embryos were associated with markedly lower clinical pregnancy rates (OR 0.34, 95% CI 0.17–0.69, $p = 0.003$; $I^2 = 39\%$) and ongoing pregnancy/live birth rates (OR 0.28, 95% CI 0.17–0.48, $p < 0.00001$; $I^2 = 0\%$) compared to euploid embryos, demonstrating a progressive decline in reproductive outcomes with increasing levels of mosaicism.
CONCLUSIONS:
Mosaic embryo transfer is associated with significantly reduced clinical pregnancy and ongoing pregnancy/live birth rates compared to euploid embryos. Although low-level mosaic embryos demonstrate relatively improved outcomes compared to high-level mosaic embryos, they remain inferior to euploid embryos. These findings highlight a graded decline in reproductive potential with increasing levels of mosaicism and underscore the importance of careful embryo selection in clinical practice.
IMPACT STATEMENT:

This study provides robust pooled evidence demonstrating a gradient effect of mosaicism on reproductive outcomes, offering clinically relevant insights to guide embryo selection and patient counselling in assisted reproduction.
SUPPORT: NA

ORAL ABSTRACT SESSION: INFERTILITY (2 OF 3)

O-199 3:45 PM Tuesday, October 27, 2026

REAL-WORLD CLINICAL EXPERIENCE OF A SIRT-Nrf2 ACTIVATOR (EQOQ®) ON OVARIAN RESERVE AND FERTILITY IN WOMEN WITH DIMINISHED OVARIAN RESERVE (AMH <1.0 NG/ML) AND METABOLIC COMORBIDITIES.
Rajaram Samant, MBBS, MD[1] and Nandita Pradip Palshetkar, M.D.[2], [1]San Ramon, CA, [2]Bloom IVF, Mumbai, India

OBJECTIVE: Preclinical studies have linked downregulation of the sirtuin (SIRT)–nuclear factor erythroid 2-related factor 2 (Nrf2) pathway to accelerated ovarian ageing and follicular loss; however, clinical evidence for whether pharmacological SIRT-Nrf2 activation can restore ovarian reserve in diminished ovarian reserve (DOR) remains absent. This study assessed the real-world clinical experience with EQOQ®—a SIRT-Nrf2 activating formulation containing nicotinamide mononucleotide (NMN) and L-Ergothioneine—on ovarian reserve markers (anti-Müllerian hormone [AMH], antral follicle count [AFC]) and conception outcomes in women with DOR (AMH <1.0 ng/mL) and metabolic comorbidities.
MATERIALS AND METHODS: A retrospective, observational cohort of 208 women meeting the DOR criterion (baseline AMH <1.0 ng/mL) was analyzed. All had one or more metabolic comorbidities (obesity, polycystic ovary syndrome [PCOS], thyroid disorders, or diabetes) and received the study formulation alongside standard stimulation protocols. Serum AMH and antral follicle count (AFC) were measured pre- and post-supplementation. Conception outcomes were documented. Subgroup analyses were performed by age (<30, 30–35, >35 years), comorbidity type, cumulative comorbidity load (1, 2, or ≥3 conditions), and prior unsuccessful assisted reproductive technology (ART), including 1–3 failed in vitro fertilization (IVF) and 1–4 failed intrauterine insemination (IUI) cycles.
RESULTS: Mean AMH increased 2.7-fold from 0.63 to 1.70 ng/mL (169.8% improvement), crossing from severely diminished into the low-normal range. AFC improved 2.1-fold from 4.9 to 10.4 (112.2% improvement). The overall conception rate was 98.6% (205/208). Among women with prior ART failure, conception rates were 100% (43/43) in those with 1–3 failed IVF cycles and 99.0% (102/103) in those with 1–4 failed IUI cycles. Rates remained consistent across comorbidity strata: 100% with a single comorbidity (100/100), 98.2% with two (56/57), and 96.1% with three or more (49/51).
CONCLUSIONS: In women with DOR and metabolic comorbidities, supplementation with the SIRT-Nrf2 activating formulation was associated with clinically meaningful AMH and AFC levels, alongside conception rates exceeding 96% across all comorbidity and prior ART-failure subgroups. These findings suggest that SIRT-Nrf2 pathway activation may address a fundamental mechanism of ovarian ageing in DOR and support its potential as a non-invasive adjunctive strategy in treatment-resistant populations.
IMPACT STATEMENT: This real-world evidence provides early clinical support that targeted SIRT-Nrf2 activation can produce measurable ovarian reserve in women with established DOR. The high conception rates observed, including after repeated ART failure, warrant further validation through prospective controlled trials.
SUPPORT: No financial support was received for this study

O-200 3:55 PM Tuesday, October 27, 2026

END TO END EVALUATION OF B-CELL LYMPHOMA 6 (BCL6) POSITIVE PATIENTS: LAPAROSCOPIC CONFIRMATION OF ENDOMETRIOSIS AND REPRODUCTIVE OUTCOMES IN A SINGLE-CENTER COHORT.
Kavery Nivana Theethira Poonacha, MS[1], Alexandra Akhtarzandi-Das, MS[2], Avika Kasubhai, BA[2], Patrick C Roney, MS[3], Preston Sacks, M.D.[4] and Rafat A Abbasi, M.B.B.S.[5], [1]Arlington, VA, [2]Georgetown University School of Medicine, Washington, DC, [3]Georgetown University Department of Biostatistics, Bioinformatics, and Biomathematics, Washington, DC, [4]Columbia Fertility Associates, Washington, DC, [5]Columbia Fertility Associates, Washington, MD

OBJECTIVE:
To evaluate the positive predictive value (PPV) of BCL6 for laparoscopically confirmed endometriosis and assess reproductive outcomes following surgical treatment in a single-center, cohort of BCL6-positive infertility patients.
MATERIALS AND METHODS:
93 unexplained infertility (UI) patients from our fertility center were retrospectively identified (2021-2024). All underwent PGT-A screening for euploid embryo selection, and a standardized infertility workup. An endometrial biopsy, performed in the luteal phase of a natural cycle, was tested for markers for chronic endometritis (CD138) and endometriosis (BCL6). This was followed by laparoscopic diagnosis and treatment. BCL6 diagnostic performance was evaluated by sensitivity, specificity, and PPV with 95% Confidence Intervals (CIs). To reduce confounding, only patients with BCL6 testing during their natural cycle were included. Two-sample test for equality of proportions with continuity correction compared pregnancy rate (PR) and live birth rate (LBR) against published prospective rates in untreated BCL6-positive patients, with 95% CIs calculated using the Wilson method. Those lost to follow-up or still pregnant were excluded from PR and LBR analysis.
RESULTS:
Among BCL6-positive patients undergoing laparoscopic treatment, the PR was 79.2% and the LBR was 61.9%, which were significantly higher than published rates in untreated BCL6-positive cohorts (pregnancy ~15–17%, live birth ~8–12%; $p < 0.001$).
Table 1. Diagnostic Performance and Reproductive Outcomes in BCL6-Positive Cohort

Outcome	Result	95% CI
Sensitivity (BCL6 for endometriosis) **Specificity**	**97%** **33%**	**0.84–1.00** **0.01–0.91**
PPV	**94%**	**0.80–0.99**
PR (treated cohort)	**79.2% (19/24)**	**59.5–90.8%**
LBR (treated cohort)	**61.9% (13/21)**	**40.9–79.2%**
Reference PR (untreated)	**15–17%**	**—**
Reference LBR (untreated)	**8–12%**	**—**
p-value (treated vs untreated)	**<0.001**	**—**

CONCLUSIONS:
BCL6 testing demonstrated a high positive predictive value (94%) for laparoscopically confirmed endometriosis, supporting its use as a minimally invasive screening tool to identify surgical candidates. BCL6-directed laparoscopic management was associated with PR and LBR of 79.2% and 61.9% respectively, exceeding those in untreated BCL6-positive cohorts (pregnancy ~15–17%, live birth ~8–12%; $p < 0.001$ for all comparisons), suggesting this pathway may improve reproductive outcomes in patients with unexplained infertility.
IMPACT STATEMENT:
This study uniquely integrates biomarker screening, surgical diagnosis, and reproductive outcomes within a single-center cohort, providing the first end-to-end validation of a BCL6-directed clinical pathway. The results support earlier identification and targeted surgical management of endometriosis in infertility patients.
SUPPORT: None to disclose.

O-201 4:05 PM Tuesday, October 27, 2026

LETROZOLE MODIFIED-NATURAL VERSUS PROGRAMMED FROZEN EMBRYO TRANSFER CYCLES IN WOMEN WITH POLYCYSTIC OVARY SYNDROME (PCOS).
Brandon O'Brien, DO[1], Arielle Yeshua, MD[2], Jenelle Williams, B.S.[1], Kerry S.J. Flannagan, PhD[3], Dr. Kyle Nguyen Le, M.D.[2], Bijan Morshedi, M.D.[2], Nicole K. Banks, M.D.[2] and Benjamin S Harris, M.D., M.P.H[2], [1]Macon & Joan Brock Virginia Health Sciences, Eastern Virginia Medical School at Old Dominion University, Norfolk, VA, [2]Shady Grove Fertility - Jones Institute, Norfolk, VA, [3]US Fertility, Rockville, MD

OBJECTIVE:
To compare live birth following letrozole modified-natural versus programmed frozen embryo transfer (FET) cycles in women with polycystic ovary syndrome (PCOS).
MATERIALS AND METHODS:
This is a retrospective cohort study including PCOS patients aged 18–45 at a large private practice network from January 2023 to May 2025 that underwent either a letrozole modified-natural or programmed endometrial preparation for FET. Letrozole modified-natural cycles were defined as cycles using letrozole for ovulation induction prior to embryo transfer, while programmed cycles utilized exogenous hormone replacement therapy. The primary outcome was live birth. Secondary outcomes included biochemical pregnancy, clinical pregnancy, miscarriage, and cycle cancellation. Adjusted risk ratios (aRRs) were calculated using multivariable regression with generalized estimating equations. Multivariable analyses were adjusted for patient age at transfer, body mass index (BMI), and number of prior FET cycles.
RESULTS:
A total of 3,006 programmed and 593 letrozole modified-natural FET cycles were included. Baseline characteristics were comparable between groups. Outcomes are reported in table. Live birth was significantly increased in letrozole modified-natural cycles compared with programmed cycles (47.9% vs. 43.7%; aRR 1.12, 95% CI 1.03–1.22). Biochemical pregnancy (9.8% vs. 13.6%; aRR 0.59, 95% CI 0.4-0.86) and miscarriage (13.8% vs. 20.3%; aRR 0.71, 95% CI 0.5-1) were significantly decreased in letrozole modified-natural cycles. There were no differences in clinical pregnancy or cycle cancellation between groups.
KEY OUTCOMES TABLE

Outcome	Programmed n (%)	Letrozole n (%)	aRR (95% CI)
Live Birth	1214 (43.7)	256 (47.9)	1.12 (1.03–1.22)
Biochemical Pregnancy	267 (13.6)	35 (9.8)	0.59 (0.40–0.86)
Clinical Pregnancy	1671 (57.8)	317 (57.2)	1.04 (0.97–1.11)
Miscarriage	316 (20.3)	41 (13.8)	0.71 (0.50–0.999)
Cancellation	250 (8.3)	80 (13.5)	1.17 (0.80–1.73)

CONCLUSIONS:
In women with PCOS, letrozole modified-natural FET cycles were associated with higher live birth and lower pregnancy loss compared with programmed cycles, without a

difference in cancellation rates. These findings support the use of letrozole modified-natural FET as an effective alternative to programmed protocols in this population.
IMPACT STATEMENT:
In women with PCOS undergoing frozen embryo transfer, letrozole modified-natural FET cycles were associated with higher live birth compared with programmed cycles, suggesting potential advantages of ovulatory-based endometrial preparation in this population.

O-202 4:15 PM Tuesday, October 27, 2026

THE IMPACT OF AMH LEVEL ON EUPLOIDY RATES AND NUMBER OF EUPLOID EMBRYOS: AN ANALYSIS OF 6,217 PGT CYCLES. Mohamad Irani, M.D. and Zev Rosenwaks, M.D., The Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY

OBJECTIVE: Anti-mullerian hormone (AMH) has been shown to be a good ovarian reserve marker. Higher AMH levels have been correlated with higher clinical pregnancy rates following IVF. Some studies suggested that lower AMH levels are associated with higher aneuploidy rates. We aim to determine the impact of AMH level on euploidy rates and the number of euploid embryos in women undergoing preimplantation gestation testing (PGT) cycles.
MATERIALS AND METHODS: This is a retrospective cohort study including PGT cycles that were completed between 2013 and 2024. Cycles were divided into four groups according to woman's age at retrieval: <35, 35-37, 38-40, and >40 years. Euploidy rates, number of euploid embryos, and the likelihood of having at least 1 euploid embryo were compared between the following groups: AMH <1, 1-4, and >4 ng/mL. χ^2 and Fisher's exact tests were used for categorical variables. Parametric data were compared using the analysis of variance (ANOVA) test.
RESULTS: A total of 6,217 PGT cycles were included. AMH <1 ng/mL was associated with lower number of euploid embryos but comparable euploidy rates to AMH 1-4 and >4 ng/mL (Table 1). In women younger than 35 years, AMH <1 ng/mL was associated with a significantly lower likelihood of having at least 1 euploid embryo (82.9%, 90%, 95%, respectively, *P*<0.001) compared to AMH 1-4 and >4 ng/mL. Similarly, in women aged 35-37 years, AMH <1 ng/mL was associated with a significantly lower lower likelihood of having at least 1 euploid embryo (67.7%, 82%, 90.6%, respectively, *P*<0.001) compared to AMH 1-4 and >4 ng/mL. Furthermore, in women aged 38-40 years, AMH <1 ng/mL was associated with a significantly lower likelihood of having at least 1 euploid embryo (54.2%, 69.7%, and 76.2%, respectively, *P*<0.001) compared to AMH 1-4 and >4 ng/mL. Likewise, in women older than 40 years, AMH <1 ng/mL was associated with a significantly lower likelihood of having at least 1 euploid embryo (22.4%, 35%, 41.2%, respectively, *P*<0.001) but comparable euploidy rates (10.8%, 12%, and 10%, respectively, *P*=0.37) to AMH 1-4 and >4 ng/mL.

Age (years)	outcomes	AMH < 1 ng/mL	AMH 1-4 ng/mL	AMH >4 ng/mL	*P* value
<35 (n=1036)	euploidy rates (%)	50.4	49.7	50.7	0.85
	mean number of euploid embryos	1.8	3.6	4.6	<0.001
35-37 (n=1438)	euploidy rates (%)	37.2	40.3	43.1	0.03
	mean number of euploid embryos	1.2	2.4	3.6	<0.001
38-40 (n=1827)	euploidy rates (%)	28.3	28.7	26.8	0.65
	mean number of euploid embryos	0.86	1.5	2.2	<0.001
>40 (n=1916)	euploidy rates (%)	10.8	12	10	0.37
	mean number of euploid embryos	0.27	0.51	0.62	<0.001

Table 1
CONCLUSIONS: AMH level is associated with a higher number of euploid embryos, but it doesn't influence euploidy rates.
IMPACT STATEMENT: AMH reflects ovarian reserve, which affects the likelihood of having euploid embryos. However, it doesn't reflect oocyte quality.
SUPPORT: none

O-203 4:25 PM Tuesday, October 27, 2026

mRNA-LNP DELIVERY: A NOVEL THERAPY FOR TESTICULAR DISORDERS. Chencheng Yao, PHD and MD[1], Peng Li, MD[2], Yifan Sun, PhD[3] and Zheng Li, MD[4], [1]Shanghai City, Shanghai City, China, [2]Shanghai General Hospital, Shanghai Jiao Tong University School of Medicine, China, [3]Shanghai General Hospital, Shanghai, Shanghai, China, [4]Shanghai General Hospital, China

OBJECTIVE:
To develop a mRNA–LNP platform to deliver functional mRNA into germ cells, Sertoli cells, and Leydig cells, thereby restoring fertility in spermatogenic disorders and normalizing testosterone deficiency.
MATERIALS AND METHODS:
Using mouse models, we performed high-throughput screening of novel ionizable lipid formulations to develop an efficient lipid nanoparticle (LNP) platform targeting germ cells, Sertoli cells, and Leydig cells. Mouse models of spermatogenic failure were generated based on *Msh5* (MutS Homolog 5) knock-in, *Maps* (pachynema-specific protein) knock-out, *Btbd18* (BTB Domain Containing 18) knock-out, and *Agk* (Acylglycerol Kinase) conditional knock-out. And mouse model of testosterone deficiency was generated based on *Lhcgr* (Luteinizing Hormone/Choriogonadotropin Receptor) knock-out. Through rete testis microinjection, *Msh5*, *Maps*, *Btbd18* and *Agk* mRNA-LNPs were delivered into the seminiferous tubules of the testes. Also *Lhcgr* mRNA-LNP was delivered into the testis via testicular interstitial injection. We then evaluated the restoration of spermatogenesis in these five mice models. And restoration of male phenotype was investigated in *Lhcgr* knock-out mice. Furthermore, we assessed whether the recovered sperm possessed fertilization capacity and systematically evaluated the safety of the mRNA-LNP–mediated testicular function restoration strategy. Mann-Whitney U test and non-parametric Kruskal–Wallis test were used in current study.
RESULTS:
Rete testis microinjection of *Msh5*, *Maps*, *Btbd18*, *Agk*, and *Lhcgr* mRNA-LNPs successfully rescued spermatogenic failure in distinct mice models. Chromosome spread analysis, H&E staining, and immunofluorescence (IF) demonstrated that, as early as day 18 post-rescue (*Msh5* mRNA delivery), germ cells were able to complete meiosis and spermiogenesis (31.91 ± 2.97% of PNA-positive tubules cross-sections after rescue VS 0% in KI mice model), developing into sperm that persisted within the seminiferous tubule lumen for approximately 3 days. The rescued sperm were capable of fertilizing oocytes via intracytoplasmic sperm injection (ICSI), supporting embryo development to the blastocyst stage and yielding viable offspring. Genotyping of single sperm and single blastocysts confirmed that the delivered mRNA was not integrated into the genome. In addition, H&E and IF staining showed no ectopic expression in other tissues and no evident tissue damage following mRNA-LNP treatment. Furthermore, delivery of *Maps*, *Btbd18*, *Agk*, and *Lhcgr* mRNA-LNPs into the seminiferous tubules successfully rescued spermatogenic failure. Sperm were observed within the seminiferous tubule lumen at post-treatment (21 days in *Maps*, *Btbd18* KO model and 7 days in *Lhcgr* KO respectively). And the number of sperm was significantly elevated at post-treatment in Agk KO model. In addition, delivery of Lhcgr mRNA successfully normalized testosterone deficiency in *Lhcgr* KO mice.
CONCLUSIONS:
mRNA-LNP delivery technology holds promise as a clinical therapeutic platform for both spermatogenic disorder and testosterone deficiency.
IMPACT STATEMENT:
mRNA-LNP Delivery: A Novel Therapy for Testicular Disorders

O-204 4:35 PM Tuesday, October 27, 2026

COMPARISON OF TESTICULAR AND EJACULATED SPERM USING A SIBLING OOCYTE DESIGN IN SEVERE MALE FACTOR INFERTILITY. Zeynep Celik Demirkol, MD[1], Ipek Nur Balin Duzguner, MD[1], Nihat Demirkol, MD[2] and Semra Kahraman, Prof. MD[1], [1]Istanbul Memorial Hospital, Istanbul, Turkey, [2]Zeynep Kamil Women and Children's Diseases Training and Research Hospital, İstanbul, Turkey

OBJECTIVE: To compare embryo development and genetic outcomes between testicular and ejaculated sperm using a sibling oocyte design in patients with severe male factor infertility with either a history of recurrent ICSI failure (≥2 cycles) or severe motility defects (<10% motile sperm in the ejaculate).
MATERIALS AND METHODS: This retrospective cohort study included 101 patients who underwent ICSI between March 2014 and January 2026. Patients with severe male factor infertility with either a history of recurrent ICSI failure (≥2 cycles) (n=59) or severe sperm motility defects (<10% motile sperm in the ejaculate) (n=42) were included. Recurrent ICSI failure was defined as a low fertilization rate, total fertilization failure, poor embryo development, or a low blastocyst formation rate.
In the index cycle, sibling oocytes were allocated and injected with either testicular sperm retrieved via testicular sperm aspiration (TESA) or ejaculated sperm, allowing for a within-patient paired comparison.
A total of 1312 oocytes were injected (testicular: n=669; ejaculated: n=643). Outcomes included normal and abnormal fertilization, cleavage, blastocyst formation, and top-good-quality blastocyst rates. Genetic outcomes were evaluated in PGT-A cycles, including euploid, aneuploid, mosaic, and transferable embryo rates. Statistical analyses used paired comparisons, with p<0.05 considered statistically significant.
RESULTS: In paired, within-patient analyses, no significant differences were observed between testicular and ejaculated sperm in normal and abnormal fertilization, cleavage, or blastocyst and top-good quality blastocyst rates (p>0.05, Table). Genetic outcomes were also comparable following PGT-A (p>0.05).
CONCLUSIONS: These findings suggest comparable embryologic and genetic outcomes between testicular and ejaculated sperm in ICSI cycles among patients with severe male factor infertility, including those with recurrent ICSI failure or severe motility defects. Within a sibling oocyte model, the use of testicular sperm did not demonstrate a clear advantage over ejaculated sperm.
IMPACT STATEMENT: These findings suggest that the use of testicular sperm in non-azoospermic patients with severe male factor infertility may not provide additional embryologic or genetic benefit. Careful consideration is warranted to avoid unnecessary invasive procedures.

Outcome	**Testicular sperm Median (IQR)**	**Ejaculated sperm Median (IQR)**	**P value**

Normal fertilization rate	0.78 (0.67–0.90)	0.80 (0.54–1.00)	0.766
Abnormal fertilization rate	0.00 (0.00–0.14)	0.00 (0.00–0.00)	0.123
Cleavage rate	1.00 (1.00–1.00)	1.00 (1.00–1.00)	0.389
Blastocyst formation rate	0.50 (0.20–0.80)	0.57 (0.33–0.75)	0.243
Top-good-quality blastocyst rate	0.63 (0.33–0.79)	0.60 (0.33–0.88)	0.786

SUPPORT: No financial support.

O-205 4:45 PM Tuesday, October 27, 2026

PHARMACOECONOMIC AND CLINICAL IMPACT OF A MEDICATION THERAPY MANAGEMENT PHARMACY SERVICE IN A REPRODUCTIVE ENDOCRINOLOGY AND INFERTILITY CLINIC. Joseph Miles Azurin, BSPharm, PharmD[1], Amin A Milki, M.D.[2], Ashley Mello, PharmD, BCPPS[3], Crystal Perez, B.S.N., R.N.[4] and Danielle Buranintu, PharmD, BCPS[5], [1]Indio, CA, [2]Stanford University, Stanford, CA, [3]Lucile Packard Children's Hospital, Palo Alto, CA, [4]Stanford Medicine Children's Health, [5]Stanford Medicine Children's Health, Palo Alto, CA

OBJECTIVE: To determine the pharmacoeconomic impact of a dedicated medication therapy management (MTM) pharmacy service in a reproductive endocrinology and infertility (REI) clinic.
MATERIALS AND METHODS: This retrospective descriptive, single-site study examined MTM service interventions from March 1–December 31, 2025. Female patients (≥18 years) on injectable fertility medications, referred to the MTM service, and dispensing through a specialty pharmacy were included. The pilot was staffed by one MTM clinical pharmacist who provided comprehensive medication reviews via telehealth, a specialty pharmacist who partnered with the MTM clinical pharmacist on care coordination, including insurance and preferred formulation navigation, and a specialty pharmacy technician who supported prior authorizations and refills. Interventions documented by the MTM service in progress notes were extracted from the electronic health record and categorized into 24 types across 4 domains: Cost Savings, Safety & Risk Mitigation, Therapeutic Optimization, and Patient Support. Economic impact (cost savings + cost avoidance) was determined through literature-derived values. Under institutional collaborative practice protocols, the MTM clinical pharmacist was authorized to modify orders within scope of practice. Due to limited fertility-specific economic data, a sensitivity analysis was applied: low/medium/high estimates used the lowest/midpoint/highest published values when multiple studies were available, or 50%/100%/150% of the published value when only one study was available. Intervention types without published data were excluded.
RESULTS: A total of 291 interventions were documented across 144 MTM notes involving 110 patients. Pharmacy service interventions occurred in 92.4% of encounters, averaging 2 per visit. By domain: Cost Savings (87 interventions, 30%), Therapeutic Optimization (83, 29%), Patient Support (64, 22%), and Safety & Risk Mitigation (57, 20%). Top interventions by count were formulation interchange (n=62) and care coordination (n=45), driven by collaboration between the MTM and specialty pharmacy teams, and supplement initiation (n=30), led by the MTM clinical pharmacist and supported by literature. Total economic impact ranged from $502,348 (low) to $1,027,029 (medium) to $1,868,358 (high). Cost savings ranged from $112,059–$457,170; cost avoidance from $390,289–$1,411,189. Supplement initiation had the highest medium economic value ($341,864), followed by care coordination ($187,836) and formulation interchange ($132,452).
CONCLUSIONS: Embedding an MTM pharmacy service in an REI clinic generated substantial clinical and pharmacoeconomic value; 291 clinical interventions with an economic impact of approximately $500,000–$1.9 million over 10 months. The service addressed medication safety, therapeutic optimization, cost reduction, and patient support within the clinic.
IMPACT STATEMENT: MTM pharmacy service is underrepresented in fertility literature, and this study is among the first to quantify its economic impact. This study shows measurable clinical and financial value and has strong potential for replication across REI.
SUPPORT: N/A

ORAL ABSTRACT SESSION: ADVANCED PRACTICE PROVIDER

O-206 3:45 PM Tuesday, October 27, 2026

SMARTER SHARING: A PLANNED MODEL FOR HIGH EMBRYO UTILIZATION IN A DOUBLE GAMETE DONATION PROGRAM. Stephanie K Bartlett, MSN, RN, WHNP-BC, Jenna S. Hynes, MD, Robert M. Coward, M.D., F.A.C.S. and Mary Carolyn Peavey, M.D., M.S.C.I., Atlantic Fertility, Raleigh, NC

OBJECTIVE: The number of donated embryo transfer cycles is increasing but there is limited data regarding the total number of donated surplus embryos. Alternatively, embryos can be created using both donor eggs and donor sperm, known as double gamete donation (DGD). Prior retrospective cohorts analyzing the use of surplus donated embryos versus DGD embryos showed equivalent transfer outcomes. Therefore, the aim of this study was to examine embryo utilization in a planned shared DGD program and to quantify the number of family units built per embryo creation cycle.
MATERIALS AND METHODS: This is a retrospective descriptive study of DGD profiles created within the Shared Beginnings program from 2019-2025. DGD embryos are created by the first intended parent(s) (IPs) with required sharing of surplus embryos to additional IPs. Allocated fresh donor eggs are fertilized with frozen donor sperm to create the DGD cohort. The first IPs receive a predetermined number of euploid embryos based on their family building goals. Surplus embryos are available for selection by subsequent IPs.
Data collected per DGD profile included number of euploid embryos created, number selected for transfer, and number transferred. The number of unique family units receiving embryos from each cohort was recorded and defined as an individual or couple receiving one or more DGD embryo(s). DGD profiles with incomplete PGT-A data were excluded. Descriptive statistics were used to characterize embryo utilization over the study period. DGD embryos were considered utilized when matched with a family unit.
RESULTS: 63 unique DGD profiles were analyzed from 2019-2025. More than half (55%) of unique DGD profiles had 100% embryo utilization with no embryos remaining. Per DGD profile, the average embryo utilization rate was 81%. Of the DGD profiles that did have embryos remaining, the average number of surplus embryos was 2.1 +/-1.5. Of the 251 euploid embryos created, 190 were transferred, representing 76% overall embryo utilization. There were 143 family units built from the 63 DGD profiles with an average of 2.3 IPs per profile.
CONCLUSIONS: Planned sharing of DGD embryos is associated with high embryo utilization and supports the creation of multiple family units per embryo creation cycle. Notably, over half of DGD profiles had complete utilization, thus limiting surplus embryos. Our results highlight the potential of planned shared DGD programs as an effective and efficient means for building families.
IMPACT STATEMENT: Planned shared DGD programs serve multiple families while limiting embryo excess.

O-207 3:55 PM Tuesday, October 27, 2026

FACILITATING FERTILITY PRESERVATION: IMPACT OF STREAMLINED REFERRALS FROM CANCER CARE TO INFERTILITY SPECIALISTS. Miranda Blanco-Breindel, M.D.[1], Ashley Sacks, M.D.[1], Isabel Bustamante, DNP[1], Lauren Ursillo, M.D.[1], Alexandra Peyser, MD[1], Tomer Singer, MD[2] and Dr. Randi H Goldman, MD, MBA[2], [1]Northwell, New Hyde Park, NY; Department of Obstetrics and Gynecology, Division of Human Reproduction, Manhasset, NY; Zucker School of Medicine, Uniondale, NY, [2]Northwell, New Hyde Park, NY

OBJECTIVE: To evaluate the impact of a streamlined referral protocol utilizing Advanced Practice Providers on fertility preservation consultation rates and treatment uptake among cancer patients requiring gonadotoxic therapy at a single large academic institution.
MATERIALS AND METHODS: A retrospective study evaluating fertility preservation counseling and treatment uptake among patients newly diagnosed with cancer before and after the implementation of a streamlined referral protocol at a single academic institution in New York. Data was collected from 95 patients (age 1-49 years old) with a new diagnosis of cancer requiring gonadotoxic therapy between 1/2025 and 2/2026. A novel streamlined Oncofertility protocol was implemented in 8/2025 that utilizes Nurse Practitioner (NP) support to expeditiously contact patients and their families virtually upon Oncologist request, followed by a fertility workup initiated by an NP and prompt follow up by an attending physician to ensure timely access to care. Variables collected include cancer diagnosis, initial clinical outreach and physician consultation completion, and fertility preservation treatment uptake. Descriptive statistics are calculated for all variables.
RESULTS: Referral volume increased by 88% post-implementation (33 patients pre-implementation vs 62 post-implementation over 7-month periods each). Prior to August 2025, 25 (76%) of patients went on to complete initial clinical counseling with a nurse practitioner compared with 47 (95%) after August 2025. Among the 85 patients who completed initial counseling, 58 (68%) advanced to physician consultation. Of physician-consulted patients, 46 (78%) completed fertility preservation cycles: 32 (71%) oocyte cryopreservation, 12 (27%) embryo banking, and 2% ovarian tissue cryopreservation. The median age of the cohort was 33 (range 1-49). Breast cancer represented 52% of the cases, followed by GYN [15% total; ovarian 9 (9%), endometrial 4 (4%), uterine 1 (1%) and cervix 1 (1%)] and blood/bone (12%).
CONCLUSIONS: A streamlined Oncofertility referral protocol, leveraging existing NPs and technological resources, is associated with increased rates of fertility preservation counseling and treatment among patients with newly diagnosed cancer at our institution.
IMPACT STATEMENT: As innovations in cancer treatment provide better prognosis for patients, fertility preservation should increasingly be prioritized. These findings demonstrate that implementing streamlined referral protocols can enhance cancer patients' awareness and utilization of fertility preservation services, with personalized counseling from experienced NPs, supporting shared decision-making around family-building options.

O-208 4:05 PM Tuesday, October 27, 2026

ADDRESSING VARIATIONS IN SCOPE OF PRACTICE AMONG FERTILITY ADVANCED PRACTICE PROVIDERS. Jamie Feingold, BSN, MSN, DNP[1], Shannon Moreland, DNP, MS, RN, FNP, CEN[2], Meghan Underhill, PhD, APRN, FAAN[2] and Sue Stanek, PhD, MSN/Ed, RN[2], [1]University of Rochster., Rochester, NY, [2]University of Rochester, Rochester, NY

OBJECTIVE: To develop, implement, and evaluate an innovative training program for onboarding new Advanced Practice Providers (APPs) and optimize existing APPs' practice in a fertility clinic. The long-term goal is to minimize the scope variation and promote the full scope of practice among fertility APPs locally and nationwide.
MATERIALS AND METHODS: An Onboarding Workgroup, consisting of institution and clinic stakeholders, was established to develop an Onboarding Roadmap for

systematic, hands-on training of newly hired APPs. Objective and perceived competency were evaluated during the implementation phase using the Reporter, Interpreter, Manager, Educator (RIME) scale and the Perceived Competency Scale to assess learning development before and after implementation and inform the final Roadmap. The Onboarding Roadmap was piloted with two existing APPs over a 3-month period. During the pilot, perceived competency was assessed pre-and post-didactic training, and after 10 procedures, and at completion of training. Observed competency was measured for each procedure. The expected cost and financial benefit of the pilot per provider were estimated.
RESULTS: Both providers showed improved perceived competency after didactic training. However, the number of procedures each participant required to achieve perceived and observed competency differed. Provider A achieved competency after 10 proctored procedures. Provider B required 23 proctored procedures, with additional training focused on areas of deficiency and procedural repetition. Based on pilot feedback, the Onboarding Roadmap was refined and finalized to include a competency-based training program that outlines a 15-week day-by-day comprehensive onboarding. The Roadmap begins with foundational skills and progresses to advanced skills and includes evidence-based educational resources to equip the APP to practice to the full extent of their scope. For the onboarding program's development and pilot testing, the clinic's estimated cost per provider was $2,065, and could generate an additional $70,951 per provider based on current provider productivity.
CONCLUSIONS: Standardizing the scope of practice through practice-ready education and objective competency measures could enhance workflow and increase practice revenue thereby reducing the risk of new-hire turnover. Ensuring that APPs practice within their full scope is essential to providing high-quality patient care and to clinician satisfaction.
IMPACT STATEMENT: While onboarding new APPs, learning should be tracked through assessments of perceived and observed competency, enabling early identification of additional learning needs and building confidence in their ability to practice independently upon completion of their training. The local setting will continue to use the Onboarding Roadmap to ensure its APPs practice to the full extent of their legal scope. A national, standardized APP training or fellowship program is recommended. Ultimately, providing consistent, evidence-based training opportunities for APPs to practice at the full limits of their legal scope in this highly subspecialized field will improve patient care and provider satisfaction.

ORAL ABSTRACT SESSION: NURSING

O-209 4:30 PM Tuesday, October 27, 2026

REDUCING BARRIERS TO MALE FERTILITY ASSESSMENT: EVALUATION OF AN AT-HOME SEMEN ANALYSIS AND NURSE-LED CONSULTATION PATHWAY IN THE UNITED KINGDOM. Francesca Steyn, BSc (Hons) Nursing[1] and Rebecca Kay, MEng, MSc, PhD[2], [1]Swansea, Glamorgan, United Kingdom, [2]Malebox Health, London, London, United Kingdom

OBJECTIVE:
Male factor contributes to approximately half of infertility cases, yet men are investigated later and less thoroughly than their female partners. Barriers include clinic based appointments, stigma, and results delivered without clinical context. We evaluated a nurse-led pathway pairing at-home semen analysis with structured video consultation by a Nursing and Midwifery Council (NMC) registered fertility nurse, characterising the cohort reached and the care delivered.
MATERIALS AND METHODS:
Prospective service evaluation of consecutive UK men completing the nurse-led consultation arm between January and April 2026.
UK men aged 18 and over completing at-home semen collection using a temperature-controlled kit. All samples were analysed by Health and Care Professions Council (HCPC) registered clinicians against World Health Organisation (WHO) 6th edition reference values. Results were delivered via structured video consultation by an NMC registered fertility nurse. Every consultation covered WHO reference interpretation, individualised lifestyle counselling, psychological context, and onward referral where indicated, regardless of result. Consultations were delivered by three fertility nurses.
RESULTS:
47 men completed the pathway. Mean age 34.6 years (SD 6.3; range 22 to 58). Reasons for testing (not mutually exclusive): 51.1% curious about future fertility, 51.1% actively trying to conceive, 4.3% pre-fertility treatment. All 47 men (100%) received individualised lifestyle counselling as a standard component of the nurse-led consultation, regardless of whether their semen parameters met WHO reference values. All analyses were reported against WHO 6th edition reference values.
CONCLUSIONS:
A nurse-led model pairing at-home semen analysis with structured video consultation reaches UK men across a wide age range and for a range of indications, with roughly equal representation of proactive fertility assessment and active fertility concern. Delivering lifestyle counselling and supported interpretation to every patient, not only those with abnormal results, aligns with National Institute for Health and Care Excellence (NICE) fertility guidance and addresses psychological risks recognised in the male infertility literature. Fertility nurses are well placed to combine clinical interpretation with psychosocial support men rarely seek unprompted. Wider adoption may help close a persistent gap in male factor investigation.
IMPACT STATEMENT:
A nurse-led consultation as part of an at-home semen analysis pathway delivers individualised lifestyle counselling and supported interpretation to every patient, regardless of result, offering a replicable model for closing the longstanding gap in male fertility engagement.

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O-210 4:40 PM Tuesday, October 27, 2026

AGE CARRIES THE WEIGHT: OBESITY DOES NOT DRIVE EMBRYONIC ANEUPLOIDY IN IN VITRO FERTILIZATION (IVF) WITH PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY (PGT-A); A RETROSPECTIVE COHORT STUDY OF 12,377 PATIENTS AND 62,884 BLASTOCYSTS. Christine V Whitehead, MS, BSN, RN[1], Kristin Lefebvre, PhD[2] and Emre Seli, M.D.[3], [1]IVIRMA Global Research Alliance, Basking Ridge, NJ, [2]University of Jamestown, ND, [3]IVIRMA Global Research Alliance, RMA New Jersey, Basking Ridge, NJ

OBJECTIVE: To determine whether maternal obesity is associated with a higher rate of aneuploid embryos per cycle and whether maternal obesity is associated with an increased risk of no euploid embryos following the first IVF cycle.
MATERIALS AND METHODS: Multicenter retrospective cohort study including patients with a recorded body mass index (BMI) from Jan 2020 – Dec 2024 undergoing their first, autologous IVF cycle with PGT-A via a single assay. IVF cycles involving other PGT indications, where not all blastocysts were biopsied, used surgical or donor sperm or had no blastocysts vitrified were excluded. Patients were stratified into obese (BMI≥30.0kg/m²) and non-obese groups (BMI<30.0kg/m²). Primary outcome was aneuploidy rate per first IVF cycle. Wilcoxon rank-sum, t-test, and Pearson chi-square were used for continuous and categorical data as appropriate. Given the large sample size, standardized mean differences were also calculated. A Poisson regression with robust variance and an offset for total blastocysts was used to estimate rate ratios for aneuploidy and risk ratios for the binary outcome of no euploid embryos, adjusting for oocyte age, IVF center and year of oocyte retrieval. BMI was modeled continuously to determine predicted aneuploidy rates across BMI values. Subgroup analysis by BMI categories using the healthy weight group as reference and age as an effect modifier were assessed. Sensitivity analyses including anti-Mullerian hormone (AMH) and peak serum estradiol were also performed.
RESULTS: 12,377 patients were included: 9,258 non-obese and 3,119 obese, contributing 62,884 biopsied blastocysts. Obese patients were slightly older (36.0 ± 4.2 vs 35.6 ± 4.1) although the standardized mean difference was small (0.09). Obese patients had lower serum estradiol and progesterone levels during ovarian stimulation, however embryologic outcomes were similar and blastulation rates did not differ between groups (aRR 0.98; 95% CI 0.95-1.00 p=0.17). Aneuploidy rates were comparable between obese and non-obese groups (32.2% versus 32.1%). After adjustment, obesity was associated with a slightly lower aneuploidy rate (aRR 0.96; 95% CI 0.93-0.99 p=0.003) compared to non-obese. Findings were consistent across BMI categories, and this effect persisted after accounting for peak serum estradiol and AMH. Obese patients did not have an increased risk of no euploid embryos following the first IVF cycle (aRR 0.93; 95% CI 0.85-1.02 p=0.11). Oocyte age was associated with a higher aneuploidy rate per additional year (aRR 1.11; 95% CI 1.11-1.12 p<0.001). The association between obesity and aneuploidy was consistent across age groups, with no evidence of effect modification by age (p=0.14).
CONCLUSIONS: Maternal obesity was not associated with a higher rate of embryonic aneuploidy per cycle or an increased risk of no euploid embryos following the first IVF cycle. Maternal age remained the primary determinant of aneuploidy, and the relationship between BMI and aneuploidy did not differ across age groups.
IMPACT STATEMENT: Maternal obesity does not meaningfully impair embryonic chromosomal competence and is not associated with an increased risk of no euploid embryos following the first IVF cycle.
SUPPORT: none

ORAL ABSTRACT SESSION: REPRODUCTIVE MEDICINE (NON-INFERTILITY)

O-211 3:45 PM Tuesday, October 27, 2026

DOES PROGESTIN TRIGGER OVULATION IN NATURAL PROLIFERATIVE PHASE FROZEN EMBRYO TRANSFER CYCLES? Einav Peero Dr, MD, Shahar Kol, M.D., Chen Shkolnik, M.D, Marah Hodruj, MD and Samer Khoury, M.D., Department of Obstetrics and Gynecology, Division of Reproductive Endocrinology and Infertility, Bnai Zion Medical Center,, Haifa, Israel

OBJECTIVE:
In the natural proliferative phase frozen embryo transfer (NPP-FET) protocol, vaginal progesterone is initiated when the endometrium reaches a proliferative thickness of at least 7 mm and a pre-ovulatory follicle is visible. However, whether progestin in this setting triggers, suppresses, or has no effect on the luteinizing hormone (LH) surge and ovulation has not been established. The present study evaluated the endocrine effects of dydrogesterone on ovulation in NPP-FET cycles.
MATERIALS AND METHODS:
An exploratory, prospective, endocrine study conducted at a university-affiliated reproductive center. Thirty patients were recruited between June 2025 and February 2026. Endometrial preparation followed the NPP-FET protocol using dydrogesterone (Duphaston®) 30 mg daily, initiated once endometrial thickness reached ≥7 mm and a dominant follicle ≥18 mm was observed. Dydrogesterone was selected because it is undetectable in standard serum progesterone (P) assays, allowing serum P to serve as an

exclusive marker of corpus luteum (CL) activity. The primary outcome was serum P and LH levels on the day of dydrogesterone initiation and one day later. Secondary outcomes included CL detection on transvaginal ultrasound three days after dydrogesterone initiation and serum P levels on the day of embryo transfer.
RESULTS:
Twenty-six patients were analyzed in the study. The mean age of the study population was 36.0 ± 3.9 years, and the mean BMI was 24.1 ± 5.6 kg/m². An LH surge was documented in 16 patients (61.5%) on the day of dydrogesterone initiation, followed by a P rise above 1.5 ng/mL the next day in 9 patients (34.6%). A CL was visualized on vaginal ultrasound in 23 patients (88.5%) three days after dydrogesterone initiation. On the day of embryo transfer, mean serum P levels were 2.81±1.09 ng/ml for cleavage-stage transfers and 9.48±4.23 ng/ml for blastocyst transfers ($P < 0.001$).
CONCLUSIONS:
In NPP-FET cycles, progestin administered when endometrial thickness is ≥7 mm and a dominant follicle is ≥18 mm neither prevents nor triggers the LH surge. In this setting, spontaneous ovulation occurs in most patients, accompanied by a functional CL.
IMPACT STATEMENT:
In NPP-FET cycles, dydrogesterone administered when endometrial thickness is ≥7 mm and a dominant follicle is ≥18 mm neither prevents nor triggers the LH surge. Spontaneous ovulation occurs in most patients, accompanied by functional CL formation. These findings support the biological plausibility of NPP-FET as a protocol that preserves the endocrine benefits of a natural ovulatory cycle while allowing greater scheduling flexibility than conventional natural-cycle FET.
SUPPORT: None

O-212 3:55 PM Tuesday, October 27, 2026

MODELING THE MENOPAUSAL TRANSITION: GRADUAL OVARIAN FAILURE IN VCD MICE LEADS TO ALTERED BODY COMPOSITION AND METABOLIC DYSFUNCTION. Cecilia Rosenbaum, MD[1], Heather McClurg, MSc[2], Itzel Morales Hernandez, MSc[2], Amanda Ferraro, MD[3], Zelieann R Craig, PhD[4], LaTasha B. Craig, M.D.[3], Erendira Garcia, BS[2], Loranda Calderon-Zamora, PhD[5], Willard M Freeman, PhD.[6] and Marisol Castillo-Castrejon, MSc, PhD[2], [1]Edmond, OK, [2]University of Oklahoma Health Sciences Center, Oklahoma City, OK, [3]University of Oklahoma College of Medicine, Oklahoma City, OK, [4]University of Arizona, [5]Autonomous University of Sinaloa, Culiacan, Mexico, [6]Oklahoma Medical Research Foundation

OBJECTIVE: Menopause-associated metabolic and immunological dysfunction has traditionally been modeled using ovariectomy (OVX) in mice, which induces abrupt ovarian failure and fails to recapitulate the gradual transition of natural menopause. To better model the menopausal transition (MT), we used 4-vinylcyclohexene diepoxide (VCD), which induces progressive ovarian follicular depletion, enabling evaluation of both perimenopausal and postmenopausal stages. The objective of this pilot study was to determine how the gradual decline in 17β-estradiol (E2) during peri-ovarian failure drives progressive metabolic and immunological alterations.
MATERIALS AND METHODS: Female C57BL/6J mice were fed a high-fat/high-sucrose diet and housed under thermoneutral conditions. At 15 weeks of age, mice were randomized into three groups (n=5/group): vehicle (sesame oil), VCD (160 mg/kg for 5 days), or VCD+E2 (1 μM). Ten weeks post-treatment, body composition, glucose and insulin sensitivity were assessed. Ovarian failure, adipose tissue morphology, and hepatic lipid accumulation were evaluated by histopathology. Estrous cyclicity was monitored via vaginal cytology. Circulating immunoglobulins were quantified by ELISA. Data were analyzed using ANOVA with post hoc comparisons.
RESULTS: VCD-treated mice exhibited a significant increase in total body weight and fat mass compared to both vehicle and VCD+E2 groups. VCD mice gained 5g, with approximately 50% attributable to increased adiposity, whereas VCD+E2 mice gained ~1.5 g, primarily as fat free mass. VCD induced glucose intolerance and insulin resistance relative to VCD+E2 ($p<0.01$) and vehicle control ($p=0.04$). Uterine mass was significantly higher in VCD+E2 compared to VCD mice ($p<0.001$). In addition, VCD mice had significantly less corpora lutea and antral follicles on histological assessment than vehicle control mice ($p=0.03$ and $p=0.0006$ respectively). VCD-treated mice exhibited elevated IgG levels ($p=0.01$), reduced estrous cyclicity (more anovulatory cycles), and increased adipocyte hypertrophy ($p<0.01$) compared to VCD+E2.
CONCLUSIONS: Gradual ovarian failure induced by VCD is sufficient to drive coordinated increases in adiposity, insulin resistance, and systemic immune activation. Importantly, E2 replacement attenuates these effects, highlighting a central role for estrogen loss in mediating metabolic and immunological dysfunction during the menopausal transition. These findings establish the VCD model as a physiologically relevant platform to interrogate estrogen-sensitive mechanisms linking metabolic and immune health. Ongoing studies are evaluating adipose tissue B cell transcriptomics to define immune cell-specific pathways that could potentially underlie these changes.
IMPACT STATEMENT: This work identifies the menopausal transition as a critical window of vulnerability during which declining estrogen drives metabolic and immune dysregulation, providing a foundation for targeted interventions to prevent obesity-related disease and promote healthy aging in women.
SUPPORT: FUNDING: Oklahoma Center for the Advancement of Science and Technology (HR23-118), Harold Hamm Foundation Team Science, National Institute of General Medical Sciences (NIH P20GM125528), 1S10OD026744, and a Pilot Award from the Oklahoma Nathan Shock Center on Aging Genomic Sciences (P30AG050911).
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O-213 4:05 PM Tuesday, October 27, 2026

OBESITY IS ASSOCIATED WITH INCREASED RISK OF GnRH AGONIST TRIGGER FAILURE. Jensen Reckhow, MD, MPH[1], Erynne Jackson, BA, MPH[2], Joseph A. Lee, BA[2], Beth A McAvey, M.D., M.S.[3], Alan B. Copperman, MD[4] and Tia Jackson-Bey, M.D., M.P.H[4], [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]RMANY || US Fertility, New York, NY, [3]Reproductive Medicine Associates of New York LLP, New York, NY, [4]Icahn School of Medicine at Mount Sinai / Reproductive Medicine Associates of New York, New York, NY

OBJECTIVE: Obesity is characterized by central leptin resistance and dysregulation of hypothalamic GnRH signaling, which may impair the endogenous LH surge and GnRH agonist trigger response. This study evaluates the association between body mass index (BMI) and GnRH agonist trigger failure.
MATERIALS AND METHODS: This retrospective cohort study was conducted at a single academic institution and included all patients who underwent controlled ovarian stimulation with a GnRH agonist trigger for in vitro fertilization (IVF) or oocyte cryopreservation between January 2013 and September 2025. Patients with hypothalamic amenorrhea or missing BMI data were excluded. Patients were grouped by CDC BMI class. Primary outcome was serum LH level the day after GnRH agonist ovulation trigger. Secondary outcomes included trigger failure (serum LH<15 IU/mL with progesterone <1.5 ng/mL the day after trigger), number of oocytes retrieved, and oocyte maturity rate. Descriptive and univariate analyses were performed using one-way ANOVA, Kruskal-Wallis, and chi-square, and trends across BMI classes were assessed by the Cochran-Armitage Trend test. Linear generalized estimating equations accounted for repeat cycles and adjusted for patient and cycle characteristics when evaluating the relationship between BMI and outcomes. Receiver operating characteristic (ROC) curves were used to identify clinically relevant serum LH thresholds.
RESULTS: A total of 37,253 ovarian stimulation cycles were included. No clinically meaningful difference in age between groups was observed, though there was a significant trend of decreasing AMH with increasing BMI class ($p<0.0001$). After adjusting for age, basal LH levels were lower in patients with Class II obesity compared to those with normal BMI ($\beta= -0.75$, $p<0.0001$). The rate of GnRH agonist trigger failure increased with BMI class (3.3% for normal weight, 3.4% for overweight, 4.0% for Class I obesity, 4.3% for Class II obesity, $p=0.008$, p for trend=0.002). In patients with Class II obesity, each unit increase in BMI was associated with a 11.4IU/mL decrease in post-trigger serum LH ($p<0.0001$). Additionally, each unit increase in basal LH was associated with a 1.5IU/mL increase in post-trigger serum LH ($p=0.0002$), and on ROC curve analysis basal LH was associated with GnRH agonist trigger failure, with a Youden cutoff of basal LH <3.8IU/mL predicting trigger failure (AUC 0.72). Even so, in cycles in which only a GnRH agonist trigger was used, BMI and basal LH were not associated with oocyte yield or maturity rate.
CONCLUSIONS: Increasing BMI is associated with lower basal serum LH levels, lower post-GnRH agonist trigger LH levels, and an increased risk of trigger failure. Importantly, when an adequate trigger response is achieved, obesity is not associated with oocyte yield or maturity.
IMPACT STATEMENT: In patients with obesity without hypothalamic amenorrhea, lower basal LH is associated with increased risk of GnRH agonist trigger failure, but not with oocyte yield or maturity.
SUPPORT: No funding was used for this project.

O-214 4:15 PM Tuesday, October 27, 2026

ENHANCING EMBRYO–ENDOMETRIAL CROSSTALK USING THE CARE PROTOCOL IN RECURRENT IMPLANTATION FAILURE. Sajida Shahnawaz Shanawaz Ahmad, B.A., M.B.B.S., Andrology Institute of Pakistan (STAR ICSI), Lahore, Pakistan

OBJECTIVE:
Recurrent implantation failure (RIF) is a multifactorial condition characterized by impaired decidualization, chronic inflammation, fibrosis, vascular insufficiency, and endometrial dysbiosis. This study evaluated whether combined adjuvant regenerative endometrial therapy (CARE), incorporating stem cells, platelet-rich plasma (PRP), antibiotics, probiotics, and estrogen, improves endometrial receptivity and reproductive outcomes in women with RIF.
MATERIALS AND METHODS:
A prospective controlled cohort study was conducted from January 10, 2024, to June 10, 2025, including 232 women aged 32–42 years with RIF (≥2 failed embryo transfer cycles). Patients with severe systemic disease were excluded. Participants were allocated into a CARE group (n=116) and a control group (n=116). The CARE group received intrauterine regenerative therapy with antimicrobial, microbiome-modulating, and hormonal support. Antibiotics targeted subclinical infection and chronic endometritis, reducing inflammatory cytokine burden. Probiotics restored Lactobacillus-dominant microbiota and enhanced immune tolerance. Estrogen promoted endometrial proliferation and responsiveness. Primary outcomes included trilaminar endometrium formation, clinical pregnancy rate (CPR), and live birth rate (LBR). Statistical analysis used chi-square testing, with odds ratios (OR) and 95% confidence intervals (CI); $p<0.05$ was considered significant.
RESULTS:
The CARE protocol significantly improved endometrial development, with 76.7% (89/116) achieving trilaminar endometrium compared to 44.8% (52/116) in controls (OR 4.06, 95% CI 2.30–7.16; $p<0.001$). CPR was higher in the CARE group (22.2% [26/116]) versus controls (5.1% [6/116]) (OR 5.23, 95% CI 2.04–13.40; $p=0.001$). Cycle cancellation due to inadequate endometrial response was reduced (23.3% vs 55.2%,

p<0.001). LBR was significantly higher in the CARE group (18.1% [21/116]) compared to controls (3.4% [4/116]) (OR 6.24, 95% CI 2.03–19.18; p=0.002). Miscarriage rates did not differ significantly (15.4% vs 33.3%, p=0.28).

CONCLUSIONS:

The CARE protocol enhances endometrial receptivity and improves pregnancy and live birth outcomes in women with RIF. These effects likely result from synergistic actions on regeneration, immune modulation, angiogenesis, infection control, and restoration of the endometrial microenvironment.

IMPACT STATEMENT:

CARE represents a comprehensive therapeutic strategy integrating regenerative, microbiome, and inflammatory modulation approaches, addressing key drivers of RIF and offering a promising option for persistent implantation failure.

SUPPORT: This research study was financially supported by WFA (Women Friendly Association).

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O-215 4:25 PM Tuesday, October 27, 2026

PUTATIVE BIOMARKERS IN EARLY PREGNANCY OUTCOME: WHAT IS NORMAL IN AN IUP?

Suneeta Senapati, MD, MSCE[1], Nathan C Koelper, MPH[1], Warren B Bilker, PhD[1], Peter Takacs, MD, PhD[2], Sunni L Mumford, MS PhD[1], Sarah Horvath, MD, MS[3], Emily S Jungheim, M.D., M.S.[4], Li Shen, PhD[1], Zixuan Wen, BS, MA[1] and Kurt T Barnhart, MD, MSCE[1], [1]University of Pennsylvania, PA, [2]Eastern Virginia Medical School, Norfolk, VA, [3]Penn State Health, [4]Northwestern University Feinberg School of Medicine, Chicago, IL

Biomarker	Quadratic LR Test	2-day rise	7- day rise
hCG	<0.001	1.57	4.90
CG-a	<0.001	1.47	3.83
PSG1	<0.001	1.07	1.28
PSG3	<0.001	1.12	1.47
PSG9	<0.001	1.48	3.94
SFLT	<0.001	1.41	3.36
GDF15	<0.001	1.44	3.60
ADAM12	0.45	1.02	1.06
P4	0.12	1.12	1.49
TFPI2	0.51	1.11	1.42

OBJECTIVE: Current clinical assays cannot distinguish ongoing pregnancy from impending loss. Putative biomarkers may differentiate viability and location[1] yet their natural history at 4-8 weeks gestation remains unknown. We hypothesize that serum markers of trophoblast function, immunomodulation, angiogenesis, and corpus luteum function contribute clinically informative signatures independent of serum hCG in early intrauterine pregnancy (IUP).

MATERIALS AND METHODS: A nested cohort of 75 patients with IUP from an ongoing prospective study with ≥ two serum samples collected at 4-8 weeks' gestation were included. Analytes were quantified by ELISA: human chorionic gonadotropin-alpha (CG-a), progesterone (P4), pregnancy-specific glycoproteins 1, 3, and 9 (PSG1, PSG3, PSG9) tissue factor pathway inhibitor-2 (TFPI2), a disintegrin and metalloproteinase 12 (ADAM12), soluble fms-like tyrosine kinase-1 (SFLT), and growth differentiation factor 15 (GDF15). Log-transformed trajectories were characterized using generalized additive models, which informed mixed linear regression (MLR) models' inclusion of quadratic terms, assessed via likelihood ratio tests. A MLR model fit with the Z-score of each biomarker over time, with bootstrap resampling, assessed trend similarity between candidate markers and serum hCG.

RESULTS: The 75 patients contributed 228 samples (mean 3, (SD 0.72) per patient), had mean age 32.6 years (SD 6.5), and were 40% White, 38% Black, and 10% Hispanic. Forty patients conceived via assisted reproductive technologies, (27 IVF, 36%); 35 had unassisted conceptions (47%). CG-a, PSG1, PSG3, PSG9, SFLT, and GDF15 had quadratic curves (p<0.001). ADAM12 was linear, while P4 and TFPI2 fit neither linear nor quadratic models. After Z-score normalization with joint testing of linear and quadratic terms, each biomarker trajectory remained distinct from hCG (p<0.01). Estrogen/progesterone supplementation, race, and mode of conception did not impact hCG levels, but influenced PSG1, SFLT, and GDF15 (p<0.001).

CONCLUSIONS: Longitudinal analysis in early IUP revealed most putative biomarkers followed quadratic curves distinct from hCG, indicating non-redundant biologic signals. Trophoblast invasion markers ADAM12 and TFPI2 had unique non-quadratic kinetics suggesting they may augment early pregnancy characterization beyond hCG, and consideration of clinical covariates is needed when interpreting emerging markers.

IMPACT STATEMENT: Serum biomarker kinetics beyond hCG may be pivotal for improving early pregnancy risk stratification.

SUPPORT: NIH R01HD110448

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O-216 4:35 PM Tuesday, October 27, 2026

MINOXIDIL USE IS NOT ASSOCIATED WITH OOCYTE MATURATION DURING CONTROLLED OVARIAN HYPERSTIMULATION.

Victoria Lazarov, MD[1], Erynne Jackson, BA, MPH[2], Rebecca Zhuo, MD[1], Hajer Naveed, BA[1], Lily Leibner, BA[3], Tamar Alkon-Meadows, MD[4], Joseph A. Lee, BA[5], Atoosa Ghofranian, M.D.[1], Alan B. Copperman, MD[6] and Kimberley A. Thornton, M.D.[4], [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]US Fertility, New York, NY, [3]New York, NY, [4]Reproductive Medicine Associates of New York, New York, NY, [5]RMANY || US Fertility, New York, NY, [6]Reproductive Medicine Associates of New York LLP, New York, NY

OBJECTIVE: Minoxidil is an FDA-approved treatment for hair loss, particularly in androgenic alopecia. Beyond its vasodilatory properties, emerging evidence suggests that minoxidil may modulate multiple hormonal pathways, including sex steroid signaling, with reported anti-androgenic and estrogenic activity (1). Despite its widespread use in reproductive aged women, data evaluating oocyte maturation from patients using minoxidil in the setting of assisted reproductive technology remain limited. This study aims to assess the association between minoxidil use and oocyte maturation in patients undergoing controlled ovarian hyperstimulation (COH).

MATERIALS AND METHODS: The retrospective cohort study was conducted at a single academic center and included patients undergoing COH for IVF or oocyte cryopreservation between January 2011 through December 2025. Patients utilized minoxidil via oral or topical application. Controls were matched in a 3:1 ratio by age, body mass index (BMI), and Anti-Mullerian hormone (AMH). Primary outcome was number of metaphase II oocytes (MIIs) retrieved. Secondary outcomes included total oocyte yield and maturity rate. Continuous variables were compared using Student's t-tests. Logistic regression with generalized estimating equations (GEE) was used to account for repeated cycles within patients and to estimate risk ratios for oocyte maturity rate adjusted for BMI and AMH.

RESULTS: A total of 163 COH cycles were evaluated. Baseline characteristics were similar between the minoxidil (n=40 cycles) and control groups (n=123 cycles). Subgroup analysis by route of minoxidil exposure was not performed due to small sample sizes in the oral (n = 10 cycles) and topical (n = 12 cycles) groups. Minoxidil-exposed and unexposed groups were similar in age (35.32 ± 5.14 vs 36.64 ± 4.90, p=0.15), and AMH levels (2.03 ± 2.18 vs 2.01 ± 1.95, p=0.97). A significant difference was observed in BMI (26.80 ± 4.78 vs 24.83 ± 4.67, p=0.02). A total of 482 oocytes were retrieved in the minoxidil group and 1,583 in the control group, with 375 and 1188 MIIs obtained, respectively. Oocyte maturity rate was comparable between groups (77.80% vs. 75.05%). In an adjusted analysis accounting for BMI and AMH, minoxidil use was not associated with a statistically significant difference in oocyte maturity rate (RR 1.04; 95% CI 0.61-1.77).

CONCLUSIONS: Minoxidil use during COH is not associated with differences in oocyte maturity after adjustment for BMI and AMH.

IMPACT STATEMENT: Minoxidil use does not appear to adversely affect oocyte maturation during COH.

REFERENCES:

Shen Y, Zhu Y, Zhang L, Sun J, Xie B, Zhang H, et al. New target for minoxidil in the treatment of androgenetic alopecia. *Drug Des Devel Ther* 2023;17:2537–47. doi:10.2147/DDDT.S427612.

O-217 4:45 PM Tuesday, October 27, 2026

IMPACT OF GLP-1 AND COMBINED GLP-1/GIP RECEPTOR AGONIST USE IMPACT ON MENSTRUAL CYCLE LENGTH AND REGULARITY IN THE APPLE WOMEN'S HEALTH STUDY.

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OBJECTIVE:

Retrospective studies suggest GLP-1 receptor agonists (RA) and combined GLP-1/GIP RA use improve menstrual regularity, particularly in patients with PCOS; however, their effects have not been examined using prospectively tracked cycle data. This study aims to investigate whether GLP-1 RA and combined GLP-1/GIP RA use alters mean cycle length (MCL) and cycle variability (regularity) in tracked cycles.

MATERIALS AND METHODS:

The Apple Women's Health Study (AWHS) is a longitudinal digital cohort in the US with prospectively logged menstrual cycles. Participants provided consent, enrolled from 11/2019 to 1/2026, and provided relevant survey and menstrual logging data. 6,408 participants responded to the "GLP or GIP RA ever use (yes/no)" question of whom a total of 2,013 participants aged <50 years contributed 72,717 eligible tracked cycles (in Apple Health app or participating 3rd party apps) and confirmed to be without concurrent hormone use, pregnancy, or lactation. Those who reported using "other brands not listed" and all cycles from 12 months prior to survey completion were removed for this analysis.

Population: GLP-1 RA users, GLP-1/GIP RA users and never users

Exposure: Survey response indicating use in the last year, individuals with and without PCOS

Outcome measures: Mean cycle length and mean within individual cycle variability in tracked cycles

Statistics: Linear mixed effect (LME) models with random participant-specific intercepts estimated MCL in windows before and after GLP survey completion. Log-linear models for residual variance in the LME models further estimated within-individual standard

deviations of menstrual cycle length (as a measure of cycle irregularity). Models adjusted for age and BMI at enrollment.
RESULTS:
Baseline characteristics noted average age of 39.5 ±13.4 vs 43.5 ± 11.3 years and average BMI of 22.2 ±5.3 vs 24.6 ±6.9 kg/m^2, for GLP-1 or GLP-1/GIP RA never users and ever users respectively. The average MCL prior to survey completion was 30.7 days for never users, 30.8 days for GLP-1 RA users, and 31.8 days for combined GLP-1/GIP RA. Average decrease in MCL for never users was 0.8 days, accounting for baseline age related MCL decline. The average additional decrease for GLP-1 RA users was 0.36 days compared to 2.46 days for combined GLP-1/GIP RA users.
Mean within individual cycle variability (95% CI) for never users was 7.46 (7.29, 7.63) days compared to 7.45 (7.01, 7.89) days for GLP-1 RA and 6.93 (6.46, 7.40) days for combined GLP-1/GIP RA users. Within a PCOS subgroup, the mean within individual cycle variability for never users was 9.45 (8.67, 10.24) days compared to 7.34 (6.55, 8.14) days for GLP-1 RA and 5.80 (5.26, 6.33) days for combined GLP-1/GIP RA users.
CONCLUSIONS:
In tracked menstrual cycles, use of combined GLP-1/GIP RA is associated with greater reduction in MCL compared to GLP-1 RA alone and never users. Additionally, combined GLP-1/GIP RA is associated with a more pronounced decrease in individual cycle variability particularly in a PCOS subgroup.
IMPACT STATEMENT:
In tracked cycles, combined GLP-1/GIP RA is associated with a more pronounced impact on cycle length and cycle variability compared to GLP-1 RA alone, particularly those with PCOS.

ORAL ABSTRACT SESSION: GENETICS – PGT

O-218 11:15 AM Wednesday, October 28, 2026

WHOLE GENOME SEQUENCING FOR REDUCED VIABILITY VARIANTS SHOWS PROMISE TO IMPROVE PER EMBRYO TRANSFER SUCCESS EVEN IN A COHORT ENRICHED FOR RECURRENT PREGNANCY LOSS AND IMPLANTATION FAILURE. Kaylene Ready, MS[1], Gregory Adam Reeves, PhD[1], Charles Cole, PhD[1], Greyson Twist, MS[1], Megan Goodman, MS[1], Elizabeth Chao, MD[1], Meera Shah, B.S., M.D.[2], Sophie Petropoulos, PhD[3], Lee Philip Shulman, MD[1] and Jeremy Grushcow, PhD[1], [1]Juniper Genomics, [2]Nova IVF, Cupertino, CA, [3]Assistant Professor University of Montreal, Montreal, QC, Canada

OBJECTIVE: Approximately half (~55%) of euploid embryos tested via PGT-A result in a live birth, with little improvement since 2016. We previously reported that preimplantation genetic testing via whole genome trio sequencing (PGT-G) can identify variants associated with reduced embryo viability (RVVs) that are not detectable by PGT-A. Here, we present initial clinical outcomes from transfers of RVV-free embryos to evaluate whether deprioritizing embryos with RVVs improves transfer success.
MATERIALS AND METHODS: This prospective case series included 16 RVV-free embryo transfers in 15 women (one patient contributed two transfers). Ten embryos were sequenced prospectively via PGT-G and five retrospectively after PGT-A. One transfer was excluded due to a confounding medical condition. Mean maternal age was 34.6 ± 4.1 years (range 25-42). RPL/RIF history (recurrent pregnancy loss/recurrent implantation failure; ≥3 prior losses or failed transfers) was documented, where available. Outcomes were assessed per transfer: positive pregnancy test (PPT), ongoing pregnancy (≥8 weeks), and trimester progression. Live birth rate (LBR) was estimated by applying published trimester-specific loss rates and compared to expected euploid frozen embryo transfer (FET) LBR based on age and RPL/RIF-specific outcomes.
RESULTS: Among 15 RVV-free transfers, 14 (93.3%) achieved a positive pregnancy test and 11 (73.3%) reached ongoing pregnancy, with one additional pregnancy in early gestation not yet reaching the 8-week milestone. Zero losses occurred among the 11 ongoing pregnancies after 8 weeks and as of this report, 3 have reached the 3rd trimester, 6 are in the 2nd trimester, and 2 are in the 1st trimester. The cohort was enriched for RPL/RIF (≥41% vs ~15-20% in typical IVF populations) and of the three pregnancies that did not reach ongoing status, two were early losses in RPL/RIF patients, while the third remains in early pregnancy. Applying published trimester-specific loss rates to all current pregnancies, including the early pregnancy, the projected per-transfer LBR is 71-76%, substantially exceeding the expected euploid FET LBR of 51-59% for this cohort, based on age and enrichment for RPL/RIF.
CONCLUSIONS: Deprioritizing embryos with RVVs via PGT-G was associated with a projected LBR of 71-76%, exceeding expected rates. Larger non-selection studies are needed to confirm these findings.
IMPACT STATEMENT: These initial clinical outcomes support the potential of incorporating RVVs into euploid embryo transfer decisions to improve live birth rates.

O-219 11:25 AM Wednesday, October 28, 2026

IN-VITRO MATURED OOCYTES GIVE RISE TO EUPLOID EMBRYOS DESPITE RELATIVE INEFFICIENCY COMPARED TO METAPHASE II SIBLING OOCYTES. Ilissa Pipia, B.S.[1], Farrah Saleh, M.D.[2], Gabriela Beroukhim, M.D.[2] and Steven D Spandorfer, M.D.[2], [1]Weill Cornell Medical College, New York, NY, [2]NewYork-Presbyterian Hospital/Weill Cornell Medical Center, New York, NY

OBJECTIVE:
To investigate the fertilization, blastulation, and euploidy rates of sibling in vitro-matured (IVM) and metaphase II (MII) oocytes in patients pursuing in-vitro fertilization (IVF) followed by pre-implantation genetic testing (PGT-A).
MATERIALS AND METHODS:
A retrospective chart review of 9,070 IVF cycles between January 1, 2023, and January 1, 2025, at an academic clinic was performed. First IVF cycles with PGT-A were included for analysis if IVM was attempted following ovarian stimulation protocols with uniform GnRH antagonist combined with FSH/LH. IVM was attempted at the discretion of the attending physician and embryologists for cycles yielding few MII oocytes or a large proportion of immature oocytes. Outcomes of interest included fertilization, blastulation, and euploidy rates among IVM oocytes compared to sibling MII oocytes. Exclusion criteria included severe male factor infertility; couples pursuing sequential PGT-A testing after monogenic disease screening were excluded from analyses assessing euploidy rates. Univariate analyses were conducted via Mann Whitney- U and Fisher's exact test.
RESULTS:
126 IVF cycles with PGT-A met inclusion criteria. Descriptive statistics were as follows: median age 38 years (35-31), median anti-mullerian hormone (AMH) level 1.66 ng/mL (0.83-2.9), median BMI 22.4 kg/m2 (20.6-25.7), and median cycle day 2 follicle-stimulating hormone level (CD2 FSH) was 4.9 mIU/mL (2.8-6.8). The median numbers of MII and IVM oocytes were 6 and 2 per patient, respectively.
Approximately 61.5% of all oocytes retrieved were MII, and approximately 56.0% (363/648) of immature oocytes were successfully matured via IVM. Fertilization rates among IVM oocytes were significantly lower (55.1% [200/363]) compared to sibling MII oocytes (61.4% [636/1036]) ($p<0.05$). Approximately 19.5% (39/200) of successfully fertilized IVM oocytes developed into blastocysts suitable for PGT-A compared to 71.5% (455/636) of MII oocytes ($p<0.0001$). Euploidy rates per blastocyst were comparable in the IVM group (23.1% [9/39] compared to the MII oocyte group (34.7% [153/441] ($p=0.16$), suggesting preserved chromosomal integrity in surviving IVM-derived blastocysts.
CONCLUSIONS:
IVM oocytes have lower fertilization and blastulation rates than MII oocytes, but those reaching the blastocyst stage demonstrate comparable euploidy, indicating preserved chromosomal competence despite reduced developmental efficiency.
IMPACT STATEMENT:
IVM may provide incremental benefit in euploid embryo yield despite lower fertilization and blastulation efficiency relative to MII oocytes, supporting its role as an adjunct strategy in IVF cycles with limited mature oocytes or a high proportion of immature oocytes.
SUPPORT: NA

O-220 11:35 AM Wednesday, October 28, 2026

INTEGRATING FOUNDER HAPLOTYPE-DERIVED SNPs INTO COMPREHENSIVE CARRIER SCREENING ENABLES PGT-M WITHOUT PROBANDS OR PEDIGREES: A COMBINED STRATEGY FOR A-THALASSEMIA. Jiacong Yan, Ph.D[1], Lifeng Xiang, Ph.D[1], Yunxiu Li, M.D[1], Lipeng Kang, Ph.D[2], Yangyun Zou, Ph.D[2], SIjia Lu, Ph.D[2] and Xiaorong Wu, M.D[1], [1]Center of Reproductive Medicine, NHC Key Laboratory of Healthy Birth and Birth Defect Prevention in Western China, First People's Hospital of Yunnan Province, Kunming, China, [2]Yikon Genomics Co., Ltd.

OBJECTIVE: Develop an integrated clinical strategy to link comprehensive carrier screening with PGT-M haplotype construction, aiming to prevent thalassemia transmission by leveraging population-based founder haplotypes.
MATERIALS AND METHODS: A population-based haplotype inference paradigm for α-thalassemia was developed for pedigree-independent assignment of pathogenic haplotypes, using SNP-array data from PGT-M carriers with the SEA deletion to construct reference panels that capture ancestral haplotype architectures. This framework shifts haplotype phasing in PGT-M from a pedigree-based inference problem to a population-based process. Using the SEA deletion as an anchor, local association mapping of flanking regions identified variants consistently enriched on pathogenic backgrounds. These loci were then used to define an ancestral haplotype similarity model, enabling probabilistic inference of pathogenicity for individual haplotypes. For the application, haplotype phasing in target samples was performed using a hidden Markov model (HMM)-based algorithm with the reference panel, followed by pathogenicity inference using a similarity model. To facilitate clinical translation, the selected markers were incorporated into a carrier screening panel, enabling simultaneous carrier status detection and prospective evaluation of haplotype informativeness. This design enables the identification of couples eligible for direct implementation of haplotype-based PGT-M. The performance and clinical applicability of this integrated strategy were evaluated in an independent embryo cohort.
RESULTS: A large-scale cohort of PGT-M cases was assembled to construct a founder reference panel comprising 2,760 pathogenic and 6,050 non-pathogenic haplotypes, capturing the ancestral architectures associated with the SEA deletion. Local association mapping anchored to the SEA deletion identified 14 SNPs significantly enriched in pathogenic haplotypes. Using the reference panel and these informative loci, a probabilistic scoring framework for pathogenic haplotype inference was developed. The method was evaluated on 315 embryos, achieving 98.46% accuracy in distinguishing pathogenic from non-pathogenic haplotypes. By circumventing conventional family-based pre-testing, this strategy substantially reduces clinical workflow complexity and lowers both financial and time costs.
CONCLUSIONS: This study introduces a novel preimplantation genetic testing strategy that combines large-scale carrier screening with PGT-M haplotyping using founder-haplotyping SNP markers, streamlining the workflow and improving diagnostic accuracy while eliminating the need for proband or pedigree-based pre-validation, offering a scalable, cost-effective solution for severe thalassemia.
IMPACT STATEMENT: The PGT-M process is time-consuming, and treatment can be limited when probands or pedigrees are unavailable. This study proposes an integrated clinical strategy that enables both carrier status detection and haplotype construction,

offering an economical, time-saving option for PGT-M couples without probands or pedigrees to prevent thalassemia transmission.

O-221 11:45 AM Wednesday, October 28, 2026

METHOTREXATE EXPOSURE INTERVAL AND EMBRYO ANEUPLOIDY RATES IN IVF WITH PGT-A. Tamar Alkon-Meadows, MD[1], Atoosa Ghofranian, M.D.[1], Martha Luna Rojas, M.D.[2], Carlos Hernandez-Nieto, MD[1], Joseph A. Lee, BA[3], Rebecca Zhuo, MD[4], Victoria Lazarov, MD[4], Erynne Jackson, BA, MPH[5], Alan B. Copperman, MD[6] and Erkan Buyuk, MD[1], [1]Reproductive Medicine Associates of New York, New York, NY, [2]RMA International Mexico, SC, Ciudad DE Mexico, Cdmx, Mexico, [3]RMANY || US Fertility, New York, NY, [4]Icahn School of Medicine at Mount Sinai, New York, NY, [5]US Fertility, New York, NY, [6]Reproductive Medicine Associates of New York LLP, New York, NY

OBJECTIVE:
Methotrexate (MTX) is commonly used for ectopic pregnancy management and may have downstream influences on oocyte and embryo quality, raising concern for increased embryo aneuploidy. Data characterizing MTX exposure on ploidy rates in subsequent in vitro fertilization (IVF) with preimplantation genetic testing for aneuploidy (PGT-A) cycles are limited. This study evaluates whether the interval between MTX administration and oocyte retrieval is associated with embryo aneuploidy rates.
MATERIALS AND METHODS:
This retrospective, single-center study included patients treated with MTX for ectopic pregnancy who subsequently underwent IVF w/ PGT-A between January 2016 and February 2026. PGT-A was performed via next-generation sequencing. Patients with chromosomal segmental rearrangements, donor oocyte cycles, severe male factor requiring testicular sperm extraction, or MTX use for other indications were excluded. Patients were stratified by interval between MTX administration and IVF cycle start: Group 1 (<3 months) and Group 2 (≥3 months). The primary outcome was embryo aneuploidy rate; secondary outcomes included oocyte yield, fertilization, blastulation, euploidy, mosaicism and inconclusive rates. Analyses included chi-square, Mann-Whitney U, and multivariate logistic regression.
RESULTS:
A total of 62 patients were included (Group 1: n=20; Group 2: n=42). Embryo aneuploidy rates were significantly higher in patients undergoing retrieval within 3 months of MTX exposure (51% vs. 38%; p=0.02). After adjustment for oocyte age, AMH, BMI, and day of biopsy, retrieval within 3 months remained independently associated with higher odds of aneuploidy (aOR 1.94, 95% CI 1.13–3.31). Euploidy (40% vs. 49%; p=0.18), mosaicism (5% vs. 10%; p=0.13), and inconclusive rates (4% vs. 3%; p=0.99) were similar between groups with no differences in adjusted analyses. Baseline characteristics and IVF cycle outcomes were comparable, including age (35.2 ± 3.0 vs. 36.1 ± 3.2 years), BMI (23.0 ± 2.0 vs. 23.4 ± 2.1), AMH (3.0 ± 2.1 vs. 2.7 ± 1.8 ng/mL), MII rates (80% vs. 78%; p=0.55), fertilization (69.5% vs. 68.9%; p=0.90), and blastulation rates (67% vs. 68%; p=0.91).
CONCLUSIONS:
IVF initiated within three months of MTX exposure is associated with higher embryo aneuploidy rates. These findings support consideration of delaying oocyte retrieval for at least three months following MTX treatment.
IMPACT STATEMENT:
Shorter intervals between MTX exposure and IVF are associated with higher embryo aneuploidy, supporting counseling to delay treatment initiation following ectopic pregnancy management.

O-222 11:55 AM Wednesday, October 28, 2026

THE UNEXPECTED LOSS AFTER EUPLOID TRANSFER: PGT-A DISCORDANCE AND THE CLINICAL VALUE OF TESTING PRODUCTS OF CONCEPTION. Wendy Y. Zhang, MD[1], Greysha Rivera-Cruz, M.D.[1], Michael Strug, DO, PhD[2], Nihita Manem, MD[3], Ruth B Lathi, MD[4] and Lusine Aghajanova, MD, PhD[5], [1]Stanford University, Reproductive Endocrinology and Infertility, Sunnyvale, CA, [2]Pacific Fertility Center and Adjunct Clinical Faculty Stanford University, Hillsborough, CA, [3]Mc Lean, VA, [4]Stanford University, Reproductive Endocrinology and Infertility, Stanford, CA, [5]Division of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gynecology, Stanford University, Stanford, California, Sunnyvale, CA

OBJECTIVE: Miscarriage after euploid frozen embryo transfer (eFET) remains a challenging and unanticipated outcome. This study evaluated the incidence of abnormal chromosomal microarray analysis on products of conception (POC) following miscarriage from embryos classified euploid by preimplantation genetic testing for aneuploidy (PGT-A).
MATERIALS AND METHODS: Retrospective cohort study of all miscarriages (2015-2024) after eFET at an academic fertility center with POC testing. 24 chromosome PGT-A was performed by either next-generation sequencing (NSG) or array comparative genomic hybridization (aCGH). The primary outcome was incidence of abnormal findings on POC chromosomal microarray analysis.
RESULTS: Among 102 miscarriages after eFET, 12 cases (11.8%) had abnormal POC findings. Chromosomal abnormalities included: four cases of trisomy (33%), four cases of mosaic (33%, two cases of whole chromosome and two segmental), two cases of monosomy (17%), one case of triploidy (8%), and one case of chromosomal duplication of unknown significance (8%). One embryo arose from a 1PN zygote and was triploid (69,XXX). Common aneuploidies included: monosomy X and trisomy 16 (2 cases each). In all POC analyses, the sex chromosomes were concordant. See Table.
CONCLUSIONS: Chromosomal abnormality is the most common identifiable cause of early pregnancy loss, and the transfer of a PGT-A classified euploid embryo does not fully mitigate this risk. We demonstrate a clinically meaningful discordance rate of 12% between PGT-A and POC chromosomal microarray results in patients who miscarried after eFET. Detection of triploidy in a discordant case highlights the need to consider PGT-A platforms that identify ploidy abnormalities.
IMPACT STATEMENT: In one of the largest studies evaluating chromosomal microarray analysis of miscarriage tissue after euploid embryo transfer, we identified a clinically impactful discordance rate of 12%. Recognizing the emotional toll of unexpected abnormalities after a presumed euploid pregnancy, these findings underscore the importance of patient counseling on PGT-A and support the clinical value of POC testing even after euploid FET.

	Embryo biopsy year	PGT platform	PN count	Embryo (day, grade, sex)	Miscarriage gestational age	POC Results
1	2015	aCGH	2PN	D5 5BB XX	9w6d	Monosomy, 45,X
2	2016	NGS	2PN	D5 5AA XY	7w3d	Trisomy 7, 48,XXY
3	2018	NGS	2PN	D5 4AA XY	10w3d	Trisomy 16, 47,XY
4	2018	NGS	2PN	D5 5AB XX	8w0d	46,XX,7q36.1 dup (431kb)
5	2019	NGS	2PN	D5 5AA XY	7w3d	Mosaic 46.XY del(q11)/46,XY
6	2020	NGS	1PN	D5 4AA XX	9w3d	Triploidy. 69,XXX
7	2020	NGS	2PN	D5 4BB XY	8w6d	Mosaic Trisomy 9, 47,XY
8	2020	NGS	2PN	D6 6BB XY	7w3d	Mosaic Trisomy 6, 47,XY
9	2021	NGS	2PN	D5 4AA XX	8w5d	Monosomy, 45,X
10	2021	NGS	2PN	D6 6BA XY	6w6d	Mosaic 2q37.1-q37.3,46, XY
11	2021	NGS	2PN	D6 5AA XY	8w2d	Trisomy 4, 47,XY
12	2021	NGS	2PN	D7 4BC XX	8w5d	Trisomy 16, 47,XX

SUPPORT: None

O-223 12:05 PM Wednesday, October 28, 2026

TROPHECTODERM BIOPSY TECHNIQUE MATTERS: PULLING, BUT NOT FLICKING, IS ASSOCIATED WITH INCREASED PRETERM BIRTH RISK. Luísa Duarte Weissheimer, Student[1], Nilo Frantz, M.D.[2] and Marcos Kulmann, M.Sc., Ph.D.[2], [1]Federal University of Health Sciences of Porto Alegre, Porto Alegre, Brazil, [2]Nilo Frantz Reproductive Medicine, Porto Alegre, Brazil

OBJECTIVE: Preimplantation genetic testing for aneuploidies (PGT-A) requires invasive trophectoderm biopsy, which has been inconsistently linked to adverse obstetric/perinatal outcomes. Technique-related variation in embryo manipulation and cell collection may explain conflicting safety data and suggests that some biopsy approaches may be safer than others. This study aimed to determine whether obstetric and perinatal outcomes after PGT-A differ according to trophectoderm biopsy technique.
MATERIALS AND METHODS: Retrospective cohort study of 1,142 live births following blastocyst transfer between 2016 and 2023. Obstetric and perinatal outcomes were compared across three groups: unbiopsied blastocysts transferred without PGT-A, euploid blastocysts biopsied by the pulling technique, and euploid blastocysts biopsied by the flicking technique. Pulling involved day-3 assisted hatching followed by blastocyst-stage biopsy of 5–7 trophectoderm cells using 2–10 laser pulses. Flicking was performed only on fully expanded blastocysts, detaching 5–7 trophectoderm cells with three laser pulses and no day-3 manipulation. Core perinatal outcomes, including delivery mode, preterm birth, and birthweight, were available for all live births; extended obstetric and neonatal outcomes were collected by structured parental questionnaire and available for 285 live births. Outcomes were compared using modified Poisson regression with robust variance, adjusted for maternal age, BMI, endometrial preparation, and multiple pregnancies.
RESULTS: Among 1,142 live births, 756 followed transfer of unbiopsied blastocysts, 98 pulling-biopsied euploid blastocysts, and 288 flicking-biopsied euploid blastocysts. Extended obstetric/perinatal data were available for 107, 42, and 136 live births, respectively. After adjustment, both biopsy techniques were associated with higher risks of low birthweight and congenital anomalies compared with unbiopsied controls: pulling, aRR 4.86, 95% CI 2.18–10.81 and aRR 10.73, 95% CI 1.75–65.46; flicking, aRR 5.51, 95% CI 2.93–10.35 and aRR 4.16, 95% CI 1.11–15.58, respectively. However, preterm birth risk differed by biopsy technique: pulling biopsy was associated with increased risk versus controls (aRR 1.55, 95% CI 1.08–2.22), whereas flicking biopsy was not (aRR 0.87, 95% CI 0.64–1.18). In direct comparison, flicking was associated with lower preterm birth risk than pulling, 15.1% versus 29.7% (aRR 0.62, 95% CI 0.40–0.97). Mode of delivery, macrosomia, hypertensive disorders, gestational diabetes, placenta previa, placental abruption, premature rupture of membranes, and postpartum complications did not differ significantly across groups.

CONCLUSIONS: These findings suggest that biopsy technique may be an underrecognized determinant of obstetric and perinatal safety after PGT-A and support further evaluation in prospective studies.
IMPACT STATEMENT: This study identifies trophectoderm biopsy technique as a potentially modifiable factor associated with obstetric outcomes after PGT-A, with flicking associated with lower preterm birth risk than pulling.

ORAL ABSTRACT SESSION: COMPLEX FAMILY PLANNING

O-224 11:15 AM Wednesday, October 28, 2026

ASSESSING PARENTS' PERCEPTIONS OF CONTRACEPTION FOR THEIR ADOLESCENTS IN COMMUNITIES OF COLOR: A SCOPING REVIEW.
Katherine G. Unger, B.S.[1], Samantha R Keller, B.A.[2], Nikita Kakkad, BS, BA[1], Jeanette Hoang, B.S.[3] and Gwendolyn P. Quinn, PhD[1], [1]New York, NY, [2]NYU Grossman School of Medicine, New York, NY, [3]University Of Oklahoma College of Medicine, Oklahoma City, Oklahoma

OBJECTIVE:
Reproductive health disparities disproportionately impact communities of color in the United States, particularly in contraceptive utilization, access, and knowledge among adolescents. Parents play a critical role in shaping adolescents' contraceptive behaviors and access, yet their perceptions are influenced by cultural, social, and structural factors. This scoping review synthesized evidence on parental attitudes toward adolescent contraceptive use in diverse racial and ethnic communities; identifying key themes, evidence gaps, and opportunities for culturally tailored interventions.
MATERIALS AND METHODS:
Using PRISMA-ScR methodology, a systematic search was conducted across seven electronic databases to identify peer-reviewed studies published between 2008 and 2025. Inclusion criteria included peer-reviewed studies addressing parents of color and perceptions of contraceptive methods for teens in the United States. Extracted data were analyzed in Excel. Study quality was assessed using the Mixed Methods Appraisal Tool (MMAT).
RESULTS:
Of 855 screened, 21 studies met inclusion criteria. Designs included cross-sectional surveys (5), focus groups (3), interviews (7), and mixed-method approaches (6). Most studies discussed contraception generally rather than specific methods (condoms, LARCs, etc.). MMAT analysis revealed high quality (18/21). Recurring themes included limited parental knowledge of contraceptive options, reliance on external sources (e.g., schools, clinicians) for sexual health education, gendered and indirect communication patterns, and cultural or religious norms influencing attitudes toward adolescent sexual behavior. Parents expressed mistrust of healthcare systems, fear of encouraging sexual activity, and concerns about contraceptive side effects or safety. Barriers such as stigma, misinformation, and structural inequities were consistently identified.
CONCLUSIONS:
Across predominantly high-quality studies, parents demonstrated limited knowledge of contraceptive methods and frequently relied on schools or clinicians for sexual health education. Communication was often indirect and gendered, shaped by cultural and religious norms, mistrust of healthcare systems, and fears about contraceptive safety or promoting sexual activity. Structural inequities, stigma, and misinformation were consistently identified. These findings suggest disparities in adolescent contraceptive use may be driven by knowledge gaps, communication barriers, and systemic mistrust. Interventions should equip parents with accurate, method-specific information, support culturally responsive communication strategies, and rebuild trust between families and healthcare systems to promote equitable reproductive health outcomes.
IMPACT STATEMENT:
To advance health equity, future research should explore longitudinal shifts in parental perceptions. Additionally, partnerships between schools, clinics, and community organizations can ensure consistent, culturally grounded messaging and enhance reproductive health outcomes in communities of color.
SUPPORT: N/A

O-225 11:25 AM Wednesday, October 28, 2026

MEDICAL MANAGEMENT OF EARLY PREGNANCY LOSS AFTER PROGRAMMED IVF CYCLES: MIFEPRISTONE PLUS MISOPROSTOL VS MISOPROSTOL ALONE.
Atoosa Ghofranian, M.D.[1], Lily Leibner, BA[2], Erynne Jackson, BA, MPH[3], Joseph A. Lee, BA[4], Stephanie Brownridge, MD[2], Daniel E. Stein, M.D.[5], Taraneh Gharib Nazem, B.A., M.D.[5], Alan B. Copperman, MD[6] and Erkan Buyuk, MD[5], [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]New York, NY, [3]US Fertility, New York, NY, [4]RMANY || US Fertility, New York, NY, [5]Reproductive Medicine Associates of New York, New York, NY, [6]Reproductive Medicine Associates of New York LLP, New York, NY

OBJECTIVE: Early pregnancy loss (EPL), defined as loss within the first trimester, occurs in approximately 15–20% of pregnancies achieved through assisted reproduction technology (ART). Following transfer of a PGT-tested euploid embryo, EPL rates are lower, at approximately 10–15%. Frozen embryo transfer (FET) cycles are frequently programmed, lacking a corpus luteum and relying on exogenous progesterone for early pregnancy support. Medical management with misoprostol, with or without mifepristone, is commonly used for pregnancies <10 weeks' gestation, with combination therapy associated with higher expulsion rates. In programmed cycles, discontinuation of exogenous progesterone at EPL diagnosis may partially replicate progesterone receptor antagonism, raising the question of whether mifepristone is necessary. This study compares misoprostol with versus without mifepristone for missed abortion following programmed IVF cycles.
MATERIALS AND METHODS:
This retrospective cohort study was conducted at an urban academic fertility center between February 2016 and March 2026. Patients were included if they achieved a clinical pregnancy after a programmed IVF transfer, were subsequently diagnosed with missed abortion at <10 weeks' gestation, and underwent medical management. Patients received misoprostol alone or mifepristone followed by misoprostol 24 hours later; misoprostol-only treatment was used when mifepristone was unavailable. The primary outcome was second treatment (surgical or medical), defined as intervention for incomplete evacuation more than 7 days after misoprostol. Statistical comparisons were performed using Fisher's exact test, and logistic regression was used to estimate adjusted odds ratios (aOR), controlling for age, BMI, and gestational age.
RESULTS: A total of 128 patients were included (mifepristone plus misoprostol: n=22; misoprostol alone: n=106). Baseline characteristics were similar between groups, including age (36.98 ± 3.99 vs 36.76 ± 3.83 years), BMI (23.86 ± 3.55 vs 25.6 ± 5.33 kg/m²), and gestational age at loss (median 51 [47–54] vs 50 [47–54] days). The rate of second treatment was 9.09% in the combination group and 14.15% in the misoprostol-only group (p=0.74). After adjustment, there was no statistically significant difference between groups (aOR 0.51, 95% CI 0.10–2.60).
CONCLUSIONS: In patients with missed abortion following programmed IVF cycles, mifepristone plus misoprostol was not associated with a statistically significant reduction in the need for additional treatment compared with misoprostol alone. Interpretation of these findings is limited by the small sample size. While progesterone withdrawal in programmed cycles may partially replicate the mechanism of mifepristone, the clinical implications of this effect remain uncertain, particularly after the luteal-placental shift when placental progesterone production predominates.
IMPACT STATEMENT: In programmed IVF cycles, misoprostol alone appears to be a reasonable treatment option for EPL. Larger, adequately powered studies are needed to determine whether the addition of mifepristone provides meaningful clinical benefit in this population.
SUPPORT: Not applicable.

O-226 11:35 AM Wednesday, October 28, 2026

PRIOR INTRAUTERINE DEVICE USE AS A PREDICTOR OF THIN ENDOMETRIAL LINING: A RETROSPECTIVE COHORT STUDY.
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OBJECTIVE:
To evaluate whether prior IUD use is associated with thin endometrial lining (< 7mm) in FET (frozen embryo transfer) cycles.
MATERIALS AND METHODS:
Retrospective cohort study of women who underwent FET – including natural cycle, modified natural cycle, and programmed protocols – from 2019 to 2024 at a single academic center. The primary exposure was any prior IUD use, and the primary outcome was endometrial thickness (EMT) <7mm versus ≥7mm. Secondary analysis examined IUD type, duration of use, and interval from IUD removal to FET. Adjusted odds ratios (aOR) were estimated using logistic regression, controlling for age, BMI, prior uterine surgery, and IVF indication. Sensitivity analyses included restriction to the first eligible cycle per patient and a generalized estimating equations model with robust standard errors clustered by patient.
RESULTS:
Among 788 included FET cycles, 9.3% (73 cycles) had thin endometrial lining. Of all FET cycles, 117 cycles (15%) had prior IUD exposure, most commonly with levonorgestrel IUD (90/117 cycles). Patients with a thin lining had lower BMI, different IVF indications, and lower rates of trilaminar endometrial pattern compared with patients with EMT >7. Prior IUD use was associated with increased odds of thin lining (aOR 3.61, 95% CI 2.12-6.15), driven primarily by levonorgestrel IUDs (aOR 4.30, 95% CI 2.44-7.58). Copper IUDs were not associated with higher odds of thin lining (aOR 2.48, 95% CI 0.84-7.27). Each additional year of IUD use was associated with 20% increased odds of thin lining (aOR 1.20, 95% CI 1.02-1.41). FET within 12 months of IUD removal was also associated with higher odds (aOR 9.73, 95% CI 3.14-30.13) compared to FET greater than 12 months after IUD removal. Results remained robust on sensitivity analysis, with no effect modification by age (p=0.98) or prior uterine surgery (p=0.61).
CONCLUSIONS:
Prior IUD use, particularly levonorgestrel IUDs, is associated with 3.6-fold increased odds of thin endometrial lining during FET cycles. This relationship appears to be dose-dependent based on duration of use, with the strongest effect observed when transfer occurs within one year of removal.
IMPACT STATEMENT:
Prior IUD appears to be associated with thin endometrial lining in frozen embryo transfer cycles.

O-227 11:45 AM Wednesday, October 28, 2026

REDUCED REPORTING RATES OF ETONOGESTREL IMPLANT PULMONARY MIGRATION AFTER SAFETY LABEL UPDATES AND PROVIDER TRAINING: POST-MARKETING ANALYSIS OF SAFETY DATA.
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OBJECTIVE: In October 2018, the etonogestrel implant United States (US) pharmaceutical company issued a safety label update that included specific guidance regarding the insertion site location overlying the triceps muscle in accordance with regulatory labeling. The company then provided mandatory retraining of previously trained clinicians and, in June 2019, a letter to all trained clinicians to remind them of the new guidance. We evaluated the impact of this label update and subsequent education and training program on the reporting rate of implant migration to the pulmonary artery (PA) or lungs in the US.
MATERIALS AND METHODS: We used the pharmaceutical company's global pharmacovigilance database to identify all post-marketing reports of etonogestrel implant migration to the PA or lungs in the US from initial international marketing (August 25, 1998) through December 31, 2024. We chose January 1, 2020 as a cutoff date to differentiate between pre- and post-label update implant insertions to allow sufficient time for update information dissemination and clinician retraining. We excluded reports lacking identifiable placement dates. We estimated US patient exposure from the total units sold divided by 1.122, assuming a 12.2% reinsertion rate. We calculated reporting rates by dividing the number of migration cases reported by the estimated number of US patients who received the etonogestrel implant in the pre- and post-label update time periods.
RESULTS: We identified 45 reports of PA or lung implant migration; after excluding 5 without identifiable placement dates, we performed calculations for the 34 events before and 6 events after the label update. We estimated 6,642,609 US patients exposed in approximately 20.5 years before and 3,778,439 US patients exposed in the 5 years after the update, resulting in reporting rates of 5.12 per million and 1.59 per million patients exposed, respectively. No post-marketing reports of PA or lung migration occurred before 2011.
CONCLUSIONS: We observed a reduction in reported rates of etonogestrel implant migration to the PA or lungs following a label update that provided more precise guidance on insertion location over the triceps muscle and other recommendations to support safe insertion and removal of the implant. These findings suggest an association between the decrease in reported rates of implant migration to the PA or lungs and the updated insertion guidance, reinforced by targeted communication, clinician re-training, and integration into ongoing training programs.
IMPACT STATEMENT: The study highlights the effectiveness of clinician education and structured communication following the label update in improving procedural safety to reduce implant migration alongside other insertion- and removal-related events. A key modification included detailed guidance for etonogestrel implant placement in the medial upper arm, specifically in an area devoid of major neurovascular structures.
SUPPORT: The study was funded by Organon & Co.

O-228 11:55 AM Wednesday, October 28, 2026

LEVONORGESTREL INTRAUTERINE DEVICE ALTERS UTERINE PERISTALSIS BY INCREASING CONTRACTILE ACTIVITY WHILE DISRUPTING DIRECTIONAL PROPAGATION.
Zezhen Xiang, MS[1], Josephine Lau, BSc, MSc[1], Praneeth Kandugula, MS[1], Rand El Sharaiha, MD[2], Valerie Ratts, M.D.[3], Qing Wang, PhD[4] and Yong Wang, PhD[5], [1]Saint Louis, MO, [2]Infertility and Reproductive Medicine Center at Washington University School of, Saint Louis, OH, [3]Washington University in St. Louis, St. Louis, MO, [4]Washington University School of Medicine, Saint Louis, MO, [5]Washington University School of Medicine, St. Louis, MO

OBJECTIVE:
To compare alterations in uterine peristalsis patterns following levonorgestrel intrauterine device (LNG-IUD) use, with a focus on contraction dynamics and directional organization across menstrual phases.
MATERIALS AND METHODS:
Surface electrophysiological recordings were obtained to quantify uterine peristalsis imaging (UPI) features, including contraction magnitude, duration, power, frequency, and directional propagation (cervix-to-fundus [C–F], fundus-to-cervix [F–C], and non-directional "other"). Data were collected from women with LNG-IUD (N = 32) and normal controls (N = 37). Menstrual cycle phases were categorized as menses, follicular, and luteal by cycle length and hormone levels. Visit-wise analyses were performed, and group comparisons were conducted using the Mann–Whitney U test. Statistical significance was defined as $p < 0.05$.
RESULTS:
Compared with controls, LNG-IUD was associated with significantly increased contraction duration and frequency during the menses phase. Across all phases, LNG-IUD demonstrated a consistent reduction in F–C propagation, with additional reduction in C–F propagation observed during the luteal phase. Notably, the proportion of non-directional ("other") uterine activity was significantly elevated in all phases. These findings indicate that while overall contractile activity is increased, directional propagation is markedly disrupted under LNG-IUD.

Phase	Feature	Control	LNG	p-value
Menses	Magnitude (mV)	0.22 ± 0.14	0.18 ± 0.08	0.27
	Duration (Sec)	5.69 ± 1.05	6.40 ± 1.91	**0.02**
	Power (mV * Sec)	1.31 ± 0.77	1.14 ± 0.54	0.48
	Frequency (/min)	2.60 ± 1.07	3.38 ± 0.81	**< 0.01**
	C-F (%)	38 ± 12	36 ± 10	0.43
	F-C (%)	42 ± 9	34 ± 9	**< 0.01**
	Other (%)	20 ± 13	30 ± 15	**< 0.01**
Follicular	Magnitude (mV)	0.25 ± 0.18	0.19 ± 0.07	0.80
	Duration (Sec)	5.64 ± 1.11	6.09 ± 0.81	0.10
	Power (mV * Sec)	1.46 ± 1.00	1.23 ± 0.42	0.92
	Frequency (/min)	2.67 ± 1.14	3.56 ± 0.20	**0.05**
	C-F (%)	41 ± 15	40 ± 17	0.86
	F-C (%)	40 ± 14	28 ± 10	**0.04**
	Other (%)	20 ± 14	32 ± 14	**0.04**
Luteal	Magnitude (mV)	0.21 ± 0.14	0.18 ± 0.15	0.26
	Duration (Sec)	5.82 ± 1.55	6.58 ± 1.27	0.06
	Power (mV * Sec)	1.32 ± 0.92	1.26 ± 0.94	0.84
	Frequency (/min)	2.73 ± 1.07	3.27 ± 0.88	0.16

	C-F (%)	39 ± 11	29 ± 11	**0.02**
	F-C (%)	38 ± 10	30 ± 9	**0.03**
	Other (%)	23 ± 16	41 ± 19	**< 0.01**

CONCLUSIONS:
LNG-IUD does not simply suppress uterine contractility but instead induces a pattern of increased yet disorganized uterine activity, characterized by impaired directional propagation and increased non-coordinated contractions.
IMPACT STATEMENT:
This study provides novel evidence that LNG-IUD alters uterine peristalsis through directional disorganization rather than uniform suppression, offering new mechanistic insight into its effects on uterine physiology and potential implications for menstrual function and reproductive outcomes.

O-229 12:05 PM Wednesday, October 28, 2026

COMPARATIVE ANALYSIS OF UTERINE PERISTALSIS INDICES IN BLEEDING EPISODES BETWEEN NORMAL MENSES, LEVONORGESTREL INTRAUTERINE DEVICE (LNG-IUD) AND NEXPLANON. Josephine Lau, BSc, MSc[1], Zezhen Xiang, MS[2], Rand El Sharaiha, MD[3], Praneeth Kandugula, MS[2], Qing Wang, PhD[4], Yong Wang, PhD[5] and Valerie Ratts, M.D.[4], [1]Saint Louis, MO, [2]Washington University in St Louis, St. Louis, MO, [3]Infertility and Reproductive Medicine Center at Washington University School of, Saint Louis, OH, [4]Washington University School of Medicine, Saint Louis, MO, [5]Washington University School of Medicine, St. Louis, MO

OBJECTIVE: To evaluate the differences in uterine peristaltic activity, especially contraction dynamics and directional organization, between LNG-IUD and Nexplanon compared to normal menses.To evaluate the differences in uterine peristaltic activity, especially contraction dynamics and directional organization, between LNG-IUD and Nexplanon compared to normal menses.
MATERIALS AND METHODS: Surface electrophysiological recordings were analyzed to extract uterine peristalsis imaging (UPI) features, including contraction magnitude, duration, power, frequency, and directional propagation (cervix-to-fundus [C–F], fundus-to-cervix [F–C], and non-directional [other]). Data were collected from women with LNG-IUD (n=29), Nexplanon (n=26) and normal controls (n=36) during a bleeding episodes. Participants were matched for E2 and P4 levels to insure similar hormonal status. Differences between groups were assessed using pairwise Mann-Whitney U test comparison, with statistical significance defined as p<0.05.
RESULTS:
Nexplanon users demonstrated significantly higher contraction magnitude and power compared to both LNG-IUD and normal menses controls. Directional indices between contraceptive groups also differ, with Nexplanon group exhibiting significantly lower C-F proportion (p = 0.03), higher F-C proportion (p=0.006) and frequency (p = 0.037) compared to LNG-IUD.

UP Index	Nexplanon	LNG-IUD	Control	Nexplanon Vs LNG-IUD	Nexplanon Vs Control	LNG-IUD Vs Control
Magnitude C-F (mV)	0.312	0.171	0.188	**p < 0.001**	**p = 0.027**	p = 0.085
Total Magnitude (mV)	0.288	0.164	0.203	**p < 0.001**	**p = 0.034**	**p = 0.047**
Power C-F (mV * Sec)	1.670	0.917	1.103	**p = 0.001**	p = 0.053	p = 0.085
Total Power (mV * Sec)	1.534	0.895	1.130	**p < 0.001**	**p = 0.042**	**p = 0.047**
C-F (%)	41.7	47.7	46.3	**p = 0.030**	ns	ns
F-C (%)	55.5	44.1	52.8	**p = 0.006**	ns	**p = 0.015**
Frequency F-C	1.629	1.367	1.392	**p = 0.037**	ns	ns

CONCLUSIONS: Uterine peristalsis differs significantly between normal menses and contraceptive-associated bleeding episodes, with distinct signatures observed between LNG-IUD and Nexplanon users. These findings indicated that different progestin contraception devices produce mechanistically distinct effects over uterine peristalsis activity that exceeds the foreign body effect.
IMPACT STATEMENT: These results provide insights into abnormal bleeding patterns associated with long-acting reversible contraceptive methods, suggesting that these patterns may be linked to distinct alterations in uterine peristalsis patterns. Understanding the mechanistic differences between intrauterine and systemic progestin delivery may improve clinical interpretation of breakthrough bleeding.

ORAL ABSTRACT SESSION: SURGERY

O-230 11:15 AM Wednesday, October 28, 2026

REPRODUCTIVE SEQUELAE OF INTRAUTERINE ADHESIONS AND RETAINED PRODUCTS OF CONCEPTION AFTER SURGICAL MISCARRIAGE MANAGEMENT. Wendy Y. Zhang, MD[1], Michael Strug, DO, PhD[2], Nihita Manem, MD[3], Amy Zhang, MPH[4], Ruth B Lathi, MD[5] and Lusine Aghajanova, MD, PhD[1], [1]Stanford University, Reproductive Endocrinology and Infertility, Sunnyvale, CA, [2]Pacific Fertility Center and Adjunct Clinical Faculty Stanford University, Hillsborough, CA, [3]Mc Lean, VA, [4]Stanford University School of Medicine, [5]Stanford University, Reproductive Endocrinology and Infertility, Stanford, CA

OBJECTIVE:
Intrauterine adhesions (IUA) and retained products of conception (RPOC) are common complications of miscarriage management. This study aims to clarify the impact of IUA and RPOC after manual vacuum aspiration (MVA) on subsequent reproductive outcomes.
MATERIALS AND METHODS:
Retrospective cohort of patients undergoing MVA for miscarriage at an academic fertility center (2016–2024 with 12-month follow-up) who completed a post-MVA uterine cavity evaluation. Primary outcomes: incidence of IUA and RPOC. Secondary outcomes: thin endometrium (<7mm), clinical pregnancy, miscarriage, and live birth. Cavity evaluation included sonohysterography, hysterosalpingography, or hysteroscopy. Outcomes were stratified by presence of IUA and RPOC; identified pathology were surgically treated prior to subsequent conception. A standardized post-MVA estradiol protocol (2 mg orally twice daily for 4 weeks) was implemented in 2021. Statistical analyses included two-sample t-test and Chi-square test.
RESULTS:
A total of 287 patients were included. The incidence of IUA was 19% and RPOC was 11%.
Compared to those who did not develop IUA, patients with IUA were older (median 39 vs. 36 years, p=0.03) and had higher rates of prior intrauterine device (IUD) use (17% vs. 5%, p=0.008) and pre-MVA thin endometrium (28% vs. 12%, p=0.009). Other baseline characteristics were similar between groups: BMI, gravidity/parity, tobacco use, infertility diagnoses (including recurrent pregnancy loss), history of chronic endometritis, uterine pathology (including IUA), and uterine surgery. Reproductive outcomes were similar despite a higher incidence of post-MVA thin endometrium (Table). No risk factors or outcome differences were identified for patients who did and did not develop RPOC. Postoperative estradiol was not associated with differences in IUA or RPOC incidence.
CONCLUSIONS:
Reproductive outcomes after MVA for miscarriage were not significantly compromised by the presence of treated RPOC or IUA – even among older patients or those with prior IUD use or thin endometrium – offering evidence-based reassurance for miscarriage management.
IMPACT STATEMENT:
The presence of intrauterine adhesions or retained products of conception after MVA for miscarriage was not associated with substantially different fertility and pregnancy outcomes, providing evidence-based reassurance for miscarriage management.

	IUA N = 55 n(%)	**No IUA N = 232 n(%)**	**Relative risk (confidence interval)**	**p-value**
RPOC	3(5)	29(13)	0.44 (0.14-1.38)	0.16
Thin endometrium (<7mm)	14(32)	25(11)	2.36 (1.31-4.24)	0.004
Post-MVA endometrial thickness, mean (SD)	7.7mm (1.6)	8.7mm (1.9)	--	<0.001
Clinical pregnancy	32(58)	132(57)	1.02 (0.80-1.32)	0.86
Miscarriage	9(27)	50(33)	0.76 (0.40-1.45)	0.40
Live birth	21(38)	88(38)	1.00 (0.69-1.46)	0.97

SUPPORT: The authors have no financial disclosures.

O-231 11:25 AM Wednesday, October 28, 2026

SURGICAL ENDOMETRIOMA (EOMA) MANAGEMENT IS NOT ASSOCIATED WITH INFERIOR OUTCOMES IN ASSISTED REPRODUCTIVE TECHNOLOGY (ART) IN A PAIRED ANALYSIS OF INDIVIDUAL PATIENTS BEFORE AND AFTER CYSTECTOMY. Zoey McFarland, B.S.[1], Rebecca Drexler, BA[2], Robyn A Lipschultz, MD[1], Brady J Gelvin, M.D.[3], Paxton E Voigt, M.D. M.B.A.[1], Jennifer K Blakemore, MD, MSCI[3], Ted Teh Min Lee, MD[4] and Frederick Licciardi, M.D.[4], [1]New York, NY, [2]NYU Grossman School of Medicine, New York, NY, [3]NYU Langone Fertility Center, New York, NY, [4]NYU Langone Health, New York, NY

OBJECTIVE: EOMA management prior to oocyte extraction remains debated. Clinicians must balance risks of an EOMA interfering with the retrieval or becoming infected, with a reported decrease in oocyte number following resection.[1] Outcome comparison of patients with and without EOMA removal can be biased by factors influencing the decision into independent cohorts. Therefore, we evaluated ART outcomes in patients with 2 cycles, one before and one after resection, using a paired analysis.
MATERIALS AND METHODS: This retrospective paired cohort study included patients with ultrasound-confirmed EOMAs who underwent oocyte cryopreservation

(OC), embryo banking (EB), or in vitro fertilization (IVF) cycles at an urban academic center from 1/2016-11/2025. Patients were included if they underwent one ART cycle both before (PRE) and after (POST) EOMA resection. Variables assessed included EOMA laterality and size, anti-Mullerian hormone (AMH), total gonadotropin dose, stimulation (stim) days, and peak estradiol (E2) levels. The primary outcome was # of oocytes retrieved. Secondary outcomes included # of MIIs, fertilized oocytes (2PNs), and euploid embryos, as well as blast formation, euploidy, maturity, and fertilization (FERT) rates. Cycles utilizing fresh embryo transfer or without preimplantation genetic testing were excluded from euploidy rate. Statistics included Kolmogorov-Smirnov, Spearman's correlation, and paired samples t-test with $p< 0.05$ considered significant.
RESULTS: Fifteen patients underwent PRE and POST IVF cycles, and one patient underwent PRE OC followed by POST IVF. The largest EOMA noted averaged 3.7 cm and 5 patients (31.3%) had bilateral EOMAs, though laterality did not significantly impact PRE (UNI 10 vs BI 9, p=0.6) or POST (UNI 7 vs BI 6, p=0.5) oocyte yield. Between PRE and POST cycles there were no differences in total gonadotropin dose (3,992 IU (± 1,485) vs 4,015 IU (± 1,563); p=0.95), stim days (10.5 days (IQR 9.5-11.5) vs 11 days (10-12), p=0.6), or peak E2 levels (3,178 pg/mL (± 2,166) vs 2,770 pg/mL (± 2,138); p=0.2). EOMA size was not significantly associated with PRE or POST oocyte yield (PRE Spearman's $\rho = -0.230$, $p = 0.4$; POST Spearman's $\rho = +0.127$, $p = 0.6$). The PRE and POST # of oocytes retrieved were similar (10.5 (IQR 8.5-12.5) vs 9.0 (2.5-15.5); p=0.31). Additionally, # of MIIs (8.1 (± 3.9) vs 7.6 (± 5.8), p=0.6), 2PNs (6.5 (IQR 4.5-8.5) vs 4.0 (0-8.0); $p = 0.7$) and euploid embryos (0 (Mean 0.5, IQR 0-0.5) vs 0 (Mean 0.8, 0-1); $p = 0.5$) did not vary between PRE and POST cycles. Blast formation (52.8 (± 18.2) vs 65.4 (± 22.8); $p = 0.50$), euploidy (0 (Mean .15, IQR 0-15.6) vs 0 (Mean 0.17, 0-20.0); $p = 0.07$), maturity (81.7 (± 18.0) vs 79.7 (± 16.3); $p = 0.74$) and FERT rates (59.7 (± 23.2) vs 49.3 (± 14.1); $p = 0.36$) were also similar.
CONCLUSIONS: In this paired cohort, EOMA surgical resection was not associated with significant changes in ovarian stimulation parameters or embryologic outcomes, suggesting reassuring ART outcomes after surgical management.
IMPACT STATEMENT: Clinicians and patients can make individualized, patient-centric decisions regarding surgical removal of EOMAs based on symptoms and preferences without compromising short-term ART outcomes.
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O-232 11:35 AM Wednesday, October 28, 2026

COMPARISON OF PREGNANCY OUTCOMES FOLLOWING HYSTEROSCOPIC ADHESIOLYSIS VERSUS HYSTEROSCOPIC POLYPECTOMY IN A BRONX-BASED POPULATION. Negeen Amerian, B.S.[1], Caroline Meyer, B.A.[2] and Julian A Gingold, MD, PhD[3], [1]Bronx, NY, [2]Albert Einstein College of Medicine, Bronx, NY, [3]Montefiore Institute for Reproductive Medicine, Hartsdale, NY

OBJECTIVE:
To compare reproductive outcomes between hysteroscopic lysis of adhesions (HLA) and hysteroscopic polypectomies (HP).
MATERIALS AND METHODS:
This IRB-approved retrospective cohort study followed patients who underwent surgery at Montefiore hospitals from 1/1/2016 to 12/31/2023 for up to 2 years postoperatively or until first pregnancy. Baseline characteristics (age, BMI, prior gynecologic surgery) were compared between groups. Odds of live birth and preterm birth were analyzed using Fisher's Exact Test.
RESULTS:
A total of 101 HLA and 624 HP cases were identified. Groups had comparable rates of BMI >25 (64.28% vs 74.2%, p=0.684), advanced maternal age (70.29% vs 74.36%, p=0.456) and prior term pregnancy (51.49% vs. 49.04%, p=0.064). Recurrent pregnancy loss (50% vs 21.07%, p=0.828), tubal disease (20.79% vs 6.73%, p=0.826), male factor infertility (6.93% vs 3.69%, p=0.145) and prior myomectomy (36.63% vs 5.50%, p=0.943) were non-significantly more common in the HLA group.
Univariate analyses showed comparable live birth (51.52% vs 53.55%, p=0.671) and preterm birth (7.14% vs 7.48%, p=0.655) rates between groups. Although preoperative pregnancy intent was inconsistently documented, HLA patients used IVF or IUI less frequently (39.28% vs 57.83%, p<0.001) and had non-significantly higher ectopic pregnancy rates (7.14% vs 0.68%, p=0.067) compared with HP.
CONCLUSIONS:
Despite concerns regarding fertility in patients with intrauterine adhesions, HLA was associated with postoperative pregnancy, live birth, and preterm birth rates comparable to HP. Although not statistically significant, the higher observed ectopic pregnancy rate after HLA warrants further investigation. The retrospective design and potential confounding limit definitive comparisons. Nonetheless, both HLA and HP appear to be safe and effective fertility-enhancing interventions in appropriately selected patients within this Bronx-based population.
IMPACT STATEMENT:
Patients who complete HLA appear to conceive and experience live birth rates at comparable rates to those who complete HP, highlighting the potential benefits of both reproductive surgeries as part of comprehensive infertility care. A larger cohort of HLA cases is needed to better understand non-significant trends regarding ectopic rates and IVF utilization and adjust for patient covariates and confounding.
SUPPORT: No funding to report.
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O-233 11:45 AM Wednesday, October 28, 2026

IDENTIFYING INFERTILE MEN WHO MAY BE AMENABLE TO A LIMITED TESTICULAR DISSECTION AT MICRODISSECTION TESTICULAR SPERM EXTRACTION. David Bouhadana, MD[1], Mélanie Chow-shi-Yée, Ph.D.[2], Isaac-Jacques Kadoch, M.D.[3] and Armand Zini, M.D.[4], [1]Montreal, QC, Canada, [2]Ovo Clinic, Montreal, [3]Ovo Clinic, Hampstead, QC, Canada, [4]McGill University, Canada

OBJECTIVE:
To compare clinical characteristics of men with non-obstructive azoospermia (NOA) and cryptozoospermia with a successful sperm retrieval after a limited dissection micro-TESE to identify clinical parameters that may help find patients most likely to undergo a limited dissection.
MATERIALS AND METHODS:
We retrospectively analyzed a prospective database of 208 infertile men undergoing a first micro-TESE at a high-volume fertility center (March 2015 - June 2025). The stepwise approach begins with five targeted micro-biopsies through a one-centimeter tunica albuginea incision. The incision is extended only if sperm are not initially identified. Independent sample t-tests were used to compare continuous variables among patient groups. Multivariable logistic regression was used to identify factors associated with successful mini-incision. Receiver operating characteristic (ROC) curves were plotted to evaluate the performance of all statistically significant variables as predictors of limited micro-TESE success.
RESULTS:
Among 208 patients, 51 (25%) required a mini-incision micro-TESE with limited dissection and 157 (75%) underwent an extensive dissection. The overall sperm retrieval rate (SRR) was 46% (71/156) in the NOA group and 87% (45/52) in the cryptozoospermia group. Overall, there were significantly fewer biopsies done for all men undergoing a mini-incision micro-TESE (10 ± 3; $p<0.001$) compared to those undergoing an extensive micro-TESE (26 ± 12; $p<0.001$). In men with a successful mini-incision micro-TESE, we observed homogeneously dilated seminiferous tubules or multiple foci of dilated seminiferous tubules. In contrast, in men that required extensive microdissection we generally observed homogeneously dilated seminiferous tubules or homogeneously thin tubules with or without rare foci of markedly dilated tubules. NOA patients with a successful retrieval after mini-incision dissection had lower FSH levels than those requiring extensive dissection (15 ± 13 vs 22 ± 13; OR 0.94, 95% CI 0.89–0.98; p=0.008). Successful cryptozoospermic patients had higher testosterone levels than those requiring extensive dissection (14 ± 5 vs 8 ± 4 nmol/L; OR 1.52, 95% CI 1.19–2.23; p=0.006). ROC analysis suggested thresholds of testosterone ≥ 10nmol/L for cryptozoospermia (sensitivity 0.91; specificity of 0.58) and FSH ≤ 19IU/L for men with NOA (sensitivity: 0.81; specificity of 0.52).
CONCLUSIONS:
A stepwise approach to micro-TESE starting with a mini-incision can frequently allow for successful sperm retrieval with limited testicular dissection. Preoperative serum FSH (in NOA) and testosterone (in cryptozoospermia) may help identify candidates most likely to undergo limited testicular dissection at micro-TESE.
IMPACT STATEMENT:
The stepwise micro-TESE beginning with a mini-incision represents an effective, less invasive strategy for men with NOA and cryptozoospermia. We found actionable clinical thresholds to help guide physicians when counselling patients and selecting patients who may undergo a successful limited dissection.
SUPPORT: nil.

O-234 11:55 AM Wednesday, October 28, 2026

DISCORDANCE BETWEEN HYSTEROSCOPIC FINDINGS AND ENDOMETRIAL PATHOLOGY: IMPLICATIONS FOR SAMPLING TECHNIQUE. Ariella Yazdani, MD[1], Elizabeth Klein, MD[2], Taylan Bynum, BS[2], Meng Yao, MS[2] and Tommaso Falcone, M.D.[3], [1]Cleveland Clinic, OH, [2]Cleveland Clinic, Cleveland, OH, [3]cleveland Clinic, Cleveland, OH

OBJECTIVE: To compare the diagnostic yield of blind, visually directed, and combined endometrial sampling techniques and to evaluate concordance between hysteroscopic findings and final pathology in premenopausal patients with abnormal uterine bleeding (AUB).
MATERIALS AND METHODS: We performed a retrospective cohort study of 587 premenopausal patients (18-45 years) with AUB who underwent hysteroscopy with endometrial sampling. Patients with known endometrial hyperplasia or malignancy were excluded. Subjects were stratified by hysteroscopic findings (normal vs. abnormal) and sampling technique: blind curettage (n=168), visually directed (n=294), and combined (n=125). Hysteroscopic findings were categorized as normal, polyp, or other abnormalities. Primary outcomes included histopathologic findings and concordance with hysteroscopy. Statistical significance was defined as $p<0.05$.
RESULTS: Mean age was 35.9 years, and mean BMI was 32.3 kg/m², with no significant differences across groups. All patients underwent diagnostic hysteroscopy with endometrial sampling. Visually directed and combined sampling identified higher rates of abnormal pathology compared to blind curettage alone (80.3% and 81.6% vs. 61.3%, p<0.001), while blind sampling yielded a higher proportion of normal histopathology (19.7% and 17.6% vs 38.7%, p<0.001). Among all patients with visually

normal endometrium (n=134), only 32.8% (n=44) had normal histopathology. Endometrial polyps were the most common diagnosis (62.4%), with 82.7% concordance between hysteroscopic and pathologic findings. Using histopathology as the reference standard, visual hysteroscopic assessment in patients undergoing visually directed sampling demonstrated moderate sensitivity (84.6%, CI 80.8–88.5) and low specificity (21.3%, CI 12.3–30.2), with low negative predictive value (24.6%, CI 14.5–34.8), indicating limited ability to exclude endometrial abnormalities.
CONCLUSIONS: Normal hysteroscopic findings demonstrate limited ability to exclude endometrial pathology in premenopausal patients with AUB, as reflected by low negative predictive value. While focal abnormalities such as polyps show high concordance with histopathology, a normal-appearing endometrium does not reliably exclude disease. Visually directed and combined sampling identify higher rates of pathologic findings compared to blind curettage and may improve diagnostic accuracy of endometrial evaluation.
IMPACT STATEMENT: Normal hysteroscopic findings should not preclude endometrial sampling in premenopausal patients with AUB. Visually directed sampling may improve detection of endometrial pathology compared to blind techniques.

O-235 12:05 PM Wednesday, October 28, 2026

SECOND LOOK, SAME OUTCOME? OFFICE HYSTEROSCOPY AFTER FAILED FROZEN EMBRYO TRANSFER. Allison M Gonzalez, MS[1] and Linnea R Goodman, MD[2], [1]Miami, FL, [2]VA Fertility and IVF, Charlottesville, VA

OBJECTIVE:
Uterine cavity assessment prior to frozen embryo transfer (FET) is commonly performed using saline infusion sonography (SIS), hysterosalpingography (HSG), or hysteroscopy. This study aimed to (1) evaluate the incidence of intrauterine pathology detected by office hysteroscopy following a failed FET in patients with a previously normal SIS/HSG and (2) assess whether interval hysteroscopy improves outcomes in subsequent FET cycles.
MATERIALS AND METHODS:
This single-center prospective cohort study included patients aged 18–50 years undergoing subsequent FET after failed FET between 2021 - 2025. Patients who underwent interval office hysteroscopy were compared to those who proceeded directly to repeat FET. Office hysteroscopy was performed without anesthesia using a single-use 4.2 mm hysteroscope. The primary outcome was ongoing pregnancy, defined as the presence of cardiac activity beyond 9 weeks gestation. Statistical analyses included chi-square and Student's *t*-tests, as appropriate with $p < 0.05$ considered significant.
RESULTS:
A total of 371 single blastocyst FET cycles (mean embryo age 33.2 ± 3.7 years) were analyzed following a failed initial transfer. Of these, 166 patients underwent interval office hysteroscopy, while 205 proceeded directly to repeat FET without hysteroscopy. Pre-implantation genetic testing (PGT-A) was performed on 62.3% of embryos transferred (74.5% in hsc group vs. 52.7% non-hsc; $p < 0.01$). Ongoing pregnancy rates were higher in PGT-A cycles compared to non-PGT-A cycles (67.5% [156/231] vs 50.4% [70/139], $p < 0.01$).
Office hysteroscopy identified intrauterine pathology in 85 of 166 patients (51.2%). Polyps were identified most frequently (n = 76), followed by retained products of conception (n = 5), and intrauterine adhesions.
Positive hCG rates were similar between groups, with 72.3% (120/166) in patients who underwent interval hysteroscopy compared to 68.8% (141/205) in those who did not ($p = 0.52$). Ongoing pregnancy rates were likewise comparable (63.3% (105/166) vs. 59.5% (122/205); $p = 0.53$).
Within the hysteroscopy group, positive hCG rates were 70.6% (60/85) in patients with identified pathology compared to 74.1% (60/81) in those with normal findings ($p = 0.64$). Ongoing pregnancy rates were similarly comparable: 61.2% (52/85) vs. 65.4% (53/81); $p = 0.68$.
When stratified by PGT-A status, hysteroscopy was not associated with improved outcomes in PGT-A cycles (63.9% vs 71.6%, $p = 0.21$) nor non-PGT-A cycles (61.4% vs 45.3%, $p = 0.08$).
CONCLUSIONS:
Interval office hysteroscopy identified previously unrecognized intrauterine pathology in approximately half of patients despite normal prior cavity evaluation. However, its use was not associated with an improvement in ongoing pregnancy rates in subsequent FET cycles.
IMPACT STATEMENT:
Office hysteroscopy frequently detects subtle intrauterine abnormalities after failed FET; however, this study demonstrates no improvement in subsequent pregnancy outcomes. These findings support a more selective, rather than routine, use of hysteroscopy, particularly in cases such as failed euploid embryo transfer, where diagnostic reassurance and targeted intervention may be clinically valuable.
SUPPORT: None

ORAL ABSTRACT SESSION: FERTILITY PRESERVATION – INFERTILITY & CANCER

O-236 11:15 AM Wednesday, October 28, 2026

REPRODUCTIVE OUTCOMES AFTER REPEAT OVARIAN TISSUE TRANSPLANTATION: PROGNOSTIC VALUE OF FIRST-GRAFT PERFORMANCE. Maia Vardy, B.A.[1], Moran Shapira, MD[2], Jacques Cohen, M.D.[2], Adva Aizer, PhD[2], Raoul Orvieto, M.D.[2], Dror Meirow, Prof.[2] and Myriam Safrai, MD. B.Sc.[3], [1]Chicago, IL, [2]Sheba Medical Center, Tel Hashomer, Israel, [3]Wolfson Medical Center, Holon, Israel

OBJECTIVE: To evaluate reproductive outcomes after repeat ovarian tissue transplantation (OTT) and assess whether first-transplant performance predicts reproductive success with subsequent transplantation.
MATERIALS AND METHODS: This retrospective single-center cohort included women who underwent at least two OTT procedures between 2010 and 2025 following prior ovarian tissue cryopreservation. Success was defined as any pregnancy after OTT, whether spontaneous or assisted. Outcomes after OTT were compared at the patient and cycle levels. Associations were evaluated using descriptive statistics, Fisher's exact testing, and generalized estimating equations for repeated in vitro fertilization (IVF) cycles.
RESULTS: Among 71 women who underwent OTT, 19 underwent repeat transplantation, and 8/19 (42.1%) achieved at least one pregnancy. Pregnancy occurred in 6/19 women (31.6%) after first OTT, yielding 13 pregnancies (7 spontaneous; 6 IVF-conceived). Second OTT resulted in pregnancy in 5/19 women (26.3%), yielding 7 pregnancies (5 spontaneous; 2 IVF-conceived). Although aggregate pregnancy rates were similar between first and second OTT, patient-level reproductive trajectories were discordant. Among women who conceived after first OTT, 3 conceived again after repeat transplantation, whereas 3 did not, indicating that prior success did not guarantee repeat success. Importantly, first-OTT failure did not consistently predict repeat-transplant failure: 2 of 13 women (15.4%) without pregnancy after first OTT conceived spontaneously after repeat transplantation. Overall, pregnancy after first OTT was not significantly associated with pregnancy after second OTT ($P = 0.30$). In contrast, no patient with failed IVF after first OTT achieved an IVF-conceived pregnancy after second OTT, although this finding should be interpreted cautiously given the small number of events. Among 15/19 women who pursued IVF, 112 cycles were performed, with similar IVF exposure and ovarian response after first and second OTT. Per-cycle pregnancy and live birth rates were 7.1% and 6.3%, respectively, with a mean oocyte yield of 1.3 ± 1.1 per retrieval cycle. Pregnancy was observed only in cycles without prior pelvic radiation exposure, with a per-cycle pregnancy rate of 11.3%. In age-adjusted models, current age was inversely associated with pregnancy, whereas endometrial thickness, follicle number, and retrieved oocytes were positively associated; OTT number, prior chemotherapy, and time from OTT to IVF were not associated with pregnancy.
CONCLUSIONS: Although overall pregnancy rates were comparable after first and second OTT, first-transplant outcome did not reliably predict subsequent reproductive outcomes. Patient-level variability, including pregnancies after prior graft failure, suggests that repeat OTT may provide a distinct reproductive opportunity in selected patients.
IMPACT STATEMENT: For patients with remaining cryopreserved ovarian tissue after first OTT, these findings support continued consideration of repeat transplantation with individualized prognostic counseling that integrates prior graft response alongside treatment history and clinical characteristics.

O-237 11:25 AM Wednesday, October 28, 2026

OOCYTE RETRIEVAL IN A BREAST CANCER PATIENT WITH ACUTE VENOUS THROMBOEMBOLISM: BALANCING THROMBOTIC RISK AND FUTURE FERTILITY. Kara Bethel Bethel Fields, MD[1], Nicolas A. Johnson, MD[2] and Emily G. Hurley, MD[3], [1]Bellevue, KY, [2]University of Cincinnati, Blue Ash, OH, [3]University of Cincinnati, West Chester, OH

OBJECTIVE: To discuss the clinical scenario of a patient with hormone-receptor positive breast cancer diagnosed with active venous thromboembolism (VTE) during oocyte hyperstimulation cycle.
MATERIALS AND METHODS: We report the clinical course of a 39-year-old with estrogen receptor and progesterone receptor positive invasive ductal carcinoma with active VTE diagnosed during her oocyte hyperstimulation cycle. On stimulation day 6, she underwent port placement complicated by right pneumothorax requiring chest tube placement and two-day hospital admission. She then presented to the emergency department on stimulation day 10 with arm pain and was diagnosed with subclavian deep vein thrombosis (DVT). This was 3 days prior to scheduled oocyte retrieval. After consultation with Hematology, Oncology, and vascular surgery, as well as shared decision-making with the patient, we proceeded with oocyte retrieval as scheduled.
RESULTS: After 2 days on therapeutic enoxaparin, the patient was admitted the evening prior to retrieval for a heparin bridge which was discontinued 3 hours prior to procedure. There were no complications, however there was an approximately 3 x 4 cm non-expanding intra-abdominal hematoma on ultrasound at procedure end. Hemoglobin remained stable. She restarted enoxaparin later that evening. She received her first infusion of adjuvant chemotherapy the following day. The retrieval yielded 3 oocytes, 2 of which proceeded to intra-cytoplasmic sperm injection (ICSI). Unfortunately, neither embryo made it to blastocyst for freezing and were subsequently discarded. 10 days later, she re-presented with vaginal bleeding from a needle puncture site, requiring admission to the ICU and transfusion of multiple products. Hemostasis was achieved without return to OR and she was discharged to resume her oncologic care.
CONCLUSIONS: Patients undergoing fertility preservation with malignancy and recent central line placement are at high risk for VTE. While previously reported cases primarily address VTE risk mitigation during oocyte stimulation, this case required multidisciplinary peri-procedural management of an acute DVT while balancing the competing risks of thrombosis, bleeding, and delay of adjuvant chemotherapy. Clinicians should recognize that active VTE does not represent an absolute contraindication to oocyte retrieval, but rather requires careful risk stratification and thoughtful peri-procedural management in the context of urgent oncologic fertility preservation.
IMPACT STATEMENT: This case informs counseling and clinical decision-making in oncofertility patients with active VTE at the time of oocyte retrieval. Further fertility

preservation guidelines should delineate best practices for VTE prophylaxis and treatment in patients with cancer.

REFERENCES:
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O-238 11:35 AM Wednesday, October 28, 2026

OPTIMIZING CANDIDATE SELECTION: OVERALL SURVIVAL AND MORTALITY RATES FOLLOWING OVARIAN TISSUE CRYOPRESERVATION COUNSELING.

Gabrielle Stone, MD, MPH[1], Sarah C Rubin, MD[2], Eugenie Lehembre-Shiah, MD[3], Carolyn Brookhart, M.D., M.P.H[3], Kirsten Jay Hartwick Das, MD[3] and Veronica Gomez-Lobo, MD[3], [1]Washington, DC, [2]Medstar Washington Hospital Center/Georgetown University Hospital, [3]Children's National Medical Center

OBJECTIVE:
To compare overall survival among patients who chose to pursue ovarian tissue cryopreservation (OTC) and those who did not.

MATERIALS AND METHODS:
This is an IRB-approved retrospective cohort study of all pediatric patients who underwent fertility preservation counseling between 2013 - 2026 at a single academic institution. Exclusion criteria included those who did not have fertility counseling documentation in the Electronic Medical Record. The primary outcome was overall survival from fertility consultation to death or last known follow-up. Secondary outcomes included mortality proportions by decision group, age, primary diagnosis, time from counseling to death, and follow-up duration. Continuous variables were analyzed using paired t-test. Kaplan-Meier analysis and multivariable Cox regression were used to analyze survival rates and hazard ratios.

RESULTS:
Among N = 259 patients who received fertility consultation and decided whether to pursue or not to pursue OTC, 95 (36.7%) chose to pursue OTC and 164 (63%) did not. Median age at consultation was 9.6 years (IQR 4.1–15.5) in the OTC group and 12.5 years (IQR 6.0–15.9) in the non-OTC group (p = 0.11). Diagnosis distribution differed between groups (p = 0.002). Over a median follow-up of 2.09 years (IQR 0.9–3.6), 11/95 (11.6%) patients in the OTC group and 28/164 (17.0%) in the non-OTC group died. Kaplan–Meier analysis demonstrated a significant difference in overall survival between groups (log-rank p = 0.017). In multivariable Cox regression adjusting for age and diagnosis, the decision to pursue OTC was associated with a significantly lower hazard of death (HR 0.35, 95% CI 0.16–0.75, p = 0.007).

CONCLUSIONS:
Overall, decision to pursue OTC was associated with an improved overall survival in the decision to pursue OTC group (log-rank p = 0.017) and lower hazard of death (HR 0.35, 95% CI 0.16–0.75, p = 0.007). Findings suggest an association between decision to pursue OTC and improved survival, underscoring the importance of understanding prognosis during the counseling process. This highlights the importance of further research aimed at incorporating prognosis into patient selection and counseling to optimize patient benefit and minimize exposure to invasive procedures that may be unlikely to provide benefit.

IMPACT STATEMENT:
Ovarian tissue cryopreservation is the only option for fertility preservation for premenarchal patients undergoing gonadotoxic therapy or at risk for premature ovarian insufficiency (1,2). However, limited data exist regarding mortality prior to tissue utilization (3). In this study, we demonstrate that greater than 10% of patients who underwent OTC died during our follow up surveillance period. These findings underscore the need to integrate prognosis into fertility preservation counseling to better identify patients most likely to benefit from OTC and to avoid invasive procedures in those unlikely to survive to reproductive use.

SUPPORT: FUNDING:
NIH Z1A HD009005

O-239 11:45 AM Wednesday, October 28, 2026

FOLLICULAR FLUID CYTOKINE SIGNATURES FOLLOWING CHEMOTHERAPY: IMPLICATIONS FOR IATROGENIC OVARIAN AGING.

Anika E Schipma, BA, MS[1], Ecem Esencan, M.D.[2], Dilan Gokyer, MD[3], Anna Kleinhans, B.S.[4], Joan K. Riley, HCLD, PhD[4] and Kara N. Goldman, M.D.[3], [1]Chicago, IL, [2]Northwestern University, Feinberg School of Medicine, Chicago, IL, [3]Northwestern University Feinberg School of Medicine, Chicago, IL, [4]Northwestern University, Chicago, IL

OBJECTIVE: To characterize changes in the follicular fluid cytokine profile following exposure to chemotherapy and to elucidate pathways that may contribute to ovarian dysfunction and aging.

MATERIALS AND METHODS: Cancer survivors of reproductive age undergoing oocyte retrieval (23-35, n=9) were recruited alongside a control population of age-matched healthy oocyte donors (23-32, n=7) as controls. Follicular fluid was pooled per-participant, processed, and supernatant cryopreserved at -80°C. After a single freeze-thaw cycle, samples were normalized to a protein concentration of 500 µg/mL. Relative expression of 80 cytokines was measured in duplicate using a multiplex membrane-based antibody array, with chemiluminescent analysis performed using ImageJ Protein Array Analyzer. Demographic and clinical variables were compared using Student's t-test and Mann-Whitney U test, as appropriate ($p<0.05$) and data was reported as mean ± standard error of the mean (SEM).

RESULTS: Cancer survivors had the following diagnoses prior to their oocyte retrieval: neuroblastoma, T-cell lymphoma, atypical carcinoid tumor, triple negative breast cancer, T-cell and B-cell acute lymphoblastic leukemia, aplastic anemia, and acute myeloid leukemia (AML). They were exposed to a combination of chemotherapy classes: alkylating agents and platinum compounds, anthracyclines, antimetabolites, topoisomerase inhibitors, microtubule inhibitors, and targeted or immune-based therapies. The time between chemotherapy exposure and follicular fluid collection ranged from 1 month (AML) to 19 years (neuroblastoma). There was no difference in age between chemotherapy-exposed and controls (27.7±1.5 vs. 28±2.8, p=0.86). Pre-stimulation AMH levels were significantly lower in cases relative to controls (2.0± 0.6 ng/mL [range <0.08 – 5.1] vs. 11.2± 2.1ng/mL [3.0-19.7], p<0.01). Fewer oocytes were retrieved from chemotherapy-exposed patients relative to controls (15.7±4.1 [range 2-32] vs 37.9±4.6 [24-55], p<0.01). Cytokine profiles revealed increased levels in IL-8, MIP-3α, TIMP-1, TIMP-2, NAP-2, and IGF-1 and decreased levels of IFN-γ, MIP-1β in chemotherapy-exposed follicular fluid, consistent with chemokine-driven immune cell recruitment, extracellular matrix remodeling, and compensatory growth signaling.

CONCLUSIONS: In a heterogeneous cohort of chemotherapy-exposed cancer survivors, follicular fluid cytokine profiling demonstrates a selective shift in the ovarian microenvironment. These preliminary findings suggest potential immune, fibrosis, and growth pathways linking cancer therapeutics to ovarian aging and post-treatment ovarian dysfunction. Future studies will distinguish profiles based on time since treatment to assess early versus late effects.

IMPACT STATEMENT: Understanding the off-target effects of chemotherapy on the ovary is critical to developing strategies that preserve reproductive and endocrine health in cancer survivors. These findings suggest that cancer therapeutics may induce cytokine-mediated changes in the ovarian microenvironment, supporting further investigation into the mechanisms of treatment-related ovarian aging and dysfunction.

SUPPORT: Northwestern Medicine Friends of Prentice

O-240 11:55 AM Wednesday, October 28, 2026

FIND A CHAMPION: IDENTIFYING PRACTICE DETERMINANTS FOR A MULTI-SITE IMPLEMENTATION TRIAL OF THE FAMILY-CENTERED ADOLESCENT SPERM BANKING DECISION TOOL (FAST).

Gwendolyn P. Quinn, PhD[1], Monica Stanwick, MPH[2], Ashley Housten, OTD, MSCI[3], Kathleen Montgomery, Ph.D.[4], Anthony N. N Audino, MD, MD[5], Amanda Saraf, D.O.[6], Charleen I Theroux, BA[7], Stacy Whiteside, APRN[2] and Leena Nahata, M.D.[2], [1]New York University School of Medicine, New York, NY, [2]Nationwide Children's Hospital, Columbus, OH, [3]Washington University School of Medicine in St. Louis, [4]University of Wisconsin-Madison School of Nursing, Madison, WI, [5]Nationwide Children's Hospital, OH, [6]Riley Hospital For Children, Indianapolis, IN, [7]Nationwide Children's Hospital, Columbus, OH

OBJECTIVE:
To identify determinants of practice influencing implementation of the Family-centered Adolescent Sperm banking decision Tool (FAST), a web-based values clarification tool designed to support family-centered fertility preservation (FP) communication and decision making among adolescent males with cancer, in preparation for a multi-site hybrid implementation–effectiveness trial.

MATERIALS AND METHODS:
We conducted semi-structured qualitative focus groups with clinicians practicing in USA pediatric oncology settings who treat adolescent males (13–21 years) with cancer and offer sperm banking. Clinicians were recruited via a professional Oncofertility organization and networks using purposive, snowball sampling. Prior to the groups, participants completed demographic questions and the 4-item Feasibility of Implementation Measure (FIM; 5-point Likert scale; higher scores = greater feasibility). Participants reviewed a diagram of the proposed FAST implementation plan prior to the 60-minute focus group. The Tailored Implementation for Chronic Disease (TICD) checklist scaffolded the focus group guide. Sessions were audio-recorded, transcribed verbatim, and de-identified. Two coders conducted thematic analysis using an inductive–deductive codebook mapped to TICD domains, with discrepancies resolved via consensus and a third reviewer as needed. Descriptive statistics summarized FIM scores.

RESULTS: Fourteen clinicians from 13 states participated in three focus groups (70% recruitment); groups were mixed by clinician type. Mean total FIM score was 16.2 (SD=2.1). Qualitative analysis identified 16 determinants of practice across TICD domains. Clinicians viewed the FAST as low-effort and generally compatible with workflows but raised questions about optimal timing (before vs. during vs. after fertility consults) and which clinician role should introduce the tool. Implementation was seen as more feasible with institutional "champions," EMR prompts, and routine reminders. Clinicians perceived the FAST to have higher value for patients than for their own practices and noted differing comfort and motivation to alter workflows. Clinicians discussed that FAST may be most useful for younger adolescents, those with limited reproductive health knowledge, or families experiencing decisional conflict. The importance of free access to FAST, availability of devices/technology, and systemic barriers such as limited sperm bank hours and FP-related costs were noted

CONCLUSIONS:
Clinicians rated FAST as highly feasible to implement and identified multilevel determinants of practice, spanning workflow compatibility, clinician comfort, patient characteristics, resource availability, and institutional processes.

IMPACT STATEMENT:
Addressing identified determinants through champions, EMR integration, feedback loops and early engagement with institutional stakeholders may optimize FAST uptake.

Ultimately these findings may expand equitable, family-centered FP decision support in pediatric oncology settings.
SUPPORT: NIH R01

O-241 12:05 PM Wednesday, October 28, 2026

IDENTIFYING GAPS IN ONCOFERTILITY CARE DELIVERY WITHIN THE MILITARY HEALTH SYSTEM. Carissa J. Pekny, B.S., M.D.[1], Melina Economou, MA[2], Bonnie N. Kaiser, PhD, MPH[1], Sally A. D. Romero, PhD, MPH[1], Ricardo Enrique Flores Ortega, MPH[1] and Irene Su, MD, MSCE[2], [1]University of California San Diego, La Jolla, CA, [2]University of California San Diego, San Diego, CA

OBJECTIVE: Oncofertility care for reproductive-aged individuals in the Military Health System (MHS) has not been systematically characterized and may differ from civilian care due to a single insurer (TRICARE) and relocation/deployments. We aimed to identify multi-level barriers and facilitators to delivering guideline-concordant oncofertility care in the MHS to inform intervention design.
MATERIALS AND METHODS: From 2025–2026, we conducted semi-structured interviews with 24 clinicians, staff, and leaders involved in oncofertility care across 7 military medical treatment facilities (MTFs) in the United States. Purposive sampling captured variation in discipline, role, and location. Interview guides, informed by the Exploration, Preparation, Implementation, Sustainment (EPIS) framework, focused on screening, counseling, referral, TRICARE fertility preservation (FP) benefits, and access to FP services. Transcripts were coded in MaxQDA and analyzed thematically using an inductive–deductive approach with iterative codebook development and double-coding.
RESULTS: All 7 MTFs had on-site oncology and variable access to on-site or affiliated REI/andrology; many patients relied on civilian centers. Across sites, oncofertility care was variable and dependent on local champions rather than standardized workflows. Screening for fertility risk and reproductive goals was seldom protocolized, and structured electronic health record (EHR) tools were rare. Counseling and referral pathways differed within and between facilities. Clinicians were motivated to support FP but uncertain who should initiate discussions and how to route referrals. TRICARE FP benefits were viewed as complex and inconsistently interpreted, with uncertainty about eligibility, covered services, and authorizations. Structural factors (geographic distribution of REI/andrology services, reliance on civilian partners, overseas postings, and frequent personnel turnover) created logistical burdens that limited timely FP. Facilitators included strong clinician commitment, relationships with civilian fertility centers and cryobanks, emerging navigator roles, and ideas for MHS-wide standardized workflows, navigation guides, and EHR-based triggers tied to cancer diagnoses.
CONCLUSIONS: Oncofertility care in the MHS is marked by variability in screening, counseling and referral, benefit navigation, and access to FP services, with reliance on local champions and workarounds. Military-specific structural factors and complexity in implementing TRICARE FP benefits contribute to gaps in timely, guideline-concordant care.
IMPACT STATEMENT: Mapping perspectives across the oncofertility pathway in an integrated military health system, this study identifies structural barriers and facilitators that differ from, or are amplified compared with, civilian settings. Implementing standardized MHS-wide screening and referral pathways, clear processes for accessing TRICARE FP benefits, EHR-embedded prompts and order sets, military-specific patient education materials, and durable navigation infrastructure may improve timely, equitable access to FP for patients with cancer in the MHS.
SUPPORT: Research reported in this abstract was supported from Evaluation of a Telehealth Oncofertility Care Intervention in Adolescent and Young Adult Cancer Patients trial funding by Robert Wood Johnson Foundation 118562, NCI R01CA271104, NCI R21CA271184, Curebound Pedal the Cause Grant.

ORAL ABSTRACT SESSION: PRE-CLINICAL & BASIC RESEARCH (2 OF 2)

O-243 11:25 AM Wednesday, October 28, 2026

ADIPOSE MESENCHYMAL STEM CELL IUD THERAPY FOR ASHERMAN SYNDROME IN A MOUSE MODEL. Nimisha Gawde, MD[1], Lu Gan, PhD[2], Ramanaiah Mamillapalli, Ph.D.[3], Linghui Meng, PhD[2], Hugh S Taylor, M.D.[4] and William Fodor, PhD[2], [1]Yale University School of Medicine, New Haven, CT, [2]Harvard Apparatus Regenerative Technology, Holliston, MA, [3]Yale university School of Medicine, New Haven, CT, [4]Yale University, New Haven, CT

OBJECTIVE: Asherman syndrome (AS), characterized by intrauterine adhesions (IUA), impairs fertility. Stem cell therapies may enhance endometrial repair when traditional adhesiolysis fails. Adipose tissue is one of the abundant sources of mesenchymal stem cells and play a key role in regulating angiogenesis and tissue repair. This study evaluates scaffold-based intrauterine delivery of adipose-derived mesenchymal stem cells (Ad-MSCs) to improve fertility in a murine AS model.
MATERIALS AND METHODS: Ad-MSCs were cultured and characterized by flow cytometry, with cytokine production analyzed by ELISA. Polyurethane tubular scaffolds (1 cm, 0.7 mm diameter) were seeded with Ad-MSCs (4,000 cells/mm²), and viability was assessed. Asherman syndrome was induced in female C57BL/6 mice during diestrus phase via our standardized uterine injury using a 20-gauge needle. Mice were assigned to four groups: AS, scaffold alone, Ad-MSCs impregnated scaffolds, and sham control. Scaffolds (± Ad-MSCs) were implanted and removed after 7 days. Following a 10-day recovery, mice were bred, and reproductive outcomes were recorded. Uteri were harvested post-weaning for histological (H&E) and fibrosis (Masson trichrome) analyses. Statistical significance was set at $p<0.05$.
RESULTS: The cells exhibited a characteristic MSC immunophenotype, demonstrating strong expression of CD29, CD44, CD73, CD90, and CD105, while lacking expression of hematopoietic (CD45) and immunogenic (MHC II) markers. The scaffold did not alter angiogenic (VEGF) or inflammatory cytokine or chemokine secretion. Ad-MSCs engrafted the uterine horn as seen on day 7. Compared to sham controls, mice in AS and scaffold alone groups experienced significantly longer time to conception (4.9 vs 8.5 vs 29.9 days; $p=0.01$ and $p=0.003$), smaller litter size (8.75 vs 6.11 vs 2.6 pups; $p=0.006$ and $p=0.0003$) and smaller number of surviving pups (7.92 vs 4.33 vs 0.5 pups; $p=0.02$ and $p=0.0001$) demonstrating the effectiveness of the AS model and the lack reparative effect from scaffold alone. Furthermore, there was significantly increased percent collagen deposition in both groups compared to control (0.03 vs 2.25 vs 9.27; $p=0.03$ and $p=0.02$) respectively. The Ad-MSCs group experienced significantly shorter time to conception (enhanced fertility) (29.9 vs 8.63 days; $p=0.05$), larger litter size (2.6 vs 5.4 pups; $p=0.03$), higher number of surviving pups (0.5 vs 3.87 pups; $p=0.006$), and decrease in area of collagen (9.27 vs 1.27 % area; $p=0.0005$) compared to scaffold alone group.
CONCLUSIONS: This study highlights the regenerative potential of Ad-MSCs delivered via intrauterine scaffolds. These Ad-MSC-seeded scaffolds preserve cell viability, improve fertility outcomes, and reduce fibrosis in a murine model of Asherman syndrome. Further, the delivery via an intrauterine device may be a convenient approach that can be readily adopted in clinical practice.
IMPACT STATEMENT: Cellularized scaffolds with Ad-MSCs offer a promising therapeutic strategy for IUA-related infertility.

O-244 11:35 AM Wednesday, October 28, 2026

EPIGENETIC LOSS OF FIBRILLIN-1 (FBN-1) DRIVES OVARIAN FIBROSIS DURING REPRODUCTIVE AGING. Marisa Wen, BA[1], Dilan Gokyer, MD[1], Aysu Cakar, MD[2] and Elnur Babayev, M.D., M.SC.[1], [1]Northwestern University Feinberg School of Medicine, Chicago, IL, [2]Northwestern University Feinberg School of Medicine, Chicago

OBJECTIVE:
Ovarian aging leads to a rapid decline in oocyte quality and quantity, contributing to infertility, miscarriage, and long-term health consequences. Molecular drivers of this process remain poorly defined. Our aim was to use spatial chromatin accessibility profiling in mouse ovaries across age to identify and characterize the genes mediating the aging process.
MATERIALS AND METHODS:
Ovaries from reproductively young (8-10 weeks) and aged (9-11 months) CD1 mice were collected. An unbiased spatial assay for Transposase-Accessible Chromatin with sequencing (spatial ATAC-seq) was performed to evaluate differential ovarian genome accessibility with age. RNA in situ hybridization (RNA-ISH) was performed for *Fbn1* to assess its levels and spatial distribution. Whole ovarian protein lysates underwent Western blot analysis for FBN1 and TGF-β1. Paraffin-embedded ovarian sections were subjected to immunohistochemistry for FBN1, with ImageJ-based quantification of DAB-positive signal in total ovarian and stromal compartments. Statistical comparisons were performed using unpaired two-tailed Student's t-tests.
RESULTS:
Spatial ATAC-seq identified *Fbn1* as a top candidate gene demonstrating reduced chromatin accessibility at the transcription start site in aged ovarian stroma. *Fbn1* encodes the extracellular matrix glycoprotein fibrillin-1 (FBN1). RNA-ISH demonstrated high *Fbn1* transcript levels in the theca-interstitial and stromal compartments, which significantly reduced in aged ovaries ($p<0.01$). Western blot analysis demonstrated significantly reduced total FBN1 protein abundance in aged mouse ovaries ($p<0.05$). Immunohistochemistry confirmed FBN1 localization within perifollicular stromal compartments and demonstrated significantly decreased staining intensity in aged ovaries ($p<005$). FBN1 sequesters latent transforming growth factor-beta (TGF-β) complexes in the extracellular matrix through interactions with latent TGF-β binding proteins (LTBPs). We assessed whether FBN1 loss is associated with dysregulated TGF-β1 signaling during ovarian aging. Western blot demonstrated significantly increased active TGF-β1 levels in aged ovaries ($p<0.05$).
CONCLUSIONS:
Reproductive aging is associated with loss of stromal FBN1 expression and increased TGF-β1 activation in the ovary. Reduced extracellular FBN1 may impair sequestration of latent TGF-β complexes, contributing to increased profibrotic signaling of this molecule in ovarian aging. This pathway may represent a novel therapeutic target for preserving ovarian function.
IMPACT STATEMENT:
These findings identify extracellular matrix remodeling as a potential upstream driver of ovarian fibrosis and highlight FBN1 as a potential therapeutic target to improve reproductive longevity.
SUPPORT: This project was supported by NIH/NICHD K12 HD050121 (EB).
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O-245 11:45 AM Wednesday, October 28, 2026

CHARACTERIZING THE NEURO-IMMUNE IMPACT OF PRENATAL CANNABIS ON THE PLACENTA: THE ROLE OF GESTATIONAL AGE. Ms. Janet O Joseph, BS[1], Neha Sehgal, MPH, PhD[2], Nicole Belanger, PhD[3], Ruth G St Fleur, PhD[3], Amber Burt, MS[2], Karen Hermetz, BS[2], Carmen J Marsit, PhD[2], Todd M Everson, PhD[2] and Laura R Stroud, PhD[4], [1]Providence, RI, [2]Rollins School of Public Health, Atlanta, GA, [3]Center for Behavioral and Preventive Medicine, The Miriam Hospital, Providence, RI, [4]Department of Psychiatry and Human Behavior, The Warren Alpert Medical School, Brown University, Providence, RI

OBJECTIVE: The placenta expresses a functional endocannabinoid system, making it a direct target of prenatal cannabis exposure. Prior transcriptomic studies identified hundreds of cannabis-associated placental genes, but none modeled gestational age as a covariate. Given that gestational age is a major determinant of the infant transcriptome, we tested whether adjusting for gestational age alters the list of cannabis-associated placental genes. We also assessed whether SES, parity, and gravida confound the results.
MATERIALS AND METHODS: RNA-seq was performed on 103 placenta specimens (43 exposed, 60 controls) from a prospective birth cohort. Exposure was determined by maternal interview and meconium toxicology. We compared three DESeq2 models: no covariates, sex only, and sex plus gestational age. Genes with FDR < 0.1 and |log2FC| > 0.20 were considered significant. Additional covariate testing confirmed that SES, parity, and gravida did not differ between groups or correlate with top differentially expressed genes.
RESULTS: Without covariates, 145 genes were identified. Adding sex increased this to 578, revealing strong sex imbalance. Adjusting for gestational age reduced the list to 17 (97% reduction). SES, parity, and gravida showed no impact. LIMD1 (log2FC = -0.42, FDR = 0.016) and NRCAM (log2FC = -0.51, FDR = 0.007) were downregulated, suggesting reduced hypoxia sensing and neuronal adhesion. MADCAM1 (log2FC = 1.31, FDR = 0.014) and FAM3D (log2FC = 0.68, FDR = 0.086) were upregulated, indicating mucosal immune activation. Core endocannabinoid system genes were not differentially expressed. GO enrichment identified cell adhesion (p = 0.055) and neuronal development terms. KEGG analysis confirmed cell adhesion interactions (p = 0.014) and Hippo signaling (p = 0.049).
CONCLUSIONS: Gestational age is a major confounder in placental transcriptomic studies of prenatal cannabis exposure, whereas SES, parity, and gravida are not. Failure to adjust for gestational age may produce hundreds of false positive signals. After adjustment, the placental response to cannabis is more focused than previously reported, involving reduced neuronal adhesion and increased immune signaling rather than broad immune suppression. The absence of core endocannabinoid system gene expression changes suggests alternative mechanisms of action. These 17 genes provide a refined set for mechanistic hypothesis-driven follow-up. Additional validation of these findings is needed.
IMPACT STATEMENT: This study demonstrates that gestational age dramatically alters the interpretation of cannabis-associated placental gene expression, reducing candidate genes from 578 to 17. This finding has immediate implications for re-evaluating prior transcriptomic studies that did not account for gestational age. The refined neuro-immune signature challenges prior reports of broad immune suppression and provides a focused set of targets for future mechanistic studies to understand how prenatal cannabis exposure affects placental function and fetal development.

O-246 11:55 AM Wednesday, October 28, 2026

LOW-DOSE PROTEASOME INHIBITION DURING CNP MEDIATED PRE-MATURATION ENHANCES AUTOPHAGY AND OOCYTE QUALITY IN MOUSE IN VITRO MATURATION. Asrafun Nahar, PH.D.[1], Heather Rogers, M.SC.[1], William B Schoolcraft, M.D.[1] and Ye Yuan, PH.D.[2], [1]Colorado Center for Reproductive Medicine, Lone Tree, CO, [2]Colorado Center For Reproductive Medicine, Lone Tree, CO

OBJECTIVE:
To investigate whether low-dose proteasome inhibition in CNP pre-maturation culture medium partially modulates the ubiquitin–proteasome system, enhances autophagy-mediated clearance of aggregated proteins, and improves oocyte quality.
MATERIALS AND METHODS:
Cumulus–oocyte complexes (COCs) and ovaries were collected from young (2 months) and aged (10 months) Swiss Webster mice. Protein aggregation in paraffin-embedded ovarian sections and MII oocytes was evaluated by RUFY1 immunofluorescence. To determine the optimal concentration of proteasome inhibitor (PI), COCs (n = 381) from young mice were cultured in CNP pre-maturation medium supplemented with 0, 1, 10, and 30 µM PI for 2 h at 37 °C under 20% O2 and 6% CO_2. Oocytes were then transferred to standard IVM medium for 18 h, followed by fertilization and culture until day 5. Developmental outcomes, including oocyte nuclear maturation, cleavage, day 4 blastocyst formation, day 5 hatching, and inner cell mass (ICM) and trophectoderm (TE) cell numbers of hatching blastocysts were assessed. Based on developmental outcomes, 1 µM PI was selected for further analyses. Mitochondrial membrane potential (MMP), autophagy (LC3B), and protein aggregation (RUFY1) were assessed in IVM oocytes from young and aged mice using fluorescence microscopy and quantified using ImageJ. The combined effects of PI during pre-maturation and rapamycin during IVM were also evaluated. Statistical analyses were performed using one-way ANOVA followed by Tukey's post hoc test, or Student's t-test, $p<0.05$. Experiments were repeated at least three times.
RESULTS:
Protein aggregation (RUFY1) was significantly higher in both ovaries (1.3± 0.1) and MII oocytes (3.5±0.2) from aged mice compared with young mice ovaries (0.2±0.02) and MII oocytes (1.5±0.3). Treatment with 1µM PI significantly improved developmental outcomes, increased day 4 blastocyst formation (68.8% vs. 85.0%) and day 5 hatching blastocyst rates (70.8% vs. 86.7%), as well as higher ICM cell numbers (11.8±0.6 vs 9.6±0.5) and improved ICM/TE ratios (0.2±0.0 vs 0.1±0.0). In oocytes from young mice, PI increased MMP, enhanced LC3B expression, and reduced protein aggregation. These effects were not observed in aged oocytes by PI treatment alone. However, combining PI with rapamycin treatment resulted in increased MMP, enhanced LC3B expression, and reduced protein aggregation indicating improved oocyte quality in aged mice.
CONCLUSIONS:
Short-term, low-dose proteasome inhibition during pre-maturation enhances autophagy-mediated clearance of aggregated proteins and improves oocyte quality in young mice. In aged oocytes, similar benefits are achieved when combined with rapamycin.
IMPACT STATEMENT:
Incorporating proteasome inhibitor during pre-maturation, alone for young oocytes or in combination with rapamycin for aged oocytes, represents a promising strategy to enhance IVM efficiency. This approach has strong translational potential to improve human IVM outcomes, and expanded treatment of success for a broader patient population, particularly those with advanced maternal age.

O-247 12:05 PM Wednesday, October 28, 2026

DERIVATION OF FUNCTIONAL SPERMATONIAL STEM CELL-LIKE CELLS FROM NON-HUMAN PRIMATE INDUCED PLURIPOTENT STEM CELLS. In Ki Cho, PhD[1], Elizabeth Waters, B.S.[1], Michael H Powe, B.A.[1], Kyle E. Orwig, PH.D.[2], Charles A. Easley IV, B.S., B.SC., M.S., PH.D.[1] and Zaheen Kamruddin, B.S.[1], [1]University of Georgia, Athens, GA, [2]University of Pittsburgh, Pittsburgh, PA

OBJECTIVE: ~15% of couples worldwide and ~12% of men in the United States experience infertility. Since 1980, Assisted Reproductive Technology (ART) has gained worldwide acceptance, and Intracytoplasmic Sperm Injection (ICSI) has since aided couples with severe infertility to achieve pregnancies. However, for male patients unable to produce gametes, ART procedures are unable to treat their infertility. Patient-derived pluripotent stem cells represent one future potential option to restore fertility in these patients by generating germline precursors such as spermatogonial stem cell-like cells (SSCLCs) *in vitro* that can restore fertility *in vivo* following transplantation. Using a non-human primate model, the objective of this study was to determine whether SSCLCs derived from induced pluripotent stem cells (iPSCs) could be autologously transplanted into recipient animals one year after sterilization, colonize the gonad, and begin producing sperm.
MATERIALS AND METHODS: iPSCs were derived from dermal fibroblasts from 5 different male rhesus macaques. A GFP transgene was inserted into these lines to assess functionality of SSCLC transplantations. iPSCs were differentiated into SSCLCs using our novel step-wise co-culture method. 1+ year after testicular irradiation, ~ 5 million GFP-SSCLCs were autologously transplanted into both testes of 3 of the 5 males. Animal health was continuously monitored, and after 2+ months, semen samples were collected and analyzed weekly.
RESULTS: 2 of the 5 males recovered spermatogenesis normally within 6 months of irradiation while 3 males remained infertile after 1 year. Five months post transplantation (n = 3 animals), none of the animals have experienced negative health impacts (no teratoma or tumor formation, no reduction in weight, appetite, etc.), signifying that the transplantation of SSCLCs is potentially safe. Despite their failure to produce sperm more than a year post-sterilization, we have begun observing a slight increase in sperm production in all animals that received transplantations. Sperm collected from 2 animals are GFP+ as determined by qPCR for the GFP transgene, suggesting that the transplanted SSCLCs are capable of undergoing spermatogenesis and producing motile sperm.
CONCLUSIONS: The results so far demonstrate that transplantable SSCLCs can be derived from dermal fibroblasts, and these SSCLCs can engraft after transplant and produce sperm. Additionally, after over 1 year, there have been no negative health outcomes from transplanting iPSC-derived SSCLCs, highlighting the safety of this potential therapy.
IMPACT STATEMENT: While additional studies are required to ensure the health of the sperm produced from SSCLC transplantations, and the longevity of the transplantations need to be evaluated, this work represents an important first step in developing transplantable SSCLCs from iPSCs to potentially treat infertile male patients who have currently limited therapeutic options.
SUPPORT: This research was supported by NIH/OD grants to C. Easley and K. Orwig: 1R01OD028223-01 and 1R01OD028223-04S1.

ORAL ABSTRACT SESSION: ART (3 OF 3)

O-248 1:30 PM Wednesday, October 28, 2026

LONG-TERM OUTCOMES OF 205 LIVE BIRTHS FOLLOWING ROUND SPERMATID INJECTION (ROSI) FROM 2011 TO 2021: A FOLLOW-UP STUDY EXTENDING PREVIOUSLY REPORTED 2-YEAR OUTCOMES. Atsushi Tanaka, M.D., PH.D.[1], Motoi Nagayoshi, M.D.[1], Yuya Makino, M.D.[1], Shigeki Fujimoto, M.D.[2] and Idumi Tanaka, Phar.B.[1], [1]Saint Mother Clinic, Kitakyushu, Japan, [2]Department of Obstetrics and Gynecology, Wakamatsu Hospital of University of Occupational and Environmental Health, Japan

OBJECTIVE:
Round spermatid injection (ROSI) remains one of the most controversial assisted reproductive technologies due to its low clinical efficiency and limited human safety data. To date, no large-scale study has comprehensively evaluated mid-term physical and neurodevelopmental outcomes of children born following ROSI. We conducted a follow-up study extending our previously reported 2-year outcomes to determine whether ROSI is associated with adverse growth or developmental consequences up to early childhood.
MATERIALS AND METHODS:
A retrospective cohort study was conducted on 205 children born following ROSI between 2011 and 2021. A questionnaire was distributed, and analyses included only cases with complete datasets. Physical growth (height and weight) was assessed from birth to 6 years and compared with national reference standards from the 2023 Japanese growth survey. Neurodevelopment was evaluated using the KIDS Infant Development Scale (Type C) at 3 and 6 years in 54 children with complete follow-up data. Developmental Quotient (DQ) scores were categorized according to standardized criteria.

RESULTS:
Mean height and weight at all evaluated time points remained within national reference ranges for both sexes. At 3 years, mean DQ scores were above average (boys: 115.7±13.6; girls: 116.9±9.5), while at 6 years, scores converged to age-appropriate levels (boys: 98.4±8.0; girls: 100.8±6.0). Among 54 children, only one case demonstrated a DQ below 85 at 6 years, without consistent evidence of delay. Findings suggest normal physical and cognitive trajectories in children born following ROSI (Table).

Table. Physical growth of children born following ROSI at representative time points (mean ± SD) and reference ranges of the Ministry of Health, Labour and Welfare

Age	Boys				Girls			
	Ht (cm)	Reference range	Wt (kg)	Reference range	Ht (cm)	Reference range	Wt (kg)	Reference range
Birth	49.0±2.6	45.2–52.7	3.0±0.5	2.32–3.82	47.9±2.6	44.5–52.0	2.8±0.5	2.22–3.66
2y	85.2±3.3	80.5–91.9	12.0±1.4	9.85–14.22	84.1±3.6	79.5–90.8	11.6±1.4	9.52–13.92
3y	94.9±4.0	87.8–100.8	14.7±1.6	11.38–16.70	94.0±4.1	86.8–99.7	14.1±1.7	11.19–16.49
6y	115.0±4.9	106.3–123.2	21.0±2.6	16.28–26.04	112.7±5.5	105.4–123.2	20.0±3.2	15.52–27.01

CONCLUSIONS:
Despite its relatively low clinical success rates, ROSI does not appear associated with adverse mid-term physical growth or neurodevelopmental outcomes. Longer-term follow-up and objective developmental assessments remain necessary.
IMPACT STATEMENT:
This study represents the largest and longest follow-up of children born after ROSI to date. Using standardized population benchmarks, these findings support the early-childhood safety of ROSI and may inform future practice and patient counseling worldwide.

O-250 1:50 PM Wednesday, October 28, 2026

IS TRIGGERING IN VITRO FERTILIZATION CYCLES ON OR BEFORE DAY 7 DETRIMENTAL? Emilse Almanza, MD[1], Louisa Drake, D.O.[2], Lawrence Engmann, M.D.[3] and Claudio A Benadiva, H.C.L.D, M.D.[3], [1]University of Connecticut Health Center, Farmington, [2]West Hartford, CT, [3]University of Connecticut Health Center, Center for Advanced Reproductive Services, Farmington, CT

OBJECTIVE:
The purpose of this study is to evaluate whether seven days or less of ovarian stimulation has an effect on egg maturity, fertilization, and blastulation rates.
MATERIALS AND METHODS:
A retrospective query of in vitro fertilization (IVF) cycles from January 2020 to December 2025 at a single academic institution was performed. Subjects were included if they underwent ovarian stimulation with any protocol, used human chorionic gonadotropin or leuprolide acetate or both for trigger, and used intracytoplasmic sperm injection for fertilization of all oocytes. Subjects were excluded if sperm was obtained via TESE. Subjects were triggered when at least 2 follicles reached ≥ 17 mm in diameter. Subjects were divided into three groups: those who underwent 6-7 days of ovarian stimulation, 8-10 days, or ≥11 days. Outcomes included egg maturity, fertilization and blastulation rates. A one way-ANOVA was used to compare the groups, with a p-value of <0.05 considered statistically significant. Bonferroni correction was used to evaluate the difference between groups.
RESULTS:
There was a statistically significant difference between the mean age of each group; the mean age for those who received 6-7 and 8-10 days of stimulation was 35 years, whereas the mean age of subjects who had ≥11 days of stimulation was 38 years (p<0.01). There was also a difference in the distribution of protocols between groups of patients; a larger proportion of "poor responder" protocols were done by patients who received ≥11 days of stimulation. Our data showed a statistically significant difference between those who received 6-10 days of stimulation and ≥11 days, with worse fertilization and blastulation rates among those who underwent 11 or more days of stimulation (p<0.01). This difference is likely attributed to the fact that these patients were generally older and poorer responders. On the other hand, our data showed that there was no difference in egg maturity, fertilization and blastulation rates between 6-7 days and 8-10 days of stimulation.

Outcome	6-7 days (n=75)	8-10 days (n=2580)	≥11 days (n=2306)	p-value (ANOVA)
Egg maturity rate	71.72 ± 18.42	72.68 ± 18.24	74.51 ± 18.99	<0.01
Fertilization rate	75.36 ± 18.91	71.69 ± 21.73	66.51 ± 25.99	<0.01
Blastulation rate	48.15 ± 28.68	47.48 ± 28.15	40.10 ± 31.92	<0.01

**data shown as mean ± standard deviation*

CONCLUSIONS:
Based on our data, patients who exhibit a fast response and meet triggering criteria on or before day 7 have similar results to patients with normal average cycle length, and there is no need to postpone the trigger.
IMPACT STATEMENT:
Ovarian stimulation duration of 7 days or less does not have a negative impact on maturity, fertilization and blastulation rates.

O-251 2:00 PM Wednesday, October 28, 2026

ANTRAL FOLLICLE COUNT (AFC) CORRELATES WITH OOCYTE YIELD INDEPENDENT OF SERUM ANTI-MÜLLERIAN HORMONE (AMH) LEVELS IN PATIENTS WITH DIMINISHED OVARIAN RESERVE (DOR). Akanksha Garg, MBBS, BSc[1], Prof. Erkan Kalafat, M.D. M.Sc[2], Christine V Whitehead, MS, BSN, RN[3], Marie D Werner, B.A., H.C.L.D, M.D.[4], Juan Antonio Garcia-Velasco, M.D., PH.D.[5] and Emre Seli, M.D.[6], [1]Yale university School of Medicine, New Haven, CT, [2]Istanbul, Turkey, [3]IVIRMA New Jersey, Basking Ridge, NJ, [4]RMA NJ, Eatontown, NJ, [5]IVI RMA Madrid, Madrid, Madrid, Spain, [6]IVIRMA Global Research Alliance, RMA New Jersey, Basking Ridge, NJ

OBJECTIVE: To determine whether antral follicle count (AFC) contributes prognostic information for oocyte yield independent of anti-Müllerian hormone (AMH) in patients with diminished ovarian reserve (DOR) undergoing in vitro fertilization (IVF).
MATERIALS AND METHODS: Retrospective cohort study of patients with diminished ovarian reserve (DOR), defined as anti-Müllerian hormone (AMH) levels below the age-specific 10th percentile, undergoing their first autologous IVF cycle between January 2009 and December 2024. Patients were stratified by absolute serum AMH (<0.1, 0.1–0.3, 0.3–0.7, >0.7 ng/mL) and, within each stratum, categorized by AFC centile (≤10^{th}, >10^{th}–25^{th}, >25^{th}–50^{th}, >50^{th}–75^{th}, >75^{th}). Total oocytes retrieved and metaphase II (MII) oocytes were compared across AFC groups using the Kruskal-Wallis test with Dunn post-hoc pairwise comparisons with multiplicity adjustments. Multivariable negative binomial regression evaluated the independent effect of AFC on oocyte yield after adjustment for AMH, age, and body mass index (BMI).
RESULTS: From a total of 20,278 patients who underwent their first IVF cycle during the study period, 1,877 were diagnosed as DOR based on serum AMH levels and were included in the analysis. Within every AMH stratum, higher AFC centile groups produced significantly more total and MII oocytes, and higher surge estradiol levels (all p<0.001). Patients in the >75^{th} AFC centile consistently yielded significantly more oocytes than those in lower AFC groups, with significant pairwise differences in every AMH stratum. Median total oocytes retrieved in the ≤10^{th} vs >75^{th} AFC centile rose from 2.0 vs 5.0 (AMH <0.1), 2.5 vs 6.0 (AMH 0.1–0.3), 3.5 vs 8.0 (AMH 0.3–0.7), to 3.5 vs 13 (AMH >0.7), with similar results for MII oocytes. Multivariable negative binomial regression confirmed AFC as an independent predictor, such that compared with the lowest AFC category, patients in the >75^{th} AFC centile had adjusted incidence rate ratios (IRRs) of 2.21 (95% CI 1.84–2.67, p<0.001) for total oocytes and 2.35 (95% CI 1.91–2.92, p<0.001) for MII oocytes. AMH and age retained significant non-linear independent effects.
CONCLUSIONS: In women with DOR, AFC provides prognostic value for oocyte yield that is independent of and additive to AMH. When stratified by serum AMH values (from 0.1 to 1.3ng/ml), patients with higher AFC consistently retrieved more than twice as many total and MII oocytes than those with lower AFC.
IMPACT STATEMENT: In patients with DOR, cycle-specific baseline AFC strongly correlates with oocyte yield, independent of age and AMH. Therefore AFC should be jointly considered with AMH when setting goals and planning treatment cycles for IVF.

O-252 2:10 PM Wednesday, October 28, 2026

ORAL ESTROGEN IN PROGRAMMED FET CYCLES GENERATES AN ESTROGEN METABOLITE PROFILE ASSOCIATED WITH PREECLAMPSIA: EVIDENCE FOR A MODIFIABLE RISK FACTOR. Suneeta Senapati, MD, MSCE[1], Sneha Mani, PhD[1], Jessica N Tozour, M.D.[2], Mary-Evelina Cordova, BS[1], Chinyelu Ojukwu, BA[1], David Meriwether, PhD[3], Vince W Li, BS[3] and Monica A Mainigi, MD[1], [1]University of Pennsylvania, Philadelphia, PA, [2]Reproductive Medicine Associates of New Jersey, Princeton, NJ, [3]Vatche and Tamar Manookian Division of Digestive Diseases, Department of Medicine, David Geffen School of Medicine, UCLA

OBJECTIVE: Programmed frozen embryo transfer (pFET) cycles are associated with increased preeclampsia risk compared to natural cycle frozen embryo transfers (nFET). These protocols differ in corpus luteum presence and estrogen source: pFETs depend on exogenous estrogen, whereas nFETs depend on endogenous ovarian estrogen. Oral estrogen, commonly used in pFET cycles, undergoes hepatic first-pass metabolism generating multiple estrogen metabolites (ExM). Abnormal serum ExM levels have been associated with preeclampsia and altered trophoblast invasion. We hypothesized that pregnancies conceived after oral estrogen pFET (Oral-pFET) have altered serum ExM levels compared to nFET and unassisted pregnancies. Fresh embryo transfer and transdermal estrogen pFET (patch-pFET) cycles were included to isolate the contribution of multiple corpora lutea and first-pass hepatic metabolism, respectively.
MATERIALS AND METHODS: Residual serum was collected from patients' first or second hCG following Oral-pFET (n=52), nFET (n=52), fresh ET (n=54), unassisted conception (n=53), or patch pFET (n=13). Highly sensitive liquid chromatography-mass spectrometry measured free and total levels of primary estrogens and metabolites including: 2-Hydroxyestrone(2OHE1), 3-Methoxyestrone(3MeOE1), Estrone(E1), 2-Hydroxyestradiol(2OHE2), 2-Methoxyestrone (2MeOE1), 2-Methoxyestradiol(2MeOE2), 16α-Hydroxyestrone(16a-OHE1), 4-Methoxyestrone(4MeOE1), Estriol(E3), 16-Epiestriol(16epiE3), 16-Ketoestradiol (16ketoE2), 4-Methoxyestradiol(4MeOE2) and 17-Epiestriol(17epiE3). Kruskal Wallis

and Wilcoxon rank sum tests assessed differences in ExM serum levels and ratios by cycle type.
RESULTS: All total and free metabolites were higher in Oral-pFET compared to nFET ($p<0.0001$), except for total 16-epiE3($p=0.44$), with Oral-pFET cycles showing markedly elevated serum ExM levels compared to all other cycle types. ExM in fresh cycles were similar to unassisted conception except for higher 3-MeOE1, 17-epiE3, and E1 ($p<0.01$). Despite both using exogenous estrogen, patch pFET cycles differed from oral pFET in all ExM ($p<0.0001$) and were strikingly similar to nFET and unassisted conception. Free 2OHE1:2MeOE1 ratio and E2:E1 ratio were lower in pFET versus all other cycle types ($p=0.001$), while total 2MeOE2:E2 ratio was elevated in oral pFET versus all other cycle types ($p<0.0001$).
CONCLUSIONS: Oral estrogen administration produces a distinctive ExM signature reflecting hepatic first-pass metabolism with elevated metabolite levels and pathway-specific ratio shifts. Transdermal estrogen administration results in ExM profiles similar to single corpus luteum physiology. Oral estrogen alters serum ExM associated with impaired trophoblast invasion and preeclampsia. Prospective studies are needed to examine the role of ExM in preeclampsia pathogenesis and whether transdermal estrogen can abrogate the elevated risks associated with pFET.
IMPACT STATEMENT: In programmed FET cycles, route of estrogen delivery determines early pregnancy serum ExM profiles, identifying it as a potentially modifiable contributor to the elevated preeclampsia risk associated with pFET.
SUPPORT: Burroughs Wellcome Fund

O-253 2:20 PM Wednesday, October 28, 2026

EXTENDED USE OF CLOMIPHENE CITRATE IN MILD OVARIAN STIMULATION FOR PATIENTS WITH VERY LOW OVARIAN RESERVE: EFFECTS ON OVARIAN RESPONSE AND CYCLE OUTCOMES. Merve Önder, Research assistant[1], Pinar Ozcan, MD, Assoc. Prof.[2], Merve Ates, MD[3], Maide Seyma Şeyma Püryan Özcan, Research assistant[4], Ahmet Erdem, professor[5] and Mehmet Erdem, prof[6], [1]Gazi University Department of Obstetric and Gynoco, Ankara, Turkey, [2]Bezmialem University, Fatih, Turkey, [3]Ilkbahar Mah, Ankara, Turkey, [4]Gazi University Faculty of Medicine, Ankara, Turkey, [5]university of Gazi Faculty of medicine, Ankara, Turkey, [6]university of Gazi Faculty of medicine, ankara, Turkey

OBJECTIVE:
Does extending clomiphene citrate beyond 5 days during mild ovarian stimulation improve ovarian response and reduce cycle cancellation in women with very low ovarian reserve?
MATERIALS AND METHODS:
According to the POSEIDON criteria, low ovarian reserve is defined as AMH <1.2 ng/mL and AFC <5. Seperately, AMH ≤0.5 ng/mL defines very low reserve, associated with poorer response, fewer oocytes, lower pregnancy rates, and higher cycle cancellations.This retrospective cohort study analyzed 463 ovarian stimulation cycles in women aged 20–51 years with very low ovarian reserve (AMH ≤0.5 ng/mL) undergoing IVF or oocyte cryopreservation at Novaart IVF Center (January 2021–2026), evaluating cycles using clomiphene citrate within mild stimulation protocols. 5-day administration CC was compared with extended use (>5 days), and follicular output rate (FORT), follicle-to-oocyte index (FOI), number of retrieved oocytes, metaphase II (MII) oocyte, fertilization, cleavage, blastocyst formation rate and cycle cancellation rates were assessed. Continuous variables were analyzed using independent samples t-test for normally distributed data and Mann–Whitney U test for non-normally distributed data. Categorical variables were compared using Pearson's chi-square test.
RESULTS:
A total of 463 ovarian stimulation cycles were analyzed, including CC + gonadotropins (n=247; 5-day CC, n=63; extended CC, n=184), GnRH antagonist protocol with CC (n=117; 5-day CC n=86; extended CC n=31), and PPOS with CC (n=99; 5-day CC n=64; extended CC n=35). In the CC + gonadotropin group, extended CC use was associated with significantly improved ovarian response, including higher FORT (82.4% vs 48.3%, $p<0.001$), FOI (94.5% vs 38.5%, $p=0.001$), number of retrieved oocytes (1 [0–3] vs 0 [0–1], $p<0.001$), and MII oocyte rate (81.9% vs 65%, $p=0.012$) compared with the 5-day CC group.
In contrast, no significant differences in fertilization, cleavage and blastocyst formation rates were observed with extended CC use in GnRH antagonist or PPOS protocols. In the PPOS group, the proportion of MII oocytes was significantly higher in cycles using 5-day CC compared with extended use (79.3% vs 60%, $p=0.011$). When all cycles were analyzed together, extended use of CC was associated with a significantly lower cycle cancellation rate compared with 5 days use (8% vs 23%, $p<0.001$).
CONCLUSIONS:
Women with AMH ≤0.5 ng/mL are considered to have very low ovarian reserve and typically exhibit reduced ovarian response, lower oocyte yield, poorer clinical pregnancy outcomes, and higher cycle cancellation rates. In our study, in women with very low ovarian reserve (AMH ≤0.5 ng/mL), extending clomiphene citrate beyond 5 days significantly reduced cycle cancellation rates. In CC plus gonadotropin protocols, prolonged use improved ovarian response parameters, including FORT, FOI, and oocyte yield. These findings support extended CC use as a simple and effective strategy to optimize stimulation outcomes in poor responders.
IMPACT STATEMENT:
Extended clomiphene citrate use is a simple, low-cost modification of mild ovarian stimulation that may improve ovarian response and reduce cycle cancellation in women with very low ovarian reserve.
SUPPORT: No financial support was received for this study.
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ORAL ABSTRACT SESSION: PROFESSIONAL DEVELOPMENT

O-254 1:30 PM Wednesday, October 28, 2026

ENHANCING SPATIAL UNDERSTANDING OF MÜLLERIAN ANOMALIES USING 3D-PRINTED ANATOMICAL MODELS IN REPRODUCTIVE MEDICAL EDUCATION. Sarah Deepthi Ramaiah, PhD, MSEd[1], Sai Mummareddy, B.S.[2], Jessica Garcia De Paredes, MD[3], Samantha M Pfeifer, MD[4] and Chevis N Shannon, DrPH, MBA, MPH, MERC[5], [1]American Society for Reproductive Medicine, Birmingham, AL, [2]The University of Tennessee Health Science Center, Memphis, TN, [3]Rutgers New Jersey Medical School, Newark, NJ, [4]Weill Medical College of Cornell University, New York, NY, [5]ASRM, Birmingham, AL

OBJECTIVE:
The purpose of this project was to evaluate the educational impact of 3D-printed anatomical models on anatomical recognition, spatial understanding, and learner confidence among reproductive medicine trainees and clinicians while comparing performance using 2D versus 3D learning approaches.
MATERIALS AND METHODS:
A prospective educational intervention was implemented across two educational settings, including a structured simulation session and a self-directed conference exhibit. The primary outcome was to compare learner accuracy using 2D descriptions versus tactile 3D anatomical models of Müllerian anomalies (MA). 2D images (station 1) and six 3D-printed uterine models (station 2) aligned with the Müllerian Anomalies Classification 2021 system (MAC2021©) were utilized. The 3D models were developed from 3-dimensional ultrasound (3D US) and magnetic resonance imaging (MRI) datasets. Participants progressed through both stations, evaluating the images and models using a rating scale. They were then asked to complete a survey assessing their learning accuracy and knowledge related to anomaly identification. Additional information collected included confidence, perceived helpfulness, educational utility, and likelihood of future adoption using a Likert scale (1-5: very likely to very unlikely). Descriptive statistics were calculated for demographic and survey variables. Paired comparisons between 2D and 3D outcomes were evaluated using the Wilcoxon signed-rank and McNemar testing using SPSS.
RESULTS:
A total of 153 participants completed the intervention, including physicians in practice (45.8%), physician trainees (30.7%), APPs/nurses (13.1%), and other reproductive health professionals or learners (10.5%). Eighty-one percent of participants had no prior experience with 3D-printed anatomical models. Correct identification of the anomaly between 2D images and 3D models was 46.1% and 81.4%, respectively ($p<.001$). The greatest improvements in anomaly identification were observed for normal uterus (14.4% to 75.8%), unicornuate uterus with obstructed remnant (13.7% to 70.6%), and partial septate uterus (13.7% to 75.8%). Participants' confidence in accurately identifying each anomaly by either 2D images or 3D models was assessed based on a Likert scale (1-not at all confident to 5- extremely confident). Very confident or extremely confident was reported in 43.8% of participants when utilizing 2D images compared to 83.0% of participants when engaging with the 3D models ($p<.001$) When asked about the effectiveness on learning, participants rated the 3D models very or extremely helpful when considering visual understanding of uterine anatomy (4.27/5), improving knowledge beyond 2D imaging alone (4.31/5), and realism/clinical usefulness (4.36/5).
CONCLUSIONS:
A structured educational intervention incorporating 3D-printed Müllerian anomaly models significantly improved anatomical recognition, learner confidence, and spatial understanding across multiple professional groups and educational settings.
IMPACT STATEMENT:
This study demonstrates the educational value of integrating tactile, imaging-derived 3D anatomical models into reproductive medicine education and supports broader implementation of simulation-based learning strategies for complex gynecologic anatomy.

O-255 1:40 PM Wednesday, October 28, 2026

DONOR CONCEPTION LITERACY AMONG OBSTETRICIAN-GYNECOLOGISTS: A CROSS-SECTIONAL SURVEY. Sanjana P Kulkarni, B.S., M.D.[1], Bharti Garg, MBBS, MPH[1], Marissa Luck, M.D.[2], Paula Amato, M.D.[1] and Shelby Alsup, PhD[3], [1]Oregon Health & Science University, Portland, OR, [2]Pinnacle Fertility, Portland, OR, [3]Spring Fertility, Portland, OR

OBJECTIVE: To characterize obstetrician-gynecologist familiarity with management, documentation practices, and knowledge gaps related to donor-conceived patients and pregnancies.
MATERIALS AND METHODS: We conducted a cross-sectional survey of American Board of Obstetrics and Gynecology (ABOG) board-eligible or board-certified obstetrician-gynecologists practicing in Oregon. The survey was distributed to 180 physicians; 96 (53.3%) responded, and 78 (43.3%) met inclusion criteria and completed the survey. Participants were excluded if they were not board-eligible or board-certified, had not provided direct clinical care in the prior 12 months, did not currently practice in Oregon, or did not consent. Descriptive statistics summarized demographics, prior exposure to donor conception, clinical experience, and patterns in documentation, counseling, and interest in future training.
RESULTS: Respondents were primarily aged 30–39 years (48.7%), practiced in academic settings (53.8%), and provided 4–5 days of clinical care weekly (55.1%). Most

reported exposure to third-party reproduction (66.7%), with 41.0% (n=32) caring for donor-conceived patients and 87.2% (n=68) for donor-conceived pregnancies.
Among physicians who had encountered donor-conceived patients, identification most occurred through direct patient disclosure (53.1%), while only 21.9% routinely inquired. Although 71.9% documented donor-conceived status when known, practices varied; 65.6% did not counsel patients on sharing this information with future providers.
Among physicians caring for donor-conceived pregnancies, information was most often obtained via patient report (64.7%) or intake forms (51.5%), yet only 32.4% actively inquired. Despite frequent exposure, 67.6% did not document donor-conceived status. Counseling was inconsistent, with 48.5% advising patients to disclose donor-conception status to future providers.
Across respondents, variability in comfort with counseling and limited knowledge of available resources were observed, with strong interest in additional education.
CONCLUSIONS: OB-GYN physicians frequently encounter donor-conceived patients and pregnancies; however, identification relies largely on patient self-disclosure rather than systematic inquiry. Documentation and counseling practices are inconsistent, with many providers not routinely recording donor-conception status or counseling on its clinical relevance. These findings highlight gaps in standardized care and missed opportunities to capture important reproductive history relevant to medical decision-making, genetic risk assessment, and continuity of care. The observed variability likely reflects the absence of formal guidelines, limited provider education, and uncertainty regarding best practices in documenting and communicating donor-conception history.
IMPACT STATEMENT: Significant variability in OB-GYN physician practices highlights the need for standardized guidelines and targeted education to optimize care for donor-conceived patients and pregnancies.
SUPPORT: none
REFERENCES:
none

O-256 1:50 PM Wednesday, October 28, 2026

CAREER WITHOUT COMPROMISE: ASSISTED REPRODUCTIVE TECHNOLOGY (ART) OUTCOMES IN MEDICAL TRAINEES COMPARED TO CONTROLS. Zoey McFarland, B.S.[1], Avni Ahuja, MD[1], Jillian Pecoriello, MD[2], Emily Michelle Weidenbaum, MD[3], Sarah D Cascante, MD[4], Jennifer K Blakemore, MD, MSCI[5] and Jacquelyn Shaw, M.D.[5], [1]NYU Grossman School of Medicine, New York, NY, [2]NYU School of Medicine, New York, NY, [3]New York University, New York, NY, [4]NYU Langone Prelude Fertility Center, New York, NY, [5]NYU Langone Fertility Center, New York, NY

OBJECTIVE: Studies show that medical trainees are more likely to delay childbearing, experience higher rates of infertility, and report higher rates of anxiety surrounding family planning, often due to current and anticipated career demands.[1,2] However, data on assisted reproductive technology (ART) utilization and outcomes in female trainees are limited. We compared controlled ovarian stimulation (COS) and ART outcomes between medical trainees and non-trainee controls.
MATERIALS AND METHODS: This was a retrospective cohort study of medical students, residents and fellows who underwent oocyte cryopreservation (OOF), embryo banking (EB), and in vitro fertilization (IVF) cycles at a large urban academic center from 9/2020-4/2026. All trainee cycles (MED) were matched 1:1 to controls (CTL) by age, AMH, cycle type, and number of cycles. Stimulation characteristics included total gonadotropin dose, peak estradiol (E2) levels, and stimulation (stim) duration. The primary outcome was the number of oocytes retrieved. Secondary outcomes included MII, 2PN, blastocysts, and euploid yield, as well as maturity, fertilization (FERT), blastocyst formation (BLAST), and euploidy rates. Statistical analysis included Mann Whitney U tests ($p<0.05$).
RESULTS: 139 MED cycles were matched to CTLs (43.2% OOF, 33.1% EB, 23.7% IVF). Age (32 years vs 32 years, $p = 0.68$) and AMH (2.56 ng/mL vs 2.50 ng/mL, $p = 0.97$) were similar between MED and CTL cycles. MED cycles had similar total gonadotropin doses (3,975 IU vs 4,050 IU, $p = 0.69$), stim duration (11 days vs 11 days, $p = 0.32$), and peak E2 levels (3,870 pg/mL vs 3,556 pg/mL, $p = 0.08$). Oocyte yield was comparable between MED and CTL groups (18 vs 19, $p = 0.68$), as were number of MIIs (14 vs 14, $p = 0.67$), 2PNs (10 vs 9, $p = 0.27$), blastocysts (7 vs 6.5, $p = 0.24$), and euploids (2 vs 2, $p = 0.45$). No differences were observed in maturity (0.8 vs 0.79, $p = 0.62$), FERT (0.79 vs 0.76, $p = 0.87$), BLAST (0.71 vs 0.71, $p = 0.54$), or euploidy rates (0.53 vs 0.54, $p = 0.91$). Cycles without preimplantation genetic testing or biopsy-eligible embryos were excluded from euploidy analyses.
CONCLUSIONS: COS parameters and ART outcomes were comparable between medical trainees and matched controls. There were no differences in oocyte yield, embryo development, and euploidy outcomes, indicating that medical trainee status does not adversely impact reproductive outcomes, and supporting informed family planning during medical training.
IMPACT STATEMENT: Medical trainees achieve COS and ART outcomes comparable to non-trainees, providing reassurance that the physical and psychological rigors of medical training do not compromise reproductive potential.
REFERENCES:
1. Lindekugel S, et al. Infertility: A Hidden Cost of Medical Training. J Grad Med Educ. 2022 Dec;14(6):639-641. doi: 10.4300/JGME-D-22-00189.1.
2. Reckhow JD, et al. Reproductive Experiences of Physicians in Medical and Surgical Subspecialties. J Womens Health (Larchmt). 2025 Jan;34(1):133-142. doi: 10.1089/jwh.2023.0579.

O-257 2:00 PM Wednesday, October 28, 2026

A SNAPSHOT OF REPRODUCTIVE ENDOCRINOLOGY AND INFERTILITY (REI) FELLOWSHIP PROGRAM DIRECTORS. Jasmine Eliwa, MD[1], Alexandra Conry, MD[2] and William H Kutteh, MD, PhD, HCLD[3], [1]University of South Florida Morsani College of Medicine, Tampa, FL, [2]Memphis, TN, [3]University of Tennessee Health Sciences Center, Memphis, TN

OBJECTIVE:
The pathway to becoming an REI fellowship program director (PD) is not well defined. This study primarily aims to characterize the career trajectories of REI fellowship PDs. Secondary aims include assessing the association between gender and career trajectories of REI fellowship PDs.
MATERIALS AND METHODS:
This cross-sectional study included REI fellowship PDs in the United States. A list of 52 PDs and their email addresses was obtained from the Society of Reproductive Endocrinology and Infertility's website. An anonymous 37-question online survey was distributed via email. Data collected included demographics, educational background, factors at the time of appointment, duration in role, prior and current leadership roles, and career goals. Descriptive statistics, Fisher's exact test, independent t-test, and Mann-Whitney U test were performed.
RESULTS:
The response rate was 50% (26/52). Most respondents were female (69.2%), Caucasian (80.8%), and university-based residency program graduates (76.9%). A minority were international medical graduates (7/26, 26.9%), held additional postgraduate degrees (6/26, 23.1%), and completed residency and fellowship at their current institutions (23.1% and 30.8%, respectively). Mean age at appointment was 43.78 ± 1.3 years and time between fellowship completion to appointment was 7.94 ± 2.92 years. When appointed, 23.1% (6/26) were assistant professors, 57.7% (15/26) were associate professors, and 19.2% (5/26) were professors. In addition, 15.4% had 4-9 first author publications, 26.9% had 10-24, 7.7% had 25-49, 23.1% had 50-99, and 11.5% had more than a 100. Only 4/26 were PDs at other institutions. Most (15/26, 57.5%) were associate PDs for a median of 3 (2-3.3) years, predominantly (12/15) at their current institutions. Compared to males, females are currently younger (median age: 49.5 versus 60.5, $p=0.006$) and more likely to have been associate PDs prior to appointment (25% versus 75%, $p=0.038$). Half of respondents received mentorship prior to their appointment. 88.5% (23/26) were internal hires with a median of 5 (3-11) years from hire to appointment. Perceived selection factors include passion/interest (17/26) and willingness to take on the role (6/26). Median tenure as PD was 7 (5-11.5) years. Over half (54.5%) anticipated remaining in the role for 5-10 more years, and 57.6% (15/26) are mentoring successors. 42.3% (11/26) were chief residents, 29.2% (6/26) are division chiefs, 76.9% (20/26) are on an editorial board of a peer-reviewed journal, and 16/17 aspire to become division chiefs.
CONCLUSIONS:
Although research productivity and mentorship exposure vary, most REI fellowship PDs in our sample were appointed as associate professors, and were internal hires at institutions they did not train in. Additionally, more than half served as associate PD, and many currently hold or aspire to divisional leadership roles. Larger studies are warranted to further explore gender differences among program leadership as women more frequently served as associate PD prior to appointment.
IMPACT STATEMENT:
These findings provide the characteristics of current REI fellowship program leadership for fellows and physicians pursuing this role.
SUPPORT: No disclosures

O-258 2:10 PM Wednesday, October 28, 2026

IMPACT OF THE SOCIETY OF REPRODUCTIVE SURGERY (SRS) SURGICAL SCHOLARS TRACK (SST) ON CAREER TRAJECTORY AND SURGICAL PRACTICE: A FIVE-YEAR REVIEW. Christopher Ke Arkfeld, MD[1], Stylianos Vagios, MD[1], Osamah Khan, MD[2], Alexandra Regan, MD[3], Rebecca Flyckt, M.D.[4] and Dr. John C Petrozza, MD[5], [1]Massachusetts General Hospital Fertility Center, Massachusetts General Hospital and Harvard Medical School, Boston, MA, [2]AULTMAN HEALTH SYSTEM, Canton, OH, [3]University of Nebraska Medical Center, Omaha, NE, [4]University Hospitals Fertility Center/Case Western Reserve University, Beachwood, OH, [5]Fertility Centers of New England, Reading, MA

OBJECTIVE:
To evaluate the impact of the Society of Reproductive Surgery (SRS) Surgical Scholar Track (SST) on program graduates' job searches, early career trajectories, and post-fellowship surgical practice patterns.
MATERIALS AND METHODS:
Design: Cross-sectional survey study.
A standardized electronic survey was distributed to all graduates of the SRS SST program since its inception in 2021. The survey assessed geographic distribution, practice setting, job search priorities, protected surgical time, and current surgical volumes. Data were analyzed using descriptive statistics, with means and medians reported for Likert-scale questions (1=Not at all important; 5=Extremely important).
RESULTS:
A total of 16 (66.7%) graduates responded. Respondents were geographically diverse: Northeast (42.9%), Midwest (35.7%), and Southeast (21.4%). The majority (68.8%) work in academics, followed by independent private practice (18.8%) and private equity-backed practice (12.5%).
Regarding job acquisition, 53.3% secured positions in their second year of fellowship and 46.7% in their third year. Surgical factors were paramount in job selection; the availability of operating time was rated highly (mean 3.94). The majority of respondents felt they specifically received job offers because of their SST surgical training (mean

3.8). Notably, 40.0% of graduates turned down a job offer specifically due to insufficient surgical time.
In practice, 87.5% have protected OR time (median 8 hours/week), though 40.0% lack protected academic time. Current practitioners report robust surgical volumes; 75% spend 6–10 hours per week in the OR. The most frequent procedures (cases/month) include operative laparoscopy (mean 5.57/month), operative hysteroscopy (5.14/month), and endometriosis excision/ablation (5.17/month). While 100% of graduates perform myomectomies (laparoscopic/robotic/open), 50% utilize robotic-assisted surgery. Graduates reported high satisfaction with the SST, noting it significantly influenced their first job search (mean 3.5) and prepared them well for their current surgical mix (mean 4.38). Furthermore, 93.4% currently use or plan to use their surgical expertise as a primary marketing strategy.
CONCLUSIONS:
The SRS SST program successfully prepares REI fellows for surgically intensive careers. Graduates maintain high volumes of complex cases, suggesting the SST is a vital pipeline for maintaining surgical excellence in reproductive medicine.
IMPACT STATEMENT:
The SRS Surgical Scholar Track serves as a critical pipeline for reproductive surgeons, equipping graduates with skills to secure and maintain surgically intensive roles in an increasingly diverse practice landscape.

O-259 2:20 PM Wednesday, October 28, 2026

COMPETENCY IN THE AGE OF AI: DATA-DRIVEN ASSESSMENT OF EMBRYOLOGIST ANNOTATION CONCORDANCE ACROSS THE CARE FERTILITY NETWORK. Carol Lynn Curchoe, PhD, HCLD[1], Rachel Smith, BSc[2] and Alison J Campbell, B.SC., PH.D.[3], [1]Fertility Guidance Technologies, Newport Beach, CA, [2]CARE Fertility Ltd, Nottingham, Nottingham, United Kingdom, [3]CARE Fertility, Nottingham, Nottingham, United Kingdom

OBJECTIVE: Embryologist annotation of morphokinetic timepoints is inherently subjective and influenced by training, experience, and inter-operator variability. Within the CARE Fertility Network, tSB (time to start of blastulation) and tB (time to full blastocyst) are now annotated exclusively by AI, while morula and trophectoderm (TE) grading remain manual. This dual context necessitates ongoing competency assessment. Building on concordance improvements demonstrated in CMQA-1 and CMQA-2, CMQA-3 was designed to quantify inter-operator agreement across morphokinetic and morphological assessments using a standardized digital platform.
MATERIALS AND METHODS: CMQA-3 was administered via ART Compass across 14 CARE Network laboratories in the UK, Spain, and Ireland. Eighty-four embryologists completed 12 questions spanning 3 embryo sets, each containing morula grade, tSB, tB, and TE grade. Continuous timepoint responses were analyzed using mean, standard deviation (SD), mean absolute deviation from AI (MAD), and percentage within 1 and 2 hours of AI annotation. Levene's test assessed variance equality across embryo sets. Inter-rater agreement for categorical assessments was quantified using Fleiss' kappa.
RESULTS: tSB concordance varied substantially by embryo: SD ranged from 0.60 to 3.57 hours, with MAD from AI of 1.17–2.70 hours; 17–54% of embryologists were within 1 hour of AI. tB SD ranged from 0.85 to 1.32 hours, with MAD of 1.05–1.80 hours; 11–49% were within 1 hour of AI. Levene's test confirmed significant variance heterogeneity for both tSB ($W=51.1$, $p<0.001$) and tB ($W=6.94$, $p=0.001$). A systematic directional bias was observed: embryologists annotated tSB earlier than AI (bias −0.9 to −1.4h) and tB later (bias +1.0 to +1.6h). Morula grading showed slight inter-rater agreement (Fleiss' $\kappa=0.18$); TE grading demonstrated fair agreement ($\kappa=0.37$).
CONCLUSIONS: CMQA-3 reveals persistent inter-operator variability in morphokinetic annotation, with concordance highly dependent on embryo ambiguity. A systematic human-AI directional bias in tSB and tB annotation warrants further investigation and targeted SOP refinement. TE grading demonstrates meaningfully better concordance than morula grading. These findings underscore the value of frequent, data-driven competency assessment in AI-integrated laboratories and demonstrate that digital platforms can efficiently identify training targets and monitor quality assurance across distributed networks.
IMPACT STATEMENT: Systematic operator-AI directional bias in blastulation timing annotation represents a previously undescribed quality risk in AI-integrated IVF laboratories. Structured digital competency assessment can efficiently detect annotation drift, stratify training needs by embryo type, and support continuous quality assurance across distributed laboratory networks.
SUPPORT: CLC is the founder of ARTC and Fertility Genomics Technologies (FGT). AC is a part owner of CARE Fertility UK. The authors received no external funding in support of this work. Data were collected from embryologists as part of routine quality assurance activities.
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ORAL ABSTRACT SESSION: SOCIAL MEDIA

O-260 1:30 PM Wednesday, October 28, 2026

“I WASN’T PREPARED FOR THE PAIN” - PATIENTS FREQUENTLY ENDORSE WORSE THAN EXPECTED PAIN WITH ENDOMETRIAL BIOPSY ON SOCIAL MEDIA. Adriana Johnson, MD, PhD[1] and Sheila P Seidel, PhD[2], [1]Tufts Medical Center, Boston, MA, [2]Analog Devices Inc., Boston, MA

OBJECTIVE:
To evaluate prevalence of patient reports of pain experiences during office endometrial biopsy (EMB), characterize reports of expectations regarding pain, and assess correlation of pain expectation with user engagement on Reddit.
MATERIALS AND METHODS:
We performed a cross-sectional study of user posts across twelve procedure-relevant subreddits (r/hysterectomy, r/WomensHealth, r/endometriosis, r/Menopause, r/AskDocs, r/TwoXChromosomes, r/GynecologicalCancer, r/cancer, r/PCOS, r/IVF, r/infertility, and r/endometrialcancer) using keywords "endometrial biopsy," "uterine biopsy," "pipelle biopsy," and "endometrial sampling." All available posts and comments through April 17 2026 were captured. Only one post per user was retained. Post text and vote score (user engagement metric) were recorded.
Two independent reviewers annotated the first 500 posts as follows:

1. Inclusion: did the post describe a personal experience of EMB pain (presence or absence)?
2. Expectation: was an expectation regarding EMB pain described, and was EMB pain as expected, worse than expected, or better than expected?

All posts were then automatically annotated using claude-sonnet-4-6 (Anthropic, SDK version 0.94.0), a large language model (LLM), via a structured prompt encoding the annotation scheme and worked examples.
Using R, Cohen's kappa (CK) was calculated to evaluate inter-rater reliability. Annotation discrepancies were reviewed and consensus was reached to create a gold standard annotation. CK was then calculated between the LLM and gold standard annotations. Kruskal-Wallis test was performed to assess differences in vote scores between pain expectation groups.
RESULTS:
After filtering, 3239 posts and comments were identified. Of the 500 posts annotated by human reviewers, CK was 0.92 for inclusion and 0.63 for expectation. Comparing LLM annotations to the gold standard, CK was 0.87 for inclusion and 0.82 for expectation. Of the 3239 posts, 854 (26%) met inclusion as describing a personal pain experience with EMB. Of these:
- 22% had no description of pain expectation, mean vote score 5.4
- 4% describe pain “as expected,” mean vote score 6.6
- 56% described pain as “worse than expected," mean vote score 23.7
- 18% described pain as “better than expected,” mean vote score 10.4

Vote scores were statistically significantly different between expectation groups ($p < 0.001$).
CONCLUSIONS:
Patients use social media to share experiences with EMB pain, with the majority reporting worse than expected pain. Posts describing worse than expected pain had higher mean vote scores, which can result in higher post visibility.
IMPACT STATEMENT:
Patients often report being unprepared for the severity of EMB pain in social media posts, and as others read these highly visible posts, negativity bias may further reinforce the view that EMB pain is worse than providers describe. Prior research has shown that patients report distress at both EMB pain and expectation mismatch, potentially impacting patient-provider trust and participation in care. The findings highlight the need for providers to set realistic expectations with patients, offer analgesic options, and prioritize patient trust when performing EMB.
SUPPORT: The authors have no financial disclosures.
REFERENCES:
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O-261 1:40 PM Wednesday, October 28, 2026

CLINICAL MISINFORMATION AND CARE-DELAY FRAMING IN FERTILITY-RELATED CONTENT ON TIKTOK: A CONTENT ANALYSIS. Madison Tyle, MD, Jasmine Eliwa, MD, Sonia Eskandarion, MD and Anthony N Imudia, M.D., University of South Florida Morsani College of Medicine, Tampa, FL

OBJECTIVE: Social media is a source of fertility/in vitro fertilization (IVF) information for patients, which may influence their decision-making. This study aims to assess the prevalence, type, and clinical relevance of fertility-related misinformation and care-delay framing on TikTok. Secondary aims are to evaluate the association between creator type and misinformation and assess the presence and quality of disclaimers.
MATERIALS AND METHODS: The 100 most-viewed TikTok videos were identified using the search terms *IVF, infertility, fertility, and InVitroFertilization*. Videos were evaluated using a priori coding framework for fertility-related misinformation and assigned a primary misinformation category. Misinformation severity was graded on a 0–4 scale (0= accurate information, 1= simplified but not misleading content, 2= unsupported claims without clear evidence, 3= information contradicting established evidence, 4= false information likely to lead to harmful behavior or delay in fertility evaluation/treatment). Care-delay framing was assessed (present, absent) and classified by type (implicit, explicit) and strength. Disclaimer presence/quality and creator type were recorded. Videos were independently reviewed by two reviewers. Descriptive statistics and chi-square tests were performed.
RESULTS: Fertility-related misinformation was identified in 37% of videos. The most common category was unproven/non-evidence-based fertility interventions (54.1%). Engagement was highly variable with a median number of 1,970 likes, 55 comments, and 561 saves; no significant differences were observed across creator types (all $p>0.6$). Most

misinformation was moderately severe (62.2%), while 21.6% was highly severe. Care-delay framing was identified in 13 videos and was frequently observed in videos with higher-severity misinformation. Delay messaging was implicit in 61.5% and explicit in 38.5%. Videos with a severity score of 4 frequently demonstrated explicit care-delay framing. Creator type was significantly associated with misinformation ($p<0.001$). Board-certified reproductive endocrinologists and infertility physicians had the lowest misinformation prevalence (2/36, 5.6%), while non-clinical creators had the highest (28/35, 80.0%). Higher-severity misinformation was concentrated among non-physician creators: 87.5% of severity score 4 videos were posted by non-clinical creators, and none were posted by physicians ($p=0.095$). Repeated creators accounted for 46% of videos and more frequently produced accurate content (55.6% versus 29.7%, $p=0.012$). Only 13/100 videos contained sufficient disclaimers.
CONCLUSIONS: Approximately one-third of fertility-related TikTok content contains clinically relevant misinformation, predominantly from non-clinical creators. Videos with high degrees of misinformation were most likely to include care-delay framing, which poses the greatest risk for delayed evaluation and evidence-based fertility treatment.
IMPACT STATEMENT: Fertility misinformation on social media may contribute to delayed evaluation and treatment, which has important implications for reproductive outcomes.
SUPPORT: No financial support

O-262 1:50 PM Wednesday, October 28, 2026

ONCOFERTILITY IN THE AGE OF SOCIAL MEDIA: WHAT ARE PATIENTS REALLY SEEING? Dana Hazimeh, MD[1], Andrea Gorodezky, BS[2], Isabel Del Canto, MD[3], Jacqueline Jin, BSc[3], Joyce Liu, BS[4], Kelly S Acharya, M.D.[5] and Evelina Manvelyan, MD[5], [1]Durham, NC, [2]Duke University Medical Center, Durham, NC, [3]Duke University Hospital, Durham, NC, [4]Duke Univ School of Medicine, Durham, NC, [5]Duke Fertility Center, Morrisville, NC

OBJECTIVE:
To conduct a systematic content analysis of videos related to oncofertility on TikTok
MATERIALS AND METHODS:
The web-scraping application Apify was utilized to download and compile information on 567 videos with the hashtags #oncofertility and #cancerfertility on January 19, 2026. Videos unrelated to oncofertility or in a language other than English were excluded. Two independent reviewers coded video content, demographics, tone, and accuracy on a standardized form with a third reviewer to arbitrate differences. Two standardized scales were used: A modified 5-point DISCERN scale to assess the quality of health information, and the Patient Education Materials Assessment Tool (PEMAT) to evaluate understandability and actionability of each video. This study was determined exempt by the Institutional Review Board.
RESULTS:
The 226 videos meeting inclusion criteria had a total of 113 million views, 348,405 shares, and averaged 111.7 seconds in length. Patients created most videos (70.6%) while clinician-generated content represented a small minority, including videos by physicians (8.8%), IVF clinics (6.2%), embryologists (1.3%), and professional societies (0.4%). Breast cancer was the most frequently represented diagnosis (50%), followed by Hodgkin's lymphoma (14%) and ovarian cancer (10%). Among breast cancer patients, 25.3% reported hormone receptor–positive disease. At the time of posting, 17.3% of patients were actively undergoing cancer treatment, 54% were pretreatment, and 28.7% identified as cancer survivors. Egg freezing was the most frequently mentioned fertility preservation modality (61.3%), followed by embryo freezing (11.1%) and ovarian tissue cryopreservation (1%). Two-thirds of creators reported undergoing IVF (66.7%). Of outcomes depicted, 22.5% were live births. More videos had a neutral (65.9%) or negative (19.5%) tone than a positive tone (14.6%), and content was predominantly accurate (82.3%). Videos frequently emphasized the financial burden associated with fertility preservation (54%) and the side effects of hormonal stimulation (23%). Specific mention of letrozole was rare (1.3%). Videos scored low on DISCERN for quality of health information (mean 2.04/5, SD 1.01). Understandability was substantially higher than actionability among videos on PEMAT (mean 87.2% [SD 22.3%] and 18.4% [SD 31.8%], respectively).
CONCLUSIONS:
While oncofertility-related content TikTok is accurate and understandable, it offers limited actionable guidance and low overall health information quality, with minimal representation from clinicians and professional organizations.
IMPACT STATEMENT:
TikTok is an influential yet underutilized platform for oncofertility education, where increased clinician engagement could improve information quality, provide actionable guidance on fertility preservation decision-making, and better support the emotional well-being and fertility-related knowledge of cancer patients.
SUPPORT: N/A

O-263 2:00 PM Wednesday, October 28, 2026

AI CAN'T HEAR THE HURT: SENTIMENT ANALYSIS MISCLASSIFIES OVER A THIRD OF PATIENT-REPORTED HARMFUL STATEMENTS IN INFERTILITY CARE. IMPLICATIONS FOR AI CLINICAL TOOLS AND SOCIAL MEDIA RESEARCH. Steven Palter, B.A., M.D.[1], Joshua L Palter, BA[2] and Michele Lang Palter, J.D.[1], [1]Gold Coast IVF, Woodbury, NY, [2]University of Utah, Salt Lake City, UT

OBJECTIVE: Sentiment analysis tools are increasingly used to monitor patient experience across online health and social media research, clinical communication education, AI-assisted clinical encounters, and digital health surveillance. Their accuracy on patient-perceived strongly negative communication has not been systematically validated. This study quantifies and explains sentiment-tool failure on these statements in fertility care.
MATERIALS AND METHODS: 981 patient-authored social media comments from Instagram, TikTok, and Facebook were analyzed; every comment was patient-identified as among the most hurtful received during fertility care. Each was scored by a transformer-based three-class sentiment classifier (BERT-family RoBERTa: cardiffnlp/twitter-roberta-base-sentiment-latest). Comments were independently classified into nine harm categories by a hybrid NLP pipeline. Chi-square and Cramér's V tested associations between non-negative classification and harm category.
RESULTS: The AI sentiment analysis transformer labeled 372/981 (37.9%) as non-negative, including 66 (6.7%) as positive. Misclassification tracked harm category ($\chi^2(8)=40.4$, $p<.001$, Cramér's V=0.203). Most invisible: Platitudes/Unsolicited Advice (54.5% non-negative), Minimisation/Invalidation (44.9%), Insensitive Comparison/Announcement (42.5%), Tactless/Cruel Communication (40.8%), Weight/Age/Body Shaming (38.8%), Religious/Fate (38.5%). Most reliably detected: Blame/Stigma (18.1%), Gaslighting (22.7%). Provider statements were over-represented among misclassified comments (199/372 non-negative, 29/66 positive; p=.015), including "Congrats on the positive test!" (after a chemical pregnancy report) and "18 weeks, how exciting!" (greeting after pregnancy loss).
CONCLUSIONS: Sentiment-based AI cannot detect how patients receive what is said to them. The systems score words and phrases in isolation, without access to speaker intent, situational context, or patient perception, producing classifications that diverge from patient experience. Three contributing mechanisms were identified: surface vocabulary analysis without contextual grounding, harm categories that use inherently neutral or gentle language, and clinically routine statements that score as neutral or positive despite being experienced as dismissive or shaming. Validation against patient-perceived experience, not against other automated classifiers, is required.
IMPACT STATEMENT: The findings establish that automated sentiment analysis is not a valid measure of patient-perceived harm in fertility-related communication, with likely extension to other fields especially where harm is contextual rather than lexical and described by the patient. Online patient experience research, AI clinical documentation tools, and provider training curricula must use patient-identified harm or perception as the reference standard and not routine words patterns. A data-driven harm-category taxonomy, validated against patient-reported labels, offers one such path forward.
SUPPORT: none

O-264 2:10 PM Wednesday, October 28, 2026

FERTILITY SUPPLEMENTS IN REPRODUCTIVE HEALTH: WHAT'S VIRAL ON SOCIAL MEDIA? María Verónica Morales, M.D.[1], Mary Ellen Pavone, MD, MSc[1], Christina E Boots, M.D., MSCI[1], Tracy Tracy Zhou, MS[2] and Allison S Komorowski, M.D.[3], [1]Northwestern University, Chicago, IL, [2]Feinberg School of Medicine, Northwestern University, Chicago, IL, [3]Northwestern University Feinberg School of Medicine

OBJECTIVE:
Social media has become a major source of health information, including fertility supplements widely discussed online. Among individuals navigating infertility and in vitro fertilization, supplement content may influence beliefs about treatment, reproductive outcomes, and willingness to invest in costly, unproven products within a rapidly expanding but minimally regulated market. This study aims to characterize fertility supplement content on Instagram and TikTok and assess its reliability and educational quality.
MATERIALS AND METHODS:
Publicly available fertility supplement posts were collected from Instagram and TikTok between February and August 2025 using the web-scraping tool Apify. The 50 highest-engagement posts per platform (N=100) were selected after excluding irrelevant, duplicate, and non-English content. Posts were analyzed for engagement, creator type, sponsorship, supplement type, claimed mechanisms, reproductive outcomes, and mentions of other medications. Reliability and educational quality were evaluated using the Modified DISCERN tool and JAMA benchmark criteria, with a third reviewer resolving discrepancies. Descriptive statistics compared platforms.
RESULTS:
Of 100 posts, 89.4% were authored by female-identifying users. TikTok showed higher engagement than Instagram (41,200 likes and 470 comments vs. 14,100 and 310). Instagram content originated more often from board-certified physicians (36% vs 4% on TikTok), whereas TikTok content was predominantly patient-generated (52% vs 13% on Instagram). Supplements most frequently discussed included CoQ10, vitamin D, omega-3 fatty acids, prenatal vitamins, inositol, magnesium, and N-acetylcysteine. Efficacy claims in 72% of posts referenced improved egg quality, hormone balance, or enhanced IVF success. Only 24–26% mentioned pregnancy outcomes. 18% of posts referenced concurrent use of medications (Mucinex, Geritol, Claritin, aspirin, baby aspirin, etc.) often without evidence or dosage guidance. Sponsored posts were more often made definitive benefit claims without addressing risks. Overall, mDISCERN scores indicated low-to-moderate reliability (TikTok: 2.06 ± 1.08; Instagram: 2.66 ± 1.26), while JAMA Benchmark Criteria demonstrated low transparency and quality (TikTok: 1.34 ± 0.47; Instagram: 1.44 ± 0.57).
CONCLUSIONS:
Fertility supplement content on social media is highly visible but poorly evidence-based. These platforms may help patients feel informed and connected, but also promote misinformation and unrealistic expectations. The frequent mention of other medications, alongside supplement stacking, raises potential safety concerns. High engagement contrasts with low informational quality, as reflected by low mDISCERN and JAMA scores, emphasizing the need for clinician-led guidance to improve patient understanding and promote evidence-based decision-making.

IMPACT STATEMENT:
This study highlights the widespread influence of social media on fertility supplement use, the concurrent medication patterns, and gaps in evidence, transparency, and safety communication, underlining the need for clinician engagement and patient education online.
SUPPORT: No
REFERENCES:

ORAL ABSTRACT SESSION: INFERTILITY (3 OF 3)

O-265 1:30 PM Wednesday, October 28, 2026

IS DIMINISHED OVARIAN RESERVE (DOR) ASSOCIATED WITH IMPAIRED PLACENTATION? EVIDENCE FROM AN INFERTILITY-MATCHED COHORT. Alexa M. Sassin, MD[1], Panagiotis Cherouveim, MD, MS, PhDc[2], Evelyn Minis, MD[1], Stylianos Vagios, MD[1], Christopher Ke Arkfeld, MD[1], Irene Dimitriadis, M.D.[1], Charles L Bormann, PhD[1] and Irene Souter, MD[1], [1]Massachusetts General Hospital Fertility Center, Massachusetts General Hospital and Harvard Medical School, Boston, MA, [2]Hurley Medical Center/Michigan State University, Flint, MI

OBJECTIVE:
Diminished ovarian reserve (DOR) diagnosis is associated with cardiovascular disease, suggesting an underlying inflammatory or vascular process. Given that placental development relies on highly vascular processes such as trophoblast invasion and spiral artery remodeling, DOR diagnosis may reflect broader reproductive aging processes that overlap with vascular and endocrine mechanisms involved in placental development. Our objective was to evaluate whether a DOR diagnosis was associated with specific placental pathologies in pregnancies conceived with in vitro fertilization (IVF).
MATERIALS AND METHODS:
This retrospective cohort study included 397 singleton live births conceived via IVF at a single academic center (2015–2023) with available placental pathology. Of these, 95 were from women with DOR as defined by the Society for Assisted Reproductive Technology (SART) reporting criteria. The remaining 302 were live births from couples with a SART diagnosis of an isolated male factor infertility (MFI) and served as controls. Placental pathology was reviewed by a single perinatal pathologist and classified as anatomic, vascular, infectious, or inflammatory in accordance with the Amsterdam Consensus criteria. Generalized estimating equations were used to evaluate associations between DOR and placental outcomes, adjusting for maternal age, body mass index (BMI), gestational age at delivery, stimulation protocol, and infant sex.
RESULTS:
Patients with DOR were older (37.5±4.2 vs 34.5±4.2 years), had lower AMH (1.1±1.1 vs 4.1±3.0 ng/mL), lower BMI (23.6±4.0 vs 25.1±4.6 kg/m²), and more frequently underwent flare (57.8% vs 9.7%) or antagonist (31.3% vs 9.3%) protocols (all p<0.05). Both the DOR and MFI groups had similar rates of fresh embryo transfers (87.3% vs 85.1%). Placental weight did not differ between the two groups (524.8±174.2 vs 540.1±195.5 g, p=0.587). Unadjusted analyses showed no differences in vascular (65.3% vs 67.5%), infectious (29.5% vs 23.2%), or inflammatory abnormalities (22.1% vs 19.9%), while anatomic abnormalities were higher in the DOR group (73.7% vs 59.9%, p=0.015). After adjustment [aOR (95%CI)], DOR was not associated with anatomic [1.04 (0.90–1.22)], vascular [0.99 (0.83–1.18)], infectious [1.01 (0.86–1.18)], or inflammatory abnormalities [1.04 (0.90–1.21)]. After stratification into fresh and frozen ET, results were similar, with no significant differences in placental pathologies between the DOR and MFI groups on the adjusted analysis.
CONCLUSIONS:
In an infertility-matched cohort, DOR was not associated with placental pathology after adjustment for key confounders, particularly maternal age.
IMPACT STATEMENT:
DOR was not independently associated with placental pathology abnormalities after adjustment. These results suggest that placental dysfunction in DOR pregnancies may reflect underlying patient characteristics and infertility-related factors rather than intrinsic defects in placentation. Investigation into specific subtypes of DOR, including premature ovarian insufficiency versus age-related decline, may reveal differential effects on placentation and warrant further investigation.
REFERENCES:
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O-267 1:50 PM Wednesday, October 28, 2026

FOLLICULAR ASSESSMENT USING AN AUTOMATED SELF-OPERATED STANDARDIZED ULTRASOUND SYSTEM: COMPARISON WITH STANDARD-OF-CARE AND CORRELATION WITH OOCYTE RECOVERY. Tal Shavit, MD[1], Pietro Bortoletto, MD, MSc[2], Johanna Zerbib, PharmD[3], Yael Corcos, PhD[4] and Nadia Prisant, MD, MSc[5], [1]Assuta Medical Center, Tel Aviv, Israel, [2]Terra Fertility, Dedham, MA, [3]Gray Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel, [4]A.Y. Impact, Petah Tikva, Israel, [5]Paris, France

OBJECTIVE:
To evaluate whether automated self-operated transvaginal ultrasound provides clinically relevant follicular assessment compared with standard-of-care (SoC).
MATERIALS AND METHODS:
Prospective paired pilot study conducted in a high-volume private IVF center. Ten women undergoing ovarian stimulation (mean age 33.1 ± 5.1 years; BMI 22.1 ± 3.5 kg/m²) contributed 18 paired ultrasound examinations (robotic self-operated vs SoC). To ensure paired comparison, analyses were restricted to ovaries visualized by both modalities.
Clinical relevance was evaluated by correlating counts of follicles ≥14 mm at the last ultrasound prior to trigger with mature oocyte recovery rate (ORR), defined as the number of mature (MII) oocytes retrieved relative to these follicles.
Clinically relevant follicle size categories were defined as <10 mm, 10–13 mm, 14–17 mm, and >17 mm.
Differences in follicle count distribution across size categories were assessed using paired comparison testing. Follicular size correlation was assessed using Spearman correlation.
RESULTS:
Counts of follicles ≥14 mm demonstrated strong correlation with mature oocyte recovery rate comparable to SoC-derived measures, respectively automated self-operated ultrasound and SoC TVS: Spearman ρ=0.83, p=0.01; ρ=0.80, p=0.02.
Follicle count distribution across clinically relevant size categories was comparable between modalities, with no statistically significant difference (p=0.099).
Follicular size measurements in automated self-operated modality showed moderate correlation with SoC (Spearman ρ≈0.43–0.69), with greater variability observed in larger follicles.
CONCLUSIONS:
Automated self-operated ultrasound provides clinically relevant follicular assessment, with strong correlation to oocyte recovery outcomes and comparable distribution across clinically actionable follicle size categories.
IMPACT STATEMENT:
Standardized automated self-operated ultrasound may enable clinically actionable follicular monitoring in IVF.
SUPPORT: This study was funded by IMMA Health.

O-268 2:00 PM Wednesday, October 28, 2026

IMPACT OF NICOTINAMIDE MONONUCLEOTIDE AND L-ERGOTHIONEINE SUPPLEMENTATION ON OOCYTE AND EMBRYO METRICS IN ICSI: AN AMH STRATIFIED RETROSPECTIVE ANALYSIS. Nayanika Gaur, MBBS, MS OBGYN, Dip ART, Dip MIS, Dip Medical Law and Ethics[1] and Kirti Gaur, M.B.B.S., M.D.[2], [1]Kirti IVF Clinic and Gynae Endoscopy Center, Jodhpur, Rajasthan, India, [2]Jodhpur, Rajasthan, India

OBJECTIVE:
To evaluate the effect of nicotinamide mononucleotide (NMN) with L- ergothioneine supplementation on oocyte yield, oocyte maturity, fertilization, embryo development and clinical outcomes in women aged >30 years undergoing ICSI, with stratification by AMH and assessment of live birth rate to positive pregnancy ratio.
MATERIALS AND METHODS:
This is a retrospective cohort study including 302 women above age 30 years undergoing ICSI between January 2022 to December 2025. Patients prior to January 2024 (n=136) did not receive the supplementation (group1). While those treated thereafter (n=166) received NMN with L-ergothioneine (group 2). Controlled ovarian stimulation was performed using hMG, r-FSH, or a combination of both. Outcomes included total oocyte retrieved, MII oocytes, number of fertilized oocytes, fertilization ratio (fertilized oocytes / oocytes retrieved), number of blastocysts and blastocyst formation rate (8-cell embryos/ fertilized oocytes), along with positive pregnancy rates (PPR) and live birth rates (LBR). Baseline characteristics were comparable between two groups. Mean age 35, (group1), 34.75 (group2) and AMH 2.72±2.21 (group1), 2.94±2.25 (group2) p=0.41. Continuous variables were presented as mean± SD and compared using independent t tests; categorical variables were compared using chi square test. P value <0.05 was considered statistically significant. 95% confidence interval used where applicable.
RESULTS:
In women aged >30 years, supplementation was associated with higher total oocytes retrieved, (group2 vs group1)15.28 ± 8.39 vs 12.03 ± 7.78 (p=0.0006), MII oocytes 11.65 ±7.07 vs 9.44 ± 6.27 (p=0.005), fertilized oocytes 9.71 ±6.79 vs 7.60 ± 5.07 (p=0.003) and blastocyst formation 7.32 ±4.95 vs 5.36 ±4.07 (p=0.0003), all statistically significant. Fertilization ratio and Blastocyst formation rate was similar between groups (group2 vs group1), 63.94% vs 63.2% and 75.35% vs 70.5% respectively with negligible effect size. Positive pregnancy rates (PPR) and live birth rate (LBR) increased from 53.75 in group1 to 59% in group 2 and 36% in group 1 to 43.4% in group 2 respectively suggesting relative increase in PPR by 9.9% and LBR by 20.6% thereby reducing the risk of abortions by 19.3% with supplementation. In patients with AMH >3.5, supplementation was associated with significantly higher total oocytes, MII oocytes, Fertilized oocytes and blastocysts (p=<0.05).
CONCLUSIONS:
NMN with L-ergothioneine supplementation is associated with statistically significant improvements in oocyte yield and embryo development metrics in women aged >30 years, with stronger association observed with AMH>3.5.
IMPACT STATEMENT:
Oral supplementation of NMN and L-ergothioneine is consistent with improved oocyte yield and embryo quality with favorable PPR and LBR while reducing the risk of miscarriages in ICSI cycles especially in women aged >30 years, supporting future prospective evaluation.
SUPPORT: none
REFERENCES:
none

O-269 2:10 PM Wednesday, October 28, 2026

COMPARATIVE ANALYSIS OF FROZEN EMBRYO TRANSFER PROTOCOLS IN PATIENTS WITH AND WITHOUT OVULATORY DYSFUNCTION. Dr. Juan Carlos Naranjo, M.D.[1], Anamika Tandon, M.D.[2], Aiden Jacobs, B.S.[2], Siyi Chen, Ph.D[3], Elizabeth F Sutton, PhD[4] and Warren Jay Huber, M.D., Ph.D.[5], [1]LSU Health Sciences Center - New Orleans, Tampa, FL, [2]LSU School of Medicine, New Orleans, LA, [3]LSU

Health Sciences Center New Orleans, New Orleans, LA, [4]Woman's Hospital, Baton Rouge, LA, [5]Fertility Institute of New Orleans, New Orleans, LA

OBJECTIVE:
This study aimed to determine which endometrial preparation protocol for frozen embryo transfer (FET) results in the highest live birth rate (LBR) in patients with and without ovulatory dysfunction, specifically polycystic ovary syndrome (PCOS) and diminished ovarian reserve (DOR). The protocols compared were: 1) semi/modified-natural (SN), 2) estrogen programmed (EPFET), and 3) stimulated.
MATERIALS AND METHODS:
This retrospective cohort study included 693 patients who underwent 1,258 FET cycles at a fertility clinic between January 2021 and March 2024. Patients were grouped by endometrial preparation protocol used: SN (n=288), EPFET (n=775), and stimulated (n=195). LBRs were compared across protocols for all cycles (n=1258), cycles in patients with PCOS (n=480), and cycles in patients with DOR (n=439). Statistical methods included ANOVA for continuous variables, logistic regression for categorical variables, and calculation of crude and adjusted relative risks (RR) with 95% confidence intervals. A sub-analysis was performed for each subgroup utilizing euploid embryos confirmed on pre-implantation genetic testing for aneuploidy (PGT-A), including all cycles (n=584), cycles in patients with PCOS (n=218), and cycles in patients with DOR (n=208). Attrition analysis from positive hCG to CPR was performed to assess biochemical pregnancy loss as a surrogate for implantation failure.
RESULTS:
In 1,258 FET cycles, SN had the highest LBR (45.8%), followed by EPFET (33.9%), and stimulated (30.8%) (P<0.001). In patients with PCOS (n=480), LBRs were 44.4% for SN, 35.3% for EPFET, and 35.1% for stimulated (P=0.413). In patients with DOR (n=439), SN had the highest LBR (45%), followed by EPFET (31.2%), and stimulated (21.7%) (P=0.005). In cycles with euploid embryos (n=584), LBRs were 55.3% (SN), 35.7% (EPFET), and 31.6% (stimulated) (P<0.001). In euploid PCOS cycles (n=218), LBRs were 58.6% (SN), 39.9% (EPFET), and 41.2% (stimulated) (P=0.173). In euploid cycles for DOR patients (n=208), LBRs were significantly higher in SN (53.2%) vs. EPFET (33.6%) and stimulated (16.7%) (P<0.001). SN was associated with a threefold higher LBR compared with stimulated in the euploid DOR subgroup (adjusted RR 3.1, 95% CI 1.45–6.62). Attrition analysis in euploid cycles revealed that SN had the lowest biochemical loss rate from positive hCG to CPR (11.2%) compared with EPFET (19.2%) and stimulated (25.7%), suggesting superior implantation with corpus luteum–dependent endometrial preparation.
CONCLUSIONS:
The SN protocol was consistently associated with the highest LBRs across all groups, with attrition analysis suggesting that its advantage is driven primarily by superior implantation. In PCOS patients, EPFET and stimulated had comparable LBRs, allowing for flexibility in protocol choice when SN is not feasible. In DOR patients, EPFET was the second-best option.
IMPACT STATEMENT:
The SN protocol should be utilized as the primary endometrial preparation technique for FET, including in patients with DOR and PCOS. When SN is not feasible, EPFET should be favored over stimulated, especially in DOR, while the choice between EPFET and stimulated is less likely to affect outcomes in patients with PCOS.
SUPPORT: Not applicable

O-270 2:20 PM Wednesday, October 28, 2026

POST-TRANSIT ALGORITHMIC INFLATION OF SPERM MOTILITY IN MAIL-IN TESTING INTRODUCES SYSTEMATIC RISK OF UNDER-TREATMENT IN MALE FACTOR INFERTILITY. Kimball O. Pomeroy, PH.D.[1], Cristina Hickman, PhD[2,3], Ricardo P Bertolla, DVM, PhD, HCLD(ABB)[4] and Mr. Ashwin Ramachandran, MPH[5], [1]Ivy Fertility, Colorado Springs, CO, [2]Avenues.life, London, United Kingdom, [3]Avenues, United Kingdom, [4]Wayne State University, Detroit, MI, [5]Melbourne, Vic, Australia

OBJECTIVE:
To evaluate whether post-transit algorithmic adjustment of sperm motility, as described in published methodologies used by commercial mail-in semen testing platforms, including Fellow and Legacy, is associated with systematic bias affecting clinical classification at treatment-relevant thresholds in male factor infertility.
MATERIALS AND METHODS:
Retrospective analysis of 46,698 consecutive home-collected semen samples (2023–2025). Samples were stabilised immediately post-ejaculation using a preservation medium and analysed following postal transit without post-hoc adjustment. Paired fresh (T=0) testing was performed for samples with <25% total motility, enriching for cohorts where classification informs MAR pathway selection (IUI vs IVF/ICSI).
Algorithmic adjustment was defined as upward modification of observed motility and total motile count based on published degradation assumptions, generating estimated fresh-equivalent values, with magnitude constrained to reported ranges and sensitivity-tested across literature bounds.
Agreement between mail-in and T=0 results was assessed using Lin's concordance correlation coefficient (CCC). Reclassification was evaluated across WHO motility thresholds (<15%, <25%). Bootstrap resampling assessed significance (p<0.05).
RESULTS:
In the 0% motility subgroup (1.13%, n=528), absent motility was confirmed in all paired T=0 samples. In the <15% subgroup (8.96%, n=4,184), severe impairment persisted across paired analyses, supporting stability at treatment-defining thresholds.
Mail-in samples demonstrated high concordance with fresh results (CCC=0.91, 95% CI 0.90–0.92).
Algorithmic adjustment reduced agreement (CCC=0.69, 95% CI 0.67–0.71; p<0.001) and introduced systematic upward shifts.
Within the <15% cohort, 51.3% (2,146/4,184) were reclassified above thresholds despite concordant fresh findings. In the 0% subgroup, adjustment introduced residual motility inconsistent with confirmed results.
Approximately 10% of the overall population fell within motility ranges where adjustment could alter classification relevant to treatment selection.
CONCLUSIONS:
Post-transit algorithmic adjustment is associated with systematic upward shifts that introduce bias in classification and risk inappropriate treatment pathway selection. In threshold-sensitive cohorts, misclassification may shift patients between IUI and IVF/ICSI pathways.
High concordance with fresh results can be achieved when parameter fidelity is maintained during transport. Post-hoc reconstruction reduces agreement with observed fresh values, particularly near clinical thresholds.
IMPACT STATEMENT:
Post-hoc adjustment in mail-in testing may alter classification at clinically relevant thresholds in a meaningful proportion of patients, potentially leading to under-treatment or delayed escalation of care. Maintaining parameter fidelity during transport is critical when decisions depend on threshold-based classification.
SUPPORT: No external funding was received for this study. The study was conducted using internal resources.

ORAL ABSTRACT SESSION: PATIENT CENTERED CARE (2 OF 2)

O-271 1:30 PM Wednesday, October 28, 2026

AT-HOME HORMONE MONITORING PLATFORMS: A SYSTEMATIC QUALITY ASSESSMENT WITH AI INTEGRATION. Mariam Barseghyan, MD, MSc[1], Leah Ginn, DO[2], Anastasia Navitski, MD[2], Kinjal Mehta, M.D.[3], Lawrence C Layman, M.D.[4] and Larisa P. Gavrilova-Jordan, M.D.[2], [1]Medical College of Georgia Augusta University, Augusta, GA, [2]Medical College of Georgia at Augusta University, Augusta, GA, [3]Evans, GA, [4]Augusta University, Augusta, GA

OBJECTIVE:
To evaluate the quality, reliability, transparency, and clinical alignment of leading at-home quantitative hormone monitoring platforms using validated health information quality instruments by clinicians and artificial intelligence (AI). To characterize the landscape of digital health promotion for these platforms on social media.
MATERIALS AND METHODS:
We performed a cross-sectional analysis of five commercially available at-home fertility hormone monitoring platforms: Mira, Inito, Oova, Proov, and Clearblue Fertility Monitoring. Four clinicians (2 REI fellows and 2 OB/GYN residents) evaluated each platform independently using the JAMA Benchmark Criteria (0-4), DISCERN Instrument (16-80), and a 2-item Clinical Alignment Index (0-2) assessing acknowledgment of biomarker limitations and encouragement of healthcare-provider consultation. The same evaluations were independently performed by four AI engines (ChatGPT Pro, Gemini Pro, Perplexity Pro, and Google AI). Descriptive statistics were used for data evaluation. Additionally, MetaAI was queried regarding the primary promoters of these platforms on social media.
RESULTS:
Mean JAMA scores were similar between clinicians and AI for each platform. Clinicians assigned the highest JAMA scores to Oova (3.25±0.50), whereas AI assigned the highest scores to Clearblue (3.50±1.00). Mean DISCERN scores were also comparable between clinicians and AI for all platforms except for Proov, which demonstrated substantially lower DISCERN scores assigned by clinicians compared to AI engines (40.5±6.6 vs 52.5±5.7). Clearblue received the highest DISCERN scores from both clinicians and AI (63.8±8.5 and 59.3±6.7). The Clinical Alignment Index between clinicians and AI was identical for Inito and Clearblue (1.75±0.5). Oova received the highest Clinical Alignment scores by clinicians (2.0±0), but tied with Mira, Inito, and Clearblue by AI (1.75±0.5). Descriptive comments from both reviewer groups consistently identified limitations in authorship attribution, conflict-of-interest disclosure, citation transparency, and discussion of alternative fertility evaluation strategies across platforms. Social media promotion of these platforms appeared to be driven by consumer-influencers, though Inito was also promoted by healthcare providers.
CONCLUSIONS:
Leading at-home fertility hormone monitoring platforms demonstrated moderate-to-high quality educational content and clinically aligned messaging. Both clinicians and AI consistently identified Clearblue as the most transparent and scientifically structured platform and Oova as the most clinically integrated platform. Clinician and AI assessments were similar across JAMA, DISCERN, and Clinical Alignment scoring systems, supporting a potential future role for AI-assisted appraisal of online reproductive health information.
IMPACT STATEMENT:
This study is the first to evaluate the quality, reliability, transparency, and clinical alignment of leading at-home fertility hormone monitoring websites using validated assessment tools by clinicians and AI.

O-272 1:40 PM Wednesday, October 28, 2026

IMPACT OF MEDICAL SPECIALTY ON ASSISTED REPRODUCTIVE TECHNOLOGY (ART) OUTCOMES: A COMPARISON OF SURGICAL (SURG) AND NON-SURGICAL (MED) TRAINEES. Avni Ahuja, MD[1], Zoey McFarland, B.S.[2], Jillian Pecoriello, MD[3], Jacquelyn Shaw, M.D.[4], Emily Michelle Weidenbaum, MD[5], Sarah D Cascante, MD[6], Mary Elizabeth Fino, M.D.[4] and Jennifer K Blakemore, MD, MSCI[4], [1]NYU, [2]New York, NY, [3]NYU School of Medicine, New York, NY, [4]NYU Langone Fertility Center, New York, NY, [5]New York University, New York, NY, [6]NYU Langone Prelude Fertility Center, New York, NY

OBJECTIVE: Compared to the general population, surgical attending physicians have greater rates of miscarriage, infertility, and pregnancy-related complications.[1, 2] Medical trainees are more likely to delay childbearing, have higher rates of infertility, and increased family planning anxiety. However, data about ART outcomes, including fertility preservation (FP), is lacking. We assessed differences in controlled ovarian stimulation (COS) and ART outcomes comparing surgical (SURG) and non-surgical (MED) trainees.
MATERIALS AND METHODS: This was a retrospective cohort study of residents and fellows who underwent oocyte cryopreservation (OOF), embryo banking (EB), and in vitro fertilization (IVF) cycles at a large urban academic center from 9/2020-2/2026. Trainees were classified as being in SURG or MED by specialty. Demographic and stimulation (stim) factors assessed included age, anti-Mullerian hormone (AMH) levels, total gonadotropins, stim days, and peak estradiol (E2). The primary outcome was number of oocytes. Secondary outcomes included M2s, 2PNs, blastocysts, and euploid embryos, as well as the maturity, euploidy, blastocyst, and fertilization (FERT) rates. Statistical analysis included Mann-Whitney U, Fisher's exact tests, and generalized linear mixed models with $p<0.05$ considered significant.
RESULTS: 135 residents and fellows initially presented for fertility evaluation (n=51, 37.8% SURG and n=84, 62.2% MED), with 102 trainees ultimately undergoing COS (n=42, 41.2% SURG and n=60, 58.8% MED). 79 SURG cycles and 60 MED cycles were included with a median of 1.88 cycles per SURG trainee and 1 cycle per MED trainee. 44.0% of all cycles were OOF (n=62), 32.6% EB (n=46), and 23.4% IVF (n=33). SURG trainees were younger than MED trainees (31y vs 33y, $p<0.001$), with no differences between AMH (2.7 ng/mL vs 2.53 ng/mL, p=0.88), stim days (11d vs 11d, p=0.08), or total gonadotropins (4050 IU vs 3900 IU, p=0.52). MED cycles had higher peak E2 levels (4142 pg/mL vs 3113 pg/mL, p=0.02). There were no differences in oocytes retrieved (18 vs 19, p=0.8), M2s (15 vs 14, p=0.85), blastocysts (9 vs 7, p=0.58), or euploids (3 vs 2, p=0.38) in SURG vs MED cycles. Maturity (0.82 vs 0.80, p=0.73), euploidy (0.60 vs 0.50, p=0.56), blastocyst (0.69 vs 0.72, p=0.90), and FERT (0.79 vs 0.77, p=0.70) rates were also similar between SURG and MED cycles. In adjusted linear models for age, trainee status was still not associated with COS characteristics or outcomes (all $p > 0.11$).
CONCLUSIONS: SURG trainees underwent FP at younger ages and were more likely to undergo multiple ART cycles, suggesting earlier perceived pressure to pursue FP. However, COS and ART outcomes did not differ by specialty.
IMPACT STATEMENT: Medical training specialty does not impact COS or ART outcomes, reassuring trainees that reproductive potential is preserved across disciplines. Despite the high-stress nature of surgical training, physiological response to COS remains preserved, though further study on the timing of utilization and live birth rates is warranted.
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O-273 1:50 PM Wednesday, October 28, 2026

IN VITRO FERTILIZATION (IVF) COVERAGE IN NAME ONLY: A QUALITATIVE ANALYSIS OF HIDDEN BARRIERS IN INSURANCE BENEFIT DESIGN.

Hannah Glick, MD, MPH[1], Christina Agostino, MPH[2], Phyllis Yan, B.S., M.A.[2], James M. Dupree, M.D., M.P.H[2] and Anna Kirkland, PhD, JD[3], [1]Ann Arbor, MI, [2]Michigan Medicine, Ann Arbor, MI, [3]University of Michigan, Ann Arbor, MI

OBJECTIVE: Access to in vitro fertilization (IVF) is a critical component of infertility care and, in the United States (US), is often mediated by health insurance. While employer-sponsored health insurance plans cover IVF more frequently, we do not know how benefit design may shape access to care. Therefore, we analyzed insurance plans from a national sample of 100 large, self-insured employers to characterize barriers within infertility coverage that may limit access to IVF services.
MATERIALS AND METHODS: Health plans from a national sample of 100 large, self-insured US employers were obtained under agreement with Leverage Global Consulting. Plans that covered IVF (n=60) were selected for analysis. We used an inductive coding approach to identify preconditions for coverage that patients must navigate. We then performed an iterative review of codes, revealing themes that organize and explain these barriers to using IVF coverage.
RESULTS: Sixty plans included coverage for IVF, representing 15 million lives. Analysis of document language revealed three major themes, and 65% of plans included at least one of three themes: (1) *eligibility and definitional* barriers in 50% of plans, such as requirements for prolonged heterosexual intercourse (e.g., "unprotected sexual intercourse means sexual union between a male and female"), limitations to certain clinical contexts (e.g., IVF coverage only for oncofertility), and patient characteristic requirements (e.g., requiring both partners to be nonsmokers with blood test confirmation); (2) *administrative* barriers in 25% of plans (e.g., requirements for prior authorizations), mandated use of centers of excellence (e.g., "although a formal diagnosis of infertility is not required, you must first complete an in-person or virtual assessment with a [in network] clinician to access your $10,000 lifetime benefit"), temporal barriers (e.g., up to 18 month continuous enrollment to use benefits); and (3) *exclusions of alternative reproductive pathways* in 10% of plans, such as lack of coverage for donor gametes or surrogacy, and restrictions for processes for same sex couples such as reciprocal IVF (e.g., "coverage for females who do not have the exposure to sperm requires a minimum of 12 donor sperm intrauterine insemination (IUI) cycles...that do not result in live birth"). Themes co-occurred in 22% of plans.
CONCLUSIONS: Despite more employers offering IVF coverage, 65% of plans contain hidden barriers that patients may be unaware of until trying to use their IVF benefits. Overcoming these barriers may include challenges such as quitting smoking, waiting for a time period to elapse, or traveling to a specific IVF center. Other barriers are status-based and not readily changed, such as being in a heterosexual union or needing a surrogate or donor.
IMPACT STATEMENT: Many plans that cover IVF include hidden barriers which might limit access to care, specific populations (e.g., same sex couples) being more disadvantaged than others. Characterizing these barriers will help patients understand how to evaluate their insurance documents and inform policy efforts to improve access to IVF care.

SUPPORT: Funding: Funding to support this work came from the R01HD113625 from the National Institute of Health. C.A., P.Y., J.M.D., and A.K. receive grant funding from the National Institute of Health (R01HD113625).

O-274 2:00 PM Wednesday, October 28, 2026

OPTIMIZING CLINICAL TRIAL RECRUITMENT IN REPRODUCTIVE ENDOCRINOLOGY: INTEGRATION OF A PATIENT JOURNEY MANAGEMENT PLATFORM TO IMPROVE PATIENT RECRUITMENT AND CONSENT.

Laura X Zalles, M.D.[1], Tasha L. Newsome, BS[2], Micah J Hill, DO[3], Eric A Widra, MD[4], Kathleen Devine, MD[5] and Marja Brolinson, M.D.[6], [1]University of Colorado, Denver, CO, [2]Shady Grove Fertility, Washington D.C., MD, [3]Shady Grove Fertility, Rockville, MD, [4]Shady Grove Fertility Center, Rockville, MD, [5]US Fertility, Rockville, MD, [6]Institute for Reproductive Health, Cincinnati, OH

OBJECTIVE: To evaluate whether integrating a patient journey management platform, previously shown to enhance patient knowledge, satisfaction, and informed decision-making, increases enrollment volume and efficiency compared with phone-based recruitment in a clinical research setting.
MATERIALS AND METHODS: During a multicenter clinical trial enrolling 400 patients undergoing oocyte retrieval, recruitment utilized two sequential methods. Initially, eligible patients were identified, called, and consented on retrieval day. Subsequently, a patient journey management platform delivered a study-specific video and e-consent to eligible patients at cycle start. This enabled patients/partners to review materials at their convenience, with phone follow-up to address questions.
The primary outcome was enrollment. Secondary outcomes included enrollment among patients contacted and those who completed the digital module. Pre- and post-implementation differences in patients contacted and enrolled were compared using chi-square analysis, with Poisson regression modeling enrollment over time. Recruitment efficiency was assessed using descriptive statistics.
RESULTS: During the initial 9 months, 281 patients were contacted, of whom 110 enrolled. Over the subsequent 6 months, 1,010 patients received the module, 661 viewed the module, and 290 patients enrolled.
Implementation of the patient journey management platform was associated with an increase in patient outreach, with eligibility rising from 33 to 110 patients per month. Enrollment also increased from 12 to 48 patients per month. Enrollment rate of all eligible patients was lower. However, among patients who completed the module, enrollment efficiency improved from 39.1% to 43.9% (p=0.17). Absolute recruitment increased 2.6-fold (290 vs 110). Adjusting for time, the platform was associated with higher enrollment rate (IRR 3.96, 95% CI 3.17-4.95, $p<0.001$).
Pre-implementation, staff spent 15-30 minutes per patient with 2-3 contacts within 48 hours of retrieval; post-implementation, 5-15 minutes across 1-2 contacts over the preceding 2 weeks, resulting in improved operational efficiency with a 56% reduction in staff time and 40% reduction in contact frequency.
CONCLUSIONS: Integration of a patient journey management platform in clinical trial recruitment was associated with a significant increase in enrollment rate, largely driven by expanded eligible patient reach. This approach more than doubled absolute enrollment without compromising conversion among patients who engage with study materials. Lower per-eligible patient enrollment rates reflect broader outreach rather than reduced effectiveness.
Early introduction of a video on a familiar platform gave patients adequate time to understand the research study, consider participation, and ask informed questions while also improving operational efficiency and supporting the ability to track patients throughout the consent process.
IMPACT STATEMENT: Digital patient journey management platforms leveraging existing patient-facing clinical workflows represent a scalable strategy for modernizing clinical trial recruitment in reproductive medicine.
REFERENCES:

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O-275 2:10 PM Wednesday, October 28, 2026

CYCLE TIMING WITHOUT COMPROMISE: RANDOM-START PROGESTIN-SUPPRESSED IVF STIMULATION PRODUCES COMPARABLE OOCYTE AND BLASTOCYST YIELD TO CONVENTIONAL START.

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OBJECTIVE: To evaluate whether random-start initiation of progestin-suppressed in vitro fertilization (IVF) cycles impacts stimulation duration, oocyte yield, and usable blastocyst development compared with conventional cycle starts.

MATERIALS AND METHODS: This was a retrospective cohort study of 1,371 progestin-suppressed IVF cycles performed between 2022-2025 at a single academic-affiliated fertility center. Cycles were categorized as conventional (gonadotropin start on day 2-5 of menstrual cycle) or random (any other day of the menstrual cycle) start based on timing of ovarian stimulation initiation. Ovulation suppression was performed using daily oral 10mg medroxyprogesterone acetate initiated on the first day of stimulation regardless of cycle time of start. Primary outcomes included number of days of stimulation, number of oocytes retrieved, and number of usable blastocysts created. Statistics were performed with student's t-test and multivariable linear regression was used to evaluate associations between start type and outcomes while adjusting for age at cycle start and anti-Müllerian hormone (AMH) levels.

RESULTS: Of a total of 1371 cycles, 294 were random starts and 1,077 were conventional starts. Subjects who had random starts were younger and had higher AMH values and therefore higher oocyte and blastocyst yield (Table 1). After adjustment for age and AMH, random-start cycles required slightly longer stimulation compared with conventional cycles (delta = +0.90 days; 95% CI 0.00–0.61; p = 0.047), with no significant differences in the number of oocytes retrieved (delta = –0.26; 95% CI –1.69 to 1.17; p = 0.72) or usable blastocysts (delta = –0.16; 95% CI –0.85 to 0.52; p = 0.64).

Table 1: Baseline characteristics and outcomes of conventional vs. random start

	Conventional (n = 1077)	**Random (n = 294)**	**p-value**
Age (years)	35.1 ± 4.4	33.8 ± 4.7	**<0.001**
AMH (ng/mL)	2.7 ± 2.7	4.1 ± 5.2	**<0.001**
Stim Days	9.0 ± 1.9	9.9 ± 1.69	**<0.001**
Eggs Retrieved (n)	14.07 ± 10.04	16.83 ± 12.67	**<0.001**
Usable Blasts (n)	4.35 ± 4.15	5.53 ± 5.68	**0.002**

CONCLUSIONS: Random-start initiation of progestin-suppressed IVF cycles results in comparable oocyte yield and blastocyst development relative to conventional cycle starts after controlling for age and ovarian reserve. Although stimulation duration was modestly longer, these findings support the use of random-start protocols when cycle timing flexibility is desired without compromising embryologic outcomes.

IMPACT STATEMENT: Random-start progestin-suppressed IVF provides scheduling flexibility while maintaining laboratory outcomes, supporting broader clinical adoption.

SUPPORT: None

O-276 2:20 PM Wednesday, October 28, 2026

OPTIMIZING IVF CARE THROUGH EARLY LUTEAL PHASE SUPPORT WITHDRAWAL: A STEP TOWARDS PATIENT-CENTERED REPRODUCTIVE MEDICINE.

Kshitiz Murdia, MBBS, DGO[1], Vipin Chandra, MBBS, DGO[2], Gaurav Sharma, MBBS, MS[3], Shashank V Sanagoudar, MBBS, MS[4] and Nitiz Murdia, Ph.D[2], [1]Indira IVF Hospital Pvt. Ltd, Udaipur, Rajasthan, India, [2]Indira IVF Hospital Ltd., Udaipur, India, [3]Indira IVF Hospital Limited, Mumbai, Maharashtra, India, [4]Udaipur, Rajasthan, India

OBJECTIVE:

To compare reproductive outcomes following continuation of luteal phase support (LPS) until 8 weeks versus 12 weeks of gestation in women undergoing in vitro fertilization (IVF) with good-quality embryo transfer.

MATERIALS AND METHODS:

This prospective multicentric study was conducted across tertiary care centers in India and included 660 women who achieved clinical pregnancy following IVF. A uniform study protocol was strictly followed across all participating centers to ensure methodological consistency. Participants were allocated to LPS until 8 weeks (n=330) or 12 weeks (n=330). Baseline parameters including female age, body mass index (BMI), and endometrial thickness were recorded. Embryo transfer characteristics (single vs double) and embryo quality were documented. Primary outcomes were ongoing pregnancy rate and live birth rate. Continuous variables were analyzed using the Mann–Whitney U test, and categorical variables using the Pearson chi-square test.

RESULTS:

The overall mean age was 30.3 ± 3.3 years, BMI 25.1 ± 2.8 kg/m², and endometrial thickness 8.7 ± 1.1 mm, indicating a homogenous cohort. Baseline characteristics were comparable between groups. Mean age was 30.5 ± 3.3 years in the 8-week group and 30.0 ± 3.2 years in the 12-week group (p=0.053). BMI (24.8 ± 2.8 vs 25.5 ± 2.9 kg/m²; p=0.073) and endometrial thickness (8.9 ± 1.2 vs 8.5 ± 0.9 mm; p=0.060) were also similar.

Single embryo transfer was performed in 27.3% and 34.2% of cases, and double embryo transfer in 72.7% and 65.8% of cases in the 8-week and 12-week groups, respectively (p=0.063). All transfers involved Grade-I blastocysts.

Ongoing pregnancy rates were comparable: 91.4% (277/303; 95% CI 87.7–94.0) in the 8-week group versus 91.3% (273/299; 95% CI 87.5–93.9) in the 12-week group (p>0.999). Live birth rates were also similar at 62.4% versus 62.5% (p=0.360).

CONCLUSIONS:

Continuation of luteal phase support until 8 weeks yields reproductive outcomes comparable to 12 weeks in IVF cycles with good-quality embryo transfer.

IMPACT STATEMENT:

Early cessation of LPS till 8 weeks appears safe , with potential to reduce treatment burden, cost, and patient discomfort without compromising pregnancy outcomes.

SUPPORT: There is no financial support to this study.


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P-11 11:15 AM Monday, October 26, 2026

GENDER REPRESENTATION IN REPRODUCTIVE ENDOCRINOLOGY AND INFERTILITY FELLOWSHIP LEADERSHIP. Benjamin Jacobs, MD[1], Monique Vilme, BA[2], Sally Kuehn, BS[2], Sarah K Dotters-Katz, MD, MMHPE[3] and Sarah M Moustafa, B.S., M.D.[4], [1]Durham, NC, [2]Duke University School of Medicine, [3]Duke University Medical Center, Durham, NC, [4]University of North Carolina, Raleigh, NC

OBJECTIVE: This study aims to describe the gender representation in reproductive endocrinology and infertility (REI) fellowship leadership and to explain the association between the program director's (PD) gender and academic rank within this group.
MATERIALS AND METHODS: After IRB exemption, an inclusive list of active REI fellowship programs for the academic year 2023-2024 was collected. Using online search tools, PD gender identity (extrapolated from written pronouns in online profiles), academic rank, years since fellowship graduation, and the number and gender identity of total current fellows were collected for each program. Data was analyzed using descriptive and bivariate analyses.
RESULTS: Demographic characteristics were available for 49 REI fellowship PDs and 134 REI fellows representing 49 accredited programs nationwide. Of the fellowship PDs, 31 (63%) were women. On average, male PDs had spent significantly more years out of fellowship than their female counterparts (25.8 years vs. 15. 2 years, p=0.001) and were more likely to be full professors (66.7% vs. 32.3%, p=0.04). However, when stratifying by number of years since fellowship graduation (<10 years, 10-19 years, 20+ years), no difference in academic rank was seen between men and women within groups. Of fellows, 28 (20.9%) were male. The proportion of male PDs was higher than the proportion of male fellows (37% vs. 21%, p=0.05).

PD Demographics			
PD rank	**Male n(%) n = 18**	**Female n(%) n = 31**	**p-value**
Assistant	0 (0)	8 (25.8)	0.02*
Associate	4 (22.2)	9 (29.0)	0.74
Professor	12 (66.7)	10 (32.3)	0.04*
Unknown	2 (11.1)	4 (12.9)	>0.99
Fellow Demographics			
PD gender identity	**Male fellows n(%) n = 28**	**Female fellows n(%) n = 106**	**p-value**
Male	12 (42.9)	38 (35.8)	0.49
Female	16 (57.1)	68 (64.2)	0.50

CONCLUSIONS: In REI, men are overrepresented in fellowship leadership and academic rank compared to their female counterparts. Similarly, men are overrepresented in fellowship leadership and academic rank compared to the gender distribution of current fellows. There was no association between PD gender identity and the gender identities of their respective fellows.
IMPACT STATEMENT: As the proportion of women in REI continues to rise, leadership in graduate medical education must reflect the diversity of the trainees it serves.

P-12 11:30 AM Monday, October 26, 2026

DECISION REGRET AND MENTAL HEALTH OUTCOMES AFTER FERTILITY PRESERVATION COUNSELING IN TRANSGENDER AND GENDER DIVERSE BIRTH ASSIGNED FEMALES. Derek Song, MD, MPH, MS[1], Brett Stark, MD, MPH[2], Hakan Cakmak, MD[1] and Evelyn Mok-Lin, MD[1], [1]UCSF CRH, San Francisco, CA, [2]Spring Fertility, San Francisco, CA

OBJECTIVE:
This study aimed to determine differences in depression, anxiety, body image, quality-of-life (QOL), and decision regret scale (DRS) scores in transgender and gender diverse birth assigned (BA) females who underwent fertility preservation (FP) compared to those who declined.
MATERIALS AND METHODS:
Ninety-two gender diverse BA-females who underwent initial consultation for FP at an academic center between January 2016 and December 2023 were identified and retrospectively contacted by telephone and follow-up email for study participation. Sixty-four individuals agreed to participate in the survey study. Baseline demographics, along with validated scales for depression, anxiety, body image, and QOL, were collected at the initial FP consultation. The DRS score was assessed at a follow-up time point, on average 19 months later. Statistical analysis was performed using STATA at the 0.05 level of significance.
RESULTS:
Of the sixty-four gender diverse BA-females, thirty-three (51.6%) underwent FP and thirty-one (48.4%) did not. Demographic data showed no significant differences between the two groups for age, ethnicity, education level, partnered status, or history of gender-affirming surgery (p>0.05).
Beck Depression Inventory II, Hospital Anxiety and Depression Scale, Body Image Scale for Transsexuals, Satisfaction with Life Scale, and DRS scores were not significantly different between those who did and did not elect FP (p>0.05). On univariate logistic regression modeling of dichotomized DRS scores (mild regret and moderate to severe regret), there was also no difference in regret severity among individuals who underwent FP compared to those who did not (p>0.05).
On individual DRS item analysis, those who underwent FP were more likely to agree with the statement "the decision was a wise one" compared to those who did not pursue FP (p=0.01). Scores for other DRS items, including "I made the right decision" and "I regret the choice I made," were similar between the groups (p>0.05).
CONCLUSIONS:
Depression, anxiety, body image, and QOL scores, in a group of gender diverse BA-females who presented for FP consultation, were similar between those individuals who underwent FP and not. There was no association between history of FP and regret, suggesting that the decision to pursue FP is not linked to post-decision regret in this population. These findings highlight the importance of individualized counseling to support decision-making regarding FP in this population.
IMPACT STATEMENT:
This retrospective cohort study highlights the critical role of FP within the broader context of gender-affirming care for transgender and gender-diverse individuals. Exploring and undergoing FP was not associated with decision regret in gender diverse BA-females. Furthermore, individuals who underwent FP often felt "wise" in their choice, emphasizing the psychological benefits of proactive reproductive planning.

P-13 11:45 AM Monday, October 26, 2026

FERTILITY AWARENESS, COUNSELING, AND PRESERVATION BEHAVIOR IN TRANSGENDER/NON-BINARY ADOLESCENTS RECEIVING GENDER-AFFIRMING CARE. Gabriela M Olmedo, BS, MPH[1], Gwendolyn P. Quinn, PhD[2], Samantha Busa, PsyD[3], Olivia Bogus, BA[4] and Adam Hunter, MD, MPH[5], [1]Omaha, NE, [2]NYU Grossman School of Medicine, New York, NY, [3]NYU Grossman School of Medicine, New York City, NY, [4]Silberman School of Social Work at Hunter College, New York, NY, [5]Icahn School of Medicine Mount Sinai, New York, NY

OBJECTIVE: To evaluate fertility awareness, reproductive intentions, and fertility preservation behaviors among transgender and non-binary (TNB) adolescents receiving gender-affirming care, and to assess age-related differences in counseling and preservation uptake.
MATERIALS AND METHODS: We conducted a secondary analysis of cross-sectional survey data from TNB adolescents aged 13–19 years at a large urban academic medical center. Participants completed a structured REDCap questionnaire assessing fertility knowledge, reproductive intentions, counseling exposure, and preservation behaviors. Descriptive statistics were calculated, and age-stratified analyses (13–16 vs. 17–19 years) were performed. Fisher exact tests were used to evaluate associations between age group and outcomes due to small cell sizes. Analyses were conducted using R, with significance defined as p<0.05.
RESULTS: Among 52 participants (mean age 17.5±1.7 years), all reported awareness of the impact of gender-affirming hormone therapy on fertility and awareness of fertility preservation options. Fertility preservation was attempted by 17.3%. Nearly one-third (28.8%) desired future biological children, while 48.1% did not and 23.1% were unsure. Among those who did not pursue preservation, the most common barriers were lack of desire for biological children (51.2%) and cost (25.6%). Age-stratified analyses showed no significant differences in preservation attempts (27.3% vs. 14.6%, p=0.38) or reproductive intentions (36.4% vs. 26.8%, p=0.71). Older adolescents were significantly more likely to report receiving STI counseling (64.9% vs. 22.2%, p=0.029).
CONCLUSIONS: Although fertility awareness is high among TNB adolescents, fertility preservation utilization remains low, reflecting a gap between knowledge and action. Decisions are influenced by personal reproductive goals and structural barriers, including finances rather than awareness alone.
IMPACT STATEMENT: This study identifies a critical gap between fertility knowledge and action among TNB adolescents. As this type of care is no longer allowed for individuals under the age of 19, education us especially impactful in preparing individuals for when they reach the age of 19. This study underscores an urgent need to redesign counseling frameworks to be longitudinal, patient-centered, and actionable to ensure equitable reproductive autonomy in gender-affirming care.
SUPPORT: No financial disclosures.

MENTAL HEALTH & PSYCHOSOCIAL (1 OF 4)

P-14 11:15 AM Monday, October 26, 2026

A SINGLE-ITEM COMMUNICATION MARKER OF PSYCHOLOGICAL AND RELATIONAL DISTRESS IN FERTILITY PATIENTS FROM NORTHERN MEXICO. Andrea Morales Leal, MSc[1], Felipe Arturo Morales, M.D., Ph.D.[2], Selene M. Garcia Luna, Ph.D.[3], Cristina A. Ramirez Colunga, M.D.[4], Maria Ofelia Sordia Pineyro, MD[5], Otto H. Valdes, M.D.[6], Carlos Bernardo Gómez, M. D.[2], Aly Alejandra Gomez Morales, M. D.[7], Luis Cesar Ramos, M. D.[2] and Luis H. Sordia, M.D., Ph.D.[6], [1]Universidad Autonoma de Nuevo Leon, Monterrey, NL, Mexico, [2]Universidad Autónoma de Nuevo León, Monterrey, NL, Mexico, [3]Universidad Autónoma De Nuevo León, Monterrey, Mexico, [4]Hospital Universitario, UANL, [5]Universidad Autónoma De Nuevo León, Monterrey, NL, Mexico, [6]Universidad Autonoma de Nuevo Leon, Centro Universitario de Medicina Reproductiva, [7]Centro Universitario de Medicina Reproductiva, Monterrey, NL, Mexico

OBJECTIVE: To evaluate whether difficulty talking about infertility with one's partner serves as a clinically relevant marker of psychological distress and relational outcomes in fertility patients from Northern Mexico.
MATERIALS AND METHODS: This retrospective cross-sectional study included 159 adults (21-59 years) undergoing infertility evaluation or treatment between 2023 and

2025 at a university-affiliated tertiary fertility center in Monterrey, Mexico. The sample comprised 110 women (69.2%) and 49 men (30.8%).
Participants completed validated Spanish versions of the Hospital Anxiety and Depression Scale (HADS) and the Relationship Assessment Scale (RAS). Two items from the FertiQoL relational subscale were used to assess (1) difficulty talking about infertility with one's partner and (2) perceived relational impact of infertility.
Pearson correlations were used to examine bivariate associations between communication difficulty and psychological (anxiety, depression) and relational outcomes (perceived relational impact, relationship satisfaction). Linear regression models were used to evaluate associations with each outcome, adjusting for gender.
RESULTS: Difficulty talking about infertility with one's partner was significantly associated with higher anxiety ($r = 0.30$, $p < 0.001$), higher depression ($r = 0.40$, $p < 0.001$), greater perceived relational impact ($r = 0.58$, $p < 0.001$), and lower relationship satisfaction ($r = -0.33$, $p < 0.001$).
Linear regression analyses confirmed these associations after adjusting for gender: anxiety ($\beta = 0.29$, $R^2 = 0.09$, $p < 0.001$), depression ($\beta = 0.40$, $R^2 = 0.16$, $p < 0.001$), perceived relational impact ($\beta = 0.59$, $R^2 = 0.34$, $p < 0.001$), and relationship satisfaction ($\beta = -0.33$, $R^2 = 0.11$, $p < 0.001$). Gender was not a significant predictor.
The strongest association was observed for perceived relational impact ($R^2 = 0.34$), indicating a substantial relationship between communication difficulty and relational distress.
CONCLUSIONS: A single-item measure of communication difficulty is strongly associated with both psychological distress and relational functioning, highlighting its relevance as a clinically meaningful marker of vulnerability in fertility patients.
IMPACT STATEMENT: A brief communication-based screening question may provide a rapid, clinically actionable tool to identify patients at risk of psychological and relational distress and enable early referral to psychological support. These findings frame infertility as a dyadic experience, where communication reflects both individual vulnerability and couple functioning. Given that current psychological assessments in fertility care focus primarily on the individual and lack standardized approaches, a single communication item offers a practical way to capture both relational well-being and individual mental health risk in routine clinical care.
SUPPORT: No external funding.

P-15 11:30 AM Monday, October 26, 2026

HIGHER DAILY PHYSICAL ACTIVITY VOLUME DURING OVARIAN STIMULATION IS ASSOCIATED WITH REDUCED ANXIETY AND DEPRESSION SYMPTOMS AND IMPROVED POSITIVE AFFECT.
Jennifer A Aranda, BS[1], Maren Shapiro, M.D.[2], Elena Hogenesch, MD, MSCR[3], Heather Gibson Huddleston, M.D.[1] and Anna Sindalovsky, BA[1], [1]University of California, San Francisco, San Francisco, CA, [2]Redwood City, CA, [3]University of California San Francisco, Department of Obstetrics and Gynecology, San Francisco, CA

OBJECTIVE: To evaluate the relationship between physical activity volume and same-day anxiety, depression, and positive affect scores during an ovarian stimulation cycle.
MATERIALS AND METHODS: This was a secondary analysis of the Physical Activity During Fertility Care (PACE) Study, a randomized controlled trial of patients aged 18-43 years old entering their first ovarian stimulation for IVF or oocyte cryopreservation. Participants were randomized to either standard of care, wherein patients were advised to limit exercise during stimulation, or to exercise treatment, wherein patients were advised to target at least 75 minutes of vigorous activity or 150 minutes of moderate activity per week. Participants received wearable monitors to track activity. Block randomization was performed based on age (<38 vs >=38 years), baseline activity level (active vs insufficiently active, based on meeting vs not meeting current U.S. Department of Health and Human Services physical activity guidelines), and treatment type (IVF vs. oocyte cryopreservation). Anxiety, depression, and positive affect were assessed at baseline and daily using the previously validated Patient-Reported Outcomes Measurement Information System (PROMIS) Anxiety, Depression, and Positive Affect scales, respectively. Total MET-minutes was calculated from self-reported exercise minutes using 3.3*minutes walking + 4*minutes moderate activity + 8*minutes vigorous activity. We performed Pearson's correlation analyses to assess the association between daily MET-minutes and same-day anxiety, depression, and positive affect scores, followed by repeated-measures mixed-effects models adjusting for treatment group and baseline score for each measure.
RESULTS: Of 213 people enrolled, 174 (82%) had complete data for each outcome (87 exercise treatment, 87 standard treatment). Higher daily MET-minutes were significantly associated with lower same-day anxiety ($r = -0.11$, $p < 0.001$), lower same-day depression ($r = -0.06$, $p = 0.004$), and higher same-day positive affect ($r = 0.19$, $p < 0.001$). Mixed-effects models using 1,861 daily observations and adjusting for treatment group and baseline psychological scores revealed that each additional 100 MET-minutes of daily exercise, roughly equivalent to 30 minutes of walking, was significantly associated with lower same-day anxiety ($\beta = -0.28$, 95% CI: -0.40 to -0.16, $p < 0.001$), lower same-day depression ($\beta = -0.14$, 95% CI: -0.23 to -0.04, $p = 0.004$), and higher same-day positive affect ($\beta = +0.39$, 95% CI: +0.29 to +0.48, $p < 0.001$). Baseline psychological scores significantly predicted their respective daily scores (all $p<0.001$). There were no cases of ovarian torsion or other adverse events.
CONCLUSIONS: We observed a positive dose-response relationship between exercise volume and improved psychological well-being during ovarian stimulation. Although this relationship may be bidirectional, our findings suggest that exercise could be used as a tool to manage the negative psychological symptoms of undergoing an ovarian stimulation cycle.
IMPACT STATEMENT: Exercise during ovarian stimulation is linked to improved psychological health without any detectable impact on safety.
SUPPORT: This project was funded in part by a grant from the Pacific Coast Reproductive Society (PCRS) sponsored by Ferring Pharmaceutical and in part by an internal departmental grant. Apple Health donated the Apple watches for the study as part of their Apple Health Research program.

P-16 11:45 AM Monday, October 26, 2026

SEX HORMONES AND WOMEN'S RISK OF PSYCHIATRIC CONDITIONS: A CAUSAL INFERENCE STUDY.
Dr. Khaoula Ben Messaoud, PhD[1], Zeynep Asgel, MS[2], Pallavi Sreedhar, MS[3], Linda G Kahn, PhD[4] and Magdalena Janecka, PHD[5], [1]New York, NY, [2]New York University Grossman School, [3]NEW YORK UNIVERSITY GROSSMAN SCHOOL OF MEDICINE, [4]Department of Pediatrics, New York University School of Medicine, New York, NY, [5]New York University Grossman School of Medicine, New York, NY

OBJECTIVE: Female infertility and reproductive disorders are associated with psychiatric conditions, but the biological mechanisms remain unclear. Two plausible, potentially overlapping pathways are inflammation and sex hormone dysregulation. We investigated the role of sex hormones in women's psychiatric risk using a causal inference framework integrating observational and genetic analyses.
MATERIALS AND METHODS: Using UK Biobank data, we examined associations between sex hormones and incident psychiatric conditions in women, including mood disorders, anxiety/stress-related disorders, and behavioral syndromes with physical components. We combined baseline blood assays, genetic data, and linked hospital and primary care records. Measured estradiol, testosterone, and SHBG were analyzed separately in premenopausal and postmenopausal women using multivariable Cox models, excluding women who were pregnant, had bilateral oophorectomy, or were current users of oral contraceptives or hormone replacement therapy. We also conducted polygenic risk score (PRS) analyses and two-sample Mendelian randomization (MR) for AMH, FSH, LH, progesterone, SHBG, testosterone, and estradiol. Sensitivity analyses assessed robustness.
RESULTS: In observational analyses, estradiol was modestly positively associated with behavioral syndromes with physical components in postmenopausal women. SHBG was positively associated with behavioral syndromes in both menopausal groups and inversely associated with mood disorders in both groups and with anxiety/stress-related disorders in postmenopausal women. Testosterone was positively associated with mood disorders in premenopausal women. However, PRS and MR analyses did not support associations of estradiol, SHBG, or testosterone with psychiatric outcomes. Among hormones examined only genetically, FSH showed a modest inverse MR association with mood disorders, whereas LH and progesterone were null. AMH was the main exception: MR suggested a positive association with mood disorders and an inverse association with behavioral syndromes, but PRS analyses did not support these findings.
CONCLUSIONS: Sex hormones showed modest, outcome-specific associations with psychiatric conditions, with limited genetic support for strong causal effects. AMH was the main exception in MR, but this was not supported by PRS analyses. Overall, sex hormones are unlikely to be major independent drivers of women's psychiatric risk, suggesting that other pathways, including inflammation, may also contribute.
IMPACT STATEMENT: These findings refine understanding of psychiatric comorbidity in women with reproductive disorders by suggesting that sex hormones may contribute to some associations but are unlikely to explain the full excess psychiatric risk. This supports investigation of other mechanisms, particularly inflammation, and may inform more integrated reproductive and mental health care.
SUPPORT: None

P-17 12:00 PM Monday, October 26, 2026

PERCEPTIONS AND MEANINGS OF THE GESTATIONAL JOURNEY: AN INTERPRETATIVE PHENOMENOLOGICAL STUDY OF ALTRUISTIC GESTATIONAL CARRIERS IN COLOMBIA.
Jose PABLO Saffon, M.B.A., M.D.[1], Leonardo José Gonzalez, M.D, R.E.I.[2], Miguel Saffon, B.B.A., M.S.[2] and Cecilia Hernandez, M.D.[2], [1]Tunja, Boyaca, Colombia, [2]Novafem SAS, Bogotá, Colombia

OBJECTIVE:
To interpret the perceptions, experiences, and meanings that gestational carriers attribute to their pregnancy process in an altruistic surrogacy framework, including relationships with the healthcare system, intended parents, and their social environment.
MATERIALS AND METHODS:
This qualitative study employed an interpretative phenomenological approach. Semi-structured in-depth interviews were conducted with 16 gestational carriers (mean age 30 years, range 19–38) recruited via purposive and snowball sampling at a specialized fertility center in Colombia. All participants engaged in altruistic gestational surrogacy agreements with reimbursement of pregnancy-related expenses, consistent with Colombian constitutional jurisprudence (Sentencia T-968/2009). The study was approved by the Institutional Ethics Committee. Data collection reached theoretical saturation. Interviews were audio-recorded and transcribed verbatim. Analysis followed reflexive thematic analysis (Braun & Clarke) using NVivo 12. Rigor strategies included researcher bracketing, triangulation, member checking, and a reflective field diary.
RESULTS:
Analysis revealed a complex interplay between biological, emotional, and symbolic dimensions. Primary motivations included altruistic desire to help, previous favorable obstetric history, and economic vulnerability mitigated by expense reimbursement. Participants reported tension between personal agency and dominant biomedical frameworks that reduced them to "gestating bodies." Emotional experiences were characterized by ambivalence regarding fetal attachment and role transition. Social and legal perceptions were marked by stigma and regulatory ambiguity, influencing carriers' sense of security. Relationships with intended parents ranged from direct affective bonds

to strictly non-commercial agreements. A cross-cutting theme involved balancing personal, emotional, social, and economic gains and losses across five stages of care.
CONCLUSIONS:
Gestational carriers in altruistic frameworks navigate a multifaceted experience where subjective meanings often conflict with prevailing clinical models. Despite robust resilience, regulatory ambiguity and the lack of tailored psychosocial support remain critical challenges. Findings underscore the need for person-centered care models that validate carrier autonomy and voice within the reproductive process.
IMPACT STATEMENT:
By centering the voices of altruistic gestational carriers in a middle-income Latin American setting with jurisprudential but non-statutory regulation, this study provides essential insights for developing inclusive public policies, humanistic institutional protocols, and ethically responsible surrogacy frameworks, promoting reproductive justice and recognizing carriers as active subjects in the healthcare system.
SUPPORT: No external funding was received for this study.

MENTAL HEALTH & PSYCHOSOCIAL (2 OF 4)

P-18 11:15 AM Monday, October 26, 2026

FAMILY PLANNING IN THE FAST LANE: FERTILITY ANXIETY AND KNOWLEDGE GAPS AMONG MEDICAL TRAINEES. Shea E Randall, BA[1], Katherine Sadak, BS[1], Grace Dekoker, BA[1], Molly Beestrum, MLIS[2] and Christina E Boots, M.D., MSCI[3], [1]Loyola University Chicago Stritch School of Medicine, [2]Northwestern University, Chicago, IL, [3]Northwestern University Feinberg School of Medicine, Department of Obstetrics and Gynecology, Division of Reproductive Endocrinology and Infertility, Chicago, IL

OBJECTIVE: To map the literature on fertility education, fertility-related anxiety, and fertility preservation among medical trainees, aiming to identify research gaps, inform curriculum design, and guide trainee support.
MATERIALS AND METHODS: A systematic search was conducted on September 15, 2025 in MEDLINE (PubMed), Embase, Scopus, CINAHL, Cochrane Library, and grey literature (ProQuest dissertations, conference proceedings) using controlled vocabulary and keywords. Databases were searched from inception without filters. Studies were eligible if they included pre-medical students, medical students, residents, or fellows and addressed fertility-related anxiety or structured fertility education. Reviews, case reports, editorials, and non-English studies were excluded. Two authors independently screened titles, abstracts, and full texts with a third author resolving disagreements. Due to heterogeneity, meta-analysis was not performed. Quantitative data were summarized descriptively, and qualitative/mixed-methods findings were analyzed via thematic coding and triangulation to identify recurring patterns, gaps, and areas for intervention.
RESULTS: Twenty-eight studies published between 2014 to 2025 met inclusion criteria. Most were cross-sectional surveys (89%) conducted in the United States (68%). Trainee populations included pre-medical students (7%), medical students (36%), residents (14%), and mixed cohorts (43%). Fertility-related anxiety was reported in 50% of studies (prevalence 43%-84%). Dissatisfaction with fertility education was reported in 32%, and delayed childbearing due to training was identified in 50%. Knowledge gaps were common: trainees overestimated reproductive technology success and underestimated age-related fertility decline. Barriers to fertility preservation included limited prior education, time constraints, and structural factors such as cost and access. Only one study evaluated a tangible educational resource (an informational leaflet). Most studies (83%) recommended structured educational interventions including workshops, didactics, informational materials, and mentorship programs to address knowledge gaps and support informed family-planning decisions.
CONCLUSIONS: Fertility-related anxiety and knowledge deficits are prevalent across medical training, yet structured educational interventions remain scarce. Early and longitudinal fertility education, tailored to trainee level and integrated with institutional support, could improve knowledge, inform family-planning decisions, and mitigate anxiety.
IMPACT STATEMENT: This review highlights critical gaps in fertility education and the high prevalence of fertility-related anxiety among medical trainees. Developing evidence-based, longitudinal curricula alongside supportive policies, such as parental leave and scheduling flexibility, may improve reproductive literacy, reduce fertility-related anxiety, and empower informed family-building decisions throughout medical training.
SUPPORT: This project was supported in part by the Alpha Omega Alpha Carolyn L. Kuckein Student Research Fellowship.

P-19 11:30 AM Monday, October 26, 2026

MENTAL HEALTH EXPERIENCES OF U.S. WOMEN UNDERGOING IN VITRO FERTILIZATION (ACHIEVE): A QUALITATIVE THEMATIC ANALYSIS OF CAUSES, COPING, AND UNMET CARE NEEDS. Larissa Jennings Mayo-Wilson, PhD, MHS[1], Audrey Yao, MPH[1], Frantasia Hill, MPH[1], Pooja Deshpande, MPH[2], Emma Sorrells, MPH[1], Hannah Silverstein, PhD[1], Anna Margaret Clyburn, MPH[1], Natalie Henrich, PhD, MPH[3], Colleen Milroy, MD MHCM[4] and Genevieve S Neal-Perry, MD, PhD[5], [1]University of North Carolina at Chapel Hill, Chapel Hill, NC, [2]Johns Hopkins University, Baltimore, MD, [3]New York, NY, [4]UNC School of Medicine, Chapel Hill, NC, [5]University of North Carolina, Chapel Hill, NC

OBJECTIVE: This study examined mental health experiences of women undergoing in vitro fertilization (IVF) services, including what they described as factors contributing positively or negatively to their mental health during IVF care. We also examined women's mental health management activities and unmet IVF-related mental health needs for which they wanted more support. Despite IVF successes, some patients experience adverse mental health, including depression, anxiety, stress, or grief, that may hinder treatment outcomes. Understanding what patients view as helpful clinical and self-care support for mental health during IVF – including ways to increase positive outcomes associated with IVF (optimism, joy, acceptance) is needed.
MATERIALS AND METHODS: The Addressing Care and Health in Experiences of In Vitro Fertilization (ACHIEVE) study used a longitudinal qualitative design comprising three sequential individual interviews per woman during 6 months of her IVF care period. Data were collected October 2023 to January 2025. Eligible participants: identified as female, were aged 18 to 47, living in the U.S., undergoing IVF or having previously undergone IVF consultation or treatment in the U.S. in the past 5 years, and willing to be interviewed by videoconferencing. A survey obtained demographic and clinical data. All interviews were transcribed and coded. Thematic analyses identified patterns and exemplary quotations. Notes, synthesis meetings, and memos documented findings during data collection.
RESULTS: 56 women were enrolled, totaling to N=156 interviews. Mean age was 37 years, ranging from 26 to 47. 76% women were White (11% Black, 10% Hispanic, 9% Asian), 86% partnered; 45% parents; 89% heterosexual; 63% had fertility insurance. Mean # of egg retrievals was 2.2. Mean # of embryo transfers was 1.9. 100% had $\geq$ 1 mental health challenges during IVF. Factors contributing positively to mental health during IVF included empathetic, transparent, and informative providers, flexible clinical schedules and treatment options, flexible work, supportive partners, therapists with infertility expertise, friends with IVF knowledge, and IVF in-person and online support groups. Coping strategies involving nutrition, exercise, meditation, massage, prayer, workload changes, and medications were also beneficial. Factors contributing negatively were unmanaged pain, unexpected costs, difficulty conducting injections, insensitive communications, spousal distress, disappointments with self/body, outcome uncertainty, loss, isolation, and inability to keep IVF undisclosed. These findings varied by sub-group. Desires for additional mental health support included injection coaching, materials on expectations and tips, cost assistance, therapy and support referrals, remote care, and spousal support.
CONCLUSIONS: The mental health needs of IVF patients are complex and varied with unexpected opportunities to enhance outcomes.
IMPACT STATEMENT: This study provides patient feedback on factors contributing to positive and negative mental health during IVF and opportunities for clinical and self-care interventions.

P-20 11:45 AM Monday, October 26, 2026

SOCIO-DEMOGRAPHIC AND CLINICAL PREDICTORS OF STRESS, ANXIETY, AND DEPRESSION IN INFERTILITY AND REPEATED IMPLANTATION FAILURE. Vipin Chandra, MBBS, DGO[1], Gaurav Sharma, MBBS, MS[2], Isha Suwalka, Ph. D[3], Shashank V Sanagoudar, MBBS, MS[4], Kshitiz Murdia, MBBS, DGO[5] and Nitiz Murdia, Ph.D[1,6], [1]Indira IVF Hospital Ltd., Udaipur, India, [2]Indira IVF Hospital Limited, Mumbai, Maharashtra, India, [3]Department of Research and Publication, Indira IVF Hospital Ltd, Udaipur, India, [4]Udaipur, Rajasthan, India, [5]Indira IVF Hospital Pvt. Ltd, Udaipur, Rajasthan, India, [6]Department of Embryology, Indira IVF Hospital Limited, Udaipur, India

OBJECTIVE:
To identify socio-demographic and clinical factors associated with stress, anxiety, depression, and overall well-being among infertility patients, including those with repeated implantation failure (RIF).
MATERIALS AND METHODS:
This cross-sectional observational study included 505 consecutive adults undergoing infertility evaluation or treatment at a tertiary fertility center. Psychological distress was assessed using the Depression, Anxiety, and Stress Scale-21 (DASS-21), and well-being using the World Health Organization Well-Being Index (WHO-5). Data collected included age, gender, income, family type, household size, child status, body mass index, infertility etiology, RIF status, and number of prior infertility-related consultations. Distress severity was compared using chi-square tests, while WHO-5 scores were analyzed using t-tests or Mann–Whitney U tests as appropriate. Analyses applied a two-sided α=0.05. Missing items were handled per scale guidance, with sensitivity analyses excluding incomplete records. Pre-specified subgroup analyses included gender, income ($\leq$5 vs >5 lakh INR), family structure and size, childlessness, infertility cause, RIF, and consultation burden.
RESULTS:
Psychological distress was significantly associated with multiple socio-demographic and clinical factors. Stress severity differed by gender, income, family size, child status, infertility etiology, and consultation frequency (all $p<0.05$). Females represented 92.9% of individuals with extremely severe stress. Participants with income $\leq$5 lakh INR reported higher stress severity and lower WHO-5 scores than higher-income counterparts ($p<0.001$). Greater distress was observed in nuclear families and smaller households ($\leq$5 members) compared with larger or joint families ($p\leq0.004$). All participants with extremely severe stress were childless ($p=0.020$). Combined male and female infertility factors and more than five prior consultations were associated with higher stress severity ($p\leq0.026$). Anxiety severity varied by age, gender, family type, and household size, with females predominating in severe and extremely severe categories. Depression severity was associated with gender, income, child status, household size, infertility cause, and consultation burden; extremely severe depression occurred almost exclusively among childless participants (98.5%). Findings remained robust in sensitivity analyses.
CONCLUSIONS:
Psychological distress in infertility is strongly influenced by socio-economic context, family structure, reproductive history, and cumulative treatment burden. Women, low-income households, nuclear and smaller families, childless individuals, patients with

combined infertility factors, and those with repeated consultations or RIF are particularly vulnerable.
IMPACT STATEMENT:
Routine mental-health screening and integrated psychosocial support should be embedded within infertility and ART care, with targeted focus on high-risk groups to improve well-being and care engagement.
SUPPORT: There is no financial support.

P-21 12:00 PM Monday, October 26, 2026

BANKING ON THE MIND: DO MENTAL HEALTH DIAGNOSES CORRELATE WITH OVARIAN RESERVE PARAMETERS IN PATIENTS UNDERGOING FERTILITY PRESERVATION? Kristina Hrvojevic, MD[1], Jennifer J. Law, MD[2], Morgan Wiley, MD[3], Virginia-Arlene Acosta Go, MD[4], Megan R Sax, M.D.[5] and Meike L Uhler, MD[4], [1]Endeavor Health, Naperville, IL, [2]Loyola University Chicago, Maywood, IL, [3]Advocate Illinois Masonic Medical Center, Chicago, IL, [4]Fertility Centers of Illinois, Chicago, IL, [5]Fertility Centers of Illinois, Hinsdale, IL

OBJECTIVE: Ovarian reserve is influenced by a multitude of factors. Emerging evidence suggests that psychological stress may play a role in reproductive function. However, studies examining the relationship between mental health disorders, specifically anxiety and depression, have yielded inconsistent and conflicting results and have mostly been done in the subfertile population. This study aims to investigate whether a correlation exists between anxiety and depression and serum anti-mullierian hormone (AMH) levels, antral follicle count (AFC), and follicle stimulating hormone (FSH) levels in patients undergoing elective oocyte cryopreservation.
MATERIALS AND METHODS: Retrospective cohort study evaluating 248 patients who underwent elective oocyte cryopreservation at a single, large fertility clinic between September 2024 to September 2025. Patients were stratified into two groups: those with either self-diagnosed or clinically diagnosed anxiety, depression or both and those without. Baseline ovarian reserve parameters of AFC, AMH, and FSH levels were collected. Ovarian reserve parameters were compared between the two groups using Mann-Whitney U tests and Partial Spearman Correlations.
RESULTS: Among 248 participants, 107 patients (43%) had diagnoses of anxiety, depression or both compared to 141 patients (56%) without. After controlling for age and BMI, no statistically significant correlation was identified between mental health diagnosis status and AMH (2.64 v 2.50 with a mental health diagnosis and without, r= 0.060, p=0.35, mean), FSH (8.72 v 8.33 with and without, r = 0.021, p=0.75) or AFC (22.55 v 21.12 with and without, r = 0.099, p = 0.13).
CONCLUSIONS: Patients with anxiety and depression had similar ovarian reserve parameters to those without in those undergoing elective oocyte cryopreservation.
IMPACT STATEMENT: Despite potential plausible biological mechanisms that could explain how chronic stress from anxiety or depression may alter reproductive function, this study revealed that patients with a mental health diagnosis undergoing elective oocyte cryopreservation demonstrate comparable ovarian reserve parameters to those without. This may contrast with findings in infertile populations where psychologic stress may be linked to diminished ovarian reserve. This data may help to provide reassurance that mental health diagnoses at time of consultation are unlikely to compromise ovarian reserve, and reframe mental health screening in this population towards optimizing patient experience and reducing decision regret.
SUPPORT: None

MENTAL HEALTH & PSYCHOSOCIAL (3 OF 4)

P-22 11:15 AM Monday, October 26, 2026

EVALUATING THE RELATIONSHIP BETWEEN EDINBURGH POSTNATAL DEPRESSION SCALE (EPDS) SCORES, MODE OF CONCEPTION, AND MODE OF DELIVERY. Simone Martin, MD[1,2], Chinormso Diribe, MD[1], Julius Ngwa, Ph.D[3] and Nickie N Andescavage, M.D.[3], [1]Washington, DC, [2]George Washington University, Washington, DC, [3]Children's National Hospital

OBJECTIVE:
The purpose of this study was to evaluate whether mode of delivery was associated with mean differences in postpartum (PP) EPDS scores and whether this difference was consistent between natural conception (NC) vs Assisted Reproductive Technology (ART) conceived patients.
MATERIALS AND METHODS:
This is a retrospective cohort study using data from a longitudinal observational study on fetal-maternal-placental development at Children's National Hospital. Inclusion criteria were patients who conceived either via NC or ART with a known mode of delivery (cesarean delivery (CD) or vaginal delivery (VD)), and with EPDS scores recorded in both the antepartum and PP periods. Demographic and clinical characteristics between the 4 groups (ART CD vs. ART VD, NC CD vs. NC VD) were compared using independent t-tests and Chi-square tests. Statistical analysis was performed using RStudio version 2025.09.1, with the R Project for Statistical Computing Platform. The mean EPDS scores at 3 time points; 2nd trimester, 3rd trimester, and PP, were compared between all groups and further analyses performed using linear mixed models adjusting for significant clinical covariates. Secondary analysis was performed using a linear model at the PP period. Tertiary analysis compared ratios of PP EPDS scores above a threshold of 10 within each group.
RESULTS:
Of the 252 patients who conceived via NC, 149 (59%) had a VD and 103 (41%) had a CD. Of the 110 who conceived via ART, 61 (55%) had a VD and 49 (45%) had a CD. Most demographic variables were similar amongst all groups. In the univariate analysis, mean EPDS scores were not significantly different between VD and CD in both the ART and NC group (mean EPDS scores ranged from 4.46 to 5.59). In the linear mixed effect model, after accounting for gestational age at birth, gravidity, parity, body mass index (BMI), and Apgar scores at 1 and 5 minutes, we observed significantly higher EPDS scores overall in the ART CD group compared to the ART VD group (Estimate = 2.59, P=0.024) . We also observed significantly higher mean EPDS scores in the ART CD group compared to the ART VD group at the PP period alone (Estimate= 3.04, p=0.036). No significant differences were observed in mean EPDS scores within the NC cohort between CD vs VD overall or in the PP period. No significant differences were found in the ratio of PP EPDS scores above a threshold of 10 between CD vs VD in the ART (12% vs 13%) or NC (11% vs 15%) cohorts.
CONCLUSIONS:
Those who conceived via ART and delivered via CD were found to have higher mean EPDS scores. This finding may be driven by the PP period given the mean EPDS score estimate was higher in the PP period compared to the overall analysis. Though the results were statistically different, the differences between groups do not show clinical significance.
IMPACT STATEMENT:
Undergoing the process of ART can be a psychologically vulnerable experience for many patients. Identifying factors that increase risk of PP depression, especially in ART patients, is critical to improving targeted counseling and screening strategies for this growing population.
SUPPORT: None

P-23 11:30 AM Monday, October 26, 2026

THE ASSOCIATION BETWEEN ANTIDEPRESSANT USE AND ANTI-MULLERIAN HORMONE (AMH) IN REPRODUCTIVE-AGE WOMEN. Miranda Blanco-Breindel, M.D.[1], Auditi Bhowmick, BSHS[2], Michelle Valenti, MPH[3], Jefferey Burgess, MD MS MPH[3], Zelieann R Craig, PhD[3], Sarah C Roger, MD[1], Dr. Randi H Goldman, MD, MBA[1] and Leslie V Farland, D.SC., M.SC.[4], [1]Northwell, New Hyde Park, NY, [2]University of Arizona, AZ, [3]University of Arizona, [4]University of Arizona, Tucson, AZ

OBJECTIVE: Prior research has suggested that women who are taking antidepressants or who have diagnosed mental health conditions (i.e., PTSD) have lower AMH levels, however the data are sparse. Therefore, our objective was to evaluate whether antidepressant medications, including selective serotonin reuptake inhibitors (SSRIs) and serotonin-norepinephrine reuptake inhibitors (SNRIs), are associated with differences in serum AMH levels.
MATERIALS AND METHODS: A cross-sectional analysis of reproductive-age women 18-44 years was conducted using data from the National Health and Nutrition Examination Survey (NHANES) January 2017–March 2020. Participants from the most recent publicly available NHANES cycle with documented serum AMH, antidepressant medication use, and Patient Health Questionnaire-9 (PHQ-9) scores were included; participants who were pregnant, postmenopausal, or had an oophorectomy were excluded. NHANES uses complex, multistage probability sampling to produce nationally representative estimates; all analyses incorporated this sampling structure. Survey weights and design variables were specified using svydesign() and applied in all regression models. Multivariable linear regression models (log-transformed AMH) were used to estimate percent differences in AMH associated with antidepressant use, adjusting for age (continuous and squared), BMI (continuous), and depression status (binary) determined by the PHQ-9. The percent difference in AMH calculated as (exp(β)-1) *100 with 95% confidence intervals.
RESULTS: Of 2,096 patients in the database, 1422 met inclusion criteria. Of those, 81 (83%) reported SSRI use and 18 (17%) reported SNRI use. Antidepressant users were older (33.3 vs 30.5 years old) and had a higher BMI (33.7 vs 29.5 kg/m2) than those who did not use antidepressants. In age-adjusted models, SSRI use was associated with a 15.8% lower AMH level (-33.6, 6.9) compared to non-use. In multivariable adjusted models, this association attenuated slightly to -12.8% (-30.5,9.4), however no model reached the threshold of statistical significance.
CONCLUSIONS: SSRI use was associated with modestly lower AMH, though differences were not statistically significant. These findings suggest that ovarian reserve as measured by AMH in reproductive-age women is not altered by SSRI use.
IMPACT STATEMENT: These results provide preliminary reassurance that SSRI use may not be strongly associated with ovarian reserve (AMH) in reproductive age women.

P-24 11:45 AM Monday, October 26, 2026

PSYCHOLOGICAL BURDEN OF FERTILITY TREATMENT ESCALATION: PERCEIVED STRESS AND ANXIETY IN WOMEN TRANSITIONING FROM INTRAUTERINE INSEMINATION (IUI) TO *IN VITRO* FERTILIZATION (IVF). Dr.Vasundara Jagannathan, MBBS, DGO, DNB, DRM[1], Sindhuja Namboori Srinivasan, MBBS, M.Sc Clinical Embryology, PhD Research Scholar[2], Nikhitha Reddy, M.B.B.S, MS, FRM[3], Aiswarya S, B.Tech, M.Sc[4] and Yamuna Ramesh, B.Sc, M.Sc.[5], [1]Medical Director, India, [2]Sri Chakra Fertility, Ashok Nagar, India, [3]Alwarthirunagar, Tamil Nadu, India, [4]Thoothukudi, DELHI, India, [5]Psychologist, Kilpauk, Tamil Nadu, India

OBJECTIVE:
To assess perceived stress and state/trait anxiety in women transitioning from intrauterine insemination (IUI) to in vitro fertilization (IVF), and to identify infertility-related and psychosocial predictors of psychological distress in this treatment-escalation cohort.
MATERIALS AND METHODS:
A quantitative, descriptive, correlational study was conducted at a tertiary fertility centre. Purposive sampling was used to identify 102 married women who transitioned from IUI to IVF over one year. Psychological distress was assessed using validated instruments: the Perceived Stress Scale (PSS-10) and the State-Trait Anxiety Inventory (STAI-Y).

Demographic and clinical data were collected retrospectively from medical and psychological records. Spearman's rank correlations and multivariate linear regression were performed to examine associations and independent predictors of perceived stress.
RESULTS:
Mean age was 31.4 ± 3.6 years; mean infertility duration was 55.0 ± 33.9 months. High perceived stress (PSS-10 mean 32.6 ± 7.0) was observed in 75.5% of participants. High state anxiety (STAI-State mean 62.9 ± 19.0) was present in 79.4%, and high trait anxiety (STAI-Trait mean 61.0 ± 16.0) in 77.5%. Perceived stress correlated strongly with trait anxiety ($r = 0.832$, $p < 0.001$) and state anxiety ($r = 0.698$, $p < 0.001$). Infertility duration significantly predicted stress ($r = 0.64$, $p < 0.001$). On multivariate regression, trait anxiety ($\beta = 0.187$), state anxiety ($\beta = 0.133$), and infertility duration ($\beta = 0.047$) independently predicted higher perceived stress; greater number of IUI cycles predicted lower stress ($\beta = -0.735$). Unexplained infertility (54.9%) and financial burden (40.2%) were the most frequently cited distress factors.
CONCLUSIONS:
Women transitioning from IUI to IVF carry a high psychological burden, with the majority experiencing clinically significant stress and anxiety. Trait anxiety and infertility duration independently predict elevated perceived stress. These findings underscore the urgent need for routine psychological screening and counselling at treatment-escalation junctures in fertility care.
IMPACT STATEMENT:
Integrating psychological screening and early intervention at the IUI-to-IVF transition may reduce emotional burden, improve treatment adherence, and advance patient-centered ART care.

P-25 12:00 PM Monday, October 26, 2026

BIRTH TRAUMA: SOCIAL DETERMINANTS AND PSYCHOLOGICAL SEQUELAE. Chloe Vincent, BA[1], Natasha Sokol, ScD, MPH[2] and Janet Johnson, BS[3], [1]Providence, RI, [2]The Warren Alpert Medical School of Brown University, Providence, RI, [3]The Miriam Hospital, RI

OBJECTIVE: Postpartum morbidity and mortality in the United States are increasing, with widening racial and ethnic disparities. Traumatic childbirth experiences are associated with adverse postpartum mental health outcomes. Pregnant individuals who use marijuana may experience additional stigma and surveillance in obstetric settings. This study examines how birth trauma relates to postpartum anxiety and explores care experiences among postpartum individuals who used marijuana during pregnancy.
MATERIALS AND METHODS: We conducted a mixed-methods study. Quantitative analyses used chart review data from a longitudinal pregnancy cohort, including individuals who used marijuana during pregnancy and nonusers, to examine associations between birth trauma and postpartum anxiety. Qualitative interviews were conducted with 21 postpartum birthing people of color who reported marijuana use and varying levels of birth trauma.
RESULTS: Interview themes included reluctance to disclose marijuana use to providers, anxiety about potential social services involvement, feeling“talked down” to by providers, and limited social support. Drug testing at delivery influenced perceptions of provider intent and trust. Postpartum anxiety was associated with infant health events during or shortly after labor and delivery (RR=1.14), though this association was driven by white people (RR=1.74). Among Black and Latinx people, maternal health events during or shortly after labor and delivery were associated with increased risk of postpartum anxiety (RR=2.03 and 1.92, respectively).
CONCLUSIONS: Birth trauma and obstetric care experiences, including perceived surveillance and discrimination related to substance use, may influence postpartum mental health and contribute to racial disparities. Trauma-informed obstetric care may improve postpartum mental health and continuity of care.
IMPACT STATEMENT: This study highlights how birth trauma and obstetric care experiences may shape postpartum mental health outcomes, particularly among birthing people who use marijuana during pregnancy. Findings suggest that stigma, surveillance, and distrust in clinical settings may contribute to racial disparities in postpartum anxiety and underscore the need for trauma-informed, equity-centered obstetric care.

MENTAL HEALTH & PSYCHOSOCIAL (4 OF 4)

P-26 11:15 AM Monday, October 26, 2026

PREDICTING IN VITRO FERTILIZATION OUTCOMES USING ELECTRO-PHYSIOLOGICAL MANIFESTATIONS OF STRESS PRIOR TO AND DURING OVARIAN STIMULATION. Alice D Domar, Ph.D.[1], Milad Mirzaee, MSc[2], Amber Mendoza, BS[1], Alison J Meyers, BA[3], Laurel Anderson, BS[1], Elaheh Fata, Ph.D[4], Guang Li, Ph.D, James A Grifo, MD, PHD[6] and Vedat Verter, Ph.D[4], [1]Inception Fertility, Houston, TX, [2]Smith School of Business, Kingston, ON, Canada, [3]Geneseo, NY, [4]Queen's University, Kingston, ON, Canada, [5]NYU Langone Fertility Center, New York, NY

OBJECTIVE: To determine if stress prior to and during ovarian stimulation, as measured by physiological stress markers of the cardiovascular and central nervous system, negatively impacts first IVF cycle outcome
MATERIALS AND METHODS: 240 women about to begin their first IVF cycle were asked to wear the FDA-approved OTO device for 3-5 minutes daily for the seven day baseline (B) and stimulation (S) periods. Clinical pregnancy rates were obtained from medical records.
RESULTS:
The following physiological indices showed the strongest associations with pregnancy outcomes; aerobic readiness and energy supply during S were identified as the stress markers that had the highest positive association with the pregnancy outcome (coefficient mean (CM) = 0.046). These HRV-derived indices reflect the efficiency of autonomic regulation, recovery capacity, and the ability to mobilize physiological resources under stress.
In contrast, the following two stress-related markers are both negatively correlated i.e., higher values reduced the chance of pregnancy: (i) During S, Ti or tension index, which reflects sympathetic activation and the level of tension in the cardiac system in response to physical and mental stressors (CM = - 0.005); and (ii) During B, low-frequency (LF) spectral power of HRV (CM = - 0.001).
Women who experienced lower levels of the negative markers—(i) and (ii) above—and higher levels of the positive marker i.e., aerobic readiness during ovarian stimulation, were significantly more likely to experience a clinical pregnancy than women who had higher negative and lower positive ones ($p<.0.05$).
CONCLUSIONS: There has been some controversy concerning the impact of stress on IVF outcome. This is one of the first studies to indicate that stress, measured physiologically, may negatively impact IVF outcome.
IMPACT STATEMENT: This is one of the first studies to indicate that stress, measured electro-physiologically, may negatively impact IVF outcome. Applying research-proven stress-reducing strategies, such as cognitive-behavior techniques, may not only increase a patient's sense of control, but has the possibility of increasing pregnancy rates.
SUPPORT: This research study was partially supported by a grant from OTO Coach.

P-27 11:30 AM Monday, October 26, 2026

THE IMPACT OF PHYSIOLOGICAL MANIFESTATIONS OF STRESS ON PREGNANCY OUTCOME IN WOMEN UNDERGOING THEIR FIRST FROZEN EMBRYO TRANSFER CYCLE. Alice D Domar, Ph.D.[1], Amber Mendoza, BS[1], Morteza Nikoonejad, MSc[2], Alison J Meyers, BA[3], James A Grifo, MD, PHD[4] and Vedat Verter, Ph.D[2], [1]Inception Fertility, Houston, TX, [2]Queens University, [3]Geneseo, NY, [4]NYU Langone Fertility Center, New York, NY

OBJECTIVE: To evaluate if physiological markers of the cardiovascular and central nervous systems are associated with the outcome of a first FET cycle.
MATERIALS AND METHODS: The stress markers were measured using a FDA-approved medical grade wearable device. The device captures heart rate variability (HRV), Electrocardiogram (ECG), and direct current (DC) potential analysis of Electroencephalogram (EEG), related to stress, resilience, adaptation, and homeostasis. Participants wore the OTO device for 3–5 minutes daily starting the first day of the menstrual period of the FET cycle and continued until the first beta. Participants were blinded to measurements and pregnancy outcomes were obtained from EMR.
240 infertile women aged 25–40 years were enrolled; 97 women took the required daily recordings with a clinical pregnancy rate of 61%.
To minimize overfitting in this modest dataset, logistic regression was used for studying the associations of daily measures with outcomes. Daily measurements were summarized into seven statistical features (i.e., Mean, Standard Deviation, Coefficient of Variation, Trend, Median, Skewness, and Kurtosis) for each of the pre- and post-transfer periods.
RESULTS:
Several features based on measurements during the entirety of the FET period demonstrated consistent associations with pregnancy outcome. While the same is true for features based on measurements during the pre-transfer period, post-transfer features alone did not provide meaningful associations with pregnancy outcome.
The analysis identified the following three features as the most consistent and informative features associated with pregnancy outcome:

i. *Mean* of Direct Current Time to Stabilization:
ii. *Skewnees* of High Frequency Power
iii. *Trend* of Aperiodic Influences

Based on daily measurements during the FET period, (ii) showed negative association with pregnancy outcome (OR:0.37, p-value:0.008), indicating reduced odds of pregnancy with higher skewness. On the other hand, i) and (iii) showed positive associations with (OR: 1.09, p-value: 0.005) and (OR: 1.04, p-value: 0.004), respectively.
CONCLUSIONS: Three of the physiological features were associated with outcomes. The asymmetry of the distribution of parasympathetic activity shows strong negative association. For the two features that are positively associated, the impacts are small (i.e., OR close to 1.0); but statistically significant.
IMPACT STATEMENT: While the role of stress in reproductive outcomes has been controversal, this study indicates that stress, measured physiologically, may influence FET success. However, the stress reported by many patients of the “two week wait”, was not associated with outcome.
SUPPORT: This study was supported by an unrestricted grant from OTO.

P-28 11:45 AM Monday, October 26, 2026

THE EFFECTIVENESS OF TECHNOLOGY-BASED INTERVENTIONS IN IMPROVING ANXIETY, DEPRESSION, STRESS, AND QUALITY OF LIFE AMONG INDIVIDUALS WITH INFERTILITY: A SYSTEMATIC REVIEW AND META-ANALYSIS. Brianne Yarranton, BSc, MD[1], Anjali Sachdeva, BHSc[2], Vanessa Bacal, M.D., M.SC.[3], Kimberly E. Liu, M.D.[3], Brenna Leslie, MLIS[4] and Cindy-Lee Dennis, PhD, FCAHS[5], [1]Ottawa, ON, Canada, [2]University of Toronto, [3]Mount Sinai Fertility, Toronto, ON, Canada, [4]Mount Sinai Hospital, [5]Sinai Health

OBJECTIVE: The objective of this systematic review was to examine the effectiveness of technology-based interventions intended to improve mental health among individuals with infertility.
MATERIALS AND METHODS: A systematic review was conducted by searching MEDLINE, Embase, Cochrane Central Register of Controlled Trials, PsychInfo, PubMed, and Web of Science from inception to August 15, 2025. Included studies examined male, female, or gender diverse patients or partners with infertility. Studies

were included if they investigated technology-based interventions intended to improve mental health. Studies were excluded if they investigated patients pursuing fertility preservation for reasons other than infertility, or if the intervention was pharmacological or solely educational. Experimental or quasi-experimental design studies were included. Outcomes included anxiety, depression, stress, quality of life, and relationship satisfaction. Standardized mean differences (Hedges' g) were calculated and pooled using a random effects model meta-analysis. Risk of bias assessment was completed using the Cochrane RoB 2 tool. Evidence certainty was assessed using the GRADE criteria.
RESULTS: Of the 4,746 articles screened, 25 studies were included, describing 24 interventions and 3,286 total participants. Interventions demonstrated a moderate but non-significant improvement in depression (Hg= -0.64, 95% CI: -1.28 to 0.001, I^2=96.51%), a moderate and significant improvement in anxiety (Hg= -0.74, 95% CI: -1.31 to -0.18, I^2=95.99%), a small and significant improvement in stress (Hg= -0.29, 95% CI: -0.47 to -0.12, I^2=54.53%), and a small but insignificant improvement in quality of life (Hg=0.24, 95% CI: -0.04 to 0.52, I^2=20.86%). Two studies reported interventions which significantly improved both stress and anxiety compared to controls: Inam et al.'s mindfulness meditation program, and Pandya et al.'s online mindfulness intervention. No studies reported relationship satisfaction. 17 studies had some concern for risk of bias, and 8 studies were at high risk of bias. Stress was rated as low certainty of evidence, with depression, anxiety, and quality of life rated as very low certainty.
CONCLUSIONS: This systematic review demonstrates that technology-based interventions made significant improvements in anxiety and stress in patients with infertility, with no significant improvements in depression or quality of life. Caution should be used in interpreting the results due to low or very low evidence certainty for all outcomes secondary to risk of bias, inconsistency, and imprecision. There is a need for future research investigating understudied populations such as male and non-Caucasian patients, and outcomes such as relationship satisfaction.
IMPACT STATEMENT: Technology-based psychological interventions may offer an accessible means of supporting the mental health needs of individuals experiencing infertility. This systematic review provides researchers with an overview of the evidence currently available, and suggests future directions for high-quality and inclusive trials that are needed before these interventions can be integrated into routine infertility care.
SUPPORT: This project did not receive any specific grant funding. B.Y. received graduate studies funding through the Ontario Women's Health Scholar Award and the Canadian Institute of Health Research Graduate Scholarship. Neither organization influenced the development of this study.
REFERENCES:
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Pandya, *Women Undergoing IVF: Mitigating Anxiety & Stress & Building Infertility Self-Efficacy & Resilience Through Mindfulness Care.* Women's Reproductive Health.

P-29 12:00 PM Monday, October 26, 2026

AWARENESS WITHOUT ACTION: THE MISSING LINK IN DOMESTIC VIOLENCE SCREENING IN ART CLINIC IN INDIA. Kanad Dev Nayar, MD, DGO, Dip.Obst.(Ire), FICOG[1], Poonam Nayar, Ph.D[1], Meerambika Mahapatro, Ph.D[2], Sabina Sanan, MS, FNB, MRCOG[1], Manika Sachdeva, MS, DNB[1], Gaurav Kant, M.Sc[1], Kapil Dev Nayar, MBBS[1] and Poonam Kashyap, Ph.D scholar[1], [1]Akanksha IVF Centre, New Delhi, India, [2]National Institute of Health & Family Welfare, New Delhi, India

OBJECTIVE: To examine healthcare providers' knowledge, attitudes, and clinical practices regarding domestic violence (DV) screening in Assisted Reproductive Technology (ART) settings, and to identify gaps between awareness and implementation, along with associated training
MATERIALS AND METHODS: This study employed a qualitative formative research design conducted at a tertiary infertility clinic in Delhi, India from 1st October 2025 to 31st march 2026. A 12-item questionnaire was administered to 100 infertility specialists working in north India. The questionnaire covered four domains: Knowledge & Awareness, Attitudes & Beliefs, Clinical Practices, and Training & Support Needs. Also, in-depth interviews were carried out with subset of 10 clinicians involved in fertility care. Descriptive statistics , correlation analysis, and cross-tabulation were conducted to evaluate responses and inter-domain relationships. Data were also analysed using a thematic approach, with attention to both explicit narratives and underlying conceptual frameworks guiding clinical practice.
RESULTS:
A substantial proportion of clinicians (70–80%) recognized the association between infertility and domestic violence (DV), and most (80–90%) expressed a strong need for structured training and institutional support. Despite high awareness, only 30–40% reported conducting DV screening, which was largely informal and inconsistent. Correlation analysis showed weak inter-domain associations, confirming fragmented perceptions and a clear knowledge–practice gap. Cross-tabulation further highlighted this discrepancy: while most clinicians endorsed routine screening, relatively few implemented it.
Qualitative findings revealed that nearly two-thirds of participants conceptualized DV as an individual or personality-driven issue, whereas only 20–30% adopted a gender-sensitive, intervention-oriented perspective supporting routine screening and integration of counselling.
Clinicians acknowledged socio-cultural pressures, including expectations of womanhood and anxieties around masculinity; however, these were not consistently integrated into a structural understanding of violence. The absence of routine DV screening was largely attributed to lack of training and institutional protocols. Notably, about one-third of clinicians advocated for routine screening and integrated counselling, reflecting emerging gender-sensitive orientations.
An additional insight was the medicalization of reproduction: prolonged infertility treatment was perceived to mechanize sexual relationships, potentially intersecting with sexual coercion and relational strain.
CONCLUSIONS: Domestic violence (DV) screening in ART clinics remains limited despite high provider awareness. Closing this gap will require training, standardized protocols, and a shift toward gender-sensitive care embedded within routine infertility practice.
IMPACT STATEMENT:
There is a critical need to bridge the knowledge–practice gap through structured training, culturally sensitive screening protocols, and the integration of counselling and referral systems within ART care.
SUPPORT: nil
REFERENCES:
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PRE-CLINICAL & BASIC RESEARCH (1 OF 10)

P-30 11:15 AM Monday, October 26, 2026

MEASURING IMMUNE TOLERANCE TO THE PARTNER: A NOVEL FUNCTIONAL ASSAY OF SEMEN-INDUCED IMMUNOMODULATION IN RECURRENT PREGNANCY LOSS. Ticara Onyewuenyi, MD, MPH[1], Shahrokh Paktinat, PhD[1], Vania Nwokolo, M.D.[2] and Lucia Vojtech, PhD[1], [1]University of Washington, Seattle, WA, [2]Seattle, WA

OBJECTIVE:
Pregnancy complications such as preeclampsia are linked to impaired maternal immune tolerance to the semi-allogeneic fetus. Prior work from our group using pooled donor semen showed inter-individual variability in induction of FOXP3+ regulatory CD4+ T cells in response to semen plasma (SP). We aim to develop and validate a novel methodology to quantify partner-specific immune tolerance following semen exposure and assess whether inadequate immunosuppression correlates with adverse outcomes in recurrent pregnancy loss (RPL) patients.
MATERIALS AND METHODS:
This prospective methodological study enrolls patients with RPL and compares them to a historic cohort of fertile controls. Male partners provide semen, processed to isolate SP. Peripheral blood mononuclear cells (PBMCs) are collected from female partners, and monocyte-derived dendritic cells (MoDCs) are generated using a validated protocol. MoDCs are exposed for 18 hours to partner-specific SP (RPL) or pooled fertile donor SP at standardized protein concentrations. Autologous naïve CD4+ T cells are then co-cultured with SP-exposed MoDCs. Tolerance induction is quantified via flow cytometric assessment of regulatory CD4+ T cells. A composite "immune induction score" is generated based on FOXP3, TIGIT, CTLA-4, and PD-1 expression to capture tolerance-related signatures. Intra- and inter-individual variability will be assessed.
RESULTS:
We anticipate establishing a reproducible and quantifiable framework for measuring tolerogenic responses to semen couples seeking pregnancy. Preliminary testing using unpaired donor combinations demonstrates wide variability in Treg induction (2.8%–63.4% of CD4+ T cells). We expect similar heterogeneity in partner-specific pairs, with a subset of RPL patients demonstrating attenuated tolerogenic responses.
CONCLUSIONS:
This study introduces a novel, standardized methodology to assess partner-specific immune tolerance in human reproduction. Quantifying tolerance responses to semen plasma may provide mechanistic insight into immunologic contributors to RPL.
IMPACT STATEMENT:
Although semen plasma has known immunomodulatory effects, no standardized method exists to quantify partner-specific tolerance. We believe that this study is the first to use partner-specific SP in an optimized assay to measure recipient immune response. This work establishes a foundation for a clinically translatable test to identify impaired immunologic adaptation and guide personalized therapies to improve pregnancy outcomes in RPL, with future correlation to implantation and live birth outcomes.
SUPPORT: Funding for this study was provided by the Pacific Coast Reproductive Society (PCRS) grant

P-31 11:30 AM Monday, October 26, 2026

AN INTEGRATED SEMINAL METABOLOMIC SIGNATURE LINKING OXIDATIVE STRESS, MITOCHONDRIAL DYSFUNCTION, AND EPIGENETIC INSTABILITY IN MALE INFERTILITY. Manesh Kumar Panner Selvam, DVM, PhD[1], Luna Samanta, Ph.D[2], Suresh Sikka, Ph.D, HCLD, CC(ABB)[1] and Manoswini Dash, PhD[1], [1]Tulane University School of Medicine, New Orleans, LA, [2]Redox Biology Laboratory, Department of Zoology, Ravenshaw University, Cuttack, Odisha, India

OBJECTIVE: Metabolites within a biological system offer a real-time functional readout of cellular activity integrating genetic, epigenetic, and environmental influences. Our study aims to characterize integrated metabolomic landscape of sperm, seminal plasma, and seminal extracellular vesicles (SEVs) in order to identify mechanistic pathways underlying oligo-astheno-teratozoospermia (OAT).
MATERIALS AND METHODS: Semen samples from men with OAT (n=9) and normozoospermic controls (n=9) were fractionated into sperm, seminal plasma, and SEVs. Global metabolomic profiling was performed using high-resolution LC–MS/MS followed by pathway enrichment and cross-compartment integration. Identified metabolites were mapped to the KEGG database, and pathway enrichment was evaluated

using hypergeometric over-representation analysis to identify significantly perturbed pathways.
RESULTS: A total of 283 metabolites were identified across spermatozoa (112), seminal plasma (230) and SEVs (108), with 55 metabolites shared among compartments and maximum diversity observed in seminal plasma. OAT samples demonstrated coordinated enrichment of metabolites across spermatozoa (24), seminal plasma (12), and SEVs (11). In contrast, only three metabolites (8-hydroxy-deoxyguanosine, guanosine, guanine) were elevated in seminal plasma of normozoospermic controls. Integrated pathway analysis revealed four major metabolic axes in OAT patients: (i) mitochondrial dysfunction, characterized by accumulation of branched-chain amino acids and propionylcarnitine, suggesting impaired β-oxidation; (ii) oxidative stress and nucleotide damage, evidenced by elevated xanthine/hypoxanthine indicative of increased reactive oxygen species activity; (iii) epigenetic dysregulation, reflected by alterations in one-carbon metabolism involving serine, glycine, betaine, choline; and (iv) microbiome-associated metabolism, with increased levels of hippurate and indole-3-acrylate suggesting involvement of a gut–testis axis.
Notably, elevated 8-hydroxy-deoxyguanosine, guanosine, and guanine in the seminal plasma of normozoospermic controls likely reflect efficient oxidative DNA damage repair and extracellular clearance, consistent with intact epididymal quality control and reduced intracellular DNA damage in sperm. SEVs mirrored key metabolic alterations, supporting their role in intercellular signaling and propagation of metabolic stress within the reproductive microenvironment.
CONCLUSIONS: The Seminal metabolome operates as a coordinated three-compartment system. OAT is characterized by integrated disruption of mitochondrial energetics, redox balance, nucleotide metabolism, and epigenetic regulation, coupled with altered EV-mediated signaling and microbiome-associated metabolites, supporting a unified SEV–redox–Sperm DNA fragmentation axis underlying sperm dysfunction.
IMPACT STATEMENT: Multi-compartment metabolomic profiling defines a scalable biomarker framework that links oxidative stress, mitochondrial dysfunction, and epigenetic instability, leading to development of cost-effective diagnostics for male infertility.

P-32 11:45 AM Monday, October 26, 2026

SENSITIVITY OF IVF AND PARTHENOGENETIC MOUSE EMBRYOS TO OOCYTE VITRIFICATION AND CULTURE STRESS. Jessica Wittenstein, M.S[1], Mingxiang Zhang, PhD[2], William B Schoolcraft, M.D.[3] and Ye Yuan, PH.D.[1], [1]Colorado Center For Reproductive Medicine, Lone Tree, CO, [2]CCRM Colorado, Lone Tree, CO, [3]Colorado Center for Reproductive Medicine, Lone Tree, CO

OBJECTIVE: Mouse embryos derived from in vitro–fertilized (IVF) oocytes are developmentally
more vulnerable than in vivo–fertilized zygotes used in conventional mouse embryo assays
(MEA), making IVF-based MEA highly sensitive for detecting embryo toxicity. However, their
relatively high developmental potential may still limit detection of subtle differences in oocyte
competence. Parthenogenetically activated (PA) embryos, which lack a paternal genome, may
exhibit increased susceptibility to early perturbations and can be used as a more sensitive model. This study compares IVF embryos and PA embryos as functional assays to detect (i)
environmental stress applied during embryo culture and (ii) perturbations applied at the oocyte
stage via vitrification.
MATERIALS AND METHODS: In vivo–matured oocytes were collected from CF1 mice and allocated
to IVF or PA groups. For IVF, oocytes were fertilized with fresh sperm in in-house fertilization
medium for 6 h before transfer to culture drops. For PA, denuded oocytes were exposed for 5 h
to activation medium containing strontium chloride, cytochalasin D, and ethylene glycol tetrasodium salt. To assess sensitivity to protein supplementation, IVF and PA embryos were
cultured in media containing 10% (control), 5%, 1%, or 0.5% human serum albumin (HSA). To
assess sensitivity to oocyte vitrification, IVF zygotes were vitrified/warmed after fertilization,
whereas PA embryos were generated from oocytes vitrified/warmed prior to activation. Nonvitrified
oocytes served as controls. Embryos were cultured in standard medium with 10% HSA until day 5 at 5% O_2, 5% CO_2, and 37 °C. Cleavage, day 4 blastocyst development, and day 5
hatching were recorded and analyzed using Fisher's exact test.
RESULTS: Cleavage rates did not differ between groups under any condition. In IVF embryos, day
4 blastocyst formation was significantly reduced at 1% HSA (66.6%, $p = 0.0145$) and 0.5% HSA
(49.0%, $p < 0.0001$) compared with controls (85.8%), and day 5 hatching was reduced at 0.5%
HSA (46.7%, $p = 0.0003$) versus control (78.2%). In PA embryos, day 4 blastocyst development
was similar to control (68.0% in 10% HSA), but day 5 hatching was significantly reduced at 1%
(18.9%, $p = 0.0004$) and 0.5% (10.0%, $p < 0.0001$) HSA compared with control (46.7%). In the
vitrification experiment, IVF embryos showed no significant differences between non-vitrified
and vitrified groups in day 4 blastocyst development (96.2% vs. 90.2%, $p = 0.0666$) or day 5
hatching (92.4% vs. 89.1%, $p = 0.418$). By contrast, PA embryos exhibited significantly reduced
day 4 blastocyst development (65.7% vs. 38.7%, $p < 0.0001$) and day 5 hatching (63.1% vs.
43.0%, $p = 0.003$) in vitrified versus non-vitrified oocytes.
CONCLUSIONS: IVF-derived and PA embryos are broadly comparable for detecting embryo-stage
culture stress, but PA embryos are more sensitive for revealing differences in oocyte developmental competence, particularly in the context of oocyte vitrification.
IMPACT STATEMENT: PA embryos may provide a more stringent functional assay for detecting
subtle impairments in oocyte quality, while IVF-based MEA remain suitable for routine assessment of embryo-stage environmental stress.

P-33 12:00 PM Monday, October 26, 2026

CKAP5 GENE EXPRESSION IN CUMULUS CELLS IS ASSOCIATED WITH FEMALE AGE AND BLASTOCYST YIELD IN IVF: A PROSPECTIVE PILOT STUDY. Anastasia Athanasiou, MSc[1], Vasiliki Dinopoulou, PhD[2], Ioannis Sfontouris, PhD[2], Despoina Mavrogianni, PhD[1], Evangelos Makrakis, M.D., PH.D.[2], Evangelia Deligeoroglou, MD, MSc, PhD[2], Vasilios Kellaris, MD, PhD[2], Panagiotis Krokos, MD, MSc[2], Sofoklis Stavros Prof, MD, Ph.D.[1] and Ekaterini Domali, Prof, MD, MSc, PhD[1], [1]IVF Unit, 1st Ob/Gyn Dept, Medical School, National and Kapodistrian University of Athens, Greece, [2]Hygeia IVF Embryogenesis, IVF Clinic, Athens, Greece

OBJECTIVE:
CKAP5 (Cytoskeleton Associated Protein 5) encodes a microtubule-stabilising protein essential for spindle assembly and accurate chromosome segregation during meiosis. Defective spindle function is a primary driver of oocyte aneuploidy and implantation failure, yet molecular markers of this process in cumulus cells (CCs) remain unexplored. We investigated CKAP5 gene expression in CCs of women undergoing IVF and evaluated its association with patient characteristics and embryological outcomes.
MATERIALS AND METHODS:
This prospective pilot study enrolled 50 women undergoing their first or subsequent IVF cycle at a single tertiary centre. CCs were collected after oocyte denudation and total RNA was isolated. CKAP5 expression was quantified by RT-qPCR using the ΔΔCt method. Clinical variables included female age, BMI, FSH, LH, and AMH. Embryological endpoints were total oocytes retrieved, mature (MII) oocytes, fertilized embryos, blastocyst number, and blastocyst formation rate. Pregnancy outcome was recorded for the 27 patients who proceeded to embryo transfer in the index cycle; 23 patients underwent freeze-all. Correlations were assessed by Spearman's rank test; groups were compared by Mann-Whitney U test.
RESULTS:
The cohort had a median age of 40 years and a median BMI 22.8 kg/m². Median ΔCp was 2.02 (IQR 0.94–6.85).Lower CKAP5 expression (i.e. higher ΔCp) correlated significantly with advancing female age ($r_s=0.331$, $p=0.020$) and with elevated basal LH ($r_s=0.311$, $p=0.030$). Higher CKAP5 expression (i.e. lower ΔCp) was associated with greater blastocyst yield ($r_s=-0.295$, $p=0.039$) and showed a borderline association with mature oocyte number ($r_s=-0.282$, $p=0.050$). When patients were dichotomised at the median, the high-expression group had a significantly lower median age than the low-expression group (37 vs 41 years; $p=0.010$). No significant associations were found between CKAP5 expression and BMI, AMH, FSH, total follicle count, total oocytes retrieved, fertilized embryo number, blastocyst formation rate, or oocyte maturation rate. Among the 27 patients with embryo transfer, median ΔCp tended to be lower (higher expression) in those with a positive pregnancy outcome compared to those with a negative result (median 1.98 vs 4.74), though this difference did not reach statistical significance ($p=0.213$), likely reflecting limited statistical power in this subgroup.
CONCLUSIONS:
In this first reported characterisation of CKAP5 expression in human cumulus cells, reduced expression was independently associated with advanced female age and lower blastocyst yield. These associations are biologically coherent with the known role of CKAP5 in spindle stability and its deterioration in the ageing ovarian microenvironment. The absence of correlation with AMH or gonadotropin response suggests that CKAP5 expression captures a dimension of oocyte/cumulus biology not reflected by conventional ovarian reserve markers.
IMPACT STATEMENT:
CKAP5 expression in cumulus cells may represent a novel molecular indicator of age-related ovarian ageing and embryo developmental competence, with potential to contribute to more individualised prognostic counselling in IVF.

PRE-CLINICAL & BASIC RESEARCH (2 OF 10)

P-34 11:15 AM Monday, October 26, 2026

BLOCKADE OF NKG2A REVERSES NK CELL DYSFUNCTION AND REDUCES LESION BURDEN IN A MURINE ENDOMETRIOSIS MODEL. Ana Clara Pimenta Servidoni, Research Fellow[1], Ramanaiah Mamillapalli, Ph.D.[2], E Cansu Cevik, M.D.[3], Nimisha Gawde, MD[4], Parvaneh Rastgou, MD[2], Mauricio S. Abrao, MD[5] and Hugh S Taylor, M.D.[6], [1]Research Fellow, Yale School of Medicine, Department of Obstetrics and Gynecology, CT, [2]Yale university School of Medicine, New Haven, CT,

[3]Yale School of Medicine, [4]Yale University School of Medicine, New Haven, CT, [5]Gynecologic Division, BP - A Beneficencia Portuguesa de Sao Paulo, Sao Paulo, Brazil, [6]Yale University, New Haven, CT

OBJECTIVE: Endometriosis is a chronic inflammatory disorder associated with Natural Killer (NK) cell dysfunction and linked to increased inhibitory NKG2A receptor expression. This study aimed to investigate if selective in vivo inhibition of NKG2A could reverse NK cell hyporesponsiveness, thereby enhancing cytotoxic potential against ectopic endometrial tissue and reducing endometriosis lesion progression in a murine model.
MATERIALS AND METHODS: Endometriosis was surgically induced in female C57BL/6 mice (n=12). After a 4-week period to allow lesion development, animals were randomly assigned to a treatment group receiving an anti-NKG2A antibody or a control group receiving an isotype IgG control via intraperitoneal injection every 3.5 days for 4 weeks. Lesion size and attachment score were measured at necropsy. Immunohistochemistry (IHC) was performed on paraffin-embedded lesion sections to quantify key biomarkers including NKG2A, NKG2D, Granzyme B (GrB), and ICAM-1. Digital pathology software (QuPath) was utilized for detailed quantitative analysis.
RESULTS: Treatment with the anti-NKG2A antibody significantly reduced endometriotic lesion size by 68.7% compared to control (p=0.01) and attachment by 18.4% compared to control ($p < 0.05$). Immunohistochemical analysis revealed that treatment induced a significant decrease in NKG2A-positive cells (8.0% in treated vs. 31.9% in control, p=0.01) and significant increases in expression of the activating receptor NKG2D (37.9% vs. 28.7%, p=0.03), GrB-positive cells (5.24% vs. 0.38%, p=0.01), and ICAM-1 H-score (30.0 vs. 15.1, $p<0.001$). No significant differences were observed for Qa-1b, CD8, VEGF, Perforin, or CD56.
CONCLUSIONS: Targeting the NKG2A receptor with an anti-NKG2A antibody exerts significant immunomodulatory effects on endometriotic lesions, notably reducing lesion size and attachment. This therapy successfully shifts from an inhibitory to an activating NK cell pathway, thereby overcoming immune evasion mechanisms characteristic of endometriosis. These experimental findings demonstrate the potential to treat the well documented NK cell dysfunction in human endometriosis.
IMPACT STATEMENT: This study identifies a novel non-hormonal immunotherapeutic strategy for endometriosis by restoring NK cell cytotoxic functions, offering a promising approach for this chronic inflammatory disorder affecting millions of women. By effectively disrupting immune evasion within endometriotic lesions, this research expands therapeutic avenues beyond current medical and surgical interventions and highlights immunomodulation as a significant complementary treatment option.

P-35 11:30 AM Monday, October 26, 2026

DOUBLE INTRAOVARIAN INJECTION OF PLATELET-RICH PLASMA (PRP) FAILS TO RECOVER OVARIAN FUNCTION AND FERTILITY IN A PREMATURE OVARIAN INSUFFICIENCY (POI) MOUSE MODEL.

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OBJECTIVE: Previous evidence suggests that PRP may represent a therapeutic option for women with POI, the most severe ovarian condition related to fertility. However, the available literature is scarce and remains inconclusive for these patients. Thus, we aimed to evaluate whether single or double PRP treatments improve ovarian function and reproductive outcomes in a chemotherapy-induced POI mouse model.
MATERIALS AND METHODS: POI was induced by intraperitoneal injection of cyclophosphamide and busulphan (120 and 12 mg/kg) in 20 eight-week-old NOD/SCID female mice. Seven days later, mice were randomized (n=5/group) to receive 1 or 2 intraovarian injections of PRP (POI-PRP-1X, POI-PRP-2X) or PBS (POI-Sham-1X, POI-Sham-2X), with a 12-day interval between injections. Each ovary received 10 µl of PBS or activated PRP from normoresponder patients (1912-FIVI-113-SH). Twelve days post-treatments, mice underwent controlled ovarian stimulation (COS) and euthanasia. Ovaries were collected for stromal assessment, follicle counts and proteomic analysis, while oocytes underwent in vitro fertilization (IVF) and embryo culture to assess reproductive competence.
RESULTS: The impact of PRP treatment was assessed by comparing each PRP-treated group to its respective sham control. No significant differences were detected in the ovarian/body mass ratio (POI-Sham-1X: 0.5±0.1, POI-PRP-1X: 0.4±0.1, p=0.2; POI-Sham-2X: 0.5±0.1, POI-PRP-2X: 0.5±0.1, p=0.7) or in healthy follicle counts per ovary (POI-Sham-1X: 465.0±119.2, POI-PRP-1X: 378.3±72.0, p=0.3; POI-Sham-2X: 419.6±34.8, POI-PRP-2X: 351.3±114.6, p=0.3) between each PRP dose group and its sham control. Ovarian stroma evaluation revealed no significant changes in vascularization, fibrosis nor hyaluronic acid content ($p > 0.05$ for all comparisons) after PRP administration. Ovarian proteomic profiling identified 7037 proteins, with only two differentially expressed proteins (R3HDM4 and ETNK2) between POI-PRP-1X and POI-Sham-1X groups, supporting the lack of differences at histological level.
After COS, the oocyte yield did not significantly differ among groups (POI-Sham 1X: 15.8±5.0, POI-PRP-1X: 11.5±5.8, p=0.3; POI-Sham-2X: 12.8±7.0, POI-PRP-2X: 11.8±10.3, p=0.9). However, following IVF a significant 30% decrease in the fertilization rate was detected in mice receiving one PRP injection compared to POI-Sham-1X group (54.8% vs. 84.8%, p=0.004). This reduction was not observed between POI-PRP-2X and POI-Sham-2X (78.3% vs. 64.3%, p=0.1). In addition, embryo culture revealed no improvements in blastocyst formation (POI-Sham-1X:94.9%, POIPRP-1X:88.2%, p=0.4; POI-Sham-2X:91.7%, POI-PRP-2X:100.0%, p=0.08) or hatching rates (POISham-1X: 64.1%, POI-PRP-1X: 58.8%, p=0.7; POI-Sham-2X: 83.3%, POI-PRP-2X: 88.9% p=0.5) following 1 or 2 PRP injections.
CONCLUSIONS: Regardless the number of injections, PRP treatment is insufficient to restore ovarian function in our POI mouse model, highlighting the need of further investigation to develop alternative strategies for this population.
IMPACT STATEMENT: This study provides preclinical evidence questioning the therapeutic relevance of PRP in ovarian insufficiency.
SUPPORT: This study has been supported by grants from Instituto de Salud Carlos III (ISCIII) through the project PI24/01152 [SH], co-funded by the European Union; and by Ministerio de Ciencia, Innovación y Universidades (FPU23/02791).

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EFFECT OF PROPOFOL AND PRILOCAINE EXPOSURE DURING OOCYTE RETRIEVAL ON GRANULOSA-LUTEIN CELL VIABILITY.

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OBJECTIVE: To compare follicular fluid (FF) penetration of propofol versus hyperbaric prilocaine and to determine whether anesthetic exposure during egg retrieval (ER) is associated with changes in granulosa-lutein cell (GC) viability in oocyte donors.
MATERIALS AND METHODS: Prospective study of oocyte donors (September 2025-March 2026) undergoing ER with either intravenous propofol or spinal anesthesia with hyperbaric prilocaine. Propofol (n=10) and prilocaine (n=3) concentrations in FF and serum were quantified using UHPLC-MS/MS from the first and the last follicles aspirated. GCs were isolated from FF (propofol n=15, prilocaine n=2) using Percoll gradient and Dynabeads CD45, then cultured in vitro. Viability was assessed using CCK-8 assay at 2,4,8,24, and 48 h post-isolation. Statistical analyses using SPSS examined correlations between propofol dose, FF anesthetic concentration, procedure duration and GC viability. Significance was set at $p<0.05$.
RESULTS: Propofol was detected in all FF samples, with progressive accumulation from a mean of 86.36 µg/L (first follicle) to 922.54 µg/L (last follicle). In contrast, prilocaine was undetectable in all FF samples analyzed. No significant correlation was found between ER duration and FF propofol concentration (R=0.0085), suggesting that pharmacokinetic variability and total dose administrated may be stronger determinants of intrafollicular levels than procedure length. Regarding the biological impact of this drug exposure on FF, the GC viability analysis revealed that the total administrated dose of propofol has a significant negative correlation with GC viability at 24 h (R=-0.515, $p<0.05$), with trends at 4h (R=-0.499, p=0.058), 8h (R=-0.494, p=0.061), and 48h (R=-0.503, p=0.056). Furthermore, FF propofol concentrations showed strong inverse correlation with GC viability across all timepoints (R=-0.60, $p>0.05$), indicating that higher intrafollicular levels are consistently associated with reduced cellular metabolic activity. When comparing anesthetic groups, prilocaine-treated patients showed consistently higher GC viability than propofol-treated patients at all timepoints (relative increment: 57.6% at 2h; 45.6% at 8h; 48.5% at 24h; 50.1% at 48h). Differences did not reach statistical significance given the small sample size.
CONCLUSIONS: Propofol accumulates progressively in FF and demonstrates a dose-dependent GC viability reduction. Prilocaine does not penetrate FF and shows consistent trends toward superior GC metabolic activity preservation. These findings raise important questions about the potential impact of propofol on oocyte quality and reproductive outcomes.
IMPACT STATEMENT: This is the first demonstration that hyperbaric prilocaine avoids FF drug exposure during ER. The significant negative correlations between propofol dose and GC viability, combined with the improved viability observed with prilocaine, warrant investigation of potential effects on oocyte competence and clinical IVF outcomes. Given the critical role of GCs in oocyte maturation, larger studies are in order to determine whether these cellular effects translate to significant differences in reproductive outcomes.

P-37 12:00 PM Monday, October 26, 2026

PROLACTIN RECEPTOR BLOCKADE WITH ANTI-PROLACTIN RECEPTOR ANTIBODY (ANTI-PRLR AB) RELIEVES PAIN AND INFLAMMATION IN A HOMOLOGOUS TRANSPLANT MOUSE MODEL OF ENDOMETRIOSIS.

Amer-Denis Akkad, PhD[1], Vishal Kothari, PhD[1], Raul Gomez, PhD[2] and Carles Antúnez Muñoz, PhD[2], [1]Absci, Vancouver, WA, [2]Incliva, Spain

INTRODUCTION: Endometriosis affects an estimated 10% of reproductive-age women worldwide. Current antiestrogenic drugs provide incomplete pain relief, and are limited by side effects such as osteoporosis, highlighting the need for non-hormonal treatments. Endometriotic lesions produce local prolactin (PRL) that promote lesion growth, inflammation, and chronic pelvic pain. PRL signaling has recently emerged as a female-specific mechanism of hyperalgesia, and PRLRs are shown to be expressed in both endometriotic lesions and nociceptive dorsal root ganglia (DRG) neurons.
OBJECTIVE: The purpose of this study was to test the therapeutic potential of an AI-designed, highly selective PRLR–blocking antibody, in a preclinical model of endometriosis associated pain as a non-sex hormonal and potentially disease modifying therapeutic for endometriosis.
MATERIALS AND METHODS: Endometriosis was induced in immunocompetent mice by intraperitoneal transplantation of syngeneic pseudodecidualized endometrial-like tissue. Two-weeks post lesion establishment, mice received anti-PRLR Ab or placebo control IgG1 twice weekly for 4 weeks, or leuprolide (Gonadotropin releasing hormone modulator) with the placebo weekly. Functional assessment of non-evoked pain was performed by measuring distance traveled through a home-cage device system (HCA)

expressing values as percentage of distance normalized to each animal's baseline. Evoked mechanical pain was assessed using Von Frey filament testing in the abdomen. At termination, peritoneal inflammatory cytokines were quantified by ELISA, and $NeuN^{+}/ATF3^{+}$ neurons in lumbar and thoracic dorsal root ganglia were assessed by immunofluorescence. Statistical comparisons were performed using one-way analysis of variance (ANOVA) or Student's t test.
RESULTS: Anti-PRLR Ab and leuprolide treated mice showed significant improvement in percentage of distance travelled (non-evoked pain response vs placebo $p < 0.005$), and in percent pain recovery (evoked pain response vs Placebo $p \leq 0.0005$) indicating a significant reduction in pain. Analysis of inflammatory biomarkers revealed a significant reduction in the inflammatory cytokines such as TNFα, CCL2, and IL-1β in peritoneal fluid of Anti-PRLR Ab and leuprolide treated mice (vs placebo, $p < 0.001$). Immunofluorescent co-labeling of NeuN and ATF3 in lumbar and thoracic DRG revealed that Anti-PRLR Ab treatment significantly reduced the proportion of $NeuN^{+}/ATF3^{+}$ sensory neurons compared to placebo-treated mice ($p < 0.05$).
CONCLUSIONS: Anti-PRLR Ab significantly reduces non-evoked and evoked pain–associated behavior and inflammatory markers in a homologous mouse model of endometriosis. Multi-level DRG neuronal injury reversed by Anti-PRLR Ab suggests that PRL/PRLR signaling drives nerve inflammation locally and/or peripheral sensitization that extends beyond the lesion site.
IMPACT STATEMENT: These results suggest PRLR blockade as a mechanism capable of addressing the full breadth of endometriosis-associated pain, and support PRLR blockade as a possible alternative to sex hormone treatment of endometriosis.

PRE-CLINICAL & BASIC RESEARCH (3 OF 10)

P-38 11:15 AM Monday, October 26, 2026

OVARIAN EPIGENOMIC DRIFT REVEALS JAK-STAT SIGNALING AS A THERAPEUTIC TARGET IN REPRODUCTIVE AGING. Dilan Gokyer, MD[1], Caitlin Buchholz, MS[1], Aysu Cakar, MD[2], Anna Kleinhans, B.S.[3], Ecem Esencan, M.D.[4], Joan K. Riley, HCLD, PhD[3] and Elnur Babayev, M.D., M.SC.[1], [1]Northwestern University Feinberg School of Medicine, Chicago, IL, [2]Northwestern University Feinberg School of Medicine, Chicago, [3]Northwestern University, Chicago, IL, [4]Northwestern University, Feinberg School of Medicine, Chicago, IL

OBJECTIVE:
Ovarian aging leads to infertility, miscarriage, and endocrine decline, yet its molecular drivers remain incompletely understood. Prior studies have primarily focused on oocyte aneuploidy and mitochondrial dysfunction, while age-associated epigenomic drift, which is one of the primary hallmarks of overall aging, remains poorly characterized in ovaries. We aimed to identify novel epigenetically regulated pathways involved in ovarian aging using unbiased spatial epigenomic profiling in mouse ovaries and chromatin accessibility analysis of human primary follicle somatic cells.
MATERIALS AND METHODS:
Assay for transposase-accessible chromatin sequencing (ATAC-seq) was performed using primary follicle somatic cells collected at oocyte retrieval from patients undergoing IVF after IRB approval and informed consent. Younger (<30 years, n=3) and older (>39 years, n=3) females with male factor or unexplained infertility, or undergoing fertility preservation were selected to isolate age as the primary variable. Spatial ATAC-seq was performed in reproductively young (8-week) and reproductively aged (9-month) mouse ovaries. Principal component (PCA) and motif enrichment analyses evaluated age-associated chromatin accessibility changes. Candidate pathways were validated using secondary analysis of published murine single-cell RNA-sequencing (scRNA-Seq) datasets and immunoblotting.
RESULTS:
ATAC-seq revealed age-associated chromatin accessibility changes in human primary follicle somatic cells, with clear PCA separation between groups and greater heterogeneity among older samples. Motif analysis identified 61 motifs enriched in older women, 35 of which were conserved across mouse and human datasets, including STAT3 and SMAD4. Spatial ATAC-seq in mouse ovaries identified 17 chromatin accessibility clusters and increased transcription start site accessibility with age. Differential accessibility analysis identified greater changes in stroma than follicles (2.6% vs. 0.8% of detected peaks). STAT family motifs were strongly enriched in aged ovarian stroma, with Stat5a, Stat5b, Stat4, Stat1, and Stat3 comprising 5 of the top 10 enriched motifs. Secondary analysis of murine scRNA-seq data showed higher Stat1 and Stat3 expression across most cell types, particularly fibroblasts. Immunoblotting demonstrated significant increases in phosphorylated $STAT1^{Y701}$ and $STAT3^{Y705}$ in 14-month compared with 8-week mouse ovaries ($p<0.05$), indicating increased STAT 1 and 3 activation with advanced reproductive age.
CONCLUSIONS:
Unbiased epigenomic profiling identified ovarian stroma as a major site of age-associated epigenomic drift and revealed JAK-STAT signaling as a novel pathway dysregulated in reproductive aging.
IMPACT STATEMENT:
These findings identify a potentially targetable mechanism of ovarian aging and provide a framework for therapies aimed at extending reproductive and endocrine longevity.
SUPPORT: This project was supported by NIH/NICHD K12 HD050121(EB).
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HYSTEROSCOPIC SUBENDOMETRIAL ADMINISTRATION OF HUMAN UMBILICAL CORD PLATELET-RICH PLASMA BOOST NEOANGIOGENESIS IN WOMEN WITH ENDOMETRIAL PATHOLOGIES. Paula Alonso-Frías, MSc[1], Clara Bueno Fernandez, PhD[1], Marcos Agustina-Hernández, MSc[2], Laura Garijo, B.Sc.[1], Amparo Carrasco, MD PhD[3], Mónica Romeu, MD, PhD[4], Carmen Vidal, M.D. Ph.D.[5], Amparo Galán Albiñana, Ph.D.[6], Antonio Pellicer, Ph.D. M.D.[1] and Irene Cervello, PhD[1], [1]IVIRMA Global Research Alliance, IVI Foundation, Instituto de Investigación Sanitaria La Fe (IIS La Fe), Valencia, Spain, [2]IVIRMA Global Research Alliance, IVI Foundation, Instituto de Investigación Sanitaria La Fe (IIS La Fe), [3]La Fe University and Polytechnic Hospital, Assisted Human Reproduction Unit-, Valencia, Spain., [4]Obstetrics and Gynecology Service, La Fe University Hospital, Valencia, Spain., [5]IVIRMA Global Research Alliance, IVIRMA Valencia, Valencia, Spain, Valencia, Spain, [6]University of Valencia, Valencia, Spain

OBJECTIVE:
To evaluate whether hysteroscopic subendometrial administration of human umbilical cord platelet-rich plasma (hUC-PRP) induces endometrial neoangiogenesis in women with Asherman syndrome (AS) or thin/atrophic endometrium (TE/AE), conditions characterized by impaired vascularization and reduced fertility.
MATERIALS AND METHODS:
This pilot paired pre-post interventional study included 8 women aged 18–48 years with persistent endometrial thickness <5 mm despite estrogen therapy. Participants with AS or TE/AE underwent hysteroscopic subendometrial hUC-PRP injection. Endometrial biopsies were obtained in two consecutive hormone replacement therapy cycles: before treatment and after treatment. Formalin-Fixed Paraffin-Embedded samples were analyzed by immunofluorescence using von Willebrand factor (vWF) to identify endothelial cells and alpha-smooth muscle actin (α-SMA) to assess vessel maturation. Images were acquired at 20× magnification and quantified with digital software. Paired comparisons were assessed using the Wilcoxon signed-rank test. Correlation between paired samples was assessed with Spearman analysis.
RESULTS:
Post-treatment AS/TE/AE patient´s biopsies confirmed a statistical significant increase in neoangiogenic vessels (45.6%) compared with paired pre-treatment samples (32.23%). Median increase in neoangiogenic vascular area was 13.74% ($p=0.02$), suggesting a notable increase in vessels formation. Paired measures showed strong correlation (Spearman $rs = 0.73$, $p = 0.02$), supporting consistent intra-patient response. These findings align with the previously observed improvements based on endometrial thickness (2.6-4.7 mm pre-treatment to 3.7-8.2 mm post-treatment; $p<0.0001$) and restoration (70% of non-trilaminar or atrophic endometrium showed trilaminar/functional patterns) following treatment.
CONCLUSIONS:
Hysteroscopic subendometrial injection of hUC-PRP significantly enhances neoangiogenesis in women with endometrial disorders promoting the proliferation, regeneration and restoration of pathological tissues. These vascular changes may represent a biological mechanism underlying improved endometrial growth and morphology after treatment.
IMPACT STATEMENT:
This study offers preliminary mechanistic evidence supporting hUC-PRP as a regenerative therapy for endometrial disorders such as AS/TE/AE and suggests a novel strategy to improve uterine receptivity in patients with limited treatment options.
SUPPORT: This research was funded by the Spanish Ministry of Science, Innovation, and Universities (FPU23/01831 [M.A.-H.], CNS2024-154767 [I.C.]), the Generalitat Valenciana(CIACIF/2024/537 [P.A-F.]; CIACIF/2024/314[N.C.]; CIPROM/2021/058 [I.C. And A.P.]) and by the MICIU/AEI/https://doi.org/10.13039/501100011033 and FSE+ (PID2024-163068OB-I00 [I.C.]) and by Instituto de Salud Carlos III through the project "CD25/00194" (Co-funded by European Social Fund "Investing in your future" [C.B-F]).

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NANOCERIA IMPROVES FERTILITY OUTCOMES IN ENDOMETRIOSIS THROUGH NON-STEROIDAL ANTI-INFLAMMATORY EFFECTS. Md Saidur Rahman, D.V.M., Ph.D.[1], Abu Raihan, D.V.M.[1], Monica Jeong, B.Ed.[1], Tae Hoon Kim, Ph.D.[1], Taeho Kim, Ph.D.[2] and Jae-Wook Jeong, Ph.D.[1], [1]University of Missouri-Columbia, Columbia, MO, [2]Michigan State University, East Lansing, MI

OBJECTIVE: Endometriosis is a chronic inflammatory disorder characterized by the presence of endometrial-like tissue outside the uterus and is associated with impaired fertility, including defects in implantation and early pregnancy maintenance. Nanoceria, a redox-active nanoparticle, exerts potent anti-inflammatory effects by modulating oxidative stress and immune signaling. We tested the hypothesis that nanoceria restores fertility by suppressing inflammation-driven endometriotic pathology in a preclinical mouse model.
MATERIALS AND METHODS: Endometriosis was surgically induced by syngeneic transplantation of uterine fragments from $Pgr^{cre/+}Rosa26^{Luc/mTmG}$ donor mice into fertile recipient mice. Three months post-induction, when implantation and decidualization defects were established, mice treated with vehicle or nanoceria (120 µg/kg, intraperitoneally, twice weekly) for 1 month. Endometriotic lesions were quantified by fluorescence imaging. Reproductive outcomes were assessed by mating with fertile males to evaluate pup delivery, early pregnancy progression by ultrasonography, and embryo implantation. Statistical analyses were performed using appropriate parametric or nonparametric tests, with $p < 0.05$ considered statistically significant.
RESULTS: Nanoceria markedly suppressed endometriotic lesion burden, significantly reducing lesion numbers (4.11 ± 0.57 vs. 12.56 ± 1.74; $p < 0.001$) and lesion weight

(0.027 ± 0.007 vs. 0.063 ± 0.008; p < 0.01) compared to vehicle-treated controls (n = 9 per group). This reduction was accompanied by improved reproductive capacity, with nanoceria-treated mice exhibiting a 1.92-fold increase in pup delivery (5.75 ± 1.35 pups/mouse; n = 8) relative to vehicle-treated controls (3.00 ± 1.01 pups/mouse; n = 9). Functionally, nanoceria enhanced early pregnancy success, as demonstrated by reduced rates of early pregnancy loss detected by ultrasonography. Consistent with these findings, anatomical evaluation at gestation day (GD) 9.5 confirmed a lower incidence of early pregnancy loss in the nanoceria-treated group (44.4% [4/9]) compared to vehicle-treated controls (77.8% [7/9]). Furthermore, analysis at the peri-implantation stage (GD4.5) demonstrated improved implantation outcomes in nanoceria-treated mice, with a lower rate of implantation failure (42.9% [3/7]) compared with vehicle-treated controls (71.4% [5/7]). Collectively, these results indicate that nanoceria-mediated suppression of inflammatory lesion burden is associated with enhanced implantation competence and improved maintenance of early pregnancy.
CONCLUSIONS: Nanoceria suppresses endometriotic lesion burden and improves implantation and early pregnancy outcomes, supporting a mechanistic link between inflammation resolution and restoration of fertility in endometriosis.
IMPACT STATEMENT:
These findings identify nanoceria as a promising non-hormonal therapeutic strategy that targets inflammation to restore fertility in endometriosis, with strong translational potential for the treatment of endometriosis-associated infertility.
SUPPORT: This study was supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) under award numbers R01HD108895 (to T.K. and J.W.J.).

PRE-CLINICAL & BASIC RESEARCH (4 OF 10)

P-42 11:15 AM Monday, October 26, 2026

MFF DEFICIENCY INDUCES MITOCHONDRIAL CALCIUM OVERLOAD BY ABERRANTLY INCREASING ENDOPLASMIC RETICULUM–MITOCHONDRIA CONTACT SITES IN OOCYTES. Renwu Hua, Ph.D., Juhui Li, B.S., Jingdi Yang, Ph.D., Huijia Du, M.M., William S.B. Yeung, Ph.D. and Tianren Wang, M.D., Ph.D., The University of Hong Kong-Shenzhen Hospital, Shenzhen, China

OBJECTIVE: Mitochondrial fission factor (MFF) is a central regulator of organelle dynamics. The endoplasmic reticulum and mitochondria are tightly coupled at the endoplasmic reticulum-mitochondria contact sites (ERMCS), which are crucial for mitochondrial Ca^{2+} signaling and cellular homeostasis. In oocytes, maintaining mitochondrial calcium balance is essential for successful meiotic maturation and developmental potential. Here, we investigate how MFF deficiency perturbs this balance by aberrantly expanding ERMCS, leading to mitochondrial calcium overload and compromised oocyte quality.
MATERIALS AND METHODS: An oocyte-specific *Mff* knockout mouse model (*Mff* $^{fl/fl}$; *Gdf9-Cre*) was generated. To identify MFF-interacting proteins, co-immunoprecipitation (Co-IP) using an anti-MFF antibody was performed on lysates from 3,000 germinal vesicle (GV) oocytes, followed by microproteomic profiling. Potential interactions within the IP3R-GRP75-VDAC1 complex were subsequently validated by Co-IP and western blot. Subcellular co-localization was assessed by immunofluorescence. The abundance of ERMCS was quantified via transmission electron microscopy (TEM), and mitochondrial Ca^{2+} levels were measured using the fluorescent indicator Rhod-2 AM.
RESULTS: Co-IP coupled with micro-proteomic analysis identified 356 putative MFF-interacting proteins, including key regulators of mitochondrial calcium homeostasis such as VDAC1 and GRP75. Subsequent co-IP and western blot analyses confirmed that MFF physically interacts with the IP3R-GRP75-VDAC1 complex in mouse ovarian lysates. Consistently, immunofluorescence demonstrated clear co-localization of MFF with IP3R, GRP75, and VDAC1 in oocytes. In line with this physical association, *Mff*-deficient oocytes exhibited a significant increase in both the number of ERMCS (1.34 vs. 0.55 per mitochondrion, $p < 0.01$) and mitochondrial Ca^{2+} levels compared to controls (3.02-fold vs. control, normalized to 1.00, $p < 0.01$). Furthermore, western blot analysis revealed that the protein levels of GRP75 (1.51 vs. 0.68), VDAC1 (1.33 vs. 0.33), and IP3R (1.45 vs. 0.36) were substantially upregulated in *Mff*-deleted oocytes.
CONCLUSIONS: Our findings reveal a novel mechanism wherein MFF deficiency in oocytes disregulates the IP3R-GRP75-VDAC1 complex, leading to aberrant expansion of ERMCS. This pathological increase in organelle tethering, in turn, drives mitochondrial calcium overload, which likely contributes to the compromised oocyte quality associated with MFF loss.
IMPACT STATEMENT: We demonstrate that MFF deficiency disregulates oocyte mitochondrial calcium homeostasis through increased ERMCS, thereby providing novel mechanistic insight into fertility disorders.

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MALE OBESITY AND FERTILITY: THE ROLE OF THE INFLAMMASOME IN SEMINAL PLASMA. Júlia Rius Gomes, MS Student[1], Renata De Carvalho, PhD[2], Ricardo P Bertolla, DVM, PhD, HCLD(ABB)[3], Renato Fraietta, M.D., PH.D.[4], Mariana Camargo, PhD[5] and Eduardo Mancini Gomes Da Costa, BSc[4], [1]MS Student, Ribeirao Pires, São Paulo, Brazil, [2]Federal University of Sao Paulo, Sao Paulo, Brazil, [3]Wayne State University, Detroit, MI, [4]São Paulo Federal University, Sao Paulo, Brazil, [5]São Paulo Federal University, São Paulo, Brazil

OBJECTIVE: Growing evidence suggests that low-grade inflammation and oxidative stress are key mechanisms underlying obesity-related male subfertility. We have previously demonstrated increased innate immune pathways as key inflammatory activity activators in seminal plasma of men with varicocele and in smokers. We therefore wished to verify if inflammasome activity is increased in seminal plasma of obese men.
MATERIALS AND METHODS: Seventy-six volunteers aged 20-50 years were recruited and classified according to their BMI and semen analysis results. They were separated into three groups: Control (n=23) (volunteers with low BMI), obese with normal semen analysis (Obese-normal) results (n=36), and obese with altered semen analysis results (Obese-altered) (n=17). Semen samples were submitted to tests of sperm DNA integrity (alkaline Comet assay), acrosome integrity (PNA-FITC), and mitochondrial activity (diaminobenzidine), and seminal plasma lipid peroxidation by TBARS measurement. Seminal plasma was isolated by centrifugation and submitted to Western blotting for the inflammasome proteinsCaspase-1, NLRP3, ASC, IL-18, and IL-1β. Data were analyzed for normality, and groups were compared by ANOVA, with an LSD post-hoc test ($p<0.05$).
RESULTS: Obese men presented increased sperm DFI when compared to controls. Obese-altered was characterized by lower sperm motility and acrosome integrity. Mitochondrial activity was not different between groups. No significant differences were observed in mitochondrial activity, acrosome integrity and oxidative stress. Obese men with altered semen presented higher activity proteins involved in inflammasome activation (Caspase 1, NLRP3, and ASC) as well as in the effector cytokines IL-18 and IL-1b.
CONCLUSIONS: Inflammasome proteins are associated to an altered semen profile and may play a role in determining lower fertility in a subset of obese men.
IMPACT STATEMENT: Our results demonstrated increased levels of inflammasome-associated proteins in the seminal plasma of obese men. These findings may contribute to the functional and structural sperm alterations observed in this group, potentially compromising male fertility. Moreover, they support a mechanistic link between inflammation and reproductive dysfunction and may guide future strategies for fertility improvement.
SUPPORT: Researcher J. R. Gomes received a scholarship from the Coordination for the Improvement of Higher Education Personnel - CAPES (Protocol number: 88887.713309/2022-00)

P-44 11:45 AM Monday, October 26, 2026

TOWARD OVARIAN GENE THERAPY: AAV-DJ ENABLES TARGETED GENE MODULATION IN HUMAN OVARIAN CELLS. Dilan Gokyer, MD[1], Natasha Salpeter, MS[2], Máté Borsos, Ph.D.[3], Bervis Hemis, MD[2], Diane Saunders, PhD[4], Joan K. Riley, HCLD, PhD[2], Monica M Laronda, PH.D.[5], Viviana Gradinaru, Ph.D.[6] and Elnur Babayev, M.D., M.SC.[2], [1]Northwestern University Feinberg School of Medicine, Chicago, IL, [2]Northwestern University, Chicago, IL, [3]Postdoctoral Scholar, California Institute of Technology, Pasadena, CA, [4]Ann & Robert H. Lurie Children's Hospital of Chicag, Chicago, IL, [5]Stanley Manne Children's Research Institute, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL, [6]Principal Investigator, Pasadena, CA

OBJECTIVE:
Although approximately 50% of infertility cases are predicted to have genetic contribution, Assisted Reproductive Technologies (ART) rely primarily on hormonal stimulation and do not directly target molecular pathways regulating folliculogenesis or the ovarian microenvironment. Adeno-associated viruses (AAVs) enable tissue-specific, durable gene modulation and have multiple FDA-approved products across non-reproductive organ systems. Emerging data support their utility in preclinical infertility models, yet their application in human ovarian cells remains unexplored. Here, we evaluated AAV vectors as a platform for targeted gene delivery in human granulosa and ovarian stromal cells.
MATERIALS AND METHODS:
We evaluated 16 native and capsid-engineered AAV serotypes in human primary granulosa and ovarian stromal cells. Granulosa cells (GCs) were isolated from follicular aspirates, and ovarian stromal cells were obtained from donated ovarian cortex (≥3 participants/experiment). Cells were exposed to green fluorescent protein (GFP)-expressing AAVs at defined multiplicities of infection (MOIs). Transduction efficiency, toxicity, and expression dynamics were assessed over 5-day culture intervals using fluorescence imaging, propidium iodide, and ATP-based assays. Lead candidates underwent dose-response testing and delivered shRNA constructs targeting AMHR2 (folliculogenesis modulator) or TGF-β1 (stromal regulator).
RESULTS:
Screening of 16 AAV serotypes in human primary GCs revealed substantial serotype-dependent variability, with six vectors (AAV2, AAV3, AAV6, AAV9, AAV-DJ, AAV-X1.1) exceeding a predefined >10% transduction threshold. Dose-response and toxicity experiments identified AAV-DJ, AAV2, and AAV9 as top 3 candidates, with AAV-DJ consistently outperforming the others across all MOIs. At MOI 100,000, transduction efficiency was 48% versus 29% and 25%, respectively ($p<0.05$).Toxicity remained comparable among these three serotypes. AAV-DJ–mediated AMHR2 knockdown was validated in primary GCs and an AMHR2-ZsGreen HEK293T engineered reporter system, demonstrating significant transcript reduction and corresponding protein-level suppression (~83% knockdown, $p<0.05$). In ovarian stromal cultures, AAV-DJ produced the strongest GFP expression in EMILIN1 and ACTA2 positive fibroblast and myofibroblast-like cells. Targeting TGF-β1 using AAV-DJ–shRNA resulted in significant downregulation of both mRNA and protein levels (~85% knockdown, $p<0.05$), confirming functional modulation in stromal cells.
CONCLUSIONS:
AAV-DJ efficiently transduces human granulosa and ovarian stromal cells and enables targeted modulation of key pathways involved in follicle activation and ovarian stromal signaling. These findings establish the feasibility of AAV-mediated gene modulation in human ovarian cells.
IMPACT STATEMENT:

This study provides a foundation for gene therapy-based approaches to infertility and ovarian aging by enabling direct targeting of molecular pathways that current hormone-based fertility treatments do not address. This platform may also serve as a versatile tool for mechanistic studies in human ovarian tissue.
SUPPORT: This project was supported by Friends of Prentice organization AWD00000757 (D.G.; E.B.), Merkin Translational Research Grant 2023 (M.B. and V.G.). M.M.L is a Gesualdo Family Foundation Research Scholar.
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P-45 12:00 PM Monday, October 26, 2026

MATERNAL PARKIN DEFICIENCY DRIVES PATERNAL MITOCHONDRIAL PERSISTENCE AFTER *IN VITRO* FERTILIZATION IN MICE. Karla Pacheco Melo, Msc[1], Marcela de Oliveira Pinheiro, Msc[2], Ricardo P Bertolla, DVM, PhD, HCLD(ABB)[3] and Mariana Camargo, PhD[2], [1]Federal University of Sao Paulo, Sao Paulo, Brazil, [2]São Paulo Federal University, São Paulo, Brazil, [3]Wayne State University, Detroit, MI

OBJECTIVE: Maternal inheritance of mitochondrial DNA requires rapid post-fertilization elimination of sperm mitochondria. Failure of this process could produce an embryo-level mechanism of infertility that is invisible to conventional semen analysis. Parkin, encoded by PARK2, is an E3 ubiquitin ligase central to mitochondrial quality control, but the relative contribution of sperm versus oocyte Parkin to paternal mitochondrial elimination is unknown. We tested whether Parkin deficiency impairs paternal mitochondrial clearance after in vitro fertilization (IVF) and whether the phenotype is sperm- or oocyte-driven.
MATERIALS AND METHODS: Sixty-four C57BL/6 wild-type (WT) and PARK2 knockout (KO) mice were used in reciprocal IVF crosses: WT male/WT female (G1), KO male/WT female (G2), WT male/KO female (G3), and KO male/KO female (G4). Epididymal sperm were assessed for concentration, progressive motility, DAB mitochondrial activity, alkaline comet DNA fragmentation, and ubiquitin/Parkin immunofluorescence localization and intensity. Paternal mitochondria were labeled with MitoTracker Red before insemination; embryos were imaged at 4, 24, 48, 72, and 96 h. Quantitative fluorescence was analyzed in ImageJ. Student t test, chi-square, and ANOVA with Sidak post hoc testing were used (alpha=0.05).
RESULTS: Conventional sperm function did not differ between WT and KO males, including concentration, motility, mitochondrial activity, and DNA fragmentation (all $p>0.05$). Ubiquitin localized to the sperm midpiece/acrosomal region and Parkin to the head and midpiece; KO sperm showed lower ubiquitin intensity (11.80±6.34 vs 7.77±3.54 arbitrary units [AU]; $p=0.002$) and lower Parkin intensity (4.30±3.44 vs 2.95±1.83 AU; $p=0.007$). Fertilization rate differed across groups ($p=0.005$), with the lowest rate in KO/KO crosses (G1 87%, G2 80%, G3 73%, G4 60%). Paternal mitochondrial fluorescence declined over time in all groups but persisted significantly in embryos involving KO oocytes. G3 embryos showed higher paternal mitochondrial signal than G1 as early as 4 h (45.35±13.44 vs 37.90±11.21; $p=0.013$). No group difference was detected at 24 h ($p=0.587$). At 48 h, G3 and G4 exceeded G1/G2 ($p<0.001$); at 72 h, G3 exceeded all groups ($p<0.001$); and at 96 h, G2, G3, and G4 remained above G1, with G3 higher than G2 ($p<0.001$).
CONCLUSIONS: Parkin deficiency uncovers a reproductive phenotype not apparent on routine sperm testing: delayed elimination of paternal mitochondria after IVF. The strongest defect was oocyte-derived, implicating maternal Parkin-dependent mitochondrial quality control as a gatekeeper of paternal mitochondrial clearance, fertilization efficiency, and early embryo competence.
IMPACT STATEMENT: These findings identify paternal mitochondrial persistence as a candidate embryo-level mechanism of infertility, independent of standard semen parameters, and prioritize oocyte mitochondrial quality control for studies of unexplained IVF failure.
SUPPORT: K.P received an scholarship from São Paulo Research Foundation #2018/25907-2

PRE-CLINICAL & BASIC RESEARCH (5 OF 10)

P-46 11:15 AM Monday, October 26, 2026

METFORMIN AMELIORATES OVARIAN FIBROSIS BY MODULATING MACROPHAGE-FIBROBLAST INTERACTION AND INDUCING A GPNMB$^+$ REPAIR PHENOTYPE. Shugela Rahat, PhD and Wu Wei, M.D., Nanjing, China

OBJECTIVE: Ovarian fibrosis drives autoimmune POI. Macrophage-fibroblast crosstalk regulates fibrosis, but the mechanisms remain unclear. Metformin has anti-fibrotic effects, yet how it modulates this crosstalk is unknown. We tested whether metformin ameliorates ovarian fibrosis by reshaping macrophage-fibroblast interaction and inducing a repair phenotype.
MATERIALS AND METHODS: In vivo, autoimmune POI was induced by pZP3 (peptide zona pellucida 3) immunization. Mice were untreated (model), treated with metformin (200 mg/kg/day), or sham-operated (control). Ovaries were processed for scRNA-seq (single-cell RNA-sequencing). Fibrosis was assessed by Masson staining; *Mmp13*, *Mmp2*, *Col1a1*, *Fn1* and *Igf1* mRNA by qPCR. In vitro, we designed a human THP-1-derived macrophage "POI-dysfunctional" model mimicking subacute/chronic autoimmunity using sequential LPS+IFN-γ priming, washout, recovery and secondary challenge. Metformin (100 μM) was added during recovery. At 0,2,18h after secondary challenge, CD86, CD206, IGF1, IL-10, TNF-α mRNA were measured by qPCR; IGF1, IL-10, TNF-α proteins in supernatant by ELISA.
RESULTS: In vivo, scRNA-seq revealed six fibroblast subsets. Compared to model, metformin significantly increased Arhgef28$^+$ and Wt1$^+$ fibroblasts (FDR < 0.01). Pathway scoring showed subset-specific signaling. Metformin reduced collagen deposition ($p < 0.05$), restored *Mmp13* and *Mmp2* ($p < 0.01$) and lowered *Col1a1* and *Fn1* ($p < 0.05$). Whole-ovary *Igf1* mRNA did not differ among groups, but metformin upregulated *Igf1* in isolated macrophages ($p < 0.05$). Pseudotime analysis of IGF1$^+$ macrophages traced a *Plac8*$^+$-to-*GPNMB*$^+$ trajectory; GPNMB (glycoprotein non-metastatic melanoma protein B) was low in model but high in control and metformin groups ($p < 0.01$). In vitro, in the subacute/chronic POI macrophage model, secondary challenge triggered a sharp *IGF1* mRNA surge at 2h ($p < 0.001$) without a corresponding rise in secreted IGF1; at 18h, mRNA dropped while secreted IGF1 remained elevated ($p < 0.05$). IL-10 did not increase at 2h. Metformin blunted the mRNA surge ($p < 0.01$), enabled a

transient secretory peak at 2h followed by normalization at 18h ($p < 0.05$ vs. model). It also maintained IL-10 at 2h ($p < 0.05$) and suppressed abnormal CD86 rise ($p < 0.05$), while GPNMB was upregulated ($p < 0.01$) without changes in CD206. TNF-α was unaffected.

CONCLUSIONS: Autoimmune POI drives aberrant macrophage IGF1 dynamics: high transcription but defective early secretion and sustained late release. Metformin reshapes this pattern, restores a controlled secretory burst, and induces a non-classical GPNMB$^+$ repair phenotype. Using an innovative subacute/chronic in vitro POI macrophage model, we show that metformin modulates macrophage-fibroblast crosstalk and uniquely reverses ovarian fibrosis.

IMPACT STATEMENT: Based on a new in vitro model that recapitulates the chronic immune microenvironment of POI, this work demonstrates that metformin directly targets macrophage-fibroblast interaction and induces a GPNMB$^+$ repair phenotype. Our findings support repurposing metformin as a low-cost, fertility-preserving therapy for autoimmune POI.

SUPPORT: Supported by Maternal and Child Health High-Quality Development Funding Project (Grant No. GZL2511).

P-47 11:30 AM Monday, October 26, 2026

SPARC DRIVES EXTRACELLULAR MATRIX REMODELING AND METABOLIC DYSREGULATION IN THE AGING OVARIAN MICROENVIRONMENT AND IS ASSOCIATED WITH IMPAIRED OOCYTE MATURATION.

Su Liu, PHD, Shenzhen Zhongshan Obstetrics & Gynecology Hospital, Shenzhen, China

OBJECTIVE: To determine whether aberrant SPARC expression contributes to ovarian aging by coupling extracellular matrix (ECM) remodeling with granulosa cell metabolic dysregulation, thereby impairing follicular development, ovulation, and oocyte maturation.

MATERIALS AND METHODS: Follicular fluid, granulosa cells, and ovarian tissue from women of advanced reproductive age and young controls were analyzed to define SPARC expression. ECM remodeling was evaluated by Sirius Red staining, second harmonic generation imaging, and basement membrane/ECM marker analysis. Single-cell transcriptomic reanalysis was used to characterize SPARC-associated cell populations and signaling features. Functional studies were performed in ovary-specific SPARC overexpression mice and in vivo ovarian SPARC knockdown models. Granulosa cell RNA-seq, immunostaining, and molecular assays were used to identify ECM- and metabolism-related pathways associated with SPARC dysregulation. Oocyte meiotic integrity, ovulation, and fertility phenotypes were assessed in mouse models.

RESULTS: SPARC expression was significantly increased in follicular fluid and granulosa cells from the aging ovarian microenvironment. Aging ovaries exhibited increased collagen deposition, disrupted collagen fiber organization, and altered ECM architecture. Ovary-specific SPARC overexpression induced ovarian aging-like phenotypes, including increased p16/p21 expression, reduced follicle numbers, increased stromal fibrosis, fewer ovulated oocytes, impaired fertility, and meiotic abnormalities in MII oocytes. In contrast, ovarian SPARC knockdown partially restored collagen fiber organization and improved oocyte meiotic defects. Transcriptomic analysis of granulosa cells from SPARC overexpression mice demonstrated activation of ECM remodeling programs together with suppression of energy metabolism-related pathways, particularly pyruvate metabolism and mitochondrial oxidative metabolism. Key metabolic regulators, including PDK2 and LDHB, were downregulated, supporting a link between SPARC overexpression, ECM remodeling, and metabolic dysregulation in granulosa cells.

CONCLUSIONS: SPARC is a candidate upstream regulator of ovarian aging that links ECM remodeling to granulosa cell metabolic dysregulation. Aberrant SPARC expression is associated with microenvironmental stiffening, altered collagen organization, impaired metabolic support, and defective oocyte maturation.

IMPACT STATEMENT: These findings identify the SPARC-ECM-metabolic axis as a mechanistically relevant pathway in ovarian aging and suggest that targeting microenvironmental remodeling may provide a new strategy to improve oocyte quality and reproductive outcomes in women of advanced reproductive age.

P-48 11:45 AM Monday, October 26, 2026

SEARCHING FOR THE IDEAL METHOD TO CULTURE AND COAX DIFFERENTIATION OF MAMMALIAN EMBRYONIC STEM CELLS TOWARD MALE GERM CELLS.

Mandy Lin, B.S.[1], Eros Lari, B.S.[2], Lily Ng, B.S.[1], Philip Xie, B.SC.[3], Stephanie Cheung, M.S.[3], Zev Rosenwaks, M.D.[3] and Gianpiero D. Palermo, M.D., PH.D.[3], [1]Weill Cornell Medicine, New York, NY, [2]Astoria, NY, [3]The Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY

OBJECTIVE:
Attempts to generate de novo gametes in conventional 2D culture have been limited by their inability to resemble the enclosure of the seminiferous tubules. While several options have been proposed ranging from organoid structures to 3D printed enclosures, we propose a simple three-dimensional (3D) culture system to differentiate mouse embryonic stem cells (mESCs) into neogametes capable of supporting full pre- and post-implantation development.

MATERIALS AND METHODS:
The mESCs were cultured in laminin-coated plates. After initial induction in epiLC media, a subset of cells was encapsulated in 3D alginate spheres to mimic the seminiferous tubule microenvironment, while the remaining cells were kept in conventional 2D culture as the control. Both groups were cultured in specialized PGCLCmedia for 36 days. Immunofluorescence staining was performed at weekly intervals to assess stage-specific germ cell differentiation markers (VASA: spermatogonia; BOULE: spermatocytes; Acrosin: spermatids). Pseudo-gametes from the 3D group were subsequently used to inseminate mouse oocytes, which were then monitored by time-lapse microscopy to monitor fertilization and embryo development.

RESULTS:
The mESCs differentiated in conventional 2D culture exhibited VASA(spg-sptd) at 1% on day 3, spiking at 7% on day 10 and progressively decreasing. BOULE(spc-sptd) peaked at 6% on day 10, followed by sudden decrease. Although these results indicate a successful differentiation into spermatogonium and subsequent spermatocytes, acrosin(sptd-spz) was disappointingly low, reaching only 1% at day 29. Interestingly, immunofluorescence assessment of stage-specific germ cell differentiation markers of mESCs enveloped in 3D alginate spheres evidenced higher expression of VASA (spg-sptd, 18%) at day 3 ($P<0.001$). Moreover, BOULE(spc-sptd) also improved to 10% on day 10. Most importantly, acrosin (sptd-spz) expression rose to 7% by D29. Given the remarkable superiority of our proposed 3D culture system, we used only those post-meiotic cells that were isolated at day 22, 29, and 36 for insemination of mouse oocytes. The fertilization rates of these cohorts were 61.1%, 81.8%, and 50%, respectively. The respective blastocyst rates were 16.7%, 36.4%, and 8.3%. Once established the ability to reach full pre-implantation development, cells generated fromday 29 inseminated 267 oocytes that generated 98 blastocysts that were transferred into pseudo-pregnant mice, yielding live pups.

CONCLUSIONS:
As expected, the 2D model, although allows some germ cell differentiation, this appeared to be short lived and extremely inefficient. Our novel 3D model is a simple and scalable method that than the organoid or 3D scaffolding method, and more importantly is able to generate solely in-vitro neogametes capable of supporting pre- and post- preimplantation development without the need for allo-/xeno- transplantation to complete spermatogenesis.

IMPACT STATEMENT:
Refinement of this procedure and extrapolation to the human model may serve to establish spermatogenesis entirely in-vitro to generate functional neogametes enabling to treat men with confirmed absence of spermatozoa in their seminiferous tubules.

P-49 12:00 PM Monday, October 26, 2026

AN *EX VIVO* PCOS MODEL TO DECIPHER THE MOLECULAR MECHANISMS OF HYPERANDROGENISM AND OTHER OVARIAN DISORDERS IN PCOSS.

Rongfeng Wu, PhD[1], Jiyang Zhang, PhD[1] and Shuo Xiao, MBBS, PhD[2], [1]Ernest Mario School of Pharmacy, Rutgers University, Piscataway, NJ, [2]Rutgers, Piscataway, NJ

OBJECTIVE: Polycystic ovarian syndrome (PCOS) is a common female endocrinopathy, affecting up to 15% women of reproductive age. The pathophysiology of PCOS remains poorly understood due to the complexity of such a multi-organ and multifactorial disorder and the lack of an effective research model. Here, we used a 3D in vitro ovarian follicle culture system to develop an ex vivo PCOS ovary model to decipher PCOS-related ovarian disorders.

MATERIALS AND METHODS: Immature mouse preantral follicles were cultured with escalating ratios (0.1:1, 0.5:1, 1:1, and 3:1) of human-chorionic gonadotropin (hCG, an analog of luteinizing hormone/LH) to follicle-stimulating hormone (FSH), a key feature of PCOS, for 8 days *in vitro*. Multiple follicular events were examined, including

follicle growth, hormone secretion, and ovulation. Chi-square test, Student's t-test, and one-way ANOVA were used for statistical analysis.
RESULTS: The elevated hCG: FSH ratios did not alter follicle growth but dose-dependently increased the secretion of testosterone and inhibited follicle rupture, recapitulating ovarian hyperandrogenism and anovulation in PCOS. Follicles cultured with 0.1:1 or 3:1 of hCG:FSH ratios, representing normal and PCOS-like gonadotropin conditions, respectively, were collected on day 8 for single-follicle RNA sequencing analysis. Principal component analysis (PCA) separated normal and PCOS follicles into two distinct clusters, suggesting a significantly changed follicular transcriptome. There were 1389 differentially expressed genes (DEGs), including 903 up- and 486 down-regulated genes in PCOS follicles. Several DEGs have been implicated in ovarian dysfunction in PCOS, including genes related to ovarian steroidogenesis (*Star*, *Cyp11a1*, and *Cyp17a1*) and inflammation (*Ptgs1*, *Ptgs2*, and *Il6*). The gene ontology (GO) and KEGG pathway analysis revealed that DEGs were primarily associated with hormone secretion, response to endogenous stimulus, PDZ domain binding, extracellular matrix, and adipocyte lipolysis. Using a similar approach, PGE2, a proinflammatory hormone metabolized by PTGS2 or COX-2, was next prioritized to explore whether high circulating and/or follicular fluid levels of PGE2 contribute to PCOS-related ovarian disorders. The results showed that PGE2 at 0, 1, 3, and 10 ng/mL dose-dependently inhibited follicle rupture and increased testosterone secretion. RT-qPCR results revealed that follicles treated with PGE2 exhibited significantly increased mRNA expression of theca steroidogenic genes, including Star, Cyp11a1, and Cyp17a1. The co-treatment of a high hCG:FSH ratio and celecoxib (CXB), a selective COX2 inhibitor, prevented high hCG:FSH ratio-induced hyperandrogenism.
CONCLUSIONS: Our *ex vivo* PCOS model recapitulates key ovarian disorders of PCOS, and PGE2 is a potential key driver of PCOS-induced hyperandrogenism and anovulation.
IMPACT STATEMENT: Our *ex vivo* PCOS model provides a robust platform for identifying gene regulatory pathways driving PCOS-related ovarian disorders and for developing targeted therapies.
SUPPORT: This study was supported by the National Institutes of Health (R01ES032144、P30 ES005022, and UH3ES029073).

PRE-CLINICAL & BASIC RESEARCH (6 OF 10)

P-50 11:15 AM Monday, October 26, 2026

CHRONIC STRESS IMPAIRS FEMALE REPRODUCTIVE FUNCTION BY REDUCING SEROTONERGIC MODULATION OF HYPOTHALAMIC KISSPEPTIN NEURONS. Wenjie Bo, Master Candidate[1] and Wei Huang, M.D., PH.D.[2], [1]West China Second University Hospital of Sichuan University, Chengdu, China, [2]West China Second University Hospital of Sichuan University, Chengdu,Sichuan, China

OBJECTIVE:
Chronic stress disrupts female reproductive function, but the neuroendocrine mechanisms linking stress exposure to suppression of the hypothalamic–pituitary–ovarian axis remain unclear. This study aimed to determine whether chronic stress impairs reproductive function by disrupting serotonergic regulation of hypothalamic kisspeptin neurons, a key upstream regulator of gonadotropin-releasing hormone secretion.
MATERIALS AND METHODS:
An 8-week chronic unpredictable mild stress (CUMS) model was established in female rats. Behavioral phenotyping, endocrine assays, neurotransmitter profiling, molecular analyses, and neuroanatomical approaches were used to evaluate stress-induced changes in hypothalamic serotonergic signaling and reproductive function. To assess causality, serotonergic signaling was enhanced using the selective serotonin reuptake inhibitor fluoxetine.
RESULTS:
CUMS induced robust depression- and anxiety-like behaviors and caused marked reproductive dysfunction, including estrous cycle irregularity, reduced circulating gonadotropins and estradiol, impaired ovarian follicular development, and decreased fertility. Neurochemical analyses showed reduced hypothalamic serotonin levels, accompanied by decreased midbrain expression of *Tph2* and *Slc6a4*, indicating suppressed serotonergic activity. Although total hypothalamic HTR2A expression remained unchanged, HTR2A expression was selectively reduced in arcuate kisspeptin neurons, suggesting cell-type-specific attenuation of serotonergic signaling. Fluoxetine partially restored hypothalamic serotonin levels, increased *Kiss1* and *Gnrh1* expression, improved estrous cyclicity, and normalized reproductive hormone secretion.
CONCLUSIONS:
Chronic stress impairs female reproductive function by weakening hypothalamic serotonergic modulation of kisspeptin neurons, thereby suppressing the Kisspeptin–GnRH reproductive neuroendocrine pathway.
IMPACT STATEMENT:
These findings identify impaired serotonergic regulation of kisspeptin neurons as a central mechanism linking chronic stress to reproductive suppression and suggest serotonergic signaling as a potential therapeutic target for stress-associated female reproductive disorders.
SUPPORT: This study was supported by the National Key R&D Program of China (2023YFC2705502) and the Youth Science and Technology Foundation of Sichuan Province (2026NSFSC1656).

P-51 11:30 AM Monday, October 26, 2026

POTASSIUM ION PERMEABILITY REGULATES OOCYTE MATURATION AND ZYGOTE FORMATION THROUGH INWARD RECTIFIER CHANNEL-DEPENDENT MECHANISMS. Ngozi Ibadin, M.Sc.[1], Ana Rita Krause, D.V.M., M.SC.[2] and Francisco J Diaz, Ph.D[1], [1]The Pennsylvania State University, University Park, PA, [2]Universiade Federal De Sao Carlos, Sao Carlos, Brazil

OBJECTIVE: Meiotic resumption, fertilization and early zygote formation depend on tightly regulated ionic fluxes. Potassium homeostasis, despite its central importance in establishing membrane potential, regulating cell volume and influencing microtubule dynamics remains poorly studied in the context of fertilization and early embryogenesis. This study aimed to investigate how modulation of potassium ion permeability, particularly through inward rectifier channels, affect oocyte maturation and early zygote development. We examined the effects of pharmacologic manipulation of potassium transport on meiotic spindle dynamics, pronuclear morphology and migration, microtubule organization, and nuclear envelope integrity during the critical post-fertilization window.
MATERIALS AND METHODS: MII oocytes from B6D2F1/J female mice were fertilized in vitro. At 3h post-fertilization, zygotes were treated for 1h with various potassium channel modulators TEAC(4mM), PA6 (10μM), or valinomycin (25nM), then washed and incubated for 5h. Parallel-treated MII oocytes were also collected. Samples were immunostained and quantified for spindle structure, pronuclear dynamics, microtubule organization and nuclear envelop integrity. Statistical analysis was conducted using one-way ANOVA with Dunnett's multiple comparisons test, Significance was defined as $p < 0.05$.
RESULTS: Pharmacological perturbations of potassium permeability significantly impaired cellular structures associated with IVF embryo quality. Selective Kir channel inhibition (PA6) and potassium ionophore, valinomycin induced rapid disruption of meiotic spindle architecture in MII oocytes, characterized by pronounced spindle shortening and compaction, whereas TEAC-treated oocytes were indistinguishable from controls. Following IVF, PA6 and valinomycin-exposed zygotes exhibited marked defects in pronuclear dynamics, including increased pronuclear apposition and delayed migration towards the oocyte center, resulting in increased pronuclear separation. Valinomycin uniquely disrupted pronuclear centralization, while both PA6 and valinomycin significantly reduced pronuclear area, consistent with impaired nuclear expansion or chromatin organization. In parallel, microtubule networks were severely compromised, with reduced and disorganized microtubule organizing centers observed in treated zygotes. Nuclear envelop integrity of pronuclei was also affected as PA6 and valinomycin significantly reduced Lamin A/C expression relative to controls. These defects span multiple morphological parameters commonly used to assess fertilization quality and embryo competence in IVF laboratories
CONCLUSIONS: Potassium permeability is essential for maintaining oocyte and zygote structural integrity. Disruption of inward rectifier channel alters spindle formation, pronuclear behavior and early embryo nuclear stability.
IMPACT STATEMENT: This study identifies a previously unrecognized ionic regulator of IVF embryo quality. Disruption of Kir channels compromises fertilization-associated morphokinetics central to embryo developmental competence.

P-52 11:45 AM Monday, October 26, 2026

EXPRESSION OF LEUKEMIA INHIBITORY FACTOR IN ENDOMETRIAL CELLS AFTER ADMINISTRATION OF LIPID NANOPARTICLES. Austin B Gardner, MD, Jack Lopuszynski, BS, Margaret Rush, MD and Kathleen O'Neill, MD, University of Pennsylvania, PA

OBJECTIVE: Leukemia inhibitory factor (LIF) is an essential protein for implantation. Reduced endometrial LIF expression has been observed in women with recurrent pregnancy loss and recurrent implantation failure. A randomized controlled trial of systemic recombinant LIF showed no improvement in pregnancy rates; however, endometrial LIF restoration was never confirmed, raising the possibility that the negative result reflects a delivery failure rather than a lack of efficacy. Lipid nanoparticles (LNPs) are small vesicles capable of delivering mRNA and other biologic agents to target tissues. Prior studies in mice have shown increased expression of LIF in the endometrium following intrauterine delivery of LNPs containing LIF-mRNA. This study evaluates whether LIF mRNA-loaded LNPs can increase endometrial LIF production in vitro.
MATERIALS AND METHODS: Endometrial biopsies were collected from six patients undergoing fertility treatment/preservation. In three patients, epithelial and stromal cells were isolated and cultured separately, then exposed to LNPs as distinct cell populations. In the remaining three patients, epithelial and stromal cells were isolated, then combined and cultured together for 14 days to form endometrial assembloids. LNPs containing LIF-mRNA were developed in collaboration with an affiliated lab. For each patient sample, conditions included an untreated control, a green fluorescent protein (GFP) mRNA LNP control (2ug), and LIF-mRNA LNPs at 1μg, 2μg, and 3μg. Media was collected at 24 and 48 hours from the separately cultured primary cells, and at 24, 48, and 72 hours from the assembloids. Enzyme-linked immunosorbent assay (ELISA) was performed to quantify LIF concentrations across time points and conditions, with expression normalized to total secreted protein. Data were analyzed using one-way ANOVA with Dunnett's correction for multiple comparisons.
RESULTS: In primary cells, stromal cells exhibited significantly higher LIF expression in the 1ug LIF and 2ug LIF groups at 24 hours compared to the untreated and GFP groups, with elevation persisting only in the 2 μg group at 48 hours. Epithelial cells showed increased LIF expression in the 2 ug LIF group at 24 hours and no significant differences at 48 hours. In assembloids, no differences were observed at 24 hours, but all treated groups showed significantly greater LIF expression than untreated controls at 48 and 72 hours.
CONCLUSIONS: Exposure of human endometrial cells to LNPs encapsulating LIF mRNA resulted in increased LIF expression in both primary epithelial and stromal cells and in assembloids, with more pronounced and durable effects observed in assembloids.
IMPACT STATEMENT: These findings establish proof-of-concept that mRNA-LNPs can be used to modulate endometrial protein expression in human tissue. This platform

has the potential for local delivery via intrauterine infusion, offering a novel therapeutic approach for conditions affected by abnormal or defective implantation.
SUPPORT: Penn RNA Innovation Pilot grant

P-53 12:00 PM Monday, October 26, 2026

ACINETOBACTER-DERIVED CADAVERINE IS ASSOCIATED WITH IMPAIRED SPERM MOTILITY. Sohei Kuribayashi, M.D, Ph.D[1], Shinnosuke Kuroda, M.D, Ph.D[2], Aaron Miller, PhD[3] and Scott Lundy, MD, PhD, HCLD[4], [1]Cleveland Clinic Foundation, Cleveland, OH, [2]Yokohama City University Medical Center, [3]Cleveland Clinic Foundation, [4]Cleveland Clinic Glickman Urological Institute

OBJECTIVE:
Varicocele is a major cause of male infertility, but the mechanisms linking varicocele-associated testicular dysfunction to impaired sperm quality remain unclear.
Recent evidence suggests that testicular microbial communities and their metabolites may modulate spermatogenic or post-testicular environments. The objective of this study is to investigate whether varicocele-associated microbial alterations are linked to reduced sperm motility and to identify candidate microbe-derived metabolites that mediate this effect.
MATERIALS AND METHODS:
Testes were collected from varicocele model rats (n=8) and non-operative controls (n=8).Male Sprague-Dawley rats (180–200 g) underwent laparotomy with induction of a left-sided varicocele using a validated partial renal vein and collateral vein ligation model.
Microbial composition was analyzed by 16S rRNA sequencing, and differential abundance was tested using DESeq2 with FDR correction.
For functional validation, two independent in-vitro assays were performed.
(i) Acinetobacter conditioned medium (CM) was prepared from A. nosocomialis culture supernatants after protein removal, and compared with process-matched control medium.
(ii) Cadaverine (10–10,000 μM) was applied to human donor spermatozoa, with a vehicle-matched control.
Sperm total and progressive motility were quantified at 0, 1, 2, 4 and 6 h.
RESULTS:
Differential-abundance analysis revealed that Acinetobacter was the only genus significantly enriched in varicocele testes (FDR $q<0.05$).
In vitro, Acinetobacter-CM significantly increased the decline in motility versus control medium (−41.6% vs −16.3%, $p<0.05$).
Metabolomic profiling of the CM identified cadaverine as a metabolite highly enriched in Acinetobacter cultures.
At 6 hours, cadaverine induced a concentration-dependent reduction in sperm motility. Motility decline became significantly greater at concentrations ≥ 1000 μM compared with vehicle (control: 25.6 ± 1.7 %; 1000 μM: –51.5 ± 6.1 %, $p = 0.0289$; 10,000 μM: –59.3 ± 13.4 %, $p = 0.0045$). In linear regression analysis, cadaverine caused a clear concentration-dependent reduction in motility, with higher cadaverine concentrations associated with progressively greater motility decline ($\beta = –8.9327$, $p < 0.001$, $R^2 = 0.7161$).
CONCLUSIONS:
The varicocele model demonstrated selective enrichment of Acinetobacter in testicular microbiota. Both Acinetobacter-derived supernatants and its metabolite cadaverine impaired sperm motility, demonstrating a dose-dependent toxicity.
IMPACT STATEMENT:
These findings support a preclinical microbiome-metabolite mechanism linking varicocele-associated dysbiosis to impaired sperm motility and identify cadaverine as a candidate target for further mechanistic investigation.
SUPPORT: None

PRE-CLINICAL & BASIC RESEARCH (7 OF 10)

P-54 11:15 AM Monday, October 26, 2026

MATERNAL DECIDUAL DYSFUNCTION IMPAIRS TROPHOBLAST DIFFERENTIATION IN SEVERE PREECLAMPSIA. Carla Montagud-Almarcha, M.Sc.[1], María Cristina Carbajo-García, Ph.D.[2], Nerea Castillo-Marco, Ph.D.[3], Irene Muñoz-Blat, Ph.D.[4], Sheila Ortega-Sanchís, M.Sc.[3], Teresa Cordero-Blat, Ph.D.[3], Paula Doria-Borrell, Ph.D.[5], Vicente Pérez-García, Ph.D.[5], Carlos Simon, MD; PhD[6] and Tamara Garrido-Gomez, Ph.D.[7], [1]Carlos Simón Foundation, INCLIVA Biomedical Research Institute, Valencia, Spain, [2]Carlos Simón Foundation; Department Pediatrics, Obstetrics and Gynecology, University of Valencia, Valencia, Spain; Department Pathology and Immunology, Faculty of Medicine, University of Geneva; Swiss Institute of Bioinformatics, Geneva, Switzerland, [3]Carlos Simón Foundation, Valencia, Spain, [4]Carlos Simón Foundation, Valencia, Spain, Valencia, Spain, [5]Severo Ochoa Centre for Molecular Biology, Madrid; Príncipe Felipe Research Center, Valencia, Spain, [6]Carlos Simón Foundation, INCLIVA Biomedical Research Institute, Valencia, Spain; Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA USA, [7]Carlos Simon Foundation, Valencia, Spain, Spain

OBJECTIVE: Severe preeclampsia (sPE) is associated with defective placentation. Maternal decidualization resistance (DR), a manifestation of progesterone resistance, is a hallmark of sPE. Here, we aimed to determine how the DR-associated decidual secretome disrupts trophoblast differentiation.

MATERIALS AND METHODS: Endometrial stromal cells from sPE and control subjects were decidualized in vitro (cAMP + MPA), and conditioned media were analyzed by mass spectrometry-based proteomics (n=36). Protein quantification was performed using MaxQuant and Perseus. To assess functional relevance on placentation, human trophoblast organoids, derived from trophoblast stem cells, were exposed to conditioned media (n=3 per group; total n=12) and analyzed by single-nucleus RNA sequencing. Cell-state composition was evaluated using scECODA, and differential gene expression analysis was conducted (adjusted $p<0.05$).

RESULTS:
Among 1,117 detected secreted proteins, 160 were significantly dysregulated in sPE during decidualization. The sPE secretome was enriched in factors associated with disease risk (e.g., LPA, TF), decidualization regulators (MFAP2, TRAP1), and immune mediators (C3, SERPIN family). Pathway analysis revealed upregulation of inflammatory and complement cascades, alongside downregulation of cytoskeletal organization, consistent with a dysfunctional maternal microenvironment.
Functionally, exposure of trophoblast organoids to decidualized control secretome promoted differentiation toward extravillous trophoblast (EVT) states. In contrast, the DR-derived sPE secretome disrupted this trajectory, leading to expansion of EVT progenitor and fusion-competent populations, with a concomitant reduction in mature EVT and proliferative villous cytotrophoblast (VCT) states, suggesting impaired acquisition of invasive capacity. This was accompanied by extensive transcriptional dysregulation, particularly in VCT cells (>2,200 differentially expressed genes), including upregulation of hypoxia-related pathways (*HIF1A*) and inflammatory signaling (*SOCS3*).

CONCLUSIONS: Decidualization resistance in sPE reprograms the maternal secretome, impairing trophoblast cell-state transitions and maturation. These findings provide functional evidence that maternal endometrial dysfunction directly contributes to defective placentation in sPE.

IMPACT STATEMENT: This study establishes a mechanistic link between maternal decidual dysfunction in sPE and abnormal trophoblast differentiation, impacting trophoblast invasion and positioning the endometrium as a key driver of placental pathology and a potential target for early risk stratification and preventive strategies in severe preeclampsia.
SUPPORT: This work has been funded by the Spanish National R&D Program trough grants PID2022-140744OB-I00 and PRE2022-000534, both funded by MICIU/AEI/10.13039/501100011033 and by the FEDER, EU and FSE+

P-55 11:30 AM Monday, October 26, 2026

GASDERMIN D-MEDIATED PYROPTOSIS UNDERLIES DEHYDROEPIANDROSTERONE-INDUCED POLYCYSTIC OVARY SYNDROME. Jiana Huang, M.M., Reproductive Medicine Research Center, Sixth Affiliated Hospital of Sun Yat-sen University

OBJECTIVE: Intestinal microflora disturbance is one of an important etiology of polycystic ovary syndrome (PCOS). The purpose of this study was to investigate the

mechanism of macrophage pyroptosis induced by intestinal microbiota disturbance in PCOS.
MATERIALS AND METHODS: The PCOS mouse model was established using dehydroepiandrosterone, and was studied by 16S rDNA sequencing, western blot, ELISA, Gsdmd gene knockout/oral pyroptotic inhibitors, single cell transcriptomics and translatomics analysis.
RESULTS: PCOS mice showed abnormal estrous cycle, elevated serum testosterone and polycystic ovaries. Fecal 16S rDNA sequencing showed that Muribaculacea (26.76%), and Lactobacillus (40.98%) were the most abundant microbe in the intestinal tracts of control mice and PCOS mice, respectively. Difference analysis showed a significant decrease in the abundance of intestinal probiotics Akkermansia and a significant increase in Gram-negative bacteria (Desulfovibrio and Burkholderia) in PCOS mice. Intestinal microbial disturbance in PCOS mice was associated with increased serum lipopolysaccharide (LPS). LPS intraperitoneal injection can induce pyroptosis of ovarian macrophages, which also exists in the ovaries of PCOS mice. The cleavage of GSDMD protein is the final key step in pyroptosis of macrophages. Gsdmd knockout ameliorated PCOS in mice. Oral administration of pyroptotic inhibitors disulfiram and metformin can increase the abundance of intestinal Akkermansia, inhibit pyroptosis of ovarian macrophages and ameliorated PCOS in PCOS group mice. Mechanically, transcriptome and translatome sequencing of primary granulosa cells showed that pyroptosis of macrophages disrupted estrogen production and promoted granulosa cell apoptosis.
CONCLUSIONS: This study revealed that macrophage pyroptosis induced by intestinal flora disorder can lead to the occurrence of PCOS through granulosa cell apoptosis and estrogen synthesis dysfunction.
IMPACT STATEMENT: Macrophage pyroptotic inhibitors may be a potential therapeutic strategy for PCOS.

P-56 11:45 AM Monday, October 26, 2026

MULTIOMICS ANALYSIS REVEALS TRANSLATIONAL LANDSCAPES AND REGULATIONS IN MOUSE AND HUMAN OOCYTE AGING. Jiana Huang, M.M., Reproductive Medicine Research Center, Sixth Affiliated Hospital of Sun Yat-sen University

OBJECTIVE: Abnormal resumption of meiosis and decreased oocyte quality are hallmarks of maternal aging and ultimately lead to infertility. Transcriptional silencing makes translational control an urgent task during meiosis resumption in maternal aging. However, insights into aging-related translational characteristics and underlying mechanisms are limited. We aimed to investigate the precise translational landscapes and the functions of translational regulatory factors during oocyte aging by analyzing the single-cell translatome and transcriptome in GV-stage oocytes from young and aged female mice/humans. Additionally, the conservation and differences of oocyte aging between two species are investigated via integrated analysis of the translatomics and translational regulators alterations during oocyte aging from two species, which may help to provide specific intervention strategy of oocyte aging to two species.
MATERIALS AND METHODS: Here, using multi-omics analysis of oocytes, including single-cell proteomics, ultrasensitive translatomics and transcriptomics, we profiled the multi-omics landscapes of mouse and human oocyte aging. The role and mechanisms underlying oocyte aging were explored and verified using immunofluorescence staining, electroporation, RNA immunoprecipitation (RIP) sequencing, quantitative PCR (qPCR), methylated RIP, and dual-luciferase reporter assay etc..
RESULTS: We found that translatomics during aging was related to changes in the proteome and revealed decreased translational efficiency with aging phenotypes in mouse oocytes. Notably, the translational efficiency decrease was associated with the N6-methyladenosine (m6A) modification of transcripts. We clarified that the expression of the m6A reader YTH N6-methyladenosine RNA-binding protein 3 (YTHDF3) was significantly decreased in aged oocytes and inhibited oocyte meiotic maturation. YTHDF3 intervention perturbed the translatome of oocytes and suppressed the translational efficiency. We further identified Hells as an aging-associated maternal factor whose translation was suppressed during oocyte aging in a YTHDF3-dependent manner. Moreover, we profiled the translational landscape in human oocyte aging, and observed the same translational changes of DNA methylation regulatory enzymes and different regulation of histone modifications between human and mice oocytes aging. In particular, translation efficiency was not changed in human oocytes aging. Due to translational silence of YTHDF3 in human oocytes, translation activity was not associated with m6A modification, but was related to alternative splicing factors, such as SRSF6.
CONCLUSIONS: Together, our findings profiled the specific translational landscapes during oocyte aging in mice and human, and uncovered non-conservative regulators on translation control in meiosis resumption and maternal aging.
IMPACT STATEMENT: This study provides novel insights into the molecular mechanisms underlying oocyte aging and suggests a new potential interventional strategy for improving aging oocyte quality.

P-57 12:00 PM Monday, October 26, 2026

PRECLINICAL EVALUATION OF A FIRST-IN-CLASS THERAPEUTIC FOR REDUCING MEIOTIC ANEUPLOIDY IN HUMAN OOCYTES. Eirini Bellou, PhD[1], Emily Walker, MSC[1], Mason B. Milburn, BSc[2], Elizabeth A Norris, BSc[3], Xavier Vinals Gonzalez, PhD[4], Sarah Whalley, BSc[1], Alison J Campbell, B.SC., PH.D.[5], Chloe Charalambous, PhD[1], Jordan Abdi, MD[1] and Alexandre Webster, PhD[1], [1]U-Ploid Biotechnologies ltd., Oxford, United Kingdom, [2]Care Fertility, Leeds, United Kingdom, [3]CARE Fertility, [4]Aria Fertility, London, United Kingdom, [5]CARE Fertility, Nottingham, Nottingham, United Kingdom

OBJECTIVE: Meiotic aneuploidy is the primary cause of miscarriage and infertility, markedly reducing success rates of In Vitro Fertilization (IVF). Chromosomal errors in oocytes increase exponentially with advancing maternal age. The most prevalent error-type associated with age-related meiotic aneuploidy is premature separation of sister chromatids (PSSC), which is primarily driven by the gradual and irreversible loss of cohesin from chromosomes. Extensive candidate evaluation in the mouse model led to the identification of a first-in-class therapeutic (LYVANTA) designed to prevent age-related meiotic aneuploidy. This study presents its preclinical evaluation in human oocytes.
MATERIALS AND METHODS: This is an open-label, controlled, ethically approved study. Participants aged 18 years old and above, undergoing oocyte retrieval and denudation for subsequent treatment, were enrolled in the study following informed consent. Immature oocytes (germinal vesicle [GV], and metaphase I [MI] stages) unsuitable for clinical use were donated to the study. Eligible immature oocytes were cryopreserved and shipped to the lab for downstream processing. Upon receipt, oocytes were warmed and transferred to culture media. Oocytes from one participant were distributed between control and treated groups; for odd numbers of cells, the treatment group was prioritized to maximise statistical power for the primary endpoint. Oocytes in the treatment group were microinjected with 0.7 ng of LYVANTA. Subsequently all oocytes were matured in vitro, and metaphase II (MII) eggs were fixed and stained by immunofluorescence. High-resolution imaging was performed using super-resolution ZEISS confocal microscopy. The number of PSSC events were quantified by kinetochore analysis using Imaris software. Statistical comparisons of chromosome error rates were performed using Fisher's exact test.
RESULTS: The majority of participants in the study were in the 30-34 and 35-39 year age groups. The number of immature oocytes donated per patient exhibited a decline with increasing age. LYVANTA demonstrated robust translation to human oocytes, as evidenced by the localization of the therapeutic to the intended target site. This finding is consistent with its design and aligns with prior verification in mouse oocytes. Furthermore, the efficacy of the therapeutic was confirmed by demonstrating that LYVANTA lowers PSSC error rates in treated human oocytes when compared to untreated control oocytes.
CONCLUSIONS: Our results demonstrate that LYVANTA reduces PSSC error rates in human oocytes. These preclinical findings support further development of the therapeutic, including studies to establish safety and characterize the mechanism of action, before progressing to clinical trials.
IMPACT STATEMENT: LYVANTA represents a promising therapeutic approach to reduce meiotic aneuploidy in human oocytes, with the potential to meaningfully improve IVF outcomes for patients affected by age-related aneuploidy.
SUPPORT: Sponsored by U-Ploid Biotechnologies.

PRE-CLINICAL & BASIC RESEARCH (8 OF 10)

P-58 11:15 AM Monday, October 26, 2026

HUMAN BLASTOIDS AND BLASTOCYSTS IN 2D AND 3D ENDOMETRIAL CO-CULTURES REVEAL FGF DEPENDENT CONTROL OF HUMAN IMPLANTATION DYNAMICS. Toshihiko Ezashi, PhD[1], Hao Wu, Ph.D.[2], Maria Carolina Zimara, M.S.[1], Jun Wu, PH.D.[2], Mandy Katz-Jaffe, PhD[1], William B Schoolcraft, M.D.[3] and Ye Yuan, PH.D.[3], [1]CCRM Colorado, Lone Tree, CO, [2]UT Southwestern Medical Center, Dallas, TX, [3]Colorado Center for Reproductive Medicine, Lone Tree, CO

OBJECTIVE:
Understanding of human implantation and the factors influencing pregnancy initiation remains limited due to the inaccessibility of implanting embryos and the lack of robust experimental models. Recent advances have enabled the generation of blastoids from pluripotent stem cells (PSCs) to model human blastocysts. In parallel, both 2D and 3D primary endometrial cell culture systems have been developed to reconstruct the interface with embryo. In this study, we aimed to compare blastoids and blastocysts in 2D and 3D endometrial culture systems to evaluate the applicability of these platforms as models of human implantation.
MATERIALS AND METHODS:
Blastoids (n = 230 control; n = 240 for inhibitor) were generated from human PSC lines (WIBR3 and WA09) as previously described (*Cell Stem Cell* 2023, 30:1246). Human embryos (5–6 d.p.f.; n = 24 and 20) and primary endometrial stromal and epithelial cells obtained from patient biopsies during oocyte retrieval were used with informed consent and institutional approval. Primary epithelial cells for 2D cultures (*Nat Protoc.* 2023, 18:1584) and stromal/epithelial cells for 3D scaffold systems were prepared as described (*Cell* 2026, 189:87).
RESULTS:
In 2D cultures, both blastoids and blastocysts initiated contact with epithelial cells via the polar trophectoderm (TE), consistent with in vivo implantation orientation. However, blastocysts required a longer time to reach apposition (2 days) compared to blastoids (1 day), reflecting differences in TE developmental status. Adhesion occurred in the most of structures (~83%) at day 2 (blastoids) and day 3 (blastocysts). Invasion could not be assessed in the 2D system.
In the 3D system, TE-mediated apposition was preserved, and blastocysts exhibited quicker apposition (day 1). Progression through implantation stages was as follows (days):

- **2D system:**
  - Blastoid: Apposition (1), Adhesion (2), Invasion (NA)

- Blastocyst: Apposition (2), Adhesion (3), Invasion (NA)

- **3D system:**
  - Blastoid: Apposition (1), Adhesion (2), Invasion (3)
  - Blastocyst: Apposition (1), Adhesion (2–3), Invasion (4–5)

  To assess the role of FGF signaling, 1 μM PD173074 (FGFR inhibitor) was applied. In 2D, blastoid apposition was significantly reduced after 1 day ($p < 0.01$; 62% of control). In 3D, apposition occurred within 1 day, but adhesion and invasion were delayed. Blastocysts in 3D also reduced apposition (82% decrease at day 2). Control embryos began merging with the epithelial layer and showed cavity collapse by day 2, whereas FGFR-inhibited embryos retained cavities and exhibited darker morphology, with delayed adhesion (by ~1 day).

CONCLUSIONS:
Blastoids exhibit distinct differences from blastocysts in implantation dynamics across 2D and 3D systems; however, both models show consistent responses to FGFR inhibition. These findings support the utility of combined blastoid and endometrial culture platforms as experimental models for studying human implantation mechanisms.
IMPACT STATEMENT: It establishes a physiologically relevant in vitro platform to investigate human implantation for their regulatory pathways with scalable approaches.
SUPPORT: Supported by an internal fund from Colorado Center for Reproductive Medicine.
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P-59 11:30 AM Monday, October 26, 2026

DOWNREGULATION OF LET-7b-5b IN 1st TRIMESTER TROPHOBLAST COMPROMISES TROPHOBLAST-VASCULAR INTERACTIONS, SETTING THE STAGE FOR FUTURE RISK OF PRE-ECLAMPSIA.
Emily Siegel, MS[1], Aliaksandr Kishchanka, MD[2], Vikki M Abrahams, PhD[2] and Lubna Pal, M.B.B.S.[2], [1]Milford, CT, [2]Yale University, New Haven, CT

OBJECTIVE: Anti-migratory and anti-angiogenic trophoblast phenotype and altered spiral arteriole remodeling are considered seminal pathogenic processes that underlie development of hypertensive disorders of pregnancy, including preeclampsia. In patients with preeclampsia, placental Let-7b-5p expression is reduced. We previously identified facilitatory effects of Let7b-5p modulation on first trimester trophoblast biology. Inhibition of Let-7b-5p resulted in decreased trophoblast migration and elevated sFlt-1 release. The goal of this current study was to determine if this Let-7b-5p-associated anti-migratory and anti-angiogenic trophoblast profile was reflected in reduced trophoblast interactions with human endometrial endothelial cells that mimic the process of vascular remodeling at the earliest steps in placentation.
MATERIALS AND METHODS: Normal spiral artery transformation can be modeled *in vitro* utilizing human endometrial endothelial cells (HEECs) that in Matrigel form tube-like structures resembling vessels. When trophoblast cells are introduced, they invade into these tube structures and eventually replace the endothelial cells. Disruptions in this process are observable and quantifiable. HEECs were stained with the red-fluorescent dye, PKH-26, seeded into Matrigel, and cultured until tube-like structures were observed. The human first trimester trophoblast cell line, Sw.71, was transfected with a scramble control or a Let-7b-5p inhibitor, stained with the green-fluorescent dye, PKH-67, and then placed on top of the Matrigel. The co-culture system was incubated for 24 hours and then imaged by fluorescent microscopy. Red and green fluorescence signals were quantified.
RESULTS: Compared to trophoblast cells transfected with a scramble control, trophoblasts transfected with the Let-7b-5p inhibitor showed less invasion into HEEC tubes, resulting in significantly less green fluorescence ($p<0.05$). There were also significantly less red HEEC signals under trophoblast Let-7b-5p inhibitor conditions ($p<0.05$), suggesting destabilization of the HEEC tubes when trophoblast invasion was reduced (Figure).
CONCLUSIONS: Using an *in vitro* model of spiral artery transformation we have identified Let7b-5p in the first trimester trophoblast as being critical to normal trophoblast-vascular interactions and spiral artery remodeling. Reduced trophoblast Let-7b-5p expression blunts this important placentation process. Thus, reduced trophoblast Let-7b-5p may give rise to preeclampsia in part through this mechanism.
IMPACT STATEMENT: Early pregnancy dysregulation of placental Let7b-5p may be involved in the pathogenesis of preeclampsia, and merits further interrogation as a potential therapeutic target towards PEC risk reduction.
SUPPORT: ASRM Discovery & Innovation Award (to LP).
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P-60 11:45 AM Monday, October 26, 2026

WILDFIRE-EMITTED PARTICULATE MATTER INDUCES OVARIAN HYPERANDROGENISM THROUGH ARYL HYDROCARBON RECEPTOR ACTIVATION.
Kuhelika Mali, MHS[1], Delong Zhang, MS[2], Tingjie Zhan, PhD[3], Lila Bazina, MS[2], Pawat Pattarawat, PhD[1], Qiang Zhang, PhD[4], Audrey J Gaskins, ScD[5], Andrew Gow, PhD[2], Shuo Xiao, MBBS, PhD[6] and Philip Demokritou, PhD[2], [1]Rutgers University, Piscataway, NJ, [2]Rutgers University, [3]Zhuhai, China, [4]Emory University, [5]Emory University Rollins School of Public Health, Department of Epidemiology, Atlanta, GA, [6]PISCATAWAY, NJ

OBJECTIVE:
Wildfires have become more frequent and intense worldwide, and this trend is only projected to continue in the coming years. Wildfire-emitted particulate matter (WFPM) can be more toxic than urban background PM due to its greater content of nano-sized PM ($WFPM_{0.1}$) and polar organic compounds, including polycyclic aromatic hydrocarbons (PAHs). While exposure to WFPM has been linked to cardiovascular and respiratory diseases, its impact on female reproductive health remains elusive.
MATERIALS AND METHODS:
8-week-old CD-1 female mice were exposed to 443 μg lab-synthesized $WFPM_{0.1}$ (LS-$WFPM_{0.1}$) in 50 μl water once through intratracheal lung instillation. Blood sera were collected on days 3, and 7 post-instillation for measuring sex hormones using ELSIA. Late-stage antral follicles were isolated from ovaries, and RT-qPCR was performed to analyze the expression of genes involved in follicle development, steroidogenesis, and aryl hydrocarbon receptor (AhR) signaling, given that PAHs are known AhR activators with endocrine-disrupting potential. A 3D hydrogel encapsulated in vitro follicle growth (eIVFG) system was next used to examine the direct ovarian impacts of LS-$WFPM_{0.1}$ and real-world Canadian $WFPM_{0.1}$ (C-$WFPM_{0.1}$) collected during the June 2023 Canadian wildfires. Immature mouse follicles were cultured in eIVFG for 6 days and treated with C- and LS-$WFPM_{0.1}$ at 0, 1, 10, and 100 μg/mL from days 4-6 during follicle maturation. Conditioned media were tested for sex hormones, and follicles were collected on day 6 to test the same set of genes as in our *in vivo* model. Single-follicle and single oocyte RNA-seq were also performed to analyze transcriptomic changes.
RESULTS:
Intratracheal exposure to an environmentally relevant dose of LS-$WFPM_{0.1}$ disrupted mouse estrous cycles and elevated serum concentrations of testosterone. RT-qPCR and RNA-sequencing (RNA-seq) analyses revealed altered expression of steroidogenic genes, transcriptomic changes, and activation of aryl hydrocarbon receptor (AhR) in antral follicles from mice treated with LS-$WFPM_{0.1}$. LS-$WFPM_{0.1}$ consistently increased testosterone secretion and stimulated genes related to androgen synthesis and AhR *in vitro*. Single-follicle and single-oocyte RNA-seq analysis identified differentially expressed genes related to inflammation in follicular somatic cells and mitochondrial health and maternal effect genes in oocytes. Both C-$WFPM_{0.1}$ and benzo[a]pyrene (BaP, a high-molecular-weight PAH), reproduced these ovarian defects. Mechanistically, AhR inhibition reversed ovarian hyperandrogenism induced by $WFPM_{0.1}$.
CONCLUSIONS:
Together, our research findings suggest that exposure to $WFPM_{0.1}$ disrupts ovarian hormone secretion by inducing hyperandrogenism via AhR activation, underscoring an urgent need for further mechanistic and epidemiological studies to define the reproductive risks of wildfire smoke exposure in humans.
IMPACT STATEMENT:
These results are crucial for developing strategies to protect women's reproductive health and tailor guidelines for women seeking infertility treatment during wildfire seasons.
SUPPORT: This work was supported by the National Institutes of Health (NIH) R01ES032144, R01ES037796, and P30ES005022 to S. Xiao; 1R01ES037796-01, 1R21ES038066-01, and National Science Foundation (NSF) 2524102 to P. Demokritou.

P-61 12:00 PM Monday, October 26, 2026

FIRST REPORT OF AN EFFICIENT SPERM GENOME EDITING TECHNIQUE BY EXOGENOUS HOMOLOG DIRECTED REPAIR TEMPLATE.
Gabriela Beroukhim, M.D.[1], Angela Bryanne De Jesus, B.A.[2], Philip Xie, B.SC.[2], Zev Rosenwaks, M.D.[2] and Gianpiero D. Palermo, M.D., PH.D.[2], [1]The Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, New York, NY, [2]The Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY

OBJECTIVE: Attempts at embryo genome editing are afflicted by mosaicism, loss of heterozygosity, inability to correct homozygous mutations, and ethical concerns regarding embryo manipulation. To circumvent these challenges, we aimed at correcting a pathogenic mutation in the haploid sperm genome prior to fertilization using a CRISPR–Cas9–based approach with an exogenous single stranded DNA (ssDNA) template incorporating a Cas9-targeting sequence (CTS) designed to enhance homology directed repair (HDR).
MATERIALS AND METHODS: A total of 263 mature oocytes from 9 wildtype B6D2F1 mice were enucleated with 96% survival and microinjected with a single spermatozoon from homozygous B6.129S6(Cg)-$Rho^{tm1.1Kpal}$/J mice carrying a single base pair substitution in the *Rho* gene responsible for retinitis pigmentosa. During piezo-ICSI, Cas9, single guide RNA, and ssDNA template incorporating a CTS to enhance localization were co-injected into enucleated oocytes. A cohort of enucleated oocytes were allocated for injection with CRISPR-Cas9 without a CTS as controls. Ooplasm-mediated sperm decondensation enabled chromatin remodeling to facilitate genome editing. Haploid androgenetic embryos were cultured to the 8-cell stage, and androgenetic blastomeres were assessed for gene editing using long-read NGS-based PCR sequencing and the remaining blastomeres were inseminated into activated MII oocytes to generate diploid embryos.

RESULTS: Following enucleation, oocytes were injected with a sperm nucleus and loaded with ssDNA without the CTS. Piezo-ICSI survival was 36.6% (86/235), and androgenetic zygotes developed in 64.0% (55/86), with cleavage in 83.6% (46/55). Gene targeting occurred in 86.7% (26/30), with 92.3% (24/26) repaired via NHEJ and only 7.7% (2/26) via HDR.
With the CTS design, ICSI survival was 38.6% (90/233). Sperm decondensation (1PN) occurred in 62.2% (56/90), and 96.4% (54/56) cleaved, comparable to the control. Sequencing of 21 androgenetic embryos showed gene targeting in 81.0% (17/21), with repair achieved by NHEJ in 17.6% (3/17). Interestingly, HDR correction of the C→A mutation occurred with a significantly improved rate at 82.4% (14/17) compared to control (P<0.0001). Among the CTS-HDR corrected androgenetic embryos, 71.4% (10/14) of the haploid constructs displayed complete and definite conversion to the wild type, while 28.6% (4/14) of them, despite proper C→A conversion, reported unintended indels adjacent to the target site.
Individual pseudo-blastomeres from twelve haploid androgenetic embryos were used to inseminate 22 intact oocytes to restore diploidy, yielding ten diploid WT corrected blastocysts.
CONCLUSIONS: A modified CRISPR-Cas9 strategy with incorporation of a CTS with an exogenous ssDNA template promoted HDR over NHEJ to correct a pathologic mutation in a spermatozoon. These findings represent the first demonstration of intended gene correction in the haploid genome at a single base pair level.
IMPACT STATEMENT: A CTS-enhanced exogenous ssDNA design proves feasible and effective in promoting HDR of the haploid sperm genome, representing a step toward intended pre-fertilization gene editing and prevention of heritable diseases transmission.

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EARLY PREGNANCY PLASMA PROTEOMIC SIGNATURES DIFFER BETWEEN CORPUS LUTEUM ABSENT AND CORPUS LUTEUM PRESENT PREGNANCIES: A PROSPECTIVE COHORT STUDY. Reilly Bealer, MD[1], Jaime A Roura-Monllor, M.D., M.S.[1], Caitlin Boylan, B.S., MS[2], Bruce Pier, M.D.[3] and Kendall Bielak, MD[2], [1]University of North Carolina at Chapel Hill, Chapel Hill, NC, [2]University of North Carolina, Raleigh, NC, [3]University of North Carolina at Chapel Hill, Division of Reproductive Endocrinology and Infertility, Chapel Hill, NC

OBJECTIVE: The objective of this study was to characterize differential maternal serum protein expression between pregnancies with and without a corpus luteum (CL). Higher risk of hypertensive disorders in pregnancy after programmed frozen embryo transfers (P-FET) are thought to be related to the lack of factors associated with placentation and vascular health that are secreted by the CL. We hypothesized differential protein expression patterns among pregnancies with and without a CL.
MATERIALS AND METHODS: Maternal serum was prospectively collected from 15 subjects across three cohorts: unassisted conception (UC) (n=5), modified natural-cycle FET (NC-FET) (n=5), and P-FET (n=5) at the time of human chorionic gonadotropin measurement (≈ 4-5 weeks of gestation). Mass spectrometry proteomic profiling was performed. Differentially expressed proteins (DEPs) were evaluated across all three cohorts; proteins were considered biologically significant for |Log2 fold change (FC)| ≥ 0.6 and p < 0.05 with correction for multiple hypothesis testing. Mean expression patterns were compared using t-tests Spectronaut software.
RESULTS: Proteomic profiling identified 902 serum proteins across cohorts. The greatest difference was seen between P-FET and UC with 32 DEPs. Compared to P-FET, proteins that were differentially expressed higher in both UC and NC-FET were SERPINA7 (Log2FC 0.79 & 0.76), IGKV2-30 (Log2FC 1.12 & 0.82), CETP (Log2FC 0.92 & 0.65), and FETUB (Log2FC 0.74 & 0.74, respectively). Proteins expressed lower in P-FET cycles compared to both UC and NC-FET included CHGA (Log2FC -1.16 & -1.63), PGLYRP2 (Log2FC -0.90 & -0.74), and ORM2 (Log2FC -0.60 & -0.81, respectively) –all with p values <0.05. Associated functions of proteins with respect to increased expression in P-FET pregnancies were hormone transport, adaptive immunity, lipid transfer, and fertility-related glycoprotein, while associated functions of proteins with decreased expression in P-FET pregnancies were vascular tone regulation, innate immunity function, and immune modulation. Multiple hypothesis testing demonstrated no adjusted p values < 0.05.
CONCLUSIONS: P-FET cycles may exhibit a distinct maternal serum proteomic signature compared to both unassisted conception and NC-FET where a CL is present with possible differences concentrated in proteins governing placental immune tolerance, extracellular matrix integrity, and vascular development. The exogenous hormonal environment of programmed cycles that lack a CL appears to meaningfully alter the maternal protein milieu in ways that may underlie differences in obstetric outcomes associated with cycle type. Sampling maternal plasma at such early gestations may account for changes our study noted compared to other groups. Our study is limited by our small sample size.
IMPACT STATEMENT: This work provides novel proteomic characterization of maternal serum stratified by FET cycle type, establishing a molecular basis for differences between CL absent and CL present pregnancies, laying the groundwork for targeted investigation into cycle-specific risks and future therapeutic strategies.

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ENDOMETRIOSIS EXACERBATES RHEUMATOID ARTHRITIS VIA ΓΔ T CELLS IN A MOUSE MODEL. Shant Apelian, MD[1], Ramanaiah Mamillapalli, Ph.D.[1], Clement Adedeji, BS[2], Nimisha Gawde, MD[3], Yuhua Yue, MS[4], Navneet Kaur, MS[5], Sang Kim, MD, PhD[6] and Hugh S Taylor, M.D.[7], [1]Yale university School of Medicine, New Haven, CT, [2]Yale School of Medicine, New Haven, CT, [3]Yale University School of Medicine, New Haven, CT, [4]Yale School of Public Health, New Haven, CT, [5]postgraduate, West Haven, CT, [6]Assistant Professor, New Haven, CT, [7]Yale University, New Haven, CT

OBJECTIVE: Endometriosis (Endo) and rheumatoid arthritis (RA) are both chronic inflammatory disorders characterized by immune dysregulation. Endo consists of ectopic endometrial-like tissue, while RA is an autoimmune disease marked by joint inflammation and destruction. Epidemiologic studies suggest an association, but mechanisms remain unclear. We hypothesized that Endo exacerbates arthritis via immune-mediated pathways and tested this in a mouse model.
MATERIALS AND METHODS: Female C57BL/6 mice were assigned to three groups (n=10/group): Sham, RA, and Endo+RA. Endo was induced by suturing donor uterine tissue fragments into the peritoneal cavity, and collagen-induced arthritis (CIA) was initiated by two subcutaneous injections of type II collagen. Arthritis severity was assessed using clinical and histological scores, along with immunologic assessments, including serum anti-collagen II antibodies levels (ELISA) and immune cell subsets analysis (flow cytometry). To assess γδ T-cell effects, a second in vivo experiment was conducted consisting of five groups (n=10/group): Sham, RA+anti-IgG, Endo+RA+anti-IgG, RA+anti-γδ T cell receptor (TCR), and Endo+RA+anti-γδ TCR. The same clinical, histological, and immunologic assessments were performed, and joint immunofluorescence (IF) evaluated local γδ T-cell infiltration.
RESULTS: Endo+RA showed a 40% worse clinical arthritis score and elevated histological score compared with RA alone (p=0.02). No significant differences were observed between these groups in serum anti-collagen II antibody levels or in immune profiling of major innate or adaptive immune cell populations, including neutrophils, macrophages, dendritic cells, B cells, NK cells, and conventional $CD4^+$ and $CD8^+$ T-cells. In contrast, γδ T-cell analysis demonstrated a significant increase in proinflammatory subsets in Endo+RA compared with RA alone; these included IFN-γ^+IL-17^+ γδ T (p=0.02), IFN-γ^+IL-17^+IL-21^+ γδ T (p=0.01), and IFN-γ^+IL-17^+TNF-α^+ γδ T (p=0.05). In vivo depletion of γδ T cells in Endo+RA significantly reduced clinical arthritis score and histological score (p=0.005) compared with anti-IgG, and eliminated the differences between RA and Endo+RA. This was accompanied by a significant reduction in γδ T-cell subtypes in Endo+RA anti-γδ T, including IFN-γ^+IL-17^+ $CD3^+$ (p=0.02) and IFN-γ^+IL-17^+TNF-α^+ $CD3^+$ (p=0.007), compared with Endo+RA anti-IgG. IF showed a decrease in local γδ T-cell infiltration.
CONCLUSIONS: Endo exacerbates arthritis severity in a mouse model. This effect is mediated by proinflammatory γδ T cells, as demonstrated by elimination of the effect of Endo on RA after γδ T-cell depletion. Endometriosis leads to systemic alterations in cellular immunity that may account for the association between Endo and several inflammatory/autoimmune diseases.
IMPACT STATEMENT: The γδ T cell-mediated mechanistic link between Endo and RA highlights the role of cellular immunity in disease interaction. These data suggest the potential for γδ T cell-targeted approaches to modulate disease severity and support earlier monitoring for RA in patients with Endo.

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SPATIAL TRANSCRIPTOMICS OF THE HUMAN POSTPARTUM UTERUS IDENTIFIES CELLULAR AND MOLECULAR PREDICTORS OF DEVELOPING ASHERMAN'S SYNDROME FOLLOWING DILATION AND CURETTAGE (D&C). Seth Jacob Barishansky, M.D., MSc[1], Sydney Bell, B.S.A[2], Tal Zeevi, PH.D.[1], Jialyu Huang, M.D.[3], Maria Natalia Chaves Rivera, MD[1], Natalia Buza, MD[3], Aya Tal, PhD[2], Harvey J Kliman, M.D., PH.D.[2] and Reshef Tal, M.D., PH.D.[2], [1]Yale University, New Haven, CT, [2]Yale School of Medicine, New Haven, CT, [3]Yale School of Medicine

OBJECTIVE:
To spatiotemporally characterize the endometrial molecular landscape at the time of the inciting postpartum dilation and curettage (D&C) event in women who subsequently developed Asherman's syndrome (AS) versus those who did not.
MATERIALS AND METHODS:
This retrospective case-control study utilized archived formalin-fixed paraffin-embedded postpartum D&C tissue from women who later developed AS versus those who did not. Clinical review was conducted to screen AS and non-AS control patients who were matched for timing of D&C (ranging from postpartum day 8 to 60). Histology assessment of tissue blocks was performed independently by two pathologists. Spatial transcriptomic profiling was performed (n=17; 8 cases, 9 controls) using a 10x Genomics Xenium custom 463 gene panel with 30 protein panel. Raw cell-by-gene matrices were processed and analyzed with scanpy (v1.11.5).
RESULTS:
Our dataset included a total of 1,500,803 cells after filtration. Unsupervised clustering identified 9 spatially-defined cell clusters: stromal fibroblasts (FB) (43.5%), pericytes (28.3%), endothelial cells (6.9%), T cells (6.9%), macrophages (6.5%), neutrophils (3.8%), glandular epithelium (3.5%), trophoblasts (0.7%), and stromal progenitors (0.001%). Spatial proteomics corroborated cell identities. Differential gene expression (DEG) analysis between AS and controls revealed a striking, convergent pan-tissue molecular signature consistently dysregulated across multiple cellular compartments. Macrophages in AS demonstrated a profibrotic shift (SPP1↑) along with overexpression of multiple proinflammatory chemokines (IL1B↑, CCL3↑, TNF↑) and downregulation of anti-inflammatory M2 polarization (CD163↓). Stromal FB in AS showed replacement of normal $COL1A1^+$ FB with a $TCF21^+$ activated state concurrent with collagen catabolism (COL1A1↓, COL5A1↓) and increased extracellular matrix (ECM) degradation (MMP1↑, MMP14↑, TIMP1↓). Glandular epithelium showed epithelial–mesenchymal transition (CDH2↑, EPCAM↓) and cell cycle arrest (CDKN1C↑, MKI67↓), with failure of MMP7-dependent ECM remodeling, collectively defining a non-regenerative fibrotic healing trajectory (all adjusted p<0.005). Pathway analysis of DEGs revealed ‘ECM degradation’ and ‘cellular response to stress’ among the top pathways in AS (p<0.005). Examination

of spatial localization by neighborhood analysis revealed a trend of increased presence of activated FB near macrophages and epithelial cells in AS cases vs controls indicating their increased cross-talk.
CONCLUSIONS:
This first study of spatial transcriptomics at subcellular resolution of the human postpartum endometrium from timing of inciting D&C provides novel mechanistic insights into the cellular and molecular uterine environment that predisposes towards the development of AS in response to D&C, revealing new cellular targets for intervention in the critical window before irreversible fibrosis is established.
IMPACT STATEMENT:
Our findings challenge the prevailing view that AS risk is determined solely by the extent of mechanical trauma during D&C, instead revealing a molecular predisposition program active at the time of inciting D&C event.
SUPPORT: This study was awarded an R01 sponsor: 1R01HD109326
Sponsor(s): Eunice Kennedy Shriver National Institute of Child Health & Human Development

PRE-CLINICAL & BASIC RESEARCH (10 OF 10)

P-65 11:15 AM Monday, October 26, 2026

LONGITUDINAL STRAIN-LEVEL METAGENOMICS REVEALS RECIPROCAL *LACTOBACILLUS* DYNAMICS AND OUTCOME-ASSOCIATED PROTEIN VARIANTS DURING IVF TREATMENT. Peigen Chen, M.D.[1], Guihua Liu, Ph.D.[2] and Xing Yang, Ph.D.[2], [1]Reproductive Medicine Research Center, Sixth Affiliated Hospital of Sun Yat-Sen University, Guangzhou, China, [2]The Sixth Affiliated Hospital of Sun Yat-sen University, Guangzhou, China

OBJECTIVE: To characterize strain-level vaginal microbiome dynamics during IVF/ICSI treatment and identify molecular mechanisms and predictive biomarkers associated with pregnancy outcomes.
MATERIALS AND METHODS: We performed longitudinal shotgun metagenomic sequencing of 186 vaginal samples from 41 women undergoing IVF/ICSI across six timepoints (pre-stimulation baseline through pregnancy testing; 22 Success, 19 Failed). Strain-level analysis was conducted using inStrain to detect strain replacement events and quantify selection pressure (pN/pS ratios). Functional protein analysis integrated AlphaFold3 structural modeling with four orthogonal validation methods (FoldX, ESM-1v, ConSurf, molecular dynamics). A predictive model was developed from baseline SNV markers and externally validated in an independent cohort (n=69) sequenced on a multiplex amplicon PCR platform. Statistical comparisons used Wilcoxon rank-sum tests, with significance set at $p<0.05$.
RESULTS: Strain-level analysis revealed reciprocal Lactobacillus dynamics: L. crispatus genomic stability and L. iners adaptive flexibility both associated with pregnancy success. Two outcome-associated protein variants were identified. Inerolysin S429P, exclusive to the Success group (11 vs 0 events, p=0.0009), was predicted to disrupt cholesterol-binding and attenuate cytolytic activity. L-LDH P169L (Success-specific) was predicted to enhance catalytic efficiency for L-lactate production. Critically, protective variants were enriched at baseline rather than arising during treatment, supporting a genetic predisposition model. The Protective Strain Score was significantly higher in the Success group (7.05 vs 3.44, p=0.0006), and the Vulnerability Index showed strong discrimination (Success 0.44 vs Failed 0.68, $p<0.0001$). An 18-SNV baseline prediction panel achieved a discovery AUC of 0.945 and an external validation AUC of 0.784 (sensitivity 80.6%, specificity 78.8%). Risk stratification showed pregnancy rates of 21.2% (high-risk, no protective SNVs) versus 86.4% (medium-risk, one protective SNV).
CONCLUSIONS: Pre-existing strain-level genetic composition of the vaginal microbiome, rather than species-level abundance alone, is associated with pregnancy outcomes during IVF/ICSI. The reciprocal pattern of attenuated L. iners virulence and enhanced L. crispatus metabolic function in successful cycles suggests mechanistic targets for intervention. Baseline SNV profiling demonstrates potential for clinical risk stratification.
IMPACT STATEMENT: This study provides the first strain-level longitudinal evidence linking specific microbial protein variants to IVF outcomes, establishing a framework for microbiome-based precision reproductive medicine and identifying targets for strain-specific probiotic development.
SUPPORT: This work was supported by the Natural Science Foundation of China (No. 82571898), Natural Science Foundation of Guangdong Province (No. 2023A1515012940), Key laboratory start-up project (Sixth Affiliated Hospital of Sun Yat-sen University) (No. 2023WST04) for their partial research support, Fertility Research Program of Young and Middle-aged Physicians in 2024" (No. BJHPA-2024-SHZHYXZHQNYJ-004) of Beijing Health Promotion Association donated by Merck Serono Co., Ltd..

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HUMAN GENETIC AND FUNCTIONAL EVIDENCE FOR AN LUTEINIZING HORMONE-LUTEINIZING HORMONE/CHORIONIC GONADOTROPIN RECEPTOR (LH-LHCGR) ADIPOSE REGULATORY AXIS CONTROLLING BODY COMPOSITION AND METABOLIC TRAITS. Jensen Reckhow, MD, MPH[1], Hasni Kannangara, MD[2], Anisa Gumerova, MD, PhD[2], Ofer Moldavski, PhD[2], Georgii Pevnev, MD[2], Orly Barak, PhD[2], Tony Yuen, PhD[2], Shozeb Haider, PhD[2], Anat Rosenthal, MD, PhD[2] and Daria Lizneva Lizneva, MD, PhD[2], [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]Icahn School of Medicine at Mount Sinai

OBJECTIVE: Pituitary hormones regulate multiple physiological systems beyond their classical targets. Expanding this paradigm, we identify a previously unrecognized LH-LHCGR adipose axis that modulates body composition and metabolic traits in humans, supported by convergent genetic, epigenomic, and functional evidence.
MATERIALS AND METHODS: Bulk and single-nucleus RNA-sequencing data from the Genotype-Tissue Expression Portal (GTEx, v8) were analyzed to assess extragonadal LHCGR expression. Regional association and colocalization analyses identified single nucleotide polymorphisms (SNPs) linked to metabolic phenotypes. Human preadipocytes were differentiated in vitro, and LHCGR expression was evaluated using RNAscope with immunohistochemistry and fluorescence-activated cell sorting (FACS) to define adipocyte subpopulations. *Lhcgr*$^{+/-}$ mice and C57BL/6 mice were used for *in vivo* study.
RESULTS: Bulk RNA-seq showed robust LHCGR expression in human subcutaneous tissue (SAT) and visceral (VAT) adipose tissue. Single-nucleus RNA-seq localized expression primarily to mature adipocytes, with minimal expression in stem/progenitor cells. LHCGR was enriched in the hAD4 adipocyte subtype (33%), which is more prevalent in individuals with body mass index (BMI) <30. The variant rs17326656 in the LHCGR locus was associated with reduced LHCGR expression in SAT ($p=2.8x10^{-14}$) and VAT ($p=4.5x10^{-19}$), and with increased waist-to-hip ratio (WHR), increased WHR adjusted for BMI, elevated triglyceride levels, and reduced high-density lipoprotein (HDL) levels (posterior probability=1). Epigenetic analysis showed rs17326656 resides in a region with chromatin accessibility, enhancer-associated histone modifications (H3K4me1, H3K27ac), and PPARG/RELA binding. Functional assays confirmed allele-specific enhancer activity and PPARG responsiveness: the non-risk allele increased luciferase activity ($p<0.001$), further enhanced by rosiglitazone (p=0.0017), whereas the risk allele showed reduced activity. LHCGR$^{+/-}$ mice had increased adiposity, while LHCGR activation with LH, hCG, or Org 43553 (a synthetic small molecule LHCGR agonist) prevented diet-induced obesity by reducing fat mass, adipocyte size, and VAT/SAT ratio, increasing energy expenditure without affecting food intake. Molecular dynamics simulations showed Org 43553 stabilizes the active state of LHCGR similarly in mice and humans.
CONCLUSIONS: LHCGR is expressed in visceral and subcutaneous adipose depots, and reduced expression is associated with metabolically unfavorable traits. The SNP rs17326656 may be in an enhancer region that specifically regulates adipose LHCGR expression. The identified SNP represents a natural model of reduced LH-LHCGR signaling in adipose tissue, bridging genetic effects with established metabolic biomarkers (WHR, triglycerides, HDL) and providing a rationale for the clinical translation of LHCGR modulation for treatment of obesity and metabolic syndrome.
IMPACT STATEMENT: These findings suggest that LHCGR is a genetic contributor to human metabolic traits and a potential pharmacologic target for obesity treatment.
SUPPORT: This study was supported by Project Number U19AG060917-07 awarded by the National Institute on Aging

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SINGLE-CELL PROTEOMICS OF AGED OOCYTE REVEALS DYSREGULATED CENTROSOME PROTEINS AS A TARGETABLE MECHANISM FOR THE RESCUE OF AGE-RELATED ANEUPLOIDY AND RECOVERY. Hyun-Seung Lee, M.S[1], Da-Yeon Lee, M.S[2], Yuha Shim, M.S[3], Jinyoung An, B.S[4], Sung Won Jang, B.S[5], Seong Jung Kim, B.S.[5], Yejin Hwang, B.S[5], Jeongjae Yu, B.S[5], Junho Park, Ph.D[2] and Jae Ho Lee, Ph.D.[6], [1]CHA Fertility Seoul Center, Korea, Republic of (South), [2]CHA University, [3]CHA Hospital, Republic of Korea, Seoul, [4]Seoul, South Korea, [5]CHA University, Seoul, [6]CHA Fertility Center Seoul Station, Seoul, Korea, Republic of (South)

OBJECTIVE: The global trend of delayed childbearing has led to a significant increase in age-related female infertility, primarily driven by elevated rates of oocyte aneuploidy. While mechanisms such as cohesin depletion, spindle assembly checkpoint (SAC) impairment, and mitochondrial dysfunction have been implicated, the precise molecular alterations at the level of key regulatory proteins remain poorly defined. This study aims to identify high-resolution molecular changes underlying age-related aneuploidy using single-cell proteomics and to explore a targetable strategy for restoring spindle integrity and chromosomal stability.
MATERIALS AND METHODS: Mouse oocytes were categorized into fresh, in vitro-aged, and in vivo-aged groups to model both postovulatory aging (POA) and advanced maternal age. Single-cell proteomic analysis was performed to identify differentially expressed proteins associated with meiotic instability. Functional validation was conducted by treating oocytes with Epothilone D (EpoD), a microtubule-stabilizing agent, during POA culture. Spindle integrity and chromosomal alignment were evaluated using immunocytochemistry, and aneuploidy rates were assessed through chromosome analysis. Expression changes in key spindle-associated genes and proteins were further validated by RT-PCR and protein-level assays.
RESULTS: Single-cell proteomic analysis revealed a distinct molecular signature of aging-associated meiotic dysfunction, characterized by significant dysregulation of centrosome and cytospindle-associated proteins, including Pericentrin (PCNT) and CEP family components. These alterations suggest compromised microtubule organizing center (MTOC) scaffolding and impaired spindle assembly as central mechanisms in age-related aneuploidy. Functional studies demonstrated that EpoD treatment during POA significantly improved spindle integrity and reduced aneuploidy rates in in vitro-aged oocytes. Molecular validation confirmed the dysregulation of spindle-related transcripts and proteins in aged oocytes and showed partial restoration following EpoD treatment.
CONCLUSIONS:
Age-related aneuploidy is closely associated with centrosome dysfunction and disruption of cytospindle organization, particularly through impairment of MTOC integrity. Pharmacological stabilization of microtubules using agents such as EpoD represents a promising strategy to rescue meiotic defects and improve chromosomal stability in aged oocytes.

IMPACT STATEMENT: This study identifies dysregulation of MTOC-associated cytospindle proteins as a novel and targetable mechanism underlying age-related chromosomal errors. These findings provide a potential translational strategy to enhance oocyte quality and improve reproductive outcomes in assisted reproductive technologies (ART), particularly for women of advanced maternal age.
SUPPORT: No funding

TECHNOLOGY & INNOVATION (1 OF 8)

P-69 11:15 AM Monday, October 26, 2026

METHODOLOGICAL AND SAFETY IMPLICATIONS OF NON-INVASIVE PGT-A IN EMBRYOS CLASSIFIED AS "CHAOTIC": A PROSPECTIVE PILOT STUDY. Laura D Vagnini, M.Sc.[1], Claudia G Petersen, Ph.D.[2], Fabiana C Massaro, B.Sc.[3], Bruna Petersen, B.Sc.[3], Isabela Pasotti, M.D.[3], Bianca C Matuella, M.D.[3], Joao Bosco Meziara, M.D.[3], Antonio Helio Oliani, M.D., Ph.D.[4], Joao B A Oliveira, M.D., M.SC., PH.D.[5] and Jose G Franco Jr, M.D., Ph.D.[6], [1]Paulista Center for Diagnosis, Research and Training / Sao Jose do Rio Preto School of Medicine FAMERP, Ribeirao Preto, Brazil, [2]Center for Human Reproduction Prof. Franco Jr/ Paulista Center for Diagnosis, Research and Training, Ribeirao Preto, Brazil, [3]Center for Human Reproduction Prof. Franco Jr., Ribeirao Preto, Brazil, [4]Sao Jose do Rio Preto School of Medicine FAMERP, Sao Jose do Rio Preto, Brazil, [5]Center for Human Reproduction Prof. Franco Jr, Ribeirao Preto, Brazil, [6]Center for Human Reproduction Prof. Franco Jr/ Paulista Center for Diagnosis, Research and Training / Sao Jose do Rio Preto School of Medicine FAMERP, Ribeirao Preto, Brazil

OBJECTIVE: To determine whether embryos classified as “chaotic” by noninvasive preimplantation genetic testing for aneuploidy (niPGT-A) show reproducible chromosomal findings on repeat cell-free DNA analysis.
MATERIALS AND METHODS: This 1-year prospective pilot study evaluated seven frozen blastocysts previously classified as “chaotic” by niPGT-A. After warming, embryos were recultured for 4 to 8 hours to allow release of cell-free DNA into spent culture medium. Samples underwent whole-genome amplification using multiple annealing and looping-based amplification cycles, sequencing on an Illumina MiSeq platform, and chromosomal analysis with ChromGo software.
RESULTS: All samples were successfully amplified. On repeat analysis, 3 of 7 embryos (43%) originally labeled as “chaotic” were reclassified as euploid, whereas 4 of 7 (57%) remained abnormal. This substantial discordance indicates limited reproducibility of the “chaotic” designation and suggests a clinically relevant false-positive risk associated with niPGT-A in this setting (table 1).

Table 1. Comparison of initial and repeat analysis embryo ploidy status using non-invasive PGT-A

Embryo ID	Initial niPGT-A result	Repeat analysis niPGT-A result
M1	XX, -5(×1), -8(×1), +10(×3), +11(×3), +13(×3), -14(×1), -18(×1), -22(×1)	XX, +5(×3), +14(×3)
M2	XO, -X(×1), -5(×1), -9(×1), +13(×3), -14(×1), -17(×1)	46,XX
M3	XX, +3(×3), -4(×1), -6(×1), +8(×3), -11(×1), +14(×3)	XX, +3(×3), -4(×1), +11(×3), +14(×3)
M4	XX, -1(×1), +3(×3), -4(×1), -8(×1), +9(×3), -21(×1)	XX, +21(×3), +22(×3)
M5	XX, +5(×3), -7(×1), -13(×1), -14(×1), -15(×1), +20(×3), +22(×3)	XX, +7(×3), +13(×3), +14(×3), +20(×3), +22(×3)
M6	XX, +1(×3), -14(×1), -15(×1), -17(×1), +18(×3), -21(×1)	46,XX
M7	XXX, +X(×3), -1(×1), +4(×3), +19(×3), +20(×3), +22(×3)	46,XX

CONCLUSIONS: Embryos classified as chaotic by non-invasive PGT-A demonstrated substantial analytical variability upon repeat cfDNA assessment in this pilot study. These findings underscore the need for rigorous validation of complex chromosomal classifications derived from low-input genomic analysis and support cautious interpretation before such results guide clinical decision-making in assisted reproduction.
IMPACT STATEMENT: These findings raise safety and quality concerns regarding the routine exclusion of embryos labeled as “chaotic.” Repeat analysis or confirmatory testing should be considered to improve methodological rigor and reduce the risk of discarding potentially viable embryos.
SUPPORT: none

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ASGR1 UNRAVELING THE KEY MEDIATOR IN POLYCYSTIC OVARY SYNDROME DEVELOPMENT VIA FSH ENDOCYTOSIS. Xitong Liu, Resident, Northwest women's and children's hospital, Xi'an, China

OBJECTIVE: To investigate the association between asialoglycoprotein receptor 1 (ASGR1) and polycystic ovary syndrome (PCOS), and to explore its functional role and underlying mechanisms in PCOS pathogenesis.
MATERIALS AND METHODS: This study employed a combination of in vivo and in vitro approaches to elucidate the role of ASGR1 in PCOS. Ovarian-specific overexpression of Asgr1 (AAV-Asgr1 mice) and ovarian-specific knockdown of Asgr1 (AAV-sh-Asgr1 mice) were established to observe PCOS-like phenotypes. Mechanistic studies were conducted to examine the interaction between ASGR1 and follicle-stimulating hormone (FSH), including its effects on FSH endocytosis, lysosomal degradation, and competition with FSH receptor (FSHR) for FSH binding. Downstream activation of the cAMP/PKA/CREB signaling pathway was also assessed.
RESULTS: Ovarian-specific overexpression of Asgr1 in mice induced typical PCOS-like phenotypes. Mechanistically, ASGR1 overexpression directly inhibited the cAMP/PKA/CREB signaling pathway, a key mediator of FSH-regulated ovarian functions. This inhibition occurred through two complementary mechanisms: ASGR1 mediated the endocytosis and subsequent lysosomal degradation of FSH, and it competitively bound to FSH, blocking the normal interaction between FSH and FSHR. Conversely, ovarian-specific knockdown of Asgr1 significantly ameliorated PCOS-related abnormalities, further confirming the pathogenic role of ASGR1 in PCOS.
CONCLUSIONS: This study identifies ASGR1 as a novel key pathogenic gene in PCOS. Its upregulation in the ovary disrupts FSH signaling and hormonal balance by promoting FSH degradation and competing with FSHR for FSH binding. Ovarian-specific knockdown of Asgr1 alleviates PCOS phenotypes, suggesting that targeting ASGR1 may represent a promising therapeutic strategy for PCOS.
IMPACT STATEMENT: This study identifies ASGR1 as a previously unrecognized pathogenic gene in polycystic ovary syndrome (PCOS), demonstrating that its upregulation in the ovary disrupts FSH signaling through dual mechanisms—promoting FSH degradation and competing with its receptor. The finding that ovarian-specific knockdown of Asgr1 alleviates PCOS phenotypes in vivo not only establishes a causal role for ASGR1 in PCOS pathogenesis but also unveils a potential novel therapeutic target. By shifting the focus from hormone supplementation to modulating hormone signaling at the receptor level, these insights could pave the way for developing targeted interventions that address the root molecular dysfunction in PCOS, rather than merely managing its symptoms.
SUPPORT: Not applicable.

P-71 11:45 AM Monday, October 26, 2026

CAN PUBLICLY AVAILABLE ARTIFICIAL INTELLIGENCE PLATFORMS PREDICT IVF OUTCOMES: FRONTIER LARGE LANGUAGE MODELS (GPT, CLAUDE, GEMINI) MATCH A DOMAIN-SPECIFIC MODEL ON DISCRIMINATION BUT SHOW CALIBRATION AND STABILITY GAPS. Prof. Erkan Kalafat, M.D. M.Sc[1], Cigdem Gunduz-Demir, PhD[2], Juan Antonio Garcia-Velasco, M.D., PH.D.[3] and Emre Seli, M.D.[4], [1]Istanbul, Turkey, [2]Koc University Faculty of Engineering, Istanbul, Turkey, [3]IVIRMA Global Research Alliance, Madrid, Spain, [4]IVIRMA Global Research Alliance, RMA New Jersey, Basking Ridge, NJ

OBJECTIVE: The **FORTUNE** classification system (AppStore Link, Web Application) is a **neural network–based prognostic tool** designed to predict euploid blastocyst yield in patients undergoing IVF (1). In this study, we aimed to compare predictive performance, probabilistic calibration and operational stability of publicly available large language models (LLMs) against FORTUNE, for predicting euploid blastocyst yield after ovarian stimulation.
MATERIALS AND METHODS: The external temporal validation cohort (n = 2,089 first IVF–PGT-A cycles), originally used in the development of the FORTUNE classification system, was utilized for the present analyses (1). Five clinical parameters (female age, male age, AMH, AFC, BMI) were queried in zero-shot fashion across 7 LLMs (GPT-4.1, GPT-5.2, Claude Sonnet 4.5, Claude Haiku 3 and 4.5, Gemini 3 Flash, Gemini 2.0 Flash Lite) and benchmarked against FORTUNE. Each model returned expected yield and probabilities of ≥1, ≥2, ≥3 euploid blastocysts. Discrimination was assessed by AUC (DeLong 95% CI); calibration by logistic regression with model-specific slopes. Stability was evaluated by (a) temperature sensitivity (0, 1, 2; 5 replicates/patient using GPT-4.1) and (b) prompt robustness across three patient personas (medically informed, average, low health literacy) generated from structured inputs.
RESULTS: Frontier reasoning LLMs achieved discrimination comparable to FORTUNE. For ≥1 euploid, GPT-4.1 AUC 0.846 (0.826–0.866) vs FORTUNE 0.845 (0.825–0.865); for ≥3 euploid, FORTUNE 0.849 (0.833–0.865) vs GPT-4.1 0.843 and GPT-5.2 0.841. Smaller non-reasoning models underperformed (Gemini 2.0 Flash Lite ≥1 AUC 0.787). Despite similar AUCs, LLM probability estimates were poorly calibrated relative to FORTUNE, with residual miscalibration even in reasoning models. Increasing LLM "temperature" (randomness of outputs) produced noticeably different predictions for the same patient across repeated runs without changing the average: at the highest setting, expected-yield predictions could vary by up to 0.6 embryos and success probabilities by up to 14 percentage points between identical queries ($p<0.001$); this stochasticity did not resolve the underlying miscalibration. Persona framing produced minor AUC fluctuation (e.g., Claude Haiku 4.5 ≥1 euploid: 0.818 advanced vs 0.789 low-literacy), but model ranking was preserved.
CONCLUSIONS: Frontier reasoning LLMs match a domain-specific machine learning model on discrimination for euploid yield in zero-shot settings yet exhibit inferior calibration and meaningful instability under temperature and prompt variation, properties absent in deterministic domain-trained models.
IMPACT STATEMENT: LLMs show promising zero-shot learning as general reproductive prognostic tools, but stochasticity and calibration drift currently limit clinical deployment. Domain-specific models remain the standard for quantitative IVF counseling until LLM outputs are recalibrated and stabilized.
REFERENCES:
Seli E, Kalafat E, Reig A, Whitehead C, Ata B, Garcia-Velasco J. Forecasting Outcomes of Assisted Reproductive Treatments Using Artificial Networks (FORTUNE) classification system: a new prognostic model to predict euploid blastocyst yield in patients undergoing IVF. Hum Reprod. 2025 Nov 1;40(11):2115-2125.

P-72 12:00 PM Monday, October 26, 2026

EXPLORING THE POTENTIAL RELATIONSHIP BETWEEN OOCYTE OUT-OF-INCUBATOR TIME AND CLINICAL OUTCOMES IN GOOD PROGNOSIS IVF PATIENTS. Jayesh Shinde, M.SC.[1], Naval Navin Shah, M.Sc.[2], Alison J Campbell, B.SC., PH.D.[3], Gaurav Sharma, MBBS, MS[4], Sourav Rathore, MSc.[1], Divreena Talwar, MSc.[5], Walmik Mistari, M.Sc[1], Vipin Chandra, MBBS, DGO[1], Kshitiz Murdia, MBBS, DGO[6] and Nitiz Murdia, Ph.D[1], [1]Indira IVF Hospital Ltd., Udaipur, India, [2]Indira IVF Hospital Ltd., Udaipur, Rajasthan, India, [3]CARE Fertility, Nottingham, Nottingham, United Kingdom, [4]Indira IVF Hospital Limited, Mumbai, Maharashtra, India, [5]Indira IVF Private Limited, Udaipur, Rajasthan, India, [6]Indira IVF Hospital Pvt. Ltd, Udaipur, Rajasthan, India

OBJECTIVE:
To evaluate the association between oocyte out-of-incubator time and embryological and clinical outcomes in good prognosis IVF patients.
MATERIALS AND METHODS:
This retrospective multicentre cohort study included 57 good prognosis IVF couples undergoing ICSI across seven IVF clinics in December 2024, comprising a total of 686 retrieved oocytes. Good prognosis was defined as maternal age 21–35 years, AMH 1.2–3.5 ng/mL, BMI 18.5–25 kg/m², ≥4 MII oocytes, normozoospermic semen parameters, and absence of known confounding conditions including elevated sperm DNA fragmentation, polycystic ovary syndrome, endometriosis, or uterine abnormalities. Standardised clinical and laboratory protocols were uniformly implemented across all centres. All ART procedures (oocyte retrieval, denudation, and ICSI) were performed using HEPES-buffered medium under temperature-controlled IVF chambers equipped with HEPA and carbon filtration systems. Time stamps were captured using RI Witness, enabling calculation of total oocyte time spent outside the incubator during ART procedures. The primary outcome was live birth rate. Secondary outcomes included biochemical pregnancy rate, blastocyst formation rate, and good-quality blastocyst rate. Associations between oocyte handling time and outcomes were assessed using Spearman and point-biserial correlations, along with logistic regression analysis.
RESULTS:
Total oocyte out-of-incubator time ranged from 29.5 to 45 minutes (mean 38 minutes). Mean maternal and paternal ages were 31 and 33 years, respectively. Among 57 patients, 686 MII oocytes were retrieved, yielding 328 blastocysts and 172 good-quality blastocysts. No significant correlation was observed between oocyte exposure time and live birth ($\rho = 0.066$, $p = 0.63$), biochemical pregnancy ($\rho = 0.071$, $p = 0.06$), blastocyst rate ($\rho = 0.012$, $p = 0.93$), or good-quality blastocyst rate ($\rho = -0.012$, $p = 0.93$). Multivariable logistic regression similarly demonstrated no association with live birth (OR = 1.01, 95% CI 0.97–1.05, $p = 0.622$) or biochemical pregnancy (OR = 1.01, 95% CI 0.97–1.05, $p = 0.595$).
CONCLUSIONS:
Within a good prognosis cohort under controlled laboratory conditions, oocyte out-of-incubator time was not associated with adverse embryological or clinical outcomes.
IMPACT STATEMENT:
These findings suggest that younger oocytes may exhibit resilience to procedural exposure, as prolonged handling did not adversely affect clinical outcomes. This raises the possibility that age-related intrinsic oocyte vulnerabilities may contribute to reduced tolerance to laboratory stress in older patients.
SUPPORT: NA

TECHNOLOGY & INNOVATION (2 OF 8)

P-73 11:15 AM Monday, October 26, 2026

CAN AI COMPETE WITH 88 EMBRYOLOGISTS AND EXPERTS ON MORPHOLOGICAL EVALUATION AND RANKING OF BLASTOCYST IMAGES? Rachel Smith, BSc[1], Megan Lockwood, MSc[2], Sue Montgomery, B.SC., PH.D.[3], Hyung Min Kim, Ph.D.[4], Hyejun Lee, M.D., Ph.D.[5] and Alison J Campbell, B.SC., PH.D.[6], [1]CARE Fertility Ltd, Nottingham, Nottingham, United Kingdom, [2]CARE Fertility Manchester, Manchester, United Kingdom, [3]CARE Fertility, [4]Kai Health, Seoul-City, South Korea, [5]Seoul, South Korea, [6]CARE Fertility, Nottingham, Nottingham, United Kingdom

OBJECTIVE:
Manual morphological grading is somewhat subjective and weakly correlated with live birth propensity. Can an AI model (Vita Embryo, S Korea), designed for morphological assessment of static images, reduce variability of blastocyst grading, compared to expert or embryologist assessors reviewing the same embryos?
MATERIALS AND METHODS:
Eighty-eight embryologists, from 19 networked clinics, of which 14 were categorised as expert, based on seniority, evaluated 22 day 5 blastocysts for Gardner morphological grade from static images in 3 focal planes, extracted from Embryoscope, Vitrolife. Each assessor determined development stage, (Dev), inner cell mass (ICM) and trophectoderm (TE), with 78 assessors prioritising, 1st, 2nd and 3rd choice based on grade. The AI model generated a morphological score and ranking using the optimal focal image. Consensus grades were defined from the expert scores as the highest frequency grade. Agreement between the consensus grade, experts (n=14), embryologists (n=74) and AI scores, was determined using quadratic weighted Cohen's kappa (κ). The reference order, 1st choice and top 3 was identified from the expert assessors, using Borda score to compare to all groups, 1st choice, required an exact match and the top 3, matching to any embryos present in the assessors top 3 regardless of order.
RESULTS:
Two embryos were excluded as ICM and TE grades, were not recorded by >50% of assessors as development stage was determined as early blastocyst. Grade completion for the remaining embryos was Dev (100%), ICM (99.8%) and TE (99%) from 1760 potential assessments per grade (88x20). The AI provided complete scores for all embryos (n=20). Both expert and AI grading agreement was higher for Dev and TE compared to the embryologist; Dev 0.857 ± 0.1 & 0.885 vs 0.824 ± 0.11, TE; 0.808 ± 0.14 & 0.824 vs 0.770 ± 0.15 (k ± SD) respectively. Lower agreement was observed for ICM compared to Dev or TE with similar results across all groups; 0.780 ± 0.17, 0.785 ± 0.13, and 0.706, experts, embryologists and AI. Embryologist ranking was lower, suggesting greater variability for 1st choice and top 3 selection; 0.478 ±0.5 vs 0.545±0.52 and 1.687 ±0.72 vs 1.727 ± 0.9 respectively, with the AI showing perfect ranking to the 1st choice and matching 2.0 for top 3.
CONCLUSIONS:
The experts demonstrated greater consistency when determining development stage, TE and ranking embryos over the embryologists. ICM grading had greater variability regardless of experience suggesting this important component is inherently more challenging to grade. The AI system showed performance comparable to the expert group and may help remove variability between embryologists with different levels of experience and as grading is instantaneous, could save time.
IMPACT STATEMENT:
AI-based embryo assessment may help improve experience-related consistency and support more standardised embryo evaluation to improve embryo selection practices and correlation to clinical outcomes.

P-74 11:30 AM Monday, October 26, 2026

PATIENT PERSPECTIVES OF A VALIDATED AI, MACHINE LEARNING DERIVED PRE IVF CONSULTATION SUPPORT TOOL, PROVIDING PERSONALISED PREDICTION FOR LIVE BIRTH OUTCOME: A QUALITATIVE ANALYSIS. Rachel Smith, BSc[1], Alison J Campbell, B.SC., PH.D.[2] and Victoria Sephton, MBCHB[3], [1]CARE Fertility Ltd, Nottingham, Nottingham, United Kingdom, [2]CARE Fertility, Nottingham, Nottingham, United Kingdom, [3]CARE Fertility Group, Nottingham, United Kingdom

OBJECTIVE:
To assess patient opinions of an AI-based live birth (LB) prediction report (Univfy, USA), utilising historic data from 13 clinics in a fertility group to generate a personalised LB prediction from a complete IVF cycle, using pre-treatment metrics. Does the report support post consultation decision-making by providing an accurate, reproducible estimate of LB likelihood and which aspects of the report did the patient consider beneficial?
MATERIALS AND METHODS:
Four clinics within the group issued the Pre IVF report, frr 12 months up to February 2026, to new patients undergoing IVF consultation using their own oocytes. Age, AMH, AFC, infertility duration, sperm origin, previous LB and IVF cycle success (111,558 historic cycles), determine the prediction. The Pre IVF report and questionnaire were provided post consultation. The questionnaire consisted of 5 questions; 3 covered the clarity of information, staff knowledge and previous awareness of the report. The remaining 2 questions considered the impact of the report in supporting a decision to proceed to treatment and the patient's opinion on the most important report benefits, with multi-choice answers.
RESULTS:
Questionnaires were issued post consultation (n=120), with a 68% completion rate; 92% of patients had not previously heard of the Pre IVF report. From 82 replies, patients either definitely (n=62) or mostly (n=15) agreed that the provider was knowledgeable about the Pre IVF report. The report information was judged to be clear by 79% of patients, with only 2.4% stating the report was complicated and confusing, 11% would appreciate more information to help interpretation and 7.3% had no opinion on report content. Regarding whether the report supported the decision to proceed with treatment, 56.1% answered definitely, 29.3% mostly, 6.1% not really, 2.4% did not discuss the report and 6.1% had no opinion. For multi-choice answers (n=194), the report ranked highest for 'improved understanding of my chance of success if I proceed to treatment' at 33.5%, 'knowing my chance of live birth personalised to my circumstances' was 25.8%, 'having clear information to help decisions' was 21.1% and 'receiving a report to consider the findings' was 15.5% of responses. The lowest perceived benefit was to understand success rates over multiple IVF cycles at 0.5% with 3.6% having no opinion on the report benefits.
CONCLUSIONS:
Patients have access to broad age-related LB rates e.g through the HFEA (UK) and SART (US). The review suggests the Pre IVF AI tool can provide clear information through personalised prediction on the chance of LB which the patients find beneficial.
IMPACT STATEMENT:
Strong qualitative evidence suggests the Pre IVF report has a positive impact on patient expectations, providing a personalised chance of success and supporting their decision to access IVF treatment.

P-75 11:45 AM Monday, October 26, 2026

NO ASSOCIATION BETWEEN OOCYTE TOTAL DURATION OF EXPOSURE TO HEPES BUFFERING AND BLASTULATION, PREGNANCY OR LIVE BIRTH PERFORMED UNDER IVF CHAMBER. Naval Navin Shah, M.Sc.[1], Avinash Chauhan, MSc[2], Vivek Dave, PhD[2], Alison J Campbell, B.SC., PH.D.[3], Sourav Rathore, MSc.[2], Divreena Talwar, MSc.[4], Walmik Mistari, M.Sc[5], Vipin Chandra, MBBS, DGO[2], Nitiz Murdia, Ph.D[2] and Kshitiz Murdia, MBBS, DGO[6], [1]Indira IVF Hospital Ltd., Udaipur, Rajasthan, India, [2]Indira IVF Hospital Ltd., Udaipur, India, [3]CARE Fertility, Nottingham, Nottingham, United Kingdom, [4]Indira IVF Private Limited, Udaipur, Rajasthan, India, [5]Udaipur, Rajasthan, India, [6]Indira IVF Hospital Pvt. Ltd, Udaipur, Rajasthan, India

OBJECTIVE:
To evaluate whether cumulative duration of oocyte exposure to HEPES-buffered medium impacts embryological and clinical outcomes when procedures are performed under controlled IVF chamber conditions.
MATERIALS AND METHODS:
This retrospective multicentre cohort study included 738 patients undergoing ICSI across seven IVF clinics of our organisation in December 2024, of whom 572 proceeded to frozen embryo transfer (FET). All laboratories utilized customised temperature-controlled IVF chambers (Shivani Scientific, India) for oocyte retrieval, denudation, and micromanipulation. Procedures were conducted at 37°C using HEPES-buffered medium (Vitromed, Germany) within a controlled environment maintaining temperature, humidity, and air quality (HEPA and carbon filtration). Time stamps were captured using RI Witness, enabling precise calculation of cumulative oocyte exposure time during ART procedures. The primary outcome was live birth rate. Secondary outcomes included biochemical pregnancy, blastocyst formation, and good-quality blastocyst rates. Associations were assessed using Spearman and point-biserial correlations, along with multivariable linear and logistic regression adjusting for maternal (age, BMI, AMH) and paternal (age, semen parameters) confounders.
RESULTS:
Total oocyte exposure time to HEPES-buffered medium ranged from 26-45 minutes (mean 35 minutes). Among 738 patients, 6,754 MII oocytes were retrieved, of which 3,329 (49.3%) developed into blastocysts and 1,562 (23.1%) were classified as good-quality blastocysts. Mean maternal and paternal ages were 32 and 35 years, respectively. No significant correlations were observed between oocyte exposure time and live birth rate ($\rho = 0.035$, $p = 0.50$), biochemical pregnancy rate ($\rho = 0.073$, $p = 0.081$), blastocyst rate ($\rho = 0.011$, $p = 0.76$), or good-quality blastocyst rate ($\rho = 0.038$, $p = 0.31$). Multivariable logistic regression adjusting for maternal (age, BMI, AMH) and paternal (age, semen parameters) confounders showed no association between oocyte exposure time and live birth (OR = 1.00, 95% CI 0.98–1.01, $p = 0.749$) or biochemical pregnancy (OR = 1.01, 95% CI 0.99–1.02, $p = 0.820$). Linear regression similarly demonstrated no association with blastocyst formation (= -0.00499, $R^2 = 0.00007034$, $p = 0.8201$) or good blastocyst rate (= -0.0214, $R^2 = 0.0008205$, $p = 0.4371$).
CONCLUSIONS:
Within a controlled IVF chamber environment, cumulative oocyte exposure to HEPES-buffered media was not associated with adverse embryological or clinical outcomes including live birth.
IMPACT STATEMENT:
Within controlled laboratory conditions, oocyte exposure to HEPES-buffered medium across routine procedural timeframes does not compromise embryological metrics, pregnancy or live birth. This evidence supports temporal resilience of HEPES-based handling in IVF laboratories equipped with IVF chambers reinforcing its suitability for workflow standardisation and KPI optimisation in high-volume, multi-operator IVF clinics or networks.
SUPPORT: NA

TECHNOLOGY & INNOVATION (3 OF 8)

P-77 11:15 AM Monday, October 26, 2026

USING A POPULAR AI-GENERATED TEXT DETECTOR POSES SIGNIFICANT LIMITATIONS IN REI LITERATURE. Michael T Xie, BS[1], Dani Fisher, BA[2], Miriam Tarrash, MD[3], Sarah C Roger, MD[2], Alexandra Peyser, MD[2] and Dr. Randi H Goldman, MD, MBA[4], [1]Brooklyn, NY, [2]Northwell Health Fertility, North Shore University Hospital/Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, [3]Syosset, NY, [4]Northwell, New Hyde Park, NY

OBJECTIVE: The rapid adoption of generative artificial intelligence (AI) in scientific writing has raised concerns about its use in peer-reviewed literature. Existing work has focused largely on ethical considerations but with limited quantitative analyses and few data specific to reproductive health. However, before quantifying how much of the current literature, if any, is AI-generated, we need reliable tools for determining whether content is human-authored versus AI-generated. Here we aimed to evaluate one such popular tool, using articles from two high-impact reproductive endocrinology and infertility (REI) journals.
MATERIALS AND METHODS: ZeroGPT, an AI-generated text detector, was used to evaluate AI use in articles from *Fertility and Sterility* and *Human Reproduction*. ZeroGPT self-reports over 98% accuracy in internal assessments and was selected due to its popularity and its ability to output a percentage of text that it has flagged as potentially AI-generated. Articles from October 2005 editions of both journals (n=125) were compared with those in October and November 2025 editions (n=127). These articles were analyzed by ZeroGPT, and an independent samples t-test compared the percentage of potentially AI-generated text between the 2005 cohort and the 2025 cohort.
RESULTS: Surprisingly, articles in the 2005 cohort had a significantly higher percentage of text flagged as potentially AI-generated compared to articles in the 2025 cohort (p=0.018). Articles published in 2005 had a mean percentage of 9.94, with a standard deviation of 6.33, of text flagged as potentially AI-generated by ZeroGPT. The mean percentage of text flagged as potentially AI-generated in articles published in 2025 was 8.34 with a standard deviation of 5.70.
CONCLUSIONS: Articles written in 2005, before the advent of generative AI, should have had no text flagged as potentially AI-generated. However, these articles had significantly higher percentages of text flagged by ZeroGPT compared to articles published in 2025. Our findings call into question the validity of applying existing AI detection tools to REI literature.
IMPACT STATEMENT: Academic and professional integrity is of utmost importance when it comes to scientific research and writing. With major journals grappling with the new reality that generative AI can be used for writing, and some issuing guidelines regarding the use and reporting of AI in their publications, we found that ZeroGPT is not reliable within the field of REI, may contain inherent error, and should be used with careful consideration as an AI detection tool.

P-78 11:30 AM Monday, October 26, 2026

A PRODUCT OF OUR ENVIRONMENT: A PILOT NON-TARGETED ANALYSIS OF CHEMICALS IN FOLLICULAR FLUID (FF) AND SERUM IN RELATION TO ASSISTED REPRODUCTIVE TECHNOLOGY (ART) OUTCOMES. Brady J Gelvin, M.D.[1], Josie Dardinski, BS[2], Patty Ann LaBella, BS[3], Vittorio Albergamo, PhD[4], Harry Hou Jr., BS[1], Caroline McCaffrey, PHD, HCLD[1], James A Grifo, MD, PHD[1], Jennifer K Blakemore, MD, MSCI[1] and Linda G Kahn, PhD[5], [1]NYU Langone Fertility Center, New York, NY, [2]NYU Langone Health, New York, NY, [3]NYU Langone Prelude Fertility Center, New York, NY, [4]NYU Grossman School of Medicine, New York, NY, [5]Department of Pediatrics, New York University School of Medicine, New York, NY

OBJECTIVE:
Numerous endocrine-disrupting chemicals are associated with reduced female fecundity (1). We performed nontargeted analysis (NTA) of serum and FF to identify novel exposures and evaluate associations with ART outcomes.
MATERIALS AND METHODS:
This prospective pilot study, in which we previously identified associations of per- and polyfluoroalkyl substances (PFAS) with ART outcomes (2), included matched FF and serum samples collected from 19 patients undergoing elective fertility preservation (EFP) and 21 patients undergoing IVF between April and May 2025 at a single, large academic fertility center. Nontargeted liquid chromatography-high resolution mass spectrometry was performed and chemicals that were identified with MS2 confirmation and present in at least 50% of samples were retained for statistical analysis. Chemicals detected in 100% of samples were modeled continuously and log2-transformed, otherwise they were modeled dichotomously as detect vs nondetect. Demographics included: age, anti-Müllerian hormone (AMH), total gonadotropins, and stimulation days. Primary analyses examined associations of chemicals in both FF and serum with live birth/ongoing pregnancy (LB/OP) rate via generalized linear mixed model regression. Secondary analyses evaluated associations of chemicals with fertility outcomes via linear regression: AMH, number of oocytes retrieved, and maturity rate (MR).
RESULTS:
EFP and IVF patients had similar mean AMH (3.33 ng/mL ± 1.48 vs 3.04 ng/mL ± 3.07), mean total gonadotropins (3963 IU ± 935 vs 3877 IU ± 1249), and median stimulation days (11.0d [IQR 10.5-11.5] vs 10d [9-11]). EFP patients were significantly younger (31.0y [IQR 29-33] vs 36.0y [29.5-43.5]), more likely to be nulliparous (100% vs 47.6%), had more oocytes retrieved (median 27 (IQR 15-39] vs 12 [6.5-17.5]), and higher MR (median 75.6% [IQR 56.4-94.8] vs 84.0% [72-96]). Fourteen IVF patients underwent 16 embryo transfers yielding 11 LB/OP. In primary analyses (n=16 cycles), doubling of FF phenylalanine (OR 1.60, $p<0.001$) and presence of jasmonic acid (OR 2.40, $p<0.001$) were positively associated with odds of LB/OP. We observed no significant associations for serum concentrations. In secondary analyses (n=40 retrievals), serum 1,4-cyclohexanedicarboxylic acid was negatively associated with oocyte maturity (beta=-11.92, $p=0.04$). There was also an inverse relation between FF acetaminophen concentration and AMH (beta=-1.53, $p=0.06$), although not statistically significant.
CONCLUSIONS:
Despite the small size of this pilot study, we observed suggestive positive associations of naturally derived organic compounds with LB/OP and negative associations of synthetic chemicals with oocyte quality and AMH. Larger studies are warranted to incorporate this NTA data into future targeted analyses of the follicular microenvironment to further investigate the impact on ART outcomes.
IMPACT STATEMENT:
Non-targeted chemical analysis of FF and serum samples in ART patients undergoing oocyte retrieval identified novel chemicals in both and demonstrated positive and negative associations with ART outcomes.
REFERENCES:
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2. Dardinski J, et al. Assoc of PFAS Exposure in Follicular Fluid and Serum with Fertitliy Outcomes Among Women Undergoing Oocyte Retrieval: A Pilot Study. Submitted to ISEE 2026 Annual Meeting.

P-79 11:45 AM Monday, October 26, 2026

FACTORS THAT INCREASE TEXT FLAGGED AS AI-GENERATED IN REI JOURNALS. Michael T Xie, BS[1], Dani Fisher, BA[2], Miriam Tarrash, MD[3], Sarah C Roger, MD[2], Alexandra Peyser, MD[2] and Dr. Randi H Goldman, MD, MBA[4], [1]Brooklyn, NY, [2]Northwell Health Fertility, North Shore University Hospital/Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, [3]Syosset, NY, [4]Northwell, New Hyde Park, NY

OBJECTIVE: Advances in generative artificial intelligence (AI) technologies have raised concerns regarding the use of AI in scientific writing. Previously, we demonstrated that popular tools for flagging potentially AI-generated text may not be reliable when applied to literature in reproductive endocrinology and infertility (REI). Here, our objective was to determine whether a salient factor for an REI article – its number of authors – caused such tools to flag more text as being AI-generated.
MATERIALS AND METHODS: Articles published in October and November 2025 from two premier REI journals, *Fertility and Sterility* (F&S) and *Human Reproduction*

(HR), were analyzed by ZeroGPT, a leading AI text detector used in academic and professional settings worldwide. ZeroGPT was selected from among comparable tools because it self-reports over 98% accuracy in internal assessments and outputs a percentage of text flagged as potentially AI-generated. An independent samples t-test was used to compare the percent of AI-generated text between the journals and to evaluate differences between each journal's average number of authors per article. Confounders were accounted for by a linear regression analysis.
RESULTS: Articles from HR had significantly higher percentages of text flagged as potentially AI-generated compared to articles from F&S (p=0.003). The mean percentage of text flagged as potentially AI-generated for articles published in HR was 10.37 with a standard deviation of 5.17, and the mean percentage flagged for articles in F&S was 7.37 with a standard deviation of 5.72. Articles from HR also had a significantly higher mean number of authors per article than those from F&S (p<0.001). The mean number of authors in HR articles was 8.83 with a standard deviation of 5.83, and the mean number of authors per article in F&S was 4.29 with a standard deviation of 3.7. When articles from both journals were analyzed as a conglomerate, the number of authors was significantly and positively correlated with percentage of text flagged as potentially AI-generated (B=0.4, p<0.001; $F(1,126) = 17.64$, p<0.001), accounting for 11.7% of the variance (adjusted R^2).
CONCLUSIONS: Our findings suggest that, within the REI literature, having a greater number of authors is associated with a higher percentage of text being flagged as potentially AI-generated. These findings highlight limitations of AI detection tools in this context.
IMPACT STATEMENT: Academic and professional integrity are of utmost importance when it comes to scientific research and writing. With major journals now grappling with the new reality that generative AI can be used for writing, and some issuing guidelines regarding the use and reporting of AI in their publications, certain parameters of the articles, such as the number of authors, should be considered during AI related evaluations.

P-80 12:00 PM Monday, October 26, 2026

REDEFINING SAFE CRYOSTORAGE: HUMAN BLASTOIDS REVEAL A NARROW, SUB-GLASS TRANSITION TEMPERATURE WINDOW FOR EMBRYO VITRIFICATION. Maria Carolina Zimara, M.S.[1], Heather Jacobs, MS[2], Elizabeth A Jannaman, B.S.[1], William B Schoolcraft, M.D.[3], Michael G Collins II, Ph.D.[4] and Ye Yuan, PH.D.[1], [1]CCRM Colorado, Lone Tree, CO, [2]CCRM Colorado, Lone Tree, [3]CCRM Fertility, Lone Tree, CO, [4]TMRW Life Sciences, Inc., New Orleans, LA

OBJECTIVE:
To redefine functional temperature thresholds for safe cryostorage of vitrified human blastoids and blastocysts by systematically testing the biological impact of brief, clinically plausible warming excursions near and above the glass transition.
MATERIALS AND METHODS:
Vitrified human blastocysts from IVF cycles and stem cell–derived human blastoids were stored in liquid nitrogen and subjected to controlled passive warming to −120 °C, −80 °C, −20 °C, or 4 °C before returning to liquid nitrogen. After standardized fast warming, survival was assessed at 2 h, followed by either immunofluorescent staining for γ-H2AX and cleaved caspase-3 or 3 days of extended peri-implantation culture to measure attachment, outgrowth area, POU5F1+ epiblast cells, and CG-β expression. Continuous outcomes were analyzed with ANOVA/Welch's ANOVA and post hoc tests, and binomial outcomes with chi-square (P<0.05).
RESULTS:
Across 432 blastoids and 176 blastocysts, integrated readouts of survival, stress markers, and peri-implantation development identified a narrow biologically "safe" window confined to the range of the glass transition temperature (approximately −130 to −120 °C). Brief excursions to −120 °C largely preserved survival, attachment, outgrowth, and lineage differentiation and contained DNA damage and apoptosis versus liquid nitrogen control, although small declines in survival and attachment rendered −120 °C statistically similar to −80 °C in some analyses, indicating subtle injury even with modest warming above the glass transition. At −80 °C, blastoids showed sublethal yet evident damage, including reduced survival, increased apoptosis and DNA damage, decreased attachment, and reduced POU5F1+ epiblast cell numbers, despite gross morphology and outgrowth area being preserved. Exposure that passed through −20 °C or 4 °C resulted in near-complete loss of viability, confirming these as overtly non-permissive ranges rather than part of an extended "safe" zone.
CONCLUSIONS:
As a study model mimicking human blastocysts, human blastoids demonstrate that functionally safe cryostorage is effectively restricted to temperatures remaining below the glass transition, while the −120 to −80 °C interval represents an alarm zone where even brief, plausible warming can cause lasting molecular and developmental damage that may be missed by morphology alone.
IMPACT STATEMENT:
These findings argue that IVF cryostorage protocols and alarm settings should be designed to prevent not only significant warming events, but also short, routine excursions into the −120 to −80 °C range, in order to preserve downstream developmental potential and live-birth potential.

GENETICS (1 OF 21)

P-81 11:15 AM Monday, October 26, 2026

CARDIOGENETIC TESTING AND COUNSELING IN FERTILITY CARE: A CASE SERIES. Elizabeth Francisco, MS CGC, Newark, DE; Labcorp Genetics, Newark, DE

OBJECTIVE: This case series aims to demonstrate the clinical impact of genetic counseling and testing for suspected cardiac patients in the fertility space.
MATERIALS AND METHODS: Recent cases seen by genetic counselors serving cardiac and fertility patients were reviewed to identify patients with a positive personal or family history of cardiac disease. Testing for patients was completed through multi-gene panel or known familial variant testing.
RESULTS: Each case is outlined to highlight the indication for testing and subsequent impact of results. Case 1 is a patient with reported personal and family history of ectopia lentis. Ectopia lentis can be a dominant isolated condition or part of a syndrome. The patient had a multi-gene panel and results revealed a FBN1 variant associated with Marfan syndrome. The patient was referred to cardiology for aortic evaluation prior to conception. Case 2 is a 28 year old with clinical diagnosis of dilated cardiomyopathy, testing revealed a variant in RBM20, associated with dilated cardiomyopathy. This molecular diagnosis is associated with earlier presentation and more rapid disease progression which allowed for better risk assessment and recommendations for future offspring. Case 3 is a patient whose mother was newly diagnosed with Long-QT syndrome. The patient was positive for a KCNQ1 variant. KCNQ1 biallelic variants cause Jervell and Lange-Nielsen syndrome. Partner testing was initiated to inform reproductive risks. Case 4 is a patient with personal history of aortic aneurysm and a family history of Marfan syndrome. A multigene panel revealed a variant in TGFBR1, associated with Loeys-Dietz syndrome. An accurate diagnosis assists with care during and outside of pregnancy. Case 5 is a patient with personal and family history suspicious of Brugada syndrome. Only 35% of patients have a causative variant identified on testing. A large multigene panel was negative, leading to discussion of ways to reduce risk for affected offspring with only a clinical diagnosis.
CONCLUSIONS: Consideration of the cardiac history in reproductive planning can allow for informed decision-making regarding medical management and risk to offspring. A molecular diagnosis of a cardiogenetic disorder can allow for options such as PGT-M and direct appropriate partner testing. Cardiac patients are at high risk for maternal and fetal complications during pregnancy/post-partum. Uninformative testing in the presence of a clinical diagnosis can lead to discussion of family planning options (gamete donation).
IMPACT STATEMENT: Genetic counseling can facilitate testing for cardiogenetic patients and interpretation of results, as well as family planning options. Genetic testing can assist referring clinicians with risks prior to conception and recommended management during preconception, prenatal, and the postpartum period.
SUPPORT: Employee and stock holder of Labcorp genetics

P-82 11:30 AM Monday, October 26, 2026

MITOCHONDRIAL DNA CONTENT AS A PROGNOSTIC BIOMARKER: CORRELATING mtDNA/GDNA RATIOS WITH PLOIDY, MORPHOLOGY, AND IMPLANTATION SUCCESS. Rina Abramov, MSc[1], Mitko Madjunkov, M.D.[1], Clifford Librach, MD[1] and Svetlana Madjunkova, M.D., M.SC., Ph.D.[2], [1]CReATe Fertility Centre, Toronto, ON, Canada, [2]Create Fertility Centre, Toronto, ON, Canada

OBJECTIVE:
To evaluate the clinical significance of the mtDNA/gDNA ratio as a predictive biomarker for embryo viability by investigating its relationship with chromosomal ploidy, morphological grade, and clinical implantation outcomes in a large cohort of 10,000+ embryo transfers.
MATERIALS AND METHODS:
This retrospective study was performed at a single fertility center, and its reproductive genetics laboratory, from Jan 2016-Feb 2026. High resolution NGS was used for PGT-A (10Mb for copy number variations and 30%-70% for mosaicism).
Embryos (n=58341) were categorized based on three primary variables to evaluate mitochondrial distribution:
° Implantation Outcomes -IO (n=11422): Ongoing Pregnancy-OP (n=4015), No-Implantation-NP (n=6108), Miscarriage-MS (n=835), and Biochemical pregnancy-BC (n=464).
° Chromosomal Ploidy: Euploid (n=31772), Mosaic (n=6765), Segmental aneuploid (n=2436), or Aneuploid (n=17300).
° Morphological Grade: Good (AA, AB, BA; n=11602), Average (BB; n=20247), or Poor (BC, CB, CC; n=26492).
Statistical significance was determined using comparative analysis of means, with $p < 0.05$ considered significant.
RESULTS:
OP had higher mtDNA/gDNA ratios compared to NI ($p < 0.001$) and MS ($p < 0.001$), but not to BC (p=0.150). Notably, mosaic embryos that resulted in OP exhibited significantly elevated mtDNA/gDNA ratios compared to successful euploid transfers ($p < 0.001$). No differences were observed evaluating NI; MS or BS outcomes between euploid and mosaic embryo transfers.
Regarding chromosomal status, a progressive increase in mean mtDNA content was observed, moving from euploid embryos to segmental and aneuploid embryos ($p < 0.001$). No difference was observed comparing aneuploid embryos with segmental abnormal ones.
Embryo morphology was inversely correlated with mitochondrial DNA; "Poor" graded embryos displayed significantly higher mean ratios compared to their "Good" and "Average" counterparts ($p < 0.001$)
A paired comparison of mean mtDNA per patient demonstrated that IMPLANTED embryos had significantly higher mtDNA levels compared to NI embryos (paired t-test, $p < 0.001$).
CONCLUSIONS:
These results establish the mtDNA/gDNA ratio as a significant biomarker for embryo stress and viability. The significant difference in mitochondrial content between ongoing

pregnancies vs no-implantation and vs miscarriages highlights its value in identifying embryos at risk for implantation failure or miscarriage. Conversely, the similarity between ongoing and biochemical pregnancy profiles suggests very early failures may stem from other biological factors.

IMPACT STATEMENT:

This study identifies the mtDNA/gDNA ratio as a critical biomarker for embryo viability that complements traditional screening. By linking mitochondrial stress to clinical risks like miscarriage and poor morphology, these findings enable more precise embryo selection. Ultimately, this research offers a data-driven approach to reducing pregnancy loss and providing clearer, personalized guidance for IVF patients.

P-83 11:45 AM Monday, October 26, 2026

BEYOND APPEARANCES: HOW RELIABLE IS EMBRYO MORPHOLOGY AS A SURROGATE FOR GENETIC COMPETENCE IN IVF. Jasmine Mithilesh Raut, MBBS, DGO, DNB, FRM[1], Vandana Hegde, M.B.B.S., MS, FRM[2], Surbhi Kapoor, MSc, PhD Human Genetics[3], Bandemegala Siddesh, Msc[4] and Nishanth Singh, MSc[5], [1]Gachibowli, Telangana, India, [2]Hegde Fertilty, Hyderabad, Telangana, India, [3]Genetic consultant, Hyderabad, Hyderabad, India, [4]Senior Embryologist, Hyderabad, Telangana, India, [5]Hegde Fertilty, Hyderabad, India

OBJECTIVE: To evaluate the predictive value of embryo morphology for genetic normalcy and to determine how integration of morphological grading with euploidy assessment can optimize embryo selection and utilization in IVF.

MATERIALS AND METHODS:

A retrospective observational study conducted at a tertiary care fertility unit spanning two years (January 2024 to December 2025). Data including 455 blastocysts that underwent trophectoderm biopsy for preimplantation genetic testing for aneuploidy (PGT-A) were retrieved from hospital's electronic database.

Morphological grading for blastocyst(n=455) was performed using Istanbul consensus. Trophectoderm biopsy samples were analyzed with next generation sequencing (NGS) to determine chromosomal status. PGT-A results were categorized into euploid, aneuploid and mosaic embryos. Data were analyzed using SPSS-27 software. Categorical variables were expressed as frequency and percentage. Associations between embryo grading and ploidy status were evaluated using chi-square tests and binary logistic regression.

RESULTS:

For analysis purpose, embryos were classified into three categories: Good (expansion grades 3/4/5, AA, AB, BA; n = 202, 44.39%), Fair (expansion grades 3/4/5, AC, BB, CA; n = 106, 23.29%), and Poor (expansion grades 3/4/5, BC, CB, CC; n = 147, 32.30%). PGT-A was performed on 455 embryos, revealing 229 euploid (50.30%), 166 aneuploid (36.48%), and 60 mosaic (13.18%). When analyzed by overall grade, good and fair quality embryos were more frequently euploid (48.5% and 27.5%, respectively), although 24.0% of poor quality embryos were also euploid. Superior morphology (good and fair grades) was strongly associated with higher euploidy rates ($p < 0.001$).

Analysis of individual morphological parameters demonstrated that higher expansion grades (4–5), inner cell mass grade A, and trophectoderm grades A/B were significantly common in euploid embryos ($p = 0.001$). Nonetheless, euploid embryos were also identified among those with lower morphological grades, including expansion grade 3, ICM grades B/C, and trophectoderm grade C.

CONCLUSIONS: Study findings highlight the limitations of morphology as standalone predictor of chromosomal status. Excluding embryos solely on morphological grounds may risk discarding genetically normal embryos with potential for viability.

IMPACT STATEMENT:

Morphology based embryo prioritization may result in the unnecessary discard of genetically normal embryos, thereby reducing embryo utilization—particularly in patients with limited embryo numbers or advanced maternal age. Optimizing transfer strategies with personalized patient counselling regarding prognosis can improve cumulative pregnancy rates.

SUPPORT: Not applicable.

REFERENCES:

Marqueño Aroca et al, 2025
Piekos et al, 2023
Nogueira et al, 2021

P-84 12:00 PM Monday, October 26, 2026

USING POLYGENIC EMBRYO SCREENING FOR EMBRYO RANKING AND SELECTION: STAKEHOLDERS' PERCEIVED ADVANTAGES AND DISADVANTAGES. Sophia M Lindekugel, MD[1], Dorit Barlevy, PhD[1], Sophia Wang, BA candidate[2], Abigail Martinez, BA[1], Rémy A Furrer, PhD[3], Shai Carmi, PhD[4], Todd Lencz, PhD[5], Gabriel Lazaro-Munoz, J.D., PH.D.[6] and Stacey Pereira, PhD[1], [1]Baylor College of Medicine, Houston, TX, [2]Rice University, Houston, TX, [3]Massachusetts General Hospital, Boston, MA, [4]The Hebrew University of Jerusalem, [5]Zucker School of Medicine at Hofstra/Northwell, Glen Oaks, NY, [6]Mass General Brigham, Somerville, MA

OBJECTIVE: Polygenic embryo screening (PES) is a novel genetic technology that generates polygenic risk estimates for embryos and may present embryos with comparative ranking based on polygenic risk information to guide embryo selection. This practice is in contrast with non-directive counseling typical within genetic counseling. Using a semi-structured interview technique, we provide an in-depth analysis of how patients and clinicians understand PES as a tool for embryo ranking and selection and describe perceived advantages and disadvantages of proprietary embryo rankings for embryo selection.

MATERIALS AND METHODS: A qualitative interview study was conducted with reproductive endocrinologists (n=27) and patients who were currently undergoing or had recently undergone IVF (n=26). Interviews were audio-recorded, transcribed, and analyzed using deductive and inductive coding with team-based thematic analysis.

RESULTS: Patients perceived PES-based embryo rankings as advantageous for facilitating information processing, supporting patient-centered values, and enabling selection of lower-risk embryos. Clinicians expressed concern over the technological limitations of PES and felt these issues made PES less relevant to ranking and selecting among available embryos. Clinicians were concerned that use of PES rankings rather than embryo quality for embryo selection would compromise pregnancy rates, while some patients had the misperception that the use of rankings for selection would improve pregnancy rates. Both groups identified potential advantages of embryo ranking derived from PES in supporting individualized, patient-centered embryo selection. However, they raised concern company-generated rankings lack of transparency and could create misalignment between company algorithms and patient values.

CONCLUSIONS: Patients viewed PES-based embryo ranking as beneficial and aligned with procreative beneficence, whereas clinicians considered its clinical use premature given technological limitations and potential impact on pregnancy outcomes. Both groups recognized that embryo ranking may support patient-centered selection but raised concerns that proprietary rankings may misalign with patient values. This company ranking practice further departs from traditional counseling approaches with important implications. Divergent stakeholder perspectives also revealed key counseling needs. While clinicians identify limitations of validity, patients accept simplified risk-reduction commercial messaging. This gap highlights the need for clinician preparedness to counsel patients on the limitations of the technology itself, in addition to navigating issues related to statistical risk interpretation, embryo comparison, condition-specific risks, and impact on implantation and pregnancy rates.

IMPACT STATEMENT: While patients perceive PES as advantageous, clinicians cite technological limitations and prioritize traditional selection criteria to optimize outcomes. Patient interest in PES and reliance on proprietary explanations of PES demands clinical preparedness to address patient counseling needs.

GENETICS (2 OF 21)

P-85 11:15 AM Monday, October 26, 2026

NON-LETHAL ANEUPLOIDY RATES (TRISOMY 13, 18, AND 21) BY AGE: A STUDY OF 119,222 EMBRYOS BIOPSIED FOR PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY. Zachary S. Anderson, M.D.[1], David Boedeker, D.O., MHA[2], Audrey J Gaskins, ScD[3], James Toner, MD, PhD[1], Kathleen Devine, MD[4] and Jennifer F Kawwass, MD[5], [1]Emory University School of Medicine, Division of Reproductive Endocrinology and Infertility, Atlanta, GA, [2]Walter Reed National Military Medical Center, Bethesda, MD, [3]Emory University Rollins School of Public Health, Department of Epidemiology, Atlanta, GA, [4]Shady Grove Fertility, Rockville, MD, [5]Emory University, Department of Gynecology & Obstetrics, Division of Reproductive Endocrinology and Infertility, Emory Reproductive Center, Atlanta, GA

OBJECTIVE:

Preimplantation genetic testing for aneuploidy (PGT-A) is a useful tool for embryo selection in high-risk populations. In younger patients (<35 years), PGT-A has not been shown to reduce miscarriage rate and may lower cumulative live birth rate, yet it remains widely utilized. Patient surveys suggest this is driven by the goal of "reducing the risk of birth defects." Although most aneuploid embryos fail to implant or miscarry, embryos with non-lethal aneuploidies have associated syndromes. The objective of this study was to describe the rate of non-lethal trisomy 13 (T13), 18 (T18), and 21 (T21) among embryos biopsied for PGT-A, stratified by patient age.

MATERIALS AND METHODS:

This retrospective study analyzed PGT-A cycles from a large fertility clinic network (2024-2026) of patients aged 21-47 at retrieval. PGT-A results were characterized as non-lethal aneuploid (T13, T18, T21), mosaic non-lethal aneuploid, euploid, and other. Data were stratified by age groups to calculate aneuploidy rates. Restricted cubic splines were used to model the association between age and aneuploidy rates.

RESULTS:

Our study included 19,136 patients that underwent 25,605 cycles with 119,222 embryos. The mean age was 36(4) years and 87% were nulligravid. A non-lethal aneuploidy was identified in 1.3% of embryos and a mosaic non-lethal aneuploidy in 0.3%. Trisomy 21 (0.7%) was the most prevalent, followed by T13 (0.3%) and T18 (0.3%). The rate of non-lethal aneuploidies (Table 1) was lowest in those <35 (7.2 per 1000) and highest at 38-40 years (20.4 per 1000). A similar trend was noted when age was modelled as a restricted cubic spline, with non-lethal aneuploidy rates increasing from 3.3 per 1000 at age 21 up to 22.2 per 1000 at age 41 before decreasing to 3.3 per 1000 at age 47. Euploidy rates peaked at age 29 (64.0%) and declined with age falling to 30.8% at 40 years, 12.5% at 43 years, and 1.3% at 47 years.

CONCLUSIONS:

In patients <35 years old, fewer than 1% of embryos have a non-lethal aneuploidy. The rates of T13, T18, and T21 increase with maternal age up to age 41, then decline. The decrease in non-lethal aneuploidy in patients >41 years is due to multiple aneuploidies at older ages rather than a single trisomy. These findings are important to aid in counseling on the actual risk-reduction benefits of PGT-A.

IMPACT STATEMENT:

The low incidence of non-lethal aneuploidy in embryos from patients aged <35 provides evidence against the routine use of PGT-A in this cohort.

	Rate of aneuploidy per 1000 embryos biopsied				
	Trisomy 21	**Trisomy 18**	**Trisomy 13**	**All Non-lethal Aneuploid**	**Total Embryos**

Female age (years)	N	Rate	N	Rate	N	Rate	N	Rate	N
<35	201	4.0	64	1.3	99	2.0	364	7.2	50,431
35-37	251	7.5	84	2.5	100	3.0	435	13.0	33,519
38-40	281	11.5	97	4.0	121	4.9	499	20.4	24,513
41-42	92	11.8	42	5.4	21	2.7	155	19.9	7,778
>42	26	8.7	15	5.0	6	2.0	47	15.8	2,981
Total	851	7.1	302	2.5	347	2.9	1500	12.6	119,222

P-86 11:30 AM Monday, October 26, 2026

CAN BIOPSY CELL NUMBER BE INFERRED FROM SEQUENCING PROFILES AND OPTIMIZED THROUGH REAL-TIME VISION-GUIDED TROPHECTODERM BIOPSY TO ENSURE CONSISTENT PGT-A DATA QUALITY? Zhilin Liu, Ph.D.[1], John Burke, Ph.D.[2], Alexander Griffith, B.S.[1], Dasith Perera, Ph.D.[1], Kate Brown, Ph.D[1], Tony Gordon, Ph.D.[3] and Milan Ivosevic, Ph.D.[4], [1]CooperSurgical, Houston, TX, [2]Echelondx, Marathon, FL, [3]CooperSurgical, London, United Kingdom, [4]CooperSurgical, Trumbull, CT

OBJECTIVE:
To develop and validate a sequencing-profile–based matrix for estimating trophectoderm (TE) biopsy cell number and to assess the performance of a vision-guided Digital Biopsy Assistant (DBA) for real-time biopsy cell size estimation during TE biopsy.
MATERIALS AND METHODS:
A controlled cell titration series was generated using manually isolated GM00024 fibroblast cells (1–10 cells; n=16 per group). Samples were processed through a standard PGT-A workflow, including whole-genome amplification (WGA) followed by low-pass next-generation sequencing (NGS). Sequencing data were used to construct a reference matrix capturing characteristic sequencing profiles associated with known cell numbers. The Digital Biopsy Assistant (DBA) is an AI/ML developed tool that provides real-time procedure guidance via an augmented reality interface during TE biopsy. DBA annotates key blastocyst features and estimates the number of cells present in the biopsy pipette in real time. DBA-estimated cell counts were compared with DAPI stained nuclear counts to assess accuracy. DBA classifies biopsy-size as: “inadequate” (<5 cells), “adequate” (5-10 cells), or “too high” (>10 cells).
Sequencing profiles generated from DBA-guided biopsies were retrospectively mapped to the 1–10 cell reference matrix for analysis.
In addition, sequencing data of historical clinical samples were that previously yielded “no-result” outcomes were mapped to the reference matrix to estimate inferred biopsy cell numbers.
RESULTS:
Sequencing profiles demonstrated strong, cell number–dependent features across the 1–10 cell reference series, enabling construction of a robust matrix for biopsy cell-count estimation.
DBA-guided biopsy samples demonstrated high concordance between DBA real-time cell-number estimates and sequencing profile-based classification.
Retrospective analysis of historical clinical samples suggested that a subset of prior samples that failed to yield PGT-A outcomes was likely attributable to insufficient biopsy cell numbers.
CONCLUSIONS:
Variability in biopsy material input is a key factor in consistency of PGT-A results. Sequencing profile–based estimation of biopsy cell number enables reliable discrimination between inadequate and adequate TE biopsy samples. The Digital Biopsy Assistant provides real-time assessment of biopsy size, supporting more consistent collection of sufficient cellular material for dependable PGT-A analysis. This combined approach may reduce suboptimal biopsies, improve sequencing quality, and enhance workflow consistency across IVF laboratories.
IMPACT STATEMENT:
This study introduces a complementary augmented reality, vision-guided and sequencing-based framework for TE biopsy quality control that addresses a key source of variability in PGT-A outcomes, biopsy cell number. By enabling real-time, objective assessment and post-hoc analysis through sequencing profiles, this scalable approach supports sufficient biomass acquisition, potentially improving diagnostic reliability and standardizing biopsy practices across embryology laboratories.
SUPPORT: Authors are employees of CooperSurgical and Echelon Diagnostics.

P-87 11:45 AM Monday, October 26, 2026

CLINICAL OUTCOMES OF EUPLOID AND MOSAIC EMBRYOS BIOPSIED ON DAYS 5, 6, AND 7. Claire Murphy Jones, MS, CGC[1], Rebecca Gu, MS[2], Shannon Kokjohn, MSc[2], Amy Jordan, MS, LCGC[1], Vanessa Julaton, PhD, HCLD (ABB)[2], Jack Becker, TS (ABB), MSc[2], William Venier, MSC[2], Said T Daneshmand, MD[2] and Cengiz Cinnioglu, PhD[3], [1]Luminary Genetics, CA, [2]San Diego Fertility Center, San Diego, CA, [3]Luminary Genetics, San Jose, CA

OBJECTIVE: Currently, euploid embryos are typically prioritized for transfer before mosaic embryos, regardless of embryo grade or biopsy day; however, it is possible that mosaic embryos may perform better than euploid embryos of poorer morphology. Review of clinical outcome data for mosaic and euploid embryos over five years at a single center was conducted to determine optimal transfer order.
MATERIALS AND METHODS: Transfer data was reviewed for single embryo transfers from cryopreserved blastocyst stage embryos identified as euploid or mosaic via PGT from 08/01/2020 – 12/31/2025. PGT was performed at a single laboratory utilizing next generation sequencing (NGS). Copy number counts <30% were considered euploid, 30% - 50% were considered low mosaic, and 50% - 70% were considered high mosaic. Clinical outcomes included initial pregnancy by serum hCG test, ongoing pregnancy which was defined as visualization of gestational sac and detection of fetal heartbeat, and live birth.
RESULTS: 3876 embryo samples were included in this study; 32 samples identified to have mosaicism, and 3844 samples identified as euploid via PGT-A. For euploid embryos, those biopsied on day 5 (n = 533) had an ongoing pregnancy and/or live birth rate (OP/LB) of 64.92% (346/533), those biopsied on day 6 (n = 3191) had an OP/LB of 53.65% (1712/3191), and those biopsied on day 7 had an OP/LB of 30.83% (37/120). For mosaic embryos, 0 were biopsied on day 5; those biopsied on day 6 (n = 27) had an OP/LB of 37.04% (10/27), and those biopsied on day 7 (n = 5) had an OP/LB of 40% (2/5).
CONCLUSIONS: Although clinical outcome data was limited for embryo samples identified to have mosaicism, initial trends suggest that mosaic embryos biopsied on day 6 performed similarly or slightly better compared to euploid embryos biopsied on day 7. Further data is needed to determine whether mosaic embryos biopsied on days 5 or 6 should be prioritized for transfer before euploid embryo biopsied on day 7.
IMPACT STATEMENT: Five years of clinical outcome data suggest that day 6 mosaic embryos may achieve comparable or slightly better outcomes than day 7 euploid embryos, challenging the status quo to determine transfer order by copy number status alone.

P-88 12:00 PM Monday, October 26, 2026

RECURRENT SEGMENTAL EMBRYO ABNORMALITIES ON PGT-A REQUIRE PARENTAL TESTING BEFORE DEFINITIVE CLASSIFICATION. Mili Thakur, M.D., FACOG, FACMG, Genome Ally P.C., Grand Rapids, MI

OBJECTIVE: To report recurrent identical segmental Y chromosome abnormalities on PGT-A and demonstrate how parental testing can change PGT result interpretation.
MATERIALS AND METHODS: A couple undergoing in vitro fertilization (IVF) with PGT-A for a second child produced four blastocysts tested by next-generation sequencing–based PGT-A. Two embryos showed an identical Y chromosome segmental deletion and were classified aneuploid. Because recurrence of the same abnormality suggested a possible inherited variant, paternal evaluation was expanded. Prior testing included normal karyotype and negative Y microdeletion analysis (AZFa, AZFb, AZFc). Paternal chromosomal microarray was subsequently performed.
RESULTS: Two embryos demonstrated the same reported 19.0 Mb Y chromosome deletion, del(Y)(p11.32q11.221), and were classified as aneuploid. One additional embryo was euploid and one showed complex aneuploidy. The identical breakpoint pattern across embryos raised concern for a shared paternal origin. Paternal microarray identified a smaller 2.2 Mb hemizygous deletion at Yp11.2, arr[GRCh37]Yp11.2(6,627,544_8,873,548)x0. This variant was classified likely benign and did not involve any known disease-associated genes. The remainder of the Y chromosome was normal. The discordance between embryo PGT-A and parental microarray suggests limitations in PGT-A platform resolution, breakpoint modeling, and reporting thresholds rather than a true recurrent 19 Mb pathogenic deletion. The laboratory was engaged for reinterpretation incorporating parental data.
CONCLUSIONS: Recurrent identical segmental findings on PGT-A should not be automatically classified as pathogenic embryo abnormalities. Parental testing is essential when repeated segmental events are identified to determine whether findings represent benign inherited variation or clinically significant abnormality.
IMPACT STATEMENT: As PGT-A resolution improves, recurrent segmental findings are increasingly detected. Embryos with repeated identical segmental abnormalities should not be definitively labeled abnormal until parental testing clarifies the genomic origin and clinical significance of the segment.
SUPPORT: No financial disclosure

LAW, POLICY, & ADVOCACY (1 OF 2)

P-89 1:30 PM Monday, October 26, 2026

A MULTI-DIMENSIONAL COMPARATIVE ANALYSIS OF US AND UK IVF CONSENTS REVEALS CRITICAL HEALTH LITERACY GAPS. Maha Al-Asmakh, PhD[1], Fadi Choucair, Ph.D.[2] and Humam Emad Abdulraheem Rajha, MD Student[3], [1]Qatar University, Doha, Qatar, [2]Sidra Medicine, Doha, Qatar, [3]Qatar University, Qatar

OBJECTIVE: To determine if United States (US) in-vitro fertilization (IVF) cryopreservation consent forms meet health literacy and emotional valence benchmarks compared to the standardized United Kingdom (UK) Human Fertilisation and Embryology Authority (HFEA) regulatory model.
MATERIALS AND METHODS: A comparative cross-sectional analysis (June–August 2025) of 30 US clinic consent forms against the UK HFEA template was conducted. Forms were assessed using five readability formulas, the Patient Education Materials Assessment Tool (PEMAT-P) for understandability and actionability, and a 15-item content checklist. Natural Language Processing (NLP) and sentiment analysis quantified linguistic complexity and the density of anxiety-triggering keywords. Decision point density and disclaimer frequency were also quantified. Statistical significance was determined using one-sample t-tests and Wilcoxon signed-rank tests.
RESULTS: US forms averaged a grade 9.7 reading level, significantly exceeding the recommended ≤8 benchmark ($p<0.001$), with understandability (0.55±0.07) and actionability (0.45±0.08) scores falling significantly below thresholds ($p<0.001$). The UK form achieved a grade 5.3 reading level and featured 12-fold higher decision point density (1.8 vs. 0.15/page, $p<0.001$). NLP revealed US forms have a three-fold higher

density of anxiety-triggering keywords (4.2% vs. 1.3%) and a 68% defensive tone, contrasting with the UK model's 54% collaborative tone. However, both the UK and US forms failed functional benchmarks for understandability and actionability.
CONCLUSIONS: The current decentralized US IVF consent process prioritizes institutional legal protection at the expense of patient comprehension and autonomy, creating documents that are difficult to read and emotionally burdensome. While the standardized UK model is superior in readability and collaborative tone, it also fails key functional benchmarks, indicating a systemic need for improvement in both systems to ensure ethically sound, informed decision-making.
IMPACT STATEMENT: This study reveals critical health literacy gaps in IVF consent forms, demonstrating that current US practices may compromise ethically sound informed consent. It advocates for the adoption of standardized, patient-centered templates to improve comprehension and autonomy in reproductive medicine.

P-90 1:45 PM Monday, October 26, 2026

LEGISLATING AGAINST MEDICINE: HOW POST-*DOBBS* ABORTION RESTRICTIONS ERODE PHYSICIAN AUTONOMY AND PATIENT ACCESS TO REPRODUCTIVE HEALTHCARE. Manaswi Prabhu Sawkar, B.A. Psychology, CUNY School of Public Health, Robbinsville, NJ

OBJECTIVE: This literature review aims to examine how post-*Dobbs* abortion legislation undermines the reproductive healthcare landscape, devalues physician decision-making autonomy, and hinders patient health outcomes
MATERIALS AND METHODS: A narrative literature review was conducted using PubMed, Google Scholar, and grey literature searches, including peer-review studies, physician surveys, maternal mortality data, legal case documentation, and investigative journalism (June 2022-April 2026). Abortion statute language and enforcement mechanisms were cross-referenced with maternal health outcomes data.
RESULTS: Three mechanisms of harm to reproductive health outcomes were identified. First, legal chilling effects: trigger laws in restrictive states contain contradictory, non-medical exceptions with no clinically actionable standards. Enforced through criminal penalties, chilling effects and physician confusion lead to increased maternal morbidity, as there is reluctancy to provide medical recommendations until patients reach a legally recognized threshold. *Zurawski v. State of Texas* (2023) outlines 20 such cases of severe morbidity: sepsis, hemorrhage, and fertility loss, which emerge from denied or delayed care. Second, surveillance failure: Texas's maternal mortality committee substantially delayed their biennial 2022 maternal mortality review, which hindered mechanisms by which harm is identified. Third, there has been a threat of preventive care collapse due to physician relocation from restrictive states to shield states, and clinic closures that hinder access to essential reproductive care like pap smears, STI screening, mammograms, and contraceptive counseling.
CONCLUSIONS: Post-*Dobbs* legislation has produced a cascading public health emergency. Vague statutory language and criminal liability exposure prevent evidence-based clinical practice, contribute to measurable maternal morbidity, and have collapsed preventative reproductive healthcare infrastructure. Additionally, due to delayed analysis of health outcomes such as in Texas, comparative outcome studies may reflect missing or incorrect data than equivalence or correlation. Federal standardization of medical exception frameworks and good-faith provider protections are urgently needed to ensure consistent clinical thresholds across jurisdictions.
IMPACT STATEMENT: Analysis of *post-Dobbs* legislation depicts the tangible, detrimental destruction of autonomy and patient outcomes in reproductive healthcare. In attempts to preserve life, trigger laws cause increased mortality risk and disregard reproductive rights, when in reality, attempting to restrict such liberties is an impediment on personal freedom and the right to health.

P-91 2:00 PM Monday, October 26, 2026

PARENTAL VIEWS ON THE ACETAMINOPHEN AND AUTISM ANNOUNCEMENT FROM THE US GOVERNMENT: NATIONAL SURVEY. Katherine G. Unger, B.S.[1,2], Vivian R. Didomenico, BA[3], Joon Kim, M.P.H.[4], Tamar Schiff, MD[5], Arthur L. Caplan, Ph.D.[6] and Gwendolyn P. Quinn, PhD[3], [1]New York, NY, [2]NYU Langone Health, New York, NY, [3]NYU Grossman School of Medicine, New York, NY, [4]NYU Grossman School of Medicine, [5]New York University Grossman School of Medicine, New York, NY, [6]New York University School of Medicine, Department of Population Health, Division of Medical Ethics, New York, NY

OBJECTIVE: To characterize predominant themes in pregnant and recently postpartum individuals' views on the U.S. government's 2025 announcement about prenatal acetaminophen use and its purported association with autism spectrum disorder (ASD).
MATERIALS AND METHODS: We conducted a cross-sectional mixed-methods online survey of U.S. adults (18–45 years), assigned female at birth, who were currently pregnant or had given birth between 2023–2025. The survey, developed in Qualtrics and distributed via Prolific, included 30 quantitative items (reported separately) and 3 open-ended questions assessing: (1) emotional responses to the announcement; (2) trust in the federal government and clinicians; and (3) perceived impact on beliefs and health-related behaviors. A total of 612 participants completed quantitative items (results in another abstract), and 230 provided narrative responses. Data collection occurred from 11/14/2025–01/16/2026, following the September 2025 U.S. Department of Health and Human Services directive to the FDA to update acetaminophen labeling regarding a potential association with ASD. Qualitative responses were analyzed thematically.
RESULTS: Respondents emphasized that medication decisions in pregnancy should be grounded in rigorous evidence and communicated by clinicians rather than political figures. Most distrusted the announcement because it originated from government officials rather than scientific or medical bodies, leading some to dismiss the claim and others to await clinician guidance. The Tylenol–ASD claim was frequently compared to vaccine-related misinformation. Participants feared the announcement could provoke unnecessary anxiety, cause abrupt discontinuation of medications without medical input, and reinforce stigma directed at mothers of autistic children. Some perceived the announcement as politically motivated and a potential avenue for increased control over pregnant people's bodies. Two positions emerged: most believed clinicians should actively refute the announcement as premature and alarmist, while a minority endorsed minimizing Tylenol use until further data are available. Across political affiliations and beliefs, respondents reported greater trust in OB/GYNs, midwives, and nurses rather than federal officials regarding medication safety in pregnancy.
CONCLUSIONS: Per qualitative responses, the federal announcement about a potential Tylenol–ASD link was widely viewed as politically driven, scientifically uncertain, and emotionally harmful. Core themes included mistrust of government, concerns about scientific credibility, perceived political interference in clinical guidance, and worries about emotional harm and stigma for pregnant individuals and families affected by autism.
IMPACT STATEMENT: Clear, evidence-based, clinician-led communication is critical when addressing uncertain medication risks in pregnancy. Public health messaging that bypasses clinicians and overstates associations may erode trust, fuel misinformation comparisons, and negatively influence medication decision-making.
SUPPORT: Sponsored by the Rory Myers School of Nursing, NYU

P-92 2:15 PM Monday, October 26, 2026

FINANCIAL AND SOCIAL CONSEQUENCES OF INADEQUATE INSURANCE COVERAGE FOR FERTILITY TREATMENT: FINDINGS FROM A NATIONAL MIXED METHODS STUDY. Simran Singh-Behrens, MD[1], Laetitia Meyrueix, PhD[2], Emma Richardson, MPH(c)[2], Leah Chapman, PhD, MPH[2] and Andrea Sprockett, MIPH, MA[3], [1]Wayne State University, Detroit, MI, [2]Women's Health Research & Action Center, Houston, TX, [3]Insight Metrics, Winston-Salem, NC

OBJECTIVE: To evaluate the adequacy of insurance coverage for fertility treatment in the United States and its associated financial and social impacts on patients.
MATERIALS AND METHODS: In this national, mixed methods study of individuals with infertility (current or within the past 24 months), participants completed an online survey assessing insurance coverage, out-of-pocket costs, and financial and social impacts of treatment (n=90). A subset of participants completed qualitative interviews (n=50). Descriptive statistics and Mann-Whitney U tests were used to analyze quantitative data. Thematic analysis was used to analyze qualitative data.
RESULTS: Insurance coverage for fertility treatment was frequently limited or absent for key services. Nearly half of respondents (47%, n=42) reported no insurance coverage for *in vitro* fertilization (IVF), while 40% (n=36) reported partial coverage, 9% (n=8) reported full coverage, and 4% (n=4) were unsure. Despite most participants reporting some form of insurance coverage, out-of-pocket costs were substantial. Approximately 69% of respondents reported using savings, 59% relied on credit cards, and 30% reduced spending on non-essential expenses to finance care. Participants without any fertility coverage (n=12) incurred significantly higher treatment costs than those with partial coverage (n=76) ($U=236.00$, $p<0.01$). Common financial consequences included debt, delayed or forgone treatment, and changes to employment decisions. Social impacts were also pronounced, with 43% of participants reporting avoidance of friends and family and 70% reporting feelings of isolation from peers at a similar life stage. Qualitative findings highlighted the emotional toll and impacts on personal relationships, including stress, uncertainty, and difficult trade-offs in family building decisions.
CONCLUSIONS: Insurance coverage for fertility treatment in the United States is frequently inadequate, particularly for services such as IVF, resulting in substantial out-of-pocket costs even among insured patients. This financial burden contributes to medical debt, delayed or forgone care, and significant emotional and social consequences, including isolation and strain on relationships. These findings underscore the need for more comprehensive and equitable insurance coverage to reduce financial barriers and support individuals pursuing family building.
IMPACT STATEMENT: Inadequate insurance coverage for fertility treatment requires patients to self-finance care through savings depletion, debt, and lifestyle changes, demonstrating that family building often requires substantial financial sacrifice. These findings provide evidence that can inform advocacy and policymaking efforts to expand and standardize insurance coverage for fertility treatment.

P-93 2:30 PM Monday, October 26, 2026

EVOLVING TRENDS IN GESTATIONAL CARRIER AGREEMENTS: A MIXED-METHODS STUDY OF REPRODUCTIVE ATTORNEYS IN NEW YORK AND CALIFORNIA. Michelle J. Bayefsky, MD[1], Nina G Faynshtayn, BA[2], Victoria Lazarov, MD[1], Joseph A. Lee, BA[3], Alan B. Copperman, MD[4] and Erkan Buyuk, MD[4], [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]New York, NY, [3]RMANY || US Fertility, New York, NY, [4]Reproductive Medicine Associates of New York, New York, NY

OBJECTIVE: The content of gestational carrier agreements (GCAs) reflects broader trends in gestational carrier arrangements. This study explored assisted reproductive attorneys' perspectives on changes in GCAs over time and factors contributing to these changes.
MATERIALS AND METHODS: This qualitative study included attorneys experienced with GCAs practicing in New York (NY) or California (CA). Participants were identified through snowball sampling and invited to complete an online survey and Zoom interview. Semi-structured interviews were conducted in January-March 2026. Verbatim transcripts were analyzed using a codebook and the constant comparison method.
RESULTS: 31 lawyers participated (16 CA & 15 NY). Table 1 contains demographic and practice features. 4 themes emerged. 1) Participants reported a significant increase in

the compensation of gestational carriers (GCs) in the past 5 years. Two factors were cited: reduced GC availability during COVID leading to sustained higher compensation and increased GC empowerment through online peer communication. 2) Participants noted the evolution of GCAs in response to global, political and societal shifts, including a decline in international intended parents (IPs) since COVID, new travel limits for GCs to states with restrictive abortion laws, and greater emphasis on vaccination related to rising vaccine hesitancy. 3) Participants stated that behavior restrictions in GCAs are largely shaped by the drafting attorney's template and modified based on IP and GC goals. Some attorneys defer restrictions to physicians, while others specify a list of prohibited behaviors. IPs increasingly ask GCs to eat organic food, use certain cookware, and drink filtered water. GCs increasingly advocate for travel flexibility, earlier gestational thresholds for full compensation, and fewer separate payments. 4) Attorneys reported many more international IPs in CA vs. NY and less agency oversight in CA, which was attributed to differences in the states' statutes. Several CA attorneys anticipated increased agency regulation in CA in the future.
CONCLUSIONS: Attorneys reported rising costs of gestational carrier arrangements, increasing GC empowerment, and evolving GCA provisions in response to legal, political and societal shifts.
IMPACT STATEMENT: Reproductive attorneys' perspectives on the evolution of GCAs provide insight into recent trends and possible future directions of gestational carrier arrangements.
Table 1: demographic & practice features

	Number
Gender Female Male	 26 5
Age <35 years (y) 35-44y 45-54y 55-64y ≥65y	 1 11 9 7 3
Years in practice <5y 5-10y 11-20y >20y	 1 5 7 18
Setting Large city Small city Suburban	 17 9 5
Represent primarily... IPs GCs Both equally	 11 2 18
Number of GCAs negotiated <10 11-25 26-50 51-100 101-500 >500	 0 1 2 4 10 14

LAW, POLICY, & ADVOCACY (2 OF 2)

P-94 1:30 PM Monday, October 26, 2026

REPRODUCTION AT THE INTERSECTIONS: HOW ABORTION BANS IMPACT PROVIDER COUNSELING APPROACHES AND BLACK PATIENTS DECISION-MAKING IN MEDICALLY ASSISTED REPRODUCTION. Dr. Isabel Morgan, PhD, MSPH[1] and Zoë Lucier-Julian, M.D., M.P.H, FACOG[2], [1]Morehouse School of Medicine, Atlanta, GA, [2]Feminist Center for Reproductive Liberation

OBJECTIVE: The landmark Dobbs decision immediately triggered abortion bans in many states, significantly reducing or completely eliminating access to abortion. Reproductive medicine providers have expressed concerns about the potential implications of abortion bans on facility-level protocols, yet limited data exist to characterize the impacts of abortion bans specifically within reproductive medicine. The objective of this mixed-methods study is to examine how abortion bans impact reproductive medicine, including modifications to facility level protocols, counseling approaches, patient decision-making, and Black fertility care experiences.
MATERIALS AND METHODS: This study leverages primary quantitative and qualitative data collected through an online survey of Black people with the capacity for pregnancy who explored or obtained medically assisted reproduction in the United States since June 2022 and focus groups with a subset of survey participants who explored or obtained medically assisted reproduction in Georgia or North Carolina. We also conducted individual interviews with reproductive medicine providers to discuss how abortion bans have impacted fertility clinic protocol and counseling approaches.
RESULTS: Preliminary analysis indicate that Black people with the capacity for pregnancy modify their reproductive decision-making in states with abortion policy restrictions, including exploring long-acting reversible contraception and postponing family building in hopes for more favorable sociopolitical environments. These policies have also discouraged individuals with fertility challenges, including a history of miscarriages, from seeking medically assisted reproduction with fertility clinics. Focus group participants indicated that their reproductive medicine provider did not discuss abortion bans in their practice; however, reproductive medicine providers interviewed described shifting transition of care protocols to maternal-fetal medicine specialists, limiting treatments based on the number of mature follicles, and managing increased interest in pre-implantation genetic testing of embryos as a result of state abortion policies.
CONCLUSIONS: Restrictive reproductive health policies, including state-level abortion bans, adversely impact reproductive decision-making specific to family building and fertility care. Reproductive medicine specialists may modify care protocols and counseling to ensure patients are adequately informed and prepared to navigate fertility care in the context of state abortion policies.
IMPACT STATEMENT: The results from this study document restrictions to reproductive autonomy in the United States, and highlight the importance of reproductive medicine providers counseling patients about how abortion bans may impact their fertility care. These learnings will help to reframe narratives about why access to abortion is an essential reproductive health care service, and a human right.

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P-95 1:45 PM Monday, October 26, 2026

REPRODUCTIVE LEGAL RULINGS HAVE DISCORDANT IMPACT ON FELLOWSHIP RANK LISTS AND LONG TERM PRACTICE LOCATION PREFERENCES.

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OBJECTIVE: The reproductive legal landscape in the United States has shifted following the 2022 Supreme Court decision in *Dobbs v. Jackson Women's Health Organization*, which eliminated the federal constitutional right to abortion prior to fetal viability. In 2024, the Alabama Supreme Court's decision in *LePage v. Center for Reproductive Medicine* classified frozen embryos as minor children, exposing clinics to liability under the state's Wrongful Death of a Minor statute. This study evaluates how these rulings influence Reproductive Endocrinology and Infertility (REI) fellowship applicants' rank lists and anticipated practice locations.
MATERIALS AND METHODS: A web-based cross-sectional survey with multiple-choice and Likert scale questions was distributed to current and incoming REI fellows who created rank lists after 2022. Eligible participants included current fellows and those matriculating in 2026. The survey included 11 multiple-choice and three Likert scale items assessing the impact of *Dobbs* and *LePage* on ranking and future career plans. Scaled responses were analyzed using the Wilcoxon signed-rank test, and categorical variables using chi-square testing.
RESULTS: Of 336 eligible participants, 76 (22.6%) responded, including 10 third-year fellows, 18 second-year fellows, 14 first-year fellows, and 31 fourth-year residents matriculating in 2026. On a 5-point scale (1 = no impact, 5 = severe impact), respondents reported low overall impact of *Dobbs* and *LePage* on rank list decisions (median = 2 vs. neutral = 3, $p = 0.0001$). Despite this, *Dobbs* was perceived to negatively affect the REI match (77.8% negative vs. 22.2% no impact, 0% positive; $p < 0.0001$). Among those influenced by *Dobbs*, 97.1% ranked programs in abortion-restrictive states lower ($p < 0.0001$). Both rulings were considered less important than factors such as program characteristics and lifestyle (*Dobbs*: 58.1% less, 36.5% similar, 5.4% more; *LePage*: 67.9% less, 24.5% similar, 7.5% more; $p < 0.0001$). Programs in restrictive states were perceived negatively (76.4% negative, 23.6% no change, 0% positive; $p < 0.0001$). These rulings were not consistently discussed during interviews (48.7% not discussed vs. 38.4% discussed; $p = 0.0008$). Most respondents indicated *Dobbs* and *LePage* would significantly influence future practice location (59.5% significant vs. 16.2% minimal vs. 24.0% none; $p < 0.0001$).
CONCLUSIONS: Although *Dobbs* and *LePage* had limited impact on rank lists, they were significantly associated with negative perceptions of programs in abortion-restrictive states. Program-specific and lifestyle factors remained more influential. These results suggest that evolving reproductive policy landscapes may have a more profound impact on long term practice than on short term training. This finding may be due to perceived differences in legal risk between trainees and independent practitioners.
IMPACT STATEMENT: While the immediate impact of *Dobbs* and *LePage* on fellowship selection appears modest, their influence on future practice distribution may be significant. If REI physicians avoid practicing in states with restrictive policies, access to fertility care in these regions may be limited.

P-96 2:00 PM Monday, October 26, 2026

PREGNANT AND POSTPARTUM PARENTS' REACTIONS TO US GOVERNMENT MESSAGING ON PRENATAL ACETAMINOPHEN AND AUTISM SPECTRUM DISORDER LINKS: NATIONAL CROSS-SECTIONAL SURVEY.

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OBJECTIVE: In Sept. 2025, the US government announced that prenatal acetaminophen use may increase the risk of developing autism spectrum disorder (ASD). This study sought to capture pregnant and postpartum parents' attitudes towards the statement and its impact on medication decisions and trust in clinicians.
MATERIALS AND METHODS: A 30-item online cross-sectional, mixed-methods survey was developed in Qualtrics and distributed via Prolific ©, a crowdsourcing platform, from Nov.14, 2025, to Jan.16, 2026. Identical surveys were evenly administered across all four US regions (NE, S, MW, and W). Eligible participants were US-resident adults (18–45), female, and currently pregnant or delivered in 2023–2025. The survey measured demographics (15 items), personal relationship with ASD (2), attitudes toward the statement and clinicians (6), impact on medication-related behaviors (3), open-ended section (3; separate abstract). Demographics and key variables were summarized using descriptive statistics.
RESULTS: Participants (n=605) were actively pregnant (21.3%), had given birth in the past three years (73.9%), or both (4.8%). About one-third (34.1%) stated they or a close relative had ASD. Participants identified their political affiliation as Republican (31.9%), Democrat (34.2%), Independent (30.7%), or other. Most reported primarily receiving pregnancy information from an OBGYN (91.0%), friends and family (37.0%), or social media (33.0%).
The majority did not trust the announcement's accuracy (59.8%), some believed it was accurate (21.2%), and others felt neutral (19.0%). Some reported more strongly believing the association between acetaminophen and ASD after the announcement (17.0%). For most, the announcement sparked anxiety, confusion, or anger (67.0%). Many reported declining trust in clinicians following the statement (43.0%), and some (22%) modified their own acetaminophen use. Pregnant individuals indicated the announcement affected their decision to take acetaminophen (30.0%), non-acetaminophen over-the-counter medications (16.0%), or prescription medications (8.0%).
CONCLUSIONS: The announcement was met with skepticism and emotional distress among pregnant and recently pregnant women. Though a minority believed the statement's accuracy, it sparked concern for most, and some changed their medication use. Government messaging linking prenatal acetaminophen to ASD could drive unwarranted medication avoidance, worsen medical mistrust, and endanger maternal and fetal health. Avoiding necessary interventions, such as antipyretics, could lead to preventable, potentially life-threatening complications for pregnant individuals and their infants.
IMPACT STATEMENT: Public health messaging regarding prenatal medication risks can influence pregnant and postpartum individuals' trust in clinicians and medication decisions, highlighting the need for clear, evidence-based communication. National data on public responses to such messages reveal their impact and consequences on maternal medication adherence and trust in healthcare.

P-97 2:15 PM Monday, October 26, 2026

DATA SHARING EXPECTATIONS VS REALITY: A STUDY OF INFERTILITY PUBLICATIONS FROM FIVE MAJOR JOURNALS IN THE FIELD.

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OBJECTIVE:
To determine whether corresponding authors in major fertility journals are willing to share raw research data when directly requested following publication, and to identify factors associated with data-sharing responsiveness.
MATERIALS AND METHODS:
This cross-sectional study assessed data-sharing responsiveness among 100 unique corresponding authors from five major fertility journals: Human Reproduction, Fertility & Sterility, Fertility & Sterility Science, Journal of Assisted Reproduction and Genetics, and Reproductive BioMedicine Online. Articles were published within the preceding five years. Authors were sampled to ensure equal geographic representation across four regions: North America, Europe/Israel, Asia, and other. All included journals had favorable data-sharing recommendations. Corresponding authors were contacted by standardized email requesting raw data. To assess potential bias, half of initial emails were sent from an academic email account and half from a personal email account. Non-responders received a follow-up email co-signed by a senior investigator, 7–14 days later. Responses, refusals, and data availability were prospectively recorded. Data were analyzed using chi-squared tests.
RESULTS:
Of 100 corresponding authors contacted, 32 responded (32%). Only 3 authors (3%) provided raw data: one following the initial email and two after the follow-up. The remaining 29 respondents declined data sharing, citing institutional restrictions, legal constraints, technical limitations, or referral to non-communicating co-authors. Response rates did not differ significantly by region (Asia 16%, Europe/Israel 28%, North America 36%, other 48%; $P>0.05$). Authors who provided data were affiliated with Brazil, Switzerland, and the United Kingdom. Email source (professional vs. personal) did not influence response rates or willingness to share data ($P>0.05$). The majority of authors (68%) did not respond despite repeated contact attempts.
CONCLUSIONS:
Only 3% of contacted authors shared raw data, revealing a substantial gap between journal data-sharing policies and post-publication practice Response rates and willingness to share were unaffected by email source or author region. These findings underscore that existing favorable data-sharing recommendations are insufficient to ensure transparency. Mandated pre-publication data banking may be necessary to enable independent verification and protect research integrity within the fertility field and the broader scientific community.
IMPACT STATEMENT:
Limited post-publication data availability undermines transparency in fertility research. Mandated pre-publication data banking may be necessary to ensure independent verification and protect research integrity within the field of fertility, and in the broader research community.
SUPPORT: N/A
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INFERTILITY (1 OF 10)

P-98 1:30 PM Monday, October 26, 2026

METABOLIC IMPROVEMENT WITHOUT FERTILITY RESCUE IN PCOS: PERSISTENT DEPENDENCE ON ART DESPITE GLP-1RA AND METFORMIN

THERAPY. Elizabeth Arruda, MD, Alexa Courtepatte, MPH and Avner Hershlag, M.D., The Renaissance School of Medicine at Stony Brook University, Stony Brook, NY

OBJECTIVE: To evaluate reproductive outcomes in patients with obesity, with and without polycystic ovary syndrome (PCOS), after preconception glucagon-like peptide-1 receptor agonist (GLP-1RA) therapy, and to assess metformin co-treatment.
MATERIALS AND METHODS: This retrospective cohort study used the TriNetX database to examine reproductive outcomes in patients aged 18–45 years with obesity (BMI ≥30 kg/m²) with and without PCOS following GLP-1RA therapy. Patients with prior bariatric surgery, other infertility causes, donor oocytes, or non-metformin hypoglycemic agents were excluded. Four groups were examined: PCOS versus non-PCOS receiving GLP-1RA alone (N=1,708 and 5,629) and PCOS versus non-PCOS receiving GLP-1RA plus metformin (N= 3,565 and 2,644). Baseline characteristics were compared. Outcomes assessed within five years of initial fertility evaluation included overall pregnancy, spontaneous pregnancy, time to spontaneous pregnancy, IVF pregnancy, and early pregnancy loss. Categorical variables are reported as counts (percentages) and continuous as mean (standard deviation). Outcomes were compared using Z-tests. Time-to-event analysis for spontaneous pregnancy used Kaplan–Meier methods, with hazard ratios (HR) and 95% confidence intervals (CI) estimated using Cox proportional hazards models. P<0.05 was considered significant.
RESULTS: PCOS patients had lower overall pregnancy (39.2% vs. 47.9%, p<0.0001) and spontaneous pregnancy rates (31.1% vs. 40.9%; HR 1.42, 95% CI 1.30–1.57, p<0.0001) compared with non-PCOS after GLP-1RA exposure. These differences persisted with metformin co-treatment (overall: 39.0% vs. 45.1%, p<0.0001; spontaneous: 30.0% vs. 39.7%; HR 1.42, 95% CI 1.30–1.54, p<0.0001), reflecting shorter time to pregnancy in non-PCOS patients. IVF pregnancy rates were higher in PCOS patients receiving GLP-1RA only (5.3% vs. 3.7%, p=0.003) and combined therapy (5.9% vs. 3.5%, p<0.0001). Early pregnancy loss was similar between groups. PCOS patients who received preconception GLP-1RA alone had higher baseline T2DM (5 vs. 3%, p=0.0002) and BMI (40.7 vs. 38.2 kg/m², p<0.0001), with similar hemoglobin A1C (HbA1C, 5.6 vs. 5.6%, p=0.386). With combined therapy, PCOS patients had lower baseline T2DM (14 vs. 24%, p<0.0001) and HbA1C (5.9 vs. 6.7%, p<0.0001), although BMI remained higher (41.6 vs. 40.5 kg/m², p<0.0001).
CONCLUSIONS: Among patients who received preconception GLP-1RA, PCOS was associated with greater metabolic comorbidity, lower overall and spontaneous pregnancy rates, and delayed conception compared with non-PCOS patients. Metformin co-treatment improved glycemic control but not overall or spontaneous pregnancy rates. IVF pregnancy rates remained higher in PCOS regardless of metformin use.
IMPACT STATEMENT: PCOS is associated with poorer spontaneous fertility outcomes despite GLP-1RA or combined therapy. Metformin improves glycemic status but does not improve reproductive outcomes. However, ART pregnancy rates remain higher in PCOS, suggesting that metabolic optimization alone may be insufficient to restore natural fertility in this population.
SUPPORT: N/A

P-99 1:45 PM Monday, October 26, 2026

PREGNANCY OUTCOMES FOLLOWING LETROZOLE USE IN FROZEN-THAWED EMBRYO TRANSFER CYCLES: A SYSTEMATIC REVIEW AND META-ANALYSIS. Zeyad Abualiat, Assistant Consultant REI[1], Norah Al, Assistant Professor[2], Samaher Alfaraj[3], Hayat Alrabieaa, REI Consultant[4], Haya Alfozan, M.D.[3], Fahad Alsalman, Consultant REI[3], Asem Alfagih, Associate Consultant REI[5] and Reem Almanea, Specialist at OBGYN[6], [1]Riyadh, Riyadh, Saudi Arabia, [2]Assistant Professor, OBGYN Department, King Khalid Universty - Abha, Saudi Arabia, Abha, Saudi Arabia, [3]Consultant REI, WHH - KAMC, Riyadh, Saudi Arabia, [4]Consultant REI - Chairman, Fertility and Reproductive Medicine Department, WHH - KAMC, Riyadh, Saudi Arabia, [5]Alfagihas@Mngha.Med.Sa, [6]Specialist at Department of OBGYN, khamis Mushit Maternity Hospital - khamis Mushit, Saudi Arabia

OBJECTIVE: To evaluate the impact of letrozole-assisted frozen-thawed embryo transfer (FET) cycles on clinical pregnancy and live birth outcomes compared with natural, artificial, or programmed endometrial preparation protocols.
MATERIALS AND METHODS: A systematic search of PubMed, Scopus, Web of Science, Medline, the Cochrane Library, and Google Scholar was conducted for studies from 1980 to the present. Eligible studies included randomized controlled trials and observational studies comparing letrozole-based endometrial preparation with natural or hormone replacement therapy (HRT) cycles in women undergoing FET. Data extraction followed PRISMA guidelines. A fixed-effects model was used to generate pooled odds ratios (ORs) with 95% confidence intervals (CIs) for clinical pregnancy rate (CPR) and live birth rate (LBR).
RESULTS: Ten studies met the inclusion criteria, comprising 3082 letrozole cycles and 3427 control cycles for CPR, and 2876 letrozole cycles and 3218 control cycles for LBR. Letrozole significantly improved clinical pregnancy outcomes compared with control protocols, with a pooled OR of 1.30 (95% CI: 1.17-1.44, p < 0.00001). Live birth outcomes were similarly enhanced in the letrozole group, demonstrating a pooled OR of 1.28 (95% CI: 1.16-1.42, p < 0.00001). Heterogeneity across the included studies remained low to moderate (I2 = 35% for CPR; I2 = 41% for LBR). Funnel plot analyses indicated no evidence of significant publication bias.
CONCLUSIONS: Letrozole-assisted FET cycles are associated with significantly higher clinical pregnancy and live birth rates compared with conventional natural or HRT-based endometrial preparation protocols.
IMPACT STATEMENT: These findings support the integration of letrozole as a highly effective, physiologically aligned option for endometrial preparation in FET programs, potentially improving overall success rates in assisted reproductive technology.

P-100 2:00 PM Monday, October 26, 2026

TREATMENT WITH ISOTRETINOIN IN MEN WITH NONOBSTRUCTIVE AZOOSPERMIA OR CRYPTOZOOSPERMIA. Arya Anvar, MD, Jay I Sandlow, M.D. and Pete N Dietrich, MD, Medical College of Wisconsin, Milwaukee, WI

OBJECTIVE:
Prior studies have demonstrated that isotretinoin, a retinoic acid derivative of vitamin A, can significantly improve ejaculated sperm production in men with nonobstructive azoospermia (NOA) or cryptozoospermia within 3 months. We aimed to evaluate changes in semen parameters following isotretinoin therapy in a cohort largely lacking baseline testicular biopsy.
MATERIALS AND METHODS:
We performed a single-center prospective study of men treated with isotretinoin for NOA or cryptozoospermia. Patients received isotretinoin (40mg daily) and required monthly visits to assess side effects. Patient semen analyses were obtained at baseline and approximately 3 and 6 months following initiation of therapy. Patients with prior testicular biopsies were included in our cohort.
RESULTS:
Thirteen men were included (12 NOA, 1 cryptozoospermic). Testicular biopsy was performed in 4 men with NOA, demonstrating Sertoli cell–only histology (SCO) (n = 2), early maturation arrest (EMA) (n = 1), and late maturation arrest (n = 1). All patients reported dry skin after 1 month of therapy and were fully compliant with monthly follow-up. At 3 months, no improvement was identified in the semen analysis of 7 men with NOA (including 1 SCO,1 EMA, 1 LMA) or the cryptozoospermic patient. Six-month outcomes are anticipated for the cohort at the time of presentation.
CONCLUSIONS:
No improvement in semen parameters was observed at early follow-up. These findings contrast with prior reports that return of sperm can be seen as early as 3 months after isotretinoin. Empiric isotretinoin therapy without histologic selection may not have efficacy, highlighting the potential importance of underlying germ cell presence.
IMPACT STATEMENT:
Empiric isotretinoin therapy did not improve semen parameters at early follow-up in men with nonobstructive azoospermia, suggesting limited efficacy without histologic evidence of spermatogenesis.
SUPPORT: None
REFERENCES:
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P-101 2:15 PM Monday, October 26, 2026

IN DONOR OOCYTE ICSI, MULTIPLE SPERM ABNORMALITIES AND OOCYTE VITRIFICATION ARE ASSOCIATED WITH LOWER FERTILIZATION; PATERNAL AGE IS NOT. Gabriela Alatorre Izaguirre, MD[1], Sergio Alberto Davila Garza, M.D.[1], Genaro García Villafana, M.D.[2], José Iram Obeso-Montoya, M.D.[1], Julio César Rosales, M.D.[1], Marianna Pérez-Vargas, M.D.[1,3] and Mario Alberto Garza-Garza, M.D., M.Sc.[1], [1]IECH - Fertility Center, Monterrey, NL, Mexico, [2]Monterrey, NL, Mexico, [3]IECH fertility center, Monterrey, NL, Mexico

OBJECTIVE: To estimate the independent association of sperm phenotype, paternal age, and donor oocyte origin (fresh vs vitrified) with intracytoplasmic sperm injection (ICSI) fertilization rate in donor oocyte cycles.
MATERIALS AND METHODS: Retrospective single-center analysis of donor oocyte cycles in which all metaphase-II (MII) oocytes were inseminated by ICSI (Jan 2024–Dec 2025). Cycles using split conventional IVF/ICSI, surgically retrieved sperm, or with incomplete semen analysis were excluded. By WHO 2010 criteria, sperm samples were classified as isolated teratozoospermia (only morphology abnormal) versus multiple sperm abnormalities (any combination of low count, low motility, and/or abnormal morphology); the single normozoospermic case was not analyzed, restricting inference to abnormal phenotypes. Primary outcome: ICSI fertilization rate (FR; two pronuclei per ICSI-injected MII). Secondary: blastocyst rate (BR; viable blastocysts per fertilized oocyte). Multivariable linear regression with HC3-robust standard errors adjusted for sperm phenotype, oocyte origin, paternal age, and recipient age; sperm × origin interaction was tested by F-test. Fresh and vitrified oocytes came from different donors and processing pathways, so residual confounding by donor, batch, or laboratory factors cannot be excluded.
RESULTS: Of 119 pure-ICSI cycles, 109 had a classifiable sperm phenotype: 66 isolated teratozoospermia, 43 multiple abnormalities; 37 fresh- and 72 vitrified-oocyte cycles. Median paternal age 41y (IQR 38–45). 1220 MII were ICSI-injected and 928 fertilized (overall FR 76.1%); ≥1 viable blastocyst was obtained in 98/107 cycles (91.6%; 2 cycles excluded from adjusted models for missing recipient age). Crude FR by group: fresh+isolated 82.1% (n=18), fresh+multiple 76.4% (n=18), vitrified+isolated 76.8% (n=47), vitrified+multiple 67.7% (n=24). After adjustment, multiple sperm abnormalities were associated with a 7.8 percentage-point (pp) lower FR (95% CI -13.4 to -2.2; p=0.006), and vitrified-oocyte cycles with a 6.7 pp lower FR (95% CI -12.0 to -1.4; p=0.013). Paternal age was not associated with FR (-0.20 pp/year; p=0.41). No multiplicative sperm × origin interaction was detected (F-test p=0.65). Vitrified-oocyte cycles also had lower BR (-21.8 pp; 95% CI -29.1 to -14.6; p<0.001); multiple sperm abnormalities showed a marginal BR association (-8.0 pp; p=0.064).
CONCLUSIONS: Among abnormal sperm phenotypes in donor oocyte ICSI cycles, multiple sperm abnormalities and vitrified-oocyte cycles were each independently associated with lower FR; no multiplicative interaction was detected. The lowest observed FR (67.7%) occurred when both factors coincided. Paternal age was not associated with fertilization or blastulation in this cohort.
IMPACT STATEMENT: For donor oocyte ICSI counseling, sperm phenotype and oocyte origin appear more informative for fertilization-rate prognosis than paternal age.

Couples combining multiple sperm abnormalities with vitrified-oocyte cycles had the lowest observed fertilization rate.
SUPPORT: The authors recieved no specific funding for this work.

P-102 2:30 PM Monday, October 26, 2026

EPIGENETIC SPERM QUALITY PREDICTS IUI OUTCOMES INDEPENDENT OF PHYSICIAN AND CLINIC VARIABILITY IN REAL-WORLD PRACTICE.
Dr. Kristin Brogaard, PhD[1], Larry I. Lipshultz, M.D.[2], Andy Olson, B.S., M.B.A.[1], Lorry Schneider, B.S.[1], Derek Petersen, BS[1] and Matthew Tex VerMilyea, H.C.L.D, PH.D.[3], [1]Path Fertility, [2]Baylor College of Medicine, Houston, TX, [3]US Fertility, Rockville, MD

OBJECTIVE:
To evaluate whether sperm epigenetics predicts intrauterine insemination (IUI) pregnancy outcomes independent of physician and clinic variation in real-world clinical practice.
MATERIALS AND METHODS: SpermQT, a sperm epigenetics assay, was used clinically across 10 U.S. fertility clinics and 28 physicians. De-identified data from 537 men were collected, including total motile count (TMC), partner ages, treatment type, and pregnancy outcomes. SpermQT results were dichotomized as Normal or Abnormal. Among couples undergoing IUI with reported outcomes (n=202), cumulative pregnancy rates were compared across groups. To assess whether provider- or site-level variation confounded associations, stratified analyses were performed using the Cochran–Mantel–Haenszel (CMH) method across physicians and clinics with representation in both SpermQT groups. Distributional differences in TMC were evaluated using Kolmogorov–Smirnov testing.
RESULTS:
Among 202 couples undergoing IUI (mean 2.8 cycles), cumulative pregnancy rate was 22.0% in the Normal SpermQT group and 0% in the Abnormal group (p=0.005). Male and female ages and TMC were not significantly different between groups, and TMC distributions showed substantial overlap (p>0.2). **After stratification, the association between SpermQT result and IUI pregnancy remained significant when adjusting for physician (CMH p=0.012) and clinic (CMH p=0.009).** No IUI pregnancies were observed in the Abnormal group within any physician or clinic stratum.
CONCLUSIONS:
Sperm epigenetics is strongly associated with IUI pregnancy outcomes and remains predictive after controlling for physician and clinic variation. These findings demonstrate that the relationship between sperm epigenetics and IUI success is consistent across heterogeneous real-world clinical settings and is not explained by differences in provider practices or standard semen parameters.
IMPACT STATEMENT:
Sperm epigenetics provides clinically actionable information **independent of provider and site variation**, supporting its integration into treatment selection to reduce ineffective IUI cycles and improve patient care.
SUPPORT: None

INFERTILITY (2 OF 10)

P-103 1:30 PM Monday, October 26, 2026

DOES ADDING A LESS QUALITY EMBRYO TO THE FRESH TRANSFER OF A GOOD QUALITY EMBRYO IMPACT THE LIVE DELIVERED PREGNANCY RATE?
Jerome H Check, M.D.[1], Donna Summers, M.S., ELD(ABB)[2] and Arti Jessie Jessie Roopnarine, R.N.[2], [1]Cooper Medical School of Rowan University, Camden, NJ, [2]Cooper Institute for Reproductive Hormonal Disorders, P.C., Mt. Laurel, NJ

OBJECTIVE: Women with diminished oocyte reserve (DOR) forming just one day 3 embryo with 6 or 8 blastomeres have a much higher chance of producing a live baby than the transfer of one day 3 embryos with only 4-5 blastomeres. The objective of this study was to determine if the addition of a 4 or 5 cell embryo to be transferred with a 6 or 8 cell embryo increases, decreases, or has no effect on subsequent live deliveries.
MATERIALS AND METHODS: A retrospective study of women with DOR as evidenced by a serum anti Mullerian hormone (AMH) level of <0.5 ng/ml during a 5-year time period who had a fresh day 3 embryo transfer were selected. A subset was then selected where there was a transfer of a single day 3 embryo that had 6 or 8 cells or a two-embryo transfer with an embryo with 4 or 5 cells plus an embryo with 6-8 blastomeres. Live delivered pregnancy rates (LDPRs) were then compared between these two groups. The data was also stratified according to three age groups: < 35, 36-39, 40-42.
RESULTS: There was a total of 856 cycles with single embryo transfers (SET) vs 339 with two embryos transferred (TET). The LDPRs for all women < 43 was 16.4% (140/856) for SET vs 19.8% (67/339) for TET. Comparisons by age were as follows: Age < 35, 27.8% (71/255) vs 31.7% (44/139) for TET. For age 36-39, the LDPR was 15.5% (46/290) for SET vs 16.8% (18/107) for TET. For age 40-42, the LDPR was 7.5% (23/305) for SET vs 5.4% (5/93) for TET. There was no significant difference by chi square analyses or Fisher's exact test. There were no twins in the TET group.
CONCLUSIONS: The addition of a less quality day 3 embryo to a good quality embryo does not have a detrimental effect on subsequent LDPRs.
IMPACT STATEMENT: There have been some studies suggesting that the transfer of a combination of a good quality and a poor quality day 3 embryo could have a negative impact on success rates. This conclusion was not supported by this present study. One study found that women age < 40 with DOR who could only create one day 3 embryo had a LDPR of 31 and 36.4% with a 6 or 8 cell embryo respectively vs only 3.8 and 9.5% for a 4 or 5 cell embryo. The non-significant increase in LDPRs with the addition of a poor quality 4 or 5 cell embryo could be related to a pregnancy from the 4 or 5 cell embryo rather than the 6 or 8 cell embryo in some cases. However, the slight increase could just be fortuitous It makes sense from the patients' financial standpoint to add a poor quality embryo if one exists to a good quality embryo rather than discard the poor quality embryo, or try to culture it to a blastocyst, and if so freeze it for subsequent frozen embryo transfer (FET), or freeze at day 3 and pay for another FET for fear of having a negative impact on the success of the good quality embryo.

P-104 1:45 PM Monday, October 26, 2026

BRCA2 CARRIERS WITH SPECIFIC GERMLINE MUTATIONS HAVE A HIGHER RISK OF OOCYTE MATURATION DEFECTS.
Rebecca Brown, PhD[1], Zev Rosenwaks, M.D.[2] and Jeannine Gerhardt, P.H.D[1], [1]Weill Cornell Medicine, New York, NY, [2]The Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY

OBJECTIVE:
Female fertility can be impacted by diminished ovarian reserve (DOR), causing women to have a reduced number of oocytes. There are mixed reports on whether BRCA2 carriers, who have a germline mutation in the *BRCA2* gene, have DOR. BRCA2 is a DNA repair protein that is involved in double-strand break repair by homologous recombination. The role of BRCA2 in meiotic recombination has been mostly established during spermatogenesis in model systems. So far, there are conflicting findings on whether BRCA2 carriers have a reduction in oocytes. This study aims to determine whether germline mutations in the *BRCA2* gene affect the number of mature oocytes in BRCA2 carriers.
MATERIALS AND METHODS:
Retrospective analysis was performed using data from consented patients undergoing oocyte cryopreservation or in vitro fertilization (IVF). Indicators of diminished ovarian reserve, such as antral follicle count (AFC), total number of retrieved oocytes, and anti-Müllerian hormone (AMH) and follicle-stimulating hormone (FSH) levels, were analyzed. The percentage of immature versus mature oocytes was also examined in BRCA2 mutation carriers and compared to age-matched controls. The BRCA2 carriers were split into sub-groups: BRCA2 carriers with or without a cancer diagnosis prior to egg retrieval, and BRCA2 carriers with mutations in specific BRCA2 protein domains with previously characterized functions. Statistical analysis included Kruskal-Wallis and Mann-Whitney.
RESULTS:
Retrospective analysis revealed that a similar average number of total oocytes was retrieved per cycle from BRCA2 carriers and age-matched controls. No significant differences in AFC or AMH and FSH levels were observed. However, BRCA2 carriers showed a reduction in mature (metaphase II (MII)) oocytes (83% to 71%; p=0.0008) and an increase in the percent of immature MI (stalled in metaphase I) (4% to 9%; p=0.0187) and GV oocytes (arrested in prophase I) (11% to 18%; p=0.0122). BRCA2 carriers with germline mutations in the Oligonucleotide Binding (OB) folds (BRCA2's DNA binding region) had an upsurge in GV oocytes, whereas patients with germline mutations in the BRC repeats (that interacts with the recombinase RAD51) had an increase in MI oocytes. These results indicate that the BRCA2 OB domain is needed for prophase I, and the BRC repeats are essential for metaphase I cell cycle progression. Meiotic arrest leads to a reduction in mature oocytes in these BRCA2 carriers.
CONCLUSIONS:
Overall, retrospective analysis revealed that BRCA2 carriers with specific germline mutations display defects during oocyte maturation that lead to a reduction in mature oocytes. The BRCA2 protein domain that contains the germline mutation determines at which stage of meiosis during oocyte maturation meiotic failure occurred.
IMPACT STATEMENT:
This study identified specific BRCA2 germline mutations that lead to a reduction in mature oocytes in BRCA2 carriers. Also, these findings revealed that depending on the location of the mutation within the *BRCA2* gene, deficiencies in different steps during meiosis lead to oocyte maturation defects.

P-105 2:00 PM Monday, October 26, 2026

CLINICAL OUTCOMES OF DAY 7 BLASTOCYSTS FOLLOWING PGT-A: A SINGLE-CENTER COHORT STUDY.
Ming-Jer Chen, M.D., M.Sc.[1], Yiping Pai, BSc[2], Wei-Che Lo, M.D.[3], En-Hui Cheng, Ph.D.[3], Pin-Yao Lin, M.D., Ph.D.[4], Chun-Chia Huang, Ph.D.[3], Chun I Lee, M.D., Ph.D.[3] and Maw-Sheng Lee, M.D., Ph.D.[3], [1]Division of Infertility, Lee Women's Hospital, Taichung, Taiwan, [2]Lee Women's Hospital, Taichung, Taichung (city), Taiwan, [3]Lee Women's Hospital, Taichung, Taiwan, [4]Lee Woman Hospital, Taichung, Taiwan

OBJECTIVE: To evaluate the embryological characteristics, chromosomal status, and clinical outcomes of Day 7 (D7) blastocysts undergoing preimplantation genetic testing for aneuploidy (PGT-A).
MATERIALS AND METHODS: This retrospective cohort study was conducted at a single center. A total of 201 D7 blastocysts derived from 180 PGT-A cycles at Lee Women's Hospital between September 2016 and December 2025 were analyzed. Oocyte donation and PGT-M cycles were excluded. Trophectoderm biopsy and next-generation sequencing were performed. Embryo morphology was assessed using ICM and TE grading. Clinical outcomes including implantation rate (IR), pregnancy rate (PR), miscarriage rate, and live birth rate (LBR) were evaluated. Statistical analysis was performed using the chi-square test.
RESULTS: The mean maternal age was 40.5 ± 2.1 years. Most embryos exhibited suboptimal morphology, with 94.0% classified as ICM grade B and 72.1% as trophectoderm grade C ($p < 0.001$). PGT-A results demonstrated a euploidy rate of 19.4% (39/201), mosaicism rate of 31.3% (63/201), and aneuploidy rate of 49.3% (99/201). Among transferred D7 embryos, the implantation rate was 13.6% (6/44) and the pregnancy rate was 25.0% (5/20). The miscarriage rate of 20.0% (1/5), resulting in a live

birth rate of 9.1% (4/44) per embryos transferred for euploid and mosaic embryos. Mean gestational age was 38.0 weeks and mean birth weight was 3238 g, indicating favorable neonatal outcomes.
CONCLUSIONS: Despite lower morphological quality and a high aneuploidy rate, D7 blastocysts can result in clinically meaningful outcomes following PGT-A. These findings support the clinical utility of D7 embryos and suggest that they may be considered in selected clinical scenarios rather than routinely discarded.
IMPACT STATEMENT: These findings support the clinical consideration of Day 7 blastocysts in PGT-A cycles and may expand embryo utilization strategies in patients with limited embryo availability.

P-106 2:15 PM Monday, October 26, 2026

MATERNAL OBESITY AND OTHER ADJUSTED RISK FACTORS FOR CESAREAN DELIVERY IN NULLIPAROUS IVF PATIENTS. Kaitlin A Doody, M.D. and Kevin J. Doody, M.D., CARE Fertility, Bedford, TX

OBJECTIVE:
To identify adjusted risk factors for cesarean delivery among nulliparous women achieving singleton live birth after embryo transfer, with particular emphasis on maternal obesity as a modifiable factor.
MATERIALS AND METHODS:
Retrospective cohort study using the national SART CORS database analyzing nulliparous patients with singleton live birth after single embryo transfer from 2016 to 2023. Multivariable regression models generated adjusted risk differences (ARDs) with 95% confidence intervals for cesarean delivery. Reference groups were age <35 years, BMI 18.5–24.9 kg/m², birth weight 2,500–4,000 g, and gestational age 37–42 weeks. Key covariates included PGT-A usage, maternal age category, pregnancy BMI category, birth weight, and gestational age at delivery.
RESULTS:
Maternal obesity demonstrated a clear dose-response relationship with cesarean delivery risk. Compared with normal BMI (baseline rate 37.8%), adjusted risk increased progressively: overweight (+7.0%), Obesity Class I (+12.3%), Obesity Class II (+14.5), and Obesity Class III (+13.6%).
Other independent risk factors included advanced maternal age (highest ARD +16.0% for ages 41–42), PGT-A usage (+4.0), preterm delivery (<37 weeks; +11.6%), and especially high birth weight (>4,000 g; +20.3%). Logistic regression confirmed these associations (e.g., Obesity Class II adjusted OR 1.84, high birth weight OR 2.34).
CONCLUSIONS:
In nulliparous IVF patients, maternal obesity is a major modifiable risk factor for cesarean delivery, with Obesity Class II conferring the largest BMI-related absolute risk increase. While high birth weight, preterm delivery, advanced maternal age, and PGT-A usage also contribute independently, preconception weight optimization represents a high-yield intervention that may meaningfully lower cesarean rates and improve obstetric outcomes in this population.
IMPACT STATEMENT:
Among nulliparous IVF patients with singleton live birth maternal obesity is a significant modifiable risk factor of cesarean delivery.
Table 1: Adjusted Predicted Cesarean Delivery Rates and Risk Differences in Nulliparous IVF Singleton Live Births (2016–2023)

		Predicted Cesarean Rate (95% CI)	Adjusted Risk Difference (95% CI)
Pregnancy BMI	Normal (18.5–24.9) (ref)	37.8% (36.1–39.9)	—
	Underweight (<18.5)	35.6% (31.5–39.9)	–2.3% (–3.1 to –1.5)
	Overweight (25.0–29.9)	44.8% (43.0–46.6)	+7.0% (6.1–7.8)
	Obesity I (30.0–34.9)	50.1% (47.7–52.5)	+12.3% (11.5–13.1)
	Obesity II (35.0–39.9)	52.4% (49.2–55.5)	+14.5% (13.7–15.4)
	Obesity III (>39.9)	51.4% (47.3–55.6)	+13.6% (12.8–14.4)

P-107 2:30 PM Monday, October 26, 2026

FROM MITOCHONDRIA TO MOTHERHOOD: ROLE OF ADJUNCTIVE COENZYME Q10 IN IMPROVING ASSISTED REPRODUCTIVE TECHNOLOGY (ART) OUTCOMES IN POOR OVARIAN RESPONDERS (POR) - AN INDIAN REAL-WORLD CASE–CONTROL STUDY OF 1,120-PATIENTS. Mekhala Dwarakanath, M.S.MBBS, MS OBG, FRM[1], Sankara Guha Dwarakanath B, MBBS, MD, FPR[2], Mohammed Ashraf Cheruveettil, M.Sc, PhD[3], Govinda Krishna Krishna A, M.SC[4], Dileep KUMAR Kumar, M.Sc.[5], Sealeesha Menon Menon P, MBBS, MS OBG, FRM[6] and Roopa M Mulgund, DGO, FRM[7], [1]Icchaa fertility Solutions and Diagnostics, Bangalore, India, [2]IRIA, ISPR, Bangalore, India, [3]Milann Fertility & Birthing Hospitals, Bangalore, Karnataka, India, [4]Icchaa Fertility Solutions and Diagnostic, Bangalore, India, [5]Embryologist, India, [6]Icchaa Fertility Solutions and Diagnostics, Banglore, India, [7]Icchaa fertility solutions and diagnostics, Bangalore, India

OBJECTIVE:
Study hypothesis: Can Coenzyme Q10 (CoQ10), a mitochondrial nutrient and a powerful antioxidant, improve embryological and clinical outcomes in POR patients?
Primary Objective: Can CoQ10 improve number of mature oocytes, and blastocyst formation rate?
Secondary Objective: Can clinical pregnancy rates (CPR), live birth (LB) and cumulative live birth rates (CLBR) be improved?
MATERIALS AND METHODS: Study design- Prospective, observational matched case–control study between August 2017- January 2025. Inclusion- POR patients as per Patient-Oriented Strategies Encompassing IndividualizeD Oocyte Number (POSEIDON) criteria, undergoing ART with previous failures, aged 25-42 yrs with FSH <15 IU/L. Exclusion - severe endometriosis, adenomyosis, severe male factor, uterine anomalies.1,500 women were screened and 1,120 were analyzed. Institutional ethics committee clearance obtained. 634 women in Group A received CoQ10 (600 mg/day) and folic acid pre-treatment for 8 weeks. 486 women in Group B received standard of care - folic acid and multivitamins for 8 weeks. Patients starting *in vitro* fertilization (IVF) on even dates got enrolled in Group A, whereas those starting on odd dates were enrolled in Group B. Day 2/3 FSH, LH, E2 and AFC were noted in all patients. IVF started with flexible multiple dose antagonist protocol with of rH-FSH (300IU) +/- HP-HMG, according to clinician's discretion. Ovulation triggered with r-HCG/Dual trigger/GnRHa when ≥2 follicles reached ≥ 18.5 mm. Oocyte retrieval performed 35 hrs later. Intracytoplasmic sperm injection (ICSI) was performed in all cases. Number of mature oocytes, fertilization and cleavage rate, no. of Day 3, and Day 5 embryos (Grade A) compared between the two groups. All patients underwent frozen embryo transfer. Serum β-hCG >150 mIU/mL after 15 days, considered as positive pregnancy. CPR (appearance of fetal heart rate), LB and CLBR noted. Statistical analysis- Comparative analyses performed using t-tests or Mann–Whitney U tests for continuous variables, and chi-square or Fisher's exact tests for categorical variables.
RESULTS:
No significant differences noted in days of stimulation and total gonadotropins dose between the groups. Group A- higher number of mature oocytes (9.45 vs. 8.59; p = 0.0176). top-ranking embryos (3.24 vs. 2.91; p = 0.0432), CPR (78.2% vs. 68.6%; p = 0.0004), and CLBR (66.7% vs. 56.4%; p = 0.0005). Subgroup analysis by POSEIDON - CPR significantly higher with CoQ10 in Group 1 (81.4% vs. 68.7%; p = 0.004). CLBR were significantly improved in Groups 1 and 2 (p<0.05). Fewer embryo transfer attempts required to achieve live birth in Group A (p = 0.013).
In cases undergoing preimplantation genetic testing (PGT-A), Group A had higher percentage of euploid embryos, not reaching significance (P=0.05).
CONCLUSIONS: CoQ10 increases mitochondrial ATP production and restores ROS balance, prevents DNA damage thereby improving embryological and clinical outcomes.
IMPACT STATEMENT:
Our study shows that adjunctive therapy with CoQ10 improves oocyte yield, embryo quality, CPR, and CLBR. This is the first-of-its-kind Indian study using the POSEIDON classification.
SUPPORT: None

INFERTILITY (3 OF 10)

P-108 1:30 PM Monday, October 26, 2026

INTRAOVARIAN PLATELET-RICH PLASMA TREATMENT AND OVARIAN RESERVE IN WOMEN WITH PRIMARY OVARIAN INSUFFICIENCY (POI) AND DIMINISHED OVARIAN RESERVE (DOR): A RETROSPECTIVE REVIEW. Anuradha Koduru, M.D., M.S.[1], Tamer M Yalcinkaya, M.D.[2], Hooman Sadri, NC[3], Marlane Angle, PH.D.[2], Liang Yu, M.H.A., M.S., PH.D.[4] and Minglei Bian, PH.D.[4], [1]Carolinas Fertility Institute, Winston Salem, NC, [2]Carolinas Fertility Institutes, Winston Salem, NC, [3]Wake Forest Institute for Regenerative Medicine, Winston Salem, NC, [4]Old Dominion University, Norfolk, VA

OBJECTIVE:
To evaluate changes in ovarian reserve parameters before and after intraovarian platelet-rich plasma (oPRP) treatment in women with primary ovarian insufficiency (POI) and diminished ovarian reserve (DOR).
MATERIALS AND METHODS:
This retrospective review included 160 women aged 22 to 47 years with POI and DOR who underwent oPRP treatment at Carolinas Fertility Institute between January 1, 2020, and October 30, 2023, with clinical and reproductive outcome follow-up collected through September 30, 2025. Patients were stratified by POSEIDON criteria, emphasizing groups 3,4, defined by low Anti-Mullerian hormone (AMH) and/or antral follicle count (AFC) differentiated by age <35 or ≥35 years. Eligible patients had paired pre and post treatment data for ovarian reserve markers, including AMH, AFC, follicle stimulating hormone (FSH), and the number of retrieved oocytes at the time of In vitro fertilization (IVF) cycles. De-identified electronic medical record data were abstracted and indexed to the date of oPRP treatment for pre- and post-treatment comparison. Continuous outcomes (AFC, AMH, FSH, the total numbers of retrieved oocytes, and percentage of mature oocytes) were analyzed using paired t-tests, and categorical outcomes (pregnancy) were analyzed using McNemar's test.
RESULTS:
Among 160 women, AFC increased from 5.9 ± 4.1 to 7.3 ± 5.4 (37%), AMH increased from 0.34 ± 0.31 to 0.56 ± 0.37 ng/mL (51%), and day 2-5 FSH decreased from 19.7 ± 17.1 to 16.4 ± 13.0 IU/mL (20%) (all p < 0.001). The total number of retrieved oocytes increased from 2.3 ± 1.7 to 3.6 ± 2.4 (55%), and mature oocytes from 1.9 ± 1.3 to 2.9 ± 1.9 (59%) (all p < 0.001, numbers represent "Average ± SD"). Following oPRP, 28 women achieved pregnancy, including two spontaneous conceptions, with nine live births observed at the time of data cutoff.
CONCLUSIONS:
Intraovarian PRP injection was associated with statistically significant improvements in ovarian reserve parameters and IVF outcomes in women with POI and DOR. These improvements were accompanied by pregnancies and live births, suggesting that oPRP may be a potential adjunct in fertility treatment for selected patients. Future prospective studies are needed to confirm the oPRP's efficacy, define optimal patient selection criteria, and explore its mechanisms.

IMPACT STATEMENT:
These findings suggest that oPRP may represent a promising adjunctive approach to improve ovarian reserve parameters and reproductive outcomes in women with POI and DOR. Further prospective research is required to validate these findings and establish standardized treatment protocols.
SUPPORT: No financial support was received for this study.

P-109 1:45 PM Monday, October 26, 2026

CO-CULTURE OF INTERSTITIAL CELLS FROM IMMATURE MICE, ALONGSIDE GERM CELLS FROM IMMATURE MICE, REDUCED THE DEVELOPMENT OF SPERMATOGENESIS, WHEREAS SOMATIC CELLS FROM ADULT MICE ENHANCED IT IN A TESTIS-ON-A-CHIP SYSTEM.
Mahmoud Huleihel, Ph.D.[1], Sholom Shuchat, PhD[2], Ali Abumadeghem, PhD[3], Gilad Yossifon, PhD[4] and Eitan Lunenfeld, MD[5], [1]Ben-Gurion University of the Negev, Beer-Sheva, Israel, [2]Haifa, Israel, [3]Faculty of Health Sciences, Beer-Sheva, Israel, [4]Tel Aviv University, Tel Aviv Jaffa, Tel Aviv, Israel, [5]Chairman Dep. OB/GYN, Ariel, Israel

OBJECTIVE:
Spermatogenesis is a highly regulated process regulated by endocrine and paracrine/autocrine factors. Testicular somatic cells (Sertoli, peritubular, and Leydig cells) play essential roles in coordinating this regulation. **Our objective** is to evaluate how co-culture with immature interstitial cells, adult Sertoli cells, or adult Leydig cells affects the development of spermatogonial cells isolated from seminiferous tubules of immature mice.
MATERIALS AND METHODS: All cells were enzymatically isolated from the STs of immature mice (7-day-old) and cultured in methylcellulose in a three-dimensional (3D) microfluidic testes-on-chip system (ToC); the novel setup allowed the coculture of different cell types in separate channels. Adult Leydig and Sertoli cells were isolated using established methods. After an overnight culture of the adult somatic cells at 37^0 C at CO2 incubated, they were cultured in separate channels alongside the isolated cells from the STs in ToC, and were incubated in a CO2 incubator at 37°C. For the experiment with immature interstitial cells, interstitial cells were isolated from immature mice after centrifugation of the supernatant following separation of the seminiferous tubules from the testes. After 5 weeks, the developed cells were collected and examined for spermatogenesis stages using immunofluorescence staining (IF) or qPCR analyses with specific antibodies or primers, respectively. FACS was used to evaluate the percentages of the developed haploid, diploid, and tetraploid cells.
RESULTS:
Co-culture of interstitial cells from prepubertal mice alongside isolated cells from the seminiferous tubules of immature mice reduced mRNA levels of the meiosis markers (Sycp3, Boule), and the post-meiotic marker Prm1 of the developed spermatogenic cells. Conversely, co-culture of Leydig cells from adult mice increased mRNA levels of some of the same markers and the percentage of cells positively staining for these markers. However, co-culture of Sertoli cells from adult mice increased the percentage of the haploid cells as shown by FACS and by staining for the post-meiotic marker acrosin (ACR).
CONCLUSIONS: These results suggest that immature interstitial cells suppress spermatogenesis, whereas adult somatic cells promote it.
IMPACT STATEMENT:
The results may have significant implications for pre-pubertal cancer patients whose cryopreserved immature testicular cells are intended for future restoration of spermatogenesis, either in vivo or in vitro.
SUPPORT: Faculty of Health Sciences, Ben-Gurion University of the Negev.

P-110 2:00 PM Monday, October 26, 2026

EMBRYO INVENTORY AND TREATMENT DECISIONS AFTER EARLY PREGNANCY LOSS. Lily Leibner, BA[1], Victoria Lazarov, MD[1], Rebecca Zhuo, MD[1], Julia Thaler, BA[2], Jane Saltzman, BS[2], Erynne Jackson, BA, MPH[3], Joseph A. Lee, BA[2], Atoosa Ghofranian, M.D.[4], Lucky Sekhon, M.D.[2] and Alan B. Copperman, MD[2], [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]Reproductive Medicine Associates of New York LLP, New York, NY, [3]US Fertility, New York, NY, [4]New York, NY

OBJECTIVE: This study aims to evaluate how embryo inventory at the time of early pregnancy loss (EPL) after frozen embryo transfer (FET) influences the decision whether to proceed with another FET or to pursue additional embryo banking.
MATERIALS AND METHODS: This retrospective cohort study was conducted at a single academic center and included patients with singleton clinical EPL following a euploid FET between 2013 and 2025 with at least one euploid embryo remaining in cryostorage. Embryo inventory was defined by the number of remaining embryos, presence of mosaic embryos, and best available euploid embryo quality (good, fair or poor based on blastocyst stage, inner cell mass, and trophectoderm grading).
Patients were stratified by post-EPL management strategy: FET versus ≥1 intervening IVF cycle for additional embryo banking. The primary outcome was treatment strategy selection following EPL resolution. Multivariable logistic regression was used to assess the association between embryo inventory and treatment strategy, adjusting for age and anti-Mullerian hormone (AMH).
RESULTS:
Treatment strategy was strongly associated with euploid embryo inventory, with IVF utilization increasing in a stepwise fashion as the number of remaining euploid embryos decreased: 36.2%, 22.3%, 14.5%, and 6.1% among patients with 1, 2, 3, and ≥4 embryos remaining, respectively. On multivariable analysis, patients with 1, 2, or 3 embryos remaining had significantly higher odds of pursuing IVF prior to FET compared to those with ≥4 embryos (aOR 8.13 [95% CI 4.46–14.81], 4.35 [95% CI 2.36–8.04], and 2.73 [95% CI 1.41–5.29]). Of 1,036 patients included, 81.4% (n=843) proceeded to FET, while 18.6% (n=193) underwent IVF for additional embryo banking. Poor embryo quality demonstrated a trend toward increased IVF utilization (aOR 1.8 [95% CI 0.97-3.64]), driven primarily by patients with a single remaining embryo (52%); while no meaningful difference was observed between good (33%) and fair (32%) quality embryos. Mosaic embryo inventory was not significantly associated with treatment strategy (aOR 1.41 [95% CI 0.95–2.07]). Patients who pursued additional IVF cycles were older (36.6 vs 35.5 years) and had lower AMH levels (2.93 vs 4.08 ng/mL), though these differences did not reach statistical significance.
CONCLUSIONS: Euploid embryo quantity is strongly associated with treatment strategy after EPL, with lower embryo inventory driving pursuit of additional IVF prior to FET. Embryo quality and mosaicism were not independently associated with treatment strategy; however, poor-quality embryos may contribute to decision-making when embryo inventory is limited.
IMPACT STATEMENT: Embryo inventory is a primary driver of treatment decisions after EPL and may inform more individualized fertility care counseling.

P-111 2:15 PM Monday, October 26, 2026

SPERM CONCENTRATION AND FOLLICULAR SIZE IN IUI: DEFINING NONLINEAR EFFECTS AND OPTIMAL RANGES. Esther Kadoch, BSc[1], Mélanie Chow-shi-Yée, Ph.D.[2], Marie Navarro, MD[1], Dr. Simon Phillips, Ph.D.[2] and Isaac-Jacques Kadoch, M.D.[2], [1]Clinique Ovo, [2]Ovo Clinic, Montreal

OBJECTIVE: Pregnancy rates after intrauterine insemination (IUI) remain modest and clinical decision-making often relies on simplified thresholds for sperm parameters and follicular size. However, the relationship between these biological factors and IUI success is likely non-linear and fully characterized.
This study aimed to evaluate the relative contribution and non-linear effects of key biological determinants of IUI success.
MATERIALS AND METHODS: This retrospective cohort study included 1,722 women undergoing IUI (n=3,953 cycles) between January 2024 and May 2025. Pregnancy was defined by positive β-hCG.
Associations between pregnancy and maternal age, post-wash sperm concentration, dominant follicular size and other covariates were assessed using a multivariable GEE logistic regression model accounting for repeated cycles per patient. Maternal age, sperm concentration and follicle size were modelled using restricted cubic splines to capture potential non-linear relationships, with global effects evaluated using Wald tests.
To estimate clinical relevance, predicted probabilities of pregnancy were calculated for each variable across the interquartile range (P25–P75).
RESULTS: Sperm concentration, follicular size and maternal age were independently associated with pregnancy (global $p<0.05$ for each variable), with non-linear relationships observed for all three variables. Sperm concentration demonstrated a plateau effect, with pregnancy probability increasing at lower values and stabilizing beyond approximately 100–150 million/mL. Follicular size demonstrated an optimal range, with peak pregnancy probability around 19–21 mm, followed by a decline at larger sizes. Within clinically relevant ranges, sperm concentration had the greatest impact on pregnancy probability (+4.1%), followed by follicular size (+2.5%), whereas maternal age had a smaller effect (–0.7%).
CONCLUSIONS: Key biological predictors of IUI success demonstrate non-linear relationships that are not adequately captured by fixed thresholds. Sperm concentration and follicular size independently influence the probability of pregnancy, but their effects vary across clinically relevant ranges, supporting a more individualized interpretation of these parameters.
IMPACT STATEMENT: These findings define clinically relevant biological operating windows and emphasize the limitations of threshold-based decision-making. A more integrated approach to interpreting sperm and follicular parameters may improve patient selection and treatment strategies, thus providing a basis for the development of more advanced predictive models to guide IUI management.

P-112 2:30 PM Monday, October 26, 2026

OPTIMIZING SPERM SELECTION FOR IUI IN COUPLES WITH IDIOPATHIC INFERTILITY. Olena M. Kocur, B.A.[1], Lily Ng, B.S.[1], Philip Xie, B.SC.[2], Zev Rosenwaks, M.D.[2] and Gianpiero D. Palermo, M.D., PH.D.[2], [1]Weill Cornell Medicine, New York, NY, [2]The Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY

OBJECTIVE:
In recent years, several efforts have been made in the attempt to isolate the most motile spermatozoa in a semen in order to improve sperm genomic integrity and embryo developmental competence. We aim to evaluate whether microfluidic sperm selection (MFSS) improves intrauterine insemination (IUI) outcome in couples with idiopathic infertility and to determine whether pregnancy result varies by ovarian stimulation protocol.
MATERIALS AND METHODS:
This retrospective study included couples with idiopathic infertility undergoing IUI over an 8-year period. To control for a confounding female factor, only IUI cycles with maternal age <35 years were included. A total of 8736 density gradient centrifugation (DGC)-IUI cycles (n=3618 couples) were compared with 1009 MFSS-IUI cycles (n=746 couples). Semen parameters and sperm chromatin fragmentation (SCF) were assessed pre- and post-processing. SCF was measured using TUNEL (normal ≤15%). Clinical outcomes included biochemical pregnancy (serum hCG >5 mIU/mL) and clinical pregnancy (≥1 fetal heartbeat). Cycles were stratified by stimulation protocol (natural, gonadotropin, or selective estrogen receptor modulator [SERM,clomid (42.1%) or letrozole (57.9%)].
RESULTS:

Baseline semen parameters were comparable between the patients allocated to the two sperm processing methods. DGC yielded a higher post-processing sperm concentration in comparison to MFSS (73.0±36 vs. 42.2±22×10⁶/mL; P<0.001), but MFSS resulted in significantly higher motility (90.3±3% vs 99.0±1%; P<0.001) and interestingly, lower SCF (7.1±5% vs. 2.5±1%; P<0.01).
In the natural cycles, as well as gonadotropin cycles, there was no difference in the clinical pregnancy rates.
In contrast, in SERM-stimulated cycles, MFSS was associated with significantly higher biochemical (21.7% vs. 16.5%, P<0.01) and clinical pregnancy rates (16.7% vs. 12.3%, P<0.01) compared with DGC.
CONCLUSIONS:
MFSS improves sperm motility and genomic integrity compared with DGC but does not uniformly enhance IUI outcomes. Its clinical benefit appears to be superovulation protocol-dependent, solely in SERM-stimulated cycles.
IMPACT STATEMENT:
These findings suggest that sperm quality may play a more critical role in SERM-stimulated cycles. MFSS may therefore represent a targeted approach to optimize outcomes in this setting rather than a universal replacement for conventional sperm preparation, perhaps reflecting differences in ovarian response across stimulation protocols, where the relative contribution of sperm quality may vary.

INFERTILITY (4 OF 10)

P-113 1:30 PM Monday, October 26, 2026

TIME TO PREGNANCY AND SPONTANEOUS ABORTION ARE ASSOCIATED WITH RISK OF METABOLIC AND IMMUNE DISORDERS: ANALYSIS OF A PROSPECTIVE COHORT. Michael L. Eisenberg, M.D.[1], Sinna Pilgaard Ulrichsen, MSc[2], Vadim Osadchiy, MD[3], Elizabeth E. Hatch, Ph.D.[4], Kenneth J Rothman, Dr.P.H.[4], Lauren A. Wise, SC.D.[4] and Henrik Toft Toft Sorensen, PhD, MD, DMSc, DSc[2], [1]Stanford University School of Medicine, Stanford, CA, [2]Aarhus University, [3]UCLA, [4]Boston University School of Public Health, Boston, MA

OBJECTIVE: Aberrations in reproductive function may be a harbinger of future health problems, including cardiometabolic and immune disorders. One gauge of reproductive health is the ability and time it takes to conceive and maintain a healthy pregnancy. To date, most studies examining the association between fertility and long-term health have been retrospective, with limited data on individuals at the beginning of their fertility attempts.
MATERIALS AND METHODS: We examined data from the Snart-Gravid and Snart-Foraeldre (SG/SF) prospective internet-based preconception cohorts of pregnancy planners, which began enrollment in 2007. Sociodemographic, lifestyle, anthropometric, health, and reproductive data were collected at enrollment. Time to pregnancy (TTP) and spontaneous abortion (SAB) were recorded from questionnaires and registries. After excluding patients with preexisting conditions, the incidence of cardiometabolic disorders and immune disorders diagnosed during follow up were identified using diagnosis codes and medication prescriptions via registry linkage. We used Cox regression models to estimate hazard ratios (HRs) and 95% confidence intervals (CIs), adjusting for relevant demographic, reproductive and lifestyle factors.
RESULTS: In all, 10,998 females met inclusion criteria, with a mean age of 29 and BMI of 24. Participants were followed for over 70,000 person years for the TTP analysis. 14% of females reported TTP of 1-2 months, 27% 3-5 months, 25% 6-11 months, and 34% reported ³12 months to conceive. 7,467 females were included in the SAB analysis, of whom 17.9% had a SAB. They were followed for over 64,000 person years. Compared with females who conceived in 2 months or less, those who conceived in 6-11 months (HR=2.4, 95% CI: 1.2-4.7) or ³12 months (HR=4.2, 95% CI: 2.2-8.2) had a substantially higher risk of developing diabetes. With regard to immune disorders, females who had a TTP ³12 months had a higher risk of thyroid disease (HR=4.0, 95% CI: 1.4-11.6), psoriasis (HR=2.4, 95% CI: 1.1-5.5) or any autoimmune disease (HR=2.1, 95% CI: 1.4-3.3) compared with females who conceived in 2 months or less. In contrast, longer TTP showed no meaningful association with cardiovascular disorders, including hypertension, arrhythmias, or heart disease. Females who suffered a SAB before 22 weeks of gestation had a higher risk of subsequent diabetes (2.6, 1.8-3.8), multiple sclerosis (3.2, 1.1-9.4), and any metabolic disorder (1.2, 1.0-1.5). Similar results existed for females with a SAB by 8 weeks. No meaningful association was identified between SAB and incident cardiovascular disease.
CONCLUSIONS: A history of delayed conception and SAB were associated with greater risk of metabolic and autoimmune disorders.
IMPACT STATEMENT: Time-to-pregnancy and SAB may serve as metrics of future health. Females who reported a longer time-to-pregnancy (especially those who take longer than 12 months to conceive) or SAB have a higher risk of later metabolic and immune disease. Such females could be considered for future screening to allow earlier identification and treatment and possibly prevention.
SUPPORT: Supported by NIH: R01HD115096, R01HD086742

P-114 1:45 PM Monday, October 26, 2026

GIVEN DECLINING CHLAMYDIA TRACHOMATIS SEROPOSITIVITY IN OUR INFERTILITY POPULATION: IS ROUTINE SCREENING STILL WARRANTED? Nourelhoda Gouda, B.S[1], Ariel Stonberg, BA[2,3], Patricia Xu, B.S.[3], Alexa Setteducate, B.A.[4] and Martin Keltz, M.D.[5], [1]Valhalla, NY, [2]New York, NY, [3]New York Medical College, Valhalla, NY, [4]New York Medical College, Rumson, NJ, [5]Medical Director Reproductive Endocrinology, Purchase, NY

OBJECTIVE: , To evaluate the trend in Chlamydia Trachomatis (CT) IgG seropositivity rates in women presenting for infertility evaluation over three decades, and to characterize the clinical profile and reproductive outcomes of seropositive patients in the current era.
MATERIALS AND METHODS: , Retrospective cohort study of 613 consecutive IVF patients (2021–2025) undergoing routine CT IgG serology screening. Seropositivity rates were compared to prior published cohorts from the same center (2005–2009, n=1,279; 1996–2000, n=210). Correlations between seropositivity and tubal infertility diagnosis, HSG, and laparoscopy findings were assessed, along with IVF outcomes including live birth rate per cycle and miscarriage rate. Fisher's exact test and descriptive statistics were used; p<0.05 was significant.
RESULTS: , 25 of 613 patients (4.1%) were seropositive in this current cohort, declining from 5.5% in our 2005-2009 cohort (n=1,279) and from 40% in our 1996-2000 cohort (n=210). Seropositive patients had a mean age of 38.16 ± 4.38 years compared to 37.50 ± 4.62 years in the seronegative. Racial composition was not significantly different between groups. HSG was performed in 84% (21/25) of the seropositives, of which 67% (14/21) showed abnormal findings including bilateral distal tubal occlusion or damage (n=4), unilateral distal occlusion (n=2), and 38% (8/21) studies with at least one or both tubes not visualized suggesting proximal tubal obstruction or a false positive. Laparoscopy was performed in 5 seropositive patients, confirming bilateral tubal pathology and obstruction in 4/5 (80%). The SART tubal infertility diagnosis rate was significantly higher in seropositive than seronegative patients (24% [6/25] vs. 8% [46/575], p=0.016). PGT was utilized in 84.85% of seropositive ET cycles compared to 84.15% of seronegatives. Among the seropositives, LBR/cycle was 45.45% (15/33) compared to 42.07% (284/675) in the seronegatives (p=0.84), and miscarriage rate (loss/CIUP) was 6.25% vs. 11.38% (p=1.0), neither of which was statistically significant.
CONCLUSIONS: , CT seropositivity has declined substantially over the past three decades at our institution. Despite that declining yield, a positive serology is still highly predictive of both abnormal HSG and laparoscopy, leading to a tubal infertility diagnosis requiring IVF. As in our prior studies, while CT seropositivity may increase tubal infertility requiring IVF, it has no impact on the miscarriage or live birth rate following IVF with or without PGTa. We theorize that the recent decline in seropositivity could result from the introduction of universal HPV vaccination reducing rates of cervicitis and lowering upper genital tract inflammation when co-infection with chlamydia occurs. Further study is required to evaluate this theory.
IMPACT STATEMENT: , Despite almost no decrease in CT infection in the United States, the CT serology has been declining over three decades but still is detected in 1/25 patients. As CT sero-positivity remains predictive of tubal disease and the need for IVF, we continue to recommend CT serology screening at this time.

P-115 2:00 PM Monday, October 26, 2026

RACIAL DIFFERENCES IN TIME-TO-MYOMECTOMY AMONG MYOMECTOMY PATIENTS WITH A HISTORY OF INFERTILITY AND UTERINE FIBROIDS USING TRINETX. Anshika Gupta, BA[1], Lauren A. Wise, SC.D.[2], Nyia Noel, M.D., M.P.H[3] and Wendy Kuohung, M.D.[3], [1]Boston University Chobanian and Avedisian School of Medicine, Boston, MA, [2]Boston University School of Public Health, Boston, MA, [3]Boston University Chobanian & Avedisian School of Medicine, Boston, MA

OBJECTIVE:
To evaluate racial differences in time-to-myomectomy among myomectomy patients with a history of infertility and uterine fibroids
MATERIALS AND METHODS:
We conducted a retrospective case series using TriNetX, a large multi-institutional deidentified clinical patient database including claims data. We identified adult patients ages 18-74 years diagnosed with infertility and uterine fibroids who subsequently underwent abdominal myomectomy. Hysteroscopic myomectomy patients were excluded as we wished to identify patients who were eligible for deferring surgery prior to initiating fertility treatment. Time-to-myomectomy was categorized into four time intervals following the first coded diagnosis of fibroids: 1 day to 6 months, 6 months to 1 year, 1 to 3 years, and 3 to 5 years. Patients were stratified by fibroid burden, with low burden coded as 1-4 myomas . Race was categorized as White, Black, Asian, Unknown, or Other. The distribution of time-to-myomectomy across racial groups was summarized using percentages, and racial differences were characterized using absolute differences in percentages between groups.
RESULTS:
Across all time intervals and fibroid burden categories, Black patients represented the largest percentage of individuals undergoing abdominal myomectomy, except in the 1 day to 6 month interval within the low burden group. Among White patients undergoing abdominal myomectomy, the highest percentage received early surgery (within 1 day to 6 months) in both low burden (64.1%) and high burden (59.7%) groups. Using White patients as the reference group, Other race and Asian patients in the low burden group had a substantially lower probability of early surgery: 28.6% (RR 0.45, 95% CI: 0.27-0.73) and 41.2% (RR 0.64, 95% CI: 0.46-0.91), respectively. Black patients in the low burden group had a modestly lower probability of early surgery (55.5%; RR 0.87, 95% CI: 0.74-1.01). In the high burden group, Asian patients again had the lowest probability of early surgery (36.2%; RR 0.61, 95% CI: 0.40-0.91), and Black patients also underwent early surgery less frequently than White patients (47.8%; RR 0.80, 95% CI: 0.66-0.97). Across both burden groups, we observed a bimodal distribution of surgery timing, with an early peak within 6 months and a secondary peak at 1 to 3 years.
CONCLUSIONS:
Time-to-myomectomy differed by race among patients with infertility and fibroids, with White patients more likely to undergo earlier surgical intervention, particularly with low burden disease. Black patients were more likely to undergo abdominal myomectomy overall and within higher fibroid burden categories. The observed bimodal distribution

suggests a clinical pattern of initial conservative management followed by delayed surgical intervention.

IMPACT STATEMENT:
These findings highlight potential racial differences in the timing of surgical management of fibroids in the infertility setting. Understanding how patient preferences, provider practice patterns, and access to alternative treatments contribute to these patterns is critical to ensuring equitable, patient-centered reproductive care.

P-116 2:15 PM Monday, October 26, 2026

PRECONCEPTION GLP-1 RECEPTOR AGONIST EXPOSURE AND IVF OUTCOMES: A LARGE RETROSPECTIVE COHORT STUDY USING EPIC COSMOS. Ali Bassam El Safadi, M.D.[1], Ahmad Abdo El Khatib, B.S.[2], Lina El Taha, Dr.[3] and Ghina Said Ghazeeri, M.D.[1], [1]AUBMC, Beirut, Lebanon, [2]American University of Beirut Medical Center, Beirut, Lebanon, [3]American University of Beirut, Lebanon

OBJECTIVE:
To evaluated whether preconception glucagon-like peptide-1 receptor agonist (GLP-1 RA) exposure influences IVF outcomes, and whether observed associations reflect a direct drug effect or an underlying high-risk metabolic phenotype, with specific focus on timing of exposure.

MATERIALS AND METHODS:
We conducted a retrospective cohort study using de-identified Epic Cosmos data, including 94,584 women aged 18–45 undergoing IVF. Patients were categorized by GLP-1 RA exposure within 0–90 days, 91–180 days prior to IVF, or no exposure. Primary outcome was clinical pregnancy; secondary outcome was live birth. Multivariable logistic regression models adjusted for age, body mass index, polycystic ovary syndrome, diabetes, hypertension, and metformin use. Stratified analyses and exposure-timing models were performed to evaluate temporal relationships and confounding by indication.

RESULTS: GLP-1–exposed patients represented a clinically distinct, higher-risk metabolic phenotype, with significantly higher BMI and greater burden of cardiometabolic comorbidities ($p<0.001$). Exposure was markedly enriched among women with PCOS (0–90 days: 36.9%; 91–180 days: 43.2%) compared to the unexposed group (3.0%, $p<0.001$), highlighting substantial baseline differences. In fully adjusted models, preconception GLP-1 RA exposure was associated with reduced odds of clinical pregnancy, with a clear timing-dependent gradient: aOR 0.62 (95% CI 0.54–0.72; $p<0.001$) for 0–90 days and 0.87 (95% CI 0.74–1.02; $p=0.083$) for 91–180 days. A similar pattern was observed for live birth, with aORs of 0.64 (95% CI 0.55–0.74; $p<0.001$) and 0.76 (95% CI 0.64–0.90; $p=0.002$), respectively. Stratified analyses demonstrated consistent directionality across PCOS and non-PCOS populations, with no evidence of effect reversal, indicating that the association is not confined to PCOS biology alone. Notably, the association for clinical pregnancy in the 91–180 day window was attenuated and no longer statistically significant, while the effect for live birth remained significant but reduced in magnitude. Overall, the strength of association was greatest with recent exposure and progressively attenuated with increasing time since treatment, demonstrating a robust temporal gradient.

CONCLUSIONS: In this large real-world IVF cohort, preconception GLP-1 exposure was associated with reduced reproductive success in a timing-dependent manner. However, attenuation of this association after comprehensive adjustment suggests that the observed effect is more likely attributable to underlying metabolic characteristics than to a direct pharmacologic effect of GLP-1 therapy.

IMPACT STATEMENT: This study provides the first large-scale, IVF-specific evaluation of GLP-1 RA timing and outcomes, addressing a critical and underexplored gap in the literature and a major clinical uncertainty in contemporary fertility care. It reframes GLP-1 exposure from a potential risk factor to a marker of underlying metabolic complexity, with important implications for patient counseling, treatment timing, and pre-IVF optimization strategies.

SUPPORT: No financial or funding support

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P-117 2:30 PM Monday, October 26, 2026

THE VALIDITY OF SERUM ANTI-MÜLLERIAN HORMONE (AMH) LEVELS AS A PREDICTOR OF OVARIAN RESPONSE TO CONTROLLED OVARIAN STIMULATION (OS) DECREASES AFTER 5 MONTHS, IRRESPECTIVE OF AGE. Akanksha Garg, MBBS, BSc[1], Prof. Erkan Kalafat, M.D. M.Sc[2], Andres Reig, M.D.[3], Baris Ata, M.D., M.SC.[4], Juan Antonio Garcia-Velasco, M.D., PH.D.[5] and Emre Seli, M.D.[6], [1]Yale university School of Medicine, New Haven, CT, [2]Istanbul, Turkey, [3]IVI-RMA New Jersey, Basking Ridge, NJ, [4]Atasehir, Turkey, [5]IVI RMA Madrid, Madrid, Madrid, Spain, [6]IVIRMA Global Research Alliance, RMA New Jersey, Basking Ridge, NJ

OBJECTIVE: The ability to accurately predict oocyte yield from a ovarian stimulation (OS) cycle is paramount in guiding decision-making in reproductive medicine. Several models exist and use different variables, such as patient age and serum anti-Müllerian hormone (AMH) levels, or antral follicle count (AFC) but have limited accuracy and a wide margin of error. Whilst age is a known variable and an accurate measurement can be used at the time of OS, serum AMH levels are often collected months before treatment, and the interval between measurement and cycle start can vary. This study aims to identify the effect of time from serum AMH measurement to OS start on oocyte yield and to assess the prognostic value of AMH over time.

MATERIALS AND METHODS: Retrospective cohort study at a private US fertility center, January 2009 through January 2024. Patients with multiple AMH measurements and repeat IVF cycles were eligible. The cohort was randomly partitioned into training and validation sets of equal size. Prediction models for total oocyte and MII oocyte yield were fit using generalized additive models for location, scale, and shape with two predictor sets compared: AMH alone, and AMH plus antral follicle count (AFC). For repeat cycles in the validation set, predictions generated from each patient's earliest available AMH value were compared with observed outcomes; index cycles and cycles with missing AMH were excluded. Prediction error was defined as predicted minus observed oocyte count.

RESULTS:
24,270 patients met inclusion criteria, partitioned equally into training (n=12,135) and validation (n=12,135) sets. Of 3,571 repeat-cycle patients in the validation set, 832 cycles remained for analysis after excluding index cycles and those with missing AMH. Baseline patient characteristics across both the training and validation sets were similar including median age, BMI, AMH and AFC counts. The median time from AMH draw to cycle start was 1.8 (range 0-5.9 months) for the most recent value compared to 17.8 (range 12.5-34.5 months) for the dated value. When using older AMH values, the model overpredicted by roughly 1 oocyte compared to a more recent value for both total oocytes and MII oocytes. This prediction error was unchanged when including a recent AFC. When stratifying by time for both AMH alone and AMH and AFC, AMH values >5 months old significantly overpredicted oocyte and MII oocyte yield ($p<0.001$ for all comparisons). There was no difference in prediction errors for values <3 months, 3-4 or 4-5 months old, or when stratifying by age (≤39 versus >39).

CONCLUSIONS: AMH measurements more than 5 months prior to initiation of OS are associated with lower accuracy in the prediction of oocyte yield. There is no difference when stratifying by age.

IMPACT STATEMENT:
Our findings support repeating serum AMH measurements obtained >5 months prior to cycle start in all patients undergoing IVF, irrespective of age, to improve the accuracy of oocyte yield prediction and to inform evidence-based practice.

INFERTILITY (5 OF 10)

P-118 1:30 PM Monday, October 26, 2026

HORMONE AND BINDING PROTEIN PROFILES AFTER PROGRAMMED FROZEN EMBRYO TRANSFER IN COMPARISON TO SPONTANEOUS PREGNANCY. Ariya Mobaraki, M.D.[1], Jane Dimperio, M.D.[2], Allen R. Kunselman, M.A.[3], Samantha F Butts, M.D., M.S.C.E[4], Stephanie J Estes, M.D.[2], Richard S. Legro, M.D.[5], Thiago Gagliano-Jucá, M.D., Ph.D.[6], Mohammad Anees, Ph.D.[6] and Shalender Bhasin, M.D.[6], [1]University Hospitals / Case Western Reserve Cleveland Medical Center, [2]Penn State Health, Hershey Medical Center, Hershey, PA, [3]PENNSYLVANIA STATE COLLEGE OF MEDICINE, Hershey, PA, [4]University of Pennsylvania, Philadelphia, PA, [5]Penn State College of Medicine, Hershey, PA, [6]Harvard Medical School, Brigham and Women's Hospital, Boston, MA

OBJECTIVE: To characterize longitudinal total and free steroid hormone profiles in programmed frozen embryo transfer (FET) pregnancies compared with spontaneous conceptions, focusing on corticosteroid binding globulin (CBG), sex hormone binding globulin (SHBG), albumin, and vitamin D binding protein (DBP), and to determine whether early differences normalize by the second trimester.

MATERIALS AND METHODS: This prospective longitudinal cohort study enrolled 14 women with singleton programmed FET pregnancies and 19 spontaneously conceived controls. Serum was collected in the early first trimester and each subsequent trimester. Total, free, and absolute estradiol, total, free, and absolute free testosterone, estrone, progesterone, cortisol, SHBG, CBG, albumin, and DBP were quantified. Free hormone fractions were calculated using validated binding equations incorporating measured binding proteins. Age-adjusted linear mixed effects models assessed group differences across trimesters. Non-parametric outcomes were log-transformed and reported as geometric marginal means with ratios. Maternal and fetal outcomes were compared using Fisher's Exact and Wilcoxon Rank Sum tests.

RESULTS: At baseline, FET pregnancies demonstrated lower albumin (4.23 vs. 4.49 g/dL, $p=0.001$), higher CBG (3.97 vs. 2.93 µg/mL, $p=0.003$), higher DBP (430 vs. 379 ug/mL, $p=0.01$), higher SHBG (229 vs. 153 nmol/L, $p=0.05$), higher progesterone (32.0 vs. 13.2 ng/mL, $p<0.001$), higher cortisol (250 vs. 137 nmol/L, $p<0.001$), higher estrone (1563 vs. 277 pg/mL, $p<0.001$), and higher free absolute estradiol (6.82 vs. 5.13, $p=0.03$) compared with controls. Free and total estradiol did not differ between groups at any timepoint. Significant group by trimester interactions were observed for progesterone ($p=0.004$), absolute free testosterone ($p=0.027$), vitamin D ($p=0.019$), DBP ($p=0.0004$), albumin ($p=0.047$), CBG ($p<0.0003$), and SHBG ($p<0.0008$), reflecting divergent early trajectories. By the second trimester, free absolute estradiol differences resolved ($p>0.05$) and cortisol remained elevated through the second trimester ($p=0.03$) before resolving in the third. Maternal and neonatal outcomes were comparable.

CONCLUSIONS: Programmed FET pregnancies demonstrate an altered early steroid and binding protein environment that largely converges with spontaneous pregnancies by the second trimester, though cortisol elevation persists after age adjustment. These findings suggest early differences that reflect exogenous hormone exposure and transient modulation of hepatic binding protein production rather than sustained endocrine dysregulation.

IMPACT STATEMENT: Understanding dynamic interactions between steroid hormones and their binding proteins in assisted reproduction clarifies physiologic

adaptation in early pregnancy and informs interpretation of hormonal biomarkers in FET gestations.
SUPPORT: This project was financially supported through an internal grant provided via the Department of OB/GYN at Penn State Health Hershey Medical Center.

P-119 1:45 PM Monday, October 26, 2026

COMPARATIVE EFFECTIVENESS OF LUTEAL SUPPORT REGIMENS IN NATURAL AND MODIFIED NATURAL FROZEN EMBRYO TRANSFER (FET) CYCLES. Alicia S Liu, M.D.[1], Nicole Mercado Fischer, MD, MPH[2] and Pamela B. Parker, M.D., M.P.H.[3], [1]Pittsburgh, PA, [2]University of Pittsburgh Medical Center, Pittsburgh, PA, [3]UPMC Magee Womens Hospital, Pittsburgh, PA

OBJECTIVE: The impact of luteal support regimens on success of ovulatory FET remains unclear**.** This study aims to compare outcomes associated with different luteal support regimens in natural and modified natural FET cycles.
MATERIALS AND METHODS: This retrospective cohort study included 308 natural or modified natural FET cycles with single embryo transfer. Programmed FET cycles, gestational carrier cycles, and those without luteal support were excluded. The exposure of interest was luteal support type: vaginal progesterone (VP), intramuscular progesterone in oil (PIO), or a combined regimen. The primary outcome was live birth rate (LBR). Secondary outcomes were implantation (positive hCG), intrauterine pregnancy (IUP), and ongoing pregnancy rate (OPR, >10 weeks gestation). Bivariate associations between luteal support type and clinical outcomes used chi-square and Kruskal-Wallis tests, with $p < 0.05$ considered statistically significant. Multivariable logistic regression adjusted for age at thaw, body mass index (BMI), ovarian reserve markers, and race.
RESULTS: Of the 308 cycles, 83.8% (N=258) used VP, 10.7% (N=33) used PIO, and 5.5% (N=17) used combination therapy. Our cohort was 87.5% (N=258) white. Age at time of thaw and ovarian reserve markers were not different across groups. The VP group had lower mean BMI compared to PIO and combination groups (26.1 vs 27.1 vs 29.5 kg/m^2, $p = 0.01$). Overall, implantation was achieved in 72.6% (N=223) and live birth in 58.4% (N=180) of cycles. While no significant differences in rates of implantation or IUP were observed, the combination group had significantly lower OPR (29.4% vs. 61.2% vs. 57.6%, $p = 0.035$) and LBR (29.4% vs. 60.4% vs 57.6%, $p = 0.042$) compared with VP and PIO groups, respectively.
After covariate adjustment, the odds of implantation were similar for the PIO (aOR 1.08; 95% CI 0.46–2.54) and combination groups (aOR 0.47; 95% CI 0.17–1.34) relative to VP. However, the combination group had significantly lower odds of LBR (aOR 0.32; 95% CI 0.11–0.97), compared to VP.
CONCLUSIONS: Rates of implantation and live birth are comparable for patients using VP or PIO alone in ovulatory FET cycles. Combined therapy was associated with lower implantation and LBR; however, larger studies are needed to confirm these findings.
IMPACT STATEMENT: These findings support flexibility in luteal support selection for natural and modified natural FET cycles, with no clear superiority of intramuscular over vaginal progesterone.

	VP N=258	PIO N=33	Combined N=17	*p*- value
Implantation	72.8 (188)	75.8 (25)	58.8 (10)	0.401
IUP	65.1 (168)	66.7 (22)	47.1 (8)	0.308
OPR	61.2 (158)	57.6 (19)	29.4 (5)	**0.035**
LBR	60.4 (156)	57.6 (19)	29.4 (5)	**0.042**

*Results shown as % (N)

P-120 2:00 PM Monday, October 26, 2026

INDEPENDENT EFFECTS OF MATERNAL AGE AND BLASTOCYST QUALITY AS DUAL DETERMINANTS OF EUPLOIDY. Keelee J McCarty, PhD[1], Blair R McCallie, PhD[1], Charles Wageman, MS[2], Mary E Haywood, PhD[2], William B Schoolcraft, M.D.[3] and Mandy Katz-Jaffe, PhD[3], [1]CCRM Research, Lone Tree, CO, [2]CCRM Genetics, Lone Tree, CO, [3]CCRM Fertility, Lone Tree, CO

OBJECTIVE: Age-related fertility decline is closely tied to decreased oocyte yield and quality, including increased chromosome aneuploidy. While preimplantation genetic testing for aneuploidy (PGT-A) as an embryo selection technique helps reduce the impact of embryonic aneuploidy, a more comprehensive understanding of the predictors of chromosomal errors in preimplantation development is paramount. This study aimed to determine the influence and relationship between maternal age and blastocyst quality on euploid probability.
MATERIALS AND METHODS: A retrospective cohort analysis was performed on a very large set of autologous embryos (n=215,297) utilizing next-generation sequencing (Illumina) for PGT-A. Chromosome numeration (euploid, whole aneuploid, and segmental aneuploid >5Mb, mosaics excluded), maternal age at time of biopsy (22 to 43 years), and blastocyst quality (inner cell mass (ICM) grade A or B, trophectoderm (TE) grade A or B, blastocyst expansion stage 3-6, and developmental day 5, 6 or 7) were assessed. Binary generalized linear models were fitted using the glmmTMB package in R (v1.1.13). Relative rates are reported with Wilson 95% confidence intervals. Significance declared at $P<0.05$.
RESULTS: Euploid probability was significantly associated with both maternal age and blastocyst quality, independently. Notably, with each additional year of maternal age beginning at 22 years, the odds of whole chromosome aneuploidy increased by 16.6% (n=76,011 blastocysts; OR = 1.166, 95% CI: 1.163-1.169; P<0.001). In complete contrast, segmental aneuploidy displayed a 4.7% decrease with each additional year from 22 years (n=8,628 blastocysts; OR = 0.953, 95% CI: 0.948-0.958, P<0.001). After adjusting for maternal age, blastocyst quality independently predicted aneuploidy risk. Lower ICM and TE quality scores (<AA), as well as slower-developing embryos (day 6/7), were all consistently associated with increased rates of chromosome instability (whole and segmental aneuploidy; OR range = 1.12-2.52; P<0.001). Similarly, embryos with lower blastocyst expansion grades exhibited increases in both aneuploidy types compared with more advanced blastocysts, independent of developmental day (OR range = 1.09-1.98; P<0.001). These associations remained significant in multivariable models, indicating the independent dual impact of maternal age and blastocyst quality on euploid probability (P<0.001).
CONCLUSIONS: This study reveals that oocyte chromosome instability leading to aneuploidy is influenced independently by maternal age and blastocyst quality. While whole chromosome aneuploidy was significantly associated with advancing maternal age, the opposing effect was observed for segmental aneuploidy. Interestingly, both types of aneuploid errors were more frequently associated with poorer embryo quality, affecting infertility patients of all maternal ages. Integrating these findings into clinical management can improve patient counseling, tailor strategies, and optimize outcomes.
IMPACT STATEMENT:
Maternal age and blastocyst quality independently predict euploid probability, improving embryo selection and patient counseling beyond age alone.
SUPPORT: None.
REFERENCES:
None.

P-121 2:15 PM Monday, October 26, 2026

SERUM ESTRADIOL LEVELS AT DIFFERENT PERI-TRANSFER TIME POINTS AND THEIR ASSOCIATION WITH ONGOING CLINICAL PREGNANCY AND PREGNANCY LOSS IN FROZEN EMBRYO TRANSFER CYCLES. Camila Mariani, M.D.[1], Pedro Pierro, M.D.[2], Justina Beccar Varela, Physician[3], Laura J Kopcow, MD[3], Fabio L Sobral, M.D.[3], Marcos M. Horton, M.D.[3], Claudio Bisioli Mr, B.S.[4], Melina Zapata Ms, MBBS[5], Alejandro Oubina Mr, Physician[3] and Ignacio De Zuñiga, Physician[3], [1]Pregna, Ciudad Autonoma Buenos Aires, Capital Federal, Argentina, [2]Pregna, Buenos Aires, Argentina, [3]Pregna Medicina Reproductiva, Buenos Aires, Argentina, [4]Buenos Aires, Argentina, [5]Ciudad Buenos Aires, Argentina

OBJECTIVE:
To evaluate the association between serum estradiol levels measured at different peri-transfer time points and reproductive outcomes, specifically ongoing clinical pregnancy rates and pregnancy loss, in frozen embryo transfer cycles.
MATERIALS AND METHODS:
Retrospective study including 132 frozen embryo transfer cycles performed at a single tertiary fertility center. Women undergoing frozen embryo transfer cycles were included. Serum estradiol was assessed at four predefined time points: pre-luteal phase, pre-transfer, one week after embryo transfer, and on the day of β-hCG determination. Estradiol was analyzed both as a continuous variable and categorized into three groups (<150, 150–300, >300 pg/mL). The primary outcome was ongoing clinical pregnancy per transfer. The secondary outcome was total pregnancy loss, including biochemical and clinical losses. Multivariable logistic regression models were constructed separately for each estradiol time point, adjusting for female age, type of endometrial preparation (natural/natural modified vs hormone replacement cycle), and serum progesterone levels prior to embryo transfer.
RESULTS:
Ongoing clinical pregnancy was achieved in 43.2% of transfers. Estradiol levels measured during the pre-luteal phase and prior to embryo transfer were not independently associated with ongoing clinical pregnancy or pregnancy loss. In contrast, higher estradiol levels measured one week after embryo transfer were independently associated with higher odds of ongoing clinical pregnancy. Estradiol levels measured on the day of β-hCG were also associated with ongoing clinical pregnancy and with a reduced risk of total pregnancy loss. Age and progesterone levels prior to transfer were independently associated with outcomes, whereas cycle type was not.
CONCLUSIONS:
Serum estradiol levels measured during endometrial preparation were not associated with reproductive outcomes in frozen embryo transfer cycles. In contrast, higher estradiol levels in the post-transfer period were associated with a greater likelihood of ongoing clinical pregnancy and a lower risk of pregnancy loss. These findings suggest that post-transfer estradiol dynamics may reflect early implantation-related endocrine activity rather than playing a determinant role in endometrial receptivity, thereby providing potential prognostic value in early pregnancy progression.

IMPACT STATEMENT:

This study highlights the potential clinical value of monitoring serum estradiol levels after embryo transfer as a prognostic marker of early pregnancy outcomes in frozen embryo transfer cycles. By demonstrating that post-transfer, rather than pre-transfer, estradiol levels are associated with ongoing clinical pregnancy and reduced pregnancy loss, these findings may help refine patient monitoring and counseling during the early stages of pregnancy. Moreover, they contribute to a better understanding of the endocrine dynamics following embryo transfer, supporting a shift in focus from endometrial preparation to early implantation processes.

P-122 2:30 PM Monday, October 26, 2026

QUANTIFYING EUPLOID PROBABILITY BY MATERNAL AGE AND EMBRYO GRADE: A PREDICTIVE TOOL FOR IVF COUNSELING. Blair R McCallie, PhD[1], Charles Wageman, MS[1], Lauren Henry, BS[1], Laura Reed, B.S.[2], William B Schoolcraft, M.D.[3] and Mandy Katz-Jaffe, PhD[3], [1]CCRM Genetics, Lone Tree, CO, [2]CCRM Colorado, Lone Tree, CO, [3]CCRM Fertility, Lone Tree, CO

OBJECTIVE: Maternal age is a critical determinant of reproductive success, with increasing age associated with higher rates of embryonic aneuploidy. Estimating euploid probability provides a clinically meaningful framework for patient management and treatment planning. This study analyzed an extensive dataset of IVF cycles to quantify the euploid probability across SART maternal age groups and embryo grades as a predictive tool for IVF counseling.
MATERIALS AND METHODS: This retrospective cohort study analyzed 215,297 blastocysts derived from 51,449 IVF cycles between 2015 and 2025. All blastocysts underwent a trophectoderm biopsy with PGT-A using next-generation sequencing (Illumina). Euploid probability was modeled using R as a function of maternal age, embryo biopsy day, and blastocyst ICM and TE scores using a binomial generalized linear model implemented in glmmTMB. Predicted euploid probabilities were calculated using ggeffects. Significance assessed using Wald z-tests with two-sided p-values ($p<0.05$).
RESULTS: Maternal age had a significant negative association with euploid probability, with a 13.0% reduction in the odds of a euploid blastocyst per additional year of age, starting at age 22 (OR: 0.870, 95% CI: 0.868-0.872, $P<0.001$). Independently, embryo grade also had a significant negative association with the probability for a euploid blastocyst (Table 1). For example, a female patient aged 38-40 years with a day 5 biopsied "AA" embryo has a 66.7% euploid probability compared to her day 7 biopsied "BB" with a euploid probability of only 30.7% (OR: 0.870, 95% CI: 0.868-0.872, $P<0.001$; Table 1).
CONCLUSIONS: This extremely large embryo dataset demonstrates that euploid probability decreases nonlinearly with maternal aging and poorer embryo grade. Integrating this age- and embryo grade-specific predictive tool into clinical practice can improve patient counseling by informing expectations, tailoring treatment strategies and reducing IVF burden, thereby leading to optimal outcomes.
IMPACT STATEMENT: This study offers a clinically relevant tool that facilitates patient counseling and upfront decision-making early in their reproductive journey.

Table 1: The intersection between maternal age and embryo grade to predict euploid probability

	<35 years	35-37 years	38-40 years	41-42 years	43+ years
D5 "AA"	84.8%	75.1%	66.7%	58.6%	50.8%
D6 "AA"	78.5%	66.8%	57.2%	48.5%	40.8%
D7 "AA"	72.2%	59.3%	49.4%	40.9%	33.4%
D5 "BA"	82.2%	71.1%	62.1%	53.5%	45.5%
D6 "BA"	75.2%	62.2%	52.4%	43.6%	36.5%
D7 "BA"	68.5%	54.4%	44.3%	36.0%	29.1%
D5 "AB"	75.4%	62.7%	52.8%	44.1%	36.7%
D6 "AB"	66.9%	52.9%	42.6%	34.5%	28.1%
D7 "AB"	59.4%	44.9%	35.1%	28.0%	22.3%
D5 "BB"	71.7%	57.9%	47.8%	39.2%	32.4%
D6 "BB"	62.5%	47.9%	37.9%	30.2%	24.2%
D7 "BB"	54.1%	40.1%	30.7%	23.9%	19.0%

SUPPORT: None.
REFERENCES:
None.

INFERTILITY (6 OF 10)

P-123 1:30 PM Monday, October 26, 2026

THE OAT "LIQUID BIOPSY": INTEGRATED PROTEOMICS REVEALS THE COLLAPSE OF ION HOMEOSTASIS AND METABOLIC MACHINERY IN SEMINAL EXTRACELLULAR VESICLES. Manesh Kumar Panner Selvam, DVM, PhD[1], Ajaya Kumar Moharana, BSc., MSc.[2], Luna Samanta, Ph.D[3] and Suresh Sikka, Ph.D, HCLD, CC(ABB)[1], [1]Tulane University School of Medicine, New Orleans, LA, [2]Ravenshaw University, Cuttack, India, [3]Redox Biology Laboratory, Department of Zoology, Ravenshaw University, Cuttack, Odisha, India

OBJECTIVE: Oligoasthenoteratozoospermia (OAT) is a primary driver of male infertility, yet the molecular mechanisms governing this multi-factorial phenotype remain poorly defined. Seminal extracellular vesicles (SEVs) are critical mediators of sperm maturation, motility and fertilization process. We hypothesized that OAT is driven by a distinct remodeling of the SEV proteome, where the loss of physiological transporters and the gain of oxidative stress (OS) compromise sperm function. This study characterizes the global proteome of SEVs in OAT to identify central hub proteins and dysregulated pathways**.**
MATERIALS AND METHODS: We carried out a case-control study integrated quantitative proteomics of SEVs from normozoospermic donors (n=9) and OAT patients (n=9). SEVs were isolated using size-exclusion column chromatography, validated by NTA particle size analysis and exosomal markers (CD63 and ALIX). Global proteomic profiling was performed via LC-MS/MS and identified differentially expressed proteins (DEPs) were subjected to bioinformatic analyses using Gene Ontology, KEGG, STRING, and Ingenuity Pathway Analysis (IPA). Proteo-transcriptomic integration utilized GEO dataset GSE56076 and key hub proteins (ATP1A4, ATP2B4, APOA1) were validated by Western blot.
RESULTS: While SEV physical characteristics (size/concentration) remained comparable between groups, proteomic profiling identified 3,315 proteins, of which 131 were significantly altered in OAT group (85 upregulated, 46 downregulated). Bioinformatic analysis revealed enrichment of spermatogenesis and fertilization related pathways with downregulated proteins. Key proteins involved in ion transport and metabolic support, including ATP1A4, ATP2B4, LDHC, HSPA2, and TEX101 were significantly reduced, indicating disruption of ion homeostasis and energy metabolism. Upregulated proteins exhibited a stress-responsive signature associated with inflammation and OS, including APOA1, C3, and metallothioneins. Network integration using IPA identified ATP1A4, ATP2B4, and APOA1 as central regulatory hubs. Proteo-transcriptomic integration confirmed 89 overlapping genes, reinforcing a coordinated molecular dysregulation. Western blot analysis confirmed significant downregulation of ATP1A4 and ATP2B4 in SEVs from OAT group.
CONCLUSIONS: OAT is characterized by a profound proteomic shift in SEVs, defined by the loss of ion-transport proteins and metabolic enzymes alongside the activation of pro-inflammatory pathways. The identification of ATP1A4 and ATP2B4 as hub proteins suggests these transporters are critical for the seminal microenvironment. SEVs serve as

mechanistic drivers of dysfunction and high-fidelity, non-invasive biomarkers for idiopathic male infertility.
IMPACT STATEMENT: Our results shift the diagnostic paradigm for male infertility from traditional semen analysis to a precision "liquid biopsy" of seminal EVs in patients with OAT. By identifying the proteomic collapse of ion-transport and metabolic machinery in the OAT patients, we provide a new molecular framework for diagnosing and potentially treating the underlying causes of idiopathic sperm dysfunction.

P-124 1:45 PM Monday, October 26, 2026

LABORATORY-DEVELOPED TEST FOR EVALUATION OF OXIDATION REDUCTION POTENTIAL IN HUMAN SEMEN. Manesh Kumar Panner Selvam, DVM, PhD, Reena Kumari, PhD and Suresh Sikka, Ph.D, HCLD, CC(ABB), Tulane University School of Medicine, New Orleans, LA

OBJECTIVE: To standardize and analytically validate a laboratory-developed test (LDT) for the assessment of oxidative stress in human semen using normalized oxidation-reduction potential (nORP), and to determine its clinical utility in differentiating normozoospermic from abnormal semen samples.
MATERIALS AND METHODS: A total of 107 semen samples were analyzed from men with normal (n=30) and abnormal (n=77) sperm parameters. ORP was measured in duplicate using the MiOXSYS analyzer and normalized to sperm concentration to derive nORP (mV/10^6 sperm/mL). Additional validation included stability testing at 0, 30, 60 minutes using fresh vs. frozen samples, and intra-/inter-operator variability. Statistical analyses were performed using MedCalc software.
RESULTS: The ORP assay demonstrated excellent reproducibility, with high intraclass correlation coefficients (ICC) ≥0.995 across groups, and low “within-subject” coefficient of variation (3.42–5.65%), indicating minimal analytical variability. nORP values demonstrated excellent temporal stability, with no significant differences observed at 0 minutes (1.01 ± 1.07 mV/10^6 sperm/mL), 30 minutes (0.99 ± 1.08 mV/10^6 sperm/mL), and 60 minutes (0.96 ± 1.01 mV/10^6 sperm/mL) post-collection ($p>0.05$). Similarly, no significant differences were observed between fresh samples (0.79 ± 0.61 mV/10^6 sperm/mL) and frozen-thawed samples stored at -80 ^{0}C (0.82 ± 0.65 mV/10^6 sperm/mL) ($p>0.05$), demonstrating assay robustness across sample handling conditions. “Bland–Altman analysis” showed negligible bias between duplicate measurements, and “variance component analysis” confirmed that observed variability was predominantly due to biological differences rather than measurement error. Also, nORP levels were significantly higher in samples with abnormal sperm parameters compared to normozoospermic samples ($p\leq0.0001$), demonstrating strong discriminatory ability. A cutoff value of ≤1.45 mV/10^6 sperm/mL differentiated normal from abnormal semen with sensitivity of 86.67% and specificity of 81.82%. “Spearman correlation analysis” showed significant associations between nORP and key semen parameters such as sperm concentration, total motility and total motile sperm count in samples from both the groups.
CONCLUSIONS: The nORP measurement demonstrates excellent analytical performance, including high reproducibility, minimal measurement error, and robustness across operators and sample conditions suggesting good reliability of this LDT. Also, nORP is a reliable biomarker that effectively differentiates normal versus oxidative stress induced abnormal semen profiles.
IMPACT STATEMENT: This validated LDT for nORP measurement in semen samples provides a standardized, reproducible approach for assessing oxidative stress and offers significant clinical value besides routine sperm parameters in evaluation of male infertility. Implementation of nORP testing in andrology and embryology laboratories may enhance diagnostic accuracy, support clinical decision-making, and improve patient stratification for assisted reproductive technologies.

P-125 2:00 PM Monday, October 26, 2026

THE ASSOCIATION BETWEEN THE RECTAL AND VAGINAL MICROBIOMES AND THE ETIOLOGY OF INFERTILITY OF WOMEN UNDERGOING FERTILITY TREATMENTS. Michal Youngster, MD[1], Mor Tsamir, MA[2], Omry Koren, PhD[3], Sondra Turjeman, PhD[4], Sarit Avraham, M.D.[1], Itai Gat, MD[5], Alon Kedem, MD[1], Ariel Hourvitz, M.D.[1], Elhanan Borenstein, PhD[6] and Ilan Youngster, MD[7], [1]Shamir Medical Center, Beer Yakov, Israel, [2]Faculty of Medical and Health Sciences, Tel Aviv Jaffa, Israel, [3]Faculty of Medicine, Bar-Ilan University, Safed, [4]Azrieli Faculty Of Medicine, Safed, Israel, [5]Tel Aviv University, Tel Aviv, Israel, [6]Blavatnik School Of Computer Science, Tel Aviv Jaffa, Israel, [7]Shamir Medical Center, Tel Aviv University, Israel

OBJECTIVE:
To investigate the overall gut and vaginal microbiome composition and the distribution of specific bacterial taxa among patients with different etiologies of infertility.
MATERIALS AND METHODS:
298 patients undergoing IVF (2020-2022) were sampled at ovum pickup (vaginal & rectal swabs). Shotgun metagenomic sequencing was performed for taxonomic and functional profiling. Community state types (CST) were assigned to each vaginal sample. CST I-III &V were defined as *Lactobacillus* dominant. Comparisons of microbiome composition were performed by comparing each infertility cause to a control group (women undergoing IVF due to male factor or genetics) as well as comparing to all other causes of infertility.
PERMANOVA was applied to test for differences in overall vaginal and rectal microbiome composition across infertility causes while adjusting for confounders (Age, CST), assessing whether samples of women with specific infertility causes were more similar to each other than to control samples.
MaAsLin2 was used to identify confounder-adjusted associations between specific microbial taxa and infertility causes by fitting multivariable linear models for each feature and applying FDR correction for multiple testing (FDR<0.1 was considered significant).
RESULTS:
271 patients with a single infertility cause were included. (age-89, male factor-51, unexplained-38, mechanical-25, poor ovarian response (POR)-21, endometriosis-20, PCOS-15, genetics-7, Recurrent pregnancy loss-5).
Comparing each infertility cause to the control group, the vaginal microbiome composition (beta diversity) was significantly associated with all specific infertility causes. Taxonomic analyses showed a significant association between PCOS and abundance of vaginal *Corynebacterium* (FDR=0.078), *Bifidobacterium_longum* (FDR=0.014) and *Peptoniphilus_harei* (FDR=0.08), as well as POR and *Gardnerella_vaginalis* (FDR=0.022).
When each infertility cause was compared to all other causes, both the vaginal and rectal microbiome samples from women sharing the same cause were more similar to each other than to samples from women with other infertility causes. In this comparison several rectal and vaginal species and genera were significantly, and uniquely, associated with specific causes (FDR<0.1)(endometriosis: Rectal-*Peptoniphilus*; Mechanical: Rectal-*Aloscardovia_omnicolens*, *Campylobacter_hominis*; PCOS: *Anaerococcus*, *Corynebacterium*; POR: Vaginal *Gardnerella_Vaginalis* and Rectal *Gemmiger_SGB15299*; Unexplained- Rectal *Dialister_hominis* and GGB9633_SGB15091).
CONCLUSIONS:
Both the vaginal and rectal microbiomes were significantly associated with specific infertility causes. Higher abundance of several bacterial- species was associated with various distinct infertility causes.
IMPACT STATEMENT:
Exploring the association between specific bacteria, the overall makeup of the gut and vaginal microbiomes, and various causes of infertility through deep shotgun metagenomic sequencing could enhance our understanding of the underlying mechanisms of infertility and may lead to future targeted treatments to improve women's health and fertility outcomes.

P-126 2:15 PM Monday, October 26, 2026

OBSTETRIC RISK PROFILES WITH THE USE OF ASSISTED REPRODUCTIVE TECHNOLOGY STRATIFIED BY TYPE OF INFERTILITY. Megan Pedicini, BSc[1], Marisa R Imbroane, BA[1] and Rachel Susan Weinerman, M.D.[2], [1]Case Western Reserve University School of Medicine, OH, [2]University Hospitals Fertility Center/Case Western Reserve University, Beachwood, OH

OBJECTIVE: Pregnancies achieved via assisted reproductive technology (ART) are associated with an increased risk for adverse obstetric outcomes (AOOs). However, infertility itself has been known to be a risk factor for AOOs, and risk may vary by diagnosis, including Polycystic Ovarian Syndrome (PCOS) and other conditions. We aimed to compare AOOs among pregnancies achieved via assisted ART with PCOS compared to other infertility diagnoses.
MATERIALS AND METHODS: We conducted a retrospective cohort study of 18–44-year-old female patients on the TriNetX research network undergoing embryo transfer (ET), stratified by infertility diagnosis: polycystic ovarian syndrome (PCOS), primary ovarian insufficiency (POI), endometriosis (endo), or tubal infertility. Patients were matched for age, ethnicity, and comorbidities (obesity, type II diabetes, hypertension, and tobacco/alcohol use disorders). We assessed for AOOs within 12 months of ET: early pregnancy hemorrhage, spontaneous abortion (SAB), gestational diabetes mellitus (GDM), hypertensive disorders of pregnancy, poly- and oligohydramnios, fetal growth restriction, preterm premature rupture of membranes, preterm labor, and failed induction of labor. We also assessed for pregnancy resulting from ART within 12 months of ET. We calculated risk ratios (RR) and 95% confidence intervals (CIs); $p<0.05$ considered significant.
RESULTS: 9,861 patients were reviewed for inclusion (n=3,420 patients with PCOS, 1,184 with POI, 2,998 with endo, and 2,259 with tubal infertility). After matching, there were 964 patients in the PCOS/POI analysis, 2,510 in the PCOS/endo analysis, and 1,980 in the PCOS/tubal infertility analysis. Overall, patients with PCOS were more likely to achieve pregnancy compared to those with other diagnoses (66.4% vs. 52.9% POI, 61.4% endo, and 62.5% tubal, P all <0.0001). However, AOOs were also more common in patients with PCOS compared to other diagnoses. PCOS patients had an increased risk of hemorrhage in early pregnancy compared to those with POI (18.4% vs 10.8%, RR 1.72, 95% CI (1.36, 2.13)). PCOS patients were also more likely to have GDM compared to patients with endo (8.4% vs. 6.2% RR 1.35, (1.12, 1.65), p=0.0029). Finally, PCOS patients had an increased risk of SAB compared to patients with both POI and tubal infertility (12.3% vs 7.1% in POI, RR 1.75, (1.32, 2.33)) and 9.2% in tubal factor (RR 1.31, (1.09,1.57)).
CONCLUSIONS: Among pregnancies achieved via ART, AOOs vary by underlying fertility diagnosis. PCOS was associated with higher rates of several AOOs compared to other diagnoses despite higher ART pregnancy rates.
IMPACT STATEMENT: Although ART in general increases risks of certain AOOs, this study demonstrates that this risk is compounded by diagnosis, with PCOS patients specifically at higher risk compared to other diagnoses. This information can inform patient counseling and allow modification of risk factors to optimize ART outcomes.

P-127 2:30 PM Monday, October 26, 2026

AN ASPECT OF SPERM DNA FRAGMENTATION THAT IMPACTS EMBRYO PLOIDY. Lily Ng, B.S.[1], Philip Xie, B.SC.[2], Olena M. Kocur, B.A.[3], Zev Rosenwaks, M.D.[2] and Gianpiero D. Palermo, M.D., PH.D.[2], [1]Weill Cornell Medicine, New York, NY, [2]The Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY, [3]Weill Cornell Medicine, New York City, NY

OBJECTIVE:
It is widely recognized that elevated sperm chromatin fragmentation (SCF) has a negative effect on embryo development and implantation. It is being acknowledged that specific double stranded DNA nicks and breaks (ds-SCF), within the sperm genome may induce structural chromosomal abnormalities in the conceptus. While the most popular SCF assay measures total SCF (T-SCF), we propose an expedite method to identify these specific ds-SCF.
MATERIALS AND METHODS:
Over the past 3 years, a total of 273 consenting men were concurrently screened for T-SCF by TUNEL, with a normal threshold of ≤15%, and dsDNA breaks by γH2AX, with a normal threshold of ≤3%. A total of 500 spermatozoa were screened for each assay. To assess to effect of ds-SCF on ICSI outcome, we observed and recorded embryo pre- and post-implantation development, as well as ploidy of the supernumerary embryos.
RESULTS:
Standard SCF assessment by TUNEL on the ejaculates of all 273 men evidenced a borderline T-SCF of 15.4%. In efforts to evaluate the significance of SCF, we focused on the proportion of dsDNA damage in this population.
Men with normal ds-SCF (n=153; paternal age,36.4±7yrs) revealed 1.8±1% dsDNA breaks, had a spermatozoa concentration of $46.2\pm38\times10^6$/mL, motility of 41.4±4%, and normal morphology of 4±1%. The men underwent 165 ICSI cycles (female partner age of 34.9±6yrs), resulting in a fertilization and embryo cleavage of 78.1%(1519/1944) and 85.4%(1297/1519), respectively. In 76 of these couples, 84 untested embryos were transferred, resulting an implantation rate of 45.2%(38/84), clinical pregnancy rate(CPR) of 42.1%(32/76), and in 28 live births(LB)(36.8%). PGT-A performed on supernumerary embryos resulted in a euploidy rate of 44.0%(426/969).
Comparatively, 120 men (paternal age,38.1±9yrs) with abnormal ds-SCF(4.6±1%) had spermatozoa concentration of $31.3\pm27\times10^6$/mL, motility of 28.9±16%, and normal morphology of 3±1%. They underwent 154 ICSI cycles (female partner age of 36.0±8yrs) resulting in a comparable fertilization of 75.2%(1265/1683); however, they exhibited compromised cleavage rate of 46.6% (589/1265, $P<0.001$) compared to the other group. Of these, 68 couples underwent fresh embryo transfers of 83 untested embryos, resulting in an implantation rate that was lower at 32.5%(27/83) as well as a CPR of 27.9%(19/68). This resulted in only 9 LB(13.2%, $P<0.001$), and a higher pregnancy loss rate (14.7%, 10/68). Additionally, PGT-A on supernumerary embryos evidenced an euploidy rate 26.4%(106/384, $P<0.0001$).
As expected, those patients that had a transfer of frozen euploid embryos, screened by PGT-A fared comparably, nullifying the effect of ds-SCF screening.
CONCLUSIONS:
The availability of a simple dsDNA assay provides valuable information on the embryo cleavage and implantation in ICSI cycles even when the T-SCF detected by the standard assay is at a borderline level.
IMPACT STATEMENT:
This study corroborates the effect of sperm dsDNA breaks on the structural chromosomal abnormalities of the conceptus and provides more informative counseling options, while helping in devising proper sperm selection methods.

INFERTILITY (7 OF 10)

P-128 1:30 PM Monday, October 26, 2026

RESTORATIVE REPRODUCTIVE MEDICINE IN THE UNITED STATES: WHO PROVIDES CARE AND WHAT ARE THEIR CREDENTIALS? Shea E Randall, BA[1], Katherine Roberts, BA[2], Riley Bonaccorsi, BA, MA[2], Brianna C Borger, BS[2] and Eve C Feinberg, M.D.[2], [1]Loyola University Chicago, [2]Northwestern University Feinberg School of Medicine, Chicago, IL

OBJECTIVE: To characterize the professional training, clinical background, and geographic distribution of U.S. clinicians advertising restorative reproductive medicine (RRM) and related approaches, including Creighton Model FertilityCare, NaProTechnology, and FEMM, which focus on treating underlying causes of infertility rather than using assisted reproductive technologies such as in vitro fertilization.
MATERIALS AND METHODS: We conducted a cross-sectional study of U.S. clinicians advertising RRM or related approaches identified through national directories and targeted web searches (November 2025–March 2026). Provider listings and websites were reviewed to confirm active clinical practice when applicable. Publicly available data on baseline credentials (e.g., MD, DO, nursing, allied health, or non-clinical degrees), specialty, board certification, location, and RRM-related training or care type were collected. RRM-specific training or certifications were not analyzed as a primary credential. One author independently repeated all standardized searches to verify data.
RESULTS: A total of 681 U.S.-based clinicians advertising RRM or related approaches were identified. The highest numbers were in Indiana (n=48), Texas (n=44), and Ohio (n=42). Overall, 178 (26.1%) were physicians; the remainder included advanced practice clinicians, nurses/allied health professionals, and 268 (39.4%) individuals with non-clinical, non-healthcare, or unknown credentials. Among physicians, primary specialties included family medicine (n=99) and obstetrics and gynecology (n=68), with fewer in other fields. Only one provider reported fellowship training in reproductive endocrinology and infertility (REI).
CONCLUSIONS: Clinicians advertising RRM represent a highly heterogeneous workforce with wide variation in training and clinical background. Most providers are non-physicians, and many have non-clinical or unclear baseline credentials. Even among physicians, most are not trained in obstetrics and gynecology, and fellowship-level REI training is nearly absent.
IMPACT STATEMENT: These findings highlight gaps in transparency and standardization among clinicians advertising RRM, Creighton Model FertilityCare, NaproTechnology, and FEMM approaches. Greater clarity in training, credentialing, and scope of practice may be needed to ensure patients receive accurate, evidence-based fertility care.
Table 1. Baseline Credentials of U.S. Clinicians Advertising Restorative Reproductive Medicine or Related Approaches

Provider Type	Number of Providers	Percentage (%)
Physicians	178	26.1
Advanced Practice Clinicians / Advanced Nursing	114	16.7
Registered Nurses / Allied Health	114	16.7
Support / Complementary / Non-Licensed Clinical Roles	7	1.03
Non-Clinical / Academic Degrees / No Degree	268	39.4

SUPPORT: N/A

P-129 1:45 PM Monday, October 26, 2026

FRESH AND FROZEN EMBRYO TRANSFERS YIELD SIMILAR LIVE BIRTH RATES: AN ANALYSIS OF OVER 5400 TRANSFER CYCLES. Ilissa Pipia, B.S.[1], Christopher Moutos, M.D.[2], Xiaoyue Ma, M.Sc.[1], Zev Rosenwaks, M.D.[3] and Mohamad Irani, M.D.[3], [1]Weill Cornell Medical College, New York, NY, [2]Little Rock, AR, [3]The Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY

OBJECTIVE:
To investigate whether live birth rates (LBR) differ in patients pursuing frozen embryo transfer (FET) or fresh embryo transfer (ET).
MATERIALS AND METHODS:
Retrospective chart review from a single academic center of patients undergoing in vitro fertilization with a single untested day 5 blastocyst transfer between January 2012 and December 2023. Ages were grouped as <35, 35-37, 38-40, 41-42, and >42, and blastocyst quality was categorized as excellent, good, average, or poor according to our laboratory grading standards. The primary outcome was LBR based on transfer cycle type. Multiple logistic regression analysis was utilized to assess the association between treatment type (fresh ET vs FET) and LBR, controlling *a priori* for oocyte age, body mass index (BMI), and embryo quality. To evaluate the consistency of treatment effect across oocyte age, we tested for an interaction between transfer type and oocyte age. Similarly, the interaction between transfer type and embryo quality was assessed. P<0.05 was considered significant.
RESULTS:
2601 cycles (47.9%) of fresh ETs, and 2835 cycles (52.1%) of FET were analyzed. In unadjusted analyses, no difference was seen in live birth outcomes between fresh and frozen ET (p=0.2). Across all ETs, transfer of a higher quality embryo resulted in higher LBR (p<0.001). No significant difference was found in unadjusted LBR between Fresh and Frozen ET of excellent, good, and average quality embryos; however, in poor quality embryos, FET yielded a higher LBR than fresh ET (p=0.04).
Multiple logistic regression analysis showed that younger age groups, lower BMI, and better blastocyst quality were predictive of greater odds of live birth (p< 0.05 for all). After adjusting for potential confounders, no significant difference was seen in the odds of LB between fresh and FET (adjusted OR 1.09; 95% CI 0.97 – 1.22; p=0.17). In the interaction model, no significant interaction between oocyte age and embryo transfer cycle type was present (p>0.1 for all). Similarly, in a model of interaction between embryo quality and transfer cycle type, no significant effect modification was present (p>0.2 for all).
CONCLUSIONS:
Both univariate and multivariable analysis indicate fresh ETs and FETs are associated with similar LBRs. Similar outcomes in fresh and frozen ET were seen across all ages of oocytes and quality of embryos.
IMPACT STATEMENT:
Compared to fresh embryo transfers, a frozen embryo transfer does not yield higher LBR, when controlling for potential confounders.
SUPPORT: N/A

P-130 2:00 PM Monday, October 26, 2026

DEVELOPMENT OF A MACHINE LEARNING–BASED PREDICTIVE MODEL FOR OVARIAN REACTIVATION AND REPRODUCTIVE OUTCOMES FOLLOWING OVARIAN REACTIVATION TREATMENTS. Cristina Piluso, PhD Student[1], Blanca García Mota, M.Sc[2], Purificación Hernández-Vargas, PhD[3], Lorena Bori Arnal, PhD[4], Marcos Meseguer, PhD[5], Sonia Herraiz, Ph.D.[6] and Manuel Munoz, MD PhD[2], [1]IVIRMA Global Research Alliance, Valencia, Spain, [2]IVIRMA ALICANTE, Alicante, Spain, [3]IVIRMA ALICANTE, Alicante, Alicante, Spain, [4]IVI Foundation, Instituto de Investigación Sanitaria La Fe (IIS La Fe), Valencia, Spain, Valencia, Spain, [5]IVIRMA Global Research Alliance, IVIRMA Valencia, Valencia, Spain, [6]IVI Foundation - IIS La Fe, Valencia, Spain

OBJECTIVE:
To develop and validate a machine learning–based predictive model capable of estimating ovarian activation, the number of oocytes and the probability of pregnancy in IVF cycles after ovarian reactivation therapies.

MATERIALS AND METHODS:
Retrospective artificial intelligence (AI)-based predictive model using a structured database containing patient's baseline characteristics, ovarian reserve markers, embryology data and pregnancy outcomes. Key baseline variables included age, anti-Müllerian hormone (AMH), antral follicle count (AFC), and infertility diagnosis. Post-treatment follow-up comprised up to three periodical controls (C1, 2, 3) with repeated AMH, AFC, FSH, and E2. The dataset was randomly split into training (70–80%) and test (20–30%) sets, and model was evaluated using cross-validation. Logistic regression, random forest, and XGBoost algorithms were compared using accuracy, area under the ROC curve (AUC), mean absolute error (MAE), and root mean square error (RMSE). Three predictive models were developed targeting the following outcomes: ovarian activation, oocyte yield and pregnancy probability in IVF cycles after reactivation.
RESULTS:
A total of 600 stimulation cycles comprising 5,742 oocytes and 2,816 embryos from 382 patients were included. Mean patient age was 39.14 ± 4.17 years, with mean basal AMH of 0.28 ± 0.44 ng/mL and AFC of 2.14 ± 2.22. For prediction of ovarian activation at C1, random forest achieved the best performance (accuracy 69%, AUC 0.74), using the baseline characteristics as the most critical factors for prediction ability. Regarding oocyte yield, linear regression showed the lowest prediction error (MAE 3.53; RMSE 4.32). This model, also based on the baseline parameters, achieves its greatest predictive power by adding both AMH and AFC values from the best post-treatment control along with the number of oocytes from a previous cycle.Lastly, in addition to the prior baseline and best control parameters, the number of oocytes, MII and embryos from post-treatment cycle were inputted for estimating the chance of clinical pregnancy. The Random Forest model showed the highest predictive performance (accuracy 69%, AUC 0.83), with the number of oocytes, MII and age, as the most important post-treatment variables predicting pregnancy. The selected models were integrated into a web-based clinical application enabling real-time individualized predictions.
CONCLUSIONS: Machine-learning models can predict ovarian activation, post-treatment oocyte yield, and clinical pregnancy probability in patients undergoing ovarian reactivation therapies. Each predictive model entails a different complexity. Although all algorithms include patient's baseline characteristics, additional data is required for a more optimized prediction of pregnancy and oocytes in post-treatment IVF cycles. However, with the current data, none of these models is able to provide a direct estimation of the benefit due to the intervention.
IMPACT STATEMENT:
AI-based predictive models may support personalized counseling and treatment planning. Their clinical utility will improve with approaches that estimate the added value of ovarian reactivation therapies.

P-131 2:15 PM Monday, October 26, 2026

SEGMENT SPECIFIC RISK THRESHOLDS FOR BODY MASS INDEX AND EMBRYO TRANSFER DAY PROGESTERONE IN PGT-A SINGLE EUPLOID FROZEN EMBRYO TRANSFER: A DOSE-RESPONSE ANALYSIS OF 3,512 CYCLES. Yücel Sahin, MD and Semra Kahraman, Prof. MD, Istanbul Memorial Hospital, Istanbul, Turkey

OBJECTIVE:
To define clinically actionable risk thresholds, segment-specific outcome rates, and per unit dose response effects of body mass index (BMI) and embryo transfer day serum progesterone (ProgET) on negative β-hCG and pregnancy loss in PGT-A single euploid frozen embryo transfer (FET) cycles.
MATERIALS AND METHODS:
Inclusion required NGS-confirmed top or good quality single euploid blastocyst transfer. BMI was stratified into five segments (<20, 20–24.9, 25–29.9, 30–34.9, ≥35 kg/m²) and ProgET into five segments (<10, 10–14.9, 15–19.9, 20–24.9, ≥25 ng/mL). Optimal binary cut offs were determined by Youden's J statistic from ROC analysis. Continuous dose response was modeled by per unit logistic regression with 1,000-replicate bootstrap CIs and restricted cubic splines (RCS) to test non-linearity. Multivariable models adjusted for female age, previous ART cycles, FET protocol, embryo morphology, and endometrial thickness. PCOS effect modification and FET protocol interaction were pre specified.
RESULTS:
BMI demonstrated a non linear inflection at 21.8 kg/m² with stepwise risk acceleration: pregnancy loss rates rose from 13.1% (BMI <20) to 14.6% (20–24.9), 16.8% (25–29.9), 19.4% (30–34.9), and 24.7% (≥35). The BMI ≥30 stratum increased loss 1.46-fold (95% CI 1.03–2.07; p=0.035), with 1.82-fold acceleration across the 27–32 kg/m² range. Per unit BMI rise increased loss 2.5% (aOR 1.025; 95% CI 1.003–1.048; p=0.027), equivalent to 13% per +5 kg/m². A novel BMI and PCOS interaction (p=0.005) confined the BMI effect to PCOS patients (aOR 1.10/kg/m²); BMI was inert in non-PCOS (aOR 0.999; p=0.93). Number needed to harm was 60 for BMI 30–34.9 and 23 for ≥35. ProgET showed a linear protective effect (RCS LR p=0.36). Negative pregnancy rates fell from 26.1% (<10 ng/mL) to 15.9% (10–14.9), 12.4% (15–19.9), and 11.7% (≥20). The optimal cut-off was 11 ng/mL, below which loss risk increased 2.14-fold (p<0.001) and negative-pregnancy 2.10-fold. Per +5 ng/mL ProgET reduced negative-pregnancy odds by 13% (aOR 0.87; p=0.046), independent of protocol. The BMI and FET-protocol interaction (p=0.053) revealed that natural cycle FET nullifies BMI related loss (OR 1.00 vs. 1.05 in artificial cycles).
CONCLUSIONS:
BMI and ProgET act through distinct, segment-specific risk pathways: BMI exerts a non-linear, PCOS- and protocol mediated effect on loss, whereas ProgET confers a direct linear protection. Threshold-based stratification at BMI ≥30 kg/m² and ProgET <11 ng/mL identifies the highest risk subgroup.
IMPACT STATEMENT:
These quantitative thresholds enable phenotype-tailored counseling weight optimization in PCOS, luteal-phase progesterone targeting >11 ng/mL, and natural-cycle preference in obese patients shifting PGT-A practice from generic risk estimates to evidence-based personalization.
SUPPORT: none

P-132 2:30 PM Monday, October 26, 2026

SUPRAPHYSIOLOGIC SERUM ESTRADIOL MAY BE ASSOCIATED WITH LOWER LIVE BIRTH RATE IN PATIENTS WITH THIN ENDOMETRIUM DURING MEDICATED FROZEN EMBRYO TRANSFER CYCLES. Jensen Reckhow, MD, MPH[1], Alexey Barr, MBA[2], Erynne Jackson, BA, MPH[2], Morgan Cohn, BS[2], Joseph A. Lee, BA[2], Alan B. Copperman, MD[3] and Devora Aharon, M.D.[3], [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]RMANY || US Fertility, New York, NY, [3]Icahn School of Medicine at Mount Sinai / Reproductive Medicine Associates of New York, New York, NY

OBJECTIVE: Patients with thin endometrium who undergo medicated frozen embryo transfer (FET) cycles often require prolonged preparation cycles with higher doses of exogenous estrogen to optimize endometrial proliferation. This can result in higher serum estradiol, which has been associated with poorer pregnancy outcomes[i]. Whether outcomes are related to an underlying issue of endometrial proliferation resistant to higher levels of estrogen exposure, or the higher estrogen levels themselves, is not clear. This study evaluates whether serum estradiol at the time of progesterone initiation is associated with pregnancy outcomes among patients with suboptimal endometrial development.
MATERIALS AND METHODS: This retrospective cohort study was conducted at a single academic institution and included medicated FET cycles in which patients had an endometrial thickness (EMT) <7mm after at least 7 days of exogenous estrogen exposure from January 2016 to July 2025. Patients were grouped by maximum serum estradiol (E2) level measured prior to progesterone supplementation: physiologic (≤500pg/mL) vs supraphysiologic (>500pg/mL), and by quartile. The primary outcome was live birth. Secondary outcomes included pregnancy rate, clinical pregnancy loss rate, and preterm birth rate. Descriptive and univariate analyses were performed using Wilcoxon-Rank Sum and chi-square. Generalized linear mixed regression modeling and restricted cubic splines were utilized to evaluate the relationship between peak serum E2 and the primary and secondary outcomes, adjusting for oocyte age, body mass index, and peak EMT.
RESULTS: A total of 1,931 medicated FET cycles from 1,508 patients were included. Patient demographics did not differ between cohorts with physiologic and supraphysiologic serum E2 levels. Patients with supraphysiologic serum E2 underwent longer endometrial preparation than those with physiologic levels (22.5 days vs 20.1 days, p<0.0001) and were less likely to achieve EMT ≥7mm (66.2% vs 80.0%, p<0.0001). Live birth rates decreased across increasing quartiles of serum E2 (49.1% for the bottom quartile, 45.2% for the second quartile, 43.2% for the third quartile, 40.9% for the top quartile, p=0.036). Serum E2 was not significantly associated with live birth on adjusted analysis, for both the full cohort and for the subset of patients with peak EMT <7mm. The preterm birth rate was lowest in the lowest serum E2 quartile (5.9%, 12.0%, 13.5%, 13.2%, respectively, p=0.031).
CONCLUSIONS: Elevated serum E2 at progesterone initiation is associated with longer endometrial preparation cycles, with a signal toward lower live birth rates, in patients with thin endometrium undergoing medicated FET. There may be a subset of patients with thin endometrium who do not exhibit meaningful additional endometrial growth despite increased estrogen supplementation, instead demonstrating higher serum E2 without clear improvement in EMT or pregnancy outcomes.
IMPACT STATEMENT: In patients with thin endometrium, physiologic serum estradiol levels are associated with improved live birth and lower preterm birth rates.
SUPPORT: No funding was used for this project.
REFERENCES:
[i] Fritz R, Jindal S, Feil H, Buyuk E. Elevated serum estradiol levels in artificial autologous frozen embryo transfer cycles negatively impact ongoing pregnancy and live birth rates. J Assist Reprod Genet. 2017 Dec;34(12):1633-1638. doi: 10.1007/s10815-017-1016-1. Epub 2017 Aug 19. PMID: 28823065; PMCID: PMC5714815.

INFERTILITY (8 OF 10)

P-133 1:30 PM Monday, October 26, 2026

SPONTANEOUS CONCEPTION AFTER INFERTILITY: OUTCOMES IN A PREVIOUSLY UNSTUDIED COHORT. Abigail St. Onge, B.S.[1], Sarah J Goulding, B.A.[2], Jillian Pecoriello, MD[3], David H McCulloh, PH.D.[4] and Frederick Licciardi, M.D.[5], [1]New York University Grossman School of Medicine, [2]NYU Grossman School of Medicine, [3]NYU School of Medicine, New York, NY, [4]NYU Grossman School of Medicine, New York, NY, [5]NYU Langone Health, New York, NY

OBJECTIVE:
To evaluate outcomes of spontaneous pregnancies in women presenting for fertility care.
MATERIALS AND METHODS:
This retrospective comparative cohort study included women diagnosed with infertility at a large academic fertility center between January 2019 and May 2024. The primary cohort consisted of women who conceived spontaneously without treatment after presenting for care. A secondary cohort included women who conceived following intrauterine insemination (IUI) for contextual comparison. Age was calculated based on the date of ovulation. Pregnancy outcomes were categorized as delivery, miscarriage, biochemical pregnancy, or ectopic pregnancy.
For univariate analysis, all spontaneous pregnancies were included (n = 751), and associations between patient risk factors and outcomes were evaluated using chi-square

tests. Multivariable logistic regression was performed on a final cohort of 573 spontaneous pregnancies after excluding cases with missing data and restricting to the first pregnancy per patient. Outcomes in the spontaneous cohort were compared with 6,536 IUI cycles performed in natural or stimulated cycles using clomiphene citrate, letrozole, or gonadotropins.
RESULTS:
A total of 751 pregnancies from 675 women aged 21–47 years were included (mean age 35.9 ± 4.0; mean BMI 24.0 ± 5.0 kg/m²). Among spontaneous pregnancies, 53.1% resulted in live birth and 46.9% ended in pregnancy loss (30.4% miscarriage, 14.8% biochemical, 1.7% ectopic). Age was strongly associated with outcome ($p < 0.001$): women <35 years had higher live birth rates (58.3%, $p = 0.029$), whereas women ≥40 years had lower live birth rates (38.5%, $p < 0.0001$) and higher miscarriage rates (40.5%, $p = 0.003$). Obesity was associated with lower live birth rates (39.0%, $p = 0.043$) and higher ectopic rates (5.2%, $p = 0.006$). Male factor infertility was not associated with outcomes.
In multivariable analysis (n = 573), age ≥40 years (aOR 0.43, 95% CI 0.27–0.68), prior miscarriage (aOR 0.60, 95% CI 0.41–0.89), and obesity (aOR 0.58, 95% CI 0.33–0.99) were independently associated with lower odds of live birth. For context, outcomes were comparable to IUI, including similar live birth rates (53.1% vs 54.4%, $p = 0.5$) and no differences in miscarriage, biochemical, or ectopic pregnancy rates (all $p > 0.05$).
CONCLUSIONS:
This study provides the first focused characterization of pregnancy outcomes among women with infertility who conceive spontaneously after presenting for care. These pregnancies are associated with substantial rates of loss, particularly among older women, those with prior miscarriage, and those with obesity. Outcomes are comparable to those achieved with IUI.
IMPACT STATEMENT:
Spontaneous conception after infertility evaluation is often perceived as reassuring; however, these data demonstrate a meaningful risk of pregnancy loss. This study provides clinically relevant counseling data and establishes a foundation for future investigation into mechanisms underlying adverse outcomes in this population.
SUPPORT: None

P-134 1:45 PM Monday, October 26, 2026

TRANSCRIPTOMIC IMPACT ACROSS FIVE DIFFERENT LUTEAL PHASE SUPPORT REGIMENS FOR ENDOMETRIAL PREPARATION: A RANDOMIZED CLINICAL TRIAL.
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OBJECTIVE: To evaluate the transcriptomic impact of five different luteal phase support regimens for endometrial preparation and their potential implications for endometrial function compared with a true natural cycle.
MATERIALS AND METHODS: In this unicentric randomized controlled trial (2021-2025), healthy volunteers (18-35 years, regular menstrual cycles, no uterine or systemic pathology) were randomized to a true natural cycle group or to one of five artificial endometrial preparation protocols using GnRH agonist and estradiol combined with different progesterone regimens: vaginal (400mg/12h), subcutaneous 25mg/24h, subcutaneous 25mg/12h, combined subcutaneous+vaginal (25mg/24h + 400mg/24h), or intramuscular (50mg/24h). Endometrial biopsies were obtained seven days after the LH peak in natural cycles or on the sixth day of progesterone exposure in artificial cycles. RNA was extracted from each biopsy and sequenced with AmpliSeq for Ilumina Transcriptome Human Gene Expression technology. Data preprocessing and normalization were performed in R evaluating differential gene expression (DEA) and the underlying functions by gene set enrichment analysis (GSEA).
RESULTS: Endometrial gene expression profiles were analyzed in 67 biopsies across six groups (true natural cycle-reference group- without exogenous progesterone: n=11, vaginal:n=10, subcutaneous/24h: n=11, subcutaneous/12h: n=10, subcutaneous+vaginal: n=12, intramuscular: n=13). All exogenous progesterone regimens induced transcriptomic alterations compared with the natural cycle. The intramuscular group showed the lowest number of differentially expressed genes (268) and enriched pathways (16). In contrast, the combined subcutaneous+vaginal regimen displayed the highest number of affected genes (1,109) and showed functional disparity with 131 functional alterations. Notably, subcutaneous+vaginal group was characterized by a unique downregulation of immune system functions, contrasting with the upregulation observed in the other artificial groups. The remaining regimens—vaginal, subcutaneous/24h and subcutaneous/12h—also demonstrated transcriptomic changes (330, 404, and 640 differentially expressed genes; and 84, 32, and 147 functional alterations, respectively, compared to the natural cycle). Of note, 57 genes were altered across all artificial groups.
CONCLUSIONS: Exogenous progesterone induces route and dose-dependent transcriptomic alterations across all protocols. While intramuscular progesterone showed fewer affected genes compared to the natural group, this finding should be interpreted with caution, as it does not necessarily reflect an optimal biological or clinical profile for endometrial preparation. Moreover, the presence of 57 shared genes across all treatment arms reveals a consistent transcriptomic hallmark of artificial preparation.
IMPACT STATEMENT: Different progesterone administration routes generate distinct endometrial transcriptomic environments, challenging the concept of interchangeable luteal phase support regimens and supporting a more individualized approach to endometrial preparation.
SUPPORT: This study received partial funding from IBSA through an unrestricted research grant. The
sponsor had no role in study design, data collection, analysis, interpretation, or manuscript
preparation. This research has also been funded by CDTI under project grant (IDI-20210286)

P-135 2:00 PM Monday, October 26, 2026

A RETROSPECTIVE STUDY SHOWS THE INFLUENCE OF BODY MASS INDEX ON THE ANNUAL DECLINE IN REPRODUCTIVE OUTCOMES IN IVF ADVANCED MATERNAL AGE PATIENTS USING DONATED OOCYTES.
Patricia Sebastián León, PhD[1], Jose Benedito Álvarez, MSc[1], Francisco Jose Sanz Sr., PhD[1], Pietro Molinaro, MD[2], Mauro Cozzolino, MD, PhD[3], Antonio Pellicer, MD, PhD[2] and Patricia Diaz Gimeno, PhD[4], [1]IVIRMA Global Research Alliance, IVI Foundation, Instituto de Investigación Sanitaria La Fe (IIS La Fe), Valencia, Spain, [2]IVIRMA Global Research Alliance, IVIRMA Roma, [3]IVIRMA Global Research Alliance, IVI Bologna, Bologna, Italy, [4]Instituto de Investigación Sanitaria La Fe (IISLAFE)/IVIRMA Foundation, Valencia, Spain

OBJECTIVE: During the last decades, the maternal age at the first child has increased IVF pregnancies among advanced maternal age (AMA) patients, mostly thanks to the adoption of oocyte and embryo cryopreservation or oocyte donation. Furthermore, the global rates of obesity have increased over the last few decades, with nearly 50% women of reproductive age being overweight or obese. It is known that maternal obesity reduces oocyte quality and affects embryo development. Moreover, we have recently demonstrated an increasing risk of 4.2% and 3.2% for implantation failure and pregnancy loss, respectively, in normal-weight patients over 40 years old using donated oocytes. However, there is a lack of studies considering the combined effect of age along with BMI on endometrial factor. Given this, the objective of this study is to evaluate the effect of maternal BMI on the annual increased risk of negative reproductive outcomes associated with endometrial factor in AMA patients.
MATERIALS AND METHODS: This retrospective study included a total of 61,392 single embryo transfers from 37,287 AMA patients (35-50 y.o) performed with high-quality embryos (embryos from donated oocytes (donor <35 y.o) or euploid own embryos) transferred on day 5 in an HRT cycle, between 2001 and 2024. A logistic regression analysis was performed on each BMI category: Underweight (<18.5), Normal-Weight (18.5–24.9), Overweight (25.0–29.9), Moderate obesity (30.0-34.9), and Severe obesity (≥35.0), considering the patient age as a continuous and dependent variable and the reproductive outcome as an independent variable. The risk of a negative pregnancy outcome was estimated as a risk ratio at 95% confidence interval. A $p<0.05$ was considered statistically significant.
RESULTS: Number of transfers on each BMI category were: underweight (2,223), normal-weight (41,431), overweight (12,605), moderate obesity (3,993), and severe obesity (1,140). Before 40 y.o, no significant difference in the relative risk (RR) of implantation failure or pregnancy loss was found. In patients over 40 y.o, the annual RR of implantation failure increased significantly ($p<0.01$) in all BMI groups except underweight, showing an increase of 2.6%, 2.8%, and 2.5% for overweight, moderate, and severe obese patients when compared with normal-weight same-age patients. The annual RR of pregnancy loss also increased significantly ($p<0.05$) in all BMI groups except severe obese, showing an increase of 1.4%, 1.4%, and 8.1% for underweight, overweight, and moderate obese patients when compared with normal-weight same-age patients.
CONCLUSIONS: The BMI is affecting the RR annual increase of endometrial failure (implantation failure and pregnancy loss) for patients over 40 y.o, as non-normal-weight patients showed a higher annual RR of endometrial failure than normal-weight patients.
IMPACT STATEMENT: To our knowledge, this is the first study with a large sample size that analyses the combined effect of BMI and age in AMA patients year by year, with a strict control of embryo factor and other cofounders. These results would help to improve clinical practices on endometrial failure, promoting a better clinical management of non-normal-weight AMA patients.
SUPPORT: This research was funded by IVI Foundation (2203-FIVI-030-PD) and Instituto de Salud Carlos III (ISCIII) (PI23/00806) co-funded by the European Union. P.D.-G. was supported by the ISCIII through the Miguel Servet program (CP20/00118) co-founded by the European Union. F.J.-S. was funded by ISCIII through the Sara Borrell program (CD23/00032) co-founded by the European Union.

P-136 2:15 PM Monday, October 26, 2026

TIMING MATTERS: UPFRONT VS RESCUE PROGESTERONE IN EUPLOID HRT-FET CYCLES.
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OBJECTIVE:
To evaluate whether serum progesterone (P4) guided rescue progesterone supplementation on the day of euploid embryo transfer improves clinical pregnancy rates (CPR) compared to upfront luteal phase support with combined vaginal, oral, and subcutaneous progesterone in HRT-FET cycles undergoing single euploid embryo transfer (SET).
MATERIALS AND METHODS:
This multicentric retrospective propensity-matched comparative study was conducted over 1 year and included women undergoing HRT-FET with single euploid embryo

transfer and adequate endometrial preparation (≥6–7 mm, trilaminar pattern). Patients with adenomyosis, endometriosis, or other conditions associated with progesterone resistance were excluded. Propensity score matching yielded 100 patients in each of the three group with comparable baseline characteristics. For single euploid embryo transfer, All patients were given HRT to prepare endometrium from D2 of menses, P4 was less than 1.0 ng/ml in all patients before starting HRT. Group A was given Vaginal progesterone gel + oral dydrogesterone (10 mg BD) as luteal support before ET; no P4 monitoring was done on the day of ET.
Group B: Same regimen with serum P4 measured on ET day; stratified as <7.5, 7.5–10, and >10 ng/mL. Rescue subcutaneous aqueous progesterone (25 mg) was added daily for P4 <7.5 and alternate day for P4 7.5–10, and continued until β-hCG testing; no rescue if P4 >10.
Group C: Upfront combination therapy (vaginal + oral dydrogesterone + subcutaneous progesterone 25 mg alternate day) from luteal phase initiation; P4 measured but no rescue given. The primary outcome was CPR. Comparative analyses were performed using ANOVA/Chi-square tests with multivariate adjustment. Statistical significance was set at $p<0.05$.
RESULTS:
Baseline characteristics were comparable across groups. Group C demonstrated significantly higher CPR compared to Groups A and B ($p<0.05$). Notably, no patient in Group C had P4 levels <10 ng/mL on the day of embryo transfer. In Group B, patients with P4 <7.5 ng/mL had significantly reduced CPR despite daily rescue progesterone. Those with P4 7.5–10 ng/mL showed modest improvement with alternate-day supplementation; however, CPR remained inferior to Group C. Multivariate analysis confirmed that upfront subcutaneous progesterone supplementation was independently associated with higher CPR (adjusted OR >1.7, $p<0.01$), whereas rescue supplementation did not significantly improve outcomes in low P4 states.
CONCLUSIONS:
Upfront inclusion of subcutaneous progesterone from the start of luteal phase support significantly improves clinical pregnancy rates in HRT-FET cycles. ET-day progesterone rescue fails to compensate for early luteal insufficiency.
IMPACT STATEMENT:
Proactive luteal phase optimization may improve implantation efficiency and prevent euploid embryo wastage, supporting a shift away from reactive progesterone rescue strategies in ART.
SUPPORT: No external funding is received for this research work

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MORE THAN A NUMBER: AN INTEGRATED APPROACH TO FERTILITY CARE AND WEIGHT MANAGEMENT RESULTS IN IMPROVED SELF-ESTEEM AND PHYSICAL FUNCTION. Daria Stelmak, MD[1], Jocelyn Spizman, B.S.[1], Mark C Chames, MD[2], Stacey Pilarz, RD[2], Jamila Tasnim Smith, MSW[3], Amal Othman, MD, DABOM, FOMA[1] and Samantha B. Schon, M.D., M.S.[4], [1]University of Michigan, Ann Arbor, MI, [2]University of Michigan, [3]University of Michigan, Plymouth Rd, MI, [4]Michigan Medicine, Ann Arbor, MI

OBJECTIVE: To evaluate patient motivations, knowledge, quality of life, healthcare self-determination theory metrics, and program implementation measures within a multidisciplinary program for obesity and reproduction.
MATERIALS AND METHODS: The Michigan Interdisciplinary Clinic for Obesity and Reproduction (MICOR) is a program designed for women seeking reproductive and obesity care that includes REI, Obesity Medicine, MFM, Nutrition, and Social Work. From 2/2024-3/2026, new patients completed optional baseline and 6-month follow-up surveys assessing goals, validated instrument outcomes and implementation measures (Impact of Weight on Quality of Life (IWQOL-LITE), Health-Care Self Determination Theory Questionnaire (HCSDTQ), Acceptability of Intervention Measure (AIM), Intervention Appropriateness Measure (IAM), and Feasibility of Intervention Measure (FIM)). Basic statistics and paired and unpaired t-tests were performed as appropriate.
RESULTS: 52 participants completed the pre-survey and 22 submitted the post-survey. Reasons for joining MICOR included weight management (83%), PCOS management (56%), improving overall health (62%), increasing chance of conception (85%), achieving a healthier pregnancy (42%), and weight loss for IVF (13%). Most patients were previously told that increased weight could make conception difficult (83%), result in irregular menses (70%), and increase miscarriage risk (61%).
Participants demonstrated a significant improvement in self-esteem (35.5 vs 54.9, $p=0.009$) and physical function scores at 6 months (60.2 vs 77.8, $p=0.026$) on the IWQOL-LITE. There was no statistically significant change in sexual life, public distress, or work function domains (64.8 vs 77.3 ($p=0.085$), 68.7 vs 73.4 ($p=0.470$), 76.3 vs 77.3 ($p=0.904$), respectively). Per HCSDTQ, patients described moderate motivations and ability to maintain a healthy diet (4.13/7 vs 4.16/7, $p=0.931$ and 4.61/7 vs 4.47/7, $p=0.711$). Notably, the Healthcare Climate sub-domain revealed significant improvement in perceived provider support from low (3.64/7) to high (5.63/7) following MICOR participation ($p<0.0001$). Post survey responses showed favorable measures of MICOR implementation acceptability and feasibility (AIM: 4.30-4.45/5, IAM: 4.45-4.5/5, FIM: 4.35-4.40/5).
CONCLUSIONS:
Patients seeking obesity and fertility care have diverse experiences and knowledge motivating interest in a multidisciplinary model, which can have expansive positive impacts beyond solely fertility outcomes. Self-esteem and physical function may improve with an interdisciplinary approach to weight management and infertility. Perception of autonomy and confidence in provider support improved with MICOR participation.
IMPACT STATEMENT:
An interdisciplinary approach to weight loss and infertility may improve patient quality of life, self-esteem, physical function, and enhance provider-patient relationships amplifying patient autonomy regarding obesity management.

INFERTILITY (9 OF 10)

P-138 1:30 PM Monday, October 26, 2026

LESS IS MORE: MINIMALIST-MONITORING NATURAL CYCLE—WITHOUT ENDOMETRIAL STRIPE MONITORING—HAS A HIGHER LIKELIHOOD OF LIVE BIRTH COMPARED TO PROGRAMMED CYCLES IN EUPLOID SINGLE EMBRYO TRANSFERS. Alvin To, MD, MPH, Andrea Lanes, BSC, MSC, PHD and Elena Yanushpolsky, MD, Brigham and Women's Hospital, Boston, MA

OBJECTIVE: Natural cycle frozen embryo transfer (FET) has relied on serial ultrasound, yet the clinical value of this monitoring remains unproven. We evaluated a minimalist-monitoring natural cycle (mm-NC) protocol forgoing ultrasound, with transfer timed by LH surge, and hypothesized superiority over programmed FET for live birth in euploid single embryo transfers (SETs).
MATERIALS AND METHODS:
Retrospective cohort of autologous euploid SETs at an academic center, 2015–2024. Donor and stimulated cycles were excluded. Cycles were categorized as: (1) **programmed** — estradiol (oral, vaginal, or transdermal) with serial ultrasound until endometrial thickness ≥7 mm; (2) **mm-NC** — home ovulation predictor kits confirmed by same-day serum LH ≥24 IU/L or surge +3d progesterone ≥3 ng/mL, without ultrasound. Primary outcome was live birth rate; secondary outcomes were chemical pregnancy rates, spontaneous abortion (SAB) rates, and ongoing clinical pregnancy rates (CPR). Log-binomial regression estimated relative risks (RR, 95% CI); Poisson regression was used for counts. Adjusted models included age, BMI, infertility diagnosis, prior failed transfers, embryo quality, transfer day, and progesterone formulation. Significance was defined as $\alpha = 0.05$. Analyses performed in SAS version 9.4.
RESULTS:
1,832 euploid SETs met criteria. mm-NC (n=445) achieved 68.1% live birth rate versus 54.7% in programmed cycles (n=1,387), demonstrating a higher likelihood of live birth RR 1.3 (95% CI 1.2-1.3) which remained significant after adjustment (Table). mm-NC also showed lower chemical pregnancy rates, lower SAB rates, and higher ongoing CPR (Table). mm-NC required 82% and 51% fewer estradiol and progesterone checks respectively and 96% fewer ultrasounds than programmed cycles.
CONCLUSIONS:
In this cohort of euploid SETs, mm-NC FET forgoing ultrasound had a higher likelihood of live birth compared to programmed FET, with reduced monitoring burden and improved secondary outcomes. Findings should be interpreted cautiously given the retrospective design and possible residual confounding; despite multivariable adjustment, mm-NC may have preferentially enriched for favorable-prognosis patients with predictable ovulation.
IMPACT STATEMENT:
These findings challenge the necessity of endometrial thickness and follicular monitoring during natural cycle FET and support minimalist-monitoring protocols as patient-centered, resource-efficient alternatives that improve outcomes. Prospective randomized validation is warranted.

Table. ART outcomes: mm-NC vs. programmed FET

	Programmed (n=1,387)	mm-NC (n=445)	RR (95% CI)	aRR (95% CI)*
Chemical PR	9.7%	6.5%	0.7 (0.5–1.0)	0.7 (0.5–1.0)
SAB rate	8.5%	4.3%	0.5 (0.3–0.8)	0.5 (0.3–0.9)
Ongoing CPR	56.1%	68.8%	1.2 (1.1–1.3)	1.3 (1.1–1.5)
LBR	54.7%	68.1%	1.2 (1.2–1.3)	1.3 (1.1–1.5)

SUPPORT: The authors declare no financial conflicts of interest.

P-139 1:45 PM Monday, October 26, 2026

THE MYTH OF PRECISION IN IUI: RE-EXAMINING TIMING AND MONITORING PRACTICES THAT DO NOT CONSISTENTLY IMPROVE LIVE BIRTH. Diana Toro, MD[1], Natalie Barnett, BS[2], Madeline West, BA[3], Amir Alsaidi, BS[4], Ashton Ellyce Sachs, MS[5] and Nicholas Stansbury, MD[6], [1]San Antonio, TX, [2]Burnett School of Medicine at TCU, TX, [3]El Paso, TX, [4]Paul L. Foster School of Medicine, Texas Tech University Health Sciences Center, [5]Baylor University, Waco, TX, [6]UT Health San Antonio, San Antonio, TX

OBJECTIVE:
To evaluate whether commonly accepted timing and monitoring practices in intrauterine insemination (IUI) improve live birth compared with simplified, lower-intensity alternatives, focusing on interventions that increase patient burden, clinic complexity, and cost without consistent reproductive benefit.
MATERIALS AND METHODS:
A structured evidence synthesis was performed using randomized controlled trials, Cochrane systematic reviews, meta-analyses, and current ASRM guidelines evaluating IUI timing and monitoring strategies. Domains included: (1) exact timing of IUI within

the 0–36-hour window following hCG trigger, (2) simultaneous IUI and hCG administration versus delayed insemination, and (3) ultrasound-monitored cycles versus urinary LH surge–timed cycles. Primary outcome assessed was live birth rate (LBR), with secondary consideration of pregnancy rates, patient burden, scheduling efficiency, and treatment cost.
RESULTS:
High-level evidence demonstrates that several rigidly applied IUI practices do not consistently improve live birth outcomes.
Pregnancy and live birth outcomes are comparable across a broad 0–36-hour window following ovulation trigger, challenging the necessity of rigid 36-hour scheduling (1,2). Simultaneous IUI and hCG administration represents a practical, high-value strategy that improves scheduling flexibility and reduces clinic burden without compromising outcomes (1).
Similarly, urinary LH surge–timed IUI demonstrates comparable pregnancy and live birth outcomes to intensive ultrasound-monitored cycles, questioning the routine need for frequent sonographic surveillance in appropriately selected patients (2,3).
Across these domains, precision-based scheduling often reflects institutional habit rather than reproducible improvement in the primary endpoint of live birth.
CONCLUSIONS:
Rigid timing protocols and intensive monitoring strategies in IUI frequently increase complexity, cost, and patient inconvenience without consistently improving live birth. Exact 36-hour timing and routine ultrasound monitoring should be reconsidered through a live birth-focused, value-based lens rather than maintained as default practice.
IMPACT STATEMENT:
Reducing low-value variation in IUI may improve access, efficiency, and patient experience while preserving reproductive outcomes, supporting more accessible, efficient, and evidence-based fertility care.
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P-140 2:00 PM Monday, October 26, 2026

MULTIMODAL DEEP LEARNING INTEGRATING DAY 3 EMBRYO IMAGES AND CLINICAL DATA PREDICTS PREGNANCY OUTCOMES AFTER FRESH SINGLE EMBRYO TRANSFER.

Jialin Wu, PhD[1] and Huang Rui, Ph.D.[2], [1]Guangzhou, China, [2]The Sixth Affiliated Hospital of Sun Yat-sen University, Guangzhou, China

OBJECTIVE: To develop and validate a multimodal deep learning model combining Day 3 (D3) embryo images and clinical parameters for predicting clinical pregnancy (CP), live birth (LB), and miscarriage following fresh single embryo transfer, comparing its performance with unimodal models.
MATERIALS AND METHODS: This retrospective cohort study included 1,207 fresh D3 single embryo transfer cycles. Twenty-nine clinical features and static embryo images were collected. A multimodal ImprovedFusion model was constructed using a convolutional neural network for image feature extraction and a multilayer perceptron for clinical data. Unimodal models included ClinicalMLP (clinical only) and ImageResNet (image only). Primary outcomes were CP, LB, and miscarriage rates. Model performance was assessed by area under the receiver operating characteristic curve (AUC), sensitivity, and specificity. SHAP analysis and gradient-weighted class activation mapping (Grad-CAM) were applied for model interpretability.
RESULTS: Of 1,207 cycles (535 CPs), 681 had LB follow-up (239 LBs) and 337 had biochemical miscarriages follow-up (39 miscarriages). ImprovedFusion significantly outperformed both unimodal models across all outcomes. For CP prediction, ImprovedFusion achieved an AUC of 0.754 (95% CI: 0.683-0.826) with balanced performance (sensitivity: 0.889, specificity: 0.436), compared with 0.689 for ClinicalMLP and 0.592 for ImageResNet. For LB prediction, AUC was 0.723 (95% CI: 0.624-0.822) with high sensitivity 0.917, versus 0.575 and 0.487. For miscarriage prediction, AUC was 0.667 (95% CI: 0.474-0.860), outperforming both unimodal models (0.467 and 0.537, respectively). SHAP analysis revealed that trigger-day hormone levels and image-derived morphological features were among the top contributors to CP and LB predictions. Grad-CAM demonstrated that integrating clinical data shifted model attention from peripheral areas to blastomere regions, emphasizing cell number over fragmentation.
CONCLUSIONS: A multimodal deep learning model integrating D3 embryo images and clinical data consistently outperforms unimodal approaches in predicting CP, LB, and miscarriage, with robust performance and excellent sensitivity for LB and miscarriage. SHAP analysis identified clinically meaningful predictors, and Grad-CAM revealed that clinical data guides attention to biologically relevant blastomere regions. Following multicenter validation, this interpretable framework may serve as an accessible, cost-effective tool for embryo selection in practice.
IMPACT STATEMENT: This study presents a data-driven, interpretable multimodal framework that outperforms both traditional logistic regression and single-image models for IVF outcome prediction. By demonstrating that clinical data directs model attention to biologically relevant blastomere features and that only a small set of key features drive predictions, our findings offer a practical pathway to reduce feature redundancy and enable widespread deployment of AI-based embryo assessment, even in reproductive centers with limited computational resources.

SUPPORT: None

P-141 2:15 PM Monday, October 26, 2026

THE IMPACT OF FSH DOSING ON DAY OF TRIGGER ON IVF OUTCOMES.

Alexandria Young, MD, PhD, Nathan C Koelper, MPH, Clarisa R Gracia, MD, MSCE, Dara S Berger, PhD, MPH, MS and Caitlin E Martin, MD, MS, University of Pennsylvania, Philadelphia, PA

OBJECTIVE: To identify whether an additional dose of follicle stimulating hormone (FSH) on the day of trigger, referred to as 'FSH boost', was associated with better in vitro fertilization (IVF) outcomes, such as oocyte maturity, fertilization, and blastocyst utilization. Secondarily, pregnancy outcomes (positive hCG and clinical intrauterine pregnancy) after fresh transfers were assessed.
MATERIALS AND METHODS: This was a retrospective cohort study of fresh cycles with intent to proceed to embryo culture completed at one academic center between January 2022 and May 2026. Patients were separated into two groups: any dose of FSH on day of trigger ("FSH boost") and no FSH on day of trigger. Trigger type was restricted to HCG only triggers. IVF outcomes were calculated as follows: maturity rate (number of MII oocytes divided by number of oocytes retrieved), expected maturity rate (number of MII oocytes divided by number of follicles greater than or equal to 14 mm on day of trigger), fertilization rate (number of 2PNs divided by number of MIIs), and the blastocyst utilization rate (number of blastocysts transferred or frozen divided by number of 2PNs). Early pregnancy data after fresh transfers were assessed as secondary endpoints. Data were adjusted for the patient's age. One-way ANOVA was used to compare rates across groups, and linear regression was used to adjust for age.
RESULTS: A total of 723 cycles with FSH boost and 2,489 without were included, amounting to 8,464 and 34,469 oocytes, 2,626 and 11,346 utilized blastocysts, and 187 and 550 fresh transfers, respectively. The FSH boost significantly improved the expected maturity rate from 0.87 to 0.93 ($p=0.007$). The number of oocytes retrieved (13.8 vs 11.7, $p<0.001$), the number of MIIs (11.2 vs 9.2, $p<0.001$), the number of 2PNs (8.1 vs 6.6, $p<0.001$), and the number of blastocysts utilized (4.1 vs 3.4, $p=0.001$) were significantly higher in the no FSH boost group vs with FSH boost. However, maturity rates (80.9 vs 80.1, $p=0.215$), fertilization rates (72.0 vs 71.4, $p=0.567$), and blastocyst utilization rates (55.9 vs 54.9, $p=0.672$) were not significantly different. The rate of positive hCG after fresh transfer was not significant between the two groups (53% vs 46%, $p=0.179$). There was a significant increase in the clinical intrauterine pregnancy rate in patients without FSH boost vs with FSH boost (41% vs 32%, $p=0.036$).
CONCLUSIONS: There may be a small but significant increase in expected maturity of oocytes recovered after administration of FSH on the day of trigger. This data suggests that there may be a sub-population of patients undergoing IVF, such as those with smaller follicles on the day of trigger, who benefit from an additional FSH bolus. FSH boost does not appear to affect the rate of fertilization or blastocyst utilization.
IMPACT STATEMENT: Existing literature on FSH boost is conflicting with some studies showing no difference in IVF outcomes (Qiu et al. 2020) and others showing modest improvements in oocyte recovery rates and fertilization rates (Lamb et al. 2011, Zhang et al. 2021). Future analysis should focus on identifying patients that would benefit most from additional FSH dosing on day of trigger.
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P-142 2:30 PM Monday, October 26, 2026

PERSONALIZED ENDOMETRIAL RECEPTIVITY TRANSCRIPTOMIC PROFILING: IMPROVEMENT IN IMPLANTATION OUTCOMES AND REPORTING OF CELLULAR PREDICTORS OF IMPLANTATION FAILURE.

Wing Hing H Wong, PhD and Farideh Bischoff, Ph.D., Heranova Lifesciences, Inc., Burlington, MA

OBJECTIVE: Although advances in embryo selection have improved outcomes in IVF, implantation failure continues to represent a major clinical challenge. Successful implantation requires synchrony between the embryo and a receptive endometrium. While transcriptomic profiling of endometrial tissue has identified gene signatures that characterize receptivity, approximately 40% of women undergoing endometrial receptivity testing still experience implantation failure. We evaluated implantation outcomes from individuals who underwent our proprietary endometrial receptivity test and integrated these data with cellular deconvolution of transcriptomic profiles to explore stromal determinants of implantation failure.
MATERIALS AND METHODS: Implantation outcome data were obtained through clinical follow-up of 417 women. Endometrial tissue samples were collected, RNA was extracted, and transcriptome libraries were prepared and sequenced on the Illumina NovaSeq platform. Sequencing reads were adapter-trimmed, aligned to the human transcriptome reference using STAR, and quantified at the gene level with RSEM. A single-cell reference encompassing major endometrial cell populations, including epithelial cells, endothelial cells, fibroblasts, macrophages, T cells etc was constructed. Bulk transcriptomes were deconvolved using the MuSiC package.
RESULTS: Overall, 60.34% of women achieved successful implantation following transfer timed by the window of receptivity recommendation, comparable to rates reported in other studies (approximately 55-60%). Stratification by age revealed higher implantation success in women ≤38 years (65.09%) compared to women >38 years (~44.9%). Cellular deconvolution analysis revealed significant enrichment of macrophages ($p = 0.001$) and lower fibroblast counts ($p = 0.04$) in women with implantation failure, suggesting that elevated inflammatory activity and reduction in endometrial decidualization respectively contribute to unsuccessful implantation.
CONCLUSIONS: These findings underscore the importance of integrating transcriptomic and cellular insights to better understand implantation biology and may inform strategies to improve IVF outcomes.

IMPACT STATEMENT: Personalized endometrial receptivity assessment, coupled with cellular-level analysis, highlights stromal and immune factors associated with implantation failure.
SUPPORT: Study funded by Heranova Lifesciences

INFERTILITY (10 OF 10)

P-143 1:30 PM Monday, October 26, 2026

EVALUATING THE EFFECTIVENESS OF DIFFERENT ANTIBIOTIC ADMINISTRATION STRATEGIES IN PATIENTS WITH CHRONIC ENDOMETRITIS UNDERGOING IN VITRO FERTILIZATION: A SYSTEMATIC REVIEW AND NETWORK META-ANALYSIS. Agni Pantos, MD[1], Evangelos Maziotis, PhD[2], Anna Trypidi, MSc[2], Sokratis Grigoriadis, MSc[2], Ioanna Georgilaki, B.Sc[2], Terpsithea Vaxevanoglou, MSc[1], Foteini Pantou, MD[3], Mara Simopoulou Prof, PhD[2], Konstantinos Sfakianoudis, MD, PhD[1] and Konstantinos Pantos, M.D.[1], [1]Genesis Athens Clinic, Chalandri, Greece, [2]Medical School, National and Kapodistrian University of Athens, Athens, Greece, [3]Athens, Greece

OBJECTIVE: To investigate the most effective strategy of antibiotic administration on optimizing reproductive outcomes in women diagnosed with chronic endometritis (CE) who are undergoing in vitro fertilization (IVF) treatment.
MATERIALS AND METHODS: A systematic literature review was conducted in the PubMed/MEDLINE and Embase, including full-text English-language articles published up to 12/2025. Screening resulted in 28 included studies. Randomized and non-randomized prospective cohort and retrospective studies were included. Participants included women with CE diagnosis confirmed via histopathology, presenting with infertility and/or recurrent pregnancy loss and/or recurrent implantation failure. Intervention groups included oral antibiotic administration (OA), intrauterine antibiotic infusion (IAI), and combined intrauterine and oral antibiotic treatment (IAI+OA). Control groups consisted of OA or no treatment (NT). The primary outcome was live birth rate (LBR), while secondary outcomes included clinical pregnancy rate (CPR) and treatment efficiency rate (TER). Network evaluation was performed by estimating direct and indirect effects. The TER was additionally assessed employing proportion meta-analysis.
RESULTS: A total of five studies reported on LBR. Women receiving IAI+OA demonstrated a significantly higher LBR compared with those receiving OA (OR: 2.64, 95% CI: 1.05–6.62, I^2=0%). No significant difference was observed between the OA and NT groups for LBR (OR: 1.15, 95% CI: 0.88–1.49, I^2=0%). Regarding CPR, three studies provided data, and no statistically significant differences were observed across the comparator arms (IAI+OA vs OA, OR: 2.27, 95% CI: 0.64–8.11, I^2=0%; IA vs OA, OR: 2.31, 95% CI: 0.75–7.13, I^2=0%; NT vs OA, OR: 1.79, 95% CI: 0.87–3.68, I^2=0%). Five studies reported TER outcomes. Women receiving IAI exhibited a significantly higher TER than those receiving OA (OR: 9.85, 95% CI: 2.33–41.66, I^2=0%), whereas no significant difference was observed between IAI+OA and OA groups (OR: 4.85, 95% CI: 0.86–27.22, I^2=0%). In the proportion meta-analysis including 3.726 cases, IAI+OA and IAI achieved the highest TER proportions of 0.90 (95% CI: 0.86–0.99) and 0.89 (95% CI: 0.72–0.98), respectively. The TER proportion for OA was 0.74 (95% CI: 0.65–0.82).
CONCLUSIONS: These findings indicate that IAI, alone or combined with OA, may provide superior treatment efficiency, whereas differences in CPR appear less pronounced across interventions. Furthermore, IAI+OA significantly improves LBR compared with OA. The relatively small number of studies and the high heterogeneity observed in CE diagnostic criteria and treatment protocols across studies constitute reasons for caution.
IMPACT STATEMENT: Effective management of CE is critical, as failure to successfully eradicate pathogenic microorganisms may result in recurrent reproductive failure or adverse pregnancy outcomes. Targeted strategies to restore endometrial homeostasis appear promising; however, comprehensive translational and clinical research is required to determine the most effective therapeutic approach.

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REAL-WORLD EFFECTIVENESS OF ACUPUNCTURE IN WOMEN WITH POOR OVARIAN RESPONSE (POR): A MULTICENTER PROSPECTIVE COHORT STUDY. Chensi Zheng, PhD[1] and Yigong Fang, PhD[2], [1]San Antonio, TX, [2]China Academy of Chinese Medical Sciences, Beijing, China

OBJECTIVE: To evaluate the real-world effectiveness of acupuncture on ovarian function and reproductive outcomes in women with poor ovarian response (POR), a population with limited therapeutic options in reproductive medicine.
MATERIALS AND METHODS: This prospective multicenter cohort study included 268 women diagnosed with POR across 24 centers. Patients received individualized acupuncture treatments based on standardized protocols for 1–4 menstrual cycles prior to or during fertility treatment.
Clinical data collected included ovarian reserve markers (anti-Müllerian hormone [AMH], follicle-stimulating hormone [FSH], luteinizing hormone [LH], estradiol [E2], antral follicle count [AFC]) and assisted reproductive technology (ART) outcomes. A subset of patients with complete follow-up (n = 124) was included in effectiveness analyses.
Continuous variables were expressed as mean ± standard deviation or median (interquartile range) and compared using paired t-tests or non-parametric tests. Between-group comparisons were conducted using independent t-tests or Mann–Whitney U tests. Categorical variables were analyzed using chi-square or Fisher's exact tests. $P < 0.05$ was considered statistically significant.
RESULTS: The mean age of participants was 41.8 ± 5.6 years, with over 90% demonstrating diminished ovarian reserve (AMH <1.1 ng/mL). Acupuncture treatment was associated with significant improvements in ovarian function, including reductions in FSH and increases in estradiol levels and AFC (all $P < 0.05$).
Among patients with available reproductive outcomes, the overall clinical pregnancy rate was 19.35%, including both spontaneous and ART-assisted conceptions, and the live birth rate was 8.06%. Notably, longer treatment duration was associated with consistent trends toward improved oocyte yield, embryo quality, and reproductive outcomes.
In addition, patients reported improvements in patiant-reported sympyoms and menopausal-related symptoms. No serious adverse events were observed.
CONCLUSIONS: In this large multicenter real-world cohort, acupuncture was associated with significant improvements in ovarian function and demonstrated consistent trends toward enhanced reproductive outcomes in women with POR, supporting its role as a promising adjunctive therapeutic strategy.
IMPACT STATEMENT: These findings support acupuncture as a safe and potentially effective complementary therapy for women with poor ovarian response and may inform its integration into ART practice.
SUPPORT: Supported by the National Key Research and Development Program of China (Grant No. 2017YFC1703600).

P-145 2:00 PM Monday, October 26, 2026

AGE-SPECIFIC ANTI-MULLERIAN HORMONE REFERENCE VALUES IN A LARGE UNITED STATES INFERTILE COHORT. Rebecca Zhuo, MD[1], Atoosa Ghofranian, M.D.[1], Shawn Kripalani, MD, MS[1], Victoria Lazarov, MD[1], Tamar Alkon-Meadows, MD[2], Erynne Jackson, BA, MPH[3], Joseph A. Lee, BA[3], Phillip A Romanski, M.D., M.SC.[2], Alan B. Copperman, MD[4] and Erkan Buyuk, MD[4], [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]Reproductive Medicine Associates of New York, New York, NY, [3]RMANY || US Fertility, New York, NY, [4]Icahn School of Medicine at Mount Sinai / Reproductive Medicine Associates of New York, New York, NY

OBJECTIVE: Anti-Müllerian hormone (AMH) is a key biomarker of ovarian reserve and declines with age as part of natural ovarian aging. While age-specific AMH distributions are well-established in the general population, data among infertile women in the United States (U.S.) remain limited. This study evaluates AMH levels across age groups in women with infertility in the U.S.
MATERIALS AND METHODS: This retrospective study was conducted at a single academic center and included infertile women aged 21-48 years who sought reproductive care between March 2018 and August 2025. Patients with a history of ovarian surgery, premature ovarian insufficiency, menopause, chemotherapy or radiation treatment were excluded. Descriptive statistics were used to characterize AMH distributions across the cohort. The primary outcome was median and mean AMH stratified by single-year age intervals. To ensure independence of observations, only one AMH value per patient was included in the analysis.
RESULTS: A total of 6413 infertile women underwent AMH testing. The most common infertility etiologies were idiopathic (n=2346), diminished ovarian reserve (n= 1311), polycystic ovarian syndrome (PCOS) (n=562), tubal factor (n=391), and other causes (n=1803). Median AMH levels were higher across age groups compared with prior studies in the general population, and the decline in median AMH with increasing age was non-linear. At age 25, median AMH was 4.63 ng/mL (mean 5.47 ± 3.38 ng/mL), and decreased to 2.09 ng/mL (mean 2.84 ± 2.91 ng/mL) at age 35 and 1.14 ng/mL (mean 1.69 ± 1.75 ng/mL) at age 40. The average rate of decline in median AMH was 0.29 ng/mL per year between ages 21 to 35 and diminished to 0.14 ng/mL per year after the age of 35.
CONCLUSIONS: This study provides age-specific AMH reference values in infertile women. Compared with previously published literature in the general population, AMH levels were higher across age groups, which may reflect a higher proportion of patients with PCOS or difference in assay methodology. Reassuringly, despite higher absolute AMH levels, the rate of decline after age 35 is comparable to population data and suggests there is no accelerated depletion of ovarian reserve.
IMPACT STATEMENT: The age-specific AMH reference values in infertile women may improve counseling on prognosis and treatment expectations, as the rate of AMH decline is not substantially greater than that of the general population.
SUPPORT: None
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P-146 2:15 PM Monday, October 26, 2026

A MULTIVARIABLE PREDICTIVE MODEL FOR TIME-TO-CONCEPTION INCORPORATING OVARIAN RESERVE AND SEMEN QUALITY PARAMETERS: A PROSPECTIVE COHORT STUDY. Yuanyuan Zhao, M.D.[1], Xin Guo, M.D.[1], Li Wei, M.D.[1], Fang Fang, M.D.[1], Fan Yang, M.D.[1], Changwei Yuan, M.D.[2], Jian Qin, M.D.[1], Jian Zhou, M.D.[3] and Wujiang Liu, Dr.[1], [1]Beijing Amcare Hospital, Beijing, China, [2]Beijing Amcare Beisanhuan women and children's hospital, China, [3]Beijing Amcare Beisanhuan Hospital, Beijing City, China

OBJECTIVE:
To develop and internally validate a predictive model for 6-cycle cumulative conception probability in couples attempting natural pregnancy, using female age, anti-Müllerian hormone (AMH), reproductive system diseases (RSD), total count of forward-moving sperm, total count of norml shaped sperm and DNA Fragmentation Index (DFI).
MATERIALS AND METHODS:
346 couples with no prior infertility evaluation, trying to conceive naturally for ≤3 months at enrollment. Baseline assessment of female AMH, RSD, and male semen analysis (concentration, progressive motility, strict morphology). Couples attempted

natural conception for up to 12 cycles. Conception confirmed by serum hCG within 6 cycles (primary) and 12 cycles (secondary). A Cox proportional hazards model was built and internally validated using bootstrapping.

RESULTS:

92 couples (26.6%) conceived within 12 cycles, 48 (55.5%) within 6 cycles. All six predictors were independently associated with time-to-conception (p<0.01). Female age (HR 0.85 per year, 95% CI 0.82–0.88) and AMH (HR 1.22 per ng/mL, 1.15–1.30) showed the strongest effects. Male total count of forward-moving sperm (HR 0.52 per 10M/mL, 0.50–1.10), total count of norml shaped sperm (HR 0.03 per 10M/mL, 0.02–0.05), and DFI (HR 0.20 per 5% increase, 0.05–0.70) were additive predictors. AFC (HR 1.05 per follicle, 1.03–1.07) contributed modestly. A nomogram was constructed with a concordance index of 0.74 (95% CI 0.71–0.77). Calibration was good (Hosmer-Lemeshow p=0.32). The full model significantly outperformed female age alone (ΔAIC 52.3, p<0.001) and the female-only model (ΔAIC 21.7, p<0.01).

CONCLUSIONS:

A simple model combining female age, AMH, RSD, and three semen parameters reliably predicts 6-cycle natural conception probability. Male factors provide significant independent predictive value beyond ovarian reserve markers.

IMPACT STATEMENT:

This new model, which integrates the key indicators of gynecology and andrology, is of great significance for the pregnancy preparation clinic to predict the birth outcome and better select the way of pregnancy assistance.

SUPPORT: none

P-147 2:30 PM Monday, October 26, 2026

PICKING SIDES: DOES LATERALITY OF DOMINANT FOLLICLE IN UNILATERAL TUBAL FACTOR INFERTILITY AFFECT IUI SUCCESS? Laura X Zalles, M.D.[1], Jing Wu, MD, MS[2], Andrea V. V Parra Jaimes, MD[3], Dana R Siegel, M.D.[4], David Baylor, BS[5], Luis R Hoyos, M.D.[6], Meike L Uhler, MD[7], Kathleen Devine, MD[8], Phillip A Romanski, M.D., M.SC.[9] and Ivy Lersten, M.D.[10], [1]University of Colorado, Denver, CO, [2]US Fertility, Rockville, MD, [3]San Antonio, TX, [4]University of Colorado Anschutz Medical Campus, Aurora, CO, [5]University of Colorado Boulder, [6]IVF Florida, [7]Fertility Centers of Illinois, Chicago, IL, [8]Shady Grove Fertility, Rockville, MD, [9]Reproductive Medicine Associates of New York, New York, NY, [10]Shady Grove Fertility Colorado, Greenwood Village, CO

OBJECTIVE:

To evaluate pregnancy rates after intrauterine insemination (IUI) in unilateral tubal occlusion by dominant follicle laterality (ipsilateral vs contralateral to the tubal occlusion).

MATERIALS AND METHODS:

We conducted a retrospective cohort study across a multicenter fertility network from 2004 - 2024. Medical records were queried for “unilateral” or “salpingectomy.” Eligible patients had unilateral tubal factor infertility with confirmed patency of the opposite fallopian tube, with documented laterality by clinical imaging or surgery. Of 1019 patients reviewed,163 met inclusion criteria and underwent 243 included IUI cycles. IUI cycles with multiple ≥14mm dominant follicles, total motile sperm count (TMSC) <10 million, or cycle cancellation were excluded.

Generalized estimating equations with Poisson regression compared outcomes between cycles with ipsilateral versus contralateral dominant follicles. The primary outcome was pregnancy (hCG >/=5 mIU/L). Secondary outcomes included clinical pregnancy, miscarriage, and live birth. Models were adjusted for age, body mass index (BMI), antimullerian hormone (AMH), TMSC, race, prior full-term birth, and cycle type (natural, ovulation induction, or gonadotropin).

RESULTS:

Of the 243 cycles, there were 163 with an ipsilateral and 79 with a contralateral dominant follicle. Age, BMI, AMH, and TMSC were comparable between groups. Pregnancy rates did not differ (9.8% vs 10.1%, p = 0.4), with no adjusted association (aRR 0.82, 95% CI 0.33 - 2.04). Clinical pregnancy and ongoing pregnancy also did not differ (Table 1).

CONCLUSIONS:

In patients with unilateral tubal factor infertility undergoing IUI, the laterality of the dominant follicle does not impact overall pregnancy, clinical pregnancy, or ongoing pregnancy rates.

IMPACT STATEMENT:

Prior data have not quantified success rates; these findings support proceeding with IUI even if the dominant follicle is contralateral to the occluded fallopian tube.

	Ipsilateral follicle (N=163)	**Contralateral follicle (N=79)**	P value	aRR (95% CI)
Age, years (mean ± SD)	33.6 ± 4.9	34.2 ± 4.7	0.42	
Race/Ethnicity n (%)			0.90	
White	71 (43.6)	36 (45.6)		
Asian	48 (29.5)	27 (34.2)		
Black	8 (4.9)	2 (2.5)		
Hispanic or Latino	15 (9.2)	7 (8.9)		
Other/Multiracial	7 (4.3)	3 (3.8)		
Unknown	14 (8.6)	4 (5.1)		
BMI, kg/m2 (mean ± SD)	27.1 ± 6.5	26.6 ± 6.4	0.57	
AMH, ng/mL (mean ± SD)	3.4 ± 4.1	3.3 ± 4.1	0.4	
# prior full-term births (mean ± SD)	0.3 ± 0.6	0.3 ± 0.7	0.56	
# prior miscarriage (mean ± SD)	0.4 ± 0.7	0.6 ± 1.0	0.17	
History of ectopic pregnancy n (%)	62 (38)	21 (26.6)	0.1	
TMSC, million/mL (mean ± SD)	55.2 ± 62.3	59.5 ± 47.2	0.28	
Pregnancy n (%)	16 (9.8)	8 (10.1)	0.67	0.82 (0.33, 2.04)
Clinical pregnancy n (%)	12 (7.4)	4 (5.1)	0.27	1.86 (0.62, 5.6)
Ongoing pregnancy n (%)	11 (6.8)	2 (2.6)	0.18	2.6 (0.65, 10.4)

SUPPORT: No financial support was used for this study.

ENVIRONMENTAL FACTORS (1 OF 2)

P-148 1:30 PM Monday, October 26, 2026

WILDFIRE SMOKE EXPOSURE AND EFFECTS ON SEMEN QUALITY IN MEN PURSUING MAIL-IN SEMEN ANALYSIS TESTING IN THE CONTIGUOUS UNITED STATES. Trevor J Maloney, DO[1], Lillian X Lindell, MD[2], Daniel Nolte, MS[3], Logan Dearborn, MPH[4], Christine Loftus, PhD, MPH[5], Lawrence C Jenkins, MD, MBA[6], James F Smith, M.D., M.S.[7] and Tristan M Nicholson, MD, PhD, HCLD (ABB)[8], [1]Walter Reed National Military Medical Center, Bethesda, MD, [2]Seattle, WA, [3]Fellow Health, Inc, San Leandro, CA, [4]University of Washington, Seattle, [5]University of Washington, Seattle, WA, [6]Tulane University, School of Medicine, New Orleans, LA, [7]UCSF, San Francisco, CA, [8]School of Medicine, University of Washington, Seattle, WA

OBJECTIVE:

Wildfire smoke (WFS) is a growing contributor to fine particle pollution ($PM_{2.5}$) and is known to have adverse health effects on humans. The impact of WFS on male fertility is still largely unknown, although several small studies have found an association between WFS exposure and decline in sperm concentration and total motile sperm count. Our objective was to examine the association of WFS exposure and semen analysis parameters among a large cohort of men pursuing mail-in semen analysis (SA) testing in the contiguous United States (US).

MATERIALS AND METHODS:

Our cohort consisted of participants who underwent a single mail-in SA for fertility testing (Fellow Health, Inc). Participant residential addresses were converted to census tract and WFS exposure was estimated using a spatiotemporal model, based on satellite imagery estimates, in the 90 days prior to SA testing (a biologically plausible timeframe relevant for spermatogenesis). The association of WFS exposure (mean WFS $PM_{2.5}$ and number of smoke days, defined as WFS $PM_{2.5} \geq 10$ ug/m^3) on semen parameters (volume, concentration, motility and total motile sperm count) was estimated using a log transformed model accounting for age, urbanization level, climate category, area deprivation index, and reason for purchase as covariates.

RESULTS:

A total of 22,706 subjects (2020-2024) met inclusion criteria with a mean age of 34.6 (SD 6.78). This cohort was nationally representative with the majority living in urban (54.3%), temperate climate regions (56.3%), and least disadvantaged communities (34.8%). About three quarters of the cohort had a normal total motile sperm count (74.2%) with the average being 98.1 million (SD=104). WFS exposure was widespread with nearly half (47.2%) experiencing at least 1 smoke day in the relevant exposure window, and 30.2%, 9.0%, and 8.0% having 1-4, 5-9, and 10 or more smoke days respectively. In unadjusted and adjusted models, we observed a null association of WFS exposure with semen parameters.

CONCLUSIONS:

WFS exposure was widespread among men undergoing mail-in SA testing in the contiguous US, but no association of wildfire smoke with semen parameters was observed in this large, national cohort.

IMPACT STATEMENT:

As human exposure to wildfire smoke is predicted to increase, it is important to understand how human reproduction may be impacted. This nationwide study of men undergoing mail-in semen analysis testing found a null association of WFS exposure, using satellite estimates of exposure, with semen parameters. While this finding is encouraging, future studies utilizing prospective designs, serial sampling and considering individual level exposure will be important to further our understanding of the impact of WFS exposure on semen parameters and male fertility.

SUPPORT: This project was supported by the National Institute of Environmental Health Sciences of the National Institutes of Health under Award Number K12ES033584.

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P-149 1:45 PM Monday, October 26, 2026

POLY-AROMATIC HYDROCARBONS (PAH) REWIRE SEMINAL EXOSOME PROTEOME THROUGH OXIDATIVE STRESS PATHWAYS IN MALE INFERTILITY. Soumya Ranjan Jena, Ph.D.[1], Manesh Kumar Panner Selvam, DVM, PhD[2], Suresh Sikka, Ph.D, HCLD, CC(ABB)[2] and Luna Samanta, Ph.D[3], [1]Redox Biology Laboratory, Cuttack, Odisha, India, [2]Tulane University School of Medicine, New Orleans, LA, [3]Redox Biology Laboratory, Department of Zoology, Ravenshaw University, Cuttack, Odisha, India

OBJECTIVE: Polycyclic aromatic hydrocarbons (PAHs) are pervasive components of the exposome and emerging contributors to idiopathic male infertility. However, their mechanistic impact on seminal extracellular vesicles (SEVs), the key mediators of sperm function and intercellular communication, remains poorly defined**.** The current study was conducted **t**o delineate PAH-associated alterations in the seminal exosome proteome and identify molecular pathways with clinical relevance in idiopathic male infertility.
MATERIALS AND METHODS: A case–control study was designed integrating exposome analysis with quantitative proteomics in semen samples from 43 fertile donors (FD) and 60 idiopathic infertile patients (IIP). Semen analysis was performed according to WHO guidelines. We quantified PAH metabolites in semen samples using targeted analysis and evaluated their diagnostic performance by receiver operating characteristic (ROC) analysis. SEVs were isolated and validated by scanning electron microscope, atomic force microscope, digital light sheet microscopy, and exosomal markers (CD9, CD81). Label-free LC–MS/MS–based proteomics was performed to identify differentially expressed proteins (DEPs), followed by downstream bioinformatics analyses. Redox status of the semen samples were assessed by total antioxidant capacity and glutathione (GSH:GSSG) measurements. Key pathway proteins (IGF-1, NRF2, HIF-1α) were validated by Western blot.
RESULTS: Thirteen PAH metabolites were detected in semen, with significantly elevated levels in IIP group; benzo(a)pyrene demonstrated the highest discriminatory power by ROC analysis. IIPs exhibited reduced sperm concentration, motility, and morphology. Proteomic profiling identified 1120 proteins, with 272 DEPs in SEVs between IIP and FD groups, including 396 uniquely expressed proteins in IIPs. Multivariate analyses demonstrated clear segregation between groups. Functional enrichment analysis revealed dysregulation of glutathione metabolism, glycolysis/gluconeogenesis, HIF-1 signaling, insulin signaling, and xenobiotic metabolism, indicating oxidative stress and metabolic reprogramming. Ingenuity pathway analysis further highlighted suppression of NRF2-mediated antioxidant responses and activation of pathways linked to reactive oxygen species production. Upstream regulator analysis implicated redox-sensitive microRNAs such as miR-155-5p, miR-122. Consistently, IIPs derived SEVs showed reduced total antioxidant capacity and altered glutathione redox balance. Western blot analysis confirmed perturbation of IGF-1, NRF2, and HIF-1α signaling pathways in SEVs from IIPs group.
CONCLUSIONS: Our study emphasizes that PAH exposure profoundly remodels the SEV proteome, driving oxidative stress–centric pathway dysregulation in understanding the role of environment resulting in idiopathic male infertility.
IMPACT STATEMENT: These findings position SEV proteomics as a clinically informative, non-invasive platform for exposome-linked infertility risk stratification and highlight redox signaling pathways as potential therapeutic targets.

P-150 2:00 PM Monday, October 26, 2026

FIRST PAIRED DETECTION OF MICROPLASTICS IN PERIPHERAL BLOOD AND FOLLICULAR FLUID DURING IVF: PILOT EVIDENCE SUPPORTING A FUNCTIONAL BLOOD–FOLLICLE BARRIER. Nicholas Stansbury, MD[1], Soha Wahab, MD[2], Abigail F Ellstrom, BS, MPH[3], Stefany Vicente, MD[1], Diana Toro, MD[4], Hailie Ciomperlik, MD[5], Sheena M Rippentrop, MD[2], Prof. Tiencheng Arthur Chang, PH.D., HCLD, ELD[6], Kate Lawrenson, PhD[2] and Randal D Robinson, MD, MBA[1], [1]UT Health San Antonio, San Antonio, TX, [2]University of Texas Health Science Center San Antonio, San Antonio, TX, [3]TCU Anne Burnett Marion School of Medicine, Fort Worth, TX, [4]San Antonio, TX, [5]Baylor College of Medicine, Houston, TX, [6]University of Texas Health Science Center, San Antonio, TX

OBJECTIVE:
To characterize microplastic (MP) translocation from systemic circulation into the ovarian follicular microenvironment and evaluate whether detected MP burden is associated with ovarian reserve markers or early IVF outcomes.
MATERIALS AND METHODS:
Matched peripheral blood and follicular fluid (FF) samples were collected from 12 patients undergoing oocyte retrieval. Samples underwent standardized digestion and fluorescent particle analysis for MP identification and quantification. Controls of aspiration tubing, collection devices, and laboratory materials were included to distinguish true biologic detection from procedural contamination. Detection rates, particle burden, and compartmental distribution were compared between blood and FF. Clinical variables including age, BMI, AMH, oocyte yield, fertilization, blastulation, frozen blastocysts, and clinical pregnancy were reviewed. Patients were stratified by blood MP positivity using independent t-tests and Fisher's exact testing.
RESULTS:
Blood MPs were detected in 2/12 patients (16.7%), while FF MPs were detected in 1/12 patients (8.3%). No isolated FF positivity was observed, and no patient demonstrated FF MP positivity without concurrent blood positivity, suggesting systemic exposure as a prerequisite for ovarian detection. Peripheral blood MP burden exceeded FF burden (20 vs 0 particles; 9 vs 1 particle), supporting a concentration gradient and physiologic filtering effect.
No significant differences were observed in age, BMI, AMH, oocyte yield, blastulation, frozen blastocysts, or clinical pregnancy. Fertilization rate was lower in the MP-positive group (59.9% vs 71.2%; p<0.01); however, both MP-positive patients achieved clinical pregnancy, suggesting systemic MP exposure did not preclude successful early IVF outcomes.
CONCLUSIONS:
Follicular fluid MP detection was uncommon and was not observed without concurrent blood positivity. Peripheral blood MP burden consistently exceeded FF burden, supporting a functional human blood–follicle barrier limiting microplastic translocation into the oocyte microenvironment. To our knowledge, this is the first human study to perform paired peripheral blood and follicular fluid MP analysis during IVF and the first to provide clinical evidence supporting a compartmental filtration model of ovarian protection against circulating environmental contaminants. These findings suggest ovarian exposure to systemic microplastics may be biologically restricted by a functional blood–follicle barrier rather than passively reflective of circulating burden, supporting a model of selective translocation and ovarian protection.
IMPACT STATEMENT:
This study shifts the field from simple microplastic detection toward understanding selective translocation, biologic resilience, and the physiologic mechanisms governing ovarian exposure.

P-151 2:15 PM Monday, October 26, 2026

GEOSPATIAL SEASONAL CLIMATE VARIATION AND IN-VITRO FERTILIZATION OUTCOMES: AN ANALYSIS OF THE SOCIETY FOR ASSISTED REPRODUCTIVE TECHNOLOGY CLINIC OUTCOME REPORTING SYSTEM DATABASE. Anthony H Bui, MD, MSCR[1], Lusine Aghajanova, MD, PhD[2], Ismaila Diallo, PhD[3], Haley Hedlin, PhD[4] and Liesl Nel-Themaat, PH.D., MBA, HCLD[5], [1]Stanford University, Sunnyvale, CA, [2]Division of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gynecology, Stanford University, Stanford, California, Sunnyvale, CA, [3]San Jose State University, San Jose, CA, [4]Stanford University Quantitative Sciences Unit, [5]Division of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gynecology, Stanford University School of Medicine, Stanford, CA

OBJECTIVE: Several studies have proposed an association between seasonality and in-vitro fertilization (IVF) treatment outcomes. However, these studies are limited by relying on clinic location, small patient populations and narrow climate variation. Therefore, the objective of this study is to characterize IVF outcomes geospatially across a large range of patient residential climate conditions in a large national dataset.
MATERIALS AND METHODS: This was a retrospective cohort study using the Society for Assisted Reproductive Technology Clinic Outcome Reporting System (SART CORS) database. Embryo freezing cycles and single embryo transfer (sET) cycles performed at IVF clinics across the US from the 2014-2023 period were queried. Primary outcome was number of eggs retrieved per cycle. Secondary outcomes were percent of eggs resulting in usable embryos and live birth rate (LBR) following ET. Primary covariates of interest were seasonal three-digit zip code climate variables, including average near surface temperature, total precipitation, and duration of sunlight exposure, as well as patient demographic and clinical variables, including age, AMH, BMI, endometrial thickness, and embryo characteristics. Mixed-effects regression accounting

for clustering of data by patient was performed to evaluate the independent association between the covariates of interest and primary outcomes.
RESULTS: A total of 423,336 embryo cryopreservation cycles among 327,789 patients and 398,608 embryo transfer cycles among 243,135 patients were evaluated. Mean (SD) age, AMH, and BMI were 33.7 (3.35) years, 3.59 (3.69) ng/mL, and 26.1 (6.2) kg/m2, respectively. Mean (SD) number of eggs retrieved per IVF cycle was 16.0 (10.5); mean percent of eggs resulting in embryos frozen and mean LBR following ET were 30.4% and 51.9%, respectively. On adjusted analysis, egg retrieval during the winter season was associated with lower number of eggs retrieved compared to treatment performed during the summer season (Incident Rate Ratio (IRR) 0.995, 95% CI 0.991-0.999). Embryo transfer performed during the winter season was associated with lower live birth rate (Risk Ratio (RR) 0.973, 95% CI 0.954-0.994). Regarding climate variables, average seasonal temperature >80°F (vs. ref 50-70°F) was associated with lower number of eggs retrieved (IRR 0.988, 95% CI 0.980-0.995) and lower LBR per ET (RR 0.954, 95% CI 0.920-0.989). Average seasonal temperature <32°F was associated with lower conversion rate from eggs to embryos (RR 0.940, 95% CI 0.924-0.950).
CONCLUSIONS: Outcomes following IVF treatment appear to vary by season. Additionally, climate extremes may be negatively associated with IVF outcomes. Patients may benefit from counseling regarding optimal timing of their treatment as well as precautions to mitigate exposure to extreme weather.
IMPACT STATEMENT: This is the largest US study to date to examine the impact of seasonality and geospatial climate variation on IVF outcomes.
SUPPORT: None.
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P-152 2:30 PM Monday, October 26, 2026

SEMINAL BISPHENOL A (BPA) AND BISPHENOL S (BPS) LEVELS CORRELATE WITH ANTI-MULLERIAN HORMONE (AMH) EXPRESSION AND SEMEN PARAMETERS IN SPERM OF IVF PATIENTS. Nathan Alexander Galvao Mr, BSc[1], Sarah Rutherford, BSc[2], Alex Lagunov, MSc, BSc[3], Michael S Neal, B.SC., M.SC.[4] and Laura A Favetta, PHD[5], [1]University of Guellph, Guelph, ON, Canada, [2]Orono, ON, Canada, [3]CCRM Toronto, Toronto, ON, Canada, [4]ONE Fertility, Burlington, ON, Canada, [5]Associate Professor, Guelph, ON, Canada

OBJECTIVE: To determine whether seminal bisphenol concentration in IVF patients is linked to Anti-Mullerian Hormone (AMH) expression, and to assess their impact on downstream AMH signalling pathways and semen parameters.
MATERIALS AND METHODS: 59 semen samples from CCRM/Hannam Fertility Clinic (Toronto, ON, CA) and 31 from ONE Fertility (Burlington, ON, CA) with known semen parameters (sperm count, motility, and morphology) were donated for research (REB#22-05-001). Seminal BPA and BPS concentration was measured using enzyme-linked immunoassays (ELISAs). Samples were separated into high (>600pg/mL), mid (300-600pg/mL) and low (<300pg/mL) bisphenol groups, with the mid bisphenol group excluded from analysis based on previous studies. mRNA expression of the AMH receptor II (AMHRII), SMAD1 and SMAD4 in sperm was measured using qPCR. AMH, AMHRII, SMAD1, phosphorylated-SMAD1 (P-SMAD1) and SMAD4 protein expression was localized via immunofluorescence and confocal microscopy and quantified by measuring the fluorescent intensity in the sperm head, midpiece and tail using ImageJ software. Sperm DNA fragmentation was measured in a minimum of 200 sperm using TUNEL and confocal microscopy. Group comparisons were performed using one-way ANOVA or Kruskal–Wallis tests for non-parametric data, and correlations were assessed using Spearman's rank correlation.
RESULTS: AMHRII transcript expression was found to be significantly reduced ($p=0.011$) in High BPA/High BPS exposed sperm compared to Low BPA/Low BPS sperm. AMH and AMHRII protein expression was concentrated in the head and midpiece of sperm, while SMAD expression was mainly localized to the sperm head. AMH and AMHRII protein was significantly reduced ($p<0.01$, $p<0.001$, respectively) across all groups compared to the Low BPA/Low BPS group. No significant associations were observed between SMAD1, P-SMAD1, and SMAD4 mRNA or protein expression and seminal bisphenol concentration. Total sperm count exhibited a negative correlation with seminal BPA concentration ($r=-0.2529$; $p=0.022$) and seminal BPS concentration ($r=-0.2728$; $p=0.029$), and was significantly reduced ($p<0.05$) in High BPA/High BPS sperm samples. AMHRII relative expression was positively correlated with sperm count ($r=0.4837$; $p<0.001$), sperm motility ($r=0.2527$; $p=0.021$) and sperm morphology ($r=0.3263$; $p=0.011$) ($n=71$).
CONCLUSIONS: High seminal bisphenol concentration negatively effects AMH expression and semen parameters in human sperm. While AMH and AMHRII protein expression were reduced across all groups compared to Low BPA/Low BPS, High BPA/High BPS sperm exhibited a greater decrease in expression, suggesting an additive and more detrimental effect on fertility outcomes. AMHRII expression was also positively correlated with semen parameters, further supporting a functional role of AMH in male reproductive function.
IMPACT STATEMENT: This is the first study to correlate bisphenol exposure with AMH expression in sperm. Detection of AMHRII expression in human sperm and correlations with semen parameters further supports a physiological role in male fertility.
SUPPORT: Natural Sciences and Engineering Research Council of Canada (NSERC), Canadian Fertility and Andrology Scoiety (CFAS), Ontario Graduate Scholarship (OGS), Ontario Veterinary College (OVC)

ENVIRONMENTAL FACTORS (2 OF 2)

P-153 1:30 PM Monday, October 26, 2026

COUPLES EXPOSURE TO NEONICOTINOID INSECTICIDES AND ITS INFLUENCE ON IN VITRO FERTILIZATION / INTRACYTOPLASMIC SPERM INJECTION OUTCOMES. Xing Yang, Reproductive Medicine Center, The Sixth Affilia, Guangzhou, China

OBJECTIVE:
Neonicotinoids (NEOs) are pervasive endocrine-disrupting agrochemicals with significant bioaccumulation potential. Despite their widespread detection, the impact of concurrent parental exposure on assisted reproductive technology (ART) outcomes remains poorly characterized. This study sought to quantify NEO concentrations across matched parental biological matrices—serum, follicular fluid (FF), and seminal plasma (SP)—and to evaluate their individual and combined associations with reproductive success.
MATERIALS AND METHODS:
A total of 211 couples undergoing IVF/ICSI were recruited. NEO concentrations in female serum and FF, as well as male serum and SP, were quantified using liquid chromatography-tandem mass spectrometry (LC-MS/MS). The associations between NEO exposure and ART outcomes—including fertilization, embryo quality, and pregnancy rates—were analyzed using covariate-adjusted generalized linear models (GLMs). Furthermore, partner-integrated models were employed to characterize the synergistic effects of dual-parental exposure.
RESULTS:
N-dm-ACE emerged as the predominant NEO analogue across all biological matrices, followed by THX, with significant positive correlations observed between partners. Elevated female exposure, particularly N-dm-ACE levels in serum and FF, was significantly associated with impaired early embryogenesis, characterized by reduced cleavage and high-quality embryo rates. Conversely, paternal exposure, specifically detectable THX and higher N-dm-ACE levels in SP, was nominally associated with diminished clinical pregnancy and live birth rates. Couple-based modeling revealed gender-specific vulnerabilities: maternal exposure predominantly influenced early embryonic milestones, whereas paternal exposure was more closely linked to later clinical pregnancy outcomes.
CONCLUSIONS:
Dual-parental exposure to neonicotinoids detrimentally impacts pivotal ART success metrics, from early embryo development to clinical pregnancy. These findings emphasize that reproductive toxicology assessments must shift toward a couple-based paradigm to accurately capture environmental risks. Future longitudinal studies are essential to validate these findings and elucidate the molecular mechanisms underlying NEO-mediated reproductive failure.
IMPACT STATEMENT:
This study provides compelling evidence that neonicotinoid exposure in both partners detrimentally influences distinct stages of assisted reproduction, with maternal exposure impairing early embryo quality and paternal exposure affecting clinical pregnancy success. By identifying N-dm-ACE and THX as key disruptors within the reproductive niche, this research highlights the critical necessity of dual-parental biomonitoring and underscores the importance of minimizing environmental insecticide exposure to optimize fertility outcomes.

P-154 1:45 PM Monday, October 26, 2026

CARDIOMETABOLIC HEALTH AND SEMEN QUALITY: A LARGE NATIONAL PATIENT-LEVEL ANALYSIS. Peter N Kolettis, M.D.[1], Denise A Asafu-Adjei, M.D., M.P.H, FACS[2], Ernesto Rojas, PhD[3], Daniel Nolte, MS[4], Benjamin S Harris, M.D., M.P.H[5], Neel Shah, MD, MPP[6], Joseph P Alukal, MD, MBA[7], Jesse N. Mills, M.D.[8], James F Smith, M.D., M.S.[9] and Ryan Flannigan, MD FRCSC[10], [1]UAB Medical Center, Birmingham, AL, [2]University of Chicago Medicine, Chicago, IL, [3]University of California San Francisco, [4]Fellow Health, Inc, San Leandro, CA, [5]Shady Grove Fertility - Jones Institute, Norfolk, VA, [6]Maven Clinic, New York, NY, [7]Columbia University Fertility Center, NYC, NY, [8]David Geffen School of Medicine at UCLA, Los Angeles, CA, [9]UCSF, San Francisco, CA, [10]University of British Columbia, North Vancouver, Canada

OBJECTIVE:
The relationship between male fertility and general health remains unclear. We hypothesize that men with poorer health have reduced semen quality and may have semen quality poor enough to require *in vitro* fertilization (IVF). Previous studies in the United States have been limited by single-site sampling and a lack of clinical data connected to semen analysis (SA).
MATERIALS AND METHODS:
We performed a cross-sectional analytic study using data from the Fellow Health mail-in SA database linked to US Census by home address. Patients completed detailed health surveys at the time of submitting their semen sample. We explored the relationship between obesity (BMI>30), diabetes (DM), hypertension (HTN), hyperlipidemia (HLD), a cardiac condition, and semen quality, i.e. Total Motile Count (TMC). Multivariable modeling was performed to explore the relationship between these health conditions and TMC, odds of having normal TMC (TMC >40 million), and the odds of needing IVF (TMC <5 million), while adjusting for age, socioeconomic status, and urbanization.
RESULTS:
Within our nationwide cohort (n=7,882) most patients were 30-39 years old (60%), and lived in urban areas (54%). Men obtained SA testing because they were "just curious," "planning to start trying in 1+ years," "actively trying 0-6 months," "actively trying 7-12 months," or "actively trying more than 1 year.". Overall, 36% reported at least one metabolic health condition. Men with health conditions were significantly more likely to be trying to conceive for 1+ years (DM:52% vs. 27%; Obesity: 34% vs. 24%; HTN 41%

vs. 27%; Cardiac condition 37% vs. 27%, p<0.05). Multivariable linear regression demonstrated that men with a cardiac condition had 28 million lower TMC compared to those without a cardiac condition (95% CI -54.0, -1.8). Men with HTN had a TMC 23 million lower than those without (95% CI -25.8, -4.7), while obese men had a TMC 15 million lower than non-obese men (95% CI -20.1, -10,0). Multivariable logistic regression demonstrated that obese men were 23% less likely to have normal TMC (OR 0.77; 95% CI 0.7, 0.9); hypertensive men were 35% less likely to have normal TMC (OR 0.65; 95% CI 0.5, 0.8). Obese men were 36% more likely to need IVF (OR 1.36, 95% CI 1.2, 1.5).

CONCLUSIONS:

Our data demonstrate a significant relationship between metabolic health and semen quality. Obesity, DM, HTN, and cardiac disease were all associated with poorer semen quality. Obese men were more likely to have TMC < 5 million and, therefore at risk for needing IVF.

IMPACT STATEMENT:

Semen quality is a window into a man's broader health. In this large national cohort, cardiometabolic conditions were associated with worse semen quality, and obese men had meaningfully higher odds of needing IVF. Whether emerging metabolic therapies, including GLP-1 receptor agonists, can modify this trajectory is a critical next question, particularly as these agents are prescribed at scale to reproductive-age men

SUPPORT: None

P-155 2:00 PM Monday, October 26, 2026

INTEGRATING *IN VITRO* SPERMATOGENESIS AND POPULATION-SCALE PUBLIC HEALTH DATA TO ELUCIDATE PATERNAL EPIGENETIC MECHANISMS OF PFAS-INDUCED NEURODEVELOPMENTAL RISK.

Elizabeth Waters, B.S.[1], Austin S Hammond, MPH[1], Adrian Bozocea, B.S.[1], Arina Chernikova, B.S.[2,3], Lisa M Renzi-Hammond, Ph.D.[4] and Charles A. Easley IV, B.S., B.SC., M.S., PH.D.[2], [1]University of Georgia College of Public Health, [2]University of Georgia, Athens, GA, [3]University of Georgia College of Public Health, GA, [4]University of Georgia College of Public Health, Athens, GA

OBJECTIVE: Synergize population-level PFAS contamination and childhood neurodevelopment data with mechanistic insights from differential methylation in PFAS-exposed spermatid-like cells to demonstrate how paternal preconception exposure to PFAS chemicals could impact offspring neurodevelopment.

MATERIALS AND METHODS: An unsupervised machine learning (UML) model established a framework for causal inferences regarding counties with PFAS contamination and infant mortality. *In vitro*, human male embryonic stem cells (hESCs) were differentiated into haploid spermatid-like cells using our previously published protocol containing various PFAS compounds plus a mixture or DMSO as a control for 10 days. DNA was extracted and methylation patterns were assessed via reduced-representation bisulfite sequencing. Differentially methylated regions (DMRs) were calculated and passed to gene ontology (GO).

RESULTS: Through the UML tiered framework, high PFAS exposure clusters exhibited markedly elevated rates of congenital malformation–related mortality (z = +1.50), gestation/malnutrition-related mortality (z = +1.49), and total developmental burden mortality (z = +1.49). Displaying PFAS exposure is spatially associated with increased congenital mortality. Fusing this evidence with an *in vitro* spermatogenesis framework, PFAS exposure results in DNA methylation differences in spermatid-like cells. Genes mapped to DMRs under PFAS conditions, compared with controls, were enriched for pathways involved in growth, development, and neurodevelopment. Many of these genes have similarly been identified as autism candidate genes and have previously been found to be differentially methylated in the sperm of fathers of children with autism. These results illustrate a compelling relationship between *in vitro* paternal PFAS exposure and offspring neurodevelopment on a mechanistic and population-scale, and link PFAS exposure with impacts on male fertility.

CONCLUSIONS: Bridging public health analysis with *in vitro* spermatogenesis reveals that paternal PFAS exposure induces epigenetic alterations linked to neurodevelopmental disorders and autism, aligning with population-level alterations in developmental burden. Our work, for the first time, shows that population-level adverse offspring health outcomes associated with PFAS exposure may result from paternal PFAS exposure, as altered DNA methylation may serve as a mechanism for intergenerational effects.

IMPACT STATEMENT: Merging population-level public health data with an *in vitro* spermatogenesis platform provides a novel methodological approach through which the impact of exposure-induced mechanistic alterations in male reproductive health may be quantified and assessed on a societal scale.

P-156 2:15 PM Monday, October 26, 2026

TOBACCO SMOKE EXTRACT DISRUPTS BLOOD-TESTIS BARRIER INTEGRITY AND ALTERS GENE EXPRESSION IN HUMAN SERTOLI CELLS.

Arina Chernikova, B.S.[1], Kylie R. Tager, Ph.D.[2], Emma G. Harris, B.S.[2], Mia Rivera, B.S.[3], Madeline A. Bray, B.S.[2], Morgan O. Brown, B.S.[2], Austin S Hammond, MPH[4], In Ki Cho, PhD[4] and Charles A. Easley IV, B.S., B.SC., M.S., PH.D.[5], [1]Athens, GA, [2]University of Georgia College of Public Health, GA, [3]University of Georgia College of Public Health, Woodstock, GA, [4]University of Georgia College of Public Health, [5]University of Georgia, Athens, GA

OBJECTIVE: More than 50 million Americans use tobacco products, a significant proportion of whom are reproductive-age men. While clinical evidence links tobacco smoking to reduced sperm count, impaired motility, and abnormal morphology, the underlying mechanisms have not been fully examined. This study investigates how tobacco smoke extract (TSE) affects spermatogenesis by impacting blood-testis barrier (BTB) integrity, Sertoli cell gene expression, and spermatogenic gene expression.

MATERIALS AND METHODS: Using a novel, *in vitro* human BTB model, Sertoli cells were exposed to TSE at concentrations normalized to nicotine representing non-smokers, heavy secondhand exposure, moderate smokers and arterial plasma spike concentration after a cigarette (0, 10, 50, and 100 ng/mL). Transepithelial electrical resistance (TEER) was measured daily from day 1 through day 10 of dosing, and Dye Flux assay was performed on day 10, both to assess barrier integrity. RT-qPCR was performed to evaluate gene expression in BTB-associated and Sertoli cell health markers.

RESULTS: TSE dosing across all nicotine-normalized concentrations weakened the BTB, as determined by TEER and Dye Flux measurements. We observed this disruption starting on day 1 and persisting through day 10 of TSE dosing. RT-qPCR analysis identified alterations in genes related to BTB integrity and Sertoli cell health. TSE exposure also altered Sertoli cell hormone secretion.

CONCLUSIONS: TSE disrupts blood-testis barrier integrity across physiologically relevant, nicotine-normalized concentrations, alters Sertoli cell gene expression, and impacts Sertoli cell hormone secretion. Together, these findings provide mechanistic insight into tobacco-related male subfertility.

IMPACT STATEMENT: This work identifies specific mechanisms by which tobacco exposure compromises male reproductive function at the somatic environment level, supporting the development of targeted interventions for smoking-associated subfertility in men of reproductive age.

P-157 2:30 PM Monday, October 26, 2026

HIDRADENITIS SUPPURATIVA IS AN INDEPENDENT RISK FACTOR FOR FEMALE INFERTILITY: A META-ANALYSIS OF MECHANISTIC PATHWAYS AND GLP-1 RECEPTOR AGONIST EFFICACY.

Walaa S Khattab, M.D.[1] and Reda Mahfouz, M.B.B.CH., M.D., M.SC., PH.D.[2], [1]Al Shohada Centeral Hospital, Menoufia, Egypt, [2]Cleveland, OH

OBJECTIVE: To quantify the association between hidradenitis suppurativa (HS), female infertility, and polycystic ovary syndrome (PCOS); characterize the metabolic-inflammatory mechanisms disrupting ovarian function; and evaluate the reproductive efficacy of GLP-1 receptor agonist (GLP-1 RA) therapy in affected women.

DESIGN: Systematic review and meta-analysis (PRISMA 2020).

MATERIALS AND METHODS: PubMed/MEDLINE, Embase, Cochrane, and Scopus were searched (Jan 2000–Apr 2026) for studies comparing fertility and PCOS outcomes in reproductive-age women (18–45 years) with validated HS versus controls. Pooled odds ratios (ORs) and mean differences (MDs) were calculated utilizing DerSimonian-Laird random-effects models. Pre-specified subgroup and meta-regression analyses evaluated HS disease severity (Hurley stage), BMI independence, and GLP-1 RA interventions.

RESULTS: Twenty-four studies (14,832 women with HS; 48,706 controls) were included. HS was associated with a 2.6-fold increased risk of clinical infertility (OR 2.61, 95% CI 1.94–3.51; P<0.001) and a 3.1-fold increased risk of PCOS (OR 3.08, 95% CI 2.27–4.17; P<0.001). BMI-adjusted analyses confirmed a BMI-independent inflammatory pathway driving infertility (OR 2.18, 95% CI 1.61–2.95). A striking dose-response emerged across disease severity: OR 1.38 (Hurley I), 1.89 (Hurley II), and 3.74 (Hurley III; P-trend<0.001). Systemic inflammatory biomarkers (IL-17, TNF-α, hsCRP) were significantly elevated in HS and inversely correlated with anti-Müllerian hormone (r=−0.53 to −0.57) and antral follicle count (r=−0.48). Among 7 GLP-1 RA studies (n=352), therapy yielded significant reductions in BMI (−4.1 kg/m²), HOMA-IR (−1.8 units), and IHS4 disease scores (−36.2%), resulting in ovulatory restoration for 60.1% of previously anovulatory patients (95% CI 52.8–67.1%). Sensitivity analyses confirmed estimate stability with no significant publication bias detected.

CONCLUSIONS: HS is a systemic reproductive health disorder and an independent risk factor for female infertility. It disrupts ovarian reserve and ovulatory competence via a converging metabolic-inflammatory axis, with PCOS acting as a primary mediating phenotype. Crucially, GLP-1 RA therapy mitigates both the dermatological and reproductive deficits. These findings mandate the integration of proactive reproductive screening into routine HS management.

IMPACT STATEMENT: This meta-analysis demonstrates a 2.6-fold increased infertility risk in women with HS, a 3.1-fold higher PCOS prevalence, and 60% ovulatory restoration with GLP-1 receptor agonists—establishing HS as a systemic reproductive disorder requiring integrated, cross-disciplinary care.

SUPPORT: None to disclose.

GLOBAL HEALTH (1 OF 3)

P-158 1:30 PM Monday, October 26, 2026

INFERTILITY WITHOUT HEALTH INSURANCE COVERAGE: A MULTISTAKEHOLDER ANALYSIS OF INSURANCE GAPS AND ACCESS TO FERTILITY CARE IN GHANA.

Promise E. Sefogah, MD, MPH, FWACS[1], Theresa Barnes, PhD, MPhil, BSc, PON, FWACN[2], Josephine Mpomaa Kyei, PhD[3], Magdalene Torto, Bsc. Medicine[4] and Charles Ampong Adjei, PhD[5], [1]University of Ghana Medical School, Accra, Accra, Ghana, [2]University of Ghana, Accra, Ghana, [3]University of Ghana School of Nursing & Midwifery, Accra, Ghana, [4]University of Ghana Medical School, Accra, Ghana, [5]UNiversity of Ghana School of Nursing & Midwifery, Accra, Ghana

OBJECTIVE:

Infertility is a recognized disease with profound psychosocial and economic consequences, yet remains systematically excluded from health financing frameworks in many low-resource settings. In Ghana, the National Health Insurance Scheme provides broad maternal coverage but omits most infertility services, creating a critical gap in reproductive health equity.

To interrogate how insurance exclusion shapes access to fertility care and to identify policy-relevant pathways toward equitable coverage.

MATERIALS AND METHODS:
We conducted a qualitative phenomenological study involving 34 stakeholders across the fertility care continuum: 17 patients, 16 clinicians, and a private health insurance representative. In-depth semi-structured interviews were audio-recorded, transcribed verbatim, and analyzed using inductive thematic content analysis with NVivo.
RESULTS:
Five interrelated themes emerged. First, infertility was experienced as a dual biomedical and social crisis, characterized by stigma, identity threat, and psychological distress. Second, despite near-universal enrollment, the National Health Insurance Scheme provided negligible support for infertility, with widespread confusion and mistrust regarding benefits. Third, out-of-pocket financing dominated care pathways, with patients reporting catastrophic expenditures, debt, and treatment abandonment. Fourth, affordability, not clinical indication, determined fertility care access, leading clinicians to ration care and limit discussions of advanced therapies such as IVF and ICSI. Finally, stakeholders consistently recommended inclusion of coverage for basic diagnostics and treatment within national insurance, tiered subsidies for assisted reproduction, and public–private financing models.
CONCLUSIONS:
In Ghana, the primary determinant of access to fertility care is not medical need but financial protection. The exclusion of infertility from insurance schemes entrenches inequities and undermines universal health coverage goals. Policy integration of fertility care into national insurance represents a critical, feasible, and equity-driven reform with implications for reproductive justice in Ghana and similar settings globally.
IMPACT STATEMENT:
Health insurance exclusion, rather than clinical complexity, is the dominant barrier to fertility care in Ghana. Findings from this study reframe infertility as a health financing problem and provide actionable evidence for urgently integrating fertility services into universal health coverage agendas globally.
SUPPORT: This study received no funding.

P-159 1:45 PM Monday, October 26, 2026

HIGH BURDEN OF OLIGOASTHENOTERATOZOOSPERMIA AMONG MEN SEEKING INFERTILITY CARE IN GHANA: IMPLICATIONS FOR ART IN RESOURCE-LIMITED SETTINGS. Promise E. Sefogah, MD, MPH, FWACS[1], Charles Takyi, MD, FGCS, MPH[2], Raymond Owusu Kantanka, BSc, MSc[3], Eric O. Tetteh, MBChB, FWACS[2], Edmund Tetteh Nartey, PhD[4] and Alim Swarray-Deen, MD, MSc, FWACS[5], [1]University of Ghana Medical School, Accra, Accra, Ghana, [2]Korle Bu Teachng Hopsital, Accra, Ghana, [3]Fertility Society of Ghana, Accra, Ghana, [4]University of Ghana Medical School, Accra, Ghana, [5]University of Ghana Medical School, College of Health Sciences, Accra, Ghana

OBJECTIVE:
To evaluate patterns and determinants of semen abnormalities among men presenting for infertility care in Ghana and assess implications for assisted reproductive technology (ART).
MATERIALS AND METHODS:
We analyzed semen analysis results of 522 men evaluated at a specialist fertility centre in Accra, Ghana (2023–2025). Semen parameters were assessed using World Health Organization (WHO) 6th edition criteria. Participants were classified into diagnostic categories of normozoospermia, oligozoospermia, azoospermia, and oligoasthenoteratozoospermia (OAT). Multivariable logistic regression identified predictors of abnormal semen parameters.
RESULTS:
Median age was 38 years (IQR 34–43). Overall, 71.4% had abnormal semen parameters, with OAT being most prevalent (38.0%). Sperm motility impairment occurred in 85.1% of participants. Partial liquefaction was independently associated with abnormal semen parameters (adjusted odds ratio [aOR] 2.4; p<0.001). Longer abstinence duration was associated with abnormal sperm motility (aOR 1.12 per day; p=0.021). Age, seminal pH, and mode of sample collection were not significant predictors. **To our knowledge, this represents one of the largest contemporary datasets on semen quality among men seeking infertility care in Ghana.**
CONCLUSIONS:
A high burden of severe male factor infertility exists in this population, driven predominantly by OAT and marked motility impairment, indicating substantial need for advanced ART, particularly intracytoplasmic sperm injection (ICSI).
Expanding access to fertility services, **early male factor screening, and timely referral for ART, including ICSI, should be prioritized in infertility care pathways in low-resource settings.**
IMPACT STATEMENT:
This study highlights a critical but under-recognized burden of severe male infertility in sub-Saharan Africa, with direct implications for ART planning, policy development, and equitable access to fertility care.
SUPPORT: None

P-160 2:00 PM Monday, October 26, 2026

BEYOND THE GAP: DIVERGING GLOBAL TRENDS IN MALE AND FEMALE INFERTILITY PREVALENCE, 1990–2023. Yinny Chan, MD, MS[1], Jennifer Yang, MD[1], Catherine Dalton, MS[2] and Avner Hershlag, M.D.[3], [1]Northwell, New Hyde Park, NY, [2]Independent Statistician, [3]Island Fertility, The Renaissance School of Medicine at Stony Brook University, Commack, NY

OBJECTIVE: To characterize regional trends in the difference between female and male infertility prevalence from 1990 to 2023 using data from the Global Burden of Disease (GBD) Study, and to assess whether disparities between sexes have widened, narrowed, or shifted over time.
MATERIALS AND METHODS: This is a retrospective ecological analysis using modeled infertility prevalence estimates from the GBD database from 1990 to 2023. Female and male infertility rates (cases per 100,000) were extracted by country, region, and age group. The primary outcome was the female–male infertility gap, calculated as the difference in prevalence between sexes. Temporal trends were evaluated globally and across World Health Organization regions.
RESULTS: Globally, female infertility prevalence consistently exceeded male infertility prevalence across the entire study period and increased at a faster rate, particularly after 2015. The female–male infertility gap widened globally, with substantial regional heterogeneity. The African Region demonstrated the largest and most consistent widening, with 38 of 47 countries showing increasing disparities and the greatest mean change +293 cases per 100,000 people. In contrast, the Western Pacific Region was the only region to exhibit a narrowing gap overall of -65 cases,, observed in 24 of 32 countries. However, notable exceptions such as China and the Philippines demonstrated significant widening respectively, +110 and +162 cases. The South-East Asia Region maintained the largest absolute gap throughout the study period, driven largely by populous countries including India and Indonesia (+1001 and +781 cases, respectively). Several countries across regions shifted from male-dominant infertility prevalence in 1990 to female-dominant prevalence by 2023, including 67% of such countries in Africa and 71% in the Region of the Americas.
CONCLUSIONS: The disparity between female and male infertility prevalence has widened globally over the past three decades, with marked regional variation. While most regions demonstrate increasing female predominance, the Western Pacific shows a unique pattern of narrowing disparities. Observed transitions from male to female-dominant infertility in multiple countries suggest evolving epidemiologic patterns.
IMPACT STATEMENT: These findings highlight important sex-based disparities in infertility burden worldwide and underscore the need for region-specific investigation into biological, environmental, and health system factors.

P-161 2:15 PM Monday, October 26, 2026

SOMATIC AND PSYCHOLOGICAL BURDEN, NOT SOCIODEMOGRAPHIC FACTORS, DETERMINE FERTILITY QUALITY OF LIFE IN KOREAN WOMEN UNDERGOING IVF. Sunyoung Kim, MD[1], Jiyeon Han, MD[2], Hyeyun Kim, MD[3], Soo Jin Han, M.D.[4], Hye Rin Choi, PhD[5], Danbee Kang, PhD[5] and Hoon Kim, MD, PhD[6], [1]Seoul National University Hospital, Seoul, Korea, Republic of (South), [2]Seoul National University Hospital, Seoul, South Korea, [3]Seoul, South Korea, [4]CHA Fertility Center Seoul Station, Seoul, [5]Center for Clinical Epidemiology, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea, Republic of (South), [6]Seoul National University College of Medicine, Seoul, Korea, Republic of (South)

OBJECTIVE:
To identify predictors of fertility quality of life (FertiQoL) across sociodemographic, clinical, behavioral, somatic, and psychological domains in women undergoing in vitro fertilization (IVF).
MATERIALS AND METHODS:
This cross-sectional survey included 583 women undergoing IVF from the FLOW (Fertility Treatment and LOng-term Impact on Women's Health) cohort. The validated Korean version of the FertiQoL questionnaire (Emotional, Mind–Body, Relational, Social, Treatment Tolerability, and Treatment Environment) was used as the primary outcome.
Five multiple linear regression models were constructed in a sequential manner. Model 1 included sociodemographic variables (age, education, income, employment, residence, and marriage duration). Model 2 additionally included reproductive and clinical variables (infertility duration, parity, prior IVF cycles, miscarriage, and history of complications). Model 3 further adjusted for lifestyle and behavioral factors (smoking, alcohol use, and sedentary time). Model 4 added psychological and social variables (PROMIS Depression, Anxiety, perceived stress, and marital quality). The fully adjusted model (Model 5) additionally included somatic burden variables (PROMIS Fatigue, Pain Interference, Sleep Disturbance, and Physical Function).
RESULTS:
The full model explained 47.5% of the variance (adjusted $R^2 = 0.447$, $P < 0.001$). Sociodemographic factors alone explained only 1.3% of the variance. The addition of reproductive and clinical variables increased the explained variance to 9.0%, while lifestyle factors contributed negligibly. The largest increase in explained variance was observed after including somatic burden ($\Delta R^2 = 0.351$, $P < 0.001$). Psychological and social factors further contributed an additional 2.2% of variance after adjustment for somatic factors ($P < 0.001$).
In the final model, the strongest negative predictors were PROMIS Depression (coefficient = −1.48, $P < 0.001$), history of IVF complications (coefficient = −4.26, $P = 0.002$), and number of prior IVF cycles (coefficient = −0.41 per cycle, $P < 0.001$). Fatigue, sleep disturbance, pain, and anxiety were also significant predictors. Protective factors included parous status (coefficient = 3.24, $P = 0.036$), marital quality (coefficient = 2.18, $P = 0.012$), and age (coefficient = 0.44 per year, $P = 0.002$).
Subscale-specific analyses showed that depression was associated with all six subscales, whereas marital quality showed the strongest association with the Relational subscale (coefficient = 11.73, $P < 0.001$). Notably, parous status was protective across most subscales but negatively affected the Relational subscale (coefficient = −7.48, $P < 0.001$).
CONCLUSIONS:
Modifiable somatic and psychological factors, particularly depression, treatment burden, and marital quality, are primary determinants of FertiQoL in Korean women undergoing IVF, outweighing sociodemographic characteristics.

IMPACT STATEMENT:
Identifying depression, somatic symptom, and cumulative treatment burden as principal modifiable determinants of FertiQoL provides direct, actionable targets for psychosocial and supportive symptom-management intervention in IVF care.
SUPPORT: This research was supported by the National Institute of Health (NIH) research project (No.2025ER060800).

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GEOGRAPHICAL HETEROGENEITY IN THE ECOLOGICAL ASSOCIATION BETWEEN LONG-TERM $PM_{2.5}$ EXPOSURE AND OVARIAN CANCER INCIDENCE: AN INTERNATIONAL ECOLOGICAL STUDY, 2013–2022.
Chaoliang Zhang, BSc, MD and Mingxia Gao, MD, Lanzhou, China

OBJECTIVE: Ambient air pollution, particularly PM2.5, is an important environmental health risk and has been associated with several cancers. However, evidence regarding the relationship between long-term PM2.5 exposure and ovarian cancer remains limited and geographically heterogeneous. This study aimed to examine the association between long-term PM2.5 exposure and ovarian cancer incidence using a cross-national ecological analysis.
MATERIALS AND METHODS: A country-level ecological study was conducted including 24 countries from Asia, Europe, and America. Age-standardized incidence rates (ASR) for ovarian cancer in 2022 were obtained from GLOBOCAN 2022. Long-term $PM_{2.5}$ exposure was estimated using population-weighted national averages from the ACAG dataset. Pearson correlation and linear regression analyses were used to assess the association between $PM_{2.5}$ and ovarian cancer incidence. An adjusted model additionally included log-transformed GDP per capita (PPP). Continental subgroup analyses were performed to assess regional heterogeneity. Countries were stratified into high- and low-pollution groups based on the median concentration, and ovarian cancer incidence was compared using the Mann–Whitney U test. Regression diagnostics included the Shapiro–Wilk test, Breusch–Pagan test, and variance inflation factor .
RESULTS: Across all countries, long-term PM2.5 exposure was positively associated with ovarian cancer incidence. In linear regression analysis, PM2.5 concentrations were significantly associated with ovarian cancer ASR ($\beta = 0.333$, $p = 0.024$). The association remained significant after adjustment for logGDP per capita ($\beta = 0.371$, $p = 0.012$). In continental subgroup analyses, the association was strongest in Europe ($r = 0.84$, $p = 0.009$), while weaker and non-significant associations were observed in Asia and Americas. Stratified analysis showed that countries with PM2.5 concentrations above the median had higher ovarian cancer incidence compared with countries with lower pollution levels. Regression diagnostic tests indicated that model assumptions were reasonably satisfied.
CONCLUSIONS: In this cross-national ecological study, higher long-term $PM_{2.5}$ exposure was associated with higher national ovarian cancer incidence rates. Given the ecological design and potential residual confounding, these findings should be interpreted cautiously. Further individual-level studies are needed to clarify the potential relationship between air pollution and ovarian cancer risk.
IMPACT STATEMENT: This exploratory study underscores the potential public health significance of air quality improvements, particularly regarding ovarian cancer risk. The observed positive association between PM2.5 and ovarian cancer ASIR, despite limitations, highlights the need for more extensive epidemiological research incorporating larger and more diverse datasets. The findings advocate for policy measures aimed at reducing air pollution as a potential means of mitigating cancer risk, and they stress the importance of integrating environmental data with cancer registries to better understand the modifiable risk factors influencing ovarian cancer incidence.
SUPPORT: not applicable

GLOBAL HEALTH (2 OF 3)

P-163 1:30 PM Monday, October 26, 2026

AQUEOUS VERSUS OIL-BASED PROGESTERONE FOR LUTEAL PHASE SUPPORT IN FROZEN EMBRYO TRANSFER (FET): A PROPENSITY SCORE-MATCHED ANALYSIS OF 5,326 CYCLES FROM CHINA.
Na Li, Doctor, Northwest Women's and Children's Hospital, Xi'An, China

OBJECTIVE: Aqueous progesterone has emerged as an alternative to oil-based intramuscular progesterone for luteal phase support (LPS) in frozen embryo transfer (FET). While prior evidence from FET cycles remain limited. We aimed to compare pregnancy outcomes between aqueous and oil-based progesterone across all four major endometrial preparation protocols in a large Chinese cohort.
MATERIALS AND METHODS: This retrospective cohort study included all FET cycles receiving injectable progesterone for LPS at a single tertiary center in China during 2025. Oil-based progesterone (Zhejiang Xianju, 20 mg/vial, intramuscular) was compared with aqueous progesterone (Changchun GeneScience, JinSaixin, 25 mg/vial, subcutaneous/intramuscular). Protocols included natural cycle, ovulation induction, hormone replacement therapy (HRT), and GnRH agonist down-regulation plus HRT. The primary outcome was ongoing pregnancy rate (OPR). One-to-one propensity score matching (PSM) was performed adjusting for age, BMI, infertility type, diagnosis, stimulation protocol, oocyte number, cycle protocol, embryo stage, endometrial thickness, and progesterone dose. Generalized estimating equations with robust standard errors were applied to the matched cohort.
RESULTS: Of 5,326 FET cycles (aqueous n=1,700; oil-based n=3,626), 2,446 cycles (1,223 matched pairs) were retained after PSM. Baseline characteristics were well balanced. Overall, OPR was comparable (49.1% versus 49.5%; OR=0.984, 95% CI 0.840-1.153; p=0.840). Clinical pregnancy and early spontaneous abortion rates were also equivalent. However, cycle protocol significantly modified the treatment effect (interaction p=0.001). In HRT cycles, aqueous progesterone was associated with significantly lower OPR (43.9% versus 55.0%; OR=0.640, 95% CI 0.470-0.872; p=0.005). OPR was equivalent in natural cycles (51.5% versus 49.7%), ovulation induction cycles (61.5% versus 52.2%), and GnRH agonist plus HRT cycles (44.8% versus 43.1%). Dose-stratified analysis within HRT cycles revealed this disparity was driven by high-dose aqueous (50 mg/day): low-dose aqueous (25 mg) achieved comparable outcomes (55.6% versus 56.0%, p=1.000), whereas high-dose aqueous (50 mg) performed significantly worse (43.6% versus 54.7%, p=0.010).
CONCLUSIONS: Aqueous progesterone achieved overall comparable pregnancy outcomes to oil-based progesterone. However, cycle type emerged as a critical effect modifier: aqueous progesterone was equivalent in natural, ovulation induction, and GnRH agonist plus HRT cycles, but was associated with significantly lower ongoing pregnancy rates in HRT cycles, particularly at the 50 mg dose. Formulation and dose selection for LPS should be individualized based on endometrial preparation protocol.
IMPACT STATEMENT: This is the largest real-world cohort study comparing aqueous and oil-based progesterone across all major FET protocols, and the first to identify HRT-specific dose-response discrepancy, providing evidence-based guidance for personalized luteal phase support in clinical practice.
SUPPORT: No financial support was received for this study
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P-164 1:45 PM Monday, October 26, 2026

HIGH SUCCESS RATES IN EUPLOID BLASTOCYST TRANSFERS FROM FROZEN–THAWED AUTOLOGOUS OOCYTES.
Tutku Melis Aygün, PhD(c)[1], Caroline Pirkevi Cetinkaya, PhD[2], Yesim Kumtepe Colakoglu, M.Sc[1] and Semra Kahraman, Prof. MD[1], [1]Istanbul Memorial Hospital, ART and Reproductive Genetics Center, İstanbul, Turkey, [2]Memorial Hospital, Okmeydani, Istanbul, Turkey

OBJECTIVE: In Turkey, legislation prohibits oocyte donation, and cryopreservation is permitted only under three conditions: prior to gonadotoxic treatments; prior to surgical procedures causing permanent loss of reproductive function; and in women without previous childbirth diagnosed with diminished ovarian reserve or with a family history of early menopause confirmed by a medical board. Due to the third indication, women undergoing elective oocyte freezing in Turkey differ demographically from cohorts commonly reported internationally. The objective of this study was to evaluate the effectiveness of preimplantation genetic testing for aneuploidy (PGT-A) and euploid embryo selection in optimizing live birth rates (LBR) following blastocyst transfer derived from frozen–thawed autologous oocytes, based on 11 years of single-center data.
MATERIALS AND METHODS: A total of 863 oocyte cryopreservation cycles were performed in 798 patients between 2014–2026 (mean age: 37.9 years; mean BMI: 23.3; mean AMH: 1.1 ng/mL). In total, 3,682 metaphase II (MII) oocytes were vitrified and warmed using Kitazato protocols. Following fertilization, embryos were cultured to the blastocyst stage when possible. Among 112 thawing cycles (76 patients), trophectoderm biopsy with PGT-A by using next-generation sequencing (NGS) was performed in selected cases (n=19), followed by transfer of a single euploid blastocyst. The remaining transfers were performed either at the blastocyst stage without PGT-A (n=38) or at the cleavage stage (n=19).
RESULTS: Across the cohort, the mean post-thaw survival rate was 81.7%, with a fertilization rate of 76.7%. Of embryos derived from thawed oocytes, 47.6% progressed to usable blastocysts. For cleavage-stage and blastocyst transfers, mean female age was 40.3 and 38 years, with mean MII of 2.3 and 7, and ongoing pregnancy rates (OPR) of 21.1% and 65.8%, respectively. Long-term data show that euploid blastocyst transfers from frozen–thawed oocytes can approach a live birth rate of 100% (mean age: 38.7 years; mean MII: 7.9; OPR: 100%). This represents a substantial improvement in clinical outcomes and reliability compared with transfers without genetic screening or at earlier embryonic stages.
CONCLUSIONS: In frozen–thawed autologous oocyte cycles, when clinically feasible, euploid blastocyst transfer is the most effective approach for achieving clinical success, consistently associated with high live birth rates.
IMPACT STATEMENT: This study supports euploid blastocyst transfer as a gold-standard strategy in autologous oocyte cryopreservation programs. By prioritizing genetically screened embryos, this approach offers highly reliable and optimized live birth outcomes in ART.
SUPPORT: none
REFERENCES:
none

P-165 2:00 PM Monday, October 26, 2026

KNOWLEDGE, BELIEFS, AND PERCEPTIONS OF CONTRACEPTION AMONG WOMEN IN DAJABÓN, DOMINICAN REPUBLIC: A CROSS-SECTIONAL STUDY.
Alexandra Ramirez, BS, University of New England College of Osteopathic Medicine, NJ

OBJECTIVE: To characterize contraception-related knowledge, beliefs, and information pathways and identify modifiable barriers to contraceptive use among adult women in a low-resource, community-based clinical setting in Dajabón, Dominican Republic.
MATERIALS AND METHODS: We conducted a cross-sectional survey of adult women (≥18 years) attending a temporary community clinic over a five-day period. Participants completed an anonymous, Spanish-language questionnaire assessing contraception-related knowledge and beliefs using structured true/false statements, along with sources of information and open-ended responses. Approximately 80 participants

were included. Descriptive statistics, including frequencies and proportions, were used to summarize responses, and subgroup comparisons were performed where applicable. Qualitative responses were analyzed thematically to identify recurring perceptions and barriers related to contraceptive use.
RESULTS: Marked variability in contraceptive knowledge was observed across assessed domains. High prevalence of incorrect beliefs were identified regarding weight gain (70%) and long-term hormonal effects (60%), with substantial uncertainty across multiple items, as up to 40% of participants selected "not sure." Knowledge gaps were consistent across age groups and educational backgrounds. Information sources were distributed across both formal and informal channels, with reliance on healthcare providers, peers, and internet-based platforms (approximately 20% each), suggesting fragmented and potentially conflicting information pathways. Qualitative responses revealed persistent concerns regarding menstrual irregularity, perceived long-term harm, and the belief that early contraceptive use contributes to future infertility or adolescent pregnancy. These findings highlight the coexistence of misinformation and uncertainty within community-based settings.
CONCLUSIONS: Significant knowledge gaps and competing information sources persist among women in this low-resource setting, potentially contributing to suboptimal contraceptive utilization and decision-making. Addressing both misinformation and uncertainty through culturally responsive, community-based interventions is essential to improving reproductive health outcomes and advancing health equity.
IMPACT STATEMENT: This study provides critical insight into modifiable drivers of contraceptive hesitancy in a global health context. By identifying both misinformation and fragmented information pathways, these findings inform targeted, culturally responsive interventions aimed at improving reproductive health literacy and access. Such strategies have the potential to reduce unintended pregnancy and address persistent disparities in reproductive health outcomes across underserved populations.

P-166 2:15 PM Monday, October 26, 2026

FERTILITY LITIGATION AS AN IMPORTANT PATIENT SAFETY SIGNAL: A GLOBAL ANALYSIS AND FRAMEWORK FOR SAFER ART PRACTICE. James Michael Niall Michael Niall Duffy, BSc (Hons) MB ChB MRes DPhil MRCOG PG Dip PG Cert HCL[1], Thomas Mitchell Dr, MBChB MRCOG[2], Sepideh Samaee, MBBS[3] and Dr. Yusuf Beebeejaun, MRCOG MHDL MBBS BSc(Hons)[4], [1]London, AL, [2]Edinburgh University, Edinburgh, [3]London, United Kingdom, [4]IVI RMA UK, London, United Kingdom

OBJECTIVE: To examine patterns of litigation and regulatory responses in assisted reproductive technology (ART) pathways across multiple jurisdictions and to develop a systems based conceptual model of failure alongside a framework to reduce avoidable harm.
MATERIALS AND METHODS: A narrative comparative document analysis was undertaken across Australia, Israel, Singapore, the United Kingdom, and the United States. Legal cases, regulatory frameworks, policy documents, and peer reviewed literature were reviewed to identify recurrent litigation themes. Findings were synthesized using patient safety, systems engineering, and high reliability organisational frameworks.
RESULTS: Comparative analysis identified consistent patterns of system vulnerability across jurisdictions despite differences in healthcare structures and regulatory frameworks. Five interrelated domains were identified: (1) consent processes, (2) identity and parentage, (3) embryology laboratory systems, (4) diagnostic and digital systems, and (5) governance and reporting structures. Adverse events rarely arose from a single domain in isolation, instead reflecting interactions between multiple system components. Consent failures were associated with later stage disagreements and misalignment between patient expectations and clinical decision making. Identity related failures, including errors in patient identification and documentation, were linked to significant legal and psychosocial consequences. Laboratory incidents, including failures in embryo identification and witnessing processes, were rare but resulted in substantial patient, offspring, and health system impact. Fragmentation of diagnostic and digital systems contributed to communication failures and data inconsistency. Governance and reporting structures influenced detection, management, and organisational learning, with variability observed across jurisdictions. These findings have significant implications for ART practice, including consent pathways, laboratory workflow design, and digital transformation.
CONCLUSIONS: Adverse events in ART reflect shared system vulnerabilities rather than isolated failures. A systems based model demonstrates that harm in ART arises from interactions between clinical, laboratory, digital, and governance processes. A zero avoidable harm framework structured around prevention, detection, and response could provide a practical approach to improving safety in ART practice.
IMPACT STATEMENT: Adverse events in ART pathways reflect interacting local health system vulnerabilities rather than isolated errors. A systems based approach to ART practice may provide a structured and practical strategy to reduce avoidable harm.
SUPPORT: No specific funding for the study was obtained.
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P-167 2:30 PM Monday, October 26, 2026

AMBIENT AIR POLLUTION AND IVF OUTCOMES IN EUROPE: A MULTINATIONAL REGISTRY ANALYSIS OF PM2.5 EXPOSURE. Jeffrey Zi Kang Huang, HS[1], Yung-Liang Liu, M.D., Ph.D.[2], Wen Jui Yang, M.D. Ph.D.[3], Farn Lu, M.D.[2], Ching Hung Chen, Ph.D.[4], Jack Yu Jen Huang, M.D., Ph.D., FACOG[5] and Barry R Behr, PH.D.[6], [1]Taipei American School, Taiwan, [2]Taiwan IVF Group, Ton Yen General Hospital, Taiwan, [3]Anaheim, CA, [4]Taiwan IVF Group, Zhubei City, Taiwan, [5]Taiwan IVF Group, Ton Yen General Hospital, Stanford University, [6]Stanford University

OBJECTIVE: To evaluate whether ambient PM2.5 exposure is associated with variation in IVF clinical pregnancy and delivery rates across European countries.
MATERIALS AND METHODS: This retrospective ecological study integrated assisted reproductive technology (ART) outcome data from the European IVF Monitoring Consortium of the European Society of Human Reproduction and Embryology (ESHRE) with country-level PM2.5 exposure data from the World Bank (2020). ART outcomes, including clinical pregnancy and delivery rates per aspiration for IVF and intracytoplasmic sperm injection (ICSI), were extracted from registry data across 27 European countries. Outcomes were harmonized using weighted averages based on aspiration volume. Associations between PM2.5 exposure and ART outcomes were evaluated using ordinary least squares and weighted least squares regression models with robust standard errors.
RESULTS: Across European countries, substantial variability in ART outcomes was observed, consistent with registry data demonstrating clinical pregnancy rates ranging from approximately 6.7% to 36.5% and delivery rates from 4.4% to 28.8%. Increasing PM2.5 exposure demonstrated a negative trend with ART outcomes. In weighted regression models, each 5 μg/m³ increase in PM2.5 was associated with a −1.91 percentage point change in clinical pregnancy rate (95% CI −4.95 to 1.13, p=0.219) and a −2.39 percentage point change in delivery rate (95% CI −5.02 to 0.24, p=0.075). Delivery outcomes demonstrated a borderline inverse relationship, while pregnancy outcomes did not reach statistical significance.
CONCLUSIONS: Ambient PM2.5 exposure demonstrates a negative trend with IVF outcomes across European countries, with stronger effects observed for delivery outcomes. These findings suggest that air pollution may contribute to regional variability in ART success.
IMPACT STATEMENT: Environmental air quality may represent a modifiable determinant of reproductive success. These findings support further investigation into environmental exposures and mitigation strategies, including air quality optimization, to improve ART outcomes.
SUPPORT: None

GLOBAL HEALTH (3 OF 3)

P-168 1:30 PM Monday, October 26, 2026

THE SILENT GAP IN FERTILITY COUNSELLING: 80% OF ARGENTINE WOMEN REPORT NO DISCUSSION OF REPRODUCTIVE AGEING IN ROUTINE GYNAECOLOGICAL CARE. Felicitas Azpiroz, MSc, PhD[1], Melina Schapira, MD[2] and Adan Nabel, MD[3], [1]Cegyr - Eugin Group, Buenos Aires, Argentina, [2]CEGYR Eugin Group, Caba, Argentina, [3]Cegyr, Buenos Aires, Argentina

OBJECTIVE: To quantify the prevalence of fertility counselling in routine gynaecological care among Argentine women aged 20–40, and to characterise its association with reproductive knowledge, information-seeking behaviour, and engagement with fertility preservation.
MATERIALS AND METHODS: Nationwide cross-sectional online survey of 1,118 women aged 20–40 without children in Argentina (August–September 2025), with sampling across all regions and socioeconomic strata. Structured items assessed whether clinicians had discussed fertility decline, ovarian reserve (OR), OR testing, or fertility preservation. Additional outcomes included knowledge indicators, reproductive intentions, information sources, and prior consultation regarding oocyte cryopreservation (OC). Analyses were descriptive and age-stratified, with exploratory comparisons by education level. AI-assisted analysis of open-ended audio responses contextualised reported counselling experiences.
RESULTS:
Eighty percent of respondents had never discussed fertility, OR, or reproductive ageing with a clinician. Knowledge deficits were substantial: 62% were unfamiliar with the concept of ovarian reserve, 55% were unaware that OR testing exists, and 34–38% believed fertility decline becomes relevant only after age 40. Understanding of fertility preservation was limited: only half identified 25–30 years as the optimal timing for OC, 22% reported a detailed understanding of it, and uptake was 3%. Preventive engagement was correspondingly low, with only 5% having sought fertility preservation counselling and 43% reporting postponement or uncertainty regarding parenthood. Non-clinical sources dominated information pathways, with over 65% relying on social media and fewer than 20% identifying a clinician as their primary source. Women reporting no counselling more frequently described delayed or undefined reproductive timelines and lower inclination to seek specialist advice. Patterns were consistent across age strata, supporting the robustness of observed findings.
CONCLUSIONS: A counselling gap affecting four in five women coincides with poor OR literacy, widespread timing misconceptions, and minimal preventive fertility engagement. Routine gynaecological care represents a largely unrealised opportunity to deliver evidence-based reproductive health education at scale.
IMPACT STATEMENT: With 80% of Argentine women reporting no clinician discussion of reproductive ageing, the case for embedding structured fertility counselling into routine gynaecological care is compelling. Proactive engagement at this contact point

could support informed reproductive planning, realistic appraisal of fertility preservation, and more equitable access to reproductive health knowledge.

P-169 1:45 PM Monday, October 26, 2026

REPRODUCTIVE AGEING MISCONCEPTIONS AND DEFERRED FAMILY PLANNING: A NATIONWIDE SURVEY OF CHILDLESS WOMEN IN ARGENTINA. Felicitas Azpiroz, MSc, PhD[1], Melina Schapira, MD[2] and Adan Nabel, MD[3], [1]Cegyr - Eugin Group, Buenos Aires, Argentina, [2]Cegyr, Caba, Argentina, [3]Cegyr, Buenos Aires, Argentina

OBJECTIVE: To determine the prevalence and age-stratified distribution of misconceptions about the onset of reproductive decline among Argentine women without children, and to characterise their association with delayed or undefined reproductive intentions.
MATERIALS AND METHODS: Nationwide cross-sectional online survey of 1,118 women aged 20–40 without children in Argentina (August–September 2025), with sampling across all regions and socioeconomic strata. Structured questionnaires and AI-assisted analysis of open-ended audio responses assessed perceptions of reproductive ageing, ovarian reserve (OR) awareness, knowledge of available OR testing, fertility preservation timing, information-seeking behaviour, counselling history, and reproductive planning timeframes. Analyses were descriptive and age-stratified (20–29, 30–34, 35–40), with exploratory socioeconomic comparisons.
RESULTS: Of 1,118 respondents, 34–38% believed fertility decline becomes relevant only after age 40; a further 22% placed onset between 40 and 45 years, whilst only 27% correctly identified the early-to-mid 30s as a critical window. Misconceptions were most prevalent in the youngest stratum (38% aged 20–29 vs. 32% aged 30–34). Although 67% had encountered the concept of fertility decline, over 60% lacked a basic understanding of OR, and 45–55% were unaware that formal assessment is available. Reproductive intentions reflected systematic deferral: 43% reported postponing or remaining undecided about parenthood, most commonly citing economic instability, housing insecurity, and professional development. Open-ended responses consistently framed reproductive ageing as a concern arising abruptly after 40, suggesting a perceived extension of biological safety well into the late 30s. Over 65% identified social media as their primary information source, whilst 80% had never discussed future fertility with a clinician. Inaccurate timing beliefs were associated with open-ended postponement and reduced inclination to seek counselling. Gradients were consistent across age strata, supporting the robustness of observed patterns.
CONCLUSIONS: One-third of Argentine women without children hold a systematic misconception about the onset of reproductive decline, one most deeply entrenched among those in their 20s and precisely the cohort for whom early intervention would carry the greatest benefit. This misperception accompanies delayed planning, poor OR literacy, and near-absent clinical engagement, making a compelling case for proactive fertility education and routine preconceptional counselling integrated earlier into reproductive healthcare pathways.
IMPACT STATEMENT: Inaccurate beliefs about reproductive ageing are widespread, systematically patterned, and clinically consequential. Structured fertility education and preconceptional counselling delivered before women enter their 30s could meaningfully narrow the gap between perceived and actual reproductive timelines, supporting informed decision-making about family planning, fertility assessment, and preservation.

P-171 2:30 PM Monday, October 26, 2026

WHOLE SYSTEMS TRADITIONAL CHINESE MEDICINE'S IMPACT ON AUTOLOGOUS FROZEN EMBRYO TRANSFER OUTCOMES AT AN ACADEMIC MEDICAL CENTER (WHOLISTIC): A RETROSPECTIVE, PROPENSITY-SCORE MATCHED COHORT STUDY. Christine M Kaiser, DACM, M.Sc.[1], Lee E. Hullender Rubin, D.A.O.M., M.SC.[1], Sung Tae Kim, PhD, HCLD[2], Rebecca Flyckt, M.D.[2], Lucas D Jones, PhD[1], Samuel Rodgers-Melnick, PhD, MPH[1] and Thomas E Love, PhD[3], [1]University Hospitals Connor Whole Health, Beachwood, OH, [2]University Hospitals Fertility Center/Case Western Reserve University, Beachwood, OH, [3]Case Western Reserve University School of Medicine, Cleveland, OH

OBJECTIVE: To assess the effect of Whole Systems-Traditional Chinese Medicine (WS-TCM) on autologous Frozen Embryo Transfer (FET) birth outcomes at a U.S. academic medical center.
MATERIALS AND METHODS: We conducted a retrospective cohort study of 1,766 autologous FETs (268 WS-TCM, 1,498 Usual care) performed within an academic medical center's fertility clinic among women aged 21-42 from January 2019 to March 2025. FETs in the WS-TCM group were propensity-score matched 1:2 to Usual care FETs without WS-TCM and balanced based on relevant covariates including demographic, biometric, social drivers of health, and general, mental, and reproductive health. After matching, a conditional logistic regression model was used to estimate the effects of attending ≥1 WS-TCM appointment between 120 days pre- and 12 days post-FET on the primary outcomes of clinical pregnancy rate (CPR) and live birth rate (LBR). Secondary outcomes were positive serum pregnancy rate (PPR) and miscarriage rate (MR). WS-TCM treatment modalities included individualized acupuncture, nutritional and lifestyle modifications, and focused dietary supplements.
RESULTS: Before matching, significant differences were observed in baseline variables including neighborhood-level median income; area deprivation index; diagnoses related to pain, thyroid disorders, mental health disorders, genitourinary system disorders, and disorders in prior pregnancies; progesterone; endometrial thickness; prior ART cycles; prior live births; and recurrent pregnancy loss. In the matched analysis of 250 FETs with WS-TCM (median 5 treatments) to 500 Usual care FETs, the CPR was 64.8% in the WS-TCM group compared with 58.8% in the FET group (adjusted odds ratio [aOR] and 95% CI: 1.27 [0.94, 1.73]) and the LBR was 50.0% in the WS-TCM group versus 44.4% in the FET group (1.26 [0.93, 1.70]). Between the WS-TCM and FET groups, the PPR was 71.2% versus 69.6%, (1.08 [0.77, 1.52]) and the MR was 21.3% compared with 28.1% (0.69 [0.44, 1.09]).
CONCLUSIONS: Within a U.S. cohort of patients undergoing FET at an academic IVF clinic, FET patients who added WS-TCM had a higher CPR and LBR and lower MR compared with FET alone, although the estimates were imprecise and confidence intervals included the null. Further investigation is needed with a larger sample size to confirm these findings.
IMPACT STATEMENT: The addition of WS-TCM to FET cycles over FET alone led to modest improvements in rates of relevant outcomes, including clinical pregnancies, live births, and miscarriages suggesting a positive, directional signal. Further multi-site research with larger samples is warranted.
SUPPORT: Supported by Elisabeth Severance Prentiss Foundation

ART (1 OF 27)

P-172 1:30 PM Monday, October 26, 2026

DOES CRYOSTORAGE DURATION INFLUENCE POST-THAW EMBRYO MORPHOLOGY IN EUPLOID BLASTOCYSTS? Tamar Alkon-Meadows, MD[1], Carlos Hernandez-Nieto, MD[1], Rebecca Zhuo, MD[2], Victoria Lazarov, MD[2], Joseph A. Lee, BA[3], Richard E. Slifkin, M.S.[1], Erynne Jackson, BA, MPH[4], Martha Luna Rojas, M.D.[5], Alan B. Copperman, MD[6] and Erkan Buyuk, MD[1], [1]Reproductive Medicine Associates of New York, New York, NY, [2]Icahn School of Medicine at Mount Sinai, New York, NY, [3]RMANY || US Fertility, New York, NY, [4]US Fertility, New York, NY, [5]RMA International Mexico, SC, Ciudad DE Mexico, Cdmx, Mexico, [6]Reproductive Medicine Associates of New York LLP, New York, NY

OBJECTIVE:
Post-thaw morphology is associated with transfer success in IVF, with downgraded embryos demonstrating reduced live birth rates (LBR); however, the factors driving these changes remain unclear.[1] Emerging evidence suggests that prolonged cryostorage may influence LBR, potentially reflecting cumulative cellular or molecular changes.[2] This study evaluates whether cryostorage duration is associated with post-thaw morphological changes in euploid blastocysts.
MATERIALS AND METHODS:
This retrospective, single-center study included autologous single euploid embryo transfer (SEET) cycles between January 2016 and February 2026. Re-frozen embryos were excluded. Patients were stratified by cryostorage duration: Group 1 (≤2 years), Group 2 (3–4 years), and Group 3 (5–10 years). Embryo reproductive potential scores were assigned based on day of biopsy, expansion grade, and trophectoderm and inner cell mass grading at cryopreservation and post-thaw, categorized as unchanged, improved, declined, or non-re-expanding. The primary outcome was post-thaw score change; secondary outcome was LBR. Analyses included chi-square, multinomial and binary logistic regression with generalized estimating equation. A sample size of 110 SEETs per group was calculated to detect a 10% difference in post-thaw score change with 80% power (α=0.05).
RESULTS:
A total of 15,550 SEET cycles were included, stratified by prior embryo cryostorage duration (Group 1: 13,924, 89.5%; Group 2: 1,501, 9.7%; Group 3: 125, 0.8%). Post-thaw score distribution did not differ across groups: unchanged (70%, 69%, 69.2%, p=0.63), improved (10%, 9.8%, 11%, p=0.97), declined (16.5%, 18.2%, 17.3%, p=0.31), non-re-expanding (3.5%, 3%, 2.5%, p=0.75). Overall LBR were comparable across cryostroage groups (54.4%, 55.2%, 54.7%, p=0.72) respectively. However, post-thaw decline and non-re-expansion were associated with lower LBR (p<0.001): declined (44.8%, 45.8%, 46.3%) and non-re-expanding (26%, 25.4%, 24.8%) compared with unchanged (54.1%, 55%, 53.2%) and improved cohorts (55%, 54.8%, 54.7%).
After controlling for confounding factors, cryostorage duration was not associated with post-thaw morphology (improved: aOR 0.98, 95% CI 0.95–1.01; declined: aOR 1.00, 95% CI 0.96–1.05; non-re-expanding: aOR 0.99, 95% CI 0.94–1.03). After adjusting for age, AMH, BMI, AFC, and cryostorage duration, post-thaw decline (aOR 0.73, 95% CI 0.65–0.81) and non-re-expansion (aOR 0.27, 95% CI 0.17–0.40) were associated with lower odds of live birth, while improved and unchanged embryos showed no difference (aOR 0.98, 95% CI 0.82–1.32).
CONCLUSIONS: Embryo cryostorage duration was not associated with post-thaw morphological changes in euploid blastocysts. In contrast, post-thaw morphological decline and non-re-expansion were independently associated with significantly reduced LBR, highlighting their prognostic value.
IMPACT STATEMENT:
Extended cryostorage does not increase the likelihood of post-thaw morphological decline in euploid blastocysts; however, when decline occurs, it is independently associated with reduced live birth rates, underscoring the clinical relevance of post-thaw assessment.
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P-173 1:45 PM Monday, October 26, 2026

REPRODUCTIVE POTENTIAL OF ABNORMALLY FERTILIZED ZYGOTES: OUTCOMES BY PRONUCLEAR NUMBER. Miriam A. Andrusier, MD, MPH[1], Jing Wu, MD, MS[2], Tierra Bender, MD[3], Erynne Jackson, BA, MPH[4], Joseph A. Lee, BA[4],

Christina Boyd, M.S.[5], Richard E. Slifkin, M.S.[5], Phillip A Romanski, M.D., M.SC.[5], Alan B. Copperman, MD[6] and Erkan Buyuk, MD[6], [1]Brooklyn, NY, [2]US Fertility, Rockville, MD, [3]Mass General Brigham, Boston, MA, [4]RMANY || US Fertility, New York, NY, [5]Reproductive Medicine Associates of New York, New York, NY, [6]Icahn School of Medicine at Mount Sinai/Reproductive Medicine Associates of New York, New York, NY

OBJECTIVE: Limited data exist on the reproductive potential of abnormally fertilized zygotes with a non-2 pronuclei number (Non-2PN). While prior studies suggest that some Non-2PN zygotes may develop into euploid blastocysts, outcomes stratified by specific pronuclear categories remain poorly defined. The objective of this study is to compare cleavage, blastulation, and euploidy rates by pronuclear number among normally and abnormally fertilized zygotes.
MATERIALS AND METHODS: This retrospective cohort study was conducted at a single academic practice and included patients undergoing an in vitro fertilization (IVF) cycle between January 2018 and February 2025. Zygotes were categorized as 2PN or Non-2PN, with the latter stratified by pronuclear number (0, 1, 3, 4, and ≥5). Kruskal-Wallis rank sum, Pearson's Chi-squared, and Fisher's exact tests were used as appropriate.
RESULTS: A total of 161,911 mature oocytes from 9,535 subjects were included. Median age and BMI at oocyte retrieval were 36.2 years and 24.7 kg/m², respectively, and were similar to those at the time of single euploid embryo transfer (SEET). Fertilization, cleavage, blastulation, and euploidy rates stratified by pronuclear number are shown in Table 1.
Table 1. Fertilization, Cleavage, Blastulation, and Euploidy Rates by Pronuclear Status

Pronuclei	Overall N=161,911 (100%)[1]	0 N=30,595 (19%)[1]	1 N=2,668 (1.6%)[1]	2 N=124,848 (77.1%)[1]	3 N=3,155 (1.9%)[1]	4 N=467 (0.3%)[1]	5+ N=178 (0.1%)[1]	p-value[2]
Fertilized								<0.001
	133,119 (82.22%)	3,166 (10.35%)	1,305 (48.91%)	124,848 (100.00%)	3,155 (100.00%)	467 (100.00%)	178 (100.00%)	
Cleaved								<0.001
	127,461 (95.75%)	3,166 (100.00%)	1,305 (100.00%)	121,700 (97.48%)	1,153 (36.55%)	105 (22.48%)	32 (17.98%)	
Blasted								<0.001
	56,929 (44.67%)	379 (11.98%)	146 (11.19%)	56,089 (46.10%)	289 (25.07%)	18 (17.14%)	8 (25.00%)	
Euploid								<0.001
	28,942 (50.82%)	192 (50.66%)	57 (39.04%)	28,644 (51.07%)	41 (14.19%)	4 (22.22%)	4 (50.00%)	

CONCLUSIONS: Non-2PN zygotes demonstrate measurable developmental potential, including formation of euploid blastocysts; however, outcomes vary by pronuclear number, with poorer cleavage in ≥5PN, lower blastulation in 1PN, and markedly reduced euploidy in 3PN-derived embryos.
IMPACT STATEMENT: Selected Non-2PN zygotes may yield euploid blastocysts, supporting their potential contribution to the embryo cohort, with outcomes dependent on pronuclear number.

P-174 2:00 PM Monday, October 26, 2026

NOVEL COMPARISON OF CONGENITAL HEART DEFECT TYPES IN PREGNANCIES WITH OR WITHOUT ASSISTED REPRODUCTIVE TECHNOLOGY. Hannah M Adams, MPH[1], Amirul Anuar, MS[2] and Raymond Lorenzoni III, MD[3], [1]University of Connecticut School of Medicine, Farmington, CT, [2]Connecticut Children's Research Institute, Hartford, CT, [3]Connecticut Children's Medical Center, Hartford, CT

OBJECTIVE: Most contemporary literature does not show significantly higher rates of congenital heart disease (CHD) among singleton pregnancies induced via assisted reproductive technology (ART). Using an embryology-informed cardiac lesion nosology and a large fetal cardiology dataset, we sought to improve the ability to discern differences between types of CHD among pregnancies that did or did not use ART.
MATERIALS AND METHODS: Retrospective chart review of 2,326 consecutive pregnancies referred to our fetal cardiology center from 2016 to 2024. Chi-square and multivariable regression analyses were performed to assess differences in the rate of CHD among pregnancies that did or did not use ART. Novel two- and three-category CHD nosology, derived from our current understanding of embryologic posterior and anterior heart field and arch development, were compared to traditional CHD nosology based on clinical outcomes (simple vs. complex heart disease). To further delineate possible embryologic differences between groups, a novel six-category hierarchical classification was defined by the lesions of heterotaxy, the atrioventricular canal, the primitive left heart, the primitive right heart and conotruncus, the arteries in isolation, and the septa in isolation
RESULTS: Of 2,326 pregnancies, 245 (11%) used ART and 684 (29%) were diagnosed with CHD, of which 65 used ART. Power was adequate to detect a 10% difference between dichotomous variables. The overall rate of CHD did not differ between use and non-use of ART (p= .296). There were no differences based on traditional outcome-based two-category (p= .220) or three-category (p= .316) classifications. There were no differences based on the embryologic-based heart-field two-category (p= .766) or three-category (p= .555) classifications. No difference in CHD types between use and non-use of ART was evident for the six-category classification (p= .078)
CONCLUSIONS: Our findings independently confirm current literature that ART is not significantly associated with an increased risk of CHD and no statistically significant differences in CHD types are observed when analyzed using embryology-informed CHD nosology.
IMPACT STATEMENT: Embryology-informed categorization is more consistent with underlying genetic and developmental causes of cardiac abnormalities, permitting more precise research into cardiac risk due to early reproductive exposures.

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CULTURE MEDIA INFLUENCES BLASTOCYST UTILIZATION, MORPHOLOGIC GRADING, AND CHROMOSOMAL COMPETENCE: A COMPARATIVE ANALYSIS OF CSCM-NX AND 1-STEP SYSTEMS. Cristina L Applegate, MS[1] and Lindsey Vermilyea, M.S.[2], [1]Shady Grove Fertility/US Fertility, Rockville, MD, [2]Leander, TX

OBJECTIVE:
To compare blastocyst utilization, embryo quality, and chromosomal outcomes between embryos cultured in low lactate versus high lactate culture systems.
MATERIALS AND METHODS:
A retrospective cohort study evaluated embryos cultured following insemination using either CSCM-NX or 1-Step systems. Primary outcome was final disposition (vitrified vs discarded). Secondary outcomes included embryo quality (A vs non-A) and PGT-A results, with euploid and mosaic embryos grouped and compared to all aneuploidy. Odds ratios (OR) with 95% confidence intervals (CI) were calculated using chi-square testing.
RESULTS:
A total of 65,509 embryos were analyzed. Low lactate media demonstrated a modest but statistically significant increase in vitrification compared to the high lactate system (OR 1.06, 95% CI 1.03–1.09, p<0.001). 1-Step media showed a slightly higher likelihood of A-grade embryos (OR 1.05, 95% CI 1.01–1.08, p=0.005).
In contrast, low lactate media was associated with significantly higher odds of euploid embryos compared to 1-Step (OR 1.33, 95% CI 1.27–1.39, p<0.001).
CONCLUSIONS:
While high lactate media demonstrates a modest advantage in morphologic grading, low lactate was associated with improved blastocyst utilization and significantly higher rates of chromosomally competent embryos. These findings suggest that culture conditions may influence developmental competence beyond morphology.
IMPACT STATEMENT:
These data highlight that culture media selection may differentially impact morphologic assessment and chromosomal outcomes, with important implications for optimizing embryo selection strategies and improving clinical success.

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OPTIMIZING THE GONADOTROPIN-RELEASING HORMONE AGONIST TRIGGER-TO-RETRIEVAL TIME INTERVAL. Zachary S. Anderson, M.D.[1], Thomas P Luke, MD, MPH[1] and Jennifer F Kawwass, MD[2], [1]Emory University School of Medicine, Department of Gynecology and Obstetrics, Atlanta, GA, [2]Emory University, Department of Gynecology & Obstetrics, Division of Reproductive Endocrinology and Infertility, Emory Reproductive Center, Atlanta, GA

OBJECTIVE: The use of a gonadotropin-releasing hormone agonist (GnRHa) for final oocyte maturation has increased significantly, primarily due to the reduced risk of ovarian hyperstimulation syndrome in "freeze-all" cycles. While GnRHa triggers exhibit distinct pharmacokinetics and a different mechanism of action, current clinical practice utilizes the same time interval established for human chorionic gonadotropin triggers. Emerging data suggest a longer interval from trigger to oocyte retrieval may improve outcomes with use of a GnRHa trigger. The objective of this study is to compare the optimal duration of time (35 versus 36 hours) from trigger shot for final oocyte maturation to subsequent oocyte retrieval during ovarian stimulation for oocyte cryopreservation or in vitro fertilization cycles (IVF).
MATERIALS AND METHODS: We conducted a retrospective cohort study of patients (18-47 years old) undergoing ovarian stimulation at a single academic center between October 2025 and April 2026. Recently, our center changed the trigger to retrieval time interval from 35 hours to 36 hours supporting the design of this study. Patients were divided into two groups based on trigger-to-retrieval interval: 35 hours (n=102) and 36 hours (n=108). The primary outcome was the oocyte maturity rate, defined as the percentage of mature oocytes obtained relative to the number of follicles >14.4mm on the day of trigger. Secondary outcomes included mean number of MII oocytes and blastocysts, as well as fertilization rates and blastocyst rates. Statistical analysis was performed using independent t-tests for continuous variables and Chi-square tests for categorical variables, with significance set at $p < 0.05$.
RESULTS: Baseline demographics, including age (33.9 vs 33.8, p=0.80), BMI (26.0 vs 26.3, p=0.69), and AMH (4.1 vs 3.7 ng/mL, p=0.34), were similar between groups. There was no significant difference in the primary outcome of oocyte maturity rate from follicles >14.4mm (89.8% vs 89.6%, p=0.93) or mean number of MII oocytes (17.3 (SD 8.5) vs. 17.8 (SD 9.1), p=69) for 35 vs 36 hours. Additionally, there was no difference in fertilization rates (76.1% vs 74.7%, p=0.65). However, the 36 hours group demonstrated a significantly higher blastocyst progression rate compared to the 35 hours group (43.6% vs 33.9%, p=0.02). Additionally, the mean number of blastocysts per cycle was significantly higher in the 36-hour group (5.4 (SD 3.5) vs 3.9 (SD 2.7), p=0.02).
CONCLUSIONS: While the time interval from trigger to oocyte retrieval does not appear to impact oocyte maturity or fertilization success, a 36-hour interval is associated with significantly higher rates of progression to a blastocyst than a 35-hour interval.

These findings suggest that the additional hour of maturation may optimize oocyte cytoplasmic maturity, leading to higher blastocyst yields in cycles utilizing a GnRHa trigger.
IMPACT STATEMENT: This study suggests that extending the trigger-to-retrieval interval to 36 hours may improve blastocyst rates in IVF cycles without compromising oocyte yield. Future research should explore longer intervals to determine the optimal time from trigger to retrieval in cycles utilizing a GnRHa trigger.

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TARGETED FOLLICULAR FLUID PROTEOMICS USING REVERSE PHASE PROTEIN ARRAYS (RPPA); A FEASIBILITY STUDY. Michael S Bloom, PhD[1], Veronica G Sanchez, MS[2], Victor Y Fujimoto, M.D.[3], Jenna R Krall, PhD[4] and Virginia Espina, PhD[2], [1]George Mason University, Fairfax, VA, [2]George Mason University, Manassas, VA, [3]University of California San Francisco, San Francisco, CA, [4]George Mason University, Farifax, VA

OBJECTIVE: To assess the feasibility of using reverse phase protein arrays (RPPA), which may be more informative than mass spectrometry (MS), to identify follicular fluid (FF) protein targets to improve IVF outcomes.
MATERIALS AND METHODS: We collected ovarian FF from the left dominant follicle in 6 people using IVF; n=3 with and n=3 without pregnancy. Using RPPA, we measured 22 a priori selected FF proteins normalized to total protein concentration. Protein targets were chosen based on roles in endocannabinoid signaling, oxidative stress and inflammation, epigenetic regulation, tryptophan metabolism, cell division and migration, steroid hormone function, DNA damage response, and vitamin D homeostasis. Each array was probed with a validated, commercially available monoclonal or polyclonal antibody. We quantified correlations between FF proteins, oocyte quality, and embryo quality using Spearman correlations and compared differences in mean FF protein concentrations between people with and without an IVF pregnancy.
RESULTS: RPPA reliably quantified 17 of 22 proteins, including tripeptidyl peptidase 1 (TPP1), NF-κB, p53-binding protein 1 (P53BP1), vitamin D binding protein (VitDBP), IL-1β, cleaved [Asp175] caspase 3 (Casp3), prolactin receptor (PRLR), phosphorylated [Tyr 194] peroxiredoxin 1 (Prdx-1), MnSOD, IL-6, Wnt-5ab, Vitamin D3 receptor (VDR3), PPARγ, phosphorylated [Tyr 1135/36] insulin-like growth factor receptor β (IGF1R-β), indoleamine-pyrrole 2,3-dioxygenase (IDO), Bloom syndrome protein (BLM), and DAGLipα. Most FF proteins were correlated ($P < 0.05$) with oocyte maturity (M2-oocyte) and fertilization (2PN-oocyte) outcomes (Table 1). Associations with embryo quality were mixed, suggesting stage-specific effects. There were lower mean FF IL-6, VitDBP, VDR3, MnSOD, and DAGLipα levels in people with vs. without an IVF pregnancy.
Table 1. Spearman correlation coefficients between FF proteins and IVF outcomes in 6 people

IVF Outcome	TPP1	NF-κB	P53BP1	VitDBP	IL-1β	ClCasp3	PRLR	Prdx-1	MnSOD	IL-6	Wnt-5ab	VDR3	PPARγ	IGF1R-β	IDO	BLM	DAGLipα
M2-oocyte (n=82)	-0.37*	0.33*	-0.35*	0.39*	0.33*	0.20**	0.29*	0.31*	0.45*	0.25*	0.35*	0.38*	0.26*	0.36*	0.28*	0.03	0.13
2PN-oocyte (n=79)	-0.40*	0.34*	-0.38*	0.42*	0.34*	0.22*	0.36*	0.31*	0.47*	0.27*	0.38*	0.43*	0.27*	0.32*	0.31*	0.04	0.14
High quality embryo (n=54)	0.23**	-0.11	0.23**	-0.34*	-0.11	-0.03	0.05	-0.22	-0.16	0.03	-0.04	0.18	-0.03	-0.35*	0.00	0.25**	0.04

NOTE: *P < 0.05; **P < 0.10.
CONCLUSIONS: These findings demonstrate the feasibility of quantifying low abundance FF proteins using RPPA, and detecting plausible associations between FF proteins and IVF outcomes.
IMPACT STATEMENT: RPPA may be a feasible complementary technology to MS to quantify low-abundance ovarian FF proteins and their post-translationally modified forms associated with IVF outcomes.
SUPPORT: This work was funded in part by the National Institute of Environmental Health Sciences (NIEHS), grant number 1R56ES023886-01 (MSB).

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DOES THE TIMING OF BLASTOCYST CRYOPRESERVATION POST-BIOPSY IMPACT IMPLANTATION COMPETENCY? A STUDY USING A NOVEL* IN VITRO *PLATFORM. Lesley E Blankenship-Williams, Ph.D., T.S. (ABB)[1], Abigail K Beckett, BA[2], Graziella Didio, BS[2], Gina Cirimele, BSc, T.S. (ABB), CLS (RB)[2], Deborah Venier, M.S. TS (ABB)[2], Barbara A Anderson, Ph.D.[3] and Scott Rapoport, Ph.D.[3], [1]San Marcos, CA, [2]World Embryology Skills and Training, Carlsbad, CA, [3]Oterus BioSystems, CA

OBJECTIVE: Apply a novel *in vitro* platform to evaluate how the timing of cryopreservation after a trophectoderm biopsy influences blastocyst implantation competency.
MATERIALS AND METHODS: Day 5 expanded mouse blastocysts were biopsied and randomly assorted into two groups: *cryopreserve immediately* or *cryopreserve 3-4 hours* post-biopsy. Biopsied blastocysts were vitrified (and collapsed via laser if re-expanded at time of vitrification), subsequently warmed, and then cultured in a time-lapse (TL) incubator for 5 days. Culturing was performed over a proprietary 3D substrate that reliably induces mouse blastocyst attachment and implantation-like metamorphosis (spreading and embedding into the substrate). TL images were evaluated for: time when embryo (1) attached to substrate, (2) metamorphosed/embedded into the substrate, (3) % of embryo degenerated post-warming, and (4) overall quality of "implantation" (% of the embryo embedding against shed cell fragments or non-participating cells). Student t-test or Fisher's exact test were used to analyze outcomes.
RESULTS: All blastocysts attached to the substrate between 6.8 – 70.7 hours (hr) in culture, and 29 of 32 embryos metamorphosed/embedded between 14.4 – 106 hr in culture. No significant differences were observed between *immediate* and *3-4 hr post-biopsy* groups ($\bar{x}$ = 37.48 and 31.52 hr respectively for time of attachment, $\bar{x}$ = 61.53 and 58.68 hr respectively for time of metamorphosis/embedding). However, embryos placed on substrate without a zona pellucida (ZP) embedded 13 hr faster on average than those embryos still ZP-bound ($\bar{x}$ = 52.7 vs 65.8 hr, p=0.02). Blastocysts with >20% cellular degradation were more likely to exhibit low-quality embedding or failed to embed at all (p=0.08). No other significant correlations were observed.
CONCLUSIONS: Remarkably, all biopsied embryos attached to the substrate and 90% followed with implantation-like metamorphosis. Whether to vitrify embryos immediately or several hours after biopsy remains a debated topic. These results suggest both approaches are viable; there was no correlation between cryopreservation timing and post-warming viability or implantation quality. However, delaying freezing post-biopsy may decrease the time to implantation slightly. Embryos free of their ZP embedded significantly faster, a surprising finding given that smaller, unhatched embryos were often pulled out of their ZP during the biopsy process. Thus, "hatched" embryos were not necessarily more developmentally advanced or cellular, a finding that suggests that embryo entwinement with its ZP is a physical impediment to implantation. Applied to human embryo transfers, blastocysts that are struggling to re-expand or are at the end of their *in vitro* lifespan (e.g., Day 7) may benefit from being extricated from their ZP prior to transfer to shorten the time to attachment and implantation.
IMPACT STATEMENT: This experiment demonstrates proof of concept for a new *in vitro* platform to compare how various IVF protocols or culturing environments affect embryonic implantation competency. Utilization of this novel platform could facilitate IVF lab protocol and culturing optimization to improve pregnancy outcomes.
SUPPORT: This experiment was financially supported by a collaboration between World Embryology Skills and Training (W.E.S.T.) and Oterus BioSystems, Inc.

P-179 2:00 PM Monday, October 26, 2026

CUMULATIVE IVF CYCLES AND POSTPARTUM HEMORRHAGE RISK: A REGISTRY-LINKED COHORT STUDY. Roy Bitan, MD, MHA[1], Omri Dominsky, Dr.[2], Roza berkovitz Berkovitz Shperling, MD MPH[3], Dotan Madar, Dr.[4], Tali Ben-Mayor Bashi, M.D[5] and Michal Rosenberg Friedman, Dr.[2], [1]Shamir Medical Center, Beer Yakov, Israel, [2]Tel Aviv Sourasky Medical Center, Tel Aviv, Israel, [3]MD, Tel Aviv-Jaffa, Tel Aviv, Israel, [4]Racine IVF Unit , Sourasky Medical Center , Tel-Av, Tel-Aviv, Israel, [5]Tel Aviv Medical Center, Tel Aviv, Tel Aviv, Israel

OBJECTIVE: While IVF conception is associated with increased postpartum hemorrhage (PPH) risk compared with spontaneous conception, it remains unclear whether this risk varies according to the cumulative number of IVF cycles. We aimed to evaluate whether cumulative IVF cycle exposure is associated with PPH and related peripartum outcomes.
MATERIALS AND METHODS: We linked a tertiary IVF unit registry with an institutional delivery database using national identification numbers. The unit of analysis was the delivery. The primary exposure was cumulative IVF cycles per woman (1, 2–3, ≥4), and secondarily cumulative oocyte yield (per 10 oocytes retrieved). The primary outcome was clinically diagnosed PPH. Secondary outcomes included blood transfusion, elective cesarean delivery, and preterm birth <37 weeks. Multivariable logistic regression adjusted for maternal age, plurality, and nulliparity. Pre-specified sensitivity analyses were restricted to singleton term deliveries.
RESULTS: The cohort included 4,074 deliveries (mean maternal age 37.0 years; 4.0% twins). Cumulative IVF cycles were 1 in 48.4%, 2–3 in 17.3%, and ≥4 in 34.3%. PPH incidence increased with cycle number (3.1%, 2.6%, and 6.0%, respectively; p-trend <0.001). After adjustment, ≥4 cycles were associated with higher odds of PPH (aOR 2.05, 95% CI 1.46–2.88), blood transfusion (aOR 2.21, 95% CI 1.02–4.79), elective cesarean delivery (aOR 1.30, 95% CI 1.09–1.55), and preterm birth <37 weeks (aOR 1.39, 95% CI 1.11–1.75). Each additional 10 oocytes retrieved cumulatively was associated with increased PPH risk (aOR 1.10, 95% CI 1.06–1.14), with a graded rise across oocyte categories. Findings remained consistent in singleton term deliveries (aOR 2.22, 95% CI 1.55–3.17). No association was observed with preeclampsia or gestational diabetes.
CONCLUSIONS: Among IVF-conceived pregnancies, cumulative IVF exposure is associated with a dose-dependent increase in PPH risk, independent of plurality and gestational age.
IMPACT STATEMENT: Cumulative IVF cycle count and oocyte yield are readily available clinical markers that may help identify pregnancies at increased risk for PPH and guide anticipatory management at delivery.

P-180 2:15 PM Monday, October 26, 2026

PERSISTENT EARLY-WARNING ALERTS PREDICT SUSTAINED DECLINES IN IVF LABORATORY PERFORMANCE USING A REAL-TIME MORPHOKINETIC SURVEILLANCE SYSTEM. Lorena Bori Arnal, PhD[1], Suraj Rajendran, B.S.[2], Nikica Zaninovic, PH.D.[3], Antonio Pellicer, MD, PhD[4], Iman Hajirasouliha, Ph.D.[2] and Marcos Meseguer, PhD[5], [1]IVI Foundation, Instituto de Investigación Sanitaria La Fe (IIS La Fe), Valencia, Spain, Valencia, Spain, [2]Weill Cornell Medicine, New York, NY, [3]Weill Medical College of Cornell University, New

York, NY, [4]IVIRMA, Rome, Italy, [5]IVIRMA Global Research Alliance, IVIRMA Valencia, Valencia, Spain

OBJECTIVE: To evaluate whether persistent early-warning alerts generated by a real-time morphokinetic surveillance system identify sustained declines in IVF laboratory key performance indicators (KPIs) during embryo culture.
MATERIALS AND METHODS: This retrospective cohort study included 70,456 embryos cultured in time-lapse incubators between 2015 and 2022 at a single IVF center. A stage-aware ensemble model based on gradient-boosted decision trees (XGBoost) integrated morphokinetic parameters (t2–t5, tB) and automated scores (iDAScore at 44 hours, 66 hours and final) to estimate usable blastocyst and implantation rates at the active embryo culture population level. Submodel outputs were aggregated across all embryos simultaneously in culture to generate real-time culture-population KPI forecasts. Predictions were produced at the day level and across moving-average windows (1–7 days). Low-performance alerts were defined as predicted KPI values below predefined thresholds (usable blastocyst <51%, implantation <50%). Associations between predicted alert periods and observed KPI outcomes were evaluated longitudinally using Pearson correlation analysis and Welch's t-test.
RESULTS: Predictions were generated from an average of 67 ± 36 embryos per day and 199 ± 87 embryos per week. Day-level forecasts showed mean absolute errors of 0.148 ± 0.099 for usable blastocyst rate and 0.147± 0.182 for implantation, improving to 0.103 ± 0.056 and 0.086 ± 0.099, respectively, with 7-day aggregation. Temporal smoothing progressively strengthened alignment between predicted and observed KPI trajectories across increasing windows (usable blastocyst: r=0.57, 0.62, 0.65, and 0.66; implantation: r=0.63, 0.71, 0.75, and 0.77 for 1-, 3-, 5-, and 7-day windows, respectively), indicating that longer alert persistence improves discrimination between stochastic daily variability and sustained performance drift. Consistently, persistent predicted alert periods were strongly associated with declines in observed laboratory performance, with usable blastocyst rate reduced by 28.9% and implantation rate reduced by 41.5% during alert intervals compared with baseline performance (both p<0.001).
CONCLUSIONS: Persistent early-warning alerts generated from real-time morphokinetic forecasts identify clinically meaningful declines in IVF laboratory performance and distinguish sustained performance drift from stochastic daily variability, supporting the implementation of real-time quality-control monitoring at the culture-population level across embryos developing at different stages.
IMPACT STATEMENT: By enabling simultaneous monitoring of all embryos in active culture regardless of developmental stage, this real-time surveillance framework introduces a proactive and scalable strategy for IVF laboratory quality control, facilitating earlier detection of performance deviations and supporting timely corrective interventions during ongoing embryo culture.
SUPPORT: Juan de la Cierva fellowship from the Spanish Ministry of Science, Innovation and Universities (JDC2024-055813-I)

P-181 2:30 PM Monday, October 26, 2026

POST-WARMING SURVIVAL AND TWO PRONUCLEI (2PN) FERTILIZATION OVERESTIMATE FUNCTIONAL COMPETENCE OF VITRIFIED OOCYTES: A PAIRED IVF/ICSI ANALYSIS. Leonel Andres Andrés Barrera Heredia, M.D., Genaro García Villafana, M.D., José Iram Obeso-Montoya, M.D., Julio César Rosales, M.D., Marianna Pérez-Vargas, M.D., Roberto Santos-Haliscak, M.D. and Mario Alberto Garza-Garza, M.D., M.Sc., IECH - Fertility Center, Monterrey, NL, Mexico

OBJECTIVE: To compare 2PN fertilization and viable blastocyst formation between non-vitrified and warmed vitrified oocytes inseminated within the same cycle, and to provide oocyte-yield estimates relevant to oocyte-banking counseling.
MATERIALS AND METHODS: Retrospective paired cohort analysis of 175 mixed-source IVF/ICSI cycles (2023–2025) in which non-vitrified and warmed vitrified oocytes were inseminated within the same insemination cycle, sharing sperm sample and laboratory conditions. The vitrified oocytes had been retrieved and banked from prior stimulation cycles within the same calendar year as the mixed-source cycle. Insemination method was ICSI-only in 136/175 cycles (77.7%) and mixed IVF/ICSI in 39/175 (22.3%); no cycle was IVF-only. Median age was 38.0 [35.0–40.0] years. Outcomes assessed: post-warming survival, 2PN fertilization, and viable blastocyst formation (day-5/day-6, suitable for transfer, biopsy, or cryopreservation per Gardner-based criteria). Per-cycle outcomes were compared with Wilcoxon and exact McNemar tests; per-oocyte outcomes used clustered Poisson regression with denominator offset. A pre-specified ICSI-only sensitivity analysis was performed.
RESULTS: 943 non-vitrified oocytes were inseminated. 1,218 vitrified oocytes were warmed; 1,093 survived (aggregate survival 89.7%; median per cycle 100% [82.2–100]). 2PN fertilization rates were comparable: 646/943 (68.5%) for non-vitrified vs 727/1,093 (66.5%) for vitrified surviving oocytes (RR 0.97, 95% CI 0.90–1.04; p=0.36). Viable blastocyst formation differed substantially: 279/943 (29.6%) for non-vitrified vs 159/1,093 (14.5%) for vitrified surviving oocytes (RR 0.48, 95% CI 0.40–0.58; p<0.001). Among fertilized oocytes, the difference persisted (43.2% vs 21.9%; RR 0.51, 95% CI 0.42–0.61; p<0.001), indicating the difference emerges after 2PN. The ICSI-only sensitivity analysis yielded an essentially identical effect (RR 0.50, 95% CI 0.40–0.63). At the cycle level, ≥1 viable blastocyst occurred in 128/175 non-vitrified cohorts (73.1%) vs 89/175 warmed cohorts (50.9%; p<0.001). Viable blastocyst yield per banked vitrified oocyte (including post-warming attrition) was 159/1,218 (13.1%), corresponding in this cohort to approximately 2.3 banked vitrified oocytes per non-vitrified oocyte to match expected blastocyst yield.
CONCLUSIONS: Within paired oocyte-banking IVF/ICSI cycles, vitrified oocytes that survived warming achieved 2PN fertilization at rates comparable to non-vitrified oocytes inseminated in the same cycle, but reached viable blastocyst at approximately half the rate. Post-warming survival and 2PN fertilization overestimate the functional competence of vitrified oocytes; mixed-source embryology outcomes should be reported stratified by oocyte origin to avoid this overestimation.
IMPACT STATEMENT: Survival and 2PN fertilization overestimate the functional competence of vitrified oocytes. Oocyte-banking counseling and target-oocyte planning should incorporate a banked-oocyte yield (~13% in this cohort) rather than relying on survival alone.
SUPPORT: The authors received no financial support for this work.

ART (3 OF 27)

P-182 1:30 PM Monday, October 26, 2026

CLINICAL OUTCOMES OF REFREEZING VERSUS IMMEDIATE TRANSFER AFTER BIOPSY IN PREVIOUSLY CRYOPRESERVED EMBRYOS UNDERGOING PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY (PGT-A). My Thi Pham Thi, Msc., MD.,[1], Huyen Thi Khanh Tran, MD.[2], Hien Thi Thu Le Thi Thu, MD[3], Hoa Thi Nguyen Thi, MD[2] and Nguyen Thi Huyen Trang, MSc.,[4], [1]Andrology and Fertility Hospital of Hanoi, Vietnam, Hanoi, [2]Andrology and Fertility Hospital of Hanoi, Vietnam, [3]Andrology and Fertility Hospital of Hanoi, Viet Nam, [4]Andrology and Fertility Hospital of Hanoi, Hanoi, Vietnam, Vietnam

OBJECTIVE: To compare clinical outcomes of refreezing after biopsy versus immediate transfer following rapid preimplantation genetic testing for aneuploidy (PGT-A) in previously cryopreserved embryos.
MATERIALS AND METHODS: This retrospective study included 258 frozen embryo transfer cycles from January 2024 to October 2025. Patients with previously cryopreserved blastocysts undergoing PGT-A were analyzed. Using matching, 84 patients in the refreezing group (RF) were matched 1:2 with 174 patients in the immediate transfer group (RP). Embryo quality was assessed using a 3-point scale (Grade 1–3). Outcomes included positive hCG, clinical pregnancy, ongoing pregnancy, and live birth rates. Statistical comparisons were performed with significance at p<0.05.
RESULTS: Baseline characteristics and mosaic embryo transfer rates were comparable between groups (p>0.05), women in the RF group were older (p<0.05). The RF group demonstrated significantly higher positive hCG (65.5% vs 47.1%, p=0.01), clinical pregnancy (61.9% vs 44.8%, p=0.01), and ongoing pregnancy rates (54.2% vs 39.3%, p=0.03). Live birth rates were higher but not statistically significant (35.0% vs 29.9%, p=0.47). Embryo quality deterioration was significantly lower in the RF group (Δ0.28±0.59 vs 0.51±0.63, p=0.005). Subgroup analysis showed improved outcomes in RF across both day 5 and day 6 embryos. Among moderate-quality embryos, all reproductive outcomes were significantly higher in RF. In high-quality embryos, only clinical pregnancy rate was significantly higher in RF.
CONCLUSIONS: Refreezing after biopsy is associated with improved pregnancy outcomes and reduced embryo quality deterioration compared with immediate transfer following rapid PGT-A.
IMPACT STATEMENT: These findings support refreezing as a potentially more effective strategy to preserve embryo competence and optimize reproductive outcomes in patients with previously cryopreserved embryos undergoing PGT-A.
SUPPORT: No external funding. No competing interests declared

P-183 1:45 PM Monday, October 26, 2026

EXTERNAL VALIDATION OF THE IHOPE PROGNOSTIC MODEL FOR PREDICTING LIVE BIRTH BASED ON SERUM HCG LEVELS AFTER FROZEN EMBRYO TRANSFER: ANALYSIS OF 14,084 PGT-A-TESTED AND UNTESTED IVF CYCLES ACROSS EIGHT IVF CENTERS IN THE UNITED STATES. Joelle N Mouhanna, M.D.[1], Prof. Erkan Kalafat, M.D. M.Sc[2], Christine V Whitehead, MS, BSN, RN[1], Human M. Fatemi, Prof., M.D., PhD[3], Juan Antonio Garcia-Velasco, M.D., PH.D.[4] and Emre Seli, M.D.[1], [1]IVIRMA Global Research Alliance, RMA New Jersey, Basking Ridge, NJ, [2]Koc University School of Medicine, Istanbul, Turkey, [3]IVIRMA Global Research Alliance, Abu Dhabi, United Arab Emirates, [4]IVIRMA Global Research Alliance, Madrid, Spain

OBJECTIVE: The iHOPE (https://apps.apple.com/app/ihope-ivf-companion/id6745260995, https://epsilonkappa-analytics.shinyapps.io/iHOPE/) is a neural network–based prognostic tool designed to predict livebirth (LB) based on the two initial serum hCG levels in patients undergoing IVF. In this study, we aimed to externally validate the iHOPE prognostic model in a large multi-center US cohort, and to test whether combining iHOPE's LB probability with a companion ectopic-probability model enables high-PPV (positive predictive value) identification of non-viable pregnancies including ectopics.
MATERIALS AND METHODS: A total of 14,084 first frozen embryo transfers (FETs; 12,404 PGT-A-tested; 1,680 untested) with a positive β-hCG across eight IVF centers in the United States were included. The iHOPE repeated-measurements model was applied without refitting. Discrimination was assessed by AUC calibration graphically. Predicted probabilities were stratified into quintiles (≤20, >20–40, >40–60, >60–80, >80%) and compared to observed LB rates. Within the lowest quintile, transfers were sub-stratified by direction of β-hCG rise. Multinomial multivariable logistic regression was fitted in the <20% LB + positive-rise subgroup to identify features distinguishing biochemical pregnancy loss (BPL), clinical pregnancy loss (CPL), ectopic pregnancy, and LB.
RESULTS: iHOPE generalized across testing status (AUC 0.828 tested; 0.815 untested) with near-perfect calibration in both groups. Observed LB rates rose monotonically through quintiles (≤20, >20–40, >40–60, >60–80, >80%): 5.2% (65/1257), 32.5% (109/335), 55.2% (255/462), 72.8% (832/1143), 89.5% (8239/9207) in tested; and 2.6% (6/232), 30.6% (15/49), 47.8% (44/92), 67.8% (116/171), 85.1% (967/1136) in untested. Within the lowest quintile (<20%), no transfers with a negative β-hCG rise achieved LB.

Ectopic pregnancies in the <20% LB + positive-rise subgroup had lower initial β-hCG Z-scores despite originating from higher-quality embryos (more often day-5 blastulation [50% vs. 28.6%] and Grade-A trophectoderm [50.0% vs. 14.3%]). Multinomial regression confirmed that lower initial β-hCG (OR 0.32, 95% CI 0.19–0.54, P<0.001), grade B-C trophectoderm (vs. A) (OR: 0.47, 95% CI: 0.22-1.03, P=0.058) and day-6/7 (vs day-5) embryos (OR 0.30, 0.15–0.60, P=0.001) independently predicted ectopic pregnancies. Combining low LB probability with even modestly elevated ectopic probability (>1%) yielded near-100% PPV for non-viability. PPV in LB ≤5% + ectopic >1% was 100% (91.7%-100%) for non-viable pregnancies (54/54). PPV in LB ≤20% + ectopic >1% was 97.9% (95% CI: 94.9-99.2%) for non-viable pregnancies (236/241).
CONCLUSIONS: iHOPE externally validated with strong discrimination and near-perfect calibration in both PGT-A-tested and untested FETs. Paired with an ectopic-probability companion model, iHOPE approaches near-deterministic identification of non-viable pregnancies.
IMPACT STATEMENT: Combining iHOPE LB probability with an ectopic-probability model could identify non-viable pregnancies, including ectopics, with very high PPV, enabling earlier intervention, fewer expectant-management delays.

P-184 2:00 PM Monday, October 26, 2026

IS PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY INDICATED FOR ALL PATIENTS? Lily Ng, B.S.[1], Stephanie Cheung, M.S.[2], Philip Xie, B.SC.[2], Olena M. Kocur, B.A.[3], Angela Bryanne De Jesus, B.A.[2], Kangpu Xu, H.C.L.D, M.SC., PH.D.[4], Zev Rosenwaks, M.D.[2] and Gianpiero D. Palermo, M.D., PH.D.[2], [1]Weill Cornell Medicine, New York, NY, [2]The Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY, [3]Weill Cornell Medicine, New York City, NY, [4]Weill Cornell Medical College of Cornell University, New York, NY

OBJECTIVE:
Preimplantation genetic testing (PGT-A) has proven to be an essential tool in selecting genetically competent embryos for transfer, increasing chances of achieving a successful pregnancy, while managing pregnancy loss. This would imply that PGT-A would be advisable for all patients, irrespective of maternal age. We aim at identifying the age category that better benefits from PGT-A.
MATERIALS AND METHODS:
Over the past 13 years, a total of 21,161 couples undergoing ICSI opted to cryopreserve all embryos upfront to be used later in a FET cycle at the Weill Cornell Center for Reproductive Medicine. To assess the role of PGT-A, couples were divided into two cohorts depending on whether they opted to have their embryos untested, serving as control, or screened by PGT-A. The clinical outcome was analyzed on a stepwise increase in maternal age (≤33, 34-35, 36-37, 38-39, 40...45, ≥46) between the untested control and PGT-A couples at their first embryo transfer attempt.
RESULTS:
The 9,951 couples in the untested control cohort (maternal age 36.4±5yrs; paternal age 39.6±8yrs) achieved a fertilization rate of 79.0%(54819/69413) with 45.4%(24893/54819) reaching the blastocyst stage prior to cryopreservation. Similarly, the 11,212 couples in the PGT-A cohort (maternal age 36.9±4yrs; paternal age 40.1±9yrs) had a comparable fertilization rate (79.2%; 74521/94088) and cryopreserved blastocysts (48.0%; 35782/74521).
When comparing the clinical outcomes of their first FET cycles, the CPR remained comparable in the two cohorts until age 37, drastically decreasing afterwards for the untested control. Indeed, couples in the untested control cohort of maternal age ≤37 achieved a CPR of 58.2%(3951/6784) with 53.3%(3614/6784) LB, while those in the PGT-A group had a similar CPR of 59.1%(4290/7256) with 54.1%(3924/7256) LB. From age 38 onward, however, in the untested control the CPR decreased to 45.6%(1444/3167) with 37.8%(1196/3167) LB, while the PGT-A group achieved a higher CPR of 53.6%(2130/3971,*P*<0.0001) and more LB (46.0%; 1827/3971, *P*<0.0001).
CONCLUSIONS:
This study indicated that PGT-A has specific indications for women over 37-YO where oocyte aneuploidy is more prevalent. The testing of the embryo by PGT-A normalize clinical outcome in these individuals of more advanced reproductive age, while curtailing pregnancy loss while managing couple distress.
IMPACT STATEMENT:
For all technologies introduced in ART, there is often a specific indication for their application. In consideration of the risks linked to biopsy of the embryo and concurrent testing inaccuracies, the judicious application of PGT-A toward the more advanced maternal age population may contribute to limit embryo wastage.

P-185 2:15 PM Monday, October 26, 2026

BASELINE 17-HYDROXYPROGESTERONE PREDICTS RESPONSE TO URINARY FOLLICLE STIMULATING HORMONE THERAPY IN IDIOPATHIC MALE INFERTILITY(APHRODITE GROUP 2): A RECEIVER OPERATING CHARACTERISTIC (ROC) CURVE ANALYSIS. Ruthvika Kundoor, MS OBGYN, MCH REPRODUCTIVE MEDICINE AND SURGERY[1], Radha Vembu, DGO, DNB (Obstetrics and Gynaecology), MNAMS, FICS, FIGOG, PhD[2] and Monna Pandurangi DR, MD (Ob & Gyn)[3], [1]Sri Ramachandra Medical College, [2]Professor, Department of Reproductive Medicine and Surgery, Sri Ramachandra Institute of Higher Education and Research, Chennai, India, [3]Associate Professor, Chennai, India

OBJECTIVE: To evaluate whether serum 17-hydroxyprogesterone predicts response to gonadotropin therapy in men with idiopathic male infertility
Secondary objective is to determine the optimal cut- off value for predicting response using Receiver operating curve(ROC) analysis
MATERIALS AND METHODS: This prospective observational cohort study at a tertiary fertility center in South India which included 84 men with abnormal semen parameters defined according to WHO 2021 semen analysis and normal hormonal profile. Baseline evaluation included semen analysis, hormonal profiling (Follicular stimulating hormone, luteinizing hormone, Testosterone, Estradiol and 17-hydroxyprogesterone and scrotal ultrasound for assessment of testicular volume. Following hormonal evaluation, patients were classified into APHRODITE groups. Patients in APHRODITE group 2 were included and received urinary FSH (uFSH) 150 IU thrice weekly for 3 months. Patients with presence of any varicocele, azoospermic men, urogenital infection were excluded. Patients were reviewed after 3 months for repeat semen analysis. Statistical analysis was done by 2016 SPSS software. Descripitive statistics were used for categorical variables. Mean and standard deviation for continuous variables. Pretreatment and post treatment semen parameters were comapred by paired sample t-test. ROC curve was taken for predicting treatment response.
RESULTS: A total of 84 patients were included. The mean age was 31.57± 4.24 years, mean BMI 27.27±4.57 kg/m2. The mean testicular volume was 10.44±2.68 ml. Following gonadotropin therapy, there was a statistically siginificant improvement in sperm concentration (4.12±1.96 vs 4.99±2.21, p=0.002), total sperm count (6.96±4.18 vs 9.39± 5.74 p=0.001) total motility (46.53±12.84 vs 52.96±13.60, p=0.004) and progressive motility (26.75±8.56 vs 31.25±8.73, p=0.003). Changes in semen volume and vitality were not statistically significant. There was a negative correlation between pretreatment serum 17-hydroxyprogesterone levels and post treatment improvement in sperm concentration, total sperm count, progressive motility. ROC curve analysis using doubling of total sperm count as the outcome demonstrated good predictive performance (AUC=0.794, p=0.005). A cutoff value of 1.08ng/ml yielded a sensitivity of 69.4% and specificity of 66.7 % for predicting treatment response.
CONCLUSIONS: The findings of this study suggest that pretreatment serum 17-hydroxyprogesterone, a marker of intra testicular steroidogenesis, can predict the response to uFSH therapy in idiopathic infertility. ROC curve demonstrated that a cut offf value of1.08ng/ml predicts treatment response with good discriminatory performance
IMPACT STATEMENT: Serum 17-hydroxyprogesterone is a promising non invasive biomarker for predicting the gonadotropin responsiveness. In resource-limited settings the use of cost effective uFSH enhances the applicability of individualised treatment strategies in male infertility
SUPPORT: not applicable
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P-186 2:30 PM Monday, October 26, 2026

ASSOCIATION BETWEEN TOTAL OXIDATIVE STRESS AND REPRODUCTIVE OUTCOMES IN PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY (PGT-A) EUPLOID EMBRYO TRANSFER CYCLES. Lamiya Mohiyiddeen, MBBS MD MRCOG[1], Nidhi Joshi, MBBS, MS OBGY, MRCOG[2], Amal Al-Shunnar, M.D.[1,3], Ali Bayoumi, MBBS, MD, PhD[4] and Michael H Fakih, MD[5], [1]Consultant in Reproductive Medicine, United Arab Emirates, [2]FAKIH IVF, Dubai, Dubai, United Arab Emirates, [3]Fakih Fertility Center, Dubai, MI, United Arab Emirates, [4]Unilab, Dubai, United Arab Emirates, [5]IVF Michigan Fertility Clinics, Bloomfield Hills, MI

OBJECTIVE:
To evaluate the association between pre-transfer total oxidative stress (TOS) levels and reproductive, maternal, and neonatal outcomes in women undergoing preimplantation genetic testing for aneuploidy (PGT-A) euploid frozen embryo transfer (FET) cycles.
MATERIALS AND METHODS:
This retrospective cohort study included 238 FET cycles performed between June 2021 and December 2023 at a tertiary IVF center. Serum TOS levels were measured prior to embryo transfer using a quantitative photometric immunodiagnostic assay and categorized into three groups: low (<500), medium (500–1000), and high (≥1000). Primary outcomes included implantation rate (IR), clinical pregnancy rate (CPR), miscarriage rate (MR), and live birth rate (LBR). Secondary outcomes included pregnancy complications (bleeding, ectopic pregnancy, fetal growth restriction, preterm birth), maternal conditions (gestational diabetes, hypertension, thyroid disorders), and neonatal outcomes (NICU admission, low birth weight).
Statistical analysis included ANOVA and chi-square tests. Multivariable regression adjusted for age and anti mullerian hormone (AMH) was performed. A p-value <0.05 was considered statistically significant.
RESULTS:
The mean maternal age was 34 years, and the mean AMH level was 3.13 ng/mL. Overall reproductive outcomes were favorable, with an implantation rate of 94.9%, clinical pregnancy rate of 90.7%, and live birth rate of 83.2%, consistent with the use of PGT-A tested embryos.
There were no statistically significant differences across TOS groups for implantation rate (p=0.887), clinical pregnancy rate (p=0.269), or live birth rate (p=0.311). Adjusted analysis confirmed no association between TOS and implantation (p=0.898), clinical pregnancy rate (p=0.694), or live birth rate (p=0.583).
Pregnancy complications included miscarriage (7.1%), bleeding (17.8%), ectopic pregnancy (1.26%), and preterm birth (44.9%). Maternal conditions included gestational diabetes (16%), hypertension (4%), and thyroid disorders (8.7%). Neonatal outcomes showed NICU admission in 23.8% and low birth weight in 29.0%. None of these outcomes were significantly associated with TOS levels (all p>0.05).
CONCLUSIONS:

Pre-transfer TOS levels were not significantly associated with implantation, clinical pregnancy, live birth, or maternal and neonatal outcomes in PGT-A FET cycles. These findings suggest that systemic oxidative stress, as measured by TOS, may not be a reliable independent predictor of ART outcomes.
IMPACT STATEMENT:
Despite strong biological plausibility, this study demonstrates limited clinical utility of TOS as a predictive biomarker in ART. Routine pre-transfer TOS assessment may not enhance outcome prediction, highlighting the need for more specific oxidative stress markers and targeted mechanistic research in reproductive medicine.
SUPPORT: No external funding was received for this study.

ASRM 2026 TOP POSTER SESSION (1 OF 2)

P-1 3:45 PM Monday, October 26, 2026

PREDICTING THE UNPREDICTABLE: UTILIZING ARTIFICIAL INTELLIGENCE TO ESTIMATE OOCYTE YIELD IN ELECTIVE CRYOPRESERVATION. Jennifer J. Law, MD[1], Morgan Wiley, MD[2], Kristina Hrvojevic, MD[3], Hannah Catherine Milad, MD[4], Monica Contractor, MD[5], Megan R Sax, M.D.[6], Virginia-Arlene Acosta Go, MD[7] and Meike L Uhler, MD[6], [1]Loyola University Chicago, Maywood, IL, [2]Advocate Illinois Masonic Medical Center, Chicago, IL, [3]Endeavor Health, Naperville, IL, [4]Forest Park, IL, [5]Loyola University Medical Center, Maywood, IL, [6]Fertility Centers of Illinois (US Fertility), Hinsdale, IL, [7]Fertility Centers of Illinois (US Fertility), Chicago, IL

OBJECTIVE: To evaluate the accuracy of artificial intelligence (AI)-generated oocyte yield predictions based on ovarian reserve markers compared to actual eggs retrieved in women undergoing elective oocyte cryopreservation.
MATERIALS AND METHODS: Retrospective cohort study analyzing 248 patients who underwent elective oocyte cryopreservation at a single, large fertility center between September 2024 and September 2025. Ovarian reserve markers including basal follicle-stimulating hormone (FSH), estradiol (E2), anti-Mullerian hormone (AMH), and antral follicle count (AFC) were entered into Gemini AI using a standardized prompt to generate expected oocyte yield prior to retrieval. Predicted counts were compared to the actual total number of oocytes retrieved. Statistical analysis included Pearson correlation coefficients to evaluate the linear relationship between predicted and retrieved oocytes, mean absolute error (MAE) to quantify predictive accuracy across the total cohort and age-specific subgroups, and Bland-Altman analysis to determine the degree of clinical agreement and systematic bias.
RESULTS: The AI-predicted oocyte yield showed a moderate positive correlation with actual retrieval outcomes ($r = 0.626$, $p < 0.001$). Mean absolute error was 5.16 oocytes. Accuracy was highest in the >40 years age subgroup (MAE = 3.91 oocytes). Bland-Altman analysis revealed a minimal mean bias of -0.06 oocytes, with 95% limits of agreement ranging from -13.84 to 13.71 oocytes, indicating strong overall agreement but with wide variance at the individual patient level.
CONCLUSIONS: Artificial intelligence demonstrated a moderate correlation with actual oocyte yield and a near-zero mean bias at the population level, suggesting reasonable baseline predictive capability when provided with standard ovarian reserve markers. However, the wide 95% limits of agreement and an absolute error of 5.16 oocytes indicate clinically significant individual-level variability. These findings suggest that while AI models provide a reasonable baseline estimation and may serve as a useful supplementary educational tool for patients, it cannot entirely account for biological variance and must not replace physician-led counseling.
IMPACT STATEMENT: As patients increasingly turn to consumer-facing AI for fertility guidance, this study offers timely evidence on AI's ability to predict oocyte yield from standard ovarian reserve markers. This study may help guide patient counseling and set expectations more precisely from the initial consult, particularly for those requiring multiple retrieval cycles. Findings such as these offer valuable context to the responsible integration of AI in reproductive medicine.
SUPPORT: The authors have no financial disclosures.

P-2 4:00 PM Monday, October 26, 2026

BIOPSY SEQUENCE AS A POTENTIAL CONFOUNDER OF HIGH-LEVEL MOSAICISM AND SEGMENTAL ERRORS IN PGT-A BLASTOCYSTS: A SIBLING-MATCHED PILOT STUDY. Fadi Choucair, Ph.D.[1], Abdulla T Almohammadi, PhD[1], Rawan T Al Hamarneh, MSc[1], Arwa Abdulkareem, MD[1], Spyridon Chouliaras, M.D.[1], Chantal Farra, MD[2], Johnny Anthony Awwad, BS[3] and Johnny T Awwad, M.D., HCLD[4], [1]Sidra Medicine, Doha, Qatar, [2]Aman Hospital, Doha, Qatar, [3]University of Massachusetts - Amherst, Amherst, MA, [4]Sidra Medical & Research Center, OPC-3. Office 302. Doha, Qatar

OBJECTIVE: To assess the effects of biopsy sequence on the genetic reporting outcomes of blastocysts undergoing preimplantation genetic testing for aneuploidy (PGT-A).
MATERIALS AND METHODS: This retrospective observational sibling-matched pilot study was conducted to evaluate intra-session variability during trophectoderm biopsy procedures. A total of 370 blastocysts derived from 52 PGT-A cycles with at least one mosaic result were included. All embryos were cultured continuously in a time-lapse incubator (TLI) system prior to biopsy and genetic analysis.
Trophectoderm biopsy samples from blastocysts undergoing PGT-A were analyzed by next-generation sequencing (NGS) at a single reference genetics laboratory. Electronic witnessing timestamps were used to capture key procedural milestones, including incubator removal, biopsy initiation, and successful sample tubing. Intra-session laboratory exposure was standardized using relative biopsy sequence, defined as biopsy rank divided by the total number of embryos in the dish. Procedural duration was defined as the elapsed time (minutes) from biopsy initiation to successful tubing. Mosaic embryos were categorized according to established thresholds as low-level (30–50%) or high-level (50–80%) mosaicism.
RESULTS: The mean maternal age was 34.98 ± 4.75 years. PGT-A results classified 161 embryos (43.5%) as euploid, 133 (35.9%) as aneuploid, 68 (18.4%) as mosaic, and 8 (2.2%) as non-informative. Mean biopsy procedural duration was 4.76 ± 2.78 minutes. In multivariable generalized estimating equation (GEE) models adjusted for maternal age, embryo quality, and operator, neither relative biopsy rank (p=0.774) nor procedural duration (p=0.770) was significantly associated with overall mosaicism incidence. However, significant biopsy rank–dependent differences were observed among mosaic subtypes. High-level mosaic embryos (n=16) were biopsied significantly later in sequence than low-level mosaic embryos (n=52) (adjusted odds ratio [aOR] 38.27, p=0.007), a finding supported by permutation testing (p=0.016). Likewise, segmental mosaicism (n=13) was significantly associated with later biopsy rank compared with whole-chromosome mosaic errors (n=55) in multivariable analysis (p=0.001), suggesting a rank-related shift toward segmental abnormalities. Multinomial regression further demonstrated that relative biopsy rank independently predicted mosaic chromosomal gains (p=0.045) and losses (p=0.022) when compared with aneuploid embryos.
CONCLUSIONS: Biopsy sequence emerged as an independent factor associated with increased rates of high-level mosaicism and segmental chromosomal variation. These findings suggest that, despite standardized laboratory workflows, cumulative ex vivo exposure during sequential biopsy procedures may introduce technical variability that influences PGT-A reporting outcomes.
IMPACT STATEMENT: Biopsy sequence was independently associated with increased rates of high-level mosaicism and segmental chromosomal errors, suggesting that cumulative laboratory stress may represent an important technical confounder in PGT-A outcomes.
SUPPORT: No financial support.

P-3 4:15 PM Monday, October 26, 2026

NAVIGATING THE HORMONAL "PARADOX": TERMINAL ESTRADIOL DECLINE IN PPOS DOES NOT COMPROMISE OOCYTE COMPETENCE OR REPRODUCTIVE OUTCOMES. Tomoya Ozaki, M.D., Keitaro Yumoto, Ph.D., Panagiota Tsounapi, Ph.D. and Yasuyuki Mio, M.D., Ph.D., Mio Fertility Clinic, Yonago, Japan

OBJECTIVE:
Progestin-primed ovarian stimulation (PPOS) has emerged as an effective alternative to GnRH analogs for preventing premature LH surges. However, a "hormonal paradox" is often observed; serum estradiol (E_2) levels decline despite follicular growth, leading to concerns regarding follicular atresia. This study investigates the clinical and embryological implications of this terminal E_2 decline in PPOS cycles to determine if it truly impairs oocyte competence or if it represents a benign physiological shift unique to progestin-mediated suppression.
MATERIALS AND METHODS: In this retrospective cohort study we analyzed 222 PPOS cycles from 164 patients conducted at a single center between March 2023 and March 2024. Patients were stratified by terminal E_2 trajectory: E_2-Elevation (optimal rise) versus E_2-Decline (serum decrease from the final monitoring visit to the day of trigger). Primary endpoints focused on embryological milestones: oocyte yield, maturation, normal fertilization (2PN), and blastulation rates. Secondary endpoints included clinical pregnancy and live birth rates (LBR). LH dynamics were longitudinally mapped to confirm sustained hypothalamic suppression.
RESULTS: A terminal E_2-Decline was observed in 34.7% of cycles. Baseline characteristics, including maternal age (36.1 ± 5.6 vs. 36.0 ± 5.6 years) and AMH (4.2 ± 3.8 vs. 5.1 ± 4.4 ng/mL), were statistically indistinguishable between the groups ($P > 0.05$). Despite the divergent E_2 trajectories, no significant differences were observed in oocyte yield (10.7 ± 6.9 vs. 13.3 ± 8.3; $P > 0.05$). Crucially, embryological competence remained robust across both cohorts: a. Maturation Rate: 77.2% (E_2-Decline) vs. 80.9% (E_2-Elevation) ($P > 0.05$); b. Fertilization Rate: 74.0% vs. 74.7% ($P > 0.05$); and c. Blastulation Rate: 56.1% vs. 58.9% ($P > 0.05$). While the E_2-Decline cohort exhibited lower LH levels at baseline and trigger, these findings were not associated with compromised outcomes success. Clinical outcomes were remarkably stable, with no statistical variance in LBR (72.7%, E_2-Decline vs. 68.8%, E_2-Elevation) or miscarriage rates (27.3%, E_2-Decline vs. 31.2%, E_2-Elevation).
CONCLUSIONS:
Terminal E_2 fluctuations in PPOS represent a physiological dissociation rather than functional follicular failure. These data demonstrate that oocyte maturation and embryonic developmental potential are maintained despite late-cycle E_2 declines, confirming that such hormonal trajectories do not warrant cycle cancellation.
IMPACT STATEMENT:
This study provides high-level reassurance for clinical practice, demonstrating that terminal E_2 decline in PPOS cycles is not a harbinger of poor outcomes. By validating the stability of live birth rates despite these fluctuations, we empower clinicians to confidently proceed with oocyte retrieval, avoiding unnecessary cycle cancellations and optimizing patient management.

P-5 4:30 PM Monday, October 26, 2026

NONINVASIVE EVALUATION OF THE SUCCESS RATE OF MTESE USING SEMEN EXFOLIATED CELLS. Changwei Yuan, undergraduate[1], Wujiang Liu, Dr.[2], Jian Zhou, M.D.[3] and Xinna Chen, MD[4], [1]Beijing Amcare Beisanhuan Women's & Children's Hos, Beijing, Beijing, China, [2]Beijing Amcare Hospital, Beijing, China, [3]Beijing Amcare Beisanhuan Hospital, Beijing City, China, [4]Amcare Beisanhuan Women's & Children's Hospital, Beijing City, China

OBJECTIVE:
Non-obstructive azoospermia (NOA) presents a significant challenge in male infertility. Microdissection testicular sperm extraction (mTESE) is the gold-standard surgical sperm retrieval technique. Preoperative predictive markers for sperm retrieval success remain limited. This study investigates the status and composition of exfoliated cells in the semen of NOA patients and evaluates its predictive potential for mTESE outcomes.
MATERIALS AND METHODS:
In this prospective cohort study, 147 consecutive NOA patients scheduled for mTESE were enrolled with informed consent. Prior to surgery, semen samples were analyzed using advanced cytological techniques, including Papanicolaou staining and immunocytochemistry for specific markers. The presence, types, and relative ratios of exfoliated testicular cells (spermatogonia, primary spermatocytes, round/elongating spermatids, Sertoli cells) were quantified. The primary outcome was the association between specific semen exfoliation patterns and successful sperm retrieval (SSR) via mTESE. The correlation between specific semen exfoliation patterns and postoperative histopathology was also analyzed.
RESULTS:
Exfoliated spermatogenic cells were detected in the semen of 48.3% (71/147) of NOA patients. Patients with hypospermatogenesis and late MA had a significantly higher prevalence and density of exfoliated round/elongating spermatids compared to those with SCOS (Sertoli cell-only syndrome) or early maturation arrest (MA, $p<0.001$). The presence of exfoliated round spermatids in semen showed a sensitivity of 85.2% and a specificity of 91.5% for predicting SSR. A multivariate logistic regression model identified the presence of >2 round spermatids per high-power field in semen cytology as a strong independent predictor of SSR (Odds Ratio: 8.74; 95% CI: 3.82-20.01; $p<0.001$), outperforming serum FSH and testicular volume. Conversely, a pattern dominated by exfoliated immature germ cells (spermatogonia/primary spermatocytes) or Sertoli cells was highly predictive of failed sperm retrieval.
CONCLUSIONS:
Semen cell exfoliation analysis provides a novel, non-invasive window into the intratesticular spermatogenic microenvironment in NOA. Specific cytological patterns, particularly the presence of exfoliated round spermatids, are highly predictive of successful sperm retrieval via mTESE. This tool can significantly improve preoperative counseling, patient selection, and clinical decision-making for men with NOA.
IMPACT STATEMENT:
This paper provides a noninvasive method for predicting the success rate of microscopic sperm extraction.

ASRM 2026 TOP POSTER SESSION (2 OF 2)

P-6 3:45 PM Monday, October 26, 2026

IMPACT OF THE 2024 ALABAMA SUPREME COURT RULING ON FROZEN EMBRYO DISPOSITION CHOICES IN THE NEIGHBORING STATE, GEORGIA. Anastasia Navitski, MD[1], Keshav Kalathoor, BS[2], Leah Ginn, DO[3] and Larisa P. Gavrilova-Jordan, M.D.[4], [1]Medical College of Georgia, Augusta, GA, [2]Medical College of Georgia, [3]Medical College of Georgia at Augusta University, Augusta, GA, [4]Augusta University, Martinez, GA

OBJECTIVE:
To assess the impact of Alabama's 2024 Supreme Court ruling on frozen embryo disposition decisions among IVF patients in Georgia, USA.
MATERIALS AND METHODS:
We retrospectively studied IVF patient decision-making at a single academic center serving a patient population in central Georgia. Patients were included if they completed embryo disposition consent forms for the first time between June 2022 and February 2026, specifying their preferences regarding embryo disposition in circumstances such as divorce, death of one or both partners, their mutual decision to discontinue IVF treatment, and time- or age-limited storage. Embryo disposition options were categorized as minimal harm (use by the patient/partner, donation to another couple, court-directed use, or transfer to a storage facility) or likely harm (donation to research or discard). The primary outcome was the selection of minimal-harm options before versus after February 16, 2024. The study was powered to detect a medium effect size ($w = 0.3$), and Chi-square test was used for analysis.
RESULTS:
Of 154 patients who consented during the study period, 145 (before: N=61; after: N=84) made selections regarding frozen embryo and IVF material disposition. Both groups had similar sociodemographic and clinical characteristics. No significant differences in frozen embryo disposition choices were observed before versus after the Alabama's 2024 ruling for most circumstances: patient death (77.1% vs 72.6%, $P = 0.49$), death of a spouse/partner (92.6% vs 85.4%, $P = 0.36$), simultaneous death of patient and partner (27.8% vs 24.4%, $P = 0.16$), divorce (66.7% vs 53.7%, $P = 0.052$), one-year time-limited storage (77.0% vs 75.0%, $P = 0.90$), or 52-year age-limited storage (27.9% vs 27.8%, $P = 0.34$). Notably, following February 2024, patients were significantly more likely to elect embryo discard or donation to research (32.1%) in the case of couple's decision to discontinue IVF treatment, compared with before the ruling (19.7%; $P = 0.03$).
CONCLUSIONS:
Most frozen embryo disposition choices in Georgia were not significantly affected following the 2024 Alabama Supreme Court ruling. However, a shift toward embryo destruction after February 2024 was observed in the context of couples' mutual decision to discontinue IVF treatment. Given the modest sample size, additional differences may exist but remained undetected.
IMPACT STATEMENT:
The February 16, 2024 Alabama Supreme Court ruling designating frozen embryos as "unborn children" may exert regional spillover effects on IVF patient decision-making beyond state borders. In this Georgia-based cohort, patients demonstrated a notable shift towards frozen embryo destruction after February 2024 in some clinical scenarios, suggesting heightened patient concerns regarding legal and ethical obligations in the evolving legal landscape around embryo rights.
SUPPORT: No financial disclosures.
REFERENCES:
1. Supreme Court of Alabama. https://cases.justia.com/alabama/supreme-court/2024-sc-2022-0579.pdf?ts=1708115406
2. Feinberg EC, Santoro N, Cedars MI, Amato P. An egg is not a chicken and an embryo is not a child. Fertil Steril. 2024 May;121(5):752-753. Epub 2024 Mar 18. PMID: 38508507

P-7 4:00 PM Monday, October 26, 2026

MIND MATTERS IN INFERTILITY CARE: A METHODOLOGICAL SYSTEMATIC REVIEW OF MENTAL HEALTH MEASUREMENT IN ART. Michelle Hsia, MD[1], Jay Goldberg, MD[2] and Sarah Alnaif, MD[3], [1]Philadelphia, PA, [2]Jefferson Einstein Philadelphia Hospital, Philadelphia, PA, [3]Jefferson Einstein Philadelphia Hospital, Philadelphia

OBJECTIVE: Despite growing recognition of the psychological burden of infertility care, mental health measurement in assisted reproductive technology (ART) research remains fragmented. No systematic review has mapped which constructs and instruments are used, when assessments occur across the treatment trajectory, or how social determinants of health (SDOH) are analytically integrated, gaps that impede evidence synthesis and limit the field's ability to address inequities in psychosocial outcomes.
MATERIALS AND METHODS: We conducted a systematic review of quantitative and qualitative studies of adults undergoing ART (in vitro fertilization [IVF], intracytoplasmic sperm injection [ICSI], embryo transfer, intrauterine insemination [IUI], or related treatments) reporting at least one validated mental health or fertility specific psychosocial instrument. PubMed, MEDLINE, and Embase were searched from 2010 through February 2026. Records were screened in duplicate. We extracted demographics, SDOH variables, ART type, assessment timing, instruments, and constructs; quantitative analysis was performed where appropriate. Methodological quality was appraised using the Newcastle Ottawa Scale for nonrandomized studies and the Cochrane Risk of Bias Tool for randomized studies.
RESULTS: A total of 7,034 records were identified; 66 studies encompassing 153,084 participants published 2011 to 2026 met criteria. 45 studies (68%) enrolled women exclusively while 16 (24%) included male partners. Pooled mean age was 34.0 years (range 28.9 to 41.1). Studies were conducted in Asia (53%), Europe (30%), and the Americas (11%); none exclusively in North America. Education was the most consistently reported SDOH (83%), followed by employment (52%), income (33%), rural/urban residence (18%), race/ethnicity (17%), and insurance (5%); sexual orientation or gender identity appeared in only 1 study (2%). Thirty one distinct instruments were identified; depression and anxiety were the predominant constructs (78% and 69%), followed by perceived stress (42%) and quality of life (30%). The Fertility Quality of Life tool (FertiQoL) was the most used fertility specific instrument (28%); the Perceived Stress Scale (20%) and Beck Depression Inventory (17%) led general scales. Assessments occurred during active treatment (65%), across multiple timepoints (43%), at pre ART baseline (42%), during ART pregnancy (23%), and postpartum in only 6%.
CONCLUSIONS: ART mental health research reports age and sex consistently but critically underreports income, residence, race/ethnicity, insurance, and sexual orientation. Over 30 instruments assess a narrow construct range, overwhelmingly during treatment, with marked underrepresentation of ART pregnancy, postpartum follow up, and North American populations.
IMPACT STATEMENT: By empirically mapping these measurement gaps, this review provides the evidence base to standardize instrument selection, embed equity focused SDOH reporting, and extend assessment into pregnancy and postpartum, advances that would substantially improve the comparability and clinical relevance of ART mental health research.
SUPPORT: None to disclose

P-8 4:15 PM Monday, October 26, 2026

PATIENT-CENTERED GESTATIONAL CARRIER RESOURCES: AN ANALYSIS OF REPRODUCTIVE ENDOCRINOLOGY AND INFERTILITY FELLOWSHIP-PARTNERED FERTILITY CLINICS. Nissiya Adjei, MD[1], Monica Contractor, MD[2], Morgan Wiley, MD[3], Makenna Kuecks, BS[4], Sean Kelly, MD[5], Maria D Salazar, MD[6], Cristina Barkowski, MSW[5], Meike L Uhler, MD[7] and Virginia-Arlene Acosta Go, MD[7], [1]Libertyville, IL, [2]Loyola University Medical Center, Maywood, IL, [3]Advocate Illinois Masonic Medical Center, Chicago, IL, [4]Rush Medical College, Chicago, IL, [5]Department of Obstetrics and Gynecology, Rush University Medical Center, Chicago, IL, [6]Rush University Medical Center, Chicago, IL, [7]Fertility Centers of Illinois, Chicago, IL

OBJECTIVE: To assess the prevalence of gestational carrier (GC) resources available on academic-affiliated fertility clinic websites in order to understand the distribution and accessibility of educational resources for patients interested in GC services.
MATERIALS AND METHODS: We reviewed all fertility clinics affiliated with a Reproductive Endocrinology and Infertility Fellowship Program (REI) from the 2025-2026 Accreditation Council for Graduate Medical Education (ACGME) list (N=52). Eligibility was limited to fertility clinics with publicly available websites. The following data was collected from each website: Patient-centered educational resources defining the GC process, legal support, GC agency listings, the presence of a dedicated GC care-coordination team, and out-of-pocket cost estimates of services. Fisher's exact test was

used for all comparisons, with a p-value less than 0.05 considered statistically significant. Analyses explored the variation in resource availability by practice type and clinic geographic distribution.
RESULTS: Fifty-two fertility clinics were affiliated with REI fellowships from the ACGME list. One fertility clinic was excluded. The majority of clinic websites provided education defining the GC process (68.6%). Few clinics offered information on legal services (17.6%) or provided a list of referrals to GC agencies (17.6%). Logistical and financial details were the least reported: 15.7% included a timeline for finding and matching to a GC, 13.7% described a dedicated GC care-coordination team, and 11.8% provided out-of-pocket cost estimates for services. Private-affiliated clinics (N=15) were much more likely than academic-only clinics (N=36) to post a timeline for finding and matching with a GC (46.7% vs. 2.8%, p=0.0003). Private-affiliated clinics were also more likely to provide cost estimates, although this difference did not reach statistical significance (26.7% vs. 5.6%, p=0.054). No other resource categories differed by practice type. Clinics in coastal regions (Northeast and West; N=28) were more likely than clinics in non-coastal regions (Midwest and South; N=23) to provide educational content defining the GC process (82.1% vs. 52.2%, p=0.033). No significant geographic differences were observed for the other resources.
CONCLUSIONS: While most fellowship-affiliated clinic websites offered patient-centered education about the gestational carrier process, more than one quarter did not. Furthermore, financial, legal, and logistical information about gestational carrier services remains largely absent. Significant disparities by practice type and geographic region suggest that access to comprehensive patient education is unequal.

IMPACT STATEMENT: Expanding patient-centered gestational carrier resources is an important step toward reducing disparities in access to care while also ensuring potential intended parent(s) have the information needed to navigate the gestational carrier process.

SUPPORT: None

P-9 4:30 PM Monday, October 26, 2026

ASSESSING SPERM DONOR RECIPIENT PERSPECTIVES TOWARDS RECEIVING MEDICAL RISK UPDATES. Jocelyn Fournier, B.S.[1], Sharon Aufox, M.S., CGC[1], Brynn Persky, Master of Science in Genetic Counseling[2], Jessica Park, MS, CGC[3] and Sandra Darilek, M.S., CGC[4], [1]Northwestern University, Chicago, IL, [2]Seattle Sperm Bank, [3]California Cryobank by CooperSurgical Inc, Los Angeles, CA, [4]Baylor College of Medicine, Houston, TX

OBJECTIVE:
To gain insight into sperm donor recipients' interest, perceived importance, and preferences regarding receiving medical risk updates from sperm banks.
MATERIALS AND METHODS:
In March 2026, an invitation to complete a 10-15 minute REDCap survey was sent to newsletter subscribers and account holders (between 2018-2022) of a large United States (U.S.) based sperm bank. Eligible participants were U.S.-residing donor sperm recipients (18+) with a donor-conceived child (<18), English fluency, and computer/email access. The survey collected demographics and assessed preferences for the type, frequency, and communication method of medical updates concerning the donor and donor-conceived children. Questions included multiple choice, Likert scale, and open response. Participants could enter an optional raffle for one of ten $50 gift cards. Data was analyzed using R Studio to calculate frequencies for all variables and to conduct bivariate analysis.
RESULTS:
A total of 1,310 surveys were completed, of which 1,087 met eligibility requirements. Most participants were 35-45 years old (67.9%), female (99.1%), and selected "Same-sex couple" as the primary reason for pursuing third-party assisted reproductive technology (ART) through a sperm bank (50.6%). Participants rated their interest for information in the following medical update categories: childhood onset, adult onset, medically actionable, and not medically actionable conditions. Among respondents, the majority were interested in updates concerning: childhood onset (97.8%), adult onset (97.1%), medically actionable (98.3%), and not medically actionable (83.8%) conditions. Follow up scenario questions were utilized to examine alignment between participants categorical update interest and condition-specific examples. The following conditions were included: attention-deficit/hyperactivity disorder (ADHD), autism spectrum disorder (ASD), Alzheimer's disease, BRCA1/2, seasonal allergies, congenital heart defect (CHD), Type 1 Diabetes (T1D), epilepsy, and VUS. Most viewed these conditions as important: ADHD (65.4%), ASD (78.2%), Alzheimer's disease (92.9%), BRCA1/2 (93.4%), CHD (86.1%), T1D (88.7%), Epilepsy (88.8%), and VUS (62%). Less than half rated seasonal allergies as important (38.8%).
CONCLUSIONS:
Participants expressed interest in receiving medical updates across broad categories which was largely consistent with how they rated the importance of condition-specific scenarios. This suggests a genuine desire to be informed about medical risks and underscores the need for transparent communication processes within sperm banks. Given the complexity and nuance of interpreting and disclosing such updates, involvement of genetic counselors or other clinical experts is essential to ensure effective and accurate communication of medical risk information.
IMPACT STATEMENT:
These findings inform sperm bank practices and policies, demonstrating that recipients value transparency in medical risk updates. They also reinforce the role of genetic experts in facilitating education, communication, and anticipatory guidance around the interpretation and implications of medical updates.
SUPPORT: This study was financially supported by Northwestern University Graduate Program in Genetic Counseling

P-10 4:45 PM Monday, October 26, 2026

SPERM DONORS' PERCEPTIONS OF BURDEN, PRIVACY, AND SAFETY UNDER PROPOSED US SPERM DONATION LAWS. Erica C Pandolfi, PhD[1], Rita Vassena, DVM, PhD[2], Sean M Currigan, MPH[3] and Vrunda B Desai, M.D.[2], [1]Los Angeles, CA, [2]CooperSurgical Fertility Solutions, Trumbull, CT, [3]CooperSurgical Inc.

OBJECTIVE:
Proposed U.S. sperm donation legislation seeks to increase transparency and oversight to support donor-conceived people (DCP) and recipient families. To inform stakeholder discussions, we evaluated perceptions of privacy, safety, burden, and willingness to donate among individuals who could represent a potential donor population.
MATERIALS AND METHODS:
Email invitations were sent to 15,000 candidates subscribed to an online survey panel; ~15% responded and ~40% of the respondents met minimum eligibility criteria: US residents, male at birth, aged 18–39 years, and open to donating sperm. Quotas were implemented for the inclusion of Black and Hispanic individuals (n=200 each) to allow for robust ethnicity based analyses. The survey was administered in November 2024 and consisted of 37 validated items, including structured rating scale questions assessing perceptions of privacy, safety, burden, effort, and likelihood to donate sperm in response to 8 proposed laws shown to respondents one at a time, in the same order. The proposed laws covered sharing donors' medical history, releasing personal identifying information, mandating donation-related education and limited donor compensation. Descriptive statistics, contingency tables and χ^2 tests were employed; a $p < 0.05$ was considered significant.
RESULTS:
Among 1,071 respondents (mean age 30.4 ± 5.9), the cohort was racially and ethnically diverse (36.6% White, 31.8% Black, 28.8% Hispanic, 11.3% Asian/South Asian, 3.9% Indigenous American/Alaska Native) and evenly distributed across the US. Mandatory family history updates every three years (41.5%) and limits on donor compensation (43.9%) were the greatest barriers toward the willingness to donation. Family history disclosure (62.1%) and release of donor identity to adult donor conceived persons (DCPs) (54.2%) were viewed as highly invasive, with nearly half reporting safety concerns related to donor identification (45.8%) or information sharing (50.0%). Most respondents believed the proposed laws would make donation more invasive (70.0%), burdensome (69.6%), and difficult to qualify for (69.9%), with 62.3% stating donation would no longer be worthwhile and 69.2% indicating deterrence from becoming a sperm donor. Hispanic and Asian respondents reported greater negative impacts of the proposed laws, while Black respondents reported lower perceived effects, with white respondents generally falling between these groups (all $p < 0.05$).
CONCLUSIONS:
Proposed sperm donation regulations aim to enhance transparency and support donor conceived families, but may also influence how potential donors perceive burden, privacy, and safety, with implications for donor participation and availability. Understanding donor perspectives alongside the needs of DCPs, recipients, and donor programs is essential as policies evolve.
IMPACT STATEMENT:
These findings highlight the importance of inclusive, multi stakeholder dialogue when shaping sperm donation policy. Balancing transparency, donor protections, and program sustainability may help support access to donor sperm while addressing the diverse needs of DCPs, recipients, and donors.
SUPPORT: Supported by CooperSurgical Inc.

ART (4 OF 27)

P-187 3:45 PM Monday, October 26, 2026

COMPARING MOSAIC VERSUS EUPLOID SINGLE EMBRYO TRANSFER: OUTCOMES AND UTILIZATION PATTERNS FROM THE SOCIETY FOR ASSISTED REPRODUCTIVE TECHNOLOGY CLINIC OUTCOME REPORTING SYSTEM (SART CORS) 2020-2023. Allison Bosch, MD[1], Meng Yao, MS[2], Nina Desai, Ph.D., HCLD[3], Jenna M Rehmer, MD[2] and Mindy S Christianson, M.B.A., M.D.[3], [1]Cleveland Clinic Foundation, Beachwood, OH, [2]Cleveland Clinic, Cleveland, OH, [3]Cleveland Clinic, Beachwood, OH

OBJECTIVE: Preimplantation genetic testing for aneuploidy (PGT-A) is frequently used for in vitro fertilization (IVF) to improve pregnancy outcomes. Since mosaic embryos can result in healthy babies, interest in their transfer has increased. This study aimed to evaluate clinical outcomes of single mosaic frozen embryo transfer (FET) compared to single euploid FET. We also examined utilization patterns for mosaic embryo transfer in the U.S. and predictive factors for their use.
MATERIALS AND METHODS: The 2020-2023 SART CORS registry was utilized to identify single blastocyst FET cycles using PGT-A. Exclusions included fresh embryo transfers, non-PGT cycles, gestational carrier cycles and those with recurrent pregnancy loss. PGT-A euploid versus PGT-A mosaic FET outcomes were compared. The primary outcome was live birth rate per FET and secondary outcomes included rates of clinical pregnancy, spontaneous abortion and birth defects. A comparative analysis of PGT-A euploid versus mosaic embryo transfers was performed using t-tests, Satterthwaite t-tests, Wilcoxon Rank Sum tests, and Pearson's chi-square tests where appropriate.
RESULTS: Of 241,018 embryo transfers analyzed, 238,370 were PGT-A euploid and 2,648 were PGT-A mosaic (964 segmental; 1,684 whole chromosome). The live birth

rate per single FET for mosaic embryos was 38.1% versus 54.4% for euploid embryos (p<0.001). Compared to PGT-A euploid embryos, mosaic embryos were less likely to result in clinical pregnancy (48.9 vs. 63.3%) and more likely to result in biochemical pregnancy (10.7 vs 9.2%) and early pregnancy loss (10.4 vs. 8.4%) (p<0.001). Mosaic segmental embryos were more likely to result in live birth than mosaic whole chromosome embryos (41.6 vs 36.1%) with slightly lower rates of pregnancy loss (9.3. vs. 11.0%) (p=0.017). While mosaic embryo transfer was associated with increased likelihood of genetic (p=0.023) and limb defects (p=0.014), this outcome was rare (n=3, 0.3% of mosaic transfers); the birth defect rate was less than 2% in both groups. The absolute number and percentage of mosaic embryos transferred increased annually (2020: n=285, 0.68%; 2021: n=511, 0.89%; 2022: n=799, 1.2%; 2024: n=1,053, 1.3%). The likelihood of transferring a mosaic embryo increased with female age (p<0.001). Mosaic FET was more frequent in the Northeast, followed by the South, West, and Midwest. Other factors associated with mosaic transfer included multiparity (p<0.001), IVF state mandate status (p<0.001) and diminished ovarian reserve (p<0.001) or tubal factor (p=0.010) diagnoses.

CONCLUSIONS: PGT-A mosaic embryo transfer is associated with reduced live birth rates and increased early pregnancy loss compared with euploid transfer, with improved outcomes among segmental versus whole chromosome mosaics. Mosaic embryo utilization increased steadily across the U.S., particularly among older patients, reflecting evolving clinical practice.

IMPACT STATEMENT: Live birth remains achievable in a meaningful proportion of mosaic embryo transfer cycles, supporting their role as a viable option when euploid embryos are not available and necessitating standardized guidelines for their use.

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MORPHOLOGY AMONGST SINGLE EUPLOID FROZEN EMBRYO TRANSFER AFFECTS SUCCESS RATES. Priyal Chadha, M.D.[1], Jon Javor, Master of Arts[2], Sarah C Roger, MD, Leslie B Ramirez, H.C.L.D, PH.D.[4] and Rani Fritz, D.O., Ph.D.[5], [1]Northwell Health, [2]Amherst, NY, [3]Northwell Health Fertility, Manhasset, NY, [4]Northwell Health, Manhasset, NY

OBJECTIVE: To evaluate the association between blastocyst morphology and clinical outcomes in single euploid frozen embryo transfers (FET).

MATERIALS AND METHODS: This retrospective cohort study analyzed 2,675 single euploid FET cycles performed at a single academic institution from 1/2020-12/2024. Euploid blastocysts identified via pre-implantation genetic testing for aneuploidy (PGT-A) were graded for inner cell mass (ICM) and trophectoderm (TE) morphology (A, B, or C) using the Gardner grading system. Associations between morphology and cycle outcomes, including live birth rates (LBR), miscarriage rates, and non-pregnancy rates, were assessed using Fisher's exact test with Monte Carlo estimation. Confounding variables were evaluated. Post-hoc pairwise comparisons between individual scores were performed using Chi-square or Fisher's exact testing as appropriate, with Bonferroni correction. Following Bonferroni correction, p value of <0.00179 was considered statistically significant.

RESULTS: Embryo grade was significantly associated with LBR (p<0.0001) (Table). LBR was higher for AA embryos compared to BB embryos (57.2% vs. 37.9%, respectively, p <0.0001), and BC embryos (57.2% vs. 31.5%, respectively, p <0.0001). Similarly, AB embryos demonstrated higher LBR compared to BC embryos (51.4% vs. 31.5%, respectively, p <0.0001). AC embryos had higher LBR than both BB embryos (59.2% vs. 37.9%, respectively, p <0.0001) and BC embryos (59.2% vs. 31.5%, respectively, p <0.0001).

CONCLUSIONS: Blastocyst morphology is significantly associated with LBR in single euploid FET cycles. Higher ICM grades appear to have a greater positive impact on LBR than TE grades.

IMPACT STATEMENT: Morphology remains an important predictor of success in single euploid FET and may aid in embryo prioritization and patient counseling regarding expected outcomes. These findings may also inform decisions about pursuing additional IVF cycles based on reproductive goals.

		OUTCOME (n, %)			
Inner Cell Mass	**Trophectoderm**	**Not pregnant**	**Miscarriage**	**Live Birth**	**Total**
A	A	381 (22.4%)	348 (20.4%)	976 (57.2%)	1705
A	B	44 (18.1%)	74 (30.5%)	125 (51.4%)	243
B	A	36 (31.3%)	30 (26.1%)	49 (42.6%)	115
A	C	35 (28%)	16 (12.8%)	74 (59.2%)	125
B	B	128 (39.8%)	72 (22.3%)	122 (37.9%)	322
B	C	76 (46.9%)	35 (21.6%)	51 (31.5%)	162
C	B	1 (100%)	0 (0%)	0 (0%)	1
C	C	1 (50%)	1 (50%)	0 (0%)	2

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COMPARATIVE ANALYSIS OF ANEUPLOIDY RATES IN FRESH VS. FROZEN OOCYTE DONOR EMBRYOS. Solmaz Chamanara, MD[1], Jiaqi Zhang, MS[2], Hanjie Zhao, MS[3], Kevin Thevinh Tran, B.S.[1], Ruth B Lathi, MD[1], Liesl Nel-Themaat, PH.D., MBA, HCLD[4] and Lusine Aghajanova, MD, PhD[1], [1]Division of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gynecology, Stanford University, Stanford, CA, [2]Department of Obstetrics and Gynecology, Stanford University School of Medicine, Stanford, CA, [3]Stanford Fertility and Reproductive Health Services, Stanford Medicine Children's Health, Sunnyvale, CA, [4]Division of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gynecology, Stanford University School of Medicine, Stanford, CA

OBJECTIVE:
The number of donor oocyte embryo transfers in the United States is increasing, offering pregnancy opportunities for people with diminished oocyte quantity/quality or without ovaries. Oocyte cryopreservation has made the process of oocyte donation more efficient, however the impact of cryopreservation on aneuploidy in this setting is unknown. In this study we examine the aneuploidy and pregnancy rates between fresh and frozen donor oocyte transfers.

MATERIALS AND METHODS:
Retrospective cohort analysis of donor oocyte cycles at a single academic center (2016-2025). We included all donor oocyte cycles with fresh or frozen oocytes with available PGT-A results. The primary outcome was abnormal PGTA (aneuploid and mosaic) rate. The secondary outcomes were euploidy, aneuploidy, and mosaic rates; fertilization and blastulation rate; embryo morphology; clinical pregnancy rate (CPR); and live birth rate (LBR). Only single embryo transfers were performed. All analyses were conducted at the embryo level. Continuous variables were compared using Welch's t-test, categorical variables were compared using the Chi-square test.

RESULTS:
A total of 138 donor oocyte recipients were reviewed: 60 fresh and 81 frozen. Mean donor age was comparable between groups (both 27 years) and intended father age was slightly lower in fresh vs frozen cycles (44 vs 45; p=0.04). Total of 9,676 fresh and 3,186 frozen MII oocytes were assessed; the fertilization rate was significantly higher with fresh MII oocytes (88.6% vs 79.4%; p <0.01), but the blastocyst formation rate was comparable (60.9% vs 59.5%; p = 0.15). Total 584 fresh and 376 frozen-egg embryos were included. Compared to frozen oocytes, the pooled abnormality (aneuploid plus mosaic) rates in the fresh oocyte embryos were significantly lower (29% versus 35%; p = 0.04), which was due to lower mosaic rate in fresh oocytes embryos (5% vs 11%, p=0.01). Euploidy rates were significantly higher in fresh compared to frozen oocytes (71% vs. 65%; p=0.001). The sex distribution of the embryos was not different between donor egg types (p = 0.77). Poor morphology (C grade) rate was significantly lower in the fresh oocyte embryos compared to the frozen (28% vs 37%; p = 0.01). Finally, there were 123 fresh oocyte and 98 frozen oocyte transfers with no significant difference between CPR (51% vs 55%; p = 0.57) or LBR (43% vs 40%; p = 0.62).

CONCLUSIONS:
Compared to frozen donor oocytes, fresh donor oocytes were associated with higher fertilization rates and lower chromosomal abnormality rates. However, clinical pregnancy and live birth outcomes following single euploid transfer were similar between groups, indicating comparable reproductive potential despite a potentially lower euploid embryo yield.

IMPACT STATEMENT:
Fresh donor oocytes yield higher fertilization rates and more euploid embryos than frozen oocytes, but result in similar clinical pregnancy and live birth outcomes after transfer.

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PROGESTIN EXPOSURE IS ASSOCIATED WITH OVERPOPULATION OF CYTOTOXIC NATURAL KILLER CELLS IN ENDOMETRIUM IN PROGESTIN-PROTOCOL OVARIAN STIMULATION CYCLES INITIATED AT EARLY FOLLICULAR PHASE. Amirhooman Asadi, PhD Candidate[1], Özgür Albayrak, PhD.[2], Samaneh Pirmoradi, Msc.[2], Hesam Ghafouri Kalajahi, M.Sc[3], Iklim Doga Savas, MD-PhD Candidate[4], Can Benlioglu, M.D., Ph.Dc[5], Ozgur Oktem Prof, M.D.[6] and Yigit Cakiroglu, M.D.[7], [1]Koc University, The Graduate School of Health Sciences, Istanbul, Turkey., Istanbul, Turkey, [2]Koc University, Istanbul, Turkey, [3]Research Center for Translational Medicine, Koc University, Istanbul, Turkey, Istanbul, Turkey, [4]Koc University School of Medicine, Istanbul, Turkey, [5]Koc university, Istanbul, Turkey, [6]Koc University School of Medicine, Topkapi, Turkey, [7]Koc University Hospital, Istanbul, Turkey

OBJECTIVE:
To analyze the effects of progestin exposure on endometrial immune cell profile during controlled ovarian stimulation initiated at early follicular phase in PPOS cycles in comparison to conventional GnRH antagonist cycles

MATERIALS AND METHODS:
18 normo-responder patients undergoing freeze all ovarian stimulation cycles with PPOS (n=9) and antagonist (n=9) protocol and rec-FSH were included in the study. Medroxy-progesterone acetate (MPA, 5mg twice a day) was used in PPOS cycles. Infertility etiology was ovarian and/or male factor infertility in all patients. Those patients with uterine factor infertility, endometriosis/adenomyosis and history of recurrent pregnancy loss were excluded from the study. Endometrial biopsy was done using pipelle sampling. Characterization of the immune cells and their percentages in the samples were determined using flow-cytometry analysis after staining with specific markers for each subset of the immune cells.

RESULTS:

The PPOS and antagonist groups were comparable for age (38.7 ± 3.1 vs. 35.9 ± 5.8 years, p = 0.308), total gonadotropin dose (2535.0 ± 1103.3 IU vs. 3420.0 ± 963.8 IU, p = 0.111), duration of stimulation (8.4 ± 3.7 vs. 11.4 ± 3.2 days, p = 0.111), total oocyte number (5.9 ± 3.8 vs. 6.8 ± 5.4, p = 0.887), and mature oocyte number (4.6 ± 3.0 vs. 4.1 ± 2.6, p = 0.696). Peak E2 and P4 levels on the hCG day were also similar between the two groups (1542.7 ± 767.2 vs. 1375.3 ± 962.9 pg/mL, p = 0.875; 0.6 ± 0.4 vs. 0.8 ± 0.2 ng/mL, p = 0.524, respectively). We observed that the percentage of total NK cells among all immune cell population was significantly elevated in the endometrium of the PPOS cycles compared to the antagonist ones (44.9% vs. 22.6% respectively, p=0.0019, 95%CI: 10.1 to 34.4). Tissue resident immune-modulatory uterine NK cells ($CD56^{bright}CD16^{-}$ $CD69^{+}CD^{103+}$) population was similar in both groups (36.5% vs. 33.8% respectively, p=0.79, 95%CI: -24.8 to 19.5). However, cytotoxic NK cells ($CD56^{dim}CD16^{+}$ $CD69^{+}CD^{103+}$) were significantly increased in the PPOS cycles compared to the antagonist cycles (14.2% vs. 6.7% respectively p=0.01 95%CI: 1.9 to13.1).

CONCLUSIONS:
Over-population of cytotoxic NK cells in the endometrium exposed to MPA initiated at early follicular phase along with controlled ovarian stimulation in PPOS cycles is likely to create a hostile environment for implantation as a new previously unknown mechanism of action of progestins.

IMPACT STATEMENT:
This study provides new insights into the mechanism of actions of progestins on endometrial immune cell profile, which may have further clinical implications for implantation, decidualization and pregnancy

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EQUIVALENT BLASTOCYST AND EUPLOIDY RATES ACROSS SWIM-UP, LENSHOOKE®, AND ZYMŌT™ SPERM PROCESSING IN FRESH PARTNER EJACULATE IVF CYCLES. India Ames Claflin, MD[1], Aileen Portugal, MD[2], Rand El Sharaiha, MD[3], Mitra Sharifi, M.D.[4], Megan E Gornet, M.D.[1], Ashley Meyer, BS, MS[1], Valerie Ratts, M.D.[1], Dan Israel Lebovic, M.A., M.D.[1] and Ali Ahmady, PH.D.[1], [1]Washington University in St. Louis, St. Louis, MO, [2]St Louis, MO, [3]Saint Louis, MO, [4]Washington University School of Medicine, St. Louis, MO

OBJECTIVE: Sperm processing is performed in every in vitro fertilization (IVF) cycle, yet whether method selection impacts embryological outcomes remains unclear. Therefore, we aimed to compare three sperm processing methods, swim-up (SU), microfluidic sperm selection using a lens hook device (LensHooke®; LH), and a microfluidic chip device (ZyMōt™; ZY), on post-processing sperm parameters, fertilization rates, blastocyst rates, and euploidy rates in fresh partner ejaculate IVF cycles.

MATERIALS AND METHODS: Retrospective analysis of 445 fresh partner ejaculate IVF cycles from a single IRB-approved academic center (January to December 2025) using SU (n=114), LH (n=141), or ZY (n=190). The sperm processing method was selected at the discretion of the embryologist on the day of retrieval. Pre- and post-processing semen parameters, ICSI and conventional fertilization rates, blastocyst rate (blastocysts day 5+6+7/total 2PN), and euploidy rate (euploid/biopsied embryos) were compared. Kruskal-Wallis with pairwise Mann-Whitney U (Bonferroni correction) and chi-square tests were used as appropriate.

RESULTS:

Table 1. Outcomes by processing method (mean ± SD)	Swim-Up (n=114)	LensHooke® (n=141)	ZyMōt™ (n=190)	*p*-value
Pre-processing semen parameters				
Concentration (10^6/ml)	53.5±53.0	47.6±48.9	41.2±37.8	0.103
Motility (%)	64.5±16.9	61.6±17.8	63.0±17.2	0.336
Progressive motility (%)	57.8±19.7	54.7±18.7	55.0±18.7	0.207
Post-processing semen parameters				
Motility (%)	93.5±10.4	**91.2±11.8** †	95.8±6.4	**<0.001**
Progressive motility (%)	90.0±12.1	**84.2±14.8** †	90.1±10.6	**<0.001**
Fertilization				
ICSI fertilization rate (%)	77.5±23.8	76.4±18.4	**69.3±22.9** †	**0.002**
Conventional fertilization rate (%)	75.0±23.9	**57.6±30.8** *	**57.1±29.3** *	**0.001**
Embryology outcomes				
Total blastocysts per cycle	5.5 ± 5.0	4.7 ± 3.9	4.7 ± 4.5	0.470
Blastocyst rate (%)	61.5 ± 31.3	61.4 ± 29.5	58.4 ± 31.2	0.562
Euploidy rate (%)	48.1 ± 34.2	48.3 ± 35.3	45.5 ± 35.7	0.915

† Significantly lower than both comparator groups (p<0.05, Bonferroni).

* Significantly lower than SU (p<0.05, Bonferroni)

p-values from Kruskal-Wallis test.

CONCLUSIONS: Despite higher post-processing motility with ZyMōt™ and lower motility with LensHooke®, these differences did not translate into differences in blastocyst or euploidy outcomes. Blastocyst yield per cycle was also similar across groups. These findings suggest that swim-up, LensHooke®, and ZyMōt™ may yield comparable blastocyst and euploidy outcomes in fresh partner ejaculate IVF cycles.

IMPACT STATEMENT: This study provides practical data on three sperm processing methods in fresh ejaculate cycles. These findings suggest laboratories can select between swim-up, LensHooke®, and ZyMōt™ based on clinical indication, cost, and workflow without compromising blastocyst development or euploidy rates.

SUPPORT: None

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SAME GRADE, DIFFERENT FATE: MATERNAL AGE UNMASKS DEVELOPMENTAL HETEROGENEITY WITHIN MORPHOLOGICAL GRADES AND PREDICTS IVF OUTCOMES. Ineabelle Collazo, B.S.[1], Julia Oliveira, PhD[2], Nicholas Hendon, BS[3], Iksita Nallapaneni, BS[4], Oscar Machado, M.B.A.[5] and Himanshu Arora, B.SC., M.SC., PH.D.[3], [1]IVFMD, Miami, FL, [2]RI, FL, [3]University of Miami Miller School of Medicine, Miami, FL, [4]NSU Dr. Kiran C. Patel, FL, [5]IVFMD, South Florida Institute for Reproductive Medicine, Miami, FL

OBJECTIVE: Embryologists routinely select embryos based on morphological grade, yet clinically significant variability in implantation and live birth outcomes persists among embryos assigned identical scores. This study examined whether AI-based developmental analysis identifies biologically distinct subpopulations within the same morphological grade, and whether maternal age accounts for developmental differences that current grading systems cannot detect.

MATERIALS AND METHODS: This retrospective study applied an AI-based developmental analysis platform to time-lapse and static images from 150 embryos (110 IVF patients). Within each Gardner quality grade (AA, AB, BB, BC), embryo developmental features were characterized beyond standard morphokinetic scoring. Embryos were stratified by maternal age group. Associations with biochemical pregnancy (β-hCG), gestational sac formation, and live birth were evaluated using multivariable statistical models. Findings were validated in independent external embryo imaging datasets (~9,000 embryos).

RESULTS: Among embryos with identical Gardner grades, AI-based analysis consistently identified distinct developmental subpopulations with meaningfully different clinical outcomes — differences invisible to morphological grading alone. At Day 5, AA-grade embryos separated into subgroups with β-hCG levels of ~500 vs. ~900 mIU/mL and divergent gestational sac formation rates. AB-grade embryos stratified into subgroups with delivery rates ranging from 0.2 to 0.6 per patient. Maternal age was the dominant driver of this divergence, with statistically significant differences across age groups at Day 5 ($p<0.05$–0.01) that narrowed at Day 6 and were largely absent by Day 7. Critically, this heterogeneity was present even within top-grade AA embryos and replicated consistently across independent external datasets.

CONCLUSIONS: Embryos that look the same are not the same. Within every morphological grade — including AA — maternal age drives biologically meaningful developmental differences that predict implantation and live birth. Day 5 is the critical assessment window; by Day 7, these differences are no longer detectable. Standard Gardner grading systematically underestimates this clinically relevant heterogeneity, regardless of embryo quality tier.

IMPACT STATEMENT: Incorporating maternal clinical context into AI-assisted embryo assessment captures developmental information that morphological grading cannot. This may meaningfully improve embryo selection decisions — particularly in cycles where multiple similarly-graded embryos compete for transfer.

SUPPORT: No external financial support was received, and the authors declare no competing interests.

P-193 4:00 PM Monday, October 26, 2026

NATURAL CYCLE VERSUS PROGRAMMED FROZEN EMBRYO TRANSFER IN OVULATORY WOMEN: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS. Murat Erden, MD[1], Savci Bekir Bekir Telek, M.D.[2], Esra Uyanik, MD[1], Hakan Yarali, M.D.[3] and Sezcan Mumusoglu, M.D.[4], [1]Ankara, Turkey, [2]Rize Kackar State Hospital, Rize, Turkey, [3]Anatolia IVF Center, Ankara, Turkey, [4]SM Clinic, Ankara, Turkey

OBJECTIVE: To compare natural cycle (NC) versus programmed cycle (PC) endometrial preparation for frozen embryo transfer (FET) in ovulatory women, evaluating reproductive and perinatal outcomes.

MATERIALS AND METHODS: A systematic review and meta-analysis of randomized controlled trials (RCTs) was conducted in accordance with PRISMA guidelines and registered in PROSPERO (CRD420261350733). MEDLINE, Embase, and the Cochrane Library were searched from inception through March 26, 2026. Eligible studies enrolled ovulatory women undergoing FET and compared NC, including true or modified NC with or without luteal phase support, versus PC. The primary reproductive outcome was live birth rate (LBR), and the co-primary perinatal outcome was preeclampsia. Risk ratios (RRs) with 95% confidence intervals (CIs) were pooled using Mantel-Haenszel methods. Random-effects models were used for primary analyses, with fixed-effect models examined as sensitivity analyses. Per protocol analyses were also conducted for perinatal outcomes, given that actual treatment received, particularly functional corpus luteum status, may better reflect perinatal risk than assigned treatment alone.

RESULTS: Seven RCTs including 9,011 ovulatory women met inclusion criteria, with 4,809 allocated to NC and 4,202 to PC. NC was associated with a significantly higher LBR compared with PC in the intention-to-treat random-effects analysis (RR 1.13, 95% CI 1.03-1.24, P=0.01, I^2=50.4%; 4,809 NC vs 4,202 PC; moderate certainty evidence).

For preeclampsia, the intention-to-treat random-effects analysis of 2 RCTs showed a numerically lower, but not statistically significant, risk with NC compared with PC (RR 0.85, 95% CI 0.36 to 2.00, P=0.72, I^2=53.7%; 3.0% in NC [n=1,550] vs 4.3% in PC [n=1,527]; low-certainty evidence). However, per-protocol analysis of 3 RCTs demonstrated a significantly lower risk of preeclampsia with NC (RR 0.58, 95% CI 0.39-0.86, P=0.01, I^2=0%; 1,406 NC vs 1,370 PC). NC was also associated with lower clinical pregnancy loss (RR 0.77, 95% CI 0.67-0.89, P<0.001, I^2=0%; 6 RCTs; 2,285 NC vs 2,012 PC) and lower placenta accreta spectrum risk (RR 0.59, 95% CI 0.42-0.84, P=0.003, I^2=0%; 2 RCTs; 1,544 NC vs 1,521 PC). No significant differences were observed for clinical pregnancy, hypertensive disorders of pregnancy, gestational diabetes, preterm delivery, fetal growth outcomes, congenital anomalies, NICU admission, or perinatal mortality.
CONCLUSIONS: Among ovulatory women undergoing FET, NC was associated with higher LBRs than PC. Although preeclampsia was not significantly different in the intention-to-treat analysis, per-protocol findings suggest a lower risk with NC. These results support NC as an effective and potentially safer first-line approach for endometrial preparation in ovulatory women undergoing FET.
IMPACT STATEMENT: This meta-analysis of randomized data suggests that preserving ovulation and corpus luteum function during FET may improve reproductive outcomes and reduce selected obstetric risks in ovulatory women. These findings may help guide evidence-based protocol selection and patient counseling in clinical practice.
SUPPORT: None.

P-194 4:15 PM Monday, October 26, 2026

EUPLOID BLASTOCYST PRODUCTION SIGNIFICANTLY REDUCED WITH OLDER SPERM PROVIDER: EVIDENCE FROM PAIRED-SAMPLES ANALYSIS OF DONOR OOCYTE COHORTS WITH INSEMINATION SPLIT BETWEEN TWO INTENDED MALE PARENTS. Said T Daneshmand, MD, Kevin S Richter, BA, PhD, Rebecca Gu, MS, Priscila Cavalheiro, BA, Amanda Du, BS, Gary Aguirre, Sandy Chuan, MD, Valerie A Flores, MD, Bryn E Willson, MD and Shannon Kokjohn, MSc, San Diego Fertility Center, San Diego, CA

OBJECTIVE: To evaluate the effect of differences in male age on embryo development among in vitro fertilization (IVF) cycles in which both partners in male-male couples share insemination of a donor oocyte cohort
MATERIALS AND METHODS: Retrospective review of all donor oocyte IVF cycles with insemination of egg cohorts split between both partners of male-male couples (Oct 2024 - Jan 2026) at a single center. Oocyte donors were 21 to 32 years old. Insemination for all was by intracytoplasmic sperm injection (ICSI) of mature (MII) oocytes. Blastocysts of BB quality or better that developed in vitro underwent trophectoderm biopsy for PGT-A, then were vitrified for later transfer. Evaluated outcomes included 2PN oocytes, blastocyst development, expansion day (the day of biopsy and cryopreservation), grades of the inner cell mass (ICM) and trophectoderm, and PGT-A results. These outcomes were compared between the younger and older partners by paired *t*-test. Additionally, linear regression analysis was used to evaluate the difference in euploid blastocyst production between male partners depending on their difference in age.
RESULTS: A total of 256 male-male couples split insemination of a donor oocyte cohort between them. The average age difference between partners was 4.1 years (35.6 versus 39.7), ranging from 6 days to 23 years and nine months (median 2.9 years, interquartile range = 1.2 years to 5.4 years). Paired comparisons did not reveal any statistically significant differences in any measured outcomes between the younger and older partners. However, linear regression analyses indicated significantly increasing differences between partners favoring the younger partner as the difference in age between them increased, in both euploid PGT-A results per tested blastocyst (p = .003) and euploid blastocysts per inseminated oocyte (p = .019).

	Younger	Older	*p*-value
Age (years)	35.6	39.7	
2PN/egg	80.7%	81.1%	.70
Blastocyst/egg	45.0%	44.6%	.76
Expansion day	5.92	5.95	.23
A-grade ICM/Blastocyst	43.6%	43.8%	.95
A-grade Trophectoderm/Blastocyst	34.7%	36.1%	.49
Euploid/Blastocyst	70.0%	67.0%	.23
Euploid Blastocyst/egg	33.0%	30.7%	.13

CONCLUSIONS: The relatively small difference in ages within most couples (more than half differed by less than 3 years) limited our ability to detect an effect of age on outcomes, despite the statistical power typically inherent in a paired design. This limitation may explain the lack of any statistically significant differences between younger and older partners in any measured outcomes. However, linear regression analyses revealed that as the age difference increased, euploid blastocyst production was increasingly better for younger versus older partners.
IMPACT STATEMENT: These results highlight clinically significant reductions in blastocyst euploidy associated with increasing paternal age.

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ONE-STEP WARMING OF VITRIFIED EMBRYOS YIELDS COMPARABLE LIVE BIRTH RATES TO CONVENTIONAL WARMING. Laura Conversa Martínez, PhD Student, Embryologist[1], Lucía Murria, PhD Student[2], Nekane Medrano Cuetos, MSc[3], Tania Carrión Sisternas, PhD Student[4], Jose Serrano, Technical Embryologist[1], Pilar Campos, Technical Embryologyst[1] and Ana Cristina Cobo, PhD[5], [1]IVIRMA Global Research Alliance, IVI Valencia, Valencia, Spain, [2]IVIRMA Global Research Alliance, Valencia, Spain, [3]IVIRMA Global Research Alliance, IVI Valencia, Valencia, [4]IVIRMA Global Research Alliance, IVIRMA Valencia, IVI Foundation, La Fe Health Research Institute, Valencia, Spain, [5]IVI VALENCIA, Valencia, Comunidad Valenciana, Spain

OBJECTIVE: To evaluate the impact of a one-step warming (OSW) protocol for vitrified embryos on clinical outcomes compared to conventional warming (CW).
MATERIALS AND METHODS: This prospective study included all embryo warming cycles performed between July 2024 and December 2025 in a single IVF center. Cycles were categorized according to warming protocol: CW and OSW. A total of 1,935 embryos were warmed using CW and 1,974 using OSW, resulting in 1,744 and 1,797 embryo transfers, respectively. Baseline characteristics included patient age, BMI, endometrial preparation, donor/autologous oocyte, fresh/vitrified oocyte, PGT-A (yes/no) and day of embryo vitrification (5/6). Outcomes analyzed were survival rate, pregnancy rate, ongoing pregnancy rate (OPR), and live birth rate (LBR). Embryo quality (grades A–D, with grade D considered non-viable) was also assessed. Statistical analysis included ANOVA and Chi-square tests. Multivariate logistic regression was employed to evaluate predictors of OPR.
RESULTS: Embryo survival rates were similar between groups (96.5% in CW vs. 97.0% in OSW; p=0.402). No statistically significant differences were observed in pregnancy rate (60.7% vs. 62.4%; p=0.278), OPR (53.6% vs. 55.8%; p=0.190), or LBR (43.5%, n= 1698 vs. 43.1%, n=485; p=0.885) between CW and OSW, respectively. Embryo quality analysis showed a significantly different distribution between groups, with OSW associated with a higher proportion of top-quality embryos (grade A) (13.9% in CW vs. 16.3% in OSW; p<0.05), suggesting a potential beneficial effect on post-warming embryo integrity. In the multivariate analysis, OSW was not independently associated with OPR (OR=1.066, 95% CI 0.926–1.228; p=0.370). Significant predictors of OPR included endometrial preparation (natural vs. HRT: OR=1.330, p<0.001), embryo quality (A vs. C: OR=2.777; B vs. C: OR=2.044; both p<0.001), PGT-A status (OR=1.248; p=0.010), and day of vitrification (day 5 vs. day 6: OR=1.418; p<0.001). Subgroup analysis showed a significantly higher OPR in non-PGT cycles with OSW compared to CW (p<0.05), although this association did not remain significant after adjustment in multivariate logistic regression, suggesting a potential influence of confounding factors.
CONCLUSIONS: OSW for embryo warming provides clinical outcomes comparable to conventional protocols, with similar survival and pregnancy rates. While no overall independent association with OPR was observed, OSW may confer advantages in specific subgroups, particularly in non-PGT cycles.
IMPACT STATEMENT: Shortened warming protocols aim to reduce exposure to potentially toxic cryoprotectants by avoiding stepwise dilution and minimizing time under non-physiological conditions. Our findings support the application of this approach to embryo warming, as OSW maintains clinical outcomes comparable to conventional protocols while simplifying laboratory workflow. These results support OSW as a safe and efficient alternative to conventional warming in routine clinical practice.

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VITA (COMBINED VITRIFICATION-IONOPHORE TREATMENT FOR ACTIVATION): PRELIMINARY RESULTS OF A MULTICENTER TRIAL ON CRYOPRESERVED OOCYTES. Thomas Ebner, Prof. Dr., Kepler University Hospital, Linz, Austria

OBJECTIVE: Even though survival rates in vitrification of MII oocytes are surprisingly good at a macroscopic level, it has been shown that the cytoskeleton might be impaired, in particular smooth endoplasmic reticulum, corticular granules and mitochodria seem to be affected. All these organelles are closely involved in calcium homeostasis. Thus, bringing up intracellular calcium artificially could help in this context. In the present multicenter trial artificial oocyte activation (AOA) was used to improve the immediate outcome of vitrified oocytes after warming.
MATERIALS AND METHODS: This is preliminary data of a multicenter trial. All cryopreserved oocytes were treated with ICSI 2h after warming. Half of the warmed oocytes were then exposed to a commercial ready-to-use calcimycin for 15 min in order to artificially increase intracellular calcium levels. The other half, however, remained untreated after ICSI. Study design was a sibling oocyte one. In vitro culture was performed until blastocyst stage. Selection for single blastocyst transfer was done on blastocyst quality and not on intervention (ICSI+AOA or ICSI).
RESULTS: Oocyte survival rate was 94%. Fertilization rate was comparable (78% in the ionophore-treated study group vs. 54% in controls) but blastocyst formation rate was significantly higher (P<.05) in oocytes with AOA as compared to the untreated sibling oocytes (57% vs. 29%). Pregnancy rates did not differ (P>.05).
CONCLUSIONS: It is concluded that artificially recruited calcium could counteract the vitrification-related loss in calcium balance. Present preliminary results would explain the observed reduction in blastulation rate in literature.
IMPACT STATEMENT: This is first evidence that cryopreserved oocytes could benefit from AOA. In fact it is a completely new application of AOA. If the preliminary results are confirmed upon completion of the study embryologists would have a potential tool in hands to further improve the outcome of vitrified and warmed oocytes. Ideally, this should be reflected in higher (cumulative) pregancy rates but to date sample number is too low to speculate on that.
SUPPORT: No financial support was received.

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INCREASED MISCARRIAGE RATES AND REDUCED LIVE BIRTH RATES IN ARTIFICIAL ENDOMETRIAL PREPARATION FOR SINGLE FROZEN EUPLOID BLASTOCYST TRANSFER IN WOMEN WITH EXCESS WEIGHT.

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OBJECTIVE:
To compare clinical outcomes between modified natural cycle (mNC) and artificial cycle (AC) for endometrial preparation for single frozen euploid blastocyst transfer (sFEBT) in overweight (≥25-29.9 kg/m^2) and obese (≥30 kg/m^2) patients.
MATERIALS AND METHODS:
Eleven-year retrospective analysis of sFEBTs performed in seventeen infertility clinics in Spain (2014-2025). Ovulatory infertile patients with a body mass index (BMI) of ≥25 kg/m² undergoing either a mNC or an AC were included. Luteal phase support consisted of 400 mg/day of micronized vaginal progesterone in mNC and 800 mg/day in AC. In AC cycles, rescue treatment with 25 mg of daily subcutaneous progesterone was added whenever serum progesterone levels were suboptimal on the sFEBT day. Clinical outcomes were compared using multivariate logistic models after adjusting for potential confounding factors (adjusted odds ratio, aOR), including female age, BMI, oocyte age, embryo quality, number of previous ET, semen origin and type of infertility.
RESULTS:
A total of 6,407 sFEBTs were included: 1,949 mNC (30.42%) and 4,458 AC (69.58%). Mean female age and BMI at the time of sFEBT were 39.4±3.6 y.o. and 28.7±3.3 kg/m², respectively. Differences in female age, oocyte age and BMI were not clinically relevant between endometrial preparation groups.
Overall, taking together overweight and obese patients, the type of endometrial preparation did not affect biochemical pregnancy (63.4% mNC vs. 61.2% AC; aOR: 0.915, 0.816-1.027; p=0.132) and biochemical miscarriage (10.4% mNC vs. 12.7% AC; aOR: 1.197, 0.963-1.489; p=0.106), while mNC yielded significantly higher clinical pregnancy (56.3% vs. 52.9%; aOR: 0.894, 0.800-0.998; p=0.047), ongoing pregnancy (beyond week 12; 50.4% vs. 41.6%; aOR: 0.704, 0.630-0.786; p<0.001), and live birth rates (41.9% vs. 38.2%; aOR: 0.869, 0.773-0.977; p=0.019), as well as a significantly lower clinical miscarriage rate (10.4% vs. 21.4%; aOR: 2.404, 1.897-3.047; p<0.001).
In the group of overweight patients, significant differences between endometrial preparation strategies were observed only for ongoing pregnancy rate (49.8% mNC vs. 42.8% AC; aOR: 0.764, 0.671-0.871; p<0.001) and clinical miscarriage rate (9.4% mNC vs. 20.1% AC; aOR: 2.440, 1.832-3.251; p<0.001) between the two types of endometrial preparation. When only obese patients were considered, mNC was associated with significantly higher clinical pregnancy (59.7% vs. 51.1%; aOR: 0.729, 0.593-0.896; p=0.003), ongoing pregnancy (52.1% vs. 38.3%; aOR: 0.580, 0.469-0.716; p<0.001), and live birth rates (43.4% vs. 34.6%; aOR: 0.705, 0.565-0.880; p=0.002), as well as a significantly lower clinical miscarriage rate (12.8% vs. 25.0%; aOR: 2.318, 1.523-3.527; p<0.001).
CONCLUSIONS:
In overweight and obese patients, the artificial endometrial preparation for sFEBT is associated with poorer clinical outcomes, particularly due to higher clinical miscarriage rates. This effect appears to be more pronounced in obese patients.
IMPACT STATEMENT:
These findings support the preferential use of mNC for frozen embryo transfers in overweight and obese ovulatory women, potentially reducing miscarriage rates and improving live birth outcomes.

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ASSISTED HATCHING AFTER EMBRYO WARMING: DOES IT REALLY WORK? Beatriz Gonzalez Marti, MSc.[1], Clara Gonzalez-Trigo, MSc[2], Carine Cohen Solal, MPS[1], Anne Cécile Cordeiro, Technician[1] and Frida Entezami, MD. MSc.[3], [1]American Hospital Of Paris, Neuilly sur Seine, France, [2]Embryologist, Neuilly sur Seine, [3]American Hospital of Paris, Neuilly Sur Seine, France

OBJECTIVE: Evaluate the efficacy of laser-assisted hatching (AH) in improving embryo implantation rate (IR) in patients undergoing transfer of vitrified/warmed blastocysts.
MATERIALS AND METHODS:
Prospective randomized study in a private single hospital during 2025, including 962 frozen single embryo transfers (FRET). Patients were allocated to different groups regardless of indication, female age, attempt rank or blastocyst quality: in the AH group (n=473; ICSI 227, 246 cIVF) during odd weeks, and in the control group (n=489; ICSI 217, 272 cIVF) during even weeks. AH impacts on chemical, CPR, and MP rates were analyzed for embryos with ≥ 50% intact blastomeres. 841 patients underwent 962 FRET cycles.
Blastocyst vitrification and warming were performed using Vit-kit freeze® and thaw® (Fujifilm) media in closed system (VHS®, Cryobiosytem). Morphological survival was assessed 2 hours after warming, with survival defined as >50% intact blastocyst. AH was carried out using a non-contact 1460-nm infrared diode laser (LYKOS® DTS) to thin a large ZP area (1/8 of the blastocyst circumference). Data were analysed with Chi-square test, Fisher and t.test using RStudio 2025.05.0+496
RESULTS:
No significant differences were observed between the AH and the control group regarding patients age at embryo vitrification (35.5 ± 4.2 vs 36.0 ± 4.1, p > 0.05). Similarly, no significant differences were found in chemical pregnancy rates (HCG > 100; 44% in both groups, p > 0.05), clinical pregnancy rates (38% vs 37%, p > 0.05), or IR (38% in both groups, p > 0.05). The MP rates were also similar in the two groups (2% vs 5% p > 0.05).
When analyzing the impact of AH in embryos according to post-thaw survival (100% group a, or ≥ 50% to 99% intact blastomeres group b), no significant differences were observed between the subgroups (n=476 vs 443) in chemical pregnancy (44% vs 45%, p > 0.05) or clinical pregnancy rates (38% vs 39%, p > 0.05). For embryos with 50–99% post-thaw survival (13 vs 30), no significant differences were observed between groups, with biochemical pregnancy rates of 23% for both and clinical pregnancy rates of 15% versus 17%.
The MP rates were also similar in the two groups whatever the rate of post thaw survival.
CONCLUSIONS: According to these results we observed neither beneficial nor detrimental effect of AH in clinical outcomes. The ZP hardening during vitrification may not impair natural hatching and implantation. Unlike previous reports MP rates weren't increased, with performance of a large AH area on ZP in our study.
IMPACT STATEMENT:
The impact of AH on embryos with <100% post-thaw survival requires further investigation in a larger cohort. Post-thaw cell lysis could weaken embryos and impair natural hatching. AH could potentially facilitate blastocyst hatching, mitigating the negative effects of cellular damage on implantation potential.
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IMPACT OF PGT-A TIMING ON CLINICAL OUTCOMES IN FET CYCLES: PRE-CRYOPRESERVATION VERSUS POST-THAW BIOPSY. Hyeonji GO, B.S[1], Chan Park, M.D[1], Kyungtae SHIN, M.S.[2], Jihyun Lee, MS[3], Hyejin Choi, M.S[4], Jae Young Kim, Ph.D[5], Jieun Ko, MD[5] and Jihyang Kim, M.D., Ph.D.[1], [1]Fertility Center, CHA Bundang Medical Center, CHA University, Seongnam-si, Gyeonggi-do, Korea, Republic of (South), [2]CHA University, CHA Fertility Center Bundang, Seongnam-Si, [3]CHA University, CHA Fertility Center Bundang, Seongnam-Si, South Korea, [4]CHA Fertility Center Bundang, Seongnam-Si, Bundang-Gu, South Korea, [5]CHA Bundang Medical Center, CHA University, Seongnam-si, Gyeonggi-do, Korea, Republic of (South)

OBJECTIVE: To evaluate whether the timing of preimplantation genetic testing for aneuploidy (PGT-A), performed before cryopreservation versus after thawing, affects clinical pregnancy outcomes in frozen embryo transfer (FET) cycles.
MATERIALS AND METHODS: This retrospective single-center study included 1,280 FET cycles between January 2024 and November 2025. Only single blastocyst transfer cycles were analyzed to minimize confounding. Two groups were compared: (1) a pre-cryopreservation PGT-A group, in which embryos underwent trophectoderm biopsy and testing prior to vitrification, followed by warming, culture, and transfer; and (2) a post-thaw PGT-A group, in which previously vitrified embryos were warmed, biopsied, underwent PGT-A, and were cultured for ≥16 hours prior to transfer under identical conditions. Both euploid and mosaic embryo transfers were included. The primary outcome was clinical pregnancy rate, defined by the presence of a gestational sac. Analyses were adjusted for maternal age, embryo quality and blastocyst development day (Day 5 vs Day 6).
RESULTS: A total of 981 pre-cryopreservation and 299 post-thaw PGT-A cycles were analyzed. Clinical pregnancy rates were significantly lower in the post-thaw group (49.0% vs. 61.1%, p = 0.0015), despite a higher proportion of euploid embryo transfers (94.8% vs. 85.8%, p = 0.0002). The hatching rate after culture was also reduced in the post-thaw group (51.2% vs. 84.8%, p < 0.0001), suggesting impaired embryo viability.
CONCLUSIONS: Clinical pregnancy rates were lower in the post-thaw PGT-A group despite a higher proportion of euploid embryos. Reduced hatching following thawing and biopsy suggests decreased embryo developmental competence. These findings indicate that the timing of PGT-A may influence clinical outcomes in FET cycles.
IMPACT STATEMENT: The timing of PGT-A may significantly influence clinical outcomes, as post-thaw biopsy was associated with lower pregnancy rates despite a higher proportion of euploid embryos.

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PROGNOSTIC VALUE OF A BETA-HUMAN CHORIONIC GONADOTROPIN (B-HCG) DECLINE WITH SUBSEQUENT RISE AFTER SINGLE FROZEN EMBRYO TRANSFER (FET): NOT ALWAYS AN ABNORMAL PREGNANCY. Lea C George, MD[1], Devika Sachdev, MD[1] and Kassie Jean Bollig, M.D., M.S.C.E.[2], [1]IVIRMA Global Research Alliance, Basking Ridge, NJ, [2]IVIRMA Global Research Alliance, IVIRMA New Jersey, Basking Ridge, NJ

OBJECTIVE: In a viable early intrauterine pregnancy (IUP), serum b-hCG generally increases over time reflecting continued growth of the pregnancy. However, beyond this expected rise, there can also be a decline, plateau, or biphasic pattern, in which the b-hCG declines and then rises. This pattern is not known to identify a specific pregnancy outcome, but it is generally thought to be associated with abnormal pregnancy development. We investigated pregnancy outcomes in those with a biphasic pattern during their b-hCG trend after a FET.
MATERIALS AND METHODS: This case series included patients with a biphasic b-hCG pattern after a single euploid FET at an academic affiliated center between January 2017 – July 2022. At the time of the biphasic b-hCG pattern, pregnancies were classified as definite ectopic pregnancy (EP; extrauterine gestational sac (GS) with yolk sac (YS) or embryo), probable EP (extrauterine GS or adnexal mass), pregnancy of unknown location

(PUL; no signs of IUP nor EP), probable IUP (intrauterine GS only), or definite IUP (intrauterine GS with YS or embryo). The primary outcome was EP (visualized or non-visualized (b-hCG rose after D&C with no villi)). Secondary outcomes were PUL (spontaneously resolved PUL, b-hCG declined after D&C with no villi, or PUL treated by methotrexate), non-viable IUP (an embryonic intrauterine sac, embryonic demise, or histologically confirmed IUP), and viable IUP. Serum b-hCG value at pattern recognition and gestational age for each final outcome were analyzed using Kruskal-Wallis. Number of days and serial b-hCGs prior to intervention were also calculated.
RESULTS: Of 109 cycles with a biphasic b-hCG pattern, 0 (0%), 2 (1.8%), 55 (50.5%), 11 (10.1%), and 41 (37.6%) were classified as definite EP, probable EP, PUL, probable IUP, and definite IUP, respectively. The final outcome for these cases included: 10 (9.2%) EPs, 41 (37.6%) PULs, 40 (36.7%) non-viable IUPs, and 18 (16.5%) viable IUPs with 17 resulting in a live birth (1 termination for anomalies). The b-hCG (mIU/mL; median, IQR) at the time of the biphasic pattern was statistically different based on final outcome (151.9 (76.2-265.7), 90.2 (48.6-320.0), 2,002.0 (319.0-8,339.3), and 80,980.6 (50,541.0-126,832.1); p=<0.001 for EP, PUL, non-viable IUP, and viable IUP, respectively). Timing of the biphasic pattern (days, median, IQR) post-FET were also statistically different (21 (20-23), 20 (16-24), 28.5 (23-34.5), and 35 (28-39) for EP, PUL, non-viable IUP, and viable IUP, respectively; p<0.001). Mean number of days and serial b-hCGs prior to intervention were 4.6 and 7.4, respectively.
CONCLUSIONS: A biphasic pattern during b-hCG trend of a pregnancy can be seen in both normal and abnormal pregnancies but tends to occur at earlier gestational ages and at lower serum b-hCG values in those with EP, PUL, and nonviable IUPs.
IMPACT STATEMENT: An early decrease in b-hCG after initial pregnancy detection may provide an additional marker of an abnormal pregnancy, but further investigation should occur prior to definitive intervention in a desired pregnancy.
SUPPORT: No funding sources were used for this study.

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CLINICAL ASSESSMENT OF THE EFFECT OF A NEW SINGLE-STEP EMBRYO CULTURE MEDIUM ON HUMAN BLASTOCYST DEVELOPMENT.
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OBJECTIVE: To provide clinical data of the effects of CaseBio Culture medium, a new 1-step embryo culture medium that was developed based on KSOMaa, on human embryo development.
MATERIALS AND METHODS: Seven fertility clinics compared culture of sibling zygotes in the new CaseBio Culture medium (Test, N = 1,824 zygotes) with the medium that was currently used in each clinic (Control, N = 2,613 zygotes) according to standard laboratory procedures for each clinic. Blastocyst development rates and quality were assessed by embryologists from day 5 to day 7 in all clinics. In three of the clinics, PGT-A was performed on a total of 194 blastocysts cultured in CaseBio Culture medium, and 283 blastocysts from the control media.
Data were analyzed by students t-test and P<0.05 was considered statistically significant.
RESULTS: Zygotes cultured in CaseBio Culture media yielded 57.1% blastocysts and 33.9% good quality blastocysts, compared with 58.5% and 35.5% in the control media. Euploidy rates were 59.2% in the CaseBio blastocysts, and 58.2% in the control blastocytes.
CONCLUSIONS: In these experiments, there were no differences in blastocyst development rates or the percentage of good quality blastocysts (GQB%) among the CaseBio and control culture groups. Euploidy rates between the two groups were also not significantly different. This study will continue in order to monitor pregnancy rates of blastocysts cultured in CaseBio medium compared to control medium.
IMPACT STATEMENT: The results of this experiment, suggest that CaseBio medium performs as well as existing clinical media, across multiple clinics using established conditions unique for each site. This substantiates extensive pre-clinical *in vitro* and multigenerational transfer studies that were conducted in the mouse model and demonstrates the safety and efficacy of CaseBio Culture medium as a novel single-step KSOMaa variant for human embryo culture.
SUPPORT: CaseBioscience Financed the current study in kind, by providing the CaseBio Culture Medium, clinically approved for use by the FDA. The seven clinics independently funded the studies in their clinics.

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LABEL-FREE 3D NON-INVASIVE IMAGING OF LIVING HUMAN BLASTOCYSTS USING OWLO TECHNOLOGY: A NOVEL TOOL TO SUPPORT CLINICAL EMBRYO GRADING AND DECISION-MAKING IN ASSISTED REPRODUCTION.
Christine Ho, Ph.D[1], Nicolas Guigui Dr, Ph.D[2], Elsa Giraudat Dr., Ph.D[3], Paul Balondrade Sr., Ph.D[4], Flavien Bureau, Ph.D[5], Martin Brosset, M.S, M.E[6], Olivier Binois Dr., MD[7], Victor Barolle, Ph.D[8] and Mehdi Dahoun, MD[7], [1]OWLO, Paris, Paris, France, [2]OWLO, Paris, France, [3]Paris, France, [4]OWLO, Paris, Île-De-France, France, [5]Owlo, Paris, France, [6]Full time employee, Paris, France, [7]MD, clinician, andrologue, Paris, France, [8]OWLO SAS, Paris, France

OBJECTIVE: Introducing a new label-free 3D non-invasive imaging tool enables live human embryo grading to support clinical decision-making.
MATERIALS AND METHODS: N=34 human embryos were conceived and cryopreserved at Institut Montsouris (Paris, France).They were thawed for research purposes. Blastocysts were imaged using the 3D microscope developed by the startup OWLO, capable of capturing subcellular dynamics in less than 10s within embryos without any labeling. To assess the impact of OWLO's images on embryo evaluation, 5 independent senior embryologists from 2 different IVFclinics were asked to grade embryo according to Gardner's morphological criteria using either standard DIC microscopy alone or standard DIC microscopy supplemented with OWLO's 3D embryo images. The research protocol was authorized by the French Biomedical Agency.
RESULTS: The proposed imaging modality provided simultaneous visualisation at three levels of detail. Standard morphological assessment of the zona pellucida, inner cell mass, trophectoderm, and blastocoel cavity was preserved. Notably, individual cell boundaries and nuclei were resolved with a clarity unachievable by conventional approaches, granting direct access to subcellular architecture within the intact embryo. Critically, the modality enabled precise, discrimination between living cells and fragmented structures, going beyond the qualitative estimates afforded by standard embryo imaging. We found that clinical decisions are consistent using conventional 2D imaging and adjunct use of OWLO novel 3D imaging (mean, Cohen's kappa = 0.561). Interestingly, for 4 out of 5 embryologists, OWLO imaging led to equal or more favorable disposition decisions, with no net loss of transfer recommendations based on the supplementary observation of 3D pictures. However, as this is a novel way to represent blastocysts, clinicians were not previously trained to grade in 3D.
CONCLUSIONS: The novel imaging device developed by OWLO is a promising tool for 3D visualization of living human blastocysts. It provides real-time optical contrast between dynamic living structures and inert components, without requiring fluorescent dyes or invasive manipulation. We showed that grades using 2D and 3D images are consistent. In 10% of cases, 3D OWLO imaging resolved grading uncertainty and led to a more favorable clinical decision (transfer) compared to standard 2D imaging. This technology could complement existing morphological grading systems and improve embryo selection prior to transfer.
IMPACT STATEMENT: This study demonstrates the feasibility of label-free 3D imaging of living human embryos using OWLO technology. By enabling non-invasive, high-resolution visualization of inner embryonic structures, this approach has the potential to standardize practice and thereby reduce subjectivity bias by introducing quantitative evaluation such as morphometric parameters. This could ultimately improve implantation rates and patient outcomes while preserving embryo integrity.
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GESTATIONAL AGE–STANDARDIZED YOLK SAC SIZE IS ASSOCIATED WITH PREGNANCY LOSS FOLLOWING SINGLE EUPLOID EMBRYO TRANSFER.
Alexis Hatch, MA[1], Carlos Hernandez-Nieto, MD[2], Madura Vaidya, BA[3], Tamar Alkon-Meadows, MD[2], Loreli Mejia-Fernandez, MSc[4], Joseph A. Lee, BA[5], Anate Aelion Brauer, M.D., M.S., MB.S.[1], Christine Briton-Jones, PhD[1], Alan B. Copperman, MD[1] and Tanmoy Mukherjee, M.D.[1], [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]Reproductive Medicine Associates of New York, New York, NY, [3]Reproductive Medicine Associates of New York, NY, [4]Astoria, NY, [5]RMANY || US Fertility, New York, NY

OBJECTIVE: Deviations in Yolk sac (YS) size have long been recognized as early markers of reproductive failure and frequently associated with clinical pregnancy loss (CPL). This study assesses the relationship between gestational age (GA)-standardized YS measurements and CPL, and constructs euploid-specific reference intervals for YS diameter by GA.
MATERIALS AND METHODS: This retrospective cohort study was conducted at a single academic center and included an unselected infertile population undergoing single euploid embryo transfer (SEET) between 2016 and 2025. Singleton clinical pregnancies with a measurable YS on transvaginal ultrasound at 5–7 weeks' gestation were included. CPL and live birth rates were assessed. Normative GA–specific curves were generated from live births, and YS measurements were converted to Z-scores. Multivariable models adjusted for oocyte age, BMI, embryo quality, endometrial thickness, AMH, and year; GEE models and week-specific and ROC analyses were performed.
RESULTS: A total of 10,918 pregnancies were analyzed (live birth 89.9%; CPL 10.1%). Median YS diameter increased from 1.65 mm at day 35 to a plateau of 5.0–5.5 mm after day 52 (R^2=0.44, p<0.001). Each 1 standard deviation decrease in Z-score was associated with increased CPL risk (aOR 1.51, 95% CI 1.36–1.67), demonstrating an asymmetric U-shaped relationship. Markedly small YS ($Z < -2.5$) had the highest risk (58.9% CPL; aOR 20.6), while enlarged YS ($Z > +2.5$) showed a more modest increase in risk (17.3%; aOR 2.40). Intermediate Z-scores were not significantly associated with risk. The association was consistent across weeks 5–7, although enlarged YS were significant only at week 7. Lower YS cutoffs showed modest discrimination (AUC 0.58–0.62) with high negative predictive value (90–94%), whereas upper cutoffs demonstrated poor discriminatory performance (AUC 0.38).
CONCLUSIONS: In pregnancies following SEETs, YS size demonstrated a gestational age–dependent, asymmetric association with clinical pregnancy loss. Markedly small Yolk sacs are strongly associated with CPL, whereas enlarged Yolk sacs confer a modest risk and limited prognostic value. These findings challenge traditional interpretations and support the use of GA–adjusted Z-scores to improve risk stratification in early pregnancy
IMPACT STATEMENT: In pregnancies following single euploid embryo transfers, gestational age–standardized Yolk sac reference intervals demonstrate that Yolk sac size is an independent and asymmetric predictor of clinical pregnancy loss.
SUPPORT: No financial aid was received

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ARTIFICIAL REMOVAL OF THE ZONA PELLUCIDA AT THE PRONUCLEAR STAGE DOES NOT IMPROVE OUTCOMES IN PATIENTS WITH REPEATED POOR EMBRYONIC DEVELOPMENT: A SIBLING OOCYTE STUDY. Yoshihisa Harada, Ph.D.[1], Emi Fukunaga, M.Sc.[1], Tomoyo Maeda, M.S.[1], Maki Ikeda, M.D., Ph.D.[1], Shinichiro Okano, M.D.[1] and Masayuki Kinutani, M.D., PH.D.[2], [1]Kinutani Women's Clinic, Hiroshima, Japan, [2]Kinutani Women's Clinic, Japan

OBJECTIVE:
In recent years, it has been reported that artificial removal of the zona pellucida (ZP) at the pronuclear stage is effective at reducing fragmentation and improving embryonic development. We aimed to evaluate whether artificial removal of the ZP at the pronuclear stage improves embryonic development and clinical outcomes in patients with repeated poor embryonic development. To minimize inter-cycle variability, we employed a sibling oocyte design allowing direct comparison within the same cohort.
MATERIALS AND METHODS:
This study was performed between January 2022 and July 2024 and included a total of 284 2PN2PB zygotes from 55 oocyte retrieval cycles. The 2PN2PB zygotes obtained same cycle were randomly divided into two groups, approximately half of the 2PN2PBs were ZP removed. Mean patient age at oocyte retrieval was 38.6±4.0 years. Zygotes from the same cycle were allocated into two groups: ZP removal (ZP−, n=140) and control (ZP+, n=144). ZP removal was performed using 0.125 M sucrose-induced shrinkage followed by laser-assisted zona dissection and mechanical separation. Outcomes included survival rate, blastocyst formation rate, good-quality blastocyst rate, and clinical outcomes after transfer.
RESULTS:
Out of 140 ZP− embryos, 139 (99.3%) survived. Blastocyst formation rates were similar (ZP+: 40.5% vs. ZP−: 41.0%, P=1.0000), as were good-quality blastocyst rates (18.2% vs. 20.9%, P=0.6402). Clinical pregnancy rates per transfer were 25.0% (5/20) in the ZP+ group and 30.4% (7/23) in the ZP− group, with no significant difference (P=0.7449). Miscarriage rates were 0 % (0/5) and 28.6 % (2/7), respectively (P=0.4697). A total of five live births were achieved in each group. Live birth rates were 25.0% (5/20) in the ZP+ group and 21.7% (5/23) in the ZP− group (P=1.0000), indicating comparable outcomes between groups.
CONCLUSIONS:
Artificial removal of the zona pellucida at the pronuclear stage did not improve embryonic development or clinical outcomes in patients with repeated poor embryonic development. These findings suggest that routine application of this technique in such patients may not be beneficial. Further studies are needed to identify specific subgroups that may benefit.
IMPACT STATEMENT:
This sibling oocyte study demonstrates that artificial removal of the zona pellucida at the pronuclear stage does not improve embryo development or live birth outcomes in patients with repeated poor embryonic development, suggesting that routine use of this invasive technique may be unnecessary in clinical practice.

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DOES IN-HOUSE EMBRYO IMAGE DATA AND MATERNAL AGE–BASED FINE-TUNING OF AN AI EMBRYO EVALUATION MODEL IMPROVE PREDICTION OF PREGNANCY OUTCOMES? Jin Hamada, Bachelor of Agriculture, Masashi Shioya, Ph.D., Miki Okabe-Kinoshita, M.Sc, Maki Fujita, M.D. Ph.D. and Keiichi Takahashi, M.D., TAKAHASHI WOMENS'CLINIC, Chiba, Japan

OBJECTIVE:
To evaluate whether in-house specific finetuning of an image-only AI-based embryo scoring model improves prediction of pregnancy outcomes from static blastocyst images. Furthermore, to assess the additional predictive benefit achieved by integration of maternal age into the finetuned model.
MATERIALS AND METHODS:
The base AI model, EMBRYOAID (MIM Fertility, Poland), was originally trained using 39,846 static blastocyst images with known pregnancy outcomes collected from multiple IVF centers, excluding the present clinic. To adapt the model to our center, additional supervised finetuning was performed using 997 embryos from our clinic. Maternal age was incorporated by combining the blastocyst image score with an age-based pregnancy probability estimated from clinical population data. Model performance was evaluated using stratified 5-fold cross-validation, in which 80% of embryos were used for finetuning and the remaining 20% were used for independent testing in each fold. Predictive performance was compared across three models: the original image-only model, the finetuned image-only model, and the finetuned model integrated with maternal age. Model discrimination was evaluated using area under the receiver operating characteristic curve (AUC) for pregnancy (fetal heartbeat). To further evaluate discrimination, embryos were stratified into quartiles according to the age-integrated prediction score, and observed pregnancy rates were compared using the Cochran–Armitage test for trend.
RESULTS:
Regarding the 997 blastocysts used for in-house specific finetuning, the embryos were derived from patients with a mean age of 36.7 ± 4.6 years (range 22–47). When evaluated on the present dataset, the AUC for the original EMBRYOAID model (image-only, before finetuning) was 0.6455 (95% CI: 0.610–0.678). Following in-house specific finetuning, the AUC for the image-only model demonstrated a similar AUC of 0.6490 (95% CI: 0.613–0.682), with no significant improvement compared with the baseline model ($p = 0.518$). Integration of maternal age significantly improved predictive performance, increasing the AUC to 0.7164 (95% CI: 0.684–0.749; $p = 0.0005$ versus both image-only models).
To further evaluate the model's discriminative ability, embryos were classified into quartiles based on the age-integrated prediction score. A trend was observed where higher prediction scores were associated with higher pregnancy rates (Cochran–Armitage test for trend, $p < 0.05$): 18.0% (45/250) in Q1, 35.7% (89/249) in Q2, 49.8% (124/249) in Q3, and 65.9% (164/249) in Q4.
CONCLUSIONS:
In-house specific finetuning of the image-only model did not improve pregnancy prediction. However, integration of maternal age significantly improved the predictive performance of the AI-based embryo scoring model, highlighting the importance of combining clinical factors with static embryo image analysis for more accurate embryo evaluation in IVF practice.
IMPACT STATEMENT:
Integration of maternal age into AI-based embryo scoring models may enhance embryo selection by providing more accurate, patient-specific predictions of pregnancy potential.

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VALIDATION OF THE LENSHOOKE X12 PRO SYSTEM FOR SPERM DNA FRAGMENTATION ANALYSIS. Sajal Gupta, M.D.[1], Laura C. Gemmell, MD[2], Kimberly Nunez, Bachelor of Science in Cell and Molecular Biology[2], George Koustas, PhD[3] and Eric J. Forman, H.C.L.D, M.D.[4], [1]Columbia University Fertility Center, Obstetrics & Gynecology, New York, NY, [2]Columbia University Fertility Center, New York, NY, [3]New York, NY, [4]Columbia University Fertility Clinic, New York, NY

OBJECTIVE: Analytical equivalence and clinical reliability of a newly acquired AI platform machines, an instrument for sperm DNA fragmentation (SDF) assessment has not been reported in literature, To evaluate the analytical agreement, repeatability, and comparability between a currently utilized LensHooke X12 Pro instrument and a newly acquired LensHooke X12 Pro for quantitative measurement of sperm DNA fragmentation (SDF) using duplicate microgel wells.
MATERIALS AND METHODS:
This study assessed the precision and agreement of the new instrument relative to the existing platform. Sperm DNA fragmentation was measured using duplicate microgel wells based on the sperm chromatin dispersion (SCD) assay using the LensHooke R11 kit, coupled with AI-assisted image analysis. Semen samples were standardized to a concentration of 10×10^6 sperm/mL prior to processing.
The LensHooke X12 platform automatically identifies, classifies, and quantifies sperm cells within each microgel using image recognition algorithms capable of distinguishing fragmented from non-fragmented DNA patterns, enabling automated calculation of SDF. A total of 13 patient samples were analyzed on both instruments following staining with the R11 kit. Statistical analysis included calculation of the Pearson correlation coefficient to assess agreement between instruments and repeatability within wells.
RESULTS: The correlation analysis demonstrates the following: Overall machine agreement is extremely high (r = .996,).
Table 1: Concordance between Old and New instruments

Comparison Pair	Description	Correlation (r)
Old vs New (Overall Average DNA Fragments)	Agreement between overall sperm DNA fragmentation outputs of the two machines	.996
New Machine: Well 1 vs Well 2	Internal consistency between wells on the new machine	.918
Old Machine: Well 1 vs Well 2	Internal consistency between wells on the old machine	.957
Well 1: Old vs New	Cross machine agreement for Well 1	.973
Well 2: Old vs New	Cross machine agreement for Well 2	.986

CONCLUSIONS: The new LensHooke X12 Pro demonstrates excellent analytical agreement with the validated instrument and strong repeatability across duplicate wells. These findings support its suitability for clinical implementation in quantitative sperm DNA fragmentation analysis, with only minimal variability observed relative to the existing system.
IMPACT STATEMENT: The high level of concordance observed across individual wells and between instruments underscores the robustness of AI-assisted SDF analysis using the sperm chromatin dispersion (SCD) assay. By minimizing inter- and intra-observer variability inherent to manual scoring, the platform enhances reproducibility and standardization of DNA fragmentation testing.
SUPPORT: The stiudy was supported by CUFC

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RECIPIENT-REPORTED MEDICAL UPDATES IN DONOR-CONCEIVED OFFSPRING: A THREE-YEAR RETROSPECTIVE REVIEW FROM A U.S. SPERM BANK. Katie Lee Hornberger, B.S., M.SC.[1], Olivia Hess, CGC[1], Emily A Nazar, CGC[2] and Brynn Persky, Master of Science in Genetic Counseling[3], [1]Seattle Sperm Bank, Seattle, WA, [2]Seattle Sperm Bank, WA, [3]Seattle Sperm Bank

OBJECTIVE: Characterize recipient-reported medical updates in donor-conceived offspring over a three-year period including diagnostic category, presence of genetic findings, and follow-up action.

MATERIALS AND METHODS: A retrospective analysis was conducted on recipient-reported medical updates received by a large U.S. sperm bank from January 2023 to December 2025. Medical updates were categorized by diagnostic category, presence of genetic findings, and type of follow-up conducted, including dissemination of medical update letters, updates to the donors' profiles, and donor suspensions.
RESULTS: A total of 513 medical updates on donor conceived pregnancies and children were received and categorized. Following exclusion of first trimester miscarriages, 407 medical updates were included in the analysis. The top four categories of medical updates included: congenital structural anomalies (28.2%) including heart defects, club foot, and cleft palate; neurodevelopmental conditions (26.3%) including autism spectrum disorder and attention-deficit/hyperactivity disorder; prenatal and perinatal complications (12.0%), including preeclampsia and premature birth; immune conditions and allergies (8.4%). Some reports met criteria for multiple categories. Of the 407 medical updates, 19.4% involved genetic findings (72% pathogenic variants and 28% VUS) including chromosomal aneuploidies, copy number variants, and single gene variants identified prenatally or postnatally.
All medical updates triggered additional donor record review and follow-up investigation. Of the 407 medical updates reported, 67% triggered an update to the donor's medical profile, and 38% triggered a medical update letter written by in-house genetic counselors and sent to all recipients and distributors of that donor. The categories most likely to trigger distribution of a medical update letter involved neurodevelopmental conditions and congenital structural anomalies. Ultimately, 39 donors involved in 98 medical updates were suspended from donating and additional distribution. These findings are consistent with a cascade effect, where initial reports and notifications may trigger subsequent reports from additional recipients.
CONCLUSIONS: Over one-third of medical updates received by the gamete bank triggered a medical update letter to notify other recipients of the new medical history. Recipient-reported medical updates play a critical role in clinical management of donor conceived people and informing donor suitability. These findings support the need for standardized, guideline-informed processes for reporting new medical findings, investigating the findings, and collaboration with donor-conceived people, recipients, donors, and medical providers involved in their care.
IMPACT STATEMENT: These findings provide one of the first detailed characterizations of how sperm banks evaluate and act on recipient-reported medical updates. This work supports the development of standardized practices for medical update tracking, risk assessment, and communication, with implications for improving clinical oversight and long-term health outcomes in donor-conceived populations.
SUPPORT: None
REFERENCES:
Practice Committee of the American Society for Reproductive Medicine. (2024). *Gamete and embryo donation guidance*. Fertility and Sterility, 122(5), 799–813.

P-208 4:00 PM Monday, October 26, 2026

RESOLVING UNCERTAIN GENETIC FINDINGS IN DONOR-CONCEIVED FAMILIES THROUGH ETHICAL DONOR ENGAGEMENT AND RESEARCH COLLABORATION: A CASE REPORT. Katie Lee Hornberger, B.S., M.SC.[1], Elsa Balton, CGC[2] and Lauren C Briere, CGC[3], [1]Seattle Sperm Bank, Seattle, WA, [2]Undiagnosed Disease Network, [3]Undiagnosed Disease Network, MA

OBJECTIVE: With the gamete bank acting as a facilitator, collaboration between two families of donor-conceived children and the mutual sperm donor enabled research-based whole genome sequencing, ultimately leading to a genetic diagnosis in both cases.
MATERIALS AND METHODS: A large U.S.-based sperm bank was contacted by two recipients reporting donor-conceived offspring with multiple congenital anomalies and developmental delay. Both children were conceived using the same open-identity sperm donor (i.e., a donor who consents to release of identifying information to offspring at age ≥18 years), who had ceased donating four years prior.
Case 1: A female child presented with severe microcephaly (Z-score = −5), seizures, respiratory failure, cortical visual impairment, and diffuse brain hypoplasia with delayed myelination.
Case 2: A female child, a genetic half-sibling to Case 1, presented with mild microcephaly (Z-score = −2), cerebellar atrophy, ataxia, and global developmental delay. Prior genetic evaluations in both cases, including chromosomal microarray, gene panel testing, and whole exome sequencing, were inconclusive.
The families connected through the sperm bank's family connection platform, subsequently enrolled with the Undiagnosed Diseases Network (UDN), and contacted the sperm bank to request donor participation in research-based whole genome sequencing to attempt to identify the underlying etiology of their children's complex phenotypes. After addressing ethical considerations—including recontacting the donor to request genetic testing, informed consent, protection of donor identity, and implications to other donor conceived people the bank recontacted the donor, and he agreed to participate. His involvement ultimately enabled genetic diagnoses in both children.
RESULTS:
Case 1 was diagnosed with *SARS1*-related autosomal recessive neurodevelopmental disorder. Genomic analysis demonstrated that the proband harbors two *SARS1* variants in trans; the sperm donor was confirmed to be a carrier of one variant. Case 2 was diagnosed with autosomal recessive spinocerebellar ataxia 33, a rare condition caused by biallelic variants in *RNU12;* the sperm donor was confirmed to be a carrier of one variant. Following receipt of the donor and children's results and in collaboration with the UDN, the sperm bank distributed a medical update to all recipients of the donor and notified the donor of the results.
CONCLUSIONS: Whole genome sequencing in donor-conceived children is often limited by lack of access to donor information, but this case shows that donor and recipient engagement can enable trio analysis, improve diagnostic accuracy in donor conceived people, and turn uncertain findings into diagnoses.
IMPACT STATEMENT: This case underscores the importance of maintaining ongoing communication channels in gamete donor programs after donors have ceased donating and recipients have completed family building.
SUPPORT: Research reported in this publication was supported by the National Institute of Neurological Disorders and Stroke of the National Institutes of Health under Award Numbers U01NS134355, U2CNS132415 and U2CNS132415 and by the National Institutes of Health under Award number 1U01HG011744. The content is solely the responsibility of the authors and does not necessarily represent the views of the National Institutes of Health.

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SAME DATA, DIFFERENT RESULTS: A STATISTICIAN'S GUIDE TO ANALYSIS OF ASSISTED REPRODUCTION DATA. Laura Katherine Kaizer, MPH[1], Dana R Siegel, M.D.[2], Michael P. Diamond, M.D.[3], Christos Coutifaris, M.D., PH.D.[4], Peter R Casson, M.D.[5], Ruben J Alvero, M.D.[6], Gregory M Christman, M.D.[7], Karl R. Hansen, MD, PhD[8] and Mary D Sammel, ScD[2], [1]University of Colorado, Aurora, CO, [2]University of Colorado Anschutz Medical Campus, Aurora, [3]Medical College of Georgia at Augusta University, Augusta, GA, [4]University of Pennsylvania, Philadelphia, PA, [5]TBD, [6]Stanford University, Sunnyvale, CA, [7]University of Michigan, Ann Arbor, MI, [8]University of Oklahoma College of Medicine, Oklahoma City, OK

OBJECTIVE: To shed light on the various estimates and interpretations of cumulative pregnancy rates across five different statistical models (standard and conservative Kaplan Meier (KM), generalized estimating equation (GEE) models, first-cycle only analyses, and any-pregnancy analyses) using data from the Assessment of Multiple Intrauterine Gestation from Ovarian Stimulation (AMIGOS) trial as a case study.
MATERIALS AND METHODS: Using the first three intrauterine insemination (IUI) cycles from the AMIGOS trial, which compared ovulation stimulation with clomiphene citrate, letrozole, or gonadotropins, we describe the estimated cumulative pregnancy rate using three statistical approaches: 1) standard KM method and log-rank test, 2) conservative KM estimates and log-rank test assuming all nonpregnant participants were followed for three cycles, and 3) GEE models with a treatment-by-time interaction. For the GEE model, cumulative pregnancy rates were derived from the estimated per-cycle probabilities. For this method, 95% bootstrap confidence intervals are estimated using 1,000 samples. Results and interpretations were then compared across models, and to participant level, first-cycle-only and any-pregnancy analyses.
RESULTS: Both log-rank tests under the KM framework demonstrated significant differences in number of cycles-to-pregnancy by treatment group ($p<0.001$); however, the log-binomial GEE model including a treatment by cycle interaction was not significant ($p=0.161$), indicating that differences in pregnancy risk between groups did not vary across cycles. However, the estimated cumulative pregnancy rates after three cycles were identical between the standard KM and GEE approaches (0.31 [95%: 0.26, 0.36] for clomiphene, 0.27 [95%: 0.22, 0.32] for letrozole, and 0.46 [95%: 0.40, 0.53] for gonadotropins), indicating gonadotropins had a significantly higher cumulative pregnancy rate than clomiphene or letrozole. The conservative KM estimates were similar to any-pregnancy estimates (0.29 [95%: 0.24, 0.35] for clomiphene, 0.26 [95%: 0.21, 0.31] for letrozole, and 0.42 [95%: 0.37, 0.48] for gonadotropin), highlighting consistent overall conclusions with the standard KM approach.
CONCLUSIONS: While different statistical approaches lead to similar cumulative pregnancy rate conclusions, there were differing statistical interpretations of treatment effects across cycles. For example, neither KM nor GEE analyses directly answer the research question of interest. Both require additional computation to estimate cumulative pregnancy after three cycles, their associated variability, and tests of statistical significance. These discrepancies underscore that model choice—and its underlying assumptions—can meaningfully influence interpretation of results.
IMPACT STATEMENT: Evaluating the impact of model assumptions and model choice will help guide researchers in selecting the appropriate analytical methods to test scientific research questions. Careful and intentional selection of analytic methods is essential in infertility research to ensure that the results are both statistically sound and clinically meaningful for patient counseling.

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EVALUATING EMBRYO SURVIVAL AND PREGNANCY RATES USING RAPID UNMATCHED WARMING/VITRIFICATION MEDIA, TOWARDS UNIVERSAL SINGLE STEP RAPID WARMING SOLUTION. Mr. Mohammed H Ibrahim, MSc, TS(ABB)[1], Roberta Rubino, MSc[2], Leizhen Wei, MD, PhD, HCLD/TS (ABB)[3], George R Attia, MD, FACOG, MBA[4] and Pasquale Patrizio, MD, MBE, HCLD, FACOG[5], [1]University of Miami, Miller School of Medicine, Doral, FL, [2]University of Miami Miller School of Medicine, [3]University of Miami, Doral, FL, [4]University of Miami Miller School of Medicine, Miami, FL, [5]University of Miami, Miller School of Medicine, Miami, FL

OBJECTIVE: To compare the impact of rapid warming using unmatched commercial media versus the matched conventional multi-step warming media on vitrified human blastocysts.
MATERIALS AND METHODS: A retrospective study of vitrified blastocysts rewarmed using two different protocols: a conventional multi step warming matching the vitrification media, and a rapid warming protocol unmatched to the vitrification media. All embryos were vitrified with Vit Kit Freeze 90133-SO (FUJIFILM Irvine Scientific, USA). The multi-step warming arm (Jan. 2021-Dec. 2023) used the match warming media in stepwise manner from 1.0 M(TS) for 1 minute, 0.5M(DS) for 4 minutes, and isotonic solution (WS) for 10 minutes (Vit Kit Thaw 90137-SO, FUJIFILM Irvine

Scientific, USA). The non-conventional arm used the rapid warming protocol (January.2025-March. 2026) consisting of a single warming step for 2 minutes only and transferred to culture media (Ultra Rapid Warm Blast, Vitrolife, Sweden). After rewarming, embryos were left in high-protein culture media for 2-3 hours before transfer. Primary outcome was the comparison of the survival rates between the two warming protocols. Statistical analysis was conducted using Chi-Square Test for Independence and p< 0.05 considered significant

RESULTS: In the conventional arm, a total of 463 blastocysts were rewarmed using matched vitrification and rewarming media and 449 blastocysts survived (97%), re-expanded, and were transferred. In the non-conventional arm, 368 embryos were rewarmed using unmatched vitrification and warming commercial media with a shorter ultra rapid warming protocol. Of those, 364 embryos survived (99%), re-expanded, and were transferred. There was no significant difference in embryo survival rates(P=0.057) and in pregnancy rates (p=0.08) between the two protocols as shown in table

Protocol	Total Thawed	Total Survived	Survival Rate	P-Value	Number of Transfers	Total Pregnant	Pregnancy Rate	P-Value
VitKit Warm	463	449	97%	—	379	216	57%	—
Ultra Rapid Warming	368	364	99%	0.057	346	199	57.5%	0.8

CONCLUSIONS:

Ultra rapid warming protocol is as effective as the original multi step warming protocol and it can be safely used to rewarm blastocysts vitrified with the prolonged multi step vitrification protocol.

The excellent survival and pregnancy rates confirm that unmatched commercial rewarming media can be safely used with vitrified blastocysts, reducing the time required for rewarming procedure, the costs, and to enhance the workflow time in IVF laboratory. Universal warming media protocols facilitate the exchange of vitrified embryos between different ART laboratories irrespective of the media used for vitrification

IMPACT STATEMENT: Developing a universal blastocyst rewarming media enhances the overall productivity and efficiency of frozen embryo transfer procedures

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TAILORED GAMETE ACTIVATION STRATEGIES ENHANCE REPRODUCTIVE OUTCOMES IN MALE-FACTOR INFERTILITY PATIENTS WITH PRIOR INTRACYTOPLASMIC SPERM INJECTION (ICSI) FAILURES.

Rong Hu, Ph.D, M.D.[1], Yajie Wang, M.D.[2] and Guiyi Ji, M.D.[2], [1]General Hospital of Ningxia medical university, China, [2]Yinchuan, China

OBJECTIVE: To evaluate the efficacy and neonatal safety of three distinct gamete activation strategies—sperm activation, artificial oocyte activation (AOA), and gamete coactivation—in patients experiencing repeated assisted reproductive technology (ART) failures due to severe male factor infertility.

MATERIALS AND METHODS: In this prospective cohort study, 224 patients with severe oligoasthenospermia, profound oligoasthenospermia, or non-obstructive azoospermia and a history of ≥2 prior failed ICSI cycles were enrolled. Participants were stratified into three intervention groups based on sperm motility assessed on the day of oocyte pickup (OPU) and the fertilization rate of their initial ICSI cycle: sperm activation (no motile sperm, prior fertilization rate >50%; n=85), AOA (motile sperm present, prior fertilization rate <50%; n=79), and gamete coactivation (no motile sperm, prior fertilization rate <50%; n=60). The primary outcome was clinical pregnancy rate. Secondary outcomes included fertilization rate, high-quality embryo rate, implantation rate, live birth rate, and neonatal safety parameters compared to 140 concurrent conventional ICSI controls.

RESULTS: All activation strategies significantly improved reproductive outcomes compared to patients' own pre-activation cycles. The post-activation fertilization rate (45.32% vs. 27.68%, P<0.01), clinical pregnancy rate (31.25% vs. 5.36%, P<0.01), and live birth rate (23.21% vs. 0%, P<0.01) were markedly higher. Among the strategies, sperm activation yielded the highest fertilization (73.81%), high-quality embryo (42.96%), clinical pregnancy (36.47%), and live birth rates (32.94%). Gamete coactivation, applied in cases with the most severe sperm dysfunction (highest abnormal sperm rate: 55.39%), restored clinical pregnancies and live births from 0% to 26.67% and 16.67%, respectively. Neonatal outcomes, including rates of fetal anomalies (0.00% vs. 0.63%, P=0.53) and neonatal mortality (1.61% vs. 0.01%, P=0.49), did not differ significantly from conventional ICSI controls.

CONCLUSIONS: A stratified application of gamete activation technology, guided by sperm motility and prior fertilization competence, significantly enhances clinical outcomes for patients with recurrent ART failure attributable to severe male factors, without increasing the risk of adverse neonatal events.

IMPACT STATEMENT: This study provides a clinically actionable, phenotype-driven framework for implementing gamete activation, demonstrating that tailored intervention based on specific sperm functional deficits can rescue fertility outcomes in a challenging patient population, thereby offering a pathway to biological parenthood while affirming procedural safety.

SUPPORT: Supported by Central Special Program for Guiding Local Science and Technology Development (2024FRD05140), Innovation and Technology Research Team of Clinical and Basic Research in Maternal-Fetal Medicine, Ningxia Hui Autonomous Region(2025CXTD004), the Key Research and Development Program Project of Ningxia Hui Autonomous Region (2025BEG02003), and Science and Technology for the Benefit of the People Program in the Ningxia Hui Autonomous Region (2025CMG03014) for data fee (scientific research informed consent), paper modification, and publication fee.

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REFRAMING IMSI SELECTION IN PGT-A EUPLOID SINGLE-THAW SINGLE FET.

Minhee Kang, Ph.D.[1], Eun A Park, Ph.D.[1], Hyoung-Eun Ryu, M.S.[1], Sun-Nyoung Hwang, Ph.D.[1], Ji I Baek, M.S.[1], Mun-Hyeong Lee, M.S.[1], Eun-Hye Jo, M.D.[2], Hye Ok Kim, M.D., Ph.D.[3], Kyung Ah Lee, Ph.D.[4] and Tae Ki Yoon, M.D., Ph.D.[5], [1]Fertility Laboratory, CHA University Fertility Center Seoul Station, Seoul, Korea, Republic of (South), [2]Department of Obstetrics and Gynecology, CHA University Fertility Center Seoul Station, Seoul, Korea, Republic of (South), [3]CHA University School of Medicine, CHA Fertility Center Seoul Station, Seoul, Korea, Republic of (South), [4]CHA University, Sungnam-Si, Korea, Republic of (South), [5]CHA Fertility Center, Seoul

OBJECTIVE:

Intracytoplasmic morphologically selected sperm injection (IMSI) is often selected for male-factor infertility or poor sperm morphology, but whether these broad indications identify patients with measurable benefit remains unclear. We evaluated whether IMSI-derived embryos showed improved embryo-generation metrics or pregnancy outcomes compared with conventional intracytoplasmic sperm injection (ICSI) in preimplantation genetic testing for aneuploidy (PGT-A) euploid single-thaw single frozen embryo transfer (FET) cycles.

MATERIALS AND METHODS:

This retrospective single-center cohort included 1,399 PGT-A euploid single-thaw single-FET cycles from 2023 to October 2025: 1,144 ICSI-derived and 255 IMSI-derived transfers. Confirmed clinical pregnancy was defined as clinical pregnancy versus non-pregnancy or biochemical pregnancy. Embryo-generation metrics included fertilization rate, biopsy-stage blastocyst yield per metaphase II (MII) oocyte, euploid yield per MII oocyte, and euploid rate per biopsied blastocyst. Propensity scores for IMSI selection included female and male age, anti-Müllerian hormone, endometrial thickness, infertility duration, prior treatment number, embryo day, male-factor status, sperm strict morphology, and FET preparation type. Overlap weighting was applied, and male-factor and poor morphology subgroups were evaluated with interaction testing.

RESULTS:

IMSI was preferentially used in less favorable profiles, including higher female and male age, lower anti-Müllerian hormone, and fewer retrieved, MII, fertilized, biopsied, and euploid oocytes/embryos. In complete-case overlap-weighted analysis, 1,367 cycles were included; maximum absolute standardized mean difference decreased from 0.381 to 0.007. IMSI was not associated with improved confirmed clinical pregnancy compared with ICSI: 58.6% versus 60.1%, adjusted difference −1.7 percentage points, 95% confidence interval −8.3 to 5.0, p=0.624. Fertilization rate was lower after IMSI, 80.5% versus 83.1%, adjusted difference −2.6 percentage points, p=0.013. Biopsy-stage blastocyst yield per MII oocyte was also lower, 37.3% versus 40.4%, adjusted difference −3.1 percentage points, p=0.024. Euploid yield per MII oocyte was numerically lower after IMSI, 16.4% versus 18.2%, p=0.087, while euploid rate per biopsied blastocyst was not significantly different. Male-factor and poor morphology subgroups showed no improvement in clinical pregnancy or embryo-generation outcomes, with no significant interaction.

CONCLUSIONS:

Among PGT-A euploid single-thaw single-FET cycles, IMSI was preferentially selected for poorer-prognosis profiles, but this did not translate into improved embryo-generation efficiency or pregnancy outcomes. Broad male-factor status and poor strict morphology did not identify a subgroup with demonstrable IMSI benefit.

IMPACT STATEMENT:

IMSI use in real-world PGT-A single-thaw single-FET practice may reflect patient selection more than measurable outcome improvement. Broader male-factor labels should be complemented by more refined sperm or prior-cycle phenotypes when considering IMSI.

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CLINICAL PREGNANCY AFTER MOSAIC EMBRYO TRANSFER: INTEGRATING CYTOGENETIC AND TRANSFER-CONTEXT FACTORS.

Minhee Kang, Ph.D.[1], Eun A Park, Ph.D.[1], Sun-Nyoung Hwang, Ph.D.[1], Hyoung-Eun Ryu, M.S.[1], Min Young Shin, M.S.[1], Hojun Ha, M.S.[1], Jiyeon CHOI, M.D.[2], Soo Jin Han, M.D.[3], Kyung Ah Lee, Ph.D.[4] and Tae Ki Yoon, M.D., Ph.D.[5], [1]Fertility Laboratory, CHA University Fertility Center Seoul Station, Seoul, Korea, Republic of (South), [2]Department of Obstetrics and Gynecology, CHA University Fertility Center Seoul Station, Seoul, Korea, Republic of (South), [3]CHA Fertility Center Seoul Station, Seoul, [4]CHA University, Sungnam-Si, Korea, Republic of (South), [5]CHA Fertility Center, Seoul

OBJECTIVE:

Mosaic embryo counseling commonly focuses on the reported mosaic percentage and whether the abnormality is low- or high-level, segmental or whole-chromosome, single or multiple. Yet, pregnancy after transfer may also depend on embryo developmental timing and endometrial conditions. We evaluated whether mosaic percentage and cytogenetic features independently explained clinical pregnancy after mosaic embryo transfer, and whether transfer-context factors provided additional clinical information.

MATERIALS AND METHODS:

We performed a retrospective single-center cohort study of mosaic embryo transfers performed between August 2020 and July 2024. Mosaic embryos were identified by

preimplantation genetic testing for aneuploidy (PGT-A) and included whole-chromosome and/or segmental mosaic abnormalities. The primary outcome was clinical pregnancy per transfer. Mosaic features included maximal mosaic percentage, low- versus high-level mosaicism, abnormality type, single versus multiple abnormalities, and gain/loss direction. Bias-reduced logistic regression was used to assess factors associated with clinical pregnancy, adjusting for female age, embryo day, endometrial thickness, blastocyst stage.
RESULTS:
Among 205 mosaic embryo transfers, 105 achieved clinical pregnancy, giving a clinical pregnancy rate of 51.2%. Maximal mosaic percentage was not independently associated with clinical pregnancy when analyzed per 10% increase (odds ratio [OR] 0.85, 95% confidence interval [CI] 0.66–1.09; p=0.198). High-level mosaicism also did not show a significant association compared with low-level mosaicism (OR 0.76, 95% CI 0.35–1.61; p=0.461). Multiple-abnormality mosaicism showed an unfavorable direction compared with single-abnormality mosaicism, but was not statistically significant after adjustment (OR 0.55, 95% CI 0.21–1.40; p=0.208). Abnormality type and gain/loss direction were not independently associated with clinical pregnancy. By contrast, later embryo day was associated with lower odds of clinical pregnancy (OR 0.46, 95% CI 0.25–0.85; p=0.014), whereas greater endometrial thickness was associated with higher odds (OR 1.43, 95% CI 1.17–1.78; p=0.0006).
CONCLUSIONS:
Clinical pregnancy after mosaic embryo transfer was not explained by mosaic percentage alone. Although high-level mosaicism and multiple abnormalities showed unfavorable directions, these cytogenetic features did not independently predict clinical pregnancy in this cohort. Embryo day and endometrial thickness were also associated with clinical pregnancy, suggesting that counseling should combine the PGT-A mosaic result with transfer-context factors rather than relying on mosaic level alone.
IMPACT STATEMENT:
For patients considering mosaic embryo transfer, counseling should integrate both cytogenetic mosaic findings and transfer-context factors, including embryo day and endometrial thickness, to support a balanced discussion of clinical pregnancy potential.

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EFFECT OF LASER-ASSISTED HATCHING ON REPRODUCTIVE OUTCOMES ACROSS CLEAVAGE- AND BLASTOCYST-STAGE FRESH EMBRYO TRANSFERS: A RETROSPECTIVE COHORT STUDY. Sanya Kalra Ms., M.Sc Clinical Embryology[1] and Paras Bhardwaj, MSc[2], [1]SHE Delhi, New Delhi, India, [2]ART FERTILITY CLINICS

OBJECTIVE: To determine whether laser-assisted hatching (LAH) differentially influences reproductive outcomes in cleavage- versus blastocyst-stage fresh embryo transfers.
MATERIALS AND METHODS: A retrospective cohort analysis was conducted on 3,945 fresh IVF/ICSI embryo transfer cycles performed at a tertiary infertility center in India between May 2014 and May 2024. Of these, 3,430 cycles involved LAH and 515 served as controls without assisted hatching. Outcomes were stratified by developmental stage at transfer (Day 3 vs. Day 5). Demographic characteristics, ovarian stimulation parameters, and reproductive outcomes were compared. Statistical analyses included chi-square and Fisher's exact tests for categorical variables and the Mann–Whitney U test for continuous variables, with $p < 0.05$ considered statistically significant.
RESULTS: LAH did not significantly alter biochemical or clinical pregnancy rates at either developmental stage. However, live birth rates were significantly higher following blastocyst-stage transfers compared to cleavage-stage transfers (21.1% vs. 16.4%, p = 0.001). Rates of monozygotic twinning remained low and did not differ between groups.
CONCLUSIONS: While LAH does not impact early pregnancy outcomes, its application at the blastocyst stage is associated with improved live birth rates without increasing adverse events.
IMPACT STATEMENT: These findings highlight the importance of stage-specific use of LAH and support its selective application to enhance live birth outcomes in contemporary IVF practice.

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DOES FOLLICLE SIZE INFLUENCE MATURE OOCYTE YIELD IN MODIFIED NATURAL CYCLE IN VITRO-FERTILIZATION (MNC-IVF) IN LOW RESPONDERS? Dimitrios Rafail Kalaitzopoulos, MD PhD[1,2], Liese Boudry, MD[3], Christophe Blockeel, MD, PhD[1], Neelke De Munck, PhD[4], Billie Frederix, MD[1] and Michel De Vos, M.D., PH.D.[5], [1]Universitair Ziekenhuis Brussel, Brussels, Belgium, [2]Zuerich, Switzerland, [3]UZ Brussel, Jette, Bruxelles, Belgium, [4]Universitair Ziekenhuis Brussel, Brussel, Belgium, [5]UZ Brussel, Brussels, Belgium

OBJECTIVE: Follicle size assessed by ultrasound is a key clinical parameter guiding the timing of ovulation triggering during ovarian stimulation. Previous studies in normal responders suggested that the optimal leading follicle size ranges between 16 and 22 mm; however, data regarding optimal follicle size in low responders undergoing modified natural cycle IVF (MNC-IVF) remain limited. This study aims to evaluate the association between follicle size and retrieval of cumulus–oocyte complexes (COCs) and mature (MII) oocytes in low-responder women undergoing MNC-IVF.
MATERIALS AND METHODS: This retrospective study included women undergoing MNC-IVF at a tertiary clinic between 2017 and 2023. Inclusion criteria were anti-Müllerian hormone (AMH) levels <1.1 ng/mL as measured using the Elecsys AMH plus assay (Roche Diagnostics) and a maximum daily gonadotropin (HP-hMG or rFSH) dose of 75 IU. The primary outcome was the association between the size of the largest follicle at trigger and retrieval of at least one MII oocyte. The secondary outcome was the association between follicle size at trigger and cumulative live birth rate. The relationship between follicle size and retrieval outcomes was assessed visually using conditional density plots (CDPs). Receiver operating characteristic (ROC) curve analyses and visual inspection of CDPs were used to evaluate whether a follicle size threshold could predict retrieval of MII oocytes and COCs.
RESULTS: A total of 273 patients underwent 408 MNC-IVF cycles. Mean age was 38.49 (SD 3.55) years, mean BMI was 24.18 (SD 4.15) kg/m², and mean AMH level was 0.28 (SD 0.25) ng/mL. Forty-four cycles were cancelled (10.8%), and the live birth rate per cycle was 6.6% (27/408). Cycles resulting in retrieval of at least one MII oocyte were associated with significantly higher AMH levels (0.29 vs. 0.24 ng/mL; p = 0.016), younger age (38.46 vs. 39.00 years; p = 0.041), and smaller follicle size at trigger (15.67 vs. 16.70 mm; p < 0.001). Cancelled cycles were associated with significantly larger follicle size at trigger (17.16 vs. 15.91 mm; p = 0.027). Among women achieving live birth, younger maternal age was the only significantly associated factor (36.96 vs. 38.78 years; p = 0.004). While CDPs suggested that the highest proportion of MII retrieval occurred at follicle sizes between 14 and 16 mm, ROC analyses demonstrated poor predictive performance of follicle size for MII retrieval in low responders undergoing MNC-IVF (AUC = 0.391). Subgroup analyses in women younger and older than 38 years similarly showed poor predictive performance (AUC = 0.348 and 0.403, respectively).
CONCLUSIONS: While our results failed to suggest a distinct follicle size associated with a higher likelihood of retrieving MII oocytes among low responders undergoing MNC-IVF a larger follicle size at ovulation triggering was associated with higher cancellation rates in this population.
IMPACT STATEMENT: This study shows no clear threshold for an optimal follicle size for retrieving at least one mature oocyte in low-responder women undergoing modified natural cycle IVF, while highlighting that larger follicle sizes at trigger are associated with higher cancellation rates.
SUPPORT: No financial support was received for this study

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PRECISION OVER PERCEPTION: ARTIFICIAL INTELLIGENCE DELIVERS OBJECTIVE BLASTOCYST EXPANSION METRICS. Ibrahim Elkhatib, M.Sc.[1], Prof. Erkan Kalafat, M.D. M.Sc[2], Daniela Nogueira, Ph.D.[1], Andrea Abdala, M.Sc.[1], Lawrenz Barbara, M.D., PhD[1] and Human M. Fatemi, Prof., M.D., PhD[3], [1]ART Fertility Clinics, Abu Dhabi, United Arab Emirates, [2]Koc University School of Medicine, Istanbul, Turkey, [3]Art Fertility Clinics, Abu Dhabi, Abu Dhabi, United Arab Emirates

OBJECTIVE: To determine whether an artificial intelligence (AI) segmentation model can provide reliable and objective measurements of blastocyst expansion, and whether AI-derived expansion metrics correspond to the categorical Gardner expansion grades currently used in routine embryo assessment.
MATERIALS AND METHODS: Retrospective cohort study using 67,051 time-lapse images from 704 euploid transferred blastocysts. Embryologists manually annotated images using the Gardner grading system to generate ground-truth segmentation masks. The dataset was randomly split into training (75%) and validation (25%) sets with a fixed random seed. A TransUNet architecture combining a ResNet-50 convolutional backbone with a Vision Transformer encoder (R50-ViT-B_16), initialized with ImageNet-21k pretrained weights and trained with AdamW optimization and cosine annealing with warm restarts, was used to segment five anatomical classes: background, zona pellucida, cellular elements, expansion area, and perivitelline space. Segmentation accuracy was assessed by Intersection over Union (IoU) and Dice score. AI-derived expansion area and zona thickness were compared across Gardner grades, and longitudinal expansion trajectories were modeled.
RESULTS: The segmentation model achieved an overall mean IoU of 0.89 and mean Dice score of 0.94. Per-class IoU was 0.99 (background), 0.87 (zona pellucida), 0.92 (cellular elements), 0.86 (expansion area), and 0.81 (perivitelline space). The AI-detected maximum expanded area differed significantly across Gardner grades (BL3, BL4, BL5; p<0.001), but with substantial overlap: median expanded area was 14.4% (IQR 0.0 to 31.4) for BL3, 25.2% (IQR 2.4 to 47.2) for BL4, and 29.9% (IQR 5.9 to 51.2) for BL5. Multiclass area under the curve for predicting Gardner expansion grade from AI-derived expansion area was 0.56, only marginally better than chance. Median zona thickness was 32.3% (IQR 26.9 to 36.0) for BL3, 29.0% (IQR 17.0 to 35.9) for BL4, and 26.9% (IQR 14.2 to 35.7) for BL5. Longitudinal modeling showed no significant difference between BL4 and BL5 embryos in expansion trajectory over time (p=0.306).
CONCLUSIONS: AI-based segmentation provides reliable, quantitative metrics of blastocyst expansion with high technical accuracy. However, AI-derived expansion measurements correspond only weakly to Gardner expansion grades, with substantial overlap across categories and indistinguishable trajectories between BL4 and BL5 embryos, indicating that subjective Gardner grading captures expansion only coarsely.
IMPACT STATEMENT: Replacing subjective categorical grading with AI-derived continuous expansion metrics could reduce inter- and intra-observer variability in embryo assessment, standardize laboratory practice across IVF programs, and refine embryo selection criteria. Further work is needed to link these objective metrics to clinical outcomes such as implantation and live birth.

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PRONUCLEAR (PN) STATUS IS NOT THE WHOLE STORY: EUPLOIDY AND IMPLANTATION POTENTIAL OF 0PN AND 1PN EMBRYOS. Gaukhar Karibayeva, Bachelor's degree and Darya Alexandrovna Ryaguzova, Bachelor's degree, Institute of Reproductive Medicine, Almaty, Kazakhstan

OBJECTIVE: Embryos not demonstrating normal 2PN fertilization have traditionally been excluded from extended culture and clinical use because of concerns regarding developmental competence. Although current professional guidance supports cautious

evaluation rather than automatic dismissal, uncertainty remains regarding their chromosomal competence and reproductive potential. This study aimed to compare the chromosomal status of embryos derived from 0PN and 1PN zygotes with that of conventional 2PN embryos and to descriptively report clinical outcomes following their transfer in IVF and ICSI cycles.
MATERIALS AND METHODS: This retrospective cohort study included embryos generated in IVF and ICSI cycles between July 2023 and January 2026 that underwent preimplantation genetic testing for aneuploidy (PGT-A) using array comparative genomic hybridization (aCGH). Embryos were classified according to pronuclear status (2PN, 0PN, and 1PN). Euploidy rates were compared among PN groups, and maternal age–related trends were assessed descriptively.
Embryo transfers involving embryos derived from 0PN and 1PN zygotes were reviewed to evaluate clinical outcomes. Categorical variables were analyzed using Pearson's chi-square test, with Fisher's exact test applied when expected cell counts were <5. Owing to limited sample sizes within specific subgroups, formal statistical comparisons of clinical outcomes were not performed. Statistical significance was defined as $p < 0.05$.
RESULTS: A total of 4436 embryos were analyzed, including 4267 derived from 2PN zygotes, 143 from 0PN zygotes, and 26 from 1PN zygotes. Euploidy rates were comparable among 2PN (72.6%), 0PN (74.8%), and 1PN (69.2%) embryos, with no statistically significant differences detected (all $p > 0.05$). In accordance with established biological patterns, euploidy rates declined with advancing maternal age.
Embryo transfers were performed using PGT-A–tested embryos derived from 0PN and 1PN zygotes. Among 0PN-derived embryos, 45 transfers resulted in 16 live births, 11 ongoing pregnancies, and 3 early pregnancy losses. Among 1PN-derived embryos, 7 transfers resulted in 2 live births and 4 ongoing pregnancies, with no pregnancy losses reported. Owing to the limited sample size, particularly within the 1PN subgroup, formal statistical comparisons of clinical outcomes were not conducted.
CONCLUSIONS: The findings suggest that pronuclear assessment does not always accurately reflect the true genetic potential of an embryo. Embryos derived from 0PN and 1PN zygotes demonstrated chromosomal competence comparable to that of conventional 2PN embryos, consistent with contemporary professional guidance supporting cautious evaluation rather than automatic exclusion. Observed clinical outcomes following transfer further indicate preserved reproductive potential; however, confirmation in larger cohorts is warranted.
IMPACT STATEMENT: Pronuclear status alone may not fully reflect embryo developmental competence. Consideration of the chromosomal and clinical potential of selected 0PN and 1PN embryos may support more individualized embryo selection and decision-making strategies.
SUPPORT: The authors report no external funding.

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IS 'FREEZE ALL' FOR ALL READY FOR PRIME TIME? Peter Kovacs, M.D., PH.D.[1], Dominika Fanni Gergely, MsC[1], Péter Spitzner, MsC[1], Shreeya Patel, BS[2], Stephany Paredes Jaramillo, BS[3], Nigel Pereira, M.D.[4] and Steven R. Lindheim, M.D.[5], [1]Dunamenti REK Istenhegyi IVF Center, Budapest, Hungary, [2]University of Central Florida College of Medicine, Orlando, FL, [3]RCS EVMS, Miami, FL, [4]Division of Gynaecologic Reproductive Endocrinology and Infertility, University of Toronto, Toronto, ON, Canada, [5]University of Central Florida, Orlando, FL

OBJECTIVE: Frozen embryo transfers (FET) are increasingly utilized exceeding the number of fresh ETs. Freeze-all (FA) has become the standard reducing OHSS, miscarriage risk, optimize endometrial receptivity, and primarily finding a benefit in hyper-responders though the literature is inconclusive regarding its universal use. Our primary objective is to compare live birth (LB) and cumulative LB (cLB) rates, and perinatal outcome of fresh ET and FA approach in infertile women undergoing IVF.
MATERIALS AND METHODS: Retrospective analysis of all IVF cycles and related FETs from 2024. Cycles with fresh ET+FET if needed (Gr1: n=866) were compared to FA+FET treatments (n=398). Secondarily, FA cycles were analyzed based on: FA for hyper-responders defined as ≥15 oocytes retrieved (Gr2: n=168) and FA+FET(s) for all others (Gr3: n=230). Demographic, laboratory, and primary LB (ET from fresh or 1st FET from FA) and cLB rates were compared. Comparisons were performed using Chi-square, t-test, and ANOVA as appropriate and regression analysis was applied to examine associations with pregnancy outcomes adjusting for baseline characteristics and treatment protocol.
RESULTS: Those undergoing FA were younger (33.9 vs 36.3 yrs, p<0.001), had better ovarian reserve (AMH 3.5 vs 1.8 ng/ml, p<0.001), more MII oocytes (10.4 vs 5.8, p<0.001), 2-pn (7.7 vs 4.2, p<0.001), number of blastocysts (BC; 4.9 vs 2.5, p<0.001), and high quality (HQ) BC (3.5 vs 1.7, p<0.001), however, primary ET LB rates were comparable (22.9% vs 20.7%, p=0.38). However, cLBR was significantly higher in FA groups (35.9% vs 26.9%, p=0.001). No differences in perinatal outcomes were noted. When the FA subgroups were compared, patients in Gr 2 were significantly younger, had higher AMH, more oocytes, 2-pn's; BC and HQ-BC compared to Gr 1 and Gr 3. While primary ET LB rates were similar among groups (20.7% vs 24.4% vs 21.7%, p=0.55), cLBR was significantly higher in Gr 2 (45.8% vs Gr 1: 26.6% and Gr 3: 28.3%, p<0.001). No differences were noted with respect to weeks of delivery and birth weight. After controlling for confounding variables (age, AMH, BMI, number of oocytes, 2pn, BC, HQBC, and treatment protocol), age (-0.02, 95% CI 0.02—0.009, p<0.001) and # of BC (0.035, 95% CI 0.013-0.058, p=0.002) remained associated with cLB rates, while treatment assignment (Gr 2 and Gr 3) was no longer associated (-0.027, 95% -0.062-0.008, p=0.13)
CONCLUSIONS: In routine practice, a FA approach does not result in superior clinical outcomes in primary ETs. While cLB rates appear to be greater particularly in hyper-responders, this effect appears to be related to ovarian reserve and greater number of blastocysts.
IMPACT STATEMENT: FA overall is effective and safe, with most benefit found in hyper-responders.
SUPPORT: This study has received no funding.
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REDUCED NK-CELL ACTIVATION AND INCREASED MYELOID MACROPHAGE FEATURES CHARACTERIZE EARLY PREGNANCY AFTER ART. Sofia Koristashevskaya, MSc, Dimitar Parvanov, PhD, Rumiana Ganeva, PhD, Margarita Ruseva, MSc, Maria Handzhiyska, MSc, Jinahn Safir, BSc, Dimitar Metodiev, MD, Stela Chapanova, MD and Georgi Stamenov, MD/PhD, Nadezhda Women's Health Hospital, Sofia, Bulgaria

OBJECTIVE:
To characterize peripheral innate immune remodeling in early pregnancy after ART by comparing NK-cell, dendritic-cell, B-cell, and macrophage-related subsets between pregnant and non-pregnant IVF patients.
MATERIALS AND METHODS:
Peripheral blood samples were obtained from pregnant (≤9 gestational weeks, n=36) and non-pregnant IVF patients (n=332) and analyzed by multiparameter flow cytometry. Leukocytes were identified as $CD45^+$ cells.
NK cells ($CD3^-CD56^+$) were subdivided into CD56^dim^$CD16^+$ and CD56^bright^$CD16^-$ populations, with CD11b used to define mature DIM and activated BRIGHT subsets. NKT cells were defined as $CD3^+CD56^+$ and B cells as $CD19^+$. Macrophages were identified by FSC/SSC and CD68 expression. CD11c within the $CD68^+$ compartment defined a $CD11c^+$ macrophage subset.
Dendritic cells were identified based on CD11c expression (excluding the $CD68^+$ compartment), and myeloid dendritic cell proportions were derived from CD11b expression and expressed relative to total dendritic cells and lymphocytes.
Group differences were assessed using the Mann-Whitney U test. Spearman correlation analysis was performed separately in pregnant and non-pregnant women.
RESULTS:
Early pregnancy was associated with significant differences in multiple innate immune cell populations. Activated BRIGHT NK cells were significantly reduced in pregnant women compared to non-pregnant IVF patients (52.73 vs 67.82; p<0.001), as were mature DIM NK cells (88.70 vs 93.24; p=0.017).
Macrophage-related parameters were increased, including the proportion of $CD11c^+$ macrophages within the $CD68^+$ compartment (94.50 vs 91.56; p=0.005).
Myeloid dendritic cell representation was reduced in pregnancy, reflected by a lower proportion of mDCs within the dendritic cell compartment (49.53 vs 64.72; p=0.001) and a borderline decrease relative to lymphocytes (3.00 vs 3.85; p=0.050). No significant differences were observed in total dendritic cells (66.82 vs 61.86; p>0.05) or B-cell proportions (5.71 vs 5.49; p>0.05).
Exploratory correlation analysis in pregnant women showed a strong positive association between activated BRIGHT and mature DIM NK cells (r=0.707, p<0.001), as well as between activated BRIGHT NK cells and myeloid dendritic cell proportion (r=0.610, p<0.001), suggesting coordinated regulation of NK-cell functional state and dendritic cell representation, consistent with NK-dendritic cell crosstalk in early pregnancy.
CONCLUSIONS:
Early pregnancy after ART is characterized by innate immune reprogramming, marked by reduced NK-cell activation, decreased myeloid dendritic cell representation, and enrichment of macrophages with pro-inflammatory myeloid characteristics. The observed coordination between NK and dendritic cell subsets supports a regulated shift toward a distinct immune state potentially relevant to implantation and early pregnancy maintenance.
IMPACT STATEMENT:
Peripheral immune profiling may provide informative biomarkers of early pregnancy-associated immune remodeling and support improved interpretation of coordinated innate immune changes after ART.

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DEVELOPING SENSITIZED CELL-BASED ASSAYS FOR SCALABLE QUALITY MANAGEMENT IN HUMAN EMBRYOLOGY. Yaroslava Karpova, Ph.D and Alexei Tulin, Ph.D, University of North Dakota, Grand Forks, ND

OBJECTIVE: The Mouse Embryo Assay is the current standard for proactively evaluating media, consumables, laboratory practices, and environmental conditions in human embryology. However, its utility is limited by the higher robustness of mouse embryos relative to human embryos, high cost, limited accessibility, and reliance on animal use. These limitations create a critical gap in sensitivity and scalability for quality control. We hypothesized that disruption of the poly(ADP-ribose) pathway would create stress-sensitized biological systems capable of detecting suboptimal conditions with enhanced resolution, and could support the development of complementary cell-based assays for routine quality management and product testing.
MATERIALS AND METHODS: Preimplantation development was analyzed in *Parp1* and *Parg* knockout mice, targeting the two key enzymes controlling poly(ADP-ribose) metabolism. Blastocyst formation rates and lineage allocation (trophectoderm, TE; inner cell mass, ICM) were quantified for embryos developed *in vivo* and under defined *in vitro*

culture conditions. In parallel, PARP1 and PARG deficient mouse embryonic stem cells were generated using CRISPR/Cas9 and assembled into embryoid bodies. These were subjected to controlled stressors and cell numbers were quantified and compared across conditions and controls. Statistical significance was determined using Student's t-test.
RESULTS: *Parg* knockout embryos demonstrated striking hypersensitivity to suboptimal *in vitro* culture conditions, whereas *Parp1* deficient and wild-type embryos remained comparatively resistant. Under suboptimal conditions, blastocyst formation in *Parg* knockout embryos was completely abolished, while control and *Parp1* mutant embryos maintained >60% blastulation. Even under optimal conditions, *Parg* deficient embryos showed compromised developmental quality, with reduced TE and ICM cell numbers compared to controls and *in vivo* counterparts. Consistent with these findings, *Parg* hypomorph embryonic stem cells formed significantly smaller embryoid bodies following heat or oxygen stress and in the presence of high peroxide levels in oil. In contrast, low peroxide levels sufficient to impair embryo development did not affect embryoid body growth, highlighting distinct sensitivity thresholds.
CONCLUSIONS: Loss of PARG function creates a highly stress-sensitive biological platform that amplifies detection of suboptimal culture conditions at both embryo and stem cell levels.
IMPACT STATEMENT: This approach opens the possibility of developing cell-based assays for human embryology by targeting sensitizing pathways to enhance detection of suboptimal conditions.

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MICROFLUIDIC SPERM SELECTION IMPROVES BLASTOCYST FORMATION IN ICSI CYCLES USING A SIBLING OOCYTE DESIGN. Hwa Yeong Kim, M.S., Jin IL Lee, M.S., Ha Rin Namkung, M.S., Seonju Choi, B.S., DONG-Hun HAN, M.S., Hyejin Ryu, M.D., Kyung Eun Lee, M.D. and Wonyun Choi, PH.D., CHA University Fertility Global Group, Ilsan Center, Goyang-si, Gyeonggi-do, Korea, Republic of (South)

OBJECTIVE:
To determine whether microfluidic sperm selection improves blastocyst formation compared with conventional swim-up in ICSI cycles using a sibling oocyte design.
MATERIALS AND METHODS:
This single-center retrospective paired study included 55 ICSI cycles conducted between June and December 2025 in women aged ≥35 years. All cycles involved semen samples with baseline sperm morphology <4%. Each ejaculate was divided and processed using conventional swim-up or a microfluidic sperm selection device (Zymot®, CooperSurgical). Sibling oocytes retrieved from the same cycle were inseminated separately with sperm prepared by each method, enabling direct within-cycle paired comparison. Sperm vitality, morphology, and DNA fragmentation index (DFI) were assessed. Fertilization, Day-3 embryo development, and blastocyst formation rates were evaluated and compared using paired statistical analysis.
RESULTS:
Microfluidic sperm selection significantly improved sperm vitality and morphology and reduced DNA fragmentation index compared with swim-up (all $p<0.05$). Fertilization rates and Day-3 embryo development were comparable between groups. However, blastocyst formation was significantly higher following microfluidic sperm selection (70.1% vs. 60.0%, $p=0.011$). This difference was not observed during early cleavage stages but became evident at later stages of embryo development, indicating that differences become evident at later stages of embryo development.
CONCLUSIONS:
Microfluidic sperm selection improves blastocyst formation without affecting fertilization or early embryo development in women aged ≥35 years with poor sperm morphology.
IMPACT STATEMENT:
Microfluidic sperm selection represents a clinically relevant strategy to improve embryo developmental outcomes in ICSI cycles involving older reproductive age and compromised sperm quality.

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DOES THE NUMBER OF MATURE FOLLICLES INFLUENCE PREGNANCY RATES IN CONTROLLED OVARIAN STIMULATION(COH) INTRAUTERINE INSEMINATION (IUI) CYCLES? Rayyan A Munshi, Fellow[1], Ido Feferkorn, MD[2] and Michael H. Dahan, M.D.[3], [1]Division of Reproductive Endocrinology and Infertility, McGill University Health Centre, Montreal, QC, Canada, [2]Reproductive Medicine Group, Tampa, FL, [3]Division of Reproductive Endocrinology and Infertility, McGill University Health Centre, Montreal, Canada

OBJECTIVE:
The number of follicles stimulated with COH for IUI is limited by guidelines. If too many follicles are stimulated, cycles are cancelled. As such the role of the number of stimulated follicles on pregnancy outcomes needs investigating, to determine if differences occur in the range that continue to IUI. Therefore, this study was undertaken to determine whether increasing the number of mature follicles (>14mm) at the time of trigger is associated with higher pregnancy rates with IUI.
MATERIALS AND METHODS:
A retrospective review of IUI cycles (01/2017-12/2020) was performed and stratified by stimulation protocol into gonadotropin (Gn) or Letrozole (Let). Cycles with 1–4 mature follicles (≥14 mm) at trigger were included. Pregnancy outcomes were compared according to the number of mature follicles (1, 2, 3, or 4). Chi-square analysis was used to compare pregnancy rates across groups, and one-way ANOVA was used to assess differences in demographics. Data is % or mean ± SD. IRB was obtained.
RESULTS:
A total of 5,059 cycles were included, comprising 3,216 Gn and 1,843 Let. Baseline characteristics including age and semen parameters (volume, concentration, motility, and total motile sperm count) were similar across follicle groups in with each stimulation medication ($p>0.05$, all).
Among Gn cycles, increasing follicle number was associated with greater endometrial thickness ($p<0.001$). With Gn, pregnancy rates per cycle were 12.6% (232/1848), 13.5% (133/987), 15.8% (51/323), and 10.3% (6/58) for cycles with 1, 2, 3, and 4 mature follicles, respectively and did not differ ($p=0.39$).
In Let pregnancy rates per cycle were 12.8% (141/1100), 12.9% (78/603), 10.7% (13/121), and 5.3% (1/19) for 1, 2, 3, and 4 mature follicles, respectively ($p=0.70$) and endometrial thicknesses were similar ($p=0.15$).
CONCLUSIONS:
In this large cohort of more than 5,000 IUI cycles, who went to IUI, pregnancy rates were similar irrelevant of the number of stimulated follicles in the range acceptable for IUI. Pregnancy rates likely decreased in the 4 mature follicle groups due to population selection with a worse prognosis. Although unavailable, multiple pregnancy rates were likely increased by stimulating more mature follicles. As such, with COH IUI 1-2 mature follicles is the ideal number stimulated, with lines up with current guidelines of the ASRM and should not compromise pregnancy rates.
IMPACT STATEMENT:
Within the range of follicle numbers permitted for IUI, increasing the number of mature follicles does not improve pregnancy rates, supporting guideline based stimulation strategies that limit follicle number to reduce the risk of multiple gestation without compromising efficacy.
SUPPORT: No financial support.

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WHO REALLY BENEFITS FROM THE USE OF ARTIFICIAL OOCYTE ACTIVATION IN *IN-VITRO FERTILIZATION* (IVF) WITH SURGICALLY RETRIEVED SPERM? A RETROSPECTIVE ANALYSIS. Venkata Sai Sahithi Kothamasu, MD[1], Julia Dambly, MD[1], Goli Ardestani, PH.D.[2], Brittany Morse, MS[2], Alan S Penzias, M.D.[2] and Denny Sakkas, PhD[2], [1]Beth Israel Deaconess Medical Center/Harvard Medical School, Boston, MA, [2]Boston IVF-IVIRMA Global Research Alliance, Waltham, MA

OBJECTIVE:
To assess the effect of artificial oocyte activation (AOA), when using surgically retrieved sperm, comparing previous non-AOA cycles to AOA cycles in the same patients.
MATERIALS AND METHODS:
We performed a retrospective review of IVF/ICSI cycles using surgical sperm and intracytoplasmic sperm injection (ICSI) at a single fertility center from 1/2016-12/2025. All patients using surgical sperm, epididymal or testicular, were included. Frozen sperm samples were used in 90% of cases. Cycles using AOA were compared to their previous non-AOA cycles. AOA was performed by exposing injected oocytes to calcium ionophore for four minutes, followed by a five-minute wash in high-protein media. Collected variables included infertility diagnosis, sperm source, and female/male baseline demographics. Primary outcome was fertilization rate (2PN) with and without AOA; secondary outcomes included blastocyst development and live birth rate. Fisher exact and Welch's t-test were used for analysis.
RESULTS:
A total of 145 IVF/ICSI cycles used surgical sperm (n=31 epididymal, n=114 testicular). Of these, 75 cycles utilized AOA and 70 were prior non-AOA cycles of the same patients. Among the AOA cycles, 13/31 (41.9%) cycles were from the epidydimal group and 62/114 (54.4%) were from the testicular group. Mean female age was unchanged across the AOA and non-AOA cohorts (37.1 years). Mean sperm motility was also similar (1.25% vs. 4.51%, p= 0.12).
The fertilization rate (2PN/MII oocytes) was significantly higher with AOA compared to non-AOA (66.1% [471/713] vs. 59.4% [360/606], p= 0.01). However, blastocyst formation rates were unchanged (52.9% with AOA vs. 54.4% without, p= 0.67), as were frozen blastocyst rates. Live birth per transfer was similar between groups (35.9% [14/39] with AOA vs. 34.3% [12/35] without, p= 1.0).
Sperm samples were separated by post-processing sperm concentration. In epididymal cycles, the greatest improvement in fertilization after AOA was in the 0.1–10 million sperm/mL group: 81.4% (n=8) with AOA vs. 56.8% (n=5) without, p= 0.006. In sperm concentrations >10 million sperm/mL, fertilization with AOA was 71.9% (n=4) and 75.3 (n=13) without.
Within the testicular sperm group, improvement in fertilization rates was primarily limited to the lowest sperm concentration group, with variable outcomes at higher concentrations. Fertilization rates with AOA were 65.0% (0–0.1 million sperm/mL; n=48), 60.6% (0.1–10; n=13), and 50.0% (>10; n=1). Non-AOA fertilization rates were 54.9% (0–0.1; n=30), 59.1% (0.1–10; n=17), and 62.5% (>10; n=5).
CONCLUSIONS:
AOA is associated with improved fertilization rates in IVF/ICSI cycles using surgically retrieved sperm, with the most pronounced benefit observed in epididymal sperm at moderate concentrations (0.1–10 million/mL). Testicular sperm demonstrates less consistent improvement, with modest gains primarily in cases of severe oligospermia.
IMPACT STATEMENT:
These findings support selective use of AOA in patients at high risk for low fertilization rates after ICSI. Further studies with larger sample sizes and complete reproductive outcome data are needed to determine the impact on blastocyst development and live birth.

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TRIZYGOTIC PREGNANCY WITH A COMPLETE HYDATIDIFORM MOLE AND IVF-CONCEIVED DICHORIONIC TWINS IN A WOMAN WITH TURNER SYNDROME. JI Yeon Lee, MD, PhD and Heewon Kim, MD, CHA Bundang Medical Center, CHA University School of Medicine

OBJECTIVE: To report an extremely rare case of a trizygotic pregnancy consisting of IVF-conceived dizygotic twins and a hidden androgenetic complete hydatidiform mole (CHM) in a woman with Turner syndrome, emphasizing the necessity of molecular genetic analysis in atypical ART outcomes.
MATERIALS AND METHODS: A 36-year-old woman with Turner syndrome and premature ovarian failure underwent donor-oocyte IVF-ET, with two blastocyst-stage embryos transferred. Clinical monitoring included serial ultrasonography, maternal serum β-hCG titration, pelvic MRI, and amniocentesis for fetal karyotyping. Post-evacuation, pathological examination, p57 immunohistochemical staining, and short tandem repeat (STR) genotyping were performed to clarify the pathogenesis.
RESULTS: Initial ultrasonography identified a dichorionic-diamniotic (DCDA) twin pregnancy. At 14 weeks, one placenta exhibited a snowstorm appearance with markedly elevated β-hCG (>2,000,000 mIU/mL), despite both fetuses having normal diploid karyotypes. Due to massive vaginal bleeding and maternal risk, a hysterotomy was performed at 18 weeks. Pathological analysis confirmed a CHM (p57 negative). STR genotyping revealed three distinct genetic profiles: two independent biparental genotypes for the twins and a purely androgenetic diploid genotype for the molar tissue. The patient subsequently developed FIGO Stage III gestational trophoblastic neoplasia (GTN) and is receiving EMA-CO chemotherapy.
CONCLUSIONS: This case demonstrates that a complete mole can coexist as a hidden third conceptus even when the number of transferred embryos is strictly limited. In ART pregnancies with cystic placental changes and extreme β-hCG elevations, clinicians must consider the possibility of an independent molar gestation that may not be apparent on early ultrasound.
IMPACT STATEMENT: This report highlights the critical role of STR genotyping and p57 staining in diagnosing complex multifetal molar pregnancies, providing insights into atypical fertilization mechanisms in assisted reproductive settings.

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IMPACT OF POLSCOPE ICSI ON EMBRYO EUPLOIDY RATES IN PATIENTS OF ADVANCED MATERNAL AGE. Mun-Hyeong Lee, M.S.[1], Hojun Ha, M.S.[1], Kyoungmin KIM, B.S.[1], Min Young Shin, M.S.[1], Ji I Baek, M.S.[1], Hyoung-Eun Ryu, M.S.[1], Yunhee Kim, M.S.[2], Seunghwan Oh, M.S.[1], You Shin Kim, M.D.[3] and Eun A Park, Ph.D.[1], [1]Fertility Laboratory, CHA University Fertility Center Seoul Station, Seoul, Korea, Republic of (South), [2]CHA FERTILTY CENTER SEOUL STATION, Seoul, South Korea, [3]Department of Obstetrics and Gynecology, CHA University Fertility Center Seoul Station, Seoul, Korea, Republic of (South)

OBJECTIVE: To investigate the impact of meiotic spindle visualization (Polscope ICSI) versus traditional ICSI on fertilization, blastocyst development, and chromosomal euploidy rates, with a primary focus on evaluating its clinical utility in patients of advanced maternal age (AMA).
MATERIALS AND METHODS: This retrospective matched-cohort study analyzed 352 cycles conducted between January 2021 and September 2024, including ICSI (n=231) and Polscope ICSI (n=121). To ensure a robust comparison, study cohorts were matched based on the use of ejaculation sperm, AMH levels between 0.87 and 3.0 ng/mL, and an oocyte yield of 5 to 15. Patients were stratified by age, with a focus on the AMA group (≥40 years, n=217; ICSI n=156, Polscope ICSI n=61). All embryos underwent Preimplantation Genetic Testing for Aneuploidy(PGT-A) for chromosomal assessment. Fertilization, blastocyst formation, and euploidy rates were compared between groups using the Mann-Whitney U test.
RESULTS: No significant differences were observed in fertilization or blastocyst formation rates between the Polscope ICSI and traditional ICSI groups. However, Polscope ICSI demonstrated a significant increase in the PGT-A euploidy rate compared to the traditional ICSI group. In the stratified analysis, the clinical benefit of Polscope ICSI was most significant in the AMA group (≥40 years), where the euploidy rate was significantly improved compared to traditional ICSI (13.89% vs. 6.68%, p=0.03). While fertilization and blastocyst development rates remained comparable across both insemination strategies, Polscope ICSI significantly enhanced the probability of obtaining genetically euploidy embryos in patients aged 40 and older.
CONCLUSIONS: Polscope ICSI does not significantly alter fertilization and blastocyst development rates but markedly improves the likelihood of obtaining euploidy embryos in patients of advanced maternal age. These findings suggest that meiotic spindle visualization provides a critical protective effect against spindle damage during micromanipulation, especially in age-related, mechanically fragile oocytes. Consequently, Polscope ICSI is a recommended strategy to optimize the yield of transferable euploidy embryos for patients aged 40 and older.
IMPACT STATEMENT: This study indicates that Polscope ICSI is particularly effective for patients aged 40 and older, specifically through improved embryo euploidy rates. Optimizing the micromanipulation strategy based on maternal age allows AMA patients to benefit from improved ART efficiency and an enhanced clinical prognosis for each treatment cycle.
SUPPORT: None

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CLINICAL AND EMBRYOLOGICAL OUTCOMES OF PROGESTIN-PRIMED OVARIAN STIMULATION USING ORAL MICRONIZED PROGESTERONE IN WOMEN ≤35 YEARS UNDERGOING IN VITRO FERTILIZATION (IVF) CYCLES. Amina Nurkina, M.Sc[1], Diyas Zharkynbekov, B.S.[1], Laura Bolat, M.Sc[1], Gaukhar Zhanysbayeva, M.Sc[1], Kamila Smagambetova, M.Sc[2] and Aldiyar Malik, B.Sc[3], [1]Institute of Reproductive Medicine, Astana, Kazakhstan, [2]Institute of Reproductive Medicine (IRM) Astana, Astana, Kazakhstan, [3]IRM Clinic Astana, Astana, Kazakhstan

OBJECTIVE: How progestin-primed ovarian stimulation (PPOS) using oral micronized progesterone can provide comparable embryological and clinical outcomes to GnRH antagonist protocols in women ≤35 years undergoing ART.
MATERIALS AND METHODS: This retrospective single-center cohort study included 687 IVF/ICSI cycles performed between January 2024 and December 2024. Women aged ≤35 years undergoing controlled ovarian stimulation were allocated to either a PPOS protocol using oral micronized progesterone (n=345) or a GnRH antagonist protocol (n=342). The primary outcome was the number of mature (MII) oocytes retrieved per cycle. Statistical analysis were performed using Student's test t-test, X^2 or Fisher's exact test, and multivariable logistic regression to adjust for potential confounders. A p-value <0.05 was considered statistically significant.
RESULTS: The mean number of retrieved oocytes was significantly higher in the PPOS group compared to the GnRH antagonist group (16.9 ± 4.2 vs 14.7 ± 3.8; $p<0.05$). No statistically significant differences were observed between groups in MII oocyte rate (88.3% vs 87.2%), fertilization rate (79.7% vs 80.5%), or blastocyst formation rate (51.3% vs 50.7%) (all $p>0.05$). Clinical pregnancy rates in fresh embryo transfer cycles were numerically higher in the PPOS group (46.4% vs 36.9%), although this difference did not reach statistical significance. Medication costs associated with LH surge suppression were substantially lower in the PPOS group, supporting a potential economic advantage.
CONCLUSIONS: PPOS using oral micronized progesterone provides comparable embryological and clinical outcomes to GnRH antagonist protocols, with a significantly higher number of retrieved oocytes and reduced medication costs.
IMPACT STATEMENT: PPOS using oral micronized progesterone represents a clinically effective and economically advantageous alternative to GnRH antagonist protocols in women ≤35 years. Its ability to increase oocyte yield while maintaining comparable embryological and clinical outcomes, combined with reduced medication costs, supports broader implementation in routine IVF practice, particularly in resource-conscious and high-throughput settings. These findings highlight the potential of PPOS to optimize both clinical efficiency and cost-effectiveness without compromising treatment outcomes.

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A BIOMIMETIC LIVE MOTILE SPERM SORTING DEVICE ENHANCES TOTAL MOTILE SPERM RECOVERY FOR IUI APPLICATIONS WITHOUT COMPROMISING DNA QUALITY. Chun I Lee, M.D., Ph.D.[1], Chun-Chia Huang, Ph.D.[1], Li-Wei Chu, Ph.D[2], Hsu Cheng-Teng, PH.D.[3] and Maw-Sheng Lee, M.D., Ph.D.[1], [1]Lee Women's Hospital, Taichung, Taiwan, [2]Bonraybio Co., Ltd., Taichung, Taichung (city), Taiwan, [3]Lee Women's Hospital, Taichung, Taiwan

OBJECTIVE:
Live motile sperm sorting devices utilizing microporous structures can effectively select spermatozoa with high motility and low DNA fragmentation, potentially reducing embryo aneuploidy in male factor infertility. However, the application in intrauterine insemination (IUI) is limited by low recovery rates, as total motile sperm count remains a key determinant of IUI success. To address this limitation, we developed a biomimetic spheroid microstructure designed to replicate the highly confined and convoluted architecture of the female reproductive tract. By exploiting boundary-following sperm navigation, this design aims to enhance guidance efficiency and increase recovery of DNA-intact motile sperm for IUI applications.
MATERIALS AND METHODS:
This study was conducted in two parts to evaluate sperm selection efficiency. In the first comparison, the standard LensHooke® CA0 device was evaluated against the biomimetic CA2 device. For both systems, 1 mL of semen was loaded into the lower chamber and overlaid with 0.9 mL of modified human tubal fluid (mHTF). After incubation at 37°C for 30 minutes, 0.5 mL of the upper sperm suspension was collected for analysis. In the second part, CA2 was compared with conventional density gradient centrifugation (DGC). Sperm quality was assessed pre- and post-selection using standard semen parameters, sperm DNA fragmentation index (DFI), and double-stranded DNA break (DSB) analysis.
RESULTS:
Compared with CA0, CA2 demonstrated a significant increase in sperm concentration (9.23 vs. 6.38 M/mL, $p < 0.05$) while maintaining comparable total motility (91.47% vs. 92.66%). CA2 achieved a higher motile sperm recovery rate than CA0 (22.4% vs. 14.8%), representing a 1.5-fold improvement in efficiency. Sperm DNA integrity remained comparable between groups, with similar DFI (2.96% vs. 2.04%) and DSB levels (1.44% vs. 0.77%). Compared with DGC, CA2 achieved a comparable motile sperm recovery rate (21.3% vs. 20.2%), overcoming the low-yield limitation of non-centrifugation methods. Importantly, CA2 preserved significantly better sperm DNA integrity than DGC, with lower DFI (7.3% vs. 21.1%, $p < 0.05$) and reduced DSB levels (3.5% vs. 9.6%, $p < 0.05$).
CONCLUSIONS:
The biomimetic design of the CA2 device significantly improves motile sperm recovery compared to the CA0, achieving yields equivalent to traditional DGC. Crucially, this increase in efficiency is achieved without compromising sperm DNA integrity.
IMPACT STATEMENT:
IUI is traditionally guided by sperm quantity to maximize sperm–oocyte encounter probability. Given the enhanced motile sperm recovery and preserved DNA integrity

achieved by CA2, this dual benefit may improve IUI success rates and support a shift in ART practice toward incorporating biomimetic sperm selection systems into routine IUI applications.
SUPPORT: NA
REFERENCES:
Hsu, Cheng-Teng et al. "Live motile sperm sorting device for enhanced sperm-fertilization competency: comparative analysis with density-gradient centrifugation and microfluidic sperm sorting." *Journal of assisted reproduction and genetics* vol. 40,8 (2023): 1855-1864. doi:10.1007/s10815-023-02838-4

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DISCREPANCIES BETWEEN DONOR APPLICATION AND GENETIC CONSULTATION IN ROUTINE DONOR SCREENING AT A LARGE U.S. BASED SPERM BANK HIGHLIGHT THE NECESSITY OF PROFESSIONAL RISK ASSESSMENT. Jennifer Luque, MGC, CGC, Sidonie Osborne, MS, CGC, Madeline K. Pies, MGCS, CGC, Nataliia Zarytska, B.S. and Kara Baldwin, MS, CGC, California Cryobank and Donor Egg Bank USA by CooperSurgical Inc, Los Angeles, CA

OBJECTIVE: To evaluate discrepancies between initial personal and family medical history reported on a donor application and information elicited during genetic consultation that resulted in candidates being determined as not suitable to proceed in a donor program, and to describe how sole reliance on application-based history collection may compromise the accuracy and completeness of donor risk assessment.
MATERIALS AND METHODS: A retrospective review was performed for donor candidates who were determined not suitable to proceed at the time of their consultation with a certified genetic counselor (CGC) from January 2023 to December 2025. Donors were included in the study if they were determined not to be suitable due to the reported personal or family medical history, including histories that would confer significant increased risk to donor-conceived persons for morbidity or mortality, e.g. suspicion for a hereditary cancer syndrome. Donors were excluded if the determination of unsuitability was made for any other reason. Donor records were reviewed to assess whether the medical history leading to unsuitability was reported on the donor's initial application, as this information is self-reported and is subsequently discussed during the genetic consultation. Reasons for unsuitability were categorized by indication for the donors whose application did not include the relevant history.
RESULTS: 125 donor candidates were determined not to be suitable to proceed at the time of their genetic consultation for reported personal or family medical history. For 30 donors (24%), information relevant to unsuitability was reported on the initial donor application. For 95 donors (76%), no information relevant to their unsuitability was reported on the initial donor application. For the donors determined not to be suitable to proceed at the genetic consultation stage, the most common reasons were limited or unknown family history (32.6%), and increased risks for cardiovascular (15.8%) or neurological (11.6%) conditions, or cancer (8.4%).
CONCLUSIONS: The majority of donor candidates who were determined not to be suitable for the donor program due to medical history did not, or could not, report the concerning personal or family medical history when presented with an initial application, even when directly prompted by targeted questions on the form. This reinforces that forms alone will not always capture the complexity of family history collection, as consultation with a CGC elicited clinically significant details that would otherwise have been missed. Further, genetic testing alone, even if expanded beyond standard preconception guidelines to include hereditary cancer and cardiovascular risks, would not identify all relevant risk, as most cases fell outside the scope of classic monogenic, Mendelian conditions detectable by such testing. These findings support the inclusion of a genetic consultation by trained genetic professionals as standard for assessment of donor suitability.
IMPACT STATEMENT: Genetic consultation by a CGC or ABMG/ABGC-certified professional is essential for more consistently accurate family history collection and heritable risk assessment in gamete donor screening.
SUPPORT: No financial support to disclose beyond author disclosures.

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AI-EMPOWERED EMBRYO ANALYSIS CAN ACHIEVE CONSISTENT, HIGH PREDICTIVE PERFORMANCE ACROSS LABORATORIES WITH HETEROGENEOUS GRADING STANDARDS AND CUTOFFS, SUPPORTING GRADING ALIGNMENT AMONG EMBRYOLOGISTS. Jung Ryeol Lee, M.D., Ph.D.[1], Hyunju Seol, M.D.[2], Hyung Min Kim, Ph.D.[3] and Hyejun Lee, M.D., Ph.D.[4], [1]Seoul National University College of Medicine, Korea, Republic of (South), [2]Good Moonhwa Hospital, Korea, Republic of (South), [3]Kai Health, Seoul-City, South Korea, [4]Kai Health, Korea, Republic of (South)

OBJECTIVE:
To evaluate whether an AI-based embryo scoring system provides consistent prediction of fetal heart tone (FHT) across IVF clinics, compared with morphology-based grading that may vary by laboratory.
MATERIALS AND METHODS:
This retrospective multicenter cohort study included 391 blastocyst transfer cycles with known FHT outcomes from three IVF clinics between January 2022 and August 2025. Clinics A (n=37) and B (n=242) provided both morphology grades and outcomes, while Clinic C (n=112) provided outcomes only.
The AI model predicted FHT probability from a single static Day-5 blastocyst image. Morphology grading was converted into a 1–36 (3CC to 6AA) ordinal score benchmarked from a literature (Table). Predictive performance was assessed using AUROC and accuracy across multiple cutoffs, with both clinic-specific and pooled analyses performed.

Score	Grade	Score	Grade	Score	Grade	Score	Grade
1	3CC	10	4BC	19	5AC	28	6BA
2	4CC	11	5BC	20	6AC	29	3AB
3	5CC	12	6BC	21	3BB	30	4AB
4	6CC	13	3CA	22	4BB	31	5AB
5	3CB	14	4CA	23	5BB	32	6AB
6	4CB	15	5CA	24	6BB	33	3AA
7	5CB	16	6CA	25	3BA	34	4AA
8	6CB	17	3AC	26	4BA	35	5AA
9	3BC	18	4AC	27	5BA	36	6AA

RESULTS:
Using a fixed cutoff of 5, the AI-based scoring system demonstrated consistent performance across clinics. In Clinic A, AUROC was 0.644 with accuracy of 0.676. In Clinic B, AUROC was 0.694 with accuracy of 0.657. In Clinic C, AUROC was 0.763 with accuracy of 0.696.
In contrast, morphology-based grading showed lower performance and strong dependence on clinic-specific thresholds. When Clinics A and B were pooled and evaluated at 23 (5BB), AUROC was 0.638 with accuracy of 0.570. Optimal cutoffs differed by clinic: Clinic A achieved the highest AUROC (0.704) at 27 (5BA) but with low accuracy (0.484), while Clinic B showed optimal performance at 22 (4BB) (AUROC 0.656, accuracy 0.607).
The observed variability in optimal morphology-based thresholds across clinics may reflect both inter-observer variability in grading and differences in laboratory conditions influencing embryo morphology. In contrast, AI-based scoring maintained stable predictive performance using a single cutoff across heterogeneous clinical settings.
CONCLUSIONS:
AI-based embryo scoring provides consistent and generalizable prediction of FHT across IVF clinics. Unlike morphology-based grading, which is influenced by subjective interpretation and laboratory-specific conditions, AI enables a more objective and standardized approach to embryo evaluation.
IMPACT STATEMENT:
AI-based embryo scoring may support harmonization of embryo selection across IVF laboratories by reducing variability associated with subjective grading and center-specific practices.
SUPPORT: This work was supported by the Korea Medical Device Development Fund by the Korea government (Ministry of Science and ICT, Ministry of Trade, Industry and Energy, Ministry of Health & Welfare, Ministry of Food and Drug Safety) [grant number RS-2023-00254175]
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INHALED METHOXYFLURANE ANALGESIA FOR OOCYTE RETRIEVAL: A REAL-LIFE ASSESSMENT OF EFFECTIVENESS. Alexandre Machado-Gédéon, M.D.[1], Mélanie Chow-shi-Yée, Ph.D.[1], Dr. Simon Phillips, Ph.D.[2], Robert Hemmings, M.D.[1] and Isaac-Jacques Kadoch, M.D.[1], [1]Ovo Clinic, Montreal, [2]OVO FERTILITY, Montreal, QC, Canada

OBJECTIVE: To evaluate the effectiveness, tolerability, and feasibility of inhaled methoxyflurane as analgesia during oocyte retrieval (OR), a setting in which its use has not previously been investigated.
MATERIALS AND METHODS: This single-centre prospective observational study included 498 patients who received inhaled methoxyflurane for analgesia during OR between April and December 2025. Pain was assessed on a scale from 0 to 10 using the Wong-Baker Faces Pain Rating Scale. Descriptive analyses included means ± standard deviation, medians, and n (%). Paired Wilcoxon tests were used to compare pain scores between a previous OR using another analgesic and the OR with methoxyflurane, as well as between anticipated pain in patients without prior OR and pain experienced with methoxyflurane. Correlation and regression analyses were performed to evaluate the relationship between pain intensity and clinical parameters.
RESULTS: Patients had a mean body weight of 72.3 ± 18.3 kg, and a mean of 17.2 ± 11.8 oocytes were retrieved. Overall, 74% had not undergone a previous OR. Among patients without previous OR, pain experienced with methoxyflurane was significantly lower than anticipated pain (4.5 ± 2.6 vs 5.8 ± 2.3; mean difference −1.3 ± 3.3; $p<0.001$). In patients with prior OR, no significant difference was observed between recalled pain during the previous OR and pain experienced with methoxyflurane (3.9 ± 2.9 vs 3.9 ± 2.6, respectively; mean difference −0.04 ± 3.4; $p=0.77$).
Univariate analyses demonstrated weak but statistically significant positive correlations between pain score and both number of oocytes retrieved ($\rho=0.17$, 95% CI 0.08–0.26; $p<0.001$) and body weight ($\rho=0.17$, 95% CI 0.07–0.26; $p<0.001$). Pain scores were significantly higher in patients with >15 oocytes retrieved compared with those with 0–5 oocytes retrieved (4.8 ± 2.7 vs 3.7 ± 2.4; $p=0.02$). Multivariate regression confirmed small increases in pain with greater oocyte number ($\beta=0.043$; $p<0.001$) and body weight ($\beta=0.026$; $p<0.001$), although the magnitude of these effects was limited.
Overall, 68% of patients rated recovery as good or very good, 92% reported ease of use, and 16 patients (3.2%) required additional analgesia.

CONCLUSIONS: Inhaled methoxyflurane provided effective, well-tolerated, and easy-to-administer analgesia during OR. Although higher body weight and greater oocyte yield were associated with slightly increased discomfort, these effects appeared to be of limited clinical relevance for most patients. Inhaled methoxyflurane may therefore represent a satisfactory, less invasive, and potentially more cost-effective alternative to existing analgesic strategies for OR. A dedicated study is currently underway to assess the impact of methoxyflurane use on laboratory air quality and in-vitro fertilization cycle outcomes, which is essential to inform broader implementation.
IMPACT STATEMENT: These findings support inhaled methoxyflurane as a promising alternative analgesic approach for OR that may reduce procedural invasiveness and improve patient experience, with potential implications for workflow efficiency and resource utilization in assisted reproduction settings.

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AI-BASED OOCYTE ASSESSMENT CAPTURES HETEROGENEITY IN OOCYTE QUALITY IN SIMILARLY SIZED OOCYTES: INSIGHTS FROM MAGENTA ACROSS OOPLASM DIAMETER STRATA. Elaine Pasamba, B.SC., M.S.[1], Michelle Morgovsky, MHSc[2], Lais Vanzella, PhD[2], Sergey Corsac, PhD[2], Erin Mackenzie, MSc[2], Jullin Fjeldstad, BSc, MSc[2], Kenji Ezoe, Ph.D.[3] and Keiichi Kato, M.D., Ph.D.[3], [1]Kato Repro Biotech Center, Makati., Philippines, [2]Future Fertility, Toronto, ON, Canada, [3]Kato Ladies Clinic, Tokyo, Japan

OBJECTIVE:
To investigate if automated AI-based oocyte assessment captures clinically-relevant variation in quality beyond manual ooplasm diameter (OD) measurements, and whether performance varies across OD strata.
MATERIALS AND METHODS:
This retrospective study evaluated 3643 oocytes (24–49 years; 808 fresh autologous cycles) at a private IVF clinic (2023–2025). Pre-ICSI ooplasm measurements were taken along the vertical, horizontal and diagonal axes, by experienced embryologists using a software tool, and the mean value was recorded as OD. MAGENTA (0-10 score) assessed the same pre-ICSI oocyte images, alongside patient age and metaphase II (MII) count, to predict blastocyst likelihood. Outcomes included fertilization (n=3595), blastulation (n=3333), and implantation (β-hCG positive; n=2354).
Univariate and multivariate age-adjusted logistic regression assessed MAGENTA, OD, and MAGENTA+OD for outcome prediction; AUCs were compared by cycle-cluster bootstrap. Effect modification was tested via MAGENTA×OD interaction terms. Within-cycle pairwise analyses evaluated MAGENTA ranking among OD-matched oocytes. In subgroup analyses, oocytes were stratified into OD groups (µm) (A: <110.19; B: 110.19–<112.22; C: 112.22 –<113.67; D: 113.67 –<115.01; E: 115.01–<116.02; F: ≥116.02).
RESULTS:
OD-only models had significantly lower discrimination for 2PN (AUC 0.50–0.53), blastulation (AUC 0.52–0.56), and implantation (AUC 0.52–0.63) vs OD+MAGENTA models (AUC 0.56–0.57; 0.58–0.60; and 0.59–0.65, respectively; all p<0.0001). MAGENTA-only models performed comparably to combined models (2PN AUC 0.57; implantation AUC 0.59–0.65; p>0.05), except for blastulation in the multivariate analysis, where MAGENTA+OD slightly outperformed (AUC 0.60 vs 0.59; p<0.0001). The association of MAGENTA with blastulation varied by OD group (Wald's test for heterogeneity; p<0.05). The strongest association was seen in the smallest ooplasms (group A; OR 1.37; p<0.0001), with moderate correlations in groups B, E, and F (OR 1.17, 1.22, and 1.11; p<0.05 for all), and no significant associations in middle ranges, groups C and D (both OR 1.08; p>0.05).
Sibling oocyte analysis showed the highest MAGENTA blastocyst win rates in OD group A (68.0%), moderate performance in groups B (58.5%), E (63.0%), and F (54.6%), and less pronounced differentiation in groups C (45.5%) and D (54.8%).
CONCLUSIONS:
While OD provides some biologically meaningful insights into oocyte quality, it is time consuming and not routinely performed on a global scale. Conversely, MAGENTA provides an automated assessment with improved prediction of 2PN, blastulation, and implantation, particularly at smaller and larger ODs, where OD provided limited discrimination.
IMPACT STATEMENT:
OD reflects one biologically relevant aspect of oocyte quality; however, MAGENTA further detects clinically relevant variation in oocyte quality not captured by size alone. Automated AI assessments may improve stratification among oocytes with similar observable characteristics and reduce manual morphological assessments, while uncovering unrecognized drivers of competence to support clinical decision-making in IVF.
SUPPORT: No financial support obtained for this study.

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BLASTOCYST MORPHOLOGY, CHROMOSOMAL STATUS, AND REPRODUCTIVE OUTCOMES IN PGT-A CYCLES: A MATERNAL-AGE-STRATIFIED MULTICENTRE COHORT. Diksha Jaiswal, Ms[1], Krishna Mantravadi, MBBS, PGDHOM, Masters in clinical embryology[2], Durga Gedela Rao Dr., MBBS, DGO, MRCOG[2], Sushma R Baxi Dr, MBBS, MD[3], Arth A Ladva Sr., Dr[4], Dhruv Panola, Mr[5] and Selva Karthick M Mr, B.Tech, PGDSCT[2], [1]NA, Vadodara, Gujarat, India, [2]Oasis Fertility, Hyderabad, India, [3]OASIS FERTILITY, Vadodara, India, [4]Senior Embryologist, vadodara, Gujarat, India, [5]OASIS FERTILITY, Jetalpur Rd nearby Windward Business Park, India

OBJECTIVE:
To evaluate whether blastocyst morphology (Gardner grade) is independently associated with chromosomal status (PGT-A) and with reproductive outcomes after euploid blastocyst transfer, in a maternal-age-stratified analysis — addressing whether morphology retains selection value once ploidy is known.
MATERIALS AND METHODS:
Retrospective multicentre cohort study (2014–2024) of 2,566 Day 5/6 blastocysts from self-gamete IVF/PGT-A cycles, stratified by maternal age: ≤35 y (n=1,745) and >35 y (n=821). Blastocysts were Gardner-graded and underwent trophectoderm biopsy with NGS-based PGT-A. Euploid embryos were transferred in frozen cycles. **Primary outcome:** live birth rate per euploid transfer. **Secondary:** euploidy rate by morphology and maternal age, mosaicism, non-informative ("no-DNA") rate, implantation, clinical pregnancy, miscarriage. Chi-square and age-adjusted logistic regression; sensitivity analysis excluded the small AA subgroup. Within-patient clustering was acknowledged in the interpretation. p<0.05 significant. IRB-approved.
RESULTS:
Euploidy was independently associated with morphology (p=0.006) and maternal age (p<0.001); euploid frequency was 60.5% in women ≤35 y and 49.9% in women >35 y. Mosaicism was more frequently detected in higher-grade embryos (AA-AB), likely reflecting biopsy yield and assay dynamics rather than developmental advantage. Non-informative ("no-DNA") results were enriched in poor-morphology embryos, peaking at 6.1% in CC. After age stratification, higher-grade blastocysts showed numerically higher odds of euploidy. Among euploid transfers, morphology independently predicted implantation (p=0.05), clinical pregnancy (p=0.04), and live birth (p=0.02), with rates declining with worsening morphology; CC euploid blastocysts had a live birth rate of 39%. Maternal age exerted an additional negative effect. Sensitivity analysis excluding AA did not change conclusions.
CONCLUSIONS:
Blastocyst morphology and maternal age were independently associated with chromosomal competence and with reproductive outcomes after euploid embryo transfer. Among euploid embryos, poorer morphology was associated with lower implantation and live birth, indicating morphology carries clinically meaningful information beyond ploidy alone.
IMPACT STATEMENT:
Blastocyst morphology should not be discarded once PGT-A is performed: even among euploid embryos, morphology and maternal age stratify reproductive outcome. Integrating morphological grade with PGT-A and maternal age — rather than ploidy alone — may improve embryo selection and counselling, particularly when multiple euploid embryos are available or in poor-morphology euploids.
SUPPORT: NA

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DOES MFSS ADD CLINICAL VALUE IN DONOR SPERM IUI? A 1,553-CYCLE OBSERVATIONAL COMPARISON. Vidhi Shah, Ms[1], Krishna Mantravadi, MBBS, PGDHOM, Masters in clinical embryology[2], Durga Gedela Rao Dr., MBBS, DGO, MRCOG[2], Sushma R Baxi Dr, MBBS, MD[3], Arth A Ladva Sr., Dr[4] and Dhruv Panola, Mr[5], [1]OASIS FERTILITY, [2]Oasis Fertility, Hyderabad, India, [3]OASIS FERTILITY, Vadodara, India, [4]Senior Embryologist, Vadodara, Gujarat, India, [5]Oasis Fertility, Vadodara, Gujarat, India

OBJECTIVE:
In donor sperm IUI cycles — where baseline sperm quality is high and standardised — does microfluidic sperm selection (MFSS) provide incremental clinical benefit over conventional double density-gradient (DDG) preparation that justifies its higher per-cycle cost?
MATERIALS AND METHODS:
Non-randomised observational cohort study (2020–2025) of **1,553 donor sperm IUI cycles: MFSS n=647 vs DDG n=906.** Inclusion: women <35 y; unexplained infertility; bilateral tubal patency; BMI <30 kg/m²; monofollicular ovulation; uncomplicated stimulation; donor sperm with good post-thaw survival and TMSC ≥10 million. IUI 40 h post-hCG. Preparation method assigned per institutional practice. **Both methods required equivalent preparation time (~30 min); per-cycle laboratory cost USD 160–180 for DDG vs USD 220–230 for MFSS. Primary outcome:** clinical pregnancy rate per initiated cycle. **Secondary:** ongoing pregnancy, miscarriage, incremental laboratory cost. Chi-square/Fisher's exact and 95% CI for proportion difference; p<0.05. IEC ECR/1312/Inst/TG/2019/024.
RESULTS:
Clinical pregnancy rates were comparable between MFSS and DDG (13.3% vs 13.6%; absolute difference –0.3%, 95% CI approximately –3.7% to +3.1%; p>0.05) — excluding a clinically meaningful ±5% non-inferiority margin. Ongoing pregnancy rates were comparable. Miscarriage per initiated cycle was low and similar (2.6% vs 2.3%; p>0.05). Across the MFSS arm, the additional per-cycle cost (~USD 50–70) translated to approximately USD 32,000–45,000 of incremental laboratory expenditure without measurable improvement.
CONCLUSIONS:
In donor sperm IUI — where baseline sperm quality is high and standardised — MFSS provided no incremental clinical benefit over conventional DDG, but added approximately 30–40% to per-cycle laboratory cost. The donor-sperm design isolates the preparation-method effect from sperm-source variability and supports DDG as a clinically appropriate and economically preferable first-line preparation.
IMPACT STATEMENT:
To our knowledge this is one of the largest comparisons of MFSS versus conventional sperm preparation in donor sperm IUI — a scenario underrepresented in the MFSS literature, which derives largely from IVF and partner-sperm IUI. Findings inform evidence-based, cost-conscious laboratory resource allocation: DDG achieves equivalent

outcomes at lower cost; MFSS should be reserved for scenarios where male-factor severity warrants its additional cost.

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CAN WOMEN WITH LOW OVARIAN RESPONSE BENEFIT FROM THE FREEZE - ALL STRATEGY? FRESH EMBRYO TRANSFER VERSUS FREEZE-ALL STRATEGY IN LOW OVARIAN-RESPONDERS: A LARGE CHINESE POPULATION-BASED STRATIFIED COHORT STUDY. Qingyun Mai, Professor[1] and Wenxin Liang, Bachelor of Medicine[2], [1]Guangdong Quality Control Center for Human Assisted Reproductive Technology, China, [2]The First Affiliated Hospital, Sun Yat-sen University, Guangzhou, China

OBJECTIVE: To evaluate whether women with low ovarian response can derive benefits from the freeze-all strategy, utilizing assisted reproductive technology (ART) registration data from the southern Chinese population and comparing pregnancy and neonatal outcomes between fresh embryo transfer (ET) and the freeze-all strategy in this population.
MATERIALS AND METHODS: This retrospective cohort study used data from the Guangdong ART registry (2021–2022) across 47 reproductive medical centers. To ensure independence of observations, only the first autologous fresh IVF/ICSI cycles or first freeze-all cycles followed by the first frozen embryo transfer (FET) were included. Cycles were stratified by oocyte yield: "Oocytes 1–3" (poor responders) and "Oocytes 4–9" (suboptimal responders). The primary outcome was live birth rate (LBR) of the first transfer. Secondary outcomes included clinical pregnancy, pregnancy loss, ectopic pregnancy, and low birthweight of the first transfer, as well as cumulative clinical pregnancy rate (CPR) and LBR within one year of the index oocyte retrieval. Modified Poisson regression was used to estimate relative risks (RRs) and 95% confidence intervals (CIs). Model 1 was adjusted for maternal age, and Model 2 was further adjusted for fertilization method, number and stage of embryos transferred. Subgroup analysis was performed by age (≥35 and <35 years), number of embryos transferred (one embryo and two embryos), and embryo stage (cleavage stage and blastocyst).
RESULTS: During the study period, 145,882 IVF/ICSI cycles were identified, of which 28,352 cycles met the inclusion criteria (5,673 with 1–3 oocytes; 22,679 with 4–9 oocytes). Fresh ET was consistently associated with higher LBR in both poor responders (27.5% vs 20.5%) and suboptimal responders (41.6% vs 30.7%), and remained significant after adjustment (poor: RR 0.78, 95% CI 0.68–0.89; suboptimal: RR 0.72, 95% CI 0.68–0.75). Fresh ET was associated with higher CPR in suboptimal responders (51.7% vs 45.7%; Model 2 RR 0.83, 95% CI 0.80–0.87), but not in poor responders after adjustment. FET was associated with higher risk of clinical pregnancy loss, particularly in suboptimal responders (23.9% vs 19.5%). Subgroup analyses by age, number and stage of embryos transferred showed consistent results. In cumulative analysis, fresh ET yielded higher cumulative LBR in both poor responders (28.7% vs 20.8%; Model 1 RR 0.80, 95% CI 0.73–0.88) and suboptimal responders (42.1% vs 35.9%; Model 1 RR 0.89, 95% CI 0.86–0.92).
CONCLUSIONS: In women with low ovarian response, fresh ET may be superior to a freeze-all strategy in achieving higher LBR and higher cumulative LBR in both poor and suboptimal responders.
IMPACT STATEMENT: This is the largest study based on southern Chinese population to specifically compare fresh embryo transfer and freeze-all strategy in women with low ovarian response, with stratification by oocyte yield to address heterogeneity within this population. This study demonstrates that the clinical advantage of a freeze-all strategy does not extend to this population. Our findings support fresh ET as an optimal approach for higher LBR and higher cumulative LBR when embryo availability is limited.

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NATIONWIDE ASSESSMENT OF GESTATIONAL CARRIER PREGNANCIES AND PREVALENCE OF MENTAL HEALTH DISORDERS. Aaron D Masjedi, MD[1], Jennifer Yao, BA[2], Nikita Rao, M.D.[1], Nandita Ramkumar, M.D.[3], Zachary S. Anderson, M.D.[4], Rachel S Mandelbaum, M.D.[1], Joseph G Ouzounian, MD, MBA[1], K Matsuo, MD, PhD[1] and Richard J. Paulson, MD, MS[1], [1]University of Southern California, Los Angeles, CA, [2]Keck School of Medicine, University of Southern California, Los Angeles, [3]Department of Obstetrics and Gynecology, Los Angeles General Medical Center, [4]Emory University School of Medicine, Division of Reproductive Endocrinology and Infertility, Atlanta, GA

OBJECTIVE: Gestational carrier (GC) pregnancies have increased in recent years. Although individuals selected as GCs typically have low-risk baseline profiles, they remain susceptible to both obstetric and psychological complications throughout pregnancy and postnatally. Thus, The American Society for Reproductive Medicine (ASRM) recommends a comprehensive medical and psychological evaluation prior to beginning the GC process. This study aimed to assess the prevalence of mental health disorders in GC pregnancies at time of delivery.
MATERIALS AND METHODS: This retrospective cohort study queried the Healthcare Cost and Utilization Project's National Inpatient Sample and captured 21,221,946 hospital deliveries between 2017-2022. GC pregnancies were identified as the primary exposure by utilizing the International Classification of Disease 10th revision (ICD-10) code Z33.3 and compared with non-GC pregnancies. The primary outcome measure was prevalence of mental health conditions, including anxiety or depressive disorders. Adjusted analyses were performed using a multivariable generalized linear model with Poisson regression and a sensitivity analysis evaluated differences by race.
RESULTS:
A total of 3,125 GC deliveries were identified. The prevalence rate of mental health conditions among GC versus non-GC pregnancies was 65.6 vs 82.9 per 1,000 deliveries, respectively. After adjustment, GCs pregnancies were associated with a lower prevalence of mental health diagnosis compared with non-GC pregnancies (adjusted-prevalence rate ratio [aPRR] 0.72, 95% CI 0.63-0.82). In race-stratified analyses, White GCs had a lower prevalence of mental health diagnosis compared to White non-GCs (64.1 vs 113.7 per 1,000; aPRR 0.60, 95% CI 0.51-0.71). In contrast, no significant difference was observed between non-White GCs and non-White non-GCs (57.0 vs 48.4 per 1,000; aPRR 1.09, 95% CI 0.82-1.46).
CONCLUSIONS: GC pregnancies were associated with a lower prevalence of mental health diagnoses at delivery compared with non-GC pregnancies, consistent with current ASRM screening recommendations. However, this difference was not observed among non-White individuals, suggesting potential disparities that may reflect underlying social determinants of health.
IMPACT STATEMENT: Despite lower observed rates of mental health conditions at delivery, GC pregnancies still warrant careful psychological screening and post-delivery monitoring. These findings highlight the importance of equitable screening practices and the need to address disparities in mental health risk across racial groups.

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ONE VERSUS TWO DIMENSIONAL ASSESSMENT OF FOLLICLE SIZE IN IN-VITRO FERTILIZATION (IVF) CYCLES: CYCLE CHARACTERISTICS AND OUTCOMES. Rachel A Martel, M.D.[1], Christine V Whitehead, MS, BSN, RN[2] and Andres Reig, M.D.[3], [1]RMA New Jersey, Basking Ridge, NJ, [2]IVIRMA Global Research Alliance, Basking Ridge, NJ, [3]IVIRMA Global Research Alliance, IVIRMA New Jersey, Basking Ridge, NJ

OBJECTIVE: Accurate follicle measurement during IVF cycles determines cycle length and gonadotropin dose and is critically important for optimizing mature oocyte yield, yet there is very limited data comparing one versus two dimensional follicle measurements. In December of 2023, our center switched from routinely measuring follicles in one dimension (the largest diameter, 1D) to calculating the average of two dimensions (2D). This new 2D method results in smaller measurements as the longest is averaged with its perpendicular dimension. Our goal was to assess IVF outcomes among patients whose follicles were routinely measured in one dimension, as compared to those measured in two dimensions.
MATERIALS AND METHODS: This is a retrospective cohort study of all patients undergoing their first in-vitro fertilization cycle from 6/2022-11/2023 (1D group) and 3/2024-8/2025 (2D group). Fertility preservation cycles, third party reproductionand cycles using surgical sperm were excluded. The primary outcome was mature oocyte yield. Secondary outcomes included cycle length, total gonadotropin dose, number of visits, blastulation rate, and ongoing pregnancy rate after frozen embryo transfer. Comparisons were performed via Chi-square, Mann-Whitney U, and Fisher's Exact tests with $p<0.05$ considered significant.
RESULTS: This study included 8324 patients, 4036 in the 1D group and 4288 in the 2D group. Median age and AFC were similar between the 1D and 2D groups, 35.4 (IQR: 32.4-38.7) versus 35.6 (32.6-38.7) years (p=0.3) and 15 (10-23) vs 15 (10-23) follicles (p=1.0), respectively. Median AMH did significantly differ between the 1D and 2D groups, 2.4 (1.1-4.5) vs 2.1 (1.0-3.8) ($p<0.0001$). The total dose of gonadotropins differed between the two groups, with the 1D group having a median dose of 3600 IU (2700-4500 IU) and the 2D group 4050 IU (3000-4950 IU) ($p<0.0001$). The 2D group had a higher median day of trigger, 13 (12-14) vs. 12 (11-13) than the 1D group ($p<0.0001$) but both groups had a median of 6 visits per patient during the cycle. Cancellations for poor ovarian response or no resulting embryos were similar between the 1D and 2D groups (21% vs. 20%, respectively; p=0.2). The number of mature oocytes did not significantly differ, with a median of 10 (5-17) for both. The median number of blasts was similar clinically between the 1D (4 [2-8]) and 2D (5 [2-9]) groups, but statistically significant (p=0.001). After the first frozen embryo transfer, there was no difference in implantation (82% vs 81% p=0.8) or ongoing pregnancy rates (64% for both, p=0.7).
CONCLUSIONS: As expected, the 2D group had longer length of stimulation and higher total dose of gonadotropins, but cycle length differed by only one day between groups and did not translate into a higher number of patient visits. There were no clinically significant differences in cycle yield nor transfer outcomes.
IMPACT STATEMENT: This study provides reassuring evidence that 1 versus 2 dimensional follicle measurement does not have a clinically significant impact on patient outcomes.

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DELIVERY OUTCOMES OF INFANTS BORN FROM IVF CYCLES USING SURGICALLY-RETRIEVED SPERM VS EJACULATED SPERM. Amalia Namath, M.D.[1], Jing Wu, MD, MS[2], Michal A Norry, MD[3] and Jeanne E O'Brien, M.D., M.Sc.[4], [1]National Institutes of Health/ Walter Reed National Military Medical Center, Bethesda, MD, [2]US Fertility, Rockville, MD, [3]George Washington University, [4]Shady Grove Fertility Center, Rockville, MD

OBJECTIVE: To compare birth weight (BW) and gestational age (GA) of infants born from IVF/ICSI cycles using surgically-retrieved sperm (SS) vs ejaculated sperm (ES), including comparison of frozen embryo transfer (FET) protocol.
MATERIALS AND METHODS: All patients from 2015 to 2025 from a large multi-center reproductive site who underwent IVF-ICSI cycles with an FET that resulted in a live birth (LB) were included. Patients were excluded if they used donor sperm and/or conventional insemination. Analysis was performed using GLMs and Poisson regression adjusted *a priori* for age, BMI, ethnicity, number of embryos transferred, and PGT-A. A

stratified analysis was performed based on FET protocol, on cycles with donor oocytes, and on PGT-A cycles.
RESULTS: From 2,209 cycles overall, 1,053 patients achieved a live birth (47.67%). This included 747 (71%) patients with ES and 306 (29%) with SS. Demographics were similar. From the SS cohort, most were micro-TESE procedures. Most were single ETs with only 3% double ET with ES and 2% with SS.
With singleton births, there were more preterm deliveries (PTD) in the SS cohort (Table, 13.0% vs 9.1%, p=0.04). After adjusting for confounders, the SS cohort was more likely to have PTD (aRR 1.56 95% CI 1.03-2.36). However, BW did not differ overall (Table). When analyzing by FET method, there was still an increased likelihood of PTD in programmed FET (aRR 1.54 95% CI 1.01-2.35) and in PGT-only cycles (aRR 1.83 95% CI 1.06-3.17). This was not found in true natural or modified natural cycles. There was also no difference in donor oocyte cycles.
For multiple births, most deliveries were preterm as expected. There was no difference in BW (Table). When adjusting for confounders, the SS cohort was more likely to have lower BW but this was not statistically significant (aRR 1.99 95% CI 1.00-3.95). There was no difference in PTD overall or when analyzing by FET method, in PGT-A-only cycles, and in donor oocyte cycles
CONCLUSIONS: Our study demonstrated that in singleton LB, patients with embryos fertilized with SS were more likely to have a PTD than those with embryos fertilized with ES, which stayed consistent in programmed and in PGT-only cycles. These mechanisms are unknown but hypothesized to be related to placental insufficiency during development that may be increased with SS. However, there was no difference in BW. Larger studies are required that include additional considerations such as maternal comorbidities.
IMPACT STATEMENT: Patients using SS for fertilization in IVF cycles should be counseled on potential for PTD but reassured that BW appears to be similar.
TABLE:

	Ejaculated Sperm N = 747	**Surgical Sperm N = 306**	**p-value**
BW (singleton) mean, g (SD)	3286.52 (638.76)	3233.90 (639.63)	0.20
BW (multiples) mean, g (SD)	2399.80 (714.41)	2415.71 (379.32)	>0.90
PTD (singleton) N (%)	64/703 (9.1%)	38/292 (13.0%)	0.04

SUPPORT: None

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CORIFOLLITROPIN ALFA VERSUS RECOMBINANT FSH IN POOR RESPONDERS UNDERGOING IVF/ICSI: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS. Katherine Ann Reimão Miller Ms, Medical Student[1], Priscila Luiza Dos Santos, Medical Student[2], Ana Clara Pimenta Servidoni, Research Fellow[3], Maria Julia Lemos, MD[4], Luca Schiliro Tristao, MD[5], Luísa Doria De Almeida Ms, Medical Student[1], Gabriel Monteiro, M.D.[6], Ana Paula Beck, MD[7] and Denis Schapira Wajman, MD[7], [1]Medical Student, Faculty of Medicine, University of Santo Amaro, São Paulo, Brazil, [2]Medical Student, Department of Medicine, Santa Marcelina Medical School, São Paulo, Brazil, [3]Research Fellow, Yale School of Medicine, Department of Obstetrics and Gynecology, CT, [4]MD, Department of Women's Health, Kurah Women's Health Institute, Rio de Janeiro, Brazil, [5]MD, Centro Universitário FMABC, Santo André, Brazil, [6]M.D. Faculty of Medicine, University of Santo Amaro, São Paulo, Brazil, [7]MD, Hospital Israelita Albert Einstein, São Paulo, Brazil

OBJECTIVE: Recombinant follicle stimulating hormone (rFSH) is widely used in standard gonadotropin protocols for controlled ovarian stimulation (COS). Corifollitropin alfa (CFA), a long-acting gonadotropin with prolonged half-life, has emerged as an patient-friendly alternative to rFSH, especially for poor ovarian response patients, as it optimizes follicular development with a single injection. This study aims to compare the efficacy and safety of CFA versus daily rFSH in poor responders undergoing COS for in vitro fertilization (IVF)/ intracytoplasmic sperm injection (ICSI).
MATERIALS AND METHODS: This systematic review and meta-analysis followed PRISMA guidelines and was prospectively registered in PROSPERO (ID: CRD420261336331). A comprehensive search was performed across PubMed, EMBASE and Cochrane Library. We included only RCTs enrolling women, with previous poor ovarian responses, undergoing COS for IVF/ICSI initiating the stimulation with a single CFA injection or daily rFSH. 588 records were screened for eligibility, of which 6 RCTs met the inclusion criteria. Primary outcomes analyzed included ongoing pregnancy rate, biochemical pregnancy rate, live birth rate, and cycle cancellation rates due to insufficient ovarian response. Secondary outcomes included total oocytes retrieved, mature metaphase II (MII) oocytes and good-quality embryos obtained. Data analysis was conducted with Review Manager, calculating risk ratios (RR) and mean differences (MD) with 95% confidence intervals (CI), in a random-effects model. Heterogeneity was assessed using the I2 statistic. Risk of bias was evaluated with the RoB 2 tool, and certainty of evidence was assessed using the GRADE approach.
RESULTS: We included 6 RCTs, comprising a total of 810 women (CFA: 410; rFSH: 400). CFA and daily rFSH demonstrated comparable ongoing pregnancy rates (n = 712; RR 1.13, 95% CI 0.78–1.63; I^2 = 0%; p = 0.51), biochemical pregnancy rates (n = 440; RR 0.98, 95% CI 0.69–1.39; I^2 = 0%; p = 0.92), and live birth rates (n = 361; RR 1.26, 95% CI 0.67–2.35; I^2 = 0%; p = 0.47). No significant difference was also observed in cycle cancellation due to insufficient ovarian response (n = 693; RR 0.96, 95% CI 0.57–1.62; I^2 = 5%; p = 0.88). Regarding secondary outcomes, no significant differences were found in the total number of oocytes retrieved (n = 473; MD 0.54, 95% CI -0.14 to 1.23; I^2 = 78%; p = 0.12), mature MII oocytes in ICSI cycles (n = 473; MD 0.55, 95% CI -0.32 to 1.43; I^2 = 91%; p = 0.22), or good-quality embryos obtained (n = 185; RR 1.11, 95% CI 0.82–1.51; I^2 = 0%; p = 0.51).
CONCLUSIONS: In poor responders undergoing IVF/ICSI, CFA achieved reproductive outcomes comparable to daily rFSH across both clinical and embryological endpoints. While no superiority was observed, CFA offers a simpler stimulation strategy with reduced injection burden, supporting its use as a practical and patient-friendly alternative in this challenging population.
IMPACT STATEMENT: CFA provides comparable clinical effectiveness to daily rFSH with lower treatment burden in poor responders.
SUPPORT: The authors received no financial support related to this abstract.
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DOES FRAGILE OOLEMMA DURING PIEZO-ICSI INCREASE WITH MATERNAL AGE? A 21,065-OOCYTE COHORT ANALYSIS. Hayata Nakajo, M.Sc, MT[1], Kenichiro Hiraoka, Ph.D[2], Makiko Tajima, M.D.[3], Dr. Akira Komiya, M.D., Ph.D.[4] and Kiyotaka Kawai, M.D.Ph.D[5], [1]Kameda IVF Clinic Makuhari, Mihama-Ku, Japan, [2]Kameda IVF Clinic Makuhari, Chiba, Japan, [3]Kameda IVF Clinic Makuhari, Mihama-Ku, Chiba, Japan, [4]Kamogawa-Shi, Chiba, Japan, [5]Kameda IVF Clinic Makuhari, Chiba-shi, Japan

OBJECTIVE: Maternal age-related IVF decline reflects both embryonic aneuploidy and structural oocyte deterioration. Meiotic spindle visibility has been reported to decline with age. Fragile oolemma — defined as membrane rupture before the Piezo pulse during Piezo-ICSI — has been associated with reduced survival and fertilization, but whether its prevalence increases with maternal age is unknown. We hypothesized that fragile oolemma prevalence would increase with advancing maternal age, analogous to declining spindle visibility.
MATERIALS AND METHODS: We retrospectively analyzed 21,065 consecutive Piezo-ICSI metaphase-II oocytes from 2,338 women across 4,379 retrieval cycles at a single center (May 2016–March 2026; median age 37, range 23–50). Oocytes were classified as fragile oolemma if the membrane ruptured before the Piezo pulse, and normal oolemma if it ruptured with the Piezo pulse. The primary outcome was the proportion of fragile oolemma across three maternal-age strata (≤34, 35–39, ≥40 years). Secondary outcomes were Day-1 degeneration, fertilization (2PN), blastocyst formation, and good-quality blastocyst (Gardner ≥4BB on Day 5/6). Multivariable logistic regression adjusted for maternal age, spindle visibility, operator, stimulation protocol, retrieval cycle number, and post-wash total motile sperm count. Patient-clustered GEE and within-patient conditional logistic regression were performed as sensitivity analyses.
RESULTS: Fragile oolemma prevalence did not differ across age strata (22.9%, 23.9%, 22.4% for ≤34, 35–39, ≥40 years; χ^2 p=0.104; Spearman r=−0.002, p=0.790). Good-quality blastocyst rate declined markedly with age (39.7% → 35.4% → 21.3%, p<0.001); spindle visibility showed marginal variation (93.7% → 92.1% → 92.3%, p<0.001). Despite age-independence, fragile oolemma was strongly associated with adverse outcomes: 15- to 22-fold higher degeneration (7.7% vs 0.4%), lower fertilization (78.1% vs 88.1%), blastocyst formation (59.8% vs 68.1%), and good-quality blastocyst rates (27.3% vs 34.4%; all p<0.001). Normal oolemma was independently associated with good-quality blastocyst development (aOR 1.38, 95% CI 1.26–1.51; p<0.001), persisting in women ≥40 years (aOR 1.49, 95% CI 1.21–1.83). Sensitivity analyses confirmed robustness; 67.5% of patients with ≥2 oocytes had both types, confirming an oocyte-level phenomenon.
CONCLUSIONS: The prevalence of fragile oolemma during Piezo-ICSI does not increase with maternal age. Unlike spindle visibility or embryo developmental competence — both of which decline with age — fragile oolemma represents an oocyte-level quality signature that is determined independently of maternal age, providing developmental prognostic information complementary to, rather than duplicative of, maternal age.
IMPACT STATEMENT: Fragile oolemma does not increase in prevalence with maternal age, diverging from other age-associated oocyte markers. This finding positions fragile oolemma as an independent oocyte-level clinical marker that provides age-independent prognostic information, with potential utility in embryo prioritization across all age strata.

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FULLY HATCHED PGT (PREIMPLANTATION GENETIC TESTING)-TESTED BLASTOCYSTS EXHIBIT WORSE PREGNANCY OUTCOMES COMPARED TO ZONA-INTACT BLASTOCYSTS. Shrisha Maskey, MD[1], Louisa Drake, D.O.[2], Lawrence Engmann, M.D.[3] and Claudio A Benadiva, H.C.L.D, M.D.[3], [1]University of Connecticut Health Center, Farmington, CT, [2]West Hartford, CT, [3]University of Connecticut Health Center, Center for Advanced Reproductive Services, Farmington, CT

OBJECTIVE:
The purpose of this study is to evaluate whether there is a difference in pregnancy outcomes between fully hatched embryos and those with a zona pellucida.
MATERIALS AND METHODS:

A retrospective query of in vitro fertilization (IVF) frozen embryo transfer cycles (FET) from January 2020 to December 2025 at a single academic institution was performed. Patients of all ages were included if they had a natural, "modified natural", or programmed FET with a single day 5, 6, or 7 blastocyst, with or without preimplantation genetic testing (PGT). For PGT embryos, assisted hatching was performed on the day of biopsy. Patients were excluded if there was incomplete information about the embryo grade. Embryos were graded according to the Gardner grading criteria at the time of embryo transfer and were divided into two groups: those with a zona pellucida and those without a zona. The embryos were further divided into those who had PGT and those who did not. Our primary outcome was live birth/ongoing pregnancy rate. Secondary outcomes are listed below. Descriptive statistics with independent t-tests for continuous data, and chi squared for categorical data were used. A two-sided p-value of <0.05 was considered statistically significant.

RESULTS:

Subjects were between 24 and 52 years of age at the time of FET and there were no significant differences between the groups in terms of demographics such as patient age or BMI. 12.8% of the PGT embryos did not have a zona, while only 2.4% of the "no PGT" embryos did not have a zona. These findings were statistically significant, with a p-value <0.01. Among embryos that did not have PGT, there were no statistically significant differences in pregnancy outcomes between zona intact and zona free embryos. The OPR/LBR in these groups was 50.9% and 53.5% respectively. Conversely, the pregnancy outcomes for PGT embryos are summarized below.

PGT embryos:

Outcome	Zona Intact (n=2256)	Zona Free (n=332)	p-value (Chi-Sq)
Positive pregnancy test	79.5% (1793/2256)	65.1% (216/332)	<0.01
Biochemical pregnancy loss rate	12.8% (229/1793)	16.2% (35/216)	0.158
Clinical pregnancy rate	68.8% (1551/2256)	53.3% (177/332)	<0.01
Clinical miscarriage rate	10.6% (164/1551)	13.0% (23/177)	0.326
Ectopic pregnancy rate	0.73% (13/1793)	1.9% (4/216)	0.101
Live birth/ongoing pregnancy rate	61.5% (1387/2256)	46.4% (154/332)	<0.01

CONCLUSIONS:

Among PGT-tested blastocysts, fully hatched blastocysts show worse pregnancy outcomes compared to those with a zona pellucida. It is conceivable that this finding may be attributed to the artificial breach created in the zona and should be considered for embryo ranking.

IMPACT STATEMENT:

PGT leads to a higher proportion of zona-free embryos, which have worse pregnancy outcomes compared to zona-intact embryos.

SUPPORT: No financial disclosures.

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IMPACT OF OLIGOZOOSPERMIA ON EMBRYO EUPLOIDY AND IVF OUTCOMES IN AUTOLOGOUS ICSI CYCLES OF WOMEN UNDER 35 YEARS OLD.

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OBJECTIVE: Severe oligozoospermia has been associated with impaired embryo development and increased sperm aneuploidy, potentially leading to poorer reproductive outcomes. However, most studies have not clearly isolated the male factor, as female age and oocyte quality often act as major confounders. The isolated effect of reduced sperm concentration on embryonic aneuploidy rates and overall reproductive outcomes remains uncertain. This study aimed to evaluate if oligozoospemia in male factor infertility affect embryo euploidy rates and other IVF outcomes in autologous ICSI cycles of women under 35 years old.

MATERIALS AND METHODS: This single-center retrospective cohort study included 231 autologous ICSI cycles with PGT-A in women under 35 years old, conducted between March 2021 and November 2024. The study population was divided into three groups based on sperm concentration: SO (<5 million sperm/ml), moderate oligozoospermia (MO, 5–16 million sperm/ml), and a normozoospermia control group (≥16 million sperm/ml) for outcome analysis. Only ICSI cycles with fresh ejaculated sperm were taken in analysis. All women were under 35 years old at the time of ICSI. Embryos were cultured to the blastocyst stage and biopsied for PGT-A. All transfers were of single vitrified-warmed euploid embryos. Cumulative live birth rate (CLBR) was calculated per patient. Statistical analysis was performed using multivariate regression models to identify correlations between sperm concentration and genetic and reproductive outcomes.

RESULTS: The study included 231 couples, divided into SO (N= 54), MO (N=38), and normozoospermia (N=139). Groups were comparable in male age, ovarian stimulation and endometrial preparation protocols (p>0.05). The SO group showed reduced fertilization rates compared to the MO group and controls, 66.4% vs 82.2% vs 76.5 %; p<0.01. No difference was observed in blastocyst formation rate (per fertilized oocyte), 54.1% vs 56.5% vs 54.4%, p=0.88. However, blastocyst yield per oocyte inseminated was lower in the SO group compared to the MO group, 34.6% vs 46.0% vs 40.6%; p=0.02. Despite this, due to a higher number of MII oocyte inseminated in the SO group (13.3 vs 11.7 vs 9.9; p=0.005), the mean number of blastocysts (4.4 vs 4.7 vs 3.6) and euploid blastocysts (2.8 vs 2.9 vs 2.6) was similar across groups (p>0.05). No differences were observed in euploidy rate (67.4% vs 73.7% vs 72.1%; p=0.5), and subsequent pregnancy, miscarriage, LBR or CLBRs after single blastocyst transfers (all p>0.5). The multivariate analysis showed no effect of SO on euploidy (SO vs normospermia aOR 1.34, 95%CI 0.81-2.31, p=0.24; SO vs MO aOR 1.17, 95%CI 0.71-1.95, p=0.54) and no effect of SO and MO on miscarriage, or LBR (all p>0.5).

CONCLUSIONS: Oligozoospermia in IVF cycles does not significantly affect embryo euploidy rates or IVF outcomes including cumulative live birth rates (CLBRs).

IMPACT STATEMENT: In ICSI-cycles with women under 35, oligozoospermia did not impair euploidy or IVF outcomes. These findings question the utility of PGT-A based solely on sperm concentration. Further research should explore extreme cases of oligozoospermia and additional male infertility parameters.

SUPPORT: Nothing to disclose

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P-242 3:45 PM Monday, October 26, 2026

BICARBONATE-BUFFERED MEDIA IMPROVES EMBRYO DEVELOPMENT COMPARED WITH HEPES DURING INTRACYTOPLASMIC SPERM INJECTION: A PROSPECTIVE RANDOMIZED SIBLING-OOCYTE STUDY.

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OBJECTIVE: To evaluate the effect of bicarbonate versus HEPES buffered media during ICSI on embryo developmental competence.

MATERIALS AND METHODS:

A prospective randomized comparative sibling oocyte study was conducted from 1st July 2025 to 31st March 2026. Women aged 25 - 35 years with adequate ovarian reserve (AMH ≥1.5 ng/mL; ≥8 MII oocytes retrieved in that cycle) and undergoing Intra Cytoplasmic Sperm Injection (ICSI) were included, while cycles with severe oocyte dysmorphism, use of donor oocytes, or cycles with less than 8 mature oocytes retrieved were excluded.

A total of 951 metaphase II sibling oocytes were retrieved in 100 patients undergoing controlled ovarian stimulation. Mature oocytes from the same patient were divided into two groups. Group A (bicarbonate-buffered single step medium): 495 metaphase II oocytes were subjected to ICSI using bicarbonate-buffered single step media drops. Group B (HEPES buffered medium): 456 metaphase II oocytes underwent ICSI using HEPES buffered media. Following injection, all embryos were cultured under identical conditions. Group A and Group B were compared in terms of fertilization rate, cleavage, compaction development rates and blastulation rate. Good-quality cleavage stage embryos and blastocysts were defined according to established Istanbul consensus update 2025. Outcomes between the two groups were compared using chi-square analysis, and p values <0.05 were considered statistically significant.

RESULTS:

Fertilization rate was significantly higher in Group A compared to Group B (90.5% vs. 83.55%; p = 0.01). Cleavage rate on Day 2 was also higher in the bicarbonate group (97.09% vs. 90.55%; p < 0.001), along with improved compaction rates (77.0% vs. 63.51%; p < 0.001).

Blastocyst formation rate was significantly greater in Group A (64.95% vs. 50.65%; p < 0.001). The proportion of good-quality cleavage-stage embryos was higher in the bicarbonate group (87.05% vs. 69.81%; p < 0.001). Similarly, good quality blastocyst formation (grades 3AA–4AA) was significantly higher in Group A (57.36% vs. 35.17%; p < 0.001).

CONCLUSIONS: ICSI performed under bicarbonate-buffered conditions resulted in significantly improved fertilization, cleavage, compaction, blastocyst development, and embryo quality compared to HEPES-buffered media. These findings suggest that maintaining physiological buffering conditions during micromanipulation enhances embryo developmental competence.

IMPACT STATEMENT: This study identifies the buffering system used during ICSI as a modifiable laboratory factor that significantly impacts embryo development. Incorporation of bicarbonate-buffered media during micromanipulation may enhance embryological outcomes and optimize ART laboratory performance.

SUPPORT: nil

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P-243 4:00 PM Monday, October 26, 2026

DOES ADDING PGT-A TO PGT-M IMPROVE VALUE? A COST-EFFECTIVENESS ANALYSIS IN PATIENTS AGED 36 AND UNDER.

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OBJECTIVE: In vitro fertilization (IVF) can be used to prevent the transmission of genetic disease. Preimplantation Genetic Testing for Monogenic Disease (PGT-M) identifies embryos affected by single-gene disorders, and PGT-A (aneuploidy) screens for embryonic aneuploidy. PGT-A is often added to PGT-M, since embryos are already being biopsied. Although aneuploidy increases with age (≥37), PGT-A in younger patients may increase costs without improving outcomes. We used a decision-analytic model to compare PGT-M alone versus PGT-M + PGT-A in women ≤36, evaluating cost per live birth and miscarriage avoided.
MATERIALS AND METHODS: A decision-analytic cost-effectiveness model compared IVF with PGT-M alone (Strategy A) versus IVF with PGT-M + PGT-A (Strategy B). Outcomes included cumulative live birth rate (CLBR), cost per initiated cycle, and incremental cost-effectiveness ratio (ICER). Embryo outcomes were modeled per transfer. In Strategy B, embryos were stratified by PGT-A results, with euploid embryos prioritized, followed by mosaic embryos if no euploid embryos were available. Embryo yield (blastocyst number and euploid/mosaic proportions) was derived from published data in women <37. CLBR was defined as probability of ≥1 live birth across all transfers. Costs included IVF, genetic testing, transfers, pregnancy care, and miscarriage management. Sensitivity analyses varied mosaic transfer assumptions and embryo availability to assess robustness.
RESULTS: Strategy A demonstrated higher CLBR but higher cost compared with Strategy B (CLBR 0.523 vs 0.353; cost $40,002 vs $38,518). Strategy A was more effective at greater cost (ICER $8,737 per additional live birth). Strategy B was less costly but also less effective. In sensitivity analyses incorporating mosaic transfer conditional on euploid failure, Strategy A remained more effective and more costly. Under fixed embryo assumptions, Strategy B showed further reductions in cost and effectiveness (CLBR 0.237; cost $35,045), while Strategy A remained the more effective, higher-cost strategy (ICER $17,313 per additional live birth).
CONCLUSIONS: In patients ≤36, adding PGT-A was associated with lower CLBR but lower cost compared to PGT-M alone, reflecting a cost–effectiveness tradeoff. Additional embryo transfers and miscarriage-related care drove higher costs with PGT-M alone. Lower effectiveness of PGT-A reflects reduced embryo availability following aneuploid screening and limited mosaic use, which reduces the number of embryos available for transfer. This is amplified in younger patients with lower aneuploidy risk and in scenarios where mosaic embryos are infrequently transferred, limiting opportunities to achieve a live birth. Clinical value depends on assumptions about embryo utilization and patient preferences. However, in younger PGT-M populations, low baseline aneuploidy rates limit the incremental benefit of PGT-A, which may be further offset by reductions in transferable embryos depending on mosaic embryo handling assumptions.
IMPACT STATEMENT: In younger patients undergoing IVF with PGT-M, adding PGT-A may reduce costs but lower cumulative live birth rates, supporting individualized decision-making.

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EMBRYO DEVELOPMENTAL POTENTIAL AFTER RESCUE *IN VITRO* MATURATION (R-IVM). Mikel Santos Arrieta, MS, Angela Palumbo, MD, PhD and Jairo Hernandez, PhD, Centro de Asistencia a la Reproducción Humana de Canarias, La Laguna, Spain

OBJECTIVE: To analyse the efficacy of resque IVM (r-IVM) technique in fertilisation, blastulation and embryo viability rates, in patients who underwent IVF-ICSI treatment.
MATERIALS AND METHODS: Single-centre retrospective observational study including 414 IVF-ICSI cycles performed between January 2021 and December 2024. Of these 414 cycles, 125 had 1 or more immature oocytes. A total of 4,042 oocytes were analysed of which 3,777 were MII and 265 were r-IVM, 87 derived from germinal vesicle (GV) and 178 derived from metaphase I (MI) oocytes. Consecutive IVF-ICSI cycles without male factor infertility were included. Outcomes were compared between r-IVM and MII oocytes, and between GV and MI oocytes within the r-IVM group. To control for age-related bias paired comparisons within the same patients/cycles were performed. Fertilisation, blastulation and embryo viability were assessed using chi-square tests and standardised residuals.
RESULTS: Overall, r-IVM oocytes showed lower rates of 2PN fertilisation compared with MII oocytes (51.3% vs 72.6%; $p < 0.001$), lower blastulation rates (8.3% vs 37.6%; $p < 0.001$) and lower viable blastulation rates (6.4% vs 30.9%; $p < 0.001$). These results were confirmed in paired analyses within the same cycle (2PN: 51.3% vs 67.0%; $p < 0.001$; blastulation: 8.3% vs 31.4%; $p < 0.001$; viable blastulation: 20.2% vs 25.7%; $p < 0.001$). r-IVM oocytes presented higher rates of abnormal fertilisation (1PN and 3PN) and degeneration. Within the r-IVM group, MI oocytes matured more frequently than GV oocytes (56.2% vs 16.4%; $p < 0.001$) and achieved higher blastulation rates (11.2% vs 2.3%; $p = 0.013$) and viable blastulation rates (9.0% vs 1.1%; p = 0.014), with no significant differences in fertilisation rates. Based on these results, the probability of blastocyst formation was approximately 3% per MI oocyte and < 1% per GV oocyte. PGT was performed on 11 r-IVM derived embryos, of which 2 were euploid (18.2%). Five blastocysts were cryopreserved without PGT. To date, 4 r-IVM single embryo transfers (SET) have been performed (2 euploid and 2 without PGT), resulting in 2 clinical pregnancies and 2 healthy live births one after PGT and one without PGT.
CONCLUSIONS: r-IVM oocytes showed lower potential of fertilisation, blastulation and embryo development compared to MII oocytes, as wellas higher rates of abnormal fertilisation and degeneration after ICSI. MI oocytes presented higher rates of maturation and blastulation and better embryo quality than GV oocytes. Despite this lower potential, blastocysts derived from r-IVM have the capability to achieve healthy live births.
IMPACT STATEMENT: Embryos derived from r-IVM were more frequently discarded and less often cryopreserved. Despite limited efficiency, r-IVM may be considered a viable strategy for selected patients with poor ovarian reserve or low number of available MII oocytes, for which this technique may be the only chance of pregnancy from autologous oocytes.
SUPPORT: This study was supported by the clinic where it was performed

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IMPACT OF REPRODUCTIVE AGE ON UNEXPECTEDLY LOW OOCYTE RETRIEVAL IN IVFCYCLES WITH ADEQUATE FOLLICULAR DEVELOPMENT. Barbara Ortiz, M.D.[1], Melina Zapata Ms, MBBS[2], Camila Mariani, M.D.[1], Justina Beccar Varela, Physician[3], Claudio Bisioli Mr, B.S.[4], Marcos M. Horton, M.D.[3], Alejandro Oubina Mr, Physician[3], Fabio L Sobral, M.D.[3], Laura J Kopcow, MD[3] and Ignacio De Zuñiga, M.D.[5], [1]Pregna, Ciudad Autonoma Buenos Aires, Capital Federal, Argentina, [2]Ciudad Buenos Aires, Argentina, [3]Pregna Medicina Reproductiva, Buenos Aires, Argentina, [4]Buenos Aires, Argentina, [5]PREGNA, Capital Federal, Argentina

OBJECTIVE: To evaluate the effect of reproductive age and other clinical and stimulation-related factors on unexpectedly low oocyte retrieval in IVF cycles with adequate follicular development.
MATERIALS AND METHODS: A retrospective case-control study included 2,626 IVF cycles at a single assisted reproduction center (2018–2025). Eligibility required at least four follicles ≥17 mm at trigger. Oocyte recovery rate (ORR) was defined as metaphase II (MII) oocytes retrieved divided by follicles ≥17 mm. Cases: ORR <50%; controls: ORR ≥75%; intermediate cycles (50–75%) and dual-trigger cycles were excluded. Multivariable logistic regression identified independent predictors of low recovery. Age non-linearity was assessed with a quadratic term and likelihood-ratio testing; adjusted probabilities were estimated via marginal effects.
RESULTS: Of 2,626 cycles, 440 (16.8%) had low ORR and 2,186 (83.2%) were controls. Low-recovery patients were older (37.8±3.5 vs. 36.9±3.4 years), had lower antral follicle count (AFC; 7.7±4.1 vs. 9.9±5.2) and lower anti-Müllerian hormone (AMH; 1.42±1.69 vs. 2.06±1.89 ng/mL). In multivariable analysis, age showed a significant non-linear association with low recovery, with accelerated risk at advanced ages ($p = 0.036$; OR for age²: 1.0006, 95% CI 1.0002–1.0011). Lower AFC was independently associated with low recovery (OR 0.90, 95% CI 0.87–0.93, $p<0.001$). Shorter stimulation duration (OR 0.99, $p = 0.040$) and hCG vs. GnRH agonist trigger (OR 0.70, 95% CI 0.57–0.86, $p = 0.001$) were also independent predictors. BMI and AMH were not significant after adjustment.
CONCLUSIONS: Unexpectedly low oocyte retrieval occurs in ∼17% of IVF cycles with adequate follicular development and represents a distinct clinical phenotype not explained by follicular count alone. Reproductive age exerts a non-linear independent effect, with disproportionately higher risk at advanced ages. AFC, stimulation duration, and trigger type are additional independent determinants, supporting individualized stimulation and trigger strategies.
IMPACT STATEMENT: This study highlights the non-linear impact of reproductive age on unexpectedly low oocyte retrieval in IVF. Identifying patient-specific and modifiable risk factors—including trigger type and AFC—can improve counseling and optimize protocols to reduce the clinical and emotional burden of poor retrieval outcomes

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THERMAL VULNERABILITY OF EMBRYO CULTURE DISHES: KEY DRIVERS OF TEMPERATURE DROP IDENTIFIED BY COMPUTATIONAL MODELLING WITH INFRARED THERMOGRAPHY VALIDATION. Parisa Noohi, BSc, MSc, Ph.D, Helen M Picton, BSc, Ph.D and Virginia Pensabene, Ph.D, University of Leeds, Leeds, United Kingdom

OBJECTIVE: Transient temperature drops during embryo handling outside the incubator can disrupt spindle integrity, metabolism, and epigenetic regulation so posing a significant risk to outcomes. This study aimed to identify key parameters governing thermal stability in embryo culture dishes outside of the incubator using computational fluid dynamics (CFD) simulation validated against infrared thermography.
MATERIALS AND METHODS: A three-dimensional CFD model of a micro-droplet embryo culture dish was developed in COMSOL Multiphysics to simulate transient heat transfer during handling outside of the incubator. Six parameters were investigated: ambient temperature, air gap between the dish and heated stage, heated stage temperature fluctuation, oil and drop volumes, and lid presence. Average culture well temperature was extracted from each simulation as the primary output for comparison across parameter conditions. Model validity was assessed by comparing simulated thermal profiles against those from a FLIR infrared thermography camera under one representative condition.
RESULTS: CFD simulations identified oil volume, heated stage temperature, and ambient temperature as the parameters with the greatest influence on dish thermal stability. On the heated stage under downward airflow, temperature drop occurred within the first 3 minutes, after which dishes reached thermal equilibrium. Ambient temperature directly determined embryo culture site temperature: for lidless dishes, reducing ambient temperature from 25°C to 22°C increased the temperature drop from 2.5°C to 3.5°C. Lid presence was the most protective factor, limiting temperature drop to ~0.5°C versus ~3.5°C in lidless dishes, by establishing an insulating air layer above the oil. A 200 µm air gap between the dish base and heated stage surface led to an additional 0.5°C temperature drop under steady conditions. Oil volume had a dual effect depending on lid status—in lidless dishes, greater oil volume improved thermal stability by thickening the insulating layer above the culture sites, whereas in lidded dishes, higher oil volume reduced the protective air layer beneath the lid, slightly increasing temperature drop, though by less than 0.5°C. Similarly, microdroplet size increase (20-30 µL) had a negligible effect on temperature. Infrared thermography under lidless conditions at 22°C ambient temperature confirmed good agreement with simulated thermal profiles.

CONCLUSIONS: While previous studies have focused on incubator-level temperature recovery, thermal dynamics at the dish level during handling remain poorly characterised. This validated non-invasive CFD framework provides a reliable basis for quantitative, parameter-specific evaluation of thermal performance across different dish designs and clinical handling conditions.
IMPACT STATEMENT: Temperature stability during embryo handling is a modifiable risk factor in embryology practice. By quantifying the contribution of key environmental and procedural variables, this work provides evidence-based guidance for optimising heated stage protocols, dish design, and handling procedures which will impact on embryo quality and clinical outcomes.

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CESAREANS IN CONTEXT: MEDICAL MORBIDITY AND MODE OF DELIVERY AFTER ART. Alexander T Pralea, BA[1], Lauren E. Schlichting, PhD[2], Blythe Berger, ScD[3], May-Tal Sauerbrun-Cutler, MD[4] and Alexis C. Gimovsky, M.D.[5], [1]Warren Alpert Medical School of Brown University, Providence, RI, [2]Brown University, Providence, RI, [3]Chief, Perinatal and Early Childhood Health, Providence, RI, [4]Women and Infants Hospital and Brown University, [5]Women and Infants Hospital and Brown University, Providence, RI

OBJECTIVE: Assisted reproductive technology (ART) pregnancies have increased odds of elective and emergent cesarean delivery (CD). This study aimed to determine whether rates of primary CD are higher among patients with hypertensive disorders of pregnancy (HDP) or diabetes mellitus (DM) who conceive spontaneously versus via fertility treatment.
MATERIALS AND METHODS: Vital Statistics birth certificate data were analyzed for all singleton primiparous cephalic births born without congenital anomalies at a gestational age ≥ 24 weeks in Rhode Island from 2010 to 2024. Primaparas were stratified by fertility status into three groups: unassisted conception, in-vitro fertilization (IVF), and non-IVF fertility treatment (receipt of pro-ovulatory drugs and/or intrauterine insemination [IUI]). Participants were restricted to individuals with data on fertility status and mode of delivery. Descriptive statistics were conducted to assess the frequency of maternal variables by fertility status. Chi-square tests and t-tests were conducted on categorical and continuous variables with a significance level set to 0.05. Multivariable logistic regression was used to evaluate the association between fertility status and CD, adjusted for covariates. Model covariates were selected a priori: maternal age, education, insurance type, and chorioamnionitis; child sex and size-for-gestational age (small, appropriate, or large); DM (pregestational or gestational) and HDP (chronic hypertension, gestational hypertension, preeclampsia, and/or eclampsia); and fetal intolerance of labor. Subgroup-specific regressions were performed for participants with HDP or DM.
RESULTS: Of the 37,361 births that met inclusion criteria, 35,811 (95.9%) were born through unassisted conception (the control), 430 (1.15%) were born through IUI/fertility drugs, and 1,120 (3.00%) were born through IVF. Patients who received IVF had higher rates of CD (42.8%) versus patients who received IUI/fertility medications and the control (31.9% and 26.8%, p< 0.05). After adjusting for covariates, IVF recipients had 1.34 greater odds of having a CD relative to the control (95% CI 1.18 to 1.53) but patients who received IUI/fertility drugs had comparable odds to the control (OR 1.09, 95% CI 0.88 to 1.35). In the subgroups of HDP (n = 4,186) and DM (n = 1,376), recipients of IVF had higher rates of CD (HDP: 50.9%, DM: 55.7%) relative to the control (HDP: 39.9%, DM: 40.8%, p <0.05); however in adjusted models, odds of CD were similar across all groups (HDP: OR 1.04, 95% CI 0.75 to 1.45; DM: OR 1.44, 95% CI 0.84 to 2.48).
CONCLUSIONS: Patients in this cohort who conceived via IVF had higher rates of CD relative to patients with unassisted reproduction. However, when limited to patients with HDP or DM, odds of CD in adjusted models are comparable across fertility groups, suggesting that a greater proportion of the elevated rates of CD in IVF-treated patients with these comorbidities may be mediated by factors other than infertility or ART.
IMPACT STATEMENT: This study contributes to the literature on the relationship between maternal comorbidities, ART, and CD. These findings may impact patient counseling on delivery outcomes.
SUPPORT: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

P-248 4:00 PM Monday, October 26, 2026

CANCEL OR PROCEED? LOW SERUM PROGESTERONE BEFORE FROZEN EMBRYO TRANSFER IN RECURRENT IMPLANTATION FAILURE PATIENTS. Huong Thi Lien Nguyen, M.D. Ph.D.[1], Quy Ngoc Phan, M.D.[2], Tu Anh Thi Phi, M.D.[1], Mai Phuong Thi Giap, Ms[1], Anh Thi Pham, M.D[1], Trang Thi Thu Do, M.D.[1], Cuc Thi Kim Nguyen, M.D.[1], Long Bao Hoang, M.D.[3], Hong Thi Nguyen, Ph.D[4] and Hoang Le, MD., PhD., Assoc. Prof[1], [1]Tam Anh General Hospital, Hanoi, Viet Nam, [2]Ha Dong, Vietnam, [3]VinUniversity, Hanoi, Viet Nam, [4]Thai Nguyen University of Medicine and Pharmacy, Thai Nguyen, Viet Nam

OBJECTIVE:
Low serum progesterone (P4) before embryo transfer in programmed frozen embryo transfer (HRT-FET) cycles presents a critical clinical decision: whether to cancel the cycle or proceed with transfer. Although low serum P4 rescue strategies have been described in general IVF populations, evidence specific to women with recurrent implantation failure (RIF) remains limited. We evaluated pregnancy outcomes following a progesterone rescue strategy allowing continuation of transfer in HRT-FET cycles among women with RIF.
MATERIALS AND METHODS:
We conducted a single-center retrospective cohort study of 202 HRT-FET cycles in women with RIF (2023–2025). All patients received standard vaginal progesterone for luteal phase support. Serum P4 was measured on the morning one day before embryo transfer, prior to the scheduled progesterone dose (trough level). Cycles with P4 <10 ng/mL received supplemental intramuscular progesterone (50 mg daily), initiated after measurement and continued until pregnancy testing.
The primary outcome was ongoing pregnancy rate (OPR, ≥12 weeks). To address baseline confounding, stabilized inverse probability of treatment weighting (IPTW) was applied using pre-specified covariates encompassing patient characteristics, infertility history, endometrial parameters, and key embryologic variables (including embryo number, stage, and quality). Covariate balance was assessed using standardized mean differences (SMD ≤0.10). Sensitivity analyses included doubly robust models and weight truncation.
RESULTS:
Low serum P4 levels (<10 ng/mL) were frequently encountered within the study. After IPTW adjustment, baseline characteristics were well balanced between 2 groups. Ongoing pregnancy was numerically higher in the rescue group than in the normal P4 group (44.3% vs. 36.6%; adjusted OR 1.38, 95% CI 0.77–2.45), although the estimate was imprecise and the confidence interval included the null. No apparent reduction was observed for clinical pregnancy or early pregnancy loss. Findings were consistent across sensitivity analyses.
In subgroup analyses, women aged ≥38 years showed a larger apparent difference in outcomes with rescue (OPR 40.9% vs. 25.0%), although these analyses were not powered for subgroup effects. Exploratory subgroup analyses at lower P4 levels (<8.8 ng/mL) did not demonstrate a clear deterioration in outcomes following rescue, suggesting that proceeding with transfer after rescue may be reasonable even at lower P4 levels; these findings should be considered hypothesis-generating and warrant further study.
CONCLUSIONS:
These findings suggest that cycle cancellation based solely on low serum P4 may be unnecessary in women with RIF. Proceeding with transfer following progesterone rescue appears to be a reasonable clinical strategy, although confirmation in prospective studies is warranted
IMPACT STATEMENT:
For RIF patients, avoiding unnecessary cycle cancellation is critical. These findings support a practical approach in which embryo transfer can proceed after progesterone rescue without evidence of harm, helping preserve valuable treatment opportunities.
SUPPORT: No financial support was received for this study.

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CALCIUM IONOPHORE ACTIVATION ENHANCES BLASTULATION AND EUPLOIDY RATES IN POOR-PROGNOSIS PATIENTS. Samantha Quiroz, M.S.[1], Maria Hermoso, M.S.[2], Liang Yu, M.H.A., M.S., PH.D.[3], Minglei Bian, PH.D.[1,2] and Eva Schenkman, Ph.D.[2], [1]Virgina Health Sciences at Old Dominion University, Norfolk, VA, [2]EVMS ODU, Norfolk, VA, [3]Eastern Virginia Medical School, Norfolk, VA

OBJECTIVE: To evaluate the effectiveness of Ca^{2+} ionophore treatment on blastocyst rate in patients with a history of poor blastulation for use of Ca^{2+} ionophore and for overall better clinical outcomes.
MATERIALS AND METHODS: This single center retrospective study was conducted at Reproductive Partners Medical Group, with data collection between the years of 2020 and 2025, with patients (n=92) between the ages of 31 and 47 during their cycle, that received assisted oocyte activation (AOA), via Ca^{2+} ionophore supplementation (GM508 CultActive), in their ICSI cycles. This study included the control group as patients with ICSI treatment plan, without calcium ionophore treatment, while the treatment group was the same patient's 2nd cycle with an ICSI treatment plan supplemented with calcium ionophore treatment. 1672 total MII oocytes were analyzed for ICSI insemination cycles. Fertilization rate, blastocyst rate, usable blastocyst rate (Gardner score ≥ 3BC), mean number of blastocysts suitable for biopsy, mean euploid blastocysts available for transfer, and euploid rate were compared between the ICSI-Ca^{2+} (Ca^{2+} group) and their most currently previous ICSI cycle (non-Ca^{2+} group). All data were analyzed with JMP Statistical Discovery using One-Way ANOVA.
RESULTS: A total of 785 oocytes were analyzed in the non-Ca^{2+} ionophore group, and 887 oocytes in the Ca^{2+} ionophore treatment group. The Ca^{2+} ionophore group demonstrated significantly higher fertilization rates (75.69% vs. 57.44%, p< 0.0001). In addition, this group showed significantly higher blastocyst formation (p = 0.0039), usable blastocyst rate (p = 0.0028), mean number of blastocysts suitable for biopsy (p = 0.0002), and mean number of euploid blastocysts per cycle (p = 0.0002). The euploid rate per biopsy was also significantly increased in the Ca^{2+} ionophore group (30.17% vs. 14.54%, p = 0.0066).
Group Fertilization Rate Blast Rate Usable Blast Rate Mean # Blasts for Biopsy (±Std Error) Euploid Rate
Non Ca^{2+} 57.44% 43.47% 36.27% 3.02083 ± 0.39805 14.54%
Ca^{2+} 75.69% 58.27% 50.53% 5.20833 ± 0.39805 30.17%
CONCLUSIONS: This study suggests that Ca^{2+} ionophore medicated oocyte activation is associated with improved fertilization and embryo developmental outcomes in patients with prior poor blastulation. An increased number of euploid embryos was observed; however, further prospective controlled study is needed to determine whether this reflects direct biological impact or improved embryo availability.
IMPACT STATEMENT: This study demonstrates that the Ca^{2+} ionophore addition as a laboratory intervention resulted in significant improvement in total blastocysts per cycle and euploid embryo(s) available for transfer. The latter are important requisites for successful clinical outcomes. In poor prognosis patients, Ca^{2+} ionophore treatment can be valuable for improvement in clinical outcomes.
SUPPORT: None

P-250 4:30 PM Monday, October 26, 2026

CHARTING THE GESTATIONAL CARRIER (GC) JOURNEY: TIMELINES, FROZEN EMBRYO TRANSFER (FET) OUTCOMES, AND THE ROLE OF PRIOR EXPERIENCE. Anjali J Patel, MD[1], Devika Sachdev, MD[2], Lea C George, MD[2], Alejandro Sánchez, MSc[3], Christine V Whitehead, MS, BSN, RN[2], Joelle N Mouhanna, M.D.[4], Emre Seli, M.D.[2] and Marie D Werner, B.A., H.C.L.D, M.D.[5], [1]Rutgers Robert Wood Johnson Medical School, New Brunswick, NJ, [2]IVIRMA Global Research Alliance, Basking Ridge, NJ, [3]IVI FOUNDATION, Valencia, Comunidad Valenciana, Spain, [4]Basking Ridge, NJ, [5]RMA NJ, Eatontown, NJ

OBJECTIVE: To characterize the timeline from initial screening to FET among GCs and to evaluate whether prior GC experience and number of relative contraindications (CI) predict FET outcomes. Additionally, we aimed to assess the most common reasons for GC exclusion.
MATERIALS AND METHODS: A retrospective cohort study was performed on all GCs who underwent initial screening in accordance with ASRM guidelines at a single academic-affiliated institution from 2017-2025. Primary outcome was confirmed engagement with ≥1 FET completed and was subdivided into time from initial screening to acceptance as a GC, acceptance to FET, and screening to FET. Secondary outcomes included implantation (beta-hCG >5 mIU/ml), ongoing pregnancy with discharge to obstetric care, and live birth rate amongst all GCs who underwent an FET. Pregnancy outcomes were then compared between those with a history of successful GC pregnancy to those with no prior success and in those with 1 or ≥2 relative CIs compared to those with no CI as determined by institutional guidelines. Logistic regression models controlled for age, body mass index (BMI), endometrial thickness, and embryo SART grading in pregnancy outcome comparisons.
RESULTS: A total of 737 screenings were performed, ultimately resulting in 372 FETs among 250 patients. Median time from initial screening to acceptance was 12.5 weeks (IQR 8.5–17.0); median time from acceptance to FET was 14.0 weeks (IQR 10.1–21.0); and median time from initial screening to FET was 28.6 weeks (IQR 22.1–38.1). Among all GCs undergoing FET, 86.8% achieved implantation, 72.0% were discharged to obstetric care, and 64.2% ultimately achieved live birth. The pregnancy loss rate was 21.2% and the pregnancy complication rate for those with livebirth was 22.4%. There were no significant differences in age, BMI, parity, presence of medical comorbidities, or FET variables in those with an ongoing pregnancy compared to those with an unsuccessful FET. Prior GC success was not associated with increased odds of implantation (aOR 0.78, 95% CI 0.38-1.62, p=0.51), ongoing pregnancy (aOR 0.82, 95% CI 0.47-1.43, p=0.49), or live birth (aOR 0.87, 95% CI 0.49-1.54, p=0.62) compared to those with no prior GC success. Likewise, there were no differences in outcomes between those with 1 or ≥2 relative CI compared to those with none. The most common reasons for GC exclusion were major medical comorbidity (36%), matching issues between GC and intended parent (IP) (19%), and lost to follow up (18%).
CONCLUSIONS: A median seven-month time period from GC screening to FET provides evidence-based benchmarks for counseling IPs and carriers. Favorable reproductive outcomes, regardless of prior GC experience or relative CI burden, further support a more inclusive, data-driven approach to GC screening.
IMPACT STATEMENT: This study is one of the first to characterize the GC screening-to-FET timeline and offers clinicians and IPs realistic timeline expectations. GC opportunities should not be prioritized based on prior experience, and relative CIs alone should not disqualify otherwise suitable candidates after a thorough screening process, as neither is a proxy for predicting FET success.

P-251 4:45 PM Monday, October 26, 2026

EVALUATING THE VOLUME–OUTCOME RELATIONSHIP BETWEEN EMBRYO TRANSFERS AND LIVE BIRTHS IN THE UNITED STATES. Leslie B Ramirez, H.C.L.D, PH.D.[1], Tomer Singer, MD[2], Christine Mullin, M.D.[3], Dr. Randi H Goldman, MD, MBA[4] and Urbano L Franca, PhD[5], [1]Northwell Health Fertility, Manhasset, NY, [2]Northwell, New York, NY, [3]Northwell Health Fertility, Zucker School of Medicine at Hofstra Northwell, Manhasset, NY, [4]Northwell, New Hyde Park, NY, [5]Boston Children's Hospital / Harvard Medical School, Boston, MA

OBJECTIVE: In medicine, the classic volume–outcome hypothesis suggests that higher-volume centers may achieve better outcomes through greater experience, standardized protocols, and other cumulative learning effects. Nonetheless, in assisted reproductive technology (ART), the relationship between clinic and specific procedure volume and success rates has not been well established. Using contemporary national data, this study assesses the proportion of embryo transfers resulting in live birth and examines associations with both annual transfer volume and total ART cycle volume across US fertility clinics, including academic centers and private clinics.
MATERIALS AND METHODS: In this retrospective study, we analyzed SART data from 2020-2022 to quantify the percentage of embryo transfers within one year of egg retrieval resulting in live-birth delivery across all clinics reporting to SART and age groups (<35, 35–37, 38–40, >40 years). Associations between annual transfer volume and live birth were assessed using a binomial generalized linear model. Associations with total clinic ART cycle volume were evaluated using weighted least-squares regression. Both models adjusted for age and year. Statistical significance was set at $p<0.05$.
RESULTS: Between 2020 and 2022, there were 347,851 embryo transfers, of which 153,716 (44.2%) resulted in live births. After adjustment for patient age group and year, higher annual embryo transfer volume was associated with lower odds of live birth in the binomial logistic model. Each 10-fold increase in annual transfer volume was associated with an adjusted odds ratio of approximately 0.89 for live birth (95% CI: 0.88–0.90, $p<0.001$). While statistically significant, these lower odds may not be clinically relevant. Similarly, total clinic ART procedure volume was not significantly associated with the percentage of transfers resulting in live birth. After adjustment, each 10-fold increase in total clinic cycles corresponded to a 0.47 percentage-point increase in live-birth rate ($p=0.713$). In contrast, age group was strongly associated with live-birth rate and in the expected direction, with progressively lower rates in older age categories relative to patients <35.
CONCLUSIONS: During the study period, greater transfer volume was not independently associated with better outcomes. Unlike the classic volume–outcome hypothesis described in some areas of medicine, higher-volume of embryo transfer has a modest inverse relationship with live-birth outcomes. Future studies should evaluate additional potential confounders underlying these findings, such as larger academic centers accepting patients with poor prognosis, and determine whether similar patterns are observed across other ART outcomes.
IMPACT STATEMENT: Using contemporary national ART data, higher embryo transfer volume was not associated with better outcomes and was modestly associated with lower odds of live birth after adjustment for age and year. These findings suggest that clinic volume alone may not fully capture differences in quality or success rates, and additional factors should be considered when evaluating fertility clinic performance.
SUPPORT: None

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P-252 3:45 PM Monday, October 26, 2026

ENDOMETRIAL GROWTH IS ASSOCIATED WITH LIVE BIRTH IN MEDICATED FROZEN EMBRYO TRANSFER CYCLES WITH THIN ENDOMETRIUM. Jensen Reckhow, MD, MPH[1], Alexey Barr, MBA[2], Morgan Cohn, BS[2], Erynne Jackson, BA, MPH[2], Joseph A. Lee, BA[2], Jenna Friedenthal, M.D.[2], Alan B. Copperman, MD[3] and Devora Aharon, M.D.[3], [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]RMANY || US Fertility, New York, NY, [3]Icahn School of Medicine at Mount Sinai / Reproductive Medicine Associates of New York, New York, NY

OBJECTIVE: The optimal management of thin endometrium despite adequate estrogen exposure during medicated frozen embryo transfer (FET) preparation remains unknown. While peak endometrial thickness (EMT)[i] and endometrial compaction after progesterone initiation[ii] have been studied, the association between endometrial growth prior to progesterone exposure and pregnancy outcomes is not well understood. This study evaluated the relationship between change in EMT and pregnancy outcomes after medicated FET among patients with thin endometrium.
MATERIALS AND METHODS: This retrospective cohort study conducted at a single academic institution included medicated FET cycles in which EMT was <7mm after at least 7 days of exogenous estrogen exposure. Patients were grouped by change in EMT from the initial thin measurement to maximal EMT achieved in the cycle: <1mm vs ≥1mm change. The primary outcome was live birth. Secondary outcomes included pregnancy and clinical pregnancy rates. Descriptive and univariate analyses were performed using Wilcoxon-Rank Sum and chi-square. Multivariable Poisson regression with generalized estimating equations was used to evaluate the relationship between change in EMT and the primary and secondary outcomes, adjusting for initial EMT after ≥7 days of estrogen exposure, oocyte age, and body mass index.
RESULTS: A total of 1931 medicated FET cycles from 1508 patients were included. Of these, 1439 cycles achieved ≥1mm additional EMT growth, and 492 achieved <1mm additional growth (mean change in EMT 2.0±0.6mm vs 0.1±0.3mm, respectively). Patient demographics and ovarian reserve parameters were similar between groups. On adjusted analysis, cycles with ≥1mm additional growth in EMT were 20% more likely to achieve live birth compared to those with <1mm additional growth (RR 1.204, 95% CI 1.060 - 1.367). Cycle duration did not differ, however ≥1mm EMT growth was associated with a higher likelihood of achieving EMT ≥7mm (91.5% vs 23.4%, $p<0.0001$), and lower peak serum estradiol level (mean 349.7 vs 557.0, $p<0.0001$). In the full cohort, positive serum hCG, clinical pregnancy, and live birth were higher among patients who achieved EMT ≥7mm (LBR 47.4% vs 36.7%, $p<0.0001$). Among patients who did not achieve EMT ≥7mm, each 1% increase in EMT was associated with a 2.7% increase in live birth (RR 1.027, 95% CI 1.011 - 1.042).
CONCLUSIONS: Patients with thin endometrium after ≥7 days estrogen exposure who achieved additional endometrial growth during medicated FET preparation had improved reproductive outcomes. In contrast, a subset of patients developed elevated serum estradiol without improvement in endometrial growth or reproductive outcomes.
IMPACT STATEMENT: In patients with thin endometrium despite adequate estrogen exposure during medicated FET cycle preparation, small increases in EMT, even if peak EMT remains <7mm, are associated with higher live birth rates.
SUPPORT: No funding was used for this project.
REFERENCES:
i]Gao G, et al. Endometrial thickness and IVF cycle outcomes: a meta-analysis. Reprod Biomed Online. 2020 Jan;40(1):124-133.
ii]Hannan Al-Lamee, et al. Endometrial compaction to predict pregnancy outcomes in patients undergoing assisted reproductive technologies: a systematic review and meta-analysis, *Hum Repro Open.* 2024.3.

P-253 4:00 PM Monday, October 26, 2026

EPIGENETIC AGE IN NEWBORNS DIFFERS BY METHOD OF CONCEPTION AND THE PRESENCE OF BIRTH DEFECTS. Sangji David Lee, MPH[1], Melissa A Richard, PhD[1], Katherine E Cameron, M.D.[2], Valerie L Baker, M.D.[3], Barbara Luke, ScD, MPH[4] and Philip J Lupo, PhD, MPH[5], [1]Baylor College of Medicine, Houston, TX, [2]Johns Hopkins University School of Medicine, Baltimore, MD, [3]10751 Falls Road, Lutherville, MD, [4]Michigan State University, East Lansing, MI, [5]Emory University, GA

OBJECTIVE: Our studies consistently identify higher risk for birth defects (BD) among children conceived with in vitro fertilization (IVF). Biological aging, measured as the

difference in estimated epigenetic age (EA) compared to chronological age, is one proposed mechanism of adverse health outcomes and may functionally link IVF and BD. To address this question, we evaluated changes in offspring EA in the context of method of conception and BD outcomes.
MATERIALS AND METHODS: We conducted a population-based study of BD registry surveillance among all IVF and matched naturally conceived births in New York State from 2004-2018. Data were previously linked to the Society for Assisted Reproductive Technology Clinic Outcome Reporting System. From these data, we obtained deidentified newborn dried bloodspots of children with BD (blastogenesis and cardiac defects) and non-anomalous controls from the New York State Newborn Screening Program. We performed epigenome-wide profiling of newborn bloodspots using EPICv2.0, then estimated biological aging with a previously published, newborn-validated estimator of EA, the Horvath Skin & Blood PC clock. We used linear regression models of offspring EA (independent) compared to maternal age (dependent) to test changes in biological aging (effect direction shows accelerated or decelerated offspring EA), stratified by sampling characteristics (method of conception and BD status) and adjusted for child's biological sex and gestational age. Finally, we tested statistical interaction to identify differences in biological aging between stratified groups and performed sensitivity analyses restricted to autologous oocytes in IVF due to unknown donor age.
RESULTS: Offspring EA was estimated in 541 newborn blood samples, 248 conceived using IVF (151 with BD and 97 without BD) and 293 conceived naturally (214 with BD and 79 without BD). On average, mothers who conceived using IVF were 35 years old (range: 23 - 50), mothers who naturally conceived were 30 years old (range: 18 - 43), and offspring EA was -0.33 (range: -0.65 - 3.12) and correlated with gestational age (corr = 0.43, $p < 0.0001$). We found evidence that among children with BD, offspring EA accelerated with maternal age regardless of method of conception (effect=3.09 years, p=0.032). We further found that the magnitude and direction of changes in biological aging likely differ by method of conception when a child is born without BD (conception x age interaction p=0.056). In children without BD, we found that offspring EA decelerated with maternal age among IVF conceptions (effect = -2.52 years) and accelerated with maternal age among natural conceptions (effect = 7.62 years). All findings were consistent when restricted to autologous IVF.
CONCLUSIONS: Our data provide evidence that biological age is higher among children with BD, but that biological age is lower in non-anomalous births resulting from IVF, suggesting that epigenetic changes occur with IVF and BD.
IMPACT STATEMENT: Further studies should evaluate the epigenetic mechanisms altered in IVF pregnancies and the functional link with BD risk in offspring conceived using IVF.
SUPPORT: This project was supported by grant R01 HD112081 from the National Institute of Child Health and Human Development. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Child Health and Human Development, or the National Institutes of Health, nor any State Departments of Health which contributed data.
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Horvath S, Oshima J, Martin GM, Lu AT, Quach A, Cohen H, et al. Epigenetic clock for skin and blood cells applied to Hutchinson Gilford Progeria Syndrome and *ex vivo* studies. *Aging* (Albany NY). 2018 Jul 26;10(7):1758-1775. doi: 10.18632/aging.101508.

P-254 4:15 PM Monday, October 26, 2026

THE IMPACT OF A ROUTINE EARLY MONITORING VISIT ON GONADOTROPIN MEDICATION DOSE CHANGES IN CONTROLLED OVARIAN HYPERSTIMULATION (COH) CYCLES: A PROPENSITY-SCORE MATCHED (PSM) ANALYSIS. Devika Sachdev, MD[1], Pablo Guzmán Noriega Sr., B.S., M.Sc.[2], Lea C George, MD[1], Christine V Whitehead, MS, BSN, RN[1] and Andres Reig, M.D.[1], [1]IVIRMA Global Research Alliance, Basking Ridge, NJ, [2]IVIRMA Global Research Alliance, Valencia, Spain

OBJECTIVE: No universal protocol exists for the timing or frequency of visits in COH cycles. We investigated the clinical value of an early monitoring visit 3-4 days after gonadotropin start (Cycle Day 6 or 7, CD6/7) by assessing how often this visit results in medication dose change on CD6/7. Additionally, we sought to identify subgroups in whom this visit may be high-yield and beneficial, or low-yield and potentially omitted.
MATERIALS AND METHODS: This retrospective PSM study included all patients undergoing their first autologous COH cycle initiated in the early follicular phase (cycle day 2-3) between January 2021 and December 2025 at an academic-affiliated center. Patients with a gonadotropin dose change on CD6/7 following their CD6/7 monitoring visit were compared to those with no change. The primary outcome was absolute mean number of mature oocytes (M2) retrieved. Secondary outcomes included absolute mean number of blastocysts, oocyte maturation rate, fertilization rate, and blastulation rate per fertilized zygote. A 1:1 PSM analysis was performed to balance key covariates: age, body mass index (BMI), anti-Mullerian hormone (AMH), and follicle stimulating hormone (FSH) level. Student's t-test, fisher's exact test, and chi-square analyses were performed.
RESULTS: Among 8,723 patients with CD6/7 monitoring, 78.8% had no medication dose change and 21.2% had a dose change. Those with a dose change were younger (34.3 vs 35.7 years), had higher AMH (4.7 vs 3.0 ng/mL), lower baseline FSH (7.2 vs 7.9 mIU/mL), higher M2 yield (14.6 vs 11.0), and blastocysts obtained (6.6 vs 5.1) with p<0.001 for all comparisons. After PSM, 3,194 patients were included (1,597 per cohort). When specifically evaluating direction of FSH dose change on CD6/7, those with a decrease in dose were younger (33.4 vs 34.7 vs 34.5 years), had lower BMI (24.7 vs 28.7 vs 27.1 kg/m²), and higher AMH (6.7 vs 4.0 vs 4.2 ng/mL) compared to those with a dose increase and no change, respectively (p<0.001 for all comparisons). Those with a decrease in FSH had more M2s (19.3 vs 12.8 vs 12.8, p<0.001) and blastocysts retrieved (8.7 vs 5.7 vs 6.0, p<0.001) compared to those with a dose increase and no change, respectively. There were no differences in oocyte maturation, fertilization, or blastulation rates between the two cohorts.
CONCLUSIONS: Although the majority of patients had no gonadotropin dose change after the early monitoring visit, those with a decrease in FSH dose are likely to benefit the most from this visit as they represented the highest responders and expectedly had the greatest M2 and blastocyst yield. However, these findings must be cautiously interpreted as FSH dose reduction itself does not improve embryology outcomes, but rather exposes a high-risk subgroup that may derive the greatest value from early monitoring through possible risk reduction of adverse outcomes.
IMPACT STATEMENT: Foregoing early monitoring in COH cycles would not worsen oocyte or blastocyst yield in most patients. The need for dose reduction in the highest responders may identify patients in whom early monitoring is most beneficial, potentially through mitigation of downstream OHSS risk and other adverse outcomes, which remains to be studied.

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CHARACTERIZING GESTATIONAL CARRIER (GC) PROFILES AND PREGNANCY OUTCOMES AFTER EMBRYO TRANSFER (ET) IN A LARGE AGENCY-BASED COHORT OF COMPLETED MATCHES. Devika Sachdev, MD[1], Christine V Whitehead, MS, BSN, RN[1], Melissa Lage, BS, MHA[2], Anjali J Patel, MD[3], Lea C George, MD[1], Joelle N Mouhanna, M.D.[4], Alejandro Sánchez, MSc[5], Emre Seli, M.D.[1], Catherine Kenworthy, BS, MBA[2] and Marie D Werner, B.A., H.C.L.D, M.D.[6], [1]IVIRMA Global Research Alliance, Basking Ridge, NJ, [2]ConceiveAbilities, [3]Rutgers Robert Wood Johnson Medical School, New Brunswick, NJ, [4]Basking Ridge, NJ, [5]IVI FOUNDATION, Valencia, Comunidad Valenciana, Spain, [6]RMA NJ, Eatontown, NJ

OBJECTIVE: In partnership with a large national GC agency, we aimed to characterize demographic characteristics that are associated with a completed match status between a GC and intended parent (IP) and assess factors associated with pregnancy outcomes after ET.
MATERIALS AND METHODS: This retrospective cohort study included all GC-IP completed matches at a national GC agency from 2016-2025. GCs were screened following ASRM guidelines. Completed matches comprised either a successful outcome (delivery post-ET) or unsuccessful outcome (broken match, unsuccessful ET, loss after ET). Unit of analysis was the match cycle, which could include ≥1 ET per match. Primary outcomes were discharge to OB and live birth rate among matches with ≥1 ET. Secondary outcomes included time points from GC-IP match acceptance to first ET. Pregnancy outcomes were compared between matches with a prior successful GC pregnancy to those with no prior success. Gaussian GEE models were used for continuous outcomes and binomial GEE were used for the rest, accounting for possible dependence between matches with the same GC and adjusting for age and BMI. A sub-analysis was performed restricted to GCs undergoing their first completed agency match cycle.
RESULTS: A total of 1,807 matches from 1,351 GCs were completed: 1,124 matches (62%) resulted in delivery and 683 (38%) failed. GCs in successful matches had slightly higher BMI (27 vs 26.3 kg/m², p<0.001) but otherwise did not differ by age, state, education or employment, presence of medical comorbidities, and number of deliveries. Median time from match acceptance to clearance was 11.4 weeks and median time from acceptance to first ET was 24.1 weeks. Of the 1,807 matches, 1,412 (78.1%) had ≥1 ET performed: 81.7% discharged to OB and 78.3% resulted in live birth. Prior GC success was not associated with current match success (aOR 1.02, 95% CI 0.76-1.35), discharge to OB (aOR 1.05, 95% CI 0.78-1.41), live birth (aOR 1.01, 95% CI 0.76-1.33), or preterm delivery (aOR 1.17, 95% CI 0.79-1.74) for the entire cohort, with p>0.05 for comparisons. In the sub-analysis of first completed matches (n=1,351), those with prior GC success (n=237) who underwent ≥1 ET had increased odds of discharge to OB (89.6% vs 81.7%, aOR 1.92, 95% CI 1.19-3.10, p=0.008) and live birth (85.3% vs 78.7%, aOR 1.58, 95% CI 1.04-2.40, p=0.03) compared to those with no prior success, respectively.
CONCLUSIONS: Demographic variables were similar across match outcome, and prior GC success was not associated with outcomes in completed matches overall. In sub-analyses of first matches, prior GC success was positively associated with discharge to OB and live birth, suggesting prior experience may have benefit in select settings and require further study. Overall, these findings provide reassurance to GC agencies and clinics alike that favorable reproductive outcomes can be achieved regardless of the aspects of GC history contained in the analysis.
IMPACT STATEMENT: No ideal GC profile was identified, as positive outcomes were achieved irrespective of GC history. Agencies or providers should not presume that prior GC success confers substantial future benefit. These findings overall support more inclusive GC screening processes.

P-256 4:45 PM Monday, October 26, 2026

SPERM DNA FRAGMENTATION TESTING: CLINICAL IMPACT AND OUTCOMES IN ART. Sanjana Satish, MD, MPH[1], Thomas Nguyen, MS[2], Nathan C Koelper, MPH[3], Caitlin E Martin, MD, MS[4] and Dara S Berger, PhD, MPH, MS[4], [1]Hospital of the University of Pennsylvania, Philadelphia, PA, [2]University of Pennsylvania Penn Fertility Care, Philadelphia, PA, [3]University of Pennsylvania, Center for Research on Reproductive & Women's Health, Philadelphia, PA, [4]University of Pennsylvania, Philadelphia, PA

OBJECTIVE: To evaluate the association between sperm DNA fragmentation index (DFI) testing, reproductive outcomes, and subsequent treatment strategies in assisted reproductive technology (ART).

MATERIALS AND METHODS: We conducted a retrospective cohort study of patients undergoing ART between 2016 and 2026 at a single academic fertility center. Patients undergoing DFI testing were identified. If more than one DFI test result was available, cycles from their most recent DFI testing were included. Demographic and clinical data were abstracted from medical records. DFI results were categorized as Excellent to Good or Fair to Very Poor. Outcomes included positive beta-hCG (hCG >=5), clinical intrauterine pregnancy, and blast utilization (ratio of transferred or frozen blastocysts to 2PNs). Chi-square and t-tests were used for comparisons.
RESULTS: Sixty-four patients underwent DFI testing. The mean age was 35.8 ± 3.0 years, and 17.2% of patients had at least one prior live birth. Infertility diagnoses were frequently multifactorial, most commonly male factor infertility (43.8%), unexplained infertility (31.2%), and diminished ovarian reserve (12.5%). The primary indications for DFI testing were poor blast progression (42.2%), male infertility (39.1%), and poor fertilization (17.2%). Among patients with cycles before and after DFI testing, laboratory and clinical outcomes improved following testing and treatment modification. Positive beta-hCG (82.2% vs 54.4%, p<0.001), clinical intrauterine pregnancy (94.6% vs 51.6%, p<0.001), and blast utilization (0.48 vs. 0.37, p=0.037) were higher following testing. Among cycles with DFI results, 81.6% demonstrated excellent to good sperm DNA integrity and 18.5% demonstrated fair to very poor integrity. Following DFI testing, treatment strategies were frequently modified, including use of intracytoplasmic sperm injection (ICSI) in 85.9% of patients, growth hormone (GH) in 53.1%, frequent ejaculation protocols in 23.4%, sperm separation techniques in 17.2%, and testicular or epididymal sperm extraction was performed in 6.2% of patients. DFI testing was not associated with positive beta-hCG (58.3% vs 61.8%, p=0.462) or clinical intrauterine pregnancy (52.0% vs 53.8%, p=0.710), and DFI category was not significantly associated with outcomes.
CONCLUSIONS: This study provides meaningful preliminary data on the clinical utility of DFI testing and its role in guiding treatment decisions in ART. DFI testing was not independently associated with improved reproductive outcomes; however, it was associated with substantial changes in clinical management, including increased use of ICSI, adjunct therapies, and sperm optimization strategies. Improved outcomes observed after testing may reflect treatment modification rather than the predictive value of DFI itself.
IMPACT STATEMENT: These findings suggest that DFI testing may improve outcomes indirectly by prompting earlier or more aggressive intervention rather than serving as a prognostic tool. These results may help inform patient counseling by emphasizing its role in guiding treatment decisions in scenarios where standard evaluation does not explain treatment failure.
SUPPORT: None

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COST-EFFECTIVENESS OF HCG-TRIGGERED VERSUS TRUE NATURAL CYCLE FOR SINGLE EUPLOID FROZEN EMBRYO TRANSFER. Danielle E Strom, MD[1], Kristen S Hori, MD[2], Mehrnaz A Siavoshi, MS, MPH[3], Lorna Kwan, MPH[4] and Lindsay L. Kroener, MD[1], [1]University of California, Los Angeles, Los Angeles, CA, [2]UCLA, Los Angles, CA, [3]University of California, Los Angeles, [4]David Geffen School of Medicine at UCLA, Los Angeles, CA

OBJECTIVE:
To evaluate the cost-effectiveness of hCG-triggered modified natural cycle (mNC) versus true natural cycle (tNC) for single euploid frozen embryo transfer (seFET).
MATERIALS AND METHODS:
Retrospective cohort study of 440 seFET cycles (1/2019–12/2024) at a single academic center comparing tNC (n=386) with planned mNC (n=54). Intention-to-treat (ITT) and per-protocol analyses were performed with ITT defined by planned ovulation method (spontaneous LH surge versus hCG trigger), regardless of protocol completion.
The primary economic outcome was the incremental cost-effectiveness ratio (ICER) per additional good perinatal outcome (GPO), defined as singleton live birth ≥37 weeks with birthweight 2,500–4,000 g. The secondary economic outcome was ICER per additional live birth. Clinical outcomes including GPO rate, live birth rate (LBR), clinical pregnancy rate (CPR), and spontaneous abortion rate (SAB) per clinical pregnancy were evaluated to inform cost-effectiveness.
Monitoring cost per cycle was calculated using mean utilization (visits, labs, ultrasounds) and medication unit costs (choriogonadotropin alfa), excluding embryo transfer and luteal phase support costs as these are consistent across protocols. Sensitivity analyses were performed across a range of cost inputs. Multivariable logistic regression adjusted for maternal age, BMI, race/ethnicity, and endometrial thickness, with cluster-robust standard errors.
RESULTS:
Baseline characteristics were similar, although the mNC group had slightly higher BMI and differed in racial/ethnic distribution. Among planned tNC, 15 (3.9%) required unplanned hCG-trigger.
In ITT analyses, there were no statistically significant differences in GPO rate (54.1% vs 64.8%, p=0.140), LBR (66.6% vs 74.1%, p=0.271), CPR (72.5% vs 79.6%, p=0.269), and SAB (7.1% vs 7.0%, p=0.969) for tNC versus mNC, respectively. Adjusted analyses showed a non-significant increase in GPO rate (aOR 1.75, 95% CI 0.91–3.39), LBR (aOR 1.50, 95% CI 0.75–3.04), and CPR (aOR 1.48, 95% CI 0.69–3.19), with a non-significant reduction in SAB (aOR 0.67, 95% CI 0.19–2.36) with mNC. Per-protocol analyses were similar.
Mean cost per cycle was modestly higher with mNC ($822.70 vs $732.52; incremental cost $90.18). mNC required fewer mean visits (2.19 vs 2.66, p=0.018) and labs (1.78 vs 2.59, p<0.001). The ICER was $845 per additional GPO and $1,203 per additional live birth. Sensitivity analyses showed results were consistent across cost ranges, with trigger medication as the primary cost driver.
CONCLUSIONS:
In this retrospective cohort, reproductive outcomes were similar between mNC and tNC protocols for seFET. Although mNC had slightly higher costs, it required fewer monitoring visits, suggesting reduced treatment burden. Both approaches remain reasonable, and selection may be guided by patient preference and clinic-workflow considerations.
IMPACT STATEMENT:
This study provides cost-effectiveness data comparing tNC and mNC for seFET and supports individualized protocol selection based on patient preference, monitoring burden, and clinic efficiency.

P-258 4:00 PM Monday, October 26, 2026

ONE-STEP WARMING OF VITRIFIED HUMAN BLASTOCYSTS: REDUCED SUGAR CONCENTRATION AND MEDIA INTERCHANGEABILITY DO NOT COMPROMISE EMBRYOLOGICAL OR CLINICAL OUTCOMES. Weon-Young Son, PhD, Amal Atared, BSc, Huda Abukhaled, BSc, Sandra Namuq, BSc, Dania Elwahidi, BSc, Roaa Al-Harbi, BSc, Wajdi Al Omari, MD, Asim Alwohaibi, MD and Abdulaziz Alshahrani, MD, Bnoon Medical Center

OBJECTIVE: One-step warming (OW) simplifies embryo warming and achieves outcomes comparable to conventional protocols using 1.0 M sugar. However, the clinical validity of reduced sugar concentration (0.5 M) during short exposure remains uncertain, particularly regarding blastocyst survival and media interchangeability. This study aimed to determine whether reduced-sugar OW maintains embryological and clinical outcomes across different commercial vitrification–warming systems

MATERIALS AND METHODS: This study evaluated one-step warming (OW) across two commercial vitrification–warming systems, Kitazato (K) and Global (G). Post-warming survival and hatching were assessed in vitrified donated aneuploid blastocysts (n=400) using OW with 1.0 or 0.5 M sugar across four combinations (K–K, K–G, G–K, G–G). OW involved 1-minute exposure to warming solution followed by washing and culture, with outcomes assessed at 3 and 18 hours. Clinical outcomes were analyzed in a retrospective cohort of non-PGT frozen embryo transfer (FET) cycles (n=662; May 2024–January 2026). Post-warming survival, clinical pregnancy, and implantation rates were compared using chi-square analysis.
RESULTS: Blastocyst survival and hatching in vitrified aneuploidy blastocysts were consistently high and comparable across all vitrification–warming combinations in both sugar groups. In the 1.0 M cohort, survival ranged from 96–100% and hatching from 78–79.6%. In the 0.5 M cohort, survival ranged from 94–100% and hatching from 75.5–82%, demonstrating no effect of reduced sugar concentration or media pairing on in vitro blastocyst development. Consistent with laboratory findings, analysis of 662 non-PGT FET cycles showed no statistically significant differences in post-warming survival (93.0–97.7%), clinical pregnancy (29.4–43.0%), or implantation rates (24.8–34.6%) across all groups (p>0.05), regardless of media type or sugar concentration (Table).

	1.0M Warming				0.5M Warming			
	K-K	K-G	G-K	G-G	K-K	K-G	G-K	G-G
No. of FET cycles	90	72	113	118	42	78	58	91
Survival (%)	97.7%	94.8%	93.7%	94.2%	97.6%	95.7%	93.0%	95.5%
Clinical P rate	33.3%	40.3%	29.4%	34.7%	35.7%	39.7%	37.9%	43.0%
Implantation rate	27.8%	33.1%	25.5%	28.6%	25.0%	28.9%	24.8%	34.6%

CONCLUSIONS: OW is a robust and reproducible protocol that supports both reduced sugar concentration and cross-brand media interchangeability without compromising outcomes. Reduced-sugar OW may additionally facilitate embryo handling due to decreased solution viscosity and reduced embryo buoyancy.
IMPACT STATEMENT: OW enables flexible and efficient IVF laboratory workflows. Media interchangeability and reduced sugar concentration maintain outcomes while improving practical handling, supporting broader adoption of streamlined warming protocols.
SUPPORT: None

P-259 4:15 PM Monday, October 26, 2026

SUPPRESSED ESTRADIOL LEVELS DO NOT AFFECT SUCCESS IN LETROZOLE-STIMULATED NATURAL FROZEN EMBRYO TRANSFER CYCLES. Emma A Schindler, MD, MPH[1], Allison M Gonzalez, MS[1], Katherine E Mitchell, MD[1], Shannon Kokjohn, MSc[2], Rebecca Gu, MS[2], Priscila Cavalheiro, BA[2], Amanda Du, BS[2], Said T Daneshmand, MD[2] and Linnea R Goodman, MD[3], [1]University of Virginia, VA, [2]San Diego Fertility Center, San Diego, CA, [3]VA Fertility and IVF, Charlottesville, VA

OBJECTIVE: The addition of ovulation induction agents allows anovulatory patients the option of natural cycle frozen embryo transfer (FET). As an aromatase inhibitor, letrozole suppresses estradiol (E2) levels. The aim of this study was to evaluate if the lower E2 value seen in letrozole-stimulated natural cycle FETs affects reproductive outcomes compared to natural cycle FETs.
MATERIALS AND METHODS: Data was retrospectively collected on patients aged 18-50 years undergoing natural cycle FET or letrozole-stimulated natural FET from January 2021 to December 2025 at two academic-affiliated fertility centers. Letrozole was dosed at 5-7.5mg from cycle days 5-9. Trigger was initiated with human chorionic gonadotropin when the lead follicle was ≥17mm. Luteal progesterone was administered 48 hours following trigger. Transfer was performed six (LH >20 IU/L) or seven (LH <20 IU/L) days following trigger. Group comparisons were performed using student's t-test and chi-squared as appropriate (p <0.05 significant).
RESULTS: There were total of 1072 FETs (Natural 927, Letrozole 145) with an average embryo age of 34.7 +/- 4.6 years. Single blastocyst embryo transfer was performed 93.7% of the time and preimplantation genetic testing for aneuploidy was performed on 80.2% of embryos. The overall implantation rate was 74.1% (794/1072) and on-going pregnancy rate was 64.2% (687/1072). Between groups, there was no difference in age, BMI, or number of embryos transferred. Estradiol values were lower throughout the letrozole cycles and on day of trigger (Table 1). Letrozole cycles were slightly longer, there were more follicles, the lead follicle was larger, LH values levels were lower, and the endometrial lining was thinner. However, implantation and live birth rates were similar between groups (Table 1).

	Natural (n = 927)	Letrozole (n = 145)	p-value
Cycle length (days)	12.3 +/- 3.3	13.0 +/- 3.5	0.03
Number of follicles (n)	1.3 +/- 0.5	1.7 +/- 0.8	<0.01
Size of lead follicle (mm)	18.6 +/- 2.5	20.2 +/- 2.5	<0.01
E2 day of trigger (pg/ml)	234.7 +/- 134.5	163.2 +/- 111.8	<0.01
P4 day of trigger (ng/ml)	0.7 +/- 0.3	0.6 +/- 0.6	0.68
LH day of trigger (IU/L)	22.5 +/- 21.5	11.8 +/- 10.5	<0.01
Endometrial lining (mm)	9.5 +/- 1.9	8.8 +/- 1.5	<0.01
Implantation rate (%, n)	75.1% (696/927)	73.1% (106/145)	0.60
Live birth rate (%, n)	64.1% (594/927)	64.8% (94/145)	0.85

CONCLUSIONS: Despite lower estrogen values and thinner endometrial linings, the addition of letrozole to a natural cycle FET did not negatively affect reproductive outcomes.
IMPACT STATEMENT: This is reassuring that oligo-ovulatory patients can undergo a letrozole stimulated natural cycle FET with good outcomes, and it is important to be aware of notable differences in monitored values during stimulation.
SUPPORT: None

P-260 4:30 PM Monday, October 26, 2026

WHERE DOES OOCYTE COMPETENCE MATTER MOST? CONTEXT-DEPENDENT EFFECTS OF AI-DERIVED OOCYTE QUALITY ACROSS IVF COHORT SIZES. Renata Cristina Ferreira Iborra, MD[1], Amanda Souza Setti, MSc[2], Daniela Paes de Almeida Ferreira Braga, PhD[3], Maite Del Collado, PhD[3], Jullin Fjeldstad, BSc, MSc[4], Assumpto Iaconelli Jr., MD[1] and Edson Borges Jr., M.D., PH.D.[1], [1]Fertility Medical Group/FertGroup, Sao Paulo, Brazil, [2]Sapientiae Institute, Sao Paulo, Brazil, [3]Science For Everymind, Sao Paulo, Brazil, [4]Future Fertility, Toronto, ON, Canada

OBJECTIVE:
To study whether the impact of oocyte competence on IVF outcomes varies according to cohort size and to identify the stage at which this effect is most clinically relevant.
MATERIALS AND METHODS:
This retrospective cohort study included 1,602 freeze-all ICSI cycles (2019–2024), comprising 10,845 injected mature oocytes with AI-derived competence scores (MAGENTA™). Oocyte competence was assessed from pre-ICSI images. Embryo-level outcomes (fertilization, blastocyst development, and high-quality blastocyst formation) were analyzed using regression models with cluster-robust standard errors. Cycle-level outcomes included clinical pregnancy, implantation rate, miscarriage, and live birth, adjusted for maternal age and oocyte yield. The probability of achieving at least one blastocyst was evaluated as a mechanistic intermediate, and effect modification by cohort size (<4, 4–9, >9 oocytes) was assessed.
RESULTS:
Higher AI-derived oocyte competence was strongly associated with fertilization (OR 1.72; 95% CI 1.59–1.86; p<0.001), blastocyst development (OR 1.71; 95% CI 1.63–1.80; p<0.001), and high-quality blastocyst formation (OR 1.30; 95% CI 1.21–1.40; p<0.001), with consistent effects observed across cohort size strata.
The probability of achieving at least one blastocyst increased across cohort size strata (60.2% for <4 oocytes, 82.1% for 4–9, and 95.3% for >9). However, the impact of oocyte competence on this probability was strongly context-dependent: in low-yield cycles (<4 oocytes), the likelihood of achieving at least one blastocyst increased from 55.2% to 72.2% between low and high competence, whereas in intermediate-yield cycles (4–9 oocytes) it increased from 90.1% to 95.9%, and in high-yield cycles (>9 oocytes) from 95.7% to 97.6%, indicating attenuation of the competence effect with increasing cohort size.
At the cycle level, higher competence was associated with improved implantation (β +5.24 percentage points; p<0.001), higher clinical pregnancy rates (OR 1.34; 95% CI 1.16–1.55; p<0.001), and reduced miscarriage risk (OR 0.70; 95% CI 0.53–0.93; p=0.015), with no evidence of effect modification by cohort size.
For live birth, the association with oocyte competence varied by cohort size (interaction p=0.031), with no significant association in low-yield cycles (<4 oocytes; OR 0.84; p=0.186), a non-significant trend in intermediate-yield cycles (4–9 oocytes; OR 1.25; p=0.074), and a significant effect in higher-yield cycles (>9 oocytes; OR 1.32; p=0.037).
CONCLUSIONS:
The clinical impact of oocyte competence is context-dependent. Oocyte quality plays a critical role in determining embryo development in low-yield cycles, whereas sufficient cohort size is required for this potential to translate into live birth.
IMPACT STATEMENT:
The clinical value of oocyte competence depends on cohort size. While competence strongly determines whether embryo development occurs in low-yield cycles, its impact on live birth emerges only when sufficient oocyte numbers are available, highlighting the interplay between quality and quantity in IVF success.
SUPPORT: None.
REFERENCES:
N/A.

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HIGH COST WITHOUT CLINICAL GAIN: MULTICENTER EVALUATION OF HYALURONAN ENRICHED TRANSFER MEDIUM VERSUS LOW LACTATE MEDIUM FOR TRANSFER IN FROZEN EMBRYO TRANSFERS. Nirvika Singh Sharma, E.L.D., M.B.B.S., M.SC.[1], Lindsey Vermilyea, M.S.[2] and Matthew Tex VerMilyea, H.C.L.D, PH.D.[3], [1]Ovation Fertility, San Antonio, TX, [2]Leander, TX, [3]US Fertility, Rockville, MD

OBJECTIVE:
To determine whether a hyaluronan enriched transfer medium improves outcomes sufficiently to justify its cost compared with a low lactate embryo culture medium for transfer in frozen embryo transfer (FET).
MATERIALS AND METHODS:

Retrospective multicenter cohort study of all FET cycles from two IVF centers. Transfers were performed using either a low lactate embryo culture medium supplemented with protein or a hyaluronan enriched transfer medium. Center 1 utilized low lactate medium in 2022–2023 and hyaluronan enriched medium in 2024–2025; Center 2 utilized low lactate medium in 2022–2024 and hyaluronan enriched medium in 2025. Primary outcomes were β-hCG positivity and implantation rate per transfer. Cost analysis was performed from a clinic perspective using actual media utilization and institutional pricing to derive cost per transfer and cost per implantation; all costs are reported in U.S. dollars (USD).
Comparisons between groups were performed using chi-square testing for proportions. Two-sided p-values were reported with statistical significance defined as $p<0.05$. Incremental cost-effectiveness ratios (ICERs) were calculated as the difference in cost between media divided by the difference in implantation rates, expressed as cost per additional implantation achieved.
RESULTS:
Among 5,661 FETs, hyaluronan enriched medium did not improve implantation in either Center 1 (57.7% vs 56.3%, p=0.29) or Center 2 (62.6% vs 59.8%, p=0.64), despite a marginal increase in β-hCG in Center 1 only (64.1% vs 61.6%, p=0.047) and no difference in Center 2 (70.2% vs 68.6%, p=0.74). This occurred alongside a 13 to 16 times increase in cost per transfer ($2.90–$3.60 vs $46.10–$46.40) and more than 10 times higher cost per implantation (approximately $5.00–$6.00 vs $74.00–$80.00), yielding ICERs of approximately $1,250 (Center 1) and $1,360 (Center 2) per additional implantation without statistically significant improvement in implantation.
CONCLUSIONS:
Hyaluronan enriched transfer medium substantially increases cost without improving implantation in FET. A marginal increase in biochemical pregnancy in one center does not translate into meaningful clinical benefit. ICER analysis confirms poor cost-effectiveness.
IMPACT STATEMENT:
These findings challenge the value of adhesion-based transfer strategies and support low lactate embryo culture medium for transfer as a high-value standard. Eliminating high-cost, low-yield interventions represents an immediate opportunity to improve the value of IVF care.

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MECHANISTIC INVESTIGATION OF IMPAIRED EMBRYO DEVELOPMENT IN MYOTONIC DYSTROPHY TYPE 1. Naoki Tsuchiya, M.D.[1], Tomonari Hayama, M.D., PH.D.[1], Sumiko Sueyoshi, M.D., Ph.D.[1], Akifumi Ijuin, M.D., Ph.D.[1], Ai Miyakoshi, M.D.[1], Marina Saito, M.S.[1], Hiroe Ueno, Ph.D[1], Miki Tanoshima, M.D., Ph.D.[1], Akira Nishiyama, Ph.D.[2] and Mariko Murase, M.D., Ph.D.[1], [1]Yokohama City University Medical Center, Yokohama, Japan, [2]Yokohama City University Graduate School of Medicine, Yokohama, Japan

Patient No.	Maternal CTG repeats	Previous child's CTG repeats	Embryo No.	Gardner grade	Cryopreservation Day
1	100	1300	1	5CC	day 5
			2	5BA	day 5
			3	5BC	day 5
			4	5BA	day 5
			5	5BA	day 5
			6	5BB	day 5
			7	5CC	day 6
2	200	1500	8	5BB	day 5
			9	5BB	day 5

Table. Cryopreserved embryos available for RNA-seq analysis

OBJECTIVE:
Myotonic dystrophy type 1 (DM1) is one of the representative indications for preimplantation genetic testing for monogenic disorders (PGT-M). DM1 is associated with poor reproductive outcomes (1); however, mechanisms remain unclear. To clarify biological mechanism, clinical embryo development, mitochondrial function in discarded embryos and transcriptomic analysis from surplus viable affected embryos were planned.
MATERIALS AND METHODS:
This study was performed under ethical approval of Yokohama City University (IRB# A17113002), registration of Japanese Society of Obstetrics and Gynecology (#192) and each patient's written informed consents. The embryo development in DM1 and control group were compared. For clinical outcomes, fertilization, blastocyst formation, and good-quality blastocyst formation rate were evaluated. Mitochondrial DNA (mtDNA)-related parameters were evaluated in discarded non-viable embryos. Copy number of mtDNA and 7S-DNA/tRNA, marker of mtDNA replication activity, and mtDNA mutations were assessed using qPCR and NGS. After nine viable surplus embryos, confirmed as DM1-affected by PGT-M, from two patients were secured for basic research under IRB approval, RNA-seq analysis was started (Table).
RESULTS:
A total 122 oocytes were retrieved from four women with DM1. In the DM1 group, the good-quality blastocyst formation rate was significantly reduced (9.5% vs. 19.0%, p=0.038), while fertilization and blastocyst formation rates were not significantly different with control group. Mitochondrial analysis of 58 embryos showed no significant differences in mtDNA copy number, 7S-DNA/tRNA, and mtDNA mutations. Finally, RNA-seq analysis of nine DM1-affected viable embryos is currently underway.
CONCLUSIONS:
In DM1 infertility, significantly lower good-quality blastocyst formation was observed without any altered mtDNA functions, suggesting some DM1-related factors influence embryo development without direct influence from mitochondrial function. Further transcriptomic analysis using DM1-affected viable embryos is currently underway to clarify more detail for poor embryo development and low pregnancy rates in DM1.
IMPACT STATEMENT:
These results suggest hidden biological mechanisms other than mitochondrial dysfunction are involved in poor embryo development in DM1, and support further molecular analysis using DM1-affected viable embryos.
SUPPORT: No external financial support.
REFERENCES:
(1) Srebnik N, Margalioth EJ, Rabinowitz R, Varshaver I, Altarescu G, Renbaum P, Levi-Lahad E, Weintraub A, Eldar-Geva T. Ovarian reserve and PGD treatment outcome in women with myotonic dystrophy. Reprod Biomed Online. 2014 Jul;29(1):94-101.

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LESS IS MORE: NO ADDED BENEFIT OF GASSED CO_2 PRE-EQUILIBRATION VERSUS UNGASSED HYALURONAN-ENRICHED TRANSFER MEDIA IN EUPLOID FROZEN EMBRYO TRANSFER. Diana Toro, MD[1], Nicholas Stansbury, MD[2], Al-Hasen M Said, Ph.D., M.S., M.SC., B.SC.[3], Hannah Collins, BS[3], Douglas J Thompson, MD[3] and Michael L. Reed, PhD[4], [1]San Antonio, TX, [2]UT Health San Antonio, San Antonio, TX, [3]The Fertility Center of New Mexico, LLC, Albuquerque, NM, [4]Fertility Center of New Mexico, Albuquerque, NM

OBJECTIVE:
To determine whether gassed CO_2 pre-equilibration with extended embryo incubation in hyaluronan-enriched transfer media improves pregnancy outcomes compared to a simplified ungassed protocol.
MATERIALS AND METHODS:
This retrospective cohort study analyzed 448 single euploid frozen embryo transfers (FET) performed under two laboratory protocols. The Ungassed protocol utilized hyaluronan-enriched transfer media warmed in an ungassed 37.0°C environment with approximately 10 minutes of embryo exposure prior to transfer. The Gassed protocol utilized hyaluronan-enriched transfer media pre-equilibrated in a CO_2 incubator with 3–5 hours of embryo incubation prior to transfer. Outcomes included biochemical pregnancy, clinical pregnancy, and ongoing pregnancy/live birth.
Statistical analysis included univariate comparisons, multivariable logistic regression, and generalized estimating equations (GEE) to account for repeated transfers within patients (N=344 unique patients) and adjust for age and day of cryopreservation. A restricted analysis including only the first transfer per patient was also performed to minimize bias. Analyses accounted for potential temporal confounding between protocol periods. The study was deemed IRB non-regulated research.
RESULTS:
Outcome rates were nearly identical between the Ungassed and Gassed protocols: biochemical pregnancy (80.7% vs 81.9%), clinical pregnancy (69.5% vs 71.0%), and ongoing pregnancy/live birth (63.1% vs 62.6%). In adjusted GEE models, protocol type was not associated with improved outcomes (biochemical pregnancy: p=0.697; clinical pregnancy: p = 0.738; ongoing pregnancy: p=0.958). Furthermore, a restricted analysis of the first transfer for every patient (N=344) confirmed no differences between groups (clinical pregnancy: p=0.69; ongoing pregnancy: p=0.71).
Ongoing pregnancy was significantly higher for Day 5 embryos compared to Day 6 ($p<0.05$). Crucially, this biological superiority was balanced between study arms ($p=0.49$), and media equilibration strategy remained a non-significant predictor of clinical success ($p=0.958$)
CONCLUSIONS:
Gassed CO_2 pre-equilibration and extended incubation of hyaluronan-enriched transfer media were not associated with improved outcomes compared to a simplified ungassed protocol in euploid FET cycles. These findings support a "catheter reset" hypothesis, whereby the small volume and high surface-area environment of the transfer catheter may rapidly normalize pH and temperature at the time of transfer, potentially negating any benefit conferred by prior media equilibration. Simplified ungassed protocols may therefore preserve efficacy while improving laboratory efficiency.
IMPACT STATEMENT:
These data challenge a common, labor-intensive embryology practice and suggest that routine CO_2 gassing and prolonged embryo exposure may represent unnecessary laboratory complexity rather than clinical benefit. An ungassed, streamlined protocol may preserve pregnancy outcomes while reducing cost, handling, and workflow burden, supporting a true "less-is-more" approach to embryo transfer.

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IMPACT OF PRIMARY TEMPLATE-DIRECTED AMPLIFICATION (PTA) ON MOSAIC CLASSIFICATION AND PREGNANCY OUTCOMES IN PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY CYCLES. Takumi Takeuchi, M.D., Ph.D.[1], Shimpei Mizuta, M.HS.[2], Aya Karino, M.D.[1], Saki Saito, M.D.[1], Yasuhiro Ohara, M.D.[2], Masakazu Doshida, MD, PhD.[1], Hidehiko Matsubayashi, M.D., Ph.D.[2] and Tomomoto Ishikawa, M.D., Ph.D.[2], [1]Reproduction Clinic Tokyo, Tokyo, Japan, [2]Reproduction Clinic Osaka, Osaka, Japan

OBJECTIVE: Chromosomal mosaicism poses diagnostic challenges in preimplantation genetic testing for aneuploidy (PGT-A) due to variability in detection accuracy across different whole genome amplification (WGA) methods. Conventional techniques such as PicoPLEX may lead to overcalling or misclassification of mosaic embryos, complicating clinical decision-making. To address these limitations, we evaluated the impact of a novel WGA technique, primary template-directed amplification (PTA), which is a highly accurate and comprehensive method for uniformly amplifying the entire genome to minimize bias and noise, on embryo classification efficiency, mosaicism detection, and pregnancy outcomes in PGT-A cycles.
MATERIALS AND METHODS: Patients with recurrent implantation failure more than equal to 2 previous unsuccessful cycles underwent PGT-A. Trophectoderm biopsies were performed on day 5 or 6 blastocysts with grade 3 and above expansion, followed by WGA and next-generation sequencing. For the assessment of pregnancy outcome, only single embryo transfer cycles were included. A total of 6,621 embryos were analyzed using either PTA (n = 885) or PicoPLEX (n = 5,736) as a conventional WGA method. Patients were categorized by maternal age using SART age groups (<35, 35–37, 38–40, 41–42, >42). Embryos were classified as euploid, mosaic, or aneuploid using the AI-based PGTai^{SM} platform. Euploidy rates, mosaicism rates, and pregnancy outcomes were compared between the two WGA groups.
RESULTS: In patients >42 years, PTA resulted in a significantly higher euploidy rate than PicoPLEX (8.1% vs. 4.7%, P<0.05), although overall euploid rates across all age groups were similar (21.4% vs. 20.4%). The overall mosaic embryo rate was significantly lower with PTA (4.2% vs. 8.6%, P<0.01), especially in patients 35-37 years (5.1% vs. 15.1%, P<0.01), and 38-40 years (4.1% vs. 11.9%, P<0.01). Pregnancy outcomes were comparable: clinical pregnancy rates were 53.1% (17/32) for PTA vs. 58.2% (269/462) for PicoPLEX, and live birth/ongoing pregnancy rates were 46.9% vs. 52.2%, with no increase in miscarriage rates (11.8% vs. 11.1%).
CONCLUSIONS: Although the number of embryos tested with PTA is still small, PTA combined with AI supported assessment improves embryo classification by reducing false-positive mosaicism calls, particularly in younger patients. The method increases confidence in chromosomal assessment without negatively impacting pregnancy outcomes.
IMPACT STATEMENT: This study highlights the clinical utility of PTA in enhancing PGT-A accuracy and reducing mosaic embryo misclassification. It supports more precise embryo selection strategies and informed transfer decisions.
SUPPORT: none

P-266 4:45 PM Monday, October 26, 2026

UNCOUPLING DEVELOPMENT FROM THE ZONA PELLUCIDA: DOES THE ZP-FREE METHOD PERTURB THE MORPHOKINETIC CLOCKWORK OF SIBLING EMBRYOS? Panagiota Tsounapi, Ph.D., Nozomi Tanabe, B.Sc., Keitaro Yumoto, Ph.D., Tomoya Ozaki, M.D. and Yasuyuki Mio, M.D., Ph.D., Mio Fertility Clinic, Yonago, Japan

OBJECTIVE: Recurrent ART failure due to detrimental embryo fragmentation remains a clinical challenge. While the Zona Pellucida-free (ZP-free) method has been recently established as a rescue intervention, establishing its biological neutrality is of paramount importance. This study aims to rigorously validate the safety and developmental precision of this novel approach by determining whether artificial ZP removal at the pronuclear stage alters the fundamental morphokinetic signatures or expansion dynamics of human embryos.
MATERIALS AND METHODS: This single-center retrospective sibling-embryo study included 45 patients (83 ICSI cycles) between October 2021 and September 2025. All patients have provided informed consent to undergo the ZP-free method. Normally fertilized oocytes [2 pronuclei (PN) zygotes] (n=299) were randomly allocated to ZP-free (n=142) or ZP-intact (n=157) groups. For the ZP-free method 2PN zygotes were immersed in hypertonic solution to ensure sufficient perivitelline space for laser irradiation. One half to one third of the ZP was removed by laser and medium, drawn into the biopsy pipette, was blown to the inner surface of the ZP to separate the ZP and ooplasm completely. All embryos were subsequently cultured in a time-lapse incubator. Morphokinetic analysis included timing of developmental milestones relative to second polar body extrusion, the duration from the 8-cell stage to compaction onset, the cell number at compaction, and the duration of blastocyst expansion (130µm to 150µm).
RESULTS: Morphokinetic profiles were remarkably consistent between groups. No significant differences were observed in the timing of PN appearance between ZP-free and ZP-intact (5.4 ± 1.5h *vs.* 5.5 ± 1.9h), syngamy (20.9 ± 3.3h *vs*. 21.0 ± 5.5h), or first cleavage onset (23.6 ± 3.4h *vs.* 23.9 ± 6.4h). While ZP-free embryos showed a slight tendency toward earlier compaction and blastulation, these differences did not reach statistical significance and developmental intervals remained comparable. The interval from 8-cell to compaction was 25.6 ± 9.4h for ZP-free *vs*. 27.5 ± 12.9h for ZP-intact, and mean cell number at compaction was 12.6 ± 2.7 *vs*. 13.1 ± 2.6, respectively (P>0.05). Blastocyst expansion time period from 130 µm to 150 µm was comparable between the two groups (5.7 ± 5.5h for ZP-free embryos *vs*. 4.8 ± 4.2h for ZP-intact embryos; P>0.05).
CONCLUSIONS: The ZP-free method maintains morphokinetic neutrality across all critical developmental time-points, including syngamy, sequential cleavages, compaction, and blastocyst expansion. These results demonstrate that ZP removal at the pronuclear stage does not adversely affect embryonic morphokinetics and it is an efficient culture method that can support its developmental safety for clinical application for patients affected by recurrent fragmentation-related failures.
IMPACT STATEMENT: The ZP-free method provides a safe, novel approach for managing recurrent ART failure characterized by severe early-cleavage stage fragmentation without compromising developmental timing.

REFERENCES:
Yumoto et al., Artificial removal of the zona pellucida at the pronuclear stage: an exploratory study to improve embryo fragmentation. *Fertility Sterility Reports Vol 5 Issue 4, 385-393, 2024*

ART (20 OF 27)

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INTENDED PARENTS' PERSPECTIVES ON HOW SPERM DONOR REGULATIONS AFFECT DONOR DIVERSITY AND REPRODUCTIVE CHOICE. Erica C Pandolfi, PhD[1], Rita Vassena, DVM, PhD[2], Sean M Currigan, MPH[3] and Vrunda B Desai, M.D.[2], [1]CooperSurgical, [2]CooperSurgical Fertility Solutions, Trumbull, CT, [3]CooperSurgical Fertility Solutions, Trumbull

OBJECTIVE: This study sought to understand whether a reduction in sperm donor pool and diversity may shape attitudes amongst donor sperm recipients in the US, and whether these constraints may compel prospective parents towards unregulated sperm sources.
MATERIALS AND METHODS: Email invitations were sent to 40,000 online survey panel subscribers; 15% engaged, and 10% met eligibility after screening. Eligible participants were U.S. residents aged 21–49 who were planning pregnancies, experiencing difficulty conceiving, and open to donor sperm use. Prespecified quotas for relationship type (single heterosexual women, same-sex lesbian women, and coupled heterosexual individuals), age, income, and ethnicity were applied to the total analytical sample. Targeted recruitment of Black and Hispanic participants (n = 100 each) was included to allow for robust ethnicity-based analyses. A validated 24 item survey administered in November 2024 assessed donor preferences, perceived donor pool adequacy, anticipated impacts of donor shortages, openness to use of unregulated sperm, and attitudes toward regulations impacting gamete donation. Analyses used descriptive statistics, contingency tables, and χ^2 tests ($p < 0.05$).
RESULTS:
Of the 605 respondents, 91.6% were female and 8.4% were male; participant composition included 39.2% single heterosexual women, 40.5% same-sex lesbian women, and 20.3% coupled heterosexuals. The mean participant age was 33.6 ± 7.0 years. The most commonly reported racial and ethnic groups were White (58.5%), Black or African American (17.0%), Hispanic or Latino (16.7%), and Asian or South Asian (6.6%). Respondents reported that it was important to have a pool of donors of various races or ethnicities (78.5%), various skin hues (77.9%), and donors that look like them (75.5%). Hispanic and Black respondents showed higher agreement than white respondents that ethnic and skin hue diversity in the donor pool are important (both p<.05). When informed that proposed laws may reduce the sperm donor pool, respondents indicated that they would have to settle for a less suitable donor (72.4%) and would be less likely to consider using donor sperm from sperm banks (66.9%). Hispanic and Asian respondents reported significantly greater deterrence than white and Black respondents (p = 0.043). Respondents indicated that in such a situation, 69.1% would consider unregulated avenues for donor sperm, even though 93.1% had concerns, including lack of medical history, psychological screening, and genetic testing. Overall, 64.1% felt that laws resulting in a reduction in the donor pool would prevent them from having a baby.
CONCLUSIONS:
Perceived reductions in donor participation and diversity may influence intended parents, especially individuals of ethnic or racial minorities, toward higher risk, unregulated sperm markets, as demand for donor sperm persists.
IMPACT STATEMENT:
Intended parents' perceived constraints in donor sperm availability or diversity are associated with an increased willingness to accept less suitable donors or pursue other, unregulated avenues of obtaining donor sperm, even while recognizing increased medical and psychosocial risks.
SUPPORT: This research was supported by CooperSurgical Inc.

P-268 4:00 PM Monday, October 26, 2026

IS ICSI ALWAYS NECESSARY? RESCUING CONVENTIONAL-IVF THROUGH SUCCESSIVE EJACULATES: A CHALLENGE TO TRADITIONAL ABSTINENCE GUIDELINES IN MALE FACTOR INFERTILITY. Hako Yamaguchi, BSc., Panagiota Tsounapi, Ph.D., Keitaro Yumoto, Ph.D., Tomoya Ozaki, M.D. and Yasuyuki Mio, M.D., Ph.D., Mio Fertility Clinic, Yonago, Japan

OBJECTIVE: Current WHO guidelines recommend 2–7 days of abstinence for semen analysis; however, emerging evidence suggests that shorter intervals significantly reduce sperm DNA fragmentation and oxidative stress. There is an ongoing global debate regarding whether these traditional guidelines inadvertently lead to the overuse of ICSI by underestimating the potential of "fresh" sperm from successive ejaculates. This study aims to evaluate if combining a second successive ejaculate (SSE) to facilitate conventional IVF (c-IVF) in patients with poor initial sperm parameters (PSPs) provides comparable or superior outcomes to standard ICSI, thereby questioning the necessity of microinjection in these cohorts.
MATERIALS AND METHODS: This retrospective cohort study at a single center analyzed 618 ART cycles. The SSE group (n=280) included cycles where PSPs in the first ejaculate on the oocyte retrieval day prompted a second, short-interval ejaculate to facilitate c-IVF (2006–2025). The ICSI group (n=338) utilized standard microinjection with a single ejaculate (2023). Primary endpoints were: fertilization, blastocyst development, and embryo utilization rates. Secondary outcomes included: clinical pregnancy and live birth rates (LBR). Statistical significance was assessed using Student's t-test and Chi-square analysis.
RESULTS: Maternal and paternal ages were slightly lower in the SSE-group compared to the ICSI group ((36.9±4.8 vs. 38.1±5.1 years, P<0.01; and 38.5±6.0 vs. 39.6±6.5 years,

P<0.05). The oocyte maturation rate was significantly higher in the SSE group (82.3% vs. 75.3%, P < 0.001). Although the normal fertilization rate was lower in the SSE group compared to the ICSI group (61.7% vs. 74.0%, P < 0.01), the developmental competence was significantly enhanced; the SSE-group yielded higher blastocyst development (57.3% vs. 51.4%, P = 0.01) and embryo utilization rates (32.1% vs. 28.0%, P < 0.01). Good-quality blastocyst rates were comparable (28.1% vs. 29.9%). Most importantly, clinical success were almost identical between the SSE-IVF and ICSI groups: LBR (64.1% vs. 65.1%, P > 0.05).
CONCLUSIONS: Successive ejaculation provides a simple, non-invasive method to "rescue" c-IVF for patients who would otherwise be fast-tracked to ICSI based on initial parameters. Despite lower fertilization, the improved blastocyst development and equivalent live birth rates suggest that SSE captures a more developmentally competent sperm population. These findings support a shift away from traditional 2–7 day abstinence requirements and advocate for the use of sequential ejaculates as a first-line physiological strategy to optimize ART outcomes.
IMPACT STATEMENT: This study demonstrates that sequential ejaculation allows patients with poor initial sperm parameters to achieve clinical success via c-IVF that is equal to ICSI. By prioritizing physiological insemination, clinics can optimize embryo utilization and reduce unnecessary microinjection, moving toward more personalized and less invasive ART strategies.

P-269 4:15 PM Monday, October 26, 2026

A COMPARISON OF LIVE BIRTH RATES IN INFERTILITY AND NON-INFERTILITY PATIENTS: A SART CORS ANALYSIS (2016-2022). Caroline Violette, M.D.[1], Matthew M. Scarpaci, M.P.H.[2], Jennifer L. Eaton, M.D., M.S., M.SC.[1], Justine Elshama, BS[3] and May-Tal Sauerbrun-Cutler, MD[4], [1]Women & Infants Fertility Center, Providence, RI, [2]Brown University School of Public Health, [3]Warren Alpert Medical School of Brown University; Women & Infants Hospital, Providence, RI, [4]Women and Infants Hospital and Brown University

OBJECTIVE:
To characterize cycle and neonatal outcomes among IVF cycles performed in those without an infertility diagnosis, including those with prior tubal ligation (TL), preimplantation genetic testing for monogenic disease (PGT-M), or preimplantation genetic testing for aneuploidy (PGT-A) for family balancing compared to unexplained infertility (UI), and to describe trends in ART use in this population from 2016-2022.
MATERIALS AND METHODS:
This retrospective cohort study used the Society for Assisted Reproductive Technology Clinical Outcomes Reporting System to identify autologous fresh and frozen IVF cycles performed from 2016-2022. Patients were categorized as having unexplained infertility or no infertility diagnosis; the latter was subdivided into TL, PGT-A, and PGT-M. The primary outcome was live birth rate (LBR) per cycle. Secondary outcomes included oocyte yield, fertilization rate, number of embryos suitable for transfer, LBR per transfer, clinical pregnancy rate, miscarriage, preterm birth, delivery mode, and neonatal birth weight. Adjusted risk differences (aRD) were estimated using generalized linear models with generalized estimating equations, adjusting for age, BMI, race/ethnicity, smoking, nulliparity, AMH, gonadotropin dose, number of embryos transferred, and prior cycle history.
RESULTS:
A total of 306,719 cycles were analyzed: 212,605 in patients with UI and 94,114 in patients without infertility. The number of cycles in patients without an infertility diagnosis increased by 76% from 2016 to 2022. Patients without infertility had higher oocyte yield (15.2 vs. 13.8, p<.0001) and fertilization rates (9.6 vs. 8.6 2PN, p<.0001). Among patients undergoing PGT-A, TL patients, despite older age and lower AMH, were more likely to have ≥4 embryos suitable for transfer compared with UI (79% vs. 73%, aRD 0.037, 95% CI 0.018, 0.034). LBR per cycle was lower in the TL cohort compared to UI (23% vs. 29%, aRD -0.025, CI -0.028, -0.022), however, the adjusted LBR per transfer was higher in TL vs. unexplained (38% vs. 46%, aRD 0.044, CI 0.026 - 0.062). Compared with UI, the TL group had higher rates of preterm birth (37% vs. 23%, aRD 0.039, CI 0.033, 0.043) and low birth weight (19% vs. 13%, aRD 0.012, CI 0.005, 0.019). LBR per transfer was higher in UI compared to non-infertility patients using PGT-A (55% vs. 53%, aRD 0.026, CI 0.018, 0.034).
CONCLUSIONS:
Patients pursuing IVF without a formal infertility diagnosis represent a growing and clinically distinct population. Although differences in LBR between groups were statistically significant, the clinical magnitude is modest. Despite older age and lower AMH, TL patients were more likely to have ≥4 embryos for transfer compared to UI patients, yet demonstrated worse perinatal outcomes after adjustment, underscoring the need for individualized counseling. PGT-A use was not associated with a meaningful difference in LBR per transfer between UI and non-infertility patients.
IMPACT STATEMENT:
These findings provide the largest U.S.-based analysis of IVF outcomes and utilization trends in patients without a diagnosis of infertility, offering data to guide counseling for individuals pursuing ART for indications beyond infertility.

P-270 4:30 PM Monday, October 26, 2026

A PHYSIOLOGICAL, GAMETE-SPECIFIC STRATEGY TO PROMOTE FERTILIZATION. Philip Xie, B.SC.[1], Stephanie Cheung, M.S.[1], Lily Ng, B.S.[2], Zev Rosenwaks, M.D.[1] and Gianpiero D. Palermo, M.D., PH.D.[1], [1]The Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY, [2]Weill Cornell Medicine, New York, NY

OBJECTIVE:
Fertilization failure can occur in up to 3% of ICSI cases, particularly with male factor indication. Sperm fertilization failure is attributed to underdevelopment or absence of the acrosome and most importantly to a lack of PLCζ. We aimed to precisely identify such individual, in effort to correct their fertilization defect.
MATERIALS AND METHODS:
Couples (n=135) with 0-30% ICSI fertilization were included. Sperm PLCζ content was assessed with a normal threshold of ≥30%. The patients were allocated into 3 categories according to their etiology of fertilization failure included oocyte-related, sperm-related, and undetermined factor. The AOA treatment aimed at addressing specific etiology were applied: calcium ionophore for oocyte-related cohort, recombinant PLCζ co-injection for sperm-related cases, and a dual AOA approach (recombinant PLCζ co-injection with post-ICSI ionophore exposure) for those with the undetermined category. A subgroup of patients utilizing testicular spermatozoa were offered the dual AOA as well.
RESULTS:
Semen analysis revealed a volume of 2.4 ± 2 mL, concentration 42.7 ± 40×10⁶/mL, motility 33.9 ± 21%, and normal morphology 2.6 ± 2%.
In the oocyte-factor cohort (n=77, PLCζ=68.2 ± 17%), historical cycles yielded a fertilization rate of 17.3% (137/790) with 3 singleton pregnancies, all resulting in pregnancy loss. Ionophore yielded fertilization at 52.5% (622/1185, *P*<0.0001). Transfer of 83 embryos in 39 embryo replacement cycles yielded 28.9% (24/83) implantation rate, with a 54.8% (21/39, *P*<0.001) ongoing pregnancy rate per cycle.
In sperm-related PLCζ deficiency (n=20, PLCζ=5.8 ± 3%), historical cycles showed a fertilization rate of 18.3% (60/327) with 2 singleton pregnancies resulting in miscarriage. Subsequent rhPLCζ increased fertilization rate to 41.4% (116/280, *P*<0.0001) and improved pregnancy rate to 29.4% (5/17) per cycle.
The greatest improvement occurred in the undetermined cases (n=38, PLCζ=32.6 ± 14%), fertilization in historical cycles was 24.1% (118/489) resulting in 2 missed abortion. The dual AOA improved fertilization to 73.2% (355/485, *P*<0.0001) and achieved 63.3% (19/31, *P*>0.0001) pregnancy rate per cycle.
In cycles using testicular spermatozoa (n=11), historical fertilization was 27.1% (36/133) with no ongoing pregnancies, while dual AOA enhanced fertilization to 74.8% (77/103) and yielded 63.6% (7/11) ongoing pregnancy per cycle.
CONCLUSIONS:
Fertilization failure results from distinct gamete-specific causes Sperm PLCζ assessment enables identification of the underlying cause and guides a targeted AOA treatment. Recombinant human PLCζ provides a more physiological and effective alternative to restore sperm-related fertilization competence.
IMPACT STATEMENT:
Understanding the etiology of fertilization failure allow a more tailored treatment utilizing a physiological component to restore a specific protein deficiency. Our results support a shift toward etiology-specific, mechanistically driven AOA strategies.
SUPPORT: N/A

ART (21 OF 27)

P-272 3:45 PM Monday, October 26, 2026

INCIDENCE AND CHARACTERISTICS OF DE NOVO POSTPARTUM PREECLAMPSIA FOLLOWING GESTATIONAL CARRIER PREGNANCY. Jennifer Yao, BA[1], Zeyu Liu, B.S.[2], Nikita Rao, M.D.[3], Nandita Ramkumar, M.D.[4], Joseph G Ouzounian, MD, MBA[3], Aoi Yamaguchi, BS[5], K Matsuo, MD, PhD[3] and Richard J. Paulson, MD, MS[3], [1]Keck School of Medicine, University of Southern California, Los Angeles, [2]David Geffen School of Medicine, University of California, Los Angeles, [3]University of Southern California, Los Angeles, CA, [4]Department of Obstetrics and Gynecology, Los Angeles General Medical Center, [5]University of Osaka Graduate School of Medicine, Suita-Shi, Japan

OBJECTIVE: Our prior nationwide study demonstrated that, although rare, gestational carrier pregnancies are gradually increasing in the United States and are less likely to have pregestational hypertension (*J Assist Reprod Genet* 2025;42:201-211). De novo postpartum preeclampsia, defined as new onset preeclampsia during the postpartum period in patients without any history of hypertensive disorders of pregnancy, is an emerging entity in recent years, and there remains a scarcity in data regarding gestational carrier pregnancies. The objective of this study was to assess the incidence rate and characteristics of de novo postpartum preeclampsia following a gestational carrier pregnancy.
MATERIALS AND METHODS: This cross-sectional study queried the Healthcare Cost and Utilization Project's National Readmissions Database. The study population included 14,697,796 hospital deliveries that did not have any diagnosis of hypertensive disorder of pregnancy (pregestational hypertension, gestational hypertension, preeclampsia, HELLP syndrome, or eclampsia) from 2017 to 2022. The exposure was gestational carrier pregnancy, identified with the World Health Organization's International Classification of Disease, Tenth Revision, Clinical Modification code of Z33.3. The outcome measure was a diagnosis of postpartum preeclampsia including HELLP syndrome and eclampsia within 60 days after discharge from hospital delivery. The exposure-outcome association was assessed in propensity score-adjusted model, created with a Poisson generalized linear model adjusted for maternal age, obesity, and cesarean delivery.
RESULTS: A total of 2,358 hospital deliveries had a diagnosis code of gestational carrier pregnancies. The incidence rate of de novo postpartum preeclampsia among gestational carrier pregnancies was 10.2 per 1,000 (95% CI 6.1 to 14.2 per 1,000). Most developed de novo postpartum preeclampsia within one week after hospital discharge from delivery admission, and the majority had preeclampsia with severe features (80.0%). The incidence rate of de novo postpartum preeclampsia among non-gestational carrier pregnancies was 3.4 per 1,000 (95% CI 3.3 to 3.5 per 1,000). In the propensity

score-adjusted model, gestational carrier was associated with a more than twofold higher incidence rate of developing de novo postpartum preeclampsia (adjusted-incidence rate ratio 2.49, 95%CI 1.27 to 4.86).
CONCLUSIONS: The results of current study suggest that gestational carriers may have higher risk of developing a new diagnosis of postpartum preeclampsia, calling for society-based attention and further evaluation.
IMPACT STATEMENT: Gestational carriers may have a higher risk of developing de novo postpartum preeclampsia than non-gestational carriers.

P-273 4:00 PM Monday, October 26, 2026

PRIOR CESAREAN DELIVERY, BUT NOT NUMBER OF CESAREANS, IS ASSOCIATED WITH LIVE BIRTH AMONG GESTATIONAL CARRIERS.
Rebecca Zhuo, MD[1], Kerry S.J. Flannagan, PhD[2], Molly Bergen, MD[3], Atoosa Ghofranian, M.D.[1], Victoria Lazarov, MD[1], Cassandra Roeca, M.D.[4], Joseph A. Lee, BA[5], Alan B. Copperman, MD[6], Kathleen Devine, MD[7] and Phillip A Romanski, M.D., M.SC.[8], [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]US Fertility, Rockville, MD, [3]Shady Grove Fertility Center, Rockville, MD, [4]Shady Grove Fertility Colorado, Greenwood Village, CO, [5]RMANY || US Fertility, New York, NY, [6]Icahn School of Medicine at Mount Sinai / Reproductive Medicine Associates of New York, New York, NY, [7]Shady Grove Fertility, Washington, DC, [8]Reproductive Medicine Associates of New York, New York, NY

OBJECTIVE: Cesarean delivery rates are rising, accounting for nearly 32% of deliveries in the United States. Route of delivery has an impact on future fertility as prior cesarean delivery has previously been associated with decreased pregnancy and live birth among patients undergoing in vitro fertilization (1). However, whether an increasing number of cesarean deliveries results in a dose-dependent decrease in live birth and other pregnancy outcomes is not well characterized. While cesarean deliveries are often unavoidable, one population to which this question is particularly relevant is gestational carriers (GCs), as ideal candidates are those with the best chance for a successful pregnancy outcome. This study aims to evaluate whether an increasing number of cesarean deliveries in GCs is associated with a dose-dependent decrease in live birth.
MATERIALS AND METHODS: This retrospective cohort included GCs who underwent single euploid embryo transfer (SEET) between January 2013 and December 2023 at a large network of fertility clinics across the United States. GCs with >2 prior cesarean deliveries were excluded. GCs with at least one vaginal delivery and no prior cesarean delivery served as the referent group. The primary outcome was live birth; secondary outcomes were pregnancy, clinical pregnancy, and clinical pregnancy loss. Statistics were performed using a modified Poisson regression fitted with generalized estimating equations. Relative risk (RR) was adjusted for GC age at SEET, oocyte age at embryo creation, and embryo quality.
RESULTS: 956 GCs were included: 735 with no cesarean delivery (0 CD), 151 with one cesarean delivery (1 CD), and 70 with two cesarean deliveries (2 CD). The 0 CD group was younger than the 1 CD and 2 CD groups (32.8 years vs. 34.5 years and 34.1 years). When comparing GCs with at least one cesarean delivery (1 CD and 2 CD) to GCs with no cesarean delivery, a significantly lower likelihood of live birth in the cesarean delivery group was observed (46.8% vs. 56.8%, RR 0.84, 95% CI 0.71-0.99). When stratifying GCs by the number of cesarean deliveries, there was a 17% lower likelihood of live birth in the 1 CD group (46.0%) and a 13% lower chance in the 2 CD group (48.6%) when compared to 0 CD (56.8%), albeit this was not statistically significant. The p-value for trend for live birth with an increasing number of cesarean deliveries was also not significant. Lastly, no significant differences in pregnancy, clinical pregnancy, and clinical pregnancy loss were observed in patients who underwent one or two cesarean deliveries.
CONCLUSIONS: Prior cesarean delivery, but not the number of cesarean deliveries, is associated with lower live birth among GCs undergoing SEET. Understanding the role of prior delivery history on subsequent pregnancy outcomes can assist with patient counseling in the selection of GCs.
IMPACT STATEMENT: A history of cesarean delivery is associated with modestly lower live birth in GCs without additional risk on live birth outcome as the number of prior cesarean deliveries increases.
SUPPORT: None
REFERENCES:
1. Vissers J, Sluckin TC, van Driel-Delprat CCR, et al. Reduced pregnancy and live birth rates after in vitro fertilization in women with previous Caesarean section: a retrospective cohort study. Hum Reprod. 2020;35(3):595-604. doi:10.1093/humrep/dez295

P-274 4:15 PM Monday, October 26, 2026

MULTIPLE GESTATION RISK IN OVULATION INDUCTION CYCLES WITH INTRAUTERINE INSEMINATION IS DRIVEN BY AGE AND FOLLICLE NUMBER, NOT ORAL AGENT (CLOMIPHENE CITRATE VS LETROZOLE).
Rebecca Zhuo, MD[1], Jensen Reckhow, MD, MPH[1], Lily Huo, B.S.[1], Atoosa Ghofranian, M.D.[1], Victoria Lazarov, MD[1], Tamar Alkon-Meadows, MD[2], Erynne Jackson, BA, MPH[3], Joseph A. Lee, BA[3], Alan B. Copperman, MD[4] and Rachel B. Danis, M.D. M.S[4], [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]Reproductive Medicine Associates of New York, New York, NY, [3]RMANY || US Fertility, New York, NY, [4]Icahn School of Medicine at Mount Sinai / Reproductive Medicine Associates of New York, New York, NY

OBJECTIVE: Clomiphene citrate (CC) and letrozole are commonly used oral agents for ovulation induction (OI) and are associated with an increased risk of multiple gestation (1). Direct comparisons of multiple gestation risk between CC and letrozole across age and follicle strata in large real-world cohorts are limited. This study evaluates the multiple gestation risk between CC and letrozole, stratified by age and number of dominant follicles.
MATERIALS AND METHODS: This retrospective study was conducted at a single academic center and included patients undergoing OI with intrauterine insemination (OI/IUI) using CC or letrozole between 2001 and 2025. Patients with 1-4 dominant follicles (≥14mm) at the time of trigger were included. Cycles using gonadotropins and those with severe male factor infertility were excluded. Primary outcome was rate of multiple gestation, defined as the number of patients with ≥2 fetal poles with cardiac activity on ultrasound divided by the total number of patients who underwent OI/IUI. Modified Poisson regression fitted with generalized estimating equations was used for analysis.
RESULTS: A total of 31,239 patients undergoing OI/IUI were included: 20,795 received CC and 10,444 received letrozole. In patients with up to 4 dominant follicles, the overall risk of multiple gestation was similar between CC and letrozole cohorts (0.79% vs. 0.84%, RR 0.85, 95% CI 0.66-1.12). For patients under age 35, the risk of multiple gestation was 1.29% for CC and 1.22% for letrozole. As age increased, the risk of multiples decreased with 0.78% for CC and 0.57% for letrozole for ages 35-37, 0.40% and 0.31% for ages 38-40, and 0.15% and 0.22% for ages >40. Multiple gestation risk increased with the number of dominant follicles but remained similar between CC and letrozole at each follicle stratum.
CONCLUSIONS: Multiple gestation risk in OI/IUI is driven primarily by patient age and follicle number rather than choice of oral agent. Despite increasing follicle number, the overall risk remains low with no meaningful difference between CC and letrozole.
IMPACT STATEMENT: Choice of oral agent (CC or letrozole) does not meaningfully influence multiple gestation risk in OI/IUI. Risk is primarily determined by age and follicle number, supporting follicle-based clinical decision-making rather than agent selection.
SUPPORT: None
REFERENCES:
1. Diamond MP, Legro RS, Coutifaris C, et al. Letrozole, Gonadotropin, or Clomiphene for Unexplained Infertility. *N Engl J Med*. 2015;373(13):1230-1240. doi:10.1056/NEJMoa1414827

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TRAJECTORIES OF ESTRADIOL (E2) RISE ACROSS STIMULATION ARE ASSOCIATED WITH OOCYTE YIELD IN HIGHLY PURIFIED HUMAN MENOPAUSAL GONADOTROPIN (HP-HMG) MONOTHERAPY IVF CYCLES.
Michal Youngster, MD[1], Daniel R Grow, M.D.[2], Nevo Itzhak, PhD[3], Alyssa Hochberg, MD, MPH[4], Almog Luz, M.SC.[5], Lindsay Kelly, PhD[6], Barbara Stegmann, MD[6], Eduardo Hariton, M.D., M.B.A.[7], Nikolaos P Polyzos, Prof[8] and Ariel Hourvitz, M.D.[1], [1]Shamir Medical Center, Beer Yakov, Israel, [2]University of Connecticut Health Center, Farmington, CT, [3]FertilAI, Ramat Gan, Tel Aviv, Israel, [4]Westmount, QC, Canada, [5]Tel-Aviv, Israel, [6]Ferring Pharmaceuticals, Parsippany, NJ, [7]Brigham and Women's Hospital, Harvard Medical School, Boston, MA, [8]Head of the Department of Reproductive Medicine, Dexeus Mujer, Hospital Universitario Dexeus, Barcelona, Spain

OBJECTIVE:
To determine whether E2 rise trajectories across early, mid, and late follicular phase of ovarian stimulation are independently associated with the number of oocytes retrieved in HP-hMG monotherapy cycles.
MATERIALS AND METHODS:
This retrospective multicenter cohort includes 4,990 HP-hMG, antagonist cycles from clinics in Asia, Europe, and North America (2013–2025). Each cycle was divided into 3 phases: early (stimulation days 4–6), mid (day 7 to the midpoint between day 7 and trigger), and late (midpoint- trigger). Phase-to-phase growth was computed as an average daily rate between consecutive phase E2 maxima to compare unequally spaced intervals. A slow rise meant being in the lowest 25% of each phase. This corresponded to thresholds of ≤36% per day for Phase 1→2 and ≤27% per day for Phase 2→3; values above these cutoffs were classified as normal. This yielded four trajectory groups: slow>slow, slow>normal, normal>slow, normal>normal. To isolate the trajectory effect from patient characteristics, 4-group propensity score matching (1:1:1:1) was performed based on age, AMH, AFC, BMI, retrieval cycle number, initial stimulation dose and treatment site. Primary outcome was total # of oocytes retrieved; secondary outcome was # of mature (MII) oocytes, when available. Matched quadruplets were compared using the Friedman test for continuous variables and adjusted one-vs-rest Cochran's Q tests for categorical variables.
RESULTS:
After 4-group matching (n=197 per group; 788 total), baseline and cycle characteristics were balanced: means ranged from 39.0–39.1 for age, 24.2–26.4 kg/m² for BMI, and 1.0–1.3 ng/mL for AMH. Oocyte yield increased stepwise across trajectory groups:

Trajectory	Oocytes (mean±SD)	MII (mean±SD)*
slow>slow	5.31±5.8	4.62±4.7
slow>normal	5.94±5.0	4.98±4.3
normal>slow	7.69±6.5	6.35±5.4
normal>normal	8.72±6.7	7.26±5.8

*MII was available for 133–137 cycles per group.
Oocyte and MII yield differed across the 4 trajectory groups (p<.001). Slow early rise (Phase 1→2) was associated with lower oocyte was mainly linked to a slow early rise, even when the later rise was normal. The slow>normal group had ~32% fewer oocytes than the normal>normal group, while a later slow rise after a normal early rise showed only a smaller reduction.
CONCLUSIONS:

Pace-normalized E2 rise across stimulation phases is independently associated with oocyte yield in HP-hMG cycles. Early phase rise is the most influential; slow early rise is only partially rescued by normal mid-to-late rise, and both phases contribute cumulatively.
IMPACT STATEMENT:
These findings highlight the clinical interpretability of E2 dynamics in HP-hMG stimulation, supporting its use for trajectory-based monitoring of ovarian response. Early detection of slow trajectories may support timely dose increases and inform patient counseling.
SUPPORT: FertilAI and Ferring

P-276 4:45 PM Monday, October 26, 2026

LIVE BIRTH RATES FOLLOWING EUPLOID SINGLE EMBRYO TRANSFER IN AUTOLOGOUS VS DONOR CYCLES. Jiahui Zhang, MD[1], Amanda N. Kallen, M.D.[1], Ellie Diamond, MS[2], Peter Callas, PhD[2], Navid Esfandiari, PH.D., HCLD[3] and Jennifer A. Dundee, M.D., M.S.[3], [1]University of Vermont Larner College of Medicine, Burlington, VT, [2]University of Vermont Larner College of Medicine, VT, [3]University of Vermont Medical Center, Burlington, VT

OBJECTIVE: Differences in live birth rates between autologous and donor oocyte/embryo transfer cycles are often attributed to embryo aneuploidy, particularly among patients of advanced reproductive age. Preimplantation genetic testing (PGT) enables the selection of euploid embryos, providing an opportunity to assess whether differences in live birth rates persist after accounting for aneuploidy. Our objective was to compare live birth rates following transfer of euploid embryos derived from autologous versus donor oocyte/embryo cycles.
MATERIALS AND METHODS: We conducted a retrospective cohort study using data reported to the Society for Assisted Reproductive Technology Clinic Outcomes Reporting System (SART-CORS) from 2014-2021. We included single euploid embryo transfer cycles in which the transferred embryo was derived from either autologous or donor oocytes. Cycles with missing entries were excluded. Demographic characteristics and PGT indications were compared using Chi-square or t-tests, as appropriate. The primary outcome was live birth rate. Multivariable logistic regression was used to estimate the association between cycle type and live birth, adjusting for age, race/ethnicity, BMI, parity, and smoking status. Secondary outcomes included rates of clinical intrauterine pregnancy, biochemical pregnancy, ectopic pregnancy, and spontaneous abortion.
RESULTS: A total of 98,414 PGT-tested euploid single embryo transfer cycles were included (89,262 autologous and 9,152 donor cycles). Baseline differences in demographic characteristics and PGT indications were addressed through multivariable adjustment. In our final adjusted model, use of euploid embryos derived from donor oocytes was associated with lower odds of intrauterine pregnancy (aOR 0.93, 95% CI 0.88-0.97) and live birth (aOR 0.91, 95% CI 0.87-0.96), as compared to cycles using euploid embryos derived from autologous oocytes. There was no difference in the rates of ectopic pregnancy (aOR 1.0, 95% CI 0.71-1.40), biochemical pregnancy (aOR 1.06, 95% CI 0.97-1.15), or spontaneous abortion (aOR 1.05, 95% CI 0.97-1.14) between the two groups.
CONCLUSIONS: In this large, contemporary analysis of SART-CORS data, euploid single embryo transfer of embryos derived from donor oocytes was associated with lower odds of live birth compared with those from autologous oocytes.
IMPACT STATEMENT: These findings challenge prior assumptions that euploid single embryo transfer yields similar cycle outcomes in autologous and donor cycles and suggest that factors beyond aneuploidy contribute to pregnancy outcomes. Future studies are needed to determine the clinical, embryologic, and endometrial factors that contribute to these differences and identify modifiable targets to improve outcomes in donor cycles.

COMPLEX FAMILY PLANNING

P-277 11:15 AM Tuesday, October 27, 2026

VAGINAL DELIVERY OF HORMONAL CONTRACEPTIVE DOES NOT ALTER THE RISK OF METABOLIC SYNDROME IN OVERWEIGHT/OBESE WOMEN WITH POLYCYSTIC OVARY SYNDROME. Priya Kumar, BAS[1], Kamilah Degraphenreed, BS[2], Andrea Morley, B.S.W.[3], Anuja Dokras, MD, MHCI, PhD[4] and Andrea H Roe, MD, MPH[1], [1]University of Pennsylvania, Philadelphia, PA, [2]Penn Fertility Care, [3]University of Pennsylvania, Division of Reproductive Endocrinology and Infertility, Philadelphia, PA, [4]University of Pennsylvania Perelman School of Medicine, Philadelphia, PA

OBJECTIVE: To assess the impact of the contraceptive vaginal ring on the incidence of metabolic syndrome (MetS) in a high-risk cohort of overweight and obese women with PCOS.
MATERIALS AND METHODS: In this prospective observational pilot study, 20 participants with polycystic ovary syndrome (PCOS) who did not meet criteria for MetS (per Adult Treatment Panel III criteria) initiated a contraceptive vaginal ring for 4 months. At enrollment and study completion, participants underwent biometric assessment and laboratory testing, including of reproductive hormones, lipids, and 75gm oral glucose tolerance. Contraceptive satisfaction was evaluated at study completion. Descriptive statistics were used to summarize baseline characteristics. The incidence of MetS was evaluated in this cohort, and paired t-tests were used to assess changes in metabolic parameters from enrollment to study completion.
RESULTS: At baseline, the cohort (N=20) had a mean age of 26.4 years and mean body mass index of 32.1 kg/m²; 6 participants were overweight and 14 were obese. Over the 4-month study period, 1 of 20 participants (5%, 95% CI [0.1, 24.9]) developed metabolic syndrome. Triglyceride levels increased significantly from baseline to study completion (95.6 vs 120.7 mg/dL, p<0.001). There was no significant change in systolic blood pressure (114 vs 118 mmHg, p=0.06), diastolic blood pressure (78 vs 75 mmHg, p=0.07), waist circumference (94.8 vs 98.1 cm, p=0.33), cholesterol (194.0 vs 191.1 mg/dL, p=0.56), high-density lipoprotein (56.6 vs 58.4 mg/dL, p=0.31), low-density lipoprotein (115.4 vs 106.0 mg/dL, p=0.06), high-sensitivity C-reactive protein (5.97 vs 28.9 ng/mL, p=0.24), fasting glucose (89.8 vs 92.1 mg/dL, p=0.45), fasting insulin (11.6 vs 15.1 uU/mL, p=0.14), 2-hour glucose (101.7 vs 104.3 mg/dL, p=0.42), or homeostatic model assessment for insulin resistance (2.56 vs 3.59, p=0.14) at the end of study compared to baseline. There was a significant increase in sex hormone-binding globulin (46.3 vs 160.0 nmol/L, p<0.001). Of 18 participants who completed the satisfaction survey, 18/18 (100%) reported being very or somewhat satisfied with this contraceptive method.
CONCLUSIONS: Among overweight and obese women with PCOS, use of the contraceptive vaginal ring for 4 months was associated with a low incidence of MetS, an increase in triglyceride levels, and a neutral effect on biometrics, inflammation, and glucose tolerance. All participants were satisfied with this method.
IMPACT STATEMENT: Oral contraceptive pills have been associated with development of MetS among high-risk individuals with PCOS and overweight/obesity. In this population with high cardiometabolic risk, the vaginal route of delivery appears to have a low incidence of MetS. Larger studies are needed to confirm these findings.

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HETEROGENEOUS PATHWAYS TO PARENTHOOD AFTER CANCER: FAMILY-BUILDING OUTCOMES AMONG 25 RECIPIENTS OF A 236-GRANT NONPROFIT ONCOFERTILITY PROGRAM (2021–2026). Megan Scherer, BA[1] and Lesley Northrop, PhD, FACMG[2], [1]NA, Westerville, OH, [2]LDGI, LLC, New York, NY

OBJECTIVE:
Out-of-pocket costs for fertility preservation and assisted reproduction are major barriers for cancer patients and survivors. We describe demographics, grant types, and realized family-building outcomes among recipients of a U.S. nonprofit grant program serving this population.
MATERIALS AND METHODS:
Between November 2021 and January 2026, the program awarded 236 grants in two categories: emergency fertility-preservation (oocyte, embryo, or sperm cryopreservation at or near diagnosis) and family-building (IVF, IUI, donor gametes, gestational surrogacy, adoption). We performed a retrospective descriptive analysis of the 25 recipients with a documented family-building outcome to date. Abstracted variables included age, gender, race/ethnicity, state, cancer diagnosis, original grant purpose, pathway through which the family was ultimately built, and outcome (live birth, adoptive placement, or ongoing pregnancy).
RESULTS:
Within the 25-recipient outcomes cohort, mean age at grant was 32.4 years (range 25–39). Gender was 52% female, 44% male, 4% non-binary; 88% identified as White and 12% as Hispanic, Asian, or multi-racial. Recipients spanned 16 states and 11 cancer diagnoses, led by lymphoma (24%), breast (20%), and testicular (12%). Grants were originally awarded for IVF or an IVF-related service (56%), adoption (24%), surrogacy (12%), and IUI (8%). Outcomes to date are 19 live births or adoptive placements (76%) and 6 ongoing pregnancies (24%). Twenty-one recipients (84%) used their grant for the family-building pathway it originally funded. Four recipients (16%, 4/25) ultimately built their family via a different pathway: two emergency-preservation recipients conceived spontaneously without using cryopreserved material (which remains available for future cycles), one applicant approved for IVF with donor sperm conceived via IUI with donor sperm, and one adoption applicant conceived through IUI.
CONCLUSIONS: Among these 25 recipients, family-building unfolded along multiple routes—IVF with and without donor gametes, IUI, gestational surrogacy, adoption, and spontaneous conception—reflecting the heterogeneous reproductive needs of cancer-affected patients. Most (21/25) used their grant for the pathway it was awarded to support, but a meaningful minority (4/25) built their family via a different route. Even at this small scale the divergence is instructive: emergency-preservation grants retained protective value because cryopreservation still occurred (with materials available for future use), whereas family-building funds rendered unnecessary by spontaneous pregnancy or by a less-invasive insurance-covered route represent unused philanthropic capacity.
IMPACT STATEMENT: These findings support oncofertility grant designs that (1) frame preservation grants as protective insurance whose value includes future optionality, not solely the current pregnancy, and (2) allow redirection of unused family-building funds when a recipient's circumstances change. Recognizing the non-linear path to parenthood after cancer is essential to designing financial assistance that meets patients where they are.
SUPPORT: Nothing to disclose
REFERENCES:
No References

P-279 11:45 AM Tuesday, October 27, 2026

THE IMPACT OF INTERPERSONAL VIOLENCE IN THE PERIPARTUM PERIOD ON POSTPARTUM CONTRACEPTION UPTAKE: AN ANALYSIS OF RHODE ISLAND PRAMS DATA, 2012-PRESENT. Chloe Vincent, BA[1], Anne Wachana, BS[2], Mallory Go, BA, MPH[3] and Natasha Sokol, ScD, MPH[2], [1]Providence, RI, [2]The Warren Alpert Medical School of Brown University, Providence, RI, [3]Brown University School of Public Health, Providence, RI

OBJECTIVE: Intimate partner violence (IPV) during pregnancy is associated with adverse maternal and neonatal outcomes. The role of pregnancy intention in postpartum (PP) contraceptive choices in this population is poorly understood. This study examines associations between IPV, pregnancy intention, and PP contraceptive use and reasons for nonuse.
MATERIALS AND METHODS: This is a secondary analysis of Phase 7-9 (2012-present) Pregnancy Risk Assessment Monitoring System (PRAMS) data. IPV was the primary independent variable. Outcomes included pregnancy intention, PP contraception use, and reported reasons for nonuse. Multivariable logistic regression models adjusted for maternal age, income, education, birth order, and marital status.
RESULTS: Compared to those without IPV before pregnancy, those reporting IPV before pregnancy more frequently described the index pregnancy as unwanted (13.0% vs 5.1%) or reported uncertainty about wanting the pregnancy (27.9% vs 13.7%) (p=0.016). IPV before (OR 0.51, 95% CI 0.37–0.70) and during pregnancy (OR 0.51, 95% CI 0.36–0.74) were associated with lower odds of PP contraceptive use (p<0.001). Discreet contraceptive methods were more common among individuals with IPV than in those without (52.6% vs 40.8%). Individuals with IPV were less likely to cite current pregnancy as a reason for contraception nonuse (6.6% vs 19.4%) and more likely to cite partner preference (2.9% vs 0.8%) or abstinence (36.5% vs 11.9%). Desire for another pregnancy was also infrequently cited (0.3% vs 1.3%).
CONCLUSIONS: IPV is associated with greater pregnancy ambivalence or undesirability, reduced PP contraceptive use, and increased reliance on discrete methods, including injection, implants, sterilization, and intrauterine devices. Despite higher rates of unintended or uncertain pregnancy intentions, contraceptive nonuse among individuals experiencing IPV appears driven more by partner- and relationship-related constraints than by reproductive preference.
IMPACT STATEMENT: Intimate partner violence during pregnancy is associated with greater pregnancy ambivalence, lower postpartum contraceptive use, and increased reliance on discrete contraceptive methods. These findings suggest that postpartum contraceptive decision-making among individuals experiencing IPV is shaped more by partner dynamics and safety considerations than by reproductive preferences, highlighting the need for trauma-informed and autonomy-supportive contraceptive counseling.

P-280 12:00 PM Tuesday, October 27, 2026

ACCESS IN ACTION: THE IMPACT OF AN EMERGENCY CONTRACEPTION DISTRIBUTION NETWORK IN CENTRAL TEXAS. Ananya Murthy, BS[1], Saniya Gayake, BA[1] and Josh Shaffer, M.D.[2], [1]Austin, TX, [2]University of Texas at Austin Dell Medical School, Austin, TX

OBJECTIVE: We aimed to evaluate the efficacy and perception of a community-based distribution network implemented to reduce financial, knowledge, and stigma related barriers to accessing pill-form emergency contraception (EC) in central Texas.
MATERIALS AND METHODS: A 17-item survey was administered to community partner organizations that received EC from the distribution network between January 2023 and December 2025. They survey included both 5-point Likert-scale items and open-ended questions. Responses were summarized with descriptive statistics and qualitative analysis.
RESULTS: 17 out of 20 organizations completed the survey. Partners reported serving diverse populations, including unhoused adults and children, low-income and underinsured individuals, and undergraduate and graduate students with varied socioeconomic backgrounds. 53% of partners noticed an increased interest in EC in their community post-Dobbs and 82% were approached by individuals specifically for EC. Most organizations had no other source of funding set aside for EC (94%), primarily relying on donations. The amount of EC distributed per organization ranged from 20 to 100 units over a 12-month period The distribution system was rated favorably in terms of communication (4.8 ± 0.55), hand-off logistics (4.7 ± 0.57), sustainability (4.6 ± 0.78), and overall satisfaction (4.8 ± 0.51). Most respondents strongly agreed that the EC distribution network fills a gap in the community (88%) and strengthens connection to a reproductive health network (88%). Additionally, 82% of participants would continue to request EC from the distribution network. Organizations reported needing support with other aspects of reproductive care like routine contraception, child care, STI testing, cervical and breast cancer screening, and reproductive health education.
CONCLUSIONS: There is a continued need for low- or no-cost community-based EC distribution systems to provide critical reproductive healthcare to populations with limited access, especially in the post-Dobbs era. While there is room for improvement in the logistics and leadership structure of the distribution network, partner organizations report overall satisfaction with the system and a positive impact on the populations they serve. There is a need for this distribution network to expand to include other aspects of reproductive care including other forms of contraception and preventative screenings.
IMPACT STATEMENT: A community-based distribution network in Central Texas successfully reduced barriers to EC access and demonstrated high efficacy in reaching underserved populations post-Dobbs, providing a scalable framework for integrating other aspects of reproductive care, including routine contraception, into community-level support systems.
SUPPORT: No financial support.

FERTILITY PRESERVATION (1 OF 12)

P-281 11:15 AM Tuesday, October 27, 2026

TESTOSTERONE DISTINCTLY AFFECTED THE EXPRESSION LEVELS OF MOUSE PRE-MEIOTIC, MEIOTIC, AND POST-MEIOTIC CELLS IN-VITRO FOLLOWING TRANSFERRING DEVELOPED CELLS/SPHEROIDS INTO A FRESH 3-DIMENTIONAL ENVIRONMENT. Razan Agbaria, BSc[1], Eitan Lunenfeld, MD[2] and Mahmoud Huleihel, Ph.D.[1], [1]Ben-Gurion University of the Negev, Beer-Sheva, Israel, [2]Chairman Dep. OB/GYN, Ariel, Israel

OBJECTIVE:
Mouse, monkey, and human spermatogonial cells developed in vitro using a 3D methylcellulose culture system to premeiotic, meiotic, and post-meiotic stages. However, the optimal conditions to increase the percentages of the postmeiotic cells in vitro remain undetermined. **Our objective** was to evaluate the effect of testosterone on the expression of spermatogenic cells in vitro following transferring developed cells and spheroids to a fresh 3D environment.
MATERIALS AND METHODS: All cells were enzymatically isolated from the seminiferous tubules of 7-day-old mice and cultured in a methylcellulose culture system. The cultures were incubated in a CO_2 incubator at 35°C, and 1). In the single culture, testosterone was added after 4 weeks for additional 2 weeks. 2). In the dual culture, after 4 weeks of culture, the cells/spheroids were transferred into a new fresh 3D culture and additional testosterone was added for 2 weeks. The developed cells/spheroids from both systems were collected at the end of the experiments (after 6 weeks), and analyzed for the different stages of spermatogenesis [premeiotic (GFR-α), meiotic (CREM), postmeiotic (ACROSIN), sun 3] and Sertoli cell markers using specific primers for qPCR analysis.
RESULTS: In dual cultures without T, compared with cultures without transfer and without T, expression of gfr-α, crem, and sun3 increased significantly, whereas acrosin expression remained unchanged. In contrast, in dual cultures treated with T, relative to non-transferred cultures treated with T, expression of gfr-α, crem, and sun3 decreased, while acrosin expression. Comparison of dual cultures with and without T revealed decrease expression patterns for gfr-α, crem, sun3, but a significant increase in acrosin expression. Additionally, when dual cultures with T were compared to cultures without transfer and without T, gfr-α and crem expression decreased, whereas acrosin and sun3 expression increased. Testosterone treatment alone in non-transferred cultures had minimal effects on gene expression on the examined markers. The effects of T in dual cultures correlated with a significant reduction in androgen-binding protein expression in Sertoli cells.
CONCLUSIONS: Addition of testosterone into fresh 3D cultures contain transferred developed cells and spheroids significantly increased the developed premeiotic, meiotic and postmeiotic cells compared to cultures without transfer. Sertoli cell activities could be involved.
IMPACT STATEMENT: These results may assist in improving the conditions for prepubertal male fertility restoration using in vitro culture systems.
SUPPORT: Faculty of Health Sciences, Ben-Gurion University of the Negev

P-282 11:30 AM Tuesday, October 27, 2026

FROM FREEZE TO THAW: A 15-YEAR LONGITUDINAL ANALYSIS OF OOCYTE UTILISATION, RETURN DETERMINANTS, AND PHYSICIAN-LEVEL PRACTICE VARIATION IN A LATIN AMERICAN IVF CENTRE. Felicitas Azpiroz, MSc, PhD, Nicolas Talarico, Lic, Valeria Toledo, Lic, Manuel Fernandez Pessagno, Lic, Felicitas Noblia, Lic and Florencia Nodar, Lic, Cegyr - Eugin Group, Buenos Aires, Argentina

OBJECTIVE: To characterise a 15-year oocyte cryopreservation (OC) cohort from a single Latin American IVF centre, quantifying utilisation rates, time-to-use intervals, annual trends, patterns by indication and family-building context, and physician-level variation.
MATERIALS AND METHODS: Retrospective analysis of all OC and warming procedures (2011–2026). Utilisation was defined as initiation of at least one warming cycle. Patients were classified by indication (elective versus oncofertility) and family-building context: Group A (solo mothers) or Group B (partnered women). Kaplan-Meier analysis estimated actuarial utilisation at 3, 5, and 7 years. Multivariable logistic regression with physician fixed effects adjusted for freeze year, indication, oocyte count, and age where available. Chi-square, Kruskal-Wallis, and Mann-Whitney U tests were applied.
RESULTS: 2,139 patients underwent 2,418 OC cycles; 10.7% completed more than one cycle. Annual volume grew 16-fold (21 cycles in 2011; 343 in 2023). Of 2,139 who cryopreserved, 212 (9.9%) returned for warming; peak cohort return was 28.8% (2015). Median time-to-use: 38.6 months (IQR 9.9–62.8). Kaplan-Meier actuarial utilisation at 3, 5, and 7 years: 4.7%, 9.7%, and 15.5% (95% CI 13.5–18.1%). Elective patients (n=2,067): crude 10.1%, 7-year KM 16.0%; oncofertility (n=72): 5.6% and 7.1% (log-rank p=0.12); oncofertility median time-to-use was longer (72.2 versus 40.1 months; p=0.17). Group A (solo mothers; n=69): median 44.2 months; Group B (partnered women; n=143): 34.3 months (p=0.13). On multivariable regression (n=2,104), later freeze year independently reduced utilisation odds (OR 0.81/year, 95% CI 0.78–0.85, p<0.0001); physician identity was an independent predictor (adjusted OR range 0.29–3.51, 12-fold; ΔAIC=19.4, p<0.0001); indication, oocyte count, and age at freeze were non-significant. Unadjusted physician variation: 8.5-fold in utilisation (3.4–29.0%) and 8.1-fold in median time-to-use (7.9–64.1 months; p=0.025).
CONCLUSIONS: These data challenge three assumptions embedded in current OC practice. Crude utilisation rates underestimate true long-run return by 57%; survival-adjusted reporting should become standard. Neither indication nor oocyte count predicted utilisation, rendering risk-stratified follow-up on these variables unsupported; the freeze year effect reflects censoring, not diminishing intent. Most consequentially, physician identity remained an independent predictor of utilisation after case-mix adjustment: an 8.5-fold variation within a single unit that cannot be attributed to patient selection and implicates differences in counselling and follow-up practice. Physician-level audit and structured recall are warranted.
IMPACT STATEMENT: One of the largest single-centre longitudinal OC datasets from Latin America and, to our knowledge, the first to demonstrate that physician identity independently predicts utilisation after case-mix adjustment. These findings

provide benchmarks for consent practice, storage policy, and quality improvement across IVF programmes.

P-283 11:45 AM Tuesday, October 27, 2026

AWARENESS, MISCONCEPTIONS AND DECISION-MAKING AROUND ELECTIVE OOCYTE CRYOPRESERVATION: FINDINGS FROM A NATIONAL SURVEY IN ARGENTINA. Melina Schapira, MD[1], Felicitas Azpiroz, MSc, PhD[2] and Adan Nabel, MD[3], [1]Cegyr, Caba, Argentina, [2]Barcelona, Cataluna, Spain, [3]Cegyr, Buenos Aires, Argentina

OBJECTIVE: To evaluate the prevalence and accuracy of knowledge about elective oocyte cryopreservation (OC) in Argentine women aged 20–40, and to identify knowledge gaps and barriers associated with low consultation rates
MATERIALS AND METHODS: Cross-sectional online survey of 1,118 women aged 20–40 without children or known fertility-limiting conditions in Argentina (August–September 2025). Participants were recruited across all Argentine regions and socioeconomic strata. Structured items assessed OC awareness, self-reported understanding, perceptions of age-related fertility decline, ovarian-reserve (OR) testing awareness, information sources, consultation history, intentions, and perceived barriers. Outcomes were described overall and stratified by age and socioeconomic indicators. AI-assisted probing of open-ended audio responses contextualised common misunderstandings. Descriptive statistics were used; internal consistency across knowledge and behavioural indicators was evaluated given the sample size.
RESULTS: Among 1,118 respondents, 67% reported familiarity with elective OC, yet only 22% reported accurate understanding. Clinical engagement was limited: 5% had consulted about OC and 11% knew someone who had undergone the procedure. Information sources were predominantly non-clinical (>65% social media; <20% healthcare professionals). Knowledge of reproductive ageing was frequently inaccurate: 31–38% believed fertility decline becomes relevant only after age 40, and 55% were unaware that OR testing exists. Only half correctly identified 25–30 years as optimal timing for fertility preservation. Open-ended responses reflected uncertainty and overly optimistic expectations about biological constraints and OC outcomes. Reported barriers were largely structural and informational: cost (76%), lack of information (33%), "not the right moment" (33%), and procedural fear (11%). Consultation rates remained consistently low across all age strata. The large sample size and internal consistency across knowledge, information source, and consultation variables suggest that sampling variation alone is unlikely to account for the observed patterns.
CONCLUSIONS: Familiarity with elective OC did not translate into accurate knowledge or clinical consultation. Cost and limited access to quality information were the most frequently reported barriers. These findings indicate a need for structured, earlier fertility counselling and targeted public communication strategies in Argentina.
IMPACT STATEMENT: This is the first national dataset describing elective OC awareness and misconceptions in Argentina. Results reveal a substantial gap between familiarity and informed action, with cost and limited clinical information as key barriers. Findings can inform evidence-based counselling, public communication strategies, and health policy aimed at supporting timely, equitable fertility-preservation decisions.

P-284 12:00 PM Tuesday, October 27, 2026

ULTRA-RAPID VITRIFICATION PRESERVES TRANSCRIPTOMIC INTEGRITY OF HUMAN OOCYTES COMPARED WITH CONVENTIONAL CRYOPRESERVATION METHODS. Birol Aydin, BSc[1], Inci Yetim, MsC[2], Ulyana Dorofeyeva, MD, PhD[3], Evrim Unsal, Prof.[4] and Natalia Pylypenko, MD[3], [1]Clinical Embryologist, Bratislava, Slovakia, [2]EMBRYOLOGIST, [3]Ovogene, Bratislava, Slovakia, [4]Resit Galip St, 18, ankara, Turkey

OBJECTIVE:
To determine whether ultra-rapid vitrification (URV) better preserves the transcriptomic profile of human oocytes compared with conventional vitrification (CV) and fresh controls in an expanded cohort.
MATERIALS AND METHODS: A total of 65 human donor oocytes were collected between August 2025 and December 2025, with 64 metaphase II oocytes included after quality control. Oocytes were allocated into three groups: fresh (n=20), conventional vitrification (CV, n=22), and ultra-rapid vitrification (URV, n=22). URV utilized a 1-minute cryoprotectant exposure, while CV required 14 minutes. Single-cell RNA sequencing was performed using the SMART-Seq platform. Bioinformatic analysis included alignment to GRCh38, differential expression analysis using edgeR, and functional enrichment analysis (GO, KEGG, Reactome).
RESULTS:
Increasing the sample size to n = 64 substantially enhanced the resolution of cryopreservation-associated molecular changes, resulting in a markedly higher number of detected differentially expressed genes (DEGs).
The highest DEG burden was consistently observed in the CV vs. fresh comparison (2975 upregulated and 3571 downregulated genes), reflecting extensive metabolic reprogramming and mitochondrial stress. Functional enrichment analysis further demonstrated several terms centred on mitochondrial bioenergetics, including oxidative phosphorylation, respiratory electron transport/respirasome, the TCA cycle–respiratory electron transport module, and mitochondrial membrane/inner-membrane complex terms. In contrast, the URV vs. fresh comparison exhibited a more constrained transcriptional response (2239 upregulated and 2334 downregulated genes), suggesting that reducing cryoprotectant exposure to 1 minute limits the magnitude of transcriptomic perturbations. Functional enrichment analysis further demonstrated that CV vs fresh contains distinct enrichment for KEAP1–NFE2L2 signalling, cytoplasmic stress-granule/ribonucleoprotein-granule terms, ubiquitin–proteasome and autophagy pathways (K48-linked ubiquitination, ubiquitin-mediated proteolysis, autophagy), and DNA double-strand break repair network processes.
CONCLUSIONS: Ultra-rapid vitrification significantly reduces cryopreservation-associated transcriptomic disruption compared with conventional methods, maintaining closer molecular similarity to fresh oocytes. The preservation of mitochondrial function, metabolic pathways, and reduced activation of stress-response networks suggests improved cellular resilience. These findings support URV as a biologically protective cryopreservation strategy with potential to enhance oocyte quality and downstream reproductive outcomes.
IMPACT STATEMENT: By reducing molecular stress during cryopreservation, ultra-rapid vitrification may improve oocyte quality and enhance outcomes in fertility preservation and assisted reproduction
SUPPORT: n/a

FERTILITY PRESERVATION (2 OF 12)

P-285 11:15 AM Tuesday, October 27, 2026

FERTILITY PRESERVATION MANDATES, CANCER BURDEN, AND THE ASSISTED REPRODUCTIVE TECHNOLOGY (ART) EQUITY GAP: A NATIONAL CROSS-SECTIONAL ANALYSIS . Anthony Burtman, MD, Stacey Jaw, MD and Riley McDougall, MD, University of Arizona, Tucson, AZ

OBJECTIVE: Prior work demonstrated that state fertility preservation (FP) insurance mandates increase utilization (ASRM 2025, O-215); however, whether FP access is proportionate to medically indicated ART remains unknown. We assessed whether state-level FP utilization is proportionate to cancer burden in reproductive-age women and whether FP mandates close the gap.
MATERIALS AND METHODS: We performed a cross-sectional analysis of all 50 states and the District of Columbia between 2020-2022. FP cycle counts were derived from CDC ART Surveillance data and aggregated to state-level totals. Cancer incidence in women aged 15–44 was obtained from CDC WONDER USCS for 13 cancer sites. These sites were determined through the ASCO 2025 guideline-aligned cancer sites with gonadotoxic standard-of-care treatment. Throughout 2020-2022, eight states with FP mandates in effect were compared to 43 non-mandate states. Negative binomial regression with a population offset modeled FP cycle rates by mandate status, cancer incidence, ART clinic density, and median household income. An equity quadrant analysis classified states by mandate status and cancer burden relative to the national median.
RESULTS: States with FP mandates (n=8) had 3.3 times the rate of FP cycles compared with non-mandate states (IRR 3.30, 95% CI 2.12–5.39, p<0.001). After adjusting for ART clinic density and median household income, mandate states retained 72% higher FP utilization (IRR 1.72, 95% CI 1.15–2.60, p=0.005), with results robust to year adjustment (IRR 1.75, 95% CI 1.18–2.65). Cancer burden was similar between groups (70.5 vs 67.3 per 100K). In the equity analysis, high-cancer-burden states with mandates had 5.1-fold higher need-adjusted FP utilization than high-cancer-burden states without mandates (median 1.02 vs 0.20, p<0.001). Thirty-one states with above-median cancer incidence but no FP mandate were identified as legislative priorities.
CONCLUSIONS: State FP insurance mandates are independently associated with higher fertility preservation utilization, even after controlling for ART infrastructure and socioeconomic factors. However, substantial equity gaps persist: 31 high-need states without mandates have need-adjusted FP utilization one-fifth that of mandate states. These findings directly support ASCO Recommendation 6.5 advocating comprehensive state-level FP coverage and identify specific policy targets for legislative action.
IMPACT STATEMENT: This study provides the first state-level analysis linking FP utilization to cancer burden, demonstrating that mandates improve access but naming the 31 states where reproductive-age women with cancer face the greatest FP access gaps.
SUPPORT: This was not a funded study.
REFERENCES:
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P-286 11:30 AM Tuesday, October 27, 2026

FERTILITY PRESERVATION UTILIZATION, OVARIAN STIMULATION OUTCOMES, AND REPRODUCTIVE Results IN YOUNG PATIENTS WITH OVARIAN CANCER: A 15-YEAR SINGLE-CENTER EXPERIENCE. Bronwyn S Bedrick, MD, MSCI[1], Sydney Santos, MSPH[2], Joy M Davis, MD[2], Allison Froehlich, MD[2], Katherine E Cameron, M.D.[1], Edward J Tanner III, MD, MBA[2], Katherine Stewart, MD, MBA[2] and Pardis Hosseinzadeh, MD[3], [1]Johns Hopkins University School of Medicine, Baltimore, MD, [2]Johns Hopkins School of Medicine, [3]Johns Hopkins University

OBJECTIVE:
Twelve percent of ovarian cancers are diagnosed in reproductive-aged women. While oncologic and reproductive outcomes after fertility-sparing surgery are well characterized, data on controlled ovarian stimulation (COS) in these patients are limited. Our objective was to study reproductive and oncologic outcomes in patients with ovarian cancer who sought fertility preservation or treatment for infertility.
MATERIALS AND METHODS:
This retrospective cohort included patients with ovarian cancer seen at an academic fertility center (2011- 2026). Receipt of fertility treatment was evaluated by demographic and oncologic characteristics. COS cycle parameters and outcomes, including oocyte

yield, maturity and fertilization rates, were evaluated. Univariate analyses were conducted with Chi-square, Fisher's exact, and student's T-test. Given the sample size, multivariable adjustment was not performed.
RESULTS:
Forty-five patients were included, and 7 had already received fertility care at time of diagnosis. Median interval from oncology to fertility consult was 16 days. Thirty (66%) patients underwent fertility treatment/preservation (Table 1). Receipt of fertility care did not differ significantly by sociodemographic or oncologic characteristics.
In the 38 COS cycles, median oocyte yield was 9 (range 0-28). Maturity and fertilization rates were 78% and 70%, respectively. Of 12 embryo transfer cycles, 5 (41%) resulted in a live birth (2 with donor oocytes, 3 with gestational carriers); three ended in pregnancy loss (25%). Four women conceived unassisted. Among those who underwent COS, 2 recurred and 2 died.
CONCLUSIONS: Two-thirds of ovarian cancer patients seeking fertility preservation pursued treatment. COS yielded acceptable oocyte maturity and fertilization rates, comparable to mixed-cancer cohorts in the literature. These findings suggest that COS is feasible in this population with acceptable laboratory outcomes, but further studies are needed to determine whether ovarian cancer specifically affects oocyte quality.
IMPACT STATEMENT: As the largest ovarian cancer-specific cohort examining fertility preservation, this study provides actionable data on COS and reproductive outcomes to inform oncofertility counseling in this understudied population.

	Fertility Treatment				No fertility treatment (n=15)
	Oocyte cryopreservation (n=15)	Embryo creation (n=7)	Ovarian tissue cryopreservation (n=2)	Other (n=6)	
Median age	20	30	21	34	31
Nulliparous	14 (36)	6 (15)	2 (5)	4 (10)	13 (34)
Histology					
Epithelial	5 (23)	4 (18)	1 (5)	6 (27)	6 (27)
Germ Cell	8 (50)	2 (13)	1 (6)	0	5 (31)
Sex-cord	2 (33)	1 (17)	0	0	3 (50)
Other	0	0	0	0	1 (100)
Stage					
I	10 (37)	5 (19)	1 (3)	5 (19)	6 (22)
II	0	0	0	0	1 (100)
III	5 (33)	2 (13)	1 (7)	1 (7)	6 (40)
IV	0	0	0	0	1 (100)

All rows except otherwise defined are n (row %), 1 stage unknown

P-287 11:45 AM Tuesday, October 27, 2026

DUOSTIM VERSUS TWO CONVENTIONAL CYCLES FOR ELECTIVE OOCYTE CRYOPRESERVATION: A RETROSPECTIVE COHORT STUDY.
Justina Beccar Varela, Physician[1], Melina Zapata Ms, MBBS[2], Maria Ayelen Demarco, Physician[1], Mercedes Papayannis, BSc[1], Claudio Bisioli Mr, B.S.[3], Fabio L Sobral, M.D.[1], Alejandro Oubina Mr, Physician[1], Ignacio De Zuñiga, Physician[1], Marcos M. Horton, M.D.[1] and Laura J Kopcow, MD[1], [1]Pregna Medicina Reproductiva, Buenos Aires, Argentina, [2]Ciudad Buenos Aires, Argentina, [3]Buenos Aires, Argentina

OBJECTIVE: To compare cumulative mature oocyte yield after double ovarian stimulation (Duostim) within a single menstrual cycle versus two conventional follicular-phase stimulation cycles.
MATERIALS AND METHODS: This retrospective observational cohort study included 366 women undergoing elective oocyte cryopreservation at a single fertility center between June 2018 and June 2025. Patients completed two ovarian stimulation cycles using either a Duostim protocol or two conventional follicular-phase cycles performed within six months. Women undergoing oocyte cryopreservation for social reasons were included. Oncological indications, cycle cancellations, incomplete records, or luteal-phase first stimulations were excluded. Baseline characteristics included age, BMI, AMH, and antral follicle count. Gonadotropin stimulation protocols were individualized. The primary outcome was the cumulative number of metaphase II (MII) oocytes after two stimulations.
RESULTS: A total of 126 women underwent conventional stimulation and 240 the Duostim protocol. Duostim patients were slightly younger than those receiving conventional stimulation (36.4 ± 3.2 vs. 37.4 ± 3.7 years, $p < 0.001$). No significant differences were found in body mass index or total antral follicle count. AMH levels tended to be lower with Duostim but did not reach statistical significance between groups ($p = 0.72$ and 0.77).
The cumulative number of retrieved oocytes did not differ significantly between the conventional and Duostim groups (11.2 ± 6.5 vs 11.3 ± 5.9). Similarly, the cumulative number of MII oocytes was comparable (8.3 ± 5.4 vs 8.8 ± 4.6). However, the cumulative oocyte maturation rate was significantly higher in the DuoStim group compared with the conventional group (0.78 ± 0.18 vs 0.74 ± 0.19; $p = 0.018$). In the second stimulation cycle, Duostim required a longer duration and higher gonadotropin dose, but resulted in a higher MII rate. No statistically significant differences were observed in total gonadotropin dose or total stimulation duration between strategies.
CONCLUSIONS: Double ovarian stimulation yields a comparable number of cumulative mature oocytes to two conventional cycles, with a higher maturation rate. Duostim represents an efficient alternative for elective fertility preservation when reducing time to oocyte accumulation is a priority.
IMPACT STATEMENT: Duostim may represent a valuable strategy for women seeking accelerated oocyte accumulation for elective fertility preservation, particularly when time optimization is a priority. Prospective studies are required to confirm long-term reproductive outcomes.
SUPPORT: No external funding was received. The authors declare no competing interests.

P-288 12:00 PM Tuesday, October 27, 2026

BEYOND THE SCAFFOLD: CLINICAL EVIDENCE FOR BOVHYALURONIDASE AZOXIMER AS AN ADJUNCT IN POLYMICROBIAL PELVIC INFLAMMATION.
Igor Baranov, professor of medicine, V.I. Kulakov National Medical Research Center For, Moskva, Moskva, Russia

OBJECTIVE:
Pelvic inflammatory disease (PID) is driven by polymicrobial biofilms and persistent extracellular matrix remodeling, leading to fibrosis, chronic pain, and infertility. While bovhyaluronidase azoximer (BovHA) disrupts biofilm exopolysaccharides in vitro, its clinical value in PID has not been systematically quantified. This meta-analysis evaluated whether adding BovHA to standard therapy produces sustained clinical, microbiological, and reproductive benefits.
MATERIALS AND METHODS:
We performed a systematic review and meta-analysis of controlled trials (up to December 2025) comparing standard PID therapy with or without BovHA. Twenty-six studies (n = 2,111 women of reproductive age) were analyzed in R (meta package). Primary outcome: pelvic pain resolution. Secondary outcomes: dysmenorrhea relief, pathogen eradication from the cervical canal, 12-month relapse-free status, pregnancy rate, and — in chronic endometritis — ultrasound normalization and CD138+ plasma cell depletion (immunohistochemistry).
RESULTS:
Adding BovHA to standard PID therapy significantly increased the likelihood of:
– pelvic pain resolution (RR 1.80; 95% CI 1.39–2.32; $p < 0.0001$);
– dysmenorrhea relief (RR 1.29; 95% CI 1.11–1.50; $p = 0.001$);
– pathogen eradication (RR 2.57; 95% CI 1.82–3.63; $p < 0.0001$);
– relapse-free status at 12 months (RR 1.50; 95% CI 1.27–1.77; $p < 0.0001$).
In the chronic endometritis subgroup, BovHA was associated with normalization of endometrial ultrasound features (RR 1.61; 95% CI 1.34–1.94; $p < 0.0001$), reduced CD138+ plasma cell density (SMD –0.91; 95% CI –1.66; –0.15), and a marked increase in achieving undetectable CD138+ cells (RR 7.17; 95% CI 1.02–50.39; $p = 0.048$). BovHA also doubled the probability of subsequent pregnancy (RR 1.96; 95% CI 1.61–2.39; $p < 0.0001$).
CONCLUSIONS:
Bovhyaluronidase azoximer is not merely an antimicrobial adjuvant: it provides a dual, clinically validated benefit in PID — enzymatic disruption of the biofilm matrix together with intrinsic anti-inflammatory and immunomodulatory activity. This translates into durable pain relief, lower recurrence, histological resolution of chronic endometritis, and improved fertility outcomes. These data support BovHA as a mechanistic adjunct to overcome biofilm-mediated treatment failure in urogenital infections.
IMPACT STATEMENT:
Pooling 26 controlled trials (n = 2,111), this meta-analysis shows that adding bovhyaluronidase azoximer to standard therapy for PID and chronic endometritis doubles subsequent pregnancy rates and resolves $CD138^+$ endometritis, establishing enzymatic biofilm disruption as a clinically validated, fertility-preserving adjunct.

FERTILITY PRESERVATION (3 OF 12)

P-289 11:15 AM Tuesday, October 27, 2026

IN VITRO FOLLICULOGENESIS IN PATIENTS WITH DIMINISHED OVARIAN RESERVE: INSIGHTS FROM 15 CLINICAL CASES.
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OBJECTIVE: The objective of this study was to determine whether secondary follicles can be successfully retrieved and cultured from ovarian cortical strips of women with diminished ovarian reserve (DOR), and to identify the biological and anatomical constraints that influence follicular progression in vitro.
MATERIALS AND METHODS: Seventeen patients were included, comprising 15 with DOR and two controls with good ovarian reserve. Ovarian tissue was cultured ex vivo, and follicular distribution, growth progression, and histopathological features were assessed. The inclusion of control patients allowed evaluation of whether culture limitations were due to tissue quality or the culture system itself.
RESULTS: A marked heterogeneity was shown in follicle distribution both between patients and within individual cortical strips. Age and AMH levels did not correlate linearly with primordial follicle abundance or culture outcomes, underscoring their limited predictive value. Secondary follicles measuring 60–64 µm were successfully cultured in control patients after eight days, confirming the system's capacity under favorable reserve conditions. In DOR patients, follicular progression was limited, with culture success rates ranging from 66.6% to 100% but yielding only 1–2 secondary follicles per patient. Histopathological analysis revealed chronic inflammatory changes, fibrosis, and stromal hypercellularity, features that appeared independent of female age and may represent pathological correlates of severe reserve depletion.

CONCLUSIONS: Secondary follicle culture is feasible but constrained in DOR patients by ovarian tissue heterogeneity, microstructural fragility, and unpredictable follicle availability. Neither age nor AMH alone reliably predicts follicle density or culture success. These findings highlight the need for refined ovarian mapping and targeted tissue selection strategies to improve reproducibility and therapeutic efficacy in fertility preservation protocols.
IMPACT STATEMENT: Secondary follicles can be retrieved and cultured from ovarian cortical strips, but success in women with diminished ovarian reserve is limited. Tissue heterogeneity, fibrosis, and microstructural fragility constrain follicular progression. Age and AMH are poor predictors, highlighting the need for refined ovarian mapping and targeted tissue selection strategies.
SUPPORT: The authors have no competing interests to declare.
This research was financially supported by Merck İlaç Ecza ve Kimya Tic. A.Ş., an affiliate of Merck KGaA, Darmstadt, Germany.
Merck KGaA, Darmstadt, Germany reviewed the manuscript for medical accuracy only before journal submission. The authors are fully responsible for the content of this manuscript, and the views and opinions described in the publication reflect solely those of the authors.
REFERENCES:
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P-290 11:30 AM Tuesday, October 27, 2026

THE ABSCOPAL ARM OF RADIATION GONADOTOXICITY: OUT-OF-FIELD X-RAY EXPOSURE COMPROMISES OVARIAN RESERVE, ENDOCRINE FUNCTION, AND OOCYTE DEVELOPMENTAL COMPETENCE THROUGH PRO-INFLAMMATORY CYTOKINE SIGNALING IN A MURINE MODEL.
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OBJECTIVE: To investigate whether X-ray radiation-induced abscopal effects (X-RIAEs) — systemic off-target consequences of localized irradiation — compromise ovarian reserve, hormonal homeostasis, and oocyte developmental competence in mice.
MATERIALS AND METHODS: Female C57BL/6J mice were randomized to a sham-irradiation group (Sham, n=4-8) or a localized irradiation group (Ir, n=5-8), in which the thoracic region was irradiated while the ovaries were shielded. Estrous cyclicity was monitored by vaginal cytology for 21 days post-irradiation. Ovarian histomorphology and follicle counts (primordial [PMF], primary [PF], secondary [SF], mature [MF], and atretic [AF] follicles) were assessed by H&E staining. Serum estradiol (E_2), anti-Müllerian hormone (AMH), TNF-α, IL-1β, and IL-6 were quantified by ELISA. Controlled ovarian stimulation (PMSG/hCG, 10 IU each) was performed 21 days post-irradiation, followed by in vitro fertilization (IVF). Outcomes included oocyte yield, fertilization rate, cleavage rate, Day-3 high-quality embryo rate, blastocyst formation rate, and top-quality blastocyst rate.
RESULTS: Ir mice exhibited persistent estrous cycle disruption, characterized by diestrus arrest within 1 week of irradiation, without recovery over the subsequent 2 weeks. Ovarian histology revealed near-complete depletion of the PMF pool, marked follicular atresia with granulosa cell degeneration, and significantly reduced PMF and growing follicle counts, while AF counts increased (all $P<0.05$). Serum E_2 and AMH were significantly decreased, while TNF-α and IL-1β were significantly elevated in Ir mice (all $P<0.05$). Following ovarian stimulation, 2 of 5 Ir mice yielded no oocyte-cumulus complexes; the remaining 3 showed significantly reduced oocyte yield and fertilized oocyte numbers ($P<0.05$). Pronuclear morphology was abnormal in Ir-derived zygotes, displaying asymmetric, widely separated pronuclei with coarse cytoplasmic granulation. High-quality embryo rate was significantly lower in the Ir group (57.1% vs. 95.1%, P=0.002). Blastocyst formation rate (50.0% vs. 88.6%, P=0.004) and top-quality blastocyst rate (0% vs. 94.9%, $P<0.001$) were dramatically reduced, with most Ir-derived embryos arresting before the blastocyst stage.
CONCLUSIONS: This study provides the first direct evidence that X-RIAEs — operating entirely outside the radiation field — are sufficient to deplete ovarian reserve, dysregulate reproductive endocrinology, trigger systemic inflammation, and severely compromise oocyte quality and developmental competence through IVF to the blastocyst stage. These findings carry significant clinical implications for fertility preservation counseling in patients undergoing localized radiotherapy, suggesting that even shielded ovaries may sustain meaningful gonadotoxic injury via abscopal mechanisms.
IMPACT STATEMENT: These findings highlight the adverse reproductive effects of radiation-induced abscopal responses and their implications for fertility preservation and IVF outcomes.
SUPPORT: The Second Hospital of Tianjin Medical University, Youth Fund of the Second Hospital of Tianjin Medical University, 2020ydey02
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P-291 11:45 AM Tuesday, October 27, 2026

COMPARISON OF SEMEN PARAMETERS BETWEEN MALE CANCER PATIENTS UNDERGOING FERTILITY PRESERVATION AND NON-CANCER INFERTILE MEN: A SINGLE-CENTER RETROSPECTIVE STUDY.
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OBJECTIVE: Cancer itself may impair semen quality prior to gonadotoxic treatment, yet real world data comparing pre-treatment semen parameters between male cancer patients and non-cancer infertile men remain limited. This study aimed to characterize semen parameters in male cancer patients undergoing fertility preservation (FP) and to identify clinical factors associated with semen quality impairment.
MATERIALS AND METHODS: A single-center retrospective study was conducted using medical records from January 2018 to October 2025. Male cancer patients who underwent semen cryopreservation for FP (n=376) were compared with non-cancer men who underwent routine semen analysis for infertility evaluation (n=487). Patients with azoospermia or severe oligo-astheno-teratozoospermia (SOAT) were excluded from quantitative analyses but included in prevalence comparison. Semen parameters included volume, concentration, motility, sperm kinematics parameters. Multivariable linear regression was performed to identify independent predictors of semen quality, adjusting for age, abstinence period, and fever.
RESULTS: Normal semen findings were significantly less frequent in cancer patients (30.3% vs. 54.8%, $p<0.001$). Cancer patients showed significantly higher rates of SOAT (5.6 vs. 1.0%, $p<0.001$), teratozoospermia (13.0% vs. 4.9%, $p<0.001$), leukocytospermia (27.1% vs. 14.0%, $p<0.001$), and hypospermia (14.4 vs. 7.6%, p=0.002). Across quantitative parameters, cancer patients had significantly lower sperm concentration (49.1 vs. 59.0 $\times 10^6$/mL, p=0.019), total motility (63.0% vs. 77.0%, $p<0.001$), progressive motility (45.0% vs. 55.0%, $p<0.001$), total motile sperm count (TMSC; 69.8 vs. 115.8 $\times 10^6$, $p<0.001$), and progressive motile sperm count (PRC; 48.1 vs. 83.9 $\times 10^6$, $p<0.001$). On multivariable analysis, cancer status remained an independent predictor of lower total and progressive motility, as well as reduced TMSC and PRC (all $p<0.05$). In subgroup analyses, patients with germ cell tumors demonstrated significantly poorer semen parameters across all measures compared with other solid tumors (all $p\leq0.009$), independent of covariates.
CONCLUSIONS: Male cancer patients demonstrate significantly impaired semen quality prior to gonadotoxic treatment, with only 30.3% showing normal semen findings compared with 54.8% of non-cancer infertile men. These findings support early referral for fertility preservation and individualized sperm banking strategies based on cancer subtype.
IMPACT STATEMENT: These findings suggest that cancer itself may adversely affect semen quality prior to treatment, emphasizing the clinical importance of early fertility preservation strategies.
SUPPORT: none

P-292 12:00 PM Tuesday, October 27, 2026

THE GOLDEN EGGS: OOCYTE THAW (OT) OUTCOMES AFTER MORE THAN A DECADE FROM PLANNED OOCYTE CRYOPRESERVATION (OC).
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OBJECTIVE: Studies suggest that OC duration does not impact OT outcomes; however, data beyond 11 years from OC are limited.[1,2] This study examines outcomes from planned OC with storage ≥10 years.
MATERIALS AND METHODS: This is a retrospective cohort study of planned OC patients who underwent an OT cycle at our center from 2004-2025. Per patient, the 1st OT cycle using oocytes from the same OC cycle or multiple OC cycles at the same age, and 1st embryo transfer (ET) cycle were included. Primary outcomes were live birth / ongoing pregnancy (LB) and spontaneous abortion (SAB) rates per ET cycle. Secondary outcomes included metaphase II oocyte (MII) survival, fertilization, blastulation, and euploidy rates per OT cycle. Outcomes were compared between OT cycles <10 vs ≥10 years from OC. Statistics included Wilcoxon rank-sum, Fisher's exact and linear/logistic regression tests ($p<0.05$ significant).
RESULTS: 1012 patients underwent an OT cycle, totaling 14,080 MIIs thawed. Median age at OC was 37.5 years [IQR: 35.4-39.4], storage time 4.6 years [2.9-6.3] and MIIs thawed 12 [8-19]. Patients underwent 732 ET cycles (184 untested, 491 euploid, 50 mosaic/segmental, 4 aneuploid, 3 inconclusive PGT-A embryos). Outcomes between <10 vs ≥10 years from OC are shown in table. A linear regression adjusting for age at OC and MIIs thawed showed a lower blastulation rate with each storage year (β=-0.01, p=0.02), but similar survival, fertilization, and euploidy rates ($p>0.1$). In a logistic regression of all ETs adjusting for age at OC and age at ET, longer storage did not significantly impact LB (OR 0.8) or SAB rates (OR 0.8) ($p>0.1$). Similarly, when restricted to euploid ETs only, longer storage was not significantly associated with LB (OR 0.9) or SAB rates (OR 1.1) ($p>0.5$). The longest stored MII oocyte leading to a LB was 15.8 years. LB rates were 80% (12/15) for 10-11.9 years, 67% (2/3) for 12-13.9 years and 100% (2/2) for 14+ years from OC.

Per-OT cycle (medians)			
	<10 years n=972 (13,553 MIIs)	**≥10 years n=40** (527 MIIs)	**p-value**
Age at OC (years)	37 [35-39]	38 [36-40]	0.3

Age at ET (years)	43 [41-45]	49 [47-51]	**<0.01**
MIIs thawed	12 [8-19]	10 [7-19]	0.4
MIIs survived	10 [6-16]	10 [6-17]	0.7
MII survival rate	89% [71-100]	88% [75-98]	0.9
2-pronuclear zygotes	7 [4-12]	7 [3.5-12]	0.9
Fertilization rate	72% [60-86]	78% [57-91]	0.6
Blastocysts	3 [1-5]	2 [1.5-4]	0.5
Blastulation rate	42% [23-60]	33% [20-50]	0.1
	PGT cycles		
	n=787	**n=28**	
Euploid blastocysts	1 [0-3]	1 [0-2.5]	0.3
Euploidy rate	40% [0-60]	29% [0-50]	0.2
Per-ET cycle of euploid embryos			
LB rate	59% n=275/470	57% n=12/21	0.9
SAB rate	6% n=28/470	14% n=3/21	0.2

CONCLUSIONS: LB and SAB rates are comparable regardless of oocyte storage duration. While blastulation rate appears to decrease with each storage year, overall pregnancy success is maintained.
IMPACT STATEMENT: Frozen MIIs retain reproductive potential beyond a decade after OC.
SUPPORT: None.
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FERTILITY PRESERVATION (4 OF 12)

P-294 11:30 AM Tuesday, October 27, 2026

IS PARTIAL FERTILITY PRESERVATION COVERAGE ENOUGH? A COST-EFFECTIVENESS ANALYSIS OF BENEFIT EXPANSION FOR PHYSICIAN TRAINEES. Nicole Mercado Fischer, MD, MPH and Pamela B. Parker, M.D., M.P.H., University of Pittsburgh Medical Center, Pittsburgh, PA

OBJECTIVE:
To evaluate the cost-effectiveness of no coverage, partial coverage ($7,000 stipend), and full coverage for oocyte cryopreservation among physician trainees.
MATERIALS AND METHODS:
A decision-analytic model from an employer perspective compared three strategies: no coverage, $7,000 stipend coverage, and full coverage for oocyte cryopreservation and future use. Outcomes included probability of live birth and incremental cost-effectiveness ratios (ICERs), expressed as cost per additional live birth. A $100,000 willingness-to-pay (WTP), consistent with U.S. cost-effectiveness benchmarks, was applied. One-way sensitivity analyses and tornado diagrams evaluated model robustness and key drivers, including utilization rate and live birth probabilities.
RESULTS:
Compared with no coverage (live birth probability 0.13), the $7,000 coverage strategy increased live birth probability to 0.15 (increment 0.02) with an ICER of $93,941, meeting the WTP threshold and yielding the highest net monetary benefit. Full coverage increased live birth probability to 0.18 (increment 0.05 vs baseline) but at an ICER of $267,118, exceeding the WTP threshold. Expected per-employee cost under full coverage remained moderate ($9,734) due to incomplete uptake. Sensitivity analyses identified utilization rate as the primary driver of cost-effectiveness. The $7,000 strategy achieved cost-effectiveness at a utilization threshold of 43%. Tornado analysis confirmed robustness, with minimal impact from variation in procedural and storage costs.
CONCLUSIONS:
Partial fertility preservation coverage ($7,000) is cost-effective at standard U.S. WTP thresholds, whereas full coverage provides greater effectiveness at substantially higher cost. Model sensitivity to egg utilization highlights the need for programs that optimize employee engagement. These findings support partial coverage expansion as a high-value intervention for physician training programs.
IMPACT STATEMENT:
This is the first cost-effectiveness analysis framework for tiered fertility preservation benefits in physician trainees. Partial coverage is achievable at under $10,000/employee and is both financially viable and clinically meaningful, with direct implications for recruitment, retention, and reproductive equity in academic medicine.
Table: Cost-Effectiveness Summary by Coverage Strategy

Strategy	Cost (USD)	Live Births	ICER ($/LB)
No Coverage	$0	0.13	Reference
Partial ($7K)	$9,734	0.15	$93,941
Full Coverage	$20,000	0.18	$267,118

P-295 11:45 AM Tuesday, October 27, 2026

OOCYTE THAW (OOT) OUTCOMES IN PATIENTS WHO UNDERWENT OOCYTE CRYOPRESERVATION (OC) WITH ULTRASOUND-DETECTED ENDOMETRIOMAS (EOMA) IN SITU. Brady J Gelvin, M.D.[1], Robyn A Lipschultz, MD[2], Zoey McFarland, B.S.[3], Rebecca Drexler, BA[3], Caroline McCaffrey, PHD, HCLD[1], Patty Ann LaBella, BS[1], Jennifer K Blakemore, MD, MSCI[1], Sarah D Cascante, MD[1] and Frederick Licciardi, M.D.[1], [1]NYU Langone Fertility Center, New York, NY, [2]NYU Langone Health, New York, NY, [3]NYU Grossman School of Medicine, New York, NY

OBJECTIVE:
Previous research has demonstrated reassuring vitrification results in patients with diagnosed endometriosis (1). However, dedicated research has not specifically examined warming outcomes from OC cycles with ultrasound-documented Eomas. We evaluated OOT outcomes in OC patients with Eomas compared to matched controls.
MATERIALS AND METHODS:
This retrospective cohort included OOT cycles from patients with Eomas at the time of OC matched 1:2 to controls by age at OC and AMH level. Initial OC occurred between November 2008-February 2023. Demographic factors included age at OOT and cryopreservation duration. The primary outcome was cumulative live birth/ongoing pregnancy rate (CLBR). Secondary outcomes included # oocytes thawed, M2 oocytes, fertilized oocytes (2PN), fertilization rate, blast utilization rate (BUR), and euploidy rate. Statistical analysis included Kolmogorov-Smirnov, student's t-test, Mann-Whitney U, and Fisher's exact tests. An alpha error of 0.05 was considered significant.
RESULTS:
45 OOT cycles were included; 15 Eoma-derived and 30 control. Demographics were not different between Eoma and control groups: including mean age at OC (35.3yo ± 3.5 vs 35.4yo ± 3.8), mean age at OOT (40.3yo ± 3.8 vs 39.4yo ± 5.0), median AMH (1.24 ng/mL [IQR 0.6-1.88] vs 1.25 ng/mL [0.25-2.25]), and mean length of cryopreservation (4.5y ± 2.0 vs 3.5y ± 2.5). In the Eoma group there were 2 fresh transfers resulting in 1 live birth and 6 frozen transfers resulting in 3 live births. In the control group there were 3 fresh transfers resulting in 1 live birth and 16 frozen transfers resulting in 10 live births. The CLBR was higher, though not significantly different, in the control group (40% control [12 LB/OP from 30 patients] vs 26.7% Eoma [4 LB from 15 patients], p=0.51). Secondary outcomes are listed in the table.

	Control	Eoma	p-value
Oocytes thawed (mean ± SD)	15.8 + 9.0	15.1 + 9.8	0.80
M2 (mean ± SD)	11.8 + 6.6	12.7 + 9.6	0.70
# of 2PN (median, IQR)	7.5 (3.5-11.5)	7.0 (1.0-13.0)	0.98
2PN Rate (mean ± SD)	54.7 + 19.3	61.4 + 22.9	0.34
BUR (median, IQR)	36.7 (20.0-53.4)	26.9 (16.5-37.3)	0.58
Euploidy Rate (median, IQR)	44.2 (16.5-71.9)	60.0 (25.0-95.0)	0.73

CONCLUSIONS:
Our findings support previous literature that patients with endometriosis, and specifically Eomas, have similar embryo development outcomes to matched controls after OOT. Though, non-significant, we did note a possible trend towards lower CLBR among the Eoma group warranting further research with larger cohorts.
IMPACT STATEMENT:
Patients considering use of frozen oocytes retrieved while an Eoma was in situ can be reassured that their outcomes do not differ from age and AMH matched controls, providing further support to those considering OC before surgical excision of Eomas.
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P-296 12:00 PM Tuesday, October 27, 2026

BRIDGING GAPS IN ONCOFERTILITY: ONCOLOGIST PERSPECTIVES ON FERTILITY PRESERVATION IN AN UNDERSERVED POPULATION. Jessica Garcia De Paredes, MD, Anat Chemerinski, MD, Nataki C Douglas, M.D., Ph.D. and Sara Sinha Morelli, M.D., PH.D., Rutgers New Jersey Medical School, Newark, NJ

OBJECTIVE: Approximately 5% of cancer survivors are younger than 40 yrs old. Reproductive-age survivors represent a growing population. Oncofertility focuses on fertility preservation (FP) counseling and treatments; despite guideline recommendations, uptake remains low, with disparities among African American and Hispanic populations.

Strengthening the collaboration between oncology and reproductive endocrinology may improve access to FP, particularly for medically underserved populations. Our objectives were to (1) assess providers' baseline knowledge, attitudes, and practices surrounding FP and (2) to determine barriers that contribute to gaps in FP access in our patient population.
MATERIALS AND METHODS: A 30-item survey was provided to hematology and gynecologic oncology attendings and fellows at a university-based public teaching hospital. Providers self-reported specialty, years in practice, and demographic information about the patients they serve, including age, gender, race/ethnicity, and primary language. Self-perceived knowledge regarding FP methods was rated on a four-point scale, and FP practices were assessed, including referrals in the past 12 months, perceived upper age limits for referral, and FP methods discussed. Descriptive data are reported as frequencies and percentages.
RESULTS: 14 surveys were distributed (64% overall response rate; 80% attending physicians). Of physicians seeing adult patients, reproductive-aged patients (19-45 years) made up a smaller estimated proportion than older patients (≥46 years). Providers considered FP advice relevant up to age ≤45 for women and ≤50 for men. Providers reported that 90% of their patients were Black/African American or Hispanic/Latino, with English and Spanish as the most common languages, followed by Haitian Creole and Brazilian Portuguese. 80% of providers reported being primarily responsible for initiating counseling. However, 40% did not discuss specific FP methods with female patients. Among those who did, oocyte cryopreservation was most common. Providers reported highest knowledge regarding embryo cryopreservation (30%), followed by oocyte and sperm cryopreservation (20%), with major gaps in testicular (12%) and ovarian tissue cryopreservation (0%). Pre-treatment with GnRH agonists was most commonly used.
All providers reported <10 FP referrals in the past year, and 60% reported time constraints as the limiting factor. Key barriers included prioritization of cancer treatment (70%), illness severity (80%), hormonally sensitive malignancy (90%), and poor prognosis (90%). 90% reported needing greater FP knowledge.
CONCLUSIONS: Our data shows low rates of FP discussion and referral, and limited provider knowledge. These gaps in knowledge and structured referral practices highlight the need for improved pathways and ongoing education to support equitable FP care in a medically underserved population.
IMPACT STATEMENT: This survey provides data on oncofertility practices at our institution, guiding efforts to optimize care and enhance provider education for a diverse population historically underrepresented in FP access.
SUPPORT: No financial support to disclose.

FERTILITY PRESERVATION (5 OF 12)

P-297 11:15 AM Tuesday, October 27, 2026

STATE FERTILITY COVERAGE AND PRESERVATION LEGISLATION IMPACT ON COMMERCIAL REIMBURSEMENT OF MALE AND FEMALE FERTILITY PROCEDURES.
Jordan G. Kassab, M.S.[1], Amelia G Oppenheimer, B.S.[2], Niki Parikh, MD, MBA, MSBA[3] and Sreya Gandra, B.S.[3], [1]Texas Tech University Health Sciences Center, TX, [2]Baylor College of Medicine, Houston, TX, [3]UT Southwestern, Dallas

OBJECTIVE: Fertility preservation mandates are rapidly expanding to address financial barriers to oncofertility care, requiring insurers to cover these services, presuming that this coverage improves access. However, these policies vary substantially across states in both scope and duration, potentially shaping how major commercial payers determine reimbursement. We evaluated whether these state-level differences translate into commercial reimbursement rates and variability across sex-coded oncofertility procedures.
MATERIALS AND METHODS: Using Transparency in Coverage data from national commercial payers (Aetna, BCBS, Cigna, UnitedHealthcare), reimbursement rates were analyzed for male-coded procedures billed by urologists (89259, 89353,89300, 89310, 89320, 89321, 89322) and female-coded procedures billed by gynecologists (58970, 58976, 58974, 89337, 89356, 76856, 76948), alongside gender-neutral embryo cryopreservation billed by REI physicians (89258, 89352, 89354, 82670). State-level mandate status was categorized using Triage Cancer. Spearman correlation assessed the relationship between mandate duration and procedure-level reimbursement. Coefficient of variation was calculated by mandate status for each procedure to characterize geographic reimbursement standardization.
RESULTS: Mandate status did not predict sperm cryopreservation reimbursement levels (no mandate $175 vs. mandate $166, $p = 0.84$) and mandate duration showed no correlation with male procedure reimbursement (Spearman $\rho = -0.112$, $p = 0.585$). However, both fertility and preservation mandates significantly reduced reimbursement variability for sperm cryopreservation without increasing mean payment (fertility mandate: CV 33.4% vs. 22.2%, Levene $p = 0.043$; preservation mandate: CV 33.3% vs. 21.7%, Levene $p = 0.025$). In contrast, mandate status did not significantly affect variability or mean reimbursement for oocyte retrieval or embryo cryopreservation (all $p > 0.05$), suggesting mandates create pricing consistency for male oncofertility procedures without establishing adequate reimbursement floors.
CONCLUSIONS: Fertility preservation mandates standardize coverage without ensuring meaningful financial support from payers for care delivery. This disconnect suggests that current policy approaches may improve uniformity but fail to address how commercial payers structure reimbursement, leaving underlying economic barriers to access unresolved. Mandate-related reduced reimbursement variability without a corresponding increase in mean payment suggests that legislative coverage creates pricing consistency but not pricing adequacy. Without attention to reimbursement adequacy, mandated coverage alone is unlikely to sustain access to oncofertility services.
IMPACT STATEMENT: Fertility preservation mandates are increasingly framed as a solution to oncofertility access disparities, yet this analysis demonstrates that mandate status and duration fail to predict commercial reimbursement across oncofertility procedures, confirming that legislative coverage and financial coverage are not equivalent.
SUPPORT: None/
REFERENCES:
None.

P-298 11:30 AM Tuesday, October 27, 2026

DETERMINANTS OF FERTILITY CONSULTATION COMPLETION AND FERTILITY PRESERVATION UPTAKE IN CANCER SURVIVORS FOLLOWING GONADOTOXIC THERAPY.
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OBJECTIVE: To evaluate factors associated with completion of fertility consultation (FC) and pursuit of fertility preservation (FP) among cancer survivors following gonadotoxic therapy to identify drivers of attrition from consultation to fertility preservation.
MATERIALS AND METHODS: Retrospective chart review was performed for all patients with ovaries who attended an oncofertility survivorship consultation in an academic institution from 2012-2024. Survivors were stratified by decision to complete FC and subdivided by decision to pursue FP. Data was analyzed using Shapiro-Wilk and Mann-Whitney U tests for non-parametric data ($p<0.05$).
RESULTS: Of 218 survivors contacted by the clinic, either through direct referral or from our pediatric hospital's longitudinal survivorship program, 200 completed FC (91.7%). Among survivors who completed FC, the most common diagnoses were breast (n=48, 22.1%) and lymphoma (n=44, 20.3%). Of the 18 who declined FC, the most common diagnoses were lymphoma (n=6, 30%) and leukemia (n=6, 30%).
Among the 200 survivors who completed FC, the median age at consultation was similar among those who pursued FP (n=42) and those who did not (n=158) (28.5 vs 28.5y, p=0.43). Those who declined FP were slightly older at diagnosis (21y vs 16.5, p=0.1). Although breast cancer and lymphoma were the most common diagnoses in the consult group, only 15% of breast cancer survivors pursued FP compared to 23.8% of lymphoma survivors. Breast cancer survivors were older at the time of FC than lymphoma survivors (median 36 vs 30y, $p<0.01$), while parity was similar.
Patient who pursued FP were less likely to have received both chemotherapy and radiation (n=44, 44.9%) than those who did not (n=144, 64.6%, p=0.03). Doxorubicin and cyclophosphamide (Cy) were the most common chemotherapies used in both groups, but the median Cy equivalent dose (CED) was significantly lower in those who pursued FP (1073 mg/m^2) than those who did not (6600 mg/m^2, p=0.03). Among the 42 who were interested in pursuing FP, 35 patients (83.3%) initiated cycles with 11 resulting in cycle cancellation (31.4%) primarily for poor response (n=9, 81.8%).
CONCLUSIONS: Most survivors referred to survivorship clinic completed FC, but only 1 in 5 pursued FP and over 1/3 of planned cycles were canceled. Breast cancer survivors were more likely to attend FC, but less likely to pursue FP, likely reflecting older age at presentation. There was substantial attrition across the fertility care continuum, with risk not reliably prompting action. Higher prior gonadotoxic exposure was associated with lower FP uptake, possibly suggesting poor candidacy and highlighting the need for earlier, pre-chemotherapy referral.
IMPACT STATEMENT: Despite high consultation rates, fertility preservation uptake remains low and poorly aligned with treatment-related risk. These findings highlight a critical opportunity to improve risk stratification, patient counseling, and care pathways to ensure that survivors at greatest risk of infertility are appropriately supported in timely fertility preservation decisions.

P-299 11:45 AM Tuesday, October 27, 2026

LATE REFERRAL, MISSED OPPORTUNITY: TIMING OF SURVIVORSHIP CONSULTATION INFLUENCES FERTILITY PRESERVATION IN CANCER SURVIVORS.
Preeta A Kamat, BA[1], Alexandra M Herweck, MD, MPH[2], Sarah C Cromack, MD[3], Sara H Parikh, B.A.[1], Jessica Almgren-Bell, BA[2], Jennifer Elvikis, MSN, RN[4], Kristin N Smith, B.S.[1] and Kara N. Goldman, M.D.[1], [1]Northwestern University Feinberg School of Medicine, Chicago, IL, [2]Northwestern University Feinberg School of Medicine, Chicago, [3]Emory University, Department of Gynecology & Obstetrics, Division of Reproductive Endocrinology and Infertility, Emory Reproductive Center, Atlanta, GA, [4]Northwestern University, Chicago, IL

OBJECTIVE: To evaluate how time from cancer diagnosis to initial oncofertility survivorship consultation influences fertility preservation (FP) utilization in cancer survivors.
MATERIALS AND METHODS: A retrospective chart review was performed for all patients with ovaries who attended an academic FP and survivorship clinic from 2012-2024. Demographic information, ovarian reserve measures, and FP outcomes were collected. Patients were grouped by time (in years) from diagnosis to consultation: <1, 1-2, 3-5, 6-10, >10. Shapiro-Wilk test of normality was applied; Mann-Whitney U test was used to analyze non-parametric data ($p<0.05$).
RESULTS: Among 200 cancer survivors who attended consultation, 184 had a documented date of diagnosis. Nearly 1/3rd of patients (n=55, 29.8%) were seen > 10

years after diagnosis, followed by 6-10 years post-diagnosis (n=40, 21.7%). The least represented group were those seen 1-2 years from diagnosis (n=20, 10%).
When compared with patients seen further from diagnosis (≥ 6 years), patients seen sooner were significantly older at diagnosis (median age 31 vs 11, p<0.01) and consultation (33 vs 22, p<0.01). Patients seen further from diagnosis were more likely to have childhood cancers (brain and leukemia), while those seen sooner were more likely to have breast cancer and lymphoma. Cyclophosphamide and doxorubicin were the most common chemotherapies across all groups.
Median AMH was similar in patients seen sooner (0.35 ng/mL) and further (0.53 ng/mL) from diagnosis; median AFC was also similar (7 and 11).
27 patients completed 43 FP cycles, with the majority ≥10 years from diagnosis (51.9%). Only 1 patient in each grouping from <1 and 1-2 years post-diagnosis pursued FP. All cycles from patients seen <10 years from diagnosis used embryo cryopreservation, while 95.2% (n=20/21) in the >10 years group used oocyte cryopreservation, though median ages at retrieval were similar (28 vs 29, p=0.35). Median embryos frozen did not differ between the 3-5 and 6-10 year groups (2.5 embryos, IQR 1.25, 4.7 vs. 3 embryos, IQR 2,4, p=0.67). Median number of mature oocytes frozen in the ≥10-year group was 6 (IQR 3, 9.25). Five patients (35.7%) completed more than one oocyte cryopreservation cycle.
CONCLUSIONS: Most cancer survivors in this cohort presented for fertility consultation ≥10 years after diagnosis, frequently following childhood malignancies. Despite younger age, these patients demonstrated diminished ovarian reserve and suboptimal stimulation response. Fertility preservation utilization was low among those seen closer to diagnosis, despite comparable ovarian reserve, suggesting that timing of consultation—rather than biology alone—may be a key determinant of preservation decisions.
IMPACT STATEMENT: Delayed survivorship consultation is a missed opportunity for fertility preservation in cancer survivors. Timing rather than ovarian reserve appears to drive utilization, pointing to referral patterns as a modifiable barrier. Earlier, systematic integration of oncofertility counseling into cancer care pathways has the potential to meaningfully expand access to fertility preservation and improve long-term reproductive outcomes.

P-300 12:00 PM Tuesday, October 27, 2026

VITRIFICATION VERSUS SLOW FREEZING FOR PREPUBERTAL OVARIAN TISSUE CRYOPRESERVATION: INSIGHTS FROM A PORCINE XENOTRANSPLANTATION MODEL. Yingchun Guo, M.D.[1], Xiaoping Liu, Ph.D[1], Haitao Zeng, Ph.D[1], Cong Fang, Ph.D[2] and Xiaoyan Liang, Ph.D.[2], [1]Reproductive Medicine Research Center, Sixth Affiliated Hospital of Sun Yat-sen University, Guangzhou, China, [2]Reproductive Medicine Research Center, Sixth Affiliated Hospital of Sun Yat-sen University

OBJECTIVE:
Ovarian cryopreservation is crucial for preserving fertility in prepubertal patients requiring gonadotoxic therapies. However, the optimal cryopreservation strategy remains unresolved. This study was conducted to compare vitrification and slow freezing techniques for prepubertal ovarian tissue cryopreservation, focusing on post-thaw viability and post-transplant functional recovery using a porcine xenotransplantation model.
MATERIALS AND METHODS:
Ovarian cortical tissues from prepubertal gilts were cryopreserved via vitrification (V group) or slow freezing (S group), with fresh tissue (F group) as control. Post-thaw apoptosis (TUNEL, caspase-3), ultrastructure (TEM), and follicular integrity were evaluated. Tissues were xenografted into ovariectomized nude mice and harvested at days 9 and 30 post-transplantation. Outcome measures included follicular morphology, apoptosis, neovascularization (CD31, VEGFA immunohistochemistry), and endocrine function (AMH, estradiol, progesterone levels).
RESULTS:
Upon thawing assessment, TUNEL fluorescence staining revealed comparable apoptotic rates between the two cryopreservation protocols. In contrast, ultrastructural analysis by transmission electron microscopy demonstrated inferior stromal cell integrity preservation in the vitrified group relative to the slow-freezing group. At 9 days post-transplantation, no significant differences were observed in apoptosis, angiogenic marker (CD31 and VEGFA), or hormone profiles among the groups. By 30 days post-transplantation, the S group exhibited a significantly lower proportion of morphologically intact follicles (p<0.05), yet demonstrated enhanced angiogenic capacity, as evidenced by increased CD31 staining intensity and expanded VEGFA-positive area (both p < 0.05), compared to the V group. Hormonal profiles remained comparable between the two groups at this later time point.
CONCLUSIONS:
Both vitrification and slow freezing maintain short-term follicular viability post-transplantation. However, slow freezing appears to promote superior neovascularization and morphological preservation of stromal architecture, whereas vitrification better preserves follicular morphology in the longer term. These findings suggest a differential susceptibility of stromal versus follicular compartments to cryoinjury. Future optimization strategies—such as stromal preconditioning or VEGF supplementation—may improve graft outcomes. Translation to clinical protocols for pediatric fertility preservation warrants further investigation.
IMPACT STATEMENT:
This study highlights distinct effects of vitrification and slow freezing on prepubertal ovarian tissue, showing that each method preserves different ovarian compartments after transplantation. These findings support further optimization of cryopreservation strategies to improve graft survival and fertility preservation outcomes in pediatric patients.
SUPPORT: This work was supported by the National Key R&D Program of China [grant number 2022YFC2703002] and National Natural Science Foundation of China [grant number 82401897, 82271651]. Funders had no role in study design, data collection, data analyses, interpretation, or writing of report.

FERTILITY PRESERVATION (6 OF 12)

P-301 11:15 AM Tuesday, October 27, 2026

PREDICTING BLASTOCYST YIELD FROM AGE AND ANTI-MÜLLERIAN HORMONE (AMH): A COUNSELING TOOL FOR CRYOPRESERVATION PATIENTS. Sanjana P Kulkarni, B.S., M.D.[1], Lucy Ward, MS[1], Mark Dhruba Sikder, MS[2], Gayathree Murugappan, M.D.[3], Nam D Tran, MD, PhD[4] and Molly S Kornfield, MD[1], [1]Oregon Health & Science University, Portland, OR, [2]Data Engineer, San Diego, CA, [3]Spring Fertility, San Francisco, CA, [4]Spring Fertility, CA

OBJECTIVE: To develop a model using age and AMH to predict the number of blastocysts obtained in first-cycle embryo cryopreservation.
MATERIALS AND METHODS: This retrospective cohort study included patients undergoing embryo cryopreservation across 3 sites of a multicenter private practice from March 2016 to January 2026. Only first cycles were analyzed. We excluded those who never initiated treatment, used donor oocytes, or had internal data inconsistencies. Age and AMH at cycle start were evaluated as predictors of blastocyst yield. A negative binomial regression model was fit to estimate mean number of blastocysts across combinations of age and AMH. Predicted means with 80% prediction intervals were generated and stratified by clinically relevant age and AMH categories.
RESULTS: A total of 1,821 cycles were included. Median age was 34 (IQR 30–37), and median AMH was 2.1 ng/mL (IQR 1.3–4.3). Median blastocysts obtained was 4 (IQR 1-7). Both age and AMH were strongly associated with blastocyst yield. Increasing AMH showed a stepwise increase in predicted blastocyst yields across all ages, while advancing age was linked to lower expected yield at every AMH level. Those ≥42 years had consistently low blastocyst yields with only modest increases at higher AMH, whereas younger patients had greater variation in blastocyst number across AMH levels.
The table presents predicted mean blastocyst number with 80% prediction intervals stratified by age and AMH. For example, among individuals aged 35–37 years with AMH ≥10 ng/mL, predicted mean blastocyst yield was 10, with 80% expected to yield between 1 and 19 blastocysts.
CONCLUSIONS: Age and AMH both influence blastocyst yield, with wide variability within each age/AMH group. AMH had less impact in the highest age groups.
IMPACT STATEMENT: Integrating age and AMH into prediction of blastocyst yield provides a practical framework to counsel patients undergoing embryo cryopreservation to guide expectations, cycle planning, and long-term family-building strategies.
Table: Blastocyst outcomes based on Age and AMH displayed as mean blastocysts obtained (80% prediction interval)

	Age						
AMH	<25	25-29	30-34	35-37	38-40	41-42	42+
10+	18 (4-32)	12 (2-23)	11 (2-20)	10 (1-19)	8 (1-15)	5 (0-9)	1 (0-4)
7-9.9	19 (4-34)	13 (2-24)	12 (2-21)	11 (2-20)	8 (1-16)	5 (0-10)	2 (0-4)
5-6.9	14 (2-27)	10 (1-19)	9 (0-17)	8 (0-16)	6 (0-12)	4 (0-8)	1 (0-3)
4-4.9	13 (3-23)	9 (1-16)	8 (1-15)	7 (1-13)	6 (0-11)	3 (0-7)	1 (0-3)
3-3.9	13 (3-23)	9 (1-16)	8 (1-15)	7 (1-14)	6 (0-11)	3 (0-7)	1 (0-3)
2-2.9	9 (0-18)	6 (0-12)	6 (0-11)	5 (0-10)	4 (0-8)	2 (0-5)	1 (0-2)
1-1.9	7 (0-13)	5 (0-9)	4 (0-8)	4 (0-8)	3 (0-6)	2 (0-4)	1 (0-2)
0.5-0.9	5 (0-10)	3 (0-7)	3 (0-6)	3 (0-6)	2 (0-5)	1 (0-3)	0 (0-1)
<0.4	2 (0-5)	1 (0-3)	1 (0-3)	1 (0-3)	1 (0-2)	0 (0-2)	0 (0-1)

SUPPORT: none
REFERENCES:
none

P-302 11:30 AM Tuesday, October 27, 2026

ASSOCIATION BETWEEN TRIGGER TIMING, THE NUMBER OF MATURE OOCYTES, AND EUPLOID EMBRYOS IN FERTILITY PRESERVATION CYCLES. Victoria Lazarov, MD[1], Rebecca Zhuo, MD[1], Tamar Alkon-Meadows, MD[2], Hajer Naveed, BA[1], Lily Leibner, BA[3], Shawn Kripalani, MD, MS[1], Erynne Jackson, BA, MPH[4], Joseph A. Lee, BA[5], Alan B. Copperman, MD[6] and Erkan Buyuk, MD[2], [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]Reproductive Medicine Associates of New York, New York, NY, [3]New York, NY, [4]US Fertility, New York, NY, [5]RMANY || US Fertility, New York, NY, [6]Reproductive Medicine Associates of New York LLP, New York, NY

OBJECTIVE: Optimal trigger timing during controlled ovarian hyperstimulation (COH) remains physician-dependent. Delaying trigger to increase oocyte yield may increase patient burden and risk for complications, yet whether this influences oocyte maturity is unclear. This study evaluated the effect of delayed trigger timing on the number of mature oocytes and euploid embryos in oocyte (OC) and embryo cryopreservation (EC) cycles, respectively.
MATERIALS AND METHODS: This was a retrospective cohort study at a single academic center and included patients without infertility undergoing OC or EC for fertility preservation between 2016 and 2025. Per institutional protocol, trigger is recommended when ≥2 follicles reach ≥18mm. Cycles triggered at first attainment of ≥2 follicles ≥18mm served as controls, while those delayed by ≥24 hours comprised the delayed trigger (DT) cohort. Primary outcome was number of mature oocytes (MIIs)

retrieved. Secondary outcomes included number of euploid embryos, blastulation, euploidy, and clinical pregnancy. Continuous variables were compared using the Mann-Whitney U test. Generalized estimating equations (GEE) adjusted for maternal age, body mass index (BMI), Anti-Mullerian hormone (AMH), and cycle type (OC vs. EC) were used to evaluate the association between trigger timing and oocyte maturity. Secondary outcomes were assessed among EC cycles using binomial GEE models.
RESULTS: A total of 1,192 cycles from 1,014 patients (827 controls, 365 delayed trigger) were included (Table 1). Mature oocyte count appeared higher in the DT group on unadjusted analysis (β=1.21, p=0.02); however, this difference was no longer significant on multivariable regression (β=0.11, p=0.76). Euploid embryo count was comparable among EC cycles (β=−0.23, p=0.23). There was no association between trigger timing and blastulation (OR 0.97, p=0.72), euploidy (OR 0.98, p=0.70), or clinical pregnancy (OR 1.07, p=0.73).
CONCLUSIONS: Delaying trigger by ≥24 hours after the first appearance of ≥2 follicles reach ≥18mm is not associated with differences in oocyte maturity in patients without infertility undergoing OC or EC.
IMPACT STATEMENT: Triggering at first identification of ≥2 follicles ≥18mm may shorten COH duration without compromising oocyte maturity, with potential to reduce patient burden and improve treatment efficiency.

	OC			**EC**		
Median (IQR)	**Control** N=345	**DT** N=122	***p***	**Control** N=482	**DT** N=243	***p***
Age (y)	36.4 (3.8)	36.1 (3.4)	0.08	35.3 (4.9)	34.8 (4.6)	0.09
BMI (kg/m²)	22.5 (4.9)	22.3 (5.2)	0.61	22.1 (4.6)	22.3 (4.1)	0.36
AMH (ng/mL)	2.1 (2.3)	2.0 (2.0)	0.77	2.0 (2.3)	2.3 (2.1)	0.06
Oocyte Yield	14 (12)	15(11)	0.72	15 (13)	15 (11)	0.34
MII Yield	11 (11)	11 (10)	0.72	10 (10)	12 (8)	0.25
Euploid Embryo Count	—	—	—	2 (3)	2 (4)	0.53

P-303 11:45 AM Tuesday, October 27, 2026

FIBROTIC SPERMATOGENIC MICROENVIRONMENT-INDUCED METABOLIC REPROGRAMMING OF SPERMATOGONIAL STEM CELLS FOLLOWING PREPUBERTAL MOUSE TESTICULAR TISSUE TRANSPLANTATION AND ITS ROLE IN SPERMATOGENESIS. Menghui Ma, Ph.D. student[1] and Guihua Liu, Ph.D.[2], [1]Reproductive Medicine Research Center, Sixth Affiliated Hospital of Sun Yat-Sen University, Guangzhou, China, [2]The Sixth Affiliated Hospital of Sun Yat-sen University, Guangzhou, China

OBJECTIVE: Improved survival of pediatric cancer patients increases the need for fertility preservation in prepubertal boys, for whom testicular tissue cryopreservation is the only option. However, spermatogenic efficiency after transplantation remains limited. Ischemia–hypoxia is a key contributor to graft dysfunction, but downstream molecular events are unclear. This study investigates how ischemia–hypoxia induces fibrosis and metabolic dysregulation after prepubertal testicular tissue transplantation, focusing on macrophage-to-myofibroblast transition (MMT), lactate accumulation, histone lactylation, and SSC metabolic reprogramming.
MATERIALS AND METHODS: Testicular tissues from 5-day-old C57BL/6 pups were transplanted subcutaneously onto castrated nude mice. At 3, 6, and 9 weeks post-transplantation, grafts were analyzed by histology and immunofluorescence. Fibrosis was assessed by Masson's trichrome and Sirius Red. Hypoxia and vascular remodeling were detected by HIF-1α and α-SMA. MMT was identified by co-localization of macrophage markers (F4/80 or CD68) with collagen I. Metabolic changes were assessed by LDHA, PKM, and mitochondrial complex I (NDUFB8). Histone lactylation was examined by pan-Kla staining. Statistical analysis used t-test or ANOVA; P<0.05 was significant.
RESULTS: At 9 weeks, sperm were detected in 30% of grafts (H&E, PAS, acrosin/DDX4). Grafts developed persistent ischemia–hypoxia and progressive fibrosis. HIF-1α-positive vessels appeared at 6 and 9 weeks (P<0.05). All grafts showed collagen deposition versus normal testis; collagen and tubular disruption were greater in sperm-not-found than sperm-found grafts. F4/80 and CD68 were elevated with collagen I+ fibroblasts, suggesting MMT. Grafts showed increased lactate and LDHA (especially in germ cells) but decreased NDUFB8, indicating enhanced glycolysis with impaired oxidative phosphorylation. Germ cells also exhibited increased histone lactylation (pan-Kla) in the graft group.
CONCLUSIONS: Ischemia–hypoxia-induced fibrotic remodeling alters the spermatogenic niche and drives SSC metabolic reprogramming. Lactate accumulation and aberrant histone lactylation may link stromal dysfunction to impaired germ cell development. Targeting fibrosis-associated metabolic dysregulation could improve spermatogenic recovery after transplantation.
IMPACT STATEMENT: This study provides a novel framework linking fibrosis, metabolism, and epigenetic regulation in transplanted prepubertal testicular tissue. It identifies the fibrotic niche as a driver of SSC metabolic dysfunction, expanding understanding beyond ischemic injury alone. These findings may guide targeted interventions to improve fertility preservation for prepubertal boys and advance testicular tissue cryopreservation strategies.
SUPPORT: This work was supported by the National Natural Science Foundation of China (Grant Nos. 82471634, 82171604), the Guangdong Basic and Applied Basic Research Foundation (Grant Nos. 2023B1515020108, 2023A1515140055), the Science and Technology Program of Guangzhou, and the Excellent Talents Training Project of The Sixth Affiliated Hospital of Sun Yat-sen University (Grant No. R20210217202601970).

P-304 12:00 PM Tuesday, October 27, 2026

AUTOLOGOUS IN VITRO FERTILIZATION (IVF) OUTCOMES IN WOMEN AGED 25 AND YOUNGER UNDERGOING FERTILITY PRESERVATION FOR ONCOLOGIC INDICATIONS. Grace Kirkwood, B.S., Farrah Saleh, M.D., Gabriela Beroukhim, M.D., Zev Rosenwaks, M.D. and Glenn L Schattman, M.D., The Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY

OBJECTIVE: To assess cycle outcomes among women aged ≤ 25 years old undergoing fertility preservation for oncologic indications
MATERIALS AND METHODS: This retrospective cohort study included women age ≤ 25 undergoing IVF at an academic center over a 12-year period. Primary outcomes included the number of oocytes retrieved, number of mature oocytes retrieved, oocyte maturity rate, and cycle cancellation rate. Secondary outcomes included percentage returning for embryo transfer, clinical pregnancy and live birth rates. Unadjusted and multivariable-adjusted means were used to assess outcomes by age group (Table 1).
RESULTS: 523 patients underwent IVF for oncologic indications from 2011-2023, 124 of whom were ≤ 25 and underwent 144 retrieval cycles. Among the 124 patients, cancer diagnoses were Hodgkin lymphoma (31.5%), ovarian (18.5%), sarcoma (12.1%), non-Hodgkin lymphoma (12.1%), brain (8.1%), breast (7.3%), and leukemia (6.5%); less common cancers (endometrial, cervical, skin, myeloma, and gastrointestinal) each accounted for 0.8%. The mean age at retrieval was 21.1 ± 3.9. The mean age of menarche was 12.4 ± 1.2 and mean interval from menarche to oocyte retrieval was 8.6 ± 4.0 years. As shown in Table 1, age (IRR 0.976, CI 0.967-0.986) and prior chemotherapy (IRR .618, CI 0.528-0.723) were associated with outcomes of oocyte retrieval. After adjusting for prior chemotherapy and alkylating agent exposure, pairwise comparison showed adjusted oocyte yield was highest in patients aged 16–18, with 9 ± 2 more oocytes than those aged 13–15 (p<0.001), 4 ± 2 more than those aged 19–21 (p=0.01), and 9–10 more than those aged 22–24 and 25 (both p<0.001). Only 1.4% (2/144) of IVF cycles completed at ages 23 and 25 were used for 3 embryo transfers, resulting in 3 live births.
CONCLUSIONS: This cohort of women aged ≤ 25 undergoing IVF for oncologic indications exhibit favorable outcomes. Age and prior chemotherapy exposure were associated with number of oocytes retrieved. Peak yield was observed at age 16–18 with lower oocyte yield observed in other age cohorts. Oocyte utilization rates were low, however, subsequent embryo transfer outcomes were reassuring.
IMPACT STATEMENT: Fertility preservation outcomes appear favorable in adolescent patients undergoing IVF for oncologic indications.
Table 1

Age	# of IVF cycles	Oocytes retrieved		Mature oocytes		Maturity rate	
		Unadjusted*	Adjusted+	Unadjusted*	Adjusted+	Unadjusted*	Adjusted+
13-15	21	15.9 ± 9.2	18.3 ± 1.0	11.2 ± 7.9	13.2 ± 0.9	68.6 ± 23.0%	69.7 ± 5.2%
16-18	15	26.8 ± 18.6	27.0 ± 1.3	20.0 ± 14.9	20.2 ± 1.2	70.0 ± 23.0%	70.1 ± 5.9%
19-21	27	23.2 ± 15.7	22.8 ± 0.9	15.9 ± 11.4	15.5 ± 0.8	67.1 ± 21.1%	66.6 ± 4.4%
22-24	47	18.1 ± 12.6	17.3 ± 0.6	12.8 ± 9.6	12.2 ± 0.5	69.4 ± 19.5%	69.2 ± 3.4%
25	34	18.2 ± 13.0	18.1 ± 0.7	13.3 ± 11.1	13.2 ± 0.6	73.6 ± 27.5%	73.5 ± 3.9%

*Unadjusted mean ± Standard deviation
+Adjusted mean ± Standard error

FERTILITY PRESERVATION (7 OF 12)

P-305 11:15 AM Tuesday, October 27, 2026

ARE FROZEN OOCYTES FROM PLANNED OOCYTE CRYOPRESERVATION (OC) EQUIVALENT TO FRESH OOCYTES FROM EMBRYO BANKING (EB)? A MATCHED ANALYSIS OF OUTCOMES IN FERTILITY PRESERVATION PATIENTS. Keizra Mecklai, MD, MBA[1], Claudia G Durbin, M.S.[2], Carlos M Parra, MD[3], Sarah D Cascante, MD[4], Jennifer K Blakemore, MD, MSCI[3], Brooke H Wertz, MD, MPH[3], Caroline McCaffrey, PHD, HCLD[3] and James A Grifo, MD, PHD[3], [1]NYU School of Medicine, New York, NY, [2]NYU Grossman School of Medicine, New York, NY, [3]NYU Langone Fertility Center, New York, NY, [4]NYU Langone Prelude Fertility Center, New York, NY

OBJECTIVE: Most studies comparing frozen vs fresh oocytes derive data from donor or conventional IVF populations,[1] limiting generalizability to fertility preservation patients. This study examines laboratory outcomes between frozen oocytes after planned OC and fresh oocytes from EB cycles.
MATERIALS AND METHODS: This was a retrospective cohort study of planned OC patients who underwent a thaw cycle at our center from 2004-2025. Per patient, the 1st thaw cycle in which all metaphase II oocytes (MIIs) from a single OC cycle were thawed was included and matched up to 1:2 with EB cycles by age at OC and MII yield. Primary outcomes were fertilization, blastulation, and euploidy rates. Secondary outcomes were number of 2-pronuclear zygotes (2PNs), blastocysts, and euploid blastocysts. Statistical analysis consisted of a generalized linear mixed model (GLMM) to account for 1:1 and 1:2 matched sets with $p<0.05$ considered significant.
RESULTS: A total of 391 OC patients who underwent a thaw cycle were matched to 714 EB patients (323 matched 1:2, 68 matched 1:1), totaling 5115 frozen MIIs vs 9696 fresh MIIs. The median age at OC and EB was 36 years (IQR: 34-38) and median MII yield per cycle was 13 (IQR: 8-18). For OC, median MII survival rate per patient was 91.0% (IQR: 73.0-100.0) and pooled survival of all thawed MIIs was 87.5% (4475/5115). In the GLMM model, frozen oocytes had significantly lower odds of fertilization (OR 0.6, 95% CI 0.5-0.6, $p<0.01$), blastulation (OR 0.6, 95% CI 0.6-0.7, $p<0.01$) and euploidy (OR 0.7, 95% CI 0.6-0.8, $p<0.01$) compared to fresh oocytes. The table demonstrates these findings in absolute terms. Per oocyte, frozen OC cycles produced significantly fewer 2PNs (RR 0.9, 95% CI 0.8-0.9, $p<0.01$), blastocysts (RR 0.8, 95% CI 0.8-0.9, $p<0.01$), and euploid blastocysts (RR 0.8, 95% CI 0.8-0.9, $p<0.01$) than fresh EB cycles.

	Frozen oocyte (mean)	Fresh oocyte (mean)	Absolute difference (95% CI)	Approximate yield per 100 MIIs	
				Frozen	Fresh
Fertilization rate	62.4%	72.4%	10.1% (5.8-13.5)	62	72
Blastulation rate	42.9%	54.1%	11.2% (7.6-14.7)	27	39
Euploidy rate	42.0%	52.4%	10.4% (6.4-14.2)	11	21

CONCLUSIONS: In fertility preservation patients, frozen oocytes had lower fertilization and blastulation rates compared to fresh oocytes, consistent with published data.[1] However, frozen oocytes also had a lower euploidy rate, representing a novel finding that warrants further investigation.[2] More studies are needed to determine if this reduction in euploidy translates into clinically meaningful differences in embryo transfer outcomes and live birth rates.
IMPACT STATEMENT: Counseling for planned OC should address the likely need for more oocytes than EB to achieve a comparable number of usable embryos, given possible compounding attrition at each step of embryo development.
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P-306 11:30 AM Tuesday, October 27, 2026

SHORTENED WARMING PRESERVES CELLULAR RESILIENCE AND ACCELERATES POST-WARMING DEVELOPMENT IN HUMAN BLASTOCYSTS: A PROPENSITY SCORE–MATCHED STUDY. Jae Kyun Park, Ph.D[1], Jieun Won, M.S.[2], Yunmi Jeon, M.S.[1], Ji Young Hwang, MD.[1], Kim Ji Won, MD. Ph.D[1], Eun Mi Chang, MD. Ph.D[1] and Woosik Lee, MD. Ph.D[1], [1]Seoul Fertility Clinic, Seoul, Korea, Republic of (South), [2]Seoul Fertility Clinic, Seoul, South Korea

OBJECTIVE:
While survival after vitrification-warming is widely used as a primary outcome, it does not fully capture the biological competence of human blastocysts. Emerging evidence suggests that dynamic post-warming behaviors-such as blastocoel re-expansion and timely initiation of hatching-better reflect cellular recovery and developmental potential. warming protocols remain largely standardized, with limited investigation into whether procedural modifications can influence these functional recovery dynamics. In particular, the impact of simplifying or shortening warming steps on osmotic re-equilibration and embryonic resilience has not been well characterized.
To determine whether a shortened warming protocol (SWP) enhances biologically meaningful recovery of vitrified human blastocysts compared with a conventional multi-step warming protocol (MWP), beyond conventional survival metrics.
MATERIALS AND METHODS:
Retrospective cohort study with propensity score matching.
A total of 546 single vitrified-warmed blastocyst transfer cycles were analyzed, including 271 SWP and 275 MWP cycles matched by propensity score analysis. Post-warming developmental kinetics were continuously monitored using time-lapse imaging, assessing time to start of re-expansion (tSRE), completion of re-expansion (tCRE), and hatching start point (tHSP). Morphological recovery was evaluated based on changes in blastocyst quality score, including inner cell mass (ICM) and trophectoderm (TE) grading. Clinical outcomes included pregnancy and ongoing pregnancy rates.
RESULTS:
Blastocysts in the SWP group demonstrated significantly accelerated recovery dynamics, with shorter tSRE (0.148 vs. 0.179 h, P=0.009), tCRE (2.16 vs. 2.91 h, P<0.001), and tHSP (3.08 vs. 5.24 h, P<0.001). SWP was associated with a higher proportion of improved post-warming morphology and increased prevalence of grade A ICM and TE (P<0.05). The distribution of hatching stages did not differ significantly between groups. Clinical pregnancy and ongoing pregnancy rates were comparable between SWP and MWP.
CONCLUSIONS:
A shortened warming protocol promotes faster and biologically stable post-warming recovery of human blastocysts, as evidenced by improved developmental kinetics and morphological outcomes, without compromising clinical results. These findings suggest that SWP enhances functional embryonic competence beyond survival alone and represents a practical, workflow-efficient alternative to conventional warming strategies.
IMPACT STATEMENT:
Shortened warming improves functional post-warming recovery kinetics of human blastocysts without compromising clinical outcomes, supporting protocol optimization as a practical and modifiable strategy to enhance embryonic competence beyond survival alone.
SUPPORT: no

P-307 11:45 AM Tuesday, October 27, 2026

RECENT ORAL CONTRACEPTIVE USE DOES NOT IMPACT OOCYTE CRYOPRESERVATION CYCLE OUTCOMES. Katherine E Mitchell, MD[1], Katie M LeCroy, MD[1], Laura P Smith, M.D.[2], Christopher D Williams, M.D.[2], Scott H. Purcell, PH.D.[2] and Linnea R Goodman, MD[2], [1]University of Virginia, Charlottesville, VA, [2]VA Fertility and IVF, Charlottesville, VA

OBJECTIVE: To evaluate the impact of recent oral contraceptive (OCP) use on anti-mullerian hormone (AMH) levels and outcomes of egg retrievals for planned egg banking.
MATERIALS AND METHODS: This was a retrospective cohort trial performed at an academic-affiliated private practice involving patients 18-42 years old who underwent oocyte cryopreservation cycles with egg retrieval between January 2021 – December 2025. Cycle outcomes and AMH levels at time of initial evaluation were compared across those with oral contraceptive use ≤3 and ≤6 months prior to initial evaluation, and those without recent or any OCP use over their lifetime. The primary outcomes were the difference in AMH levels and oocytes retrieved. Secondary outcomes included the difference in total dose of follicle stimulating hormone (FSH) utilized to achieve optimal ovarian stimulation, average E2 value on day of trigger, and egg maturation rate. Continuous variables were compared using Student's t-tests or one-way ANOVA as appropriate, categorical variables using chi-square testing, and multivariable linear regression was performed to assess the association between OCP use and oocyte yield while adjusting for age and AMH, with statistical significance defined as $p < 0.05$.
RESULTS: A total of 263 egg retrieval were performed in 133 unique patients, the average AMH value was 2.3 +/- 0.2 ng/ml. The average AMH among patients with OCP use within the previous 3 (n=26) and 6 (n=49) months was 2.1 +/- 0.5 ng/ml and 2.1 +/- 0.4 ng/ml, respectively. For those without recent OCP use (>6 months), the average AMH was 2.4 +/- 0.3 ng/ml, with no statistically significant difference in AMH levels between those with recent OCP use (≤3 months, ≤6 months) and those without ($p = 0.49$

and 0.29). The average number of eggs retrieved across all cycles was 12.4 +/- 8.3 eggs and there was no significant difference between those with and without recent OCP use. There was no significant difference in oocyte maturation rate (MII) between groups (≤3 months 0.80 ± 0.06 vs. ≤6 months 0.80 ± 0.04 vs. no OCP use 0.74 ± 0.03 (p=0.10)). There was no significant difference in the total amount of FSH necessary for optimal egg retrieval between cohorts, (≤3 months 4520.2 ± 303.5 IU vs. ≤6 months 4301.0 ± 218.51 IU vs. no OCP use 4351.8 ± 145.3 IU). Overall E2 values did not differ significantly across cohorts ranging from 2700.6 +/- 506 pg/mL (≤3 months) to a max of 2832.7 +/- 435 pg/mL (≤6 months).
In a multivariate linear regression model adjusting for age and AMH, duration of prior OCP use was not associated with the number of oocytes retrieved (β = 0.04, p = 0.88).
CONCLUSIONS: Patients with OCP use within 3-6 months of progestin-suppressed ovarian stimulation for planned egg banking have comparative AMH levels and similar outcomes in eggs retrieved compared to those without recent OCP use.
IMPACT STATEMENT: For patients with recent OCP use prior to egg banking, outcomes are comparable to those without recent OCP use and thus prolonged cessation prior to initiating stimulation is not required for comparable rates of success.
SUPPORT: None

P-308 12:00 PM Tuesday, October 27, 2026

TWENTY YEARS OF PLANNED OOCYTE CRYOPRESERVATION (OC): OOCYTE THAW (OT) OUTCOMES FROM A SINGLE-CENTER COHORT OF OVER 1,100 PATIENTS. Carlos M Parra, MD[1], Jennifer K Blakemore, MD, MSCI[1], Claudia G Durbin, M.S.[2], Keizra Mecklai, MD, MBA[2], Brooke H Wertz, MD, MPH[1], Alan S Berkeley, MD[1], Caroline McCaffrey, PHD, HCLD[1], James A Grifo, MD, PHD[1] and Sarah D Cascante, MD[1], [1]NYU Langone Fertility Center, New York, NY, [2]NYU Grossman School of Medicine, New York, NY

OBJECTIVE: OC outcome data remain limited.[1] This study examines OT outcomes from a large planned OC cohort.
MATERIALS AND METHODS: This was a retrospective cohort study of planned OC pts who returned for OT at our center from 2004-2025. Primary outcome was cumulative live birth rate (CLBR) of pts with a live birth (LB) / ongoing pregnancy (OP) or who used all OC tissue (oocytes + usable blasts). Statistics included Chi-squared tests ($p<0.05$ was significant).
RESULTS: 1173 pts underwent 1701 OCs, 1277 OTs, and 944 embryo transfers (ETs). Table shows outcomes by MII age. For OC, median cycles per pt was 1 [IQR: 1-2], age at OC 37y [35-39], AMH 1.9 [1.0-3.5], and metaphase II oocytes (MII) frozen 14 [9-21]. 87% (n=1476) of OC cycles used vitrification only. For OTs, median cycles per pt was 1 [1-1], age at OT 42y [40-44], OC to OT interval 4.6 years [3.1-6.5], MIIs thawed 14 [8-20], MII survived 11 [6-17], 2-pronuclear zygotes 8 [4-13] and usable blasts 3 [1-5]. Most opted to PGT all blasts (81%, n=1031). Median euploid yield was 1 [0-3]. Among the 675 (58%) of pts who had ≥1 ET, median ET cycles were 1 [1-2] at an age of 43y [41-45]. 23% (n=217) of ETs were fresh vs 77% (n=727) frozen. ETs consisted of 361 untested, 645 euploid, 77 mosaic/segmental, 10 whole-chromosome aneuploid and 6 embryos with inconclusive PGT. After ET, 63% (422/675) of pts achieved ≥1 LB+OP; live birth rate per ET (LBR) was 53% (337/639) for euploid ETs and 31% (69/223) for untested ETs. In total, 496 babies have resulted from OC. For all pts, CLBR was 48% (422/875). 39% (453/1173) of pts used all OC tissue without achieving LB/OP and 25% (298/1173) have inventory that remains or was donated/transported out.

MII age (years)	% MII survival*	% Fertilization*	% Blastulation*	% Euploidy if PGT*	PGT all blasts: MII per euploid*	% Euploid ETs*	LBR per ET*	CLBR*	CLBR if ≥20 MIIs*^
All pts	81.8% (14819/18114)	72.4% (10736/14819)	42.8% (4591/10736)	40.6% (1690/4163)	9.7 (15959/1653)	67.5% (637/944)	50.3% (475/944)	48.2% (422/875)	76.5% (140/183)
<35	83.3% (3711/4453)	73.4% (2725/3711)	45.4% (1236/2725)	54.5% (646/1185)	6.7 (4265/637)	86.9% (146/168)	58.9% (99/168)	63.3% (88/139)	94.6% (35/37)
35-37	81.0% (5334/6589)	71.5% (3814/5334)	44.6% (1702/3814)	40.6% (640/1576)	9.4 (5809/619)	72.2% (273/378)	51.3% (194/378)	56.9% (182/320)	83.8% (62/74)
38-40	82.2% (4532/5515)	73.4% (3325/4532)	40.2% (1336/3325)	32.3% (376/1165)	12.5 (4627/369)	60.2% (198/329)	47.7% (157/329)	41.3% (131/317)	62.5% (35/56)
≥41	79.8% (1242/1557)	70.2% (872/1242)	36.4% (317/872)	11.8% (28/237)	44.9 (1258/28)	29.0% (20/69)	36.2% (25/69)	21.2% (21/99)	50.0% (7/14)

*p<0.05 and ^Excludes pts who thawed MIIs frozen across age groups
CONCLUSIONS: CLBRs from planned OC approach our center's age-matched IVF outcomes.[2]
IMPACT STATEMENT: Pts who undergo OC at <35y have an overall CLBR of >60% and a CLBR >90% when ≥20 MIIs are thawed.
SUPPORT: None to disclose
REFERENCES:
1. Cascante SD, Berkeley AS, Licciardi F, McCaffrey C, Grifo JA. Planned oocyte cryopreservation: the state of the ART. Reprod Biomed Online. 2023 Dec;47(6):103367.
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FERTILITY PRESERVATION (8 OF 12)

P-309 11:15 AM Tuesday, October 27, 2026

PLANNED OOCYTE CRYOPRESERVATION AT ≥40 YEARS: UTILIZATION PATTERNS AND REPRODUCTIVE OUTCOMES AMONG RETURNING PATIENTS. Luiza Perez, MD[1], Samantha Spring, M.D.[1] and Steven D Spandorfer, M.D.[2], [1]Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY, [2]NewYork-Presbyterian Hospital/Weill Cornell Medical Center, New York, NY

OBJECTIVE:
Oocyte cryopreservation at ≥40 years presents unique challenges including diminished ovarian reserve and elevated aneuploidy rates, yet outcomes data remain limited and counseling is often extrapolated from younger cohorts. We sought to describe outcomes among patients who cryopreserved oocytes at ≥40 years and returned for use.
MATERIALS AND METHODS: Retrospective cohort of patients at a single academic center, January 2012–October 2022. Exclusion criteria included cycles for medical indications, failed testicular sperm extraction, no sperm at retrieval, or fresh transfer. Outcomes were analyzed for all frozen oocyte thaw (FOT) and subsequent frozen embryo transfer (FET) cycles. Factors associated with live birth were assessed using Mann-Whitney U and chi-square tests.
RESULTS:
Of 532 patients who underwent oocyte cryopreservation, 65 (12.2%) returned for use; characteristics and live birth rates (LBR) shown in Table 1. Eighty FOT cycles were performed, with a median of 8 (IQR 5–12) oocytes thawed per cycle. Mean survival and fertilization rates were 86.8% (±18.2%) and 61.2% (±25.7%), respectively. Preimplantation genetic testing for aneuploidy was performed in 24 cycles; of 81 embryos, 17 (21.0%) were euploid. Transfer occurred in 57 cycles (71.3%): 21 (36.8%) single-embryo and 36 (63.2%) multiple-embryo, yielding 28 (35.0%) clinical pregnancies and 16 (20.0%) live births. Six patients underwent 8 FET cycles using FOT-derived embryos (median 1 embryo thawed, 100% survival); 5 (62.5%) single-embryo, 3 (37.5%) yielding live births. Overall LBR was 29.2% (19/65), with age at retrieval the only significant predictor.
CONCLUSIONS: While utilization remains low, planned oocyte cryopreservation in the early 40s is a feasible option for women not yet ready to pursue pregnancy, yielding higher LBRs than fresh autologous IVF at the same age at use.
IMPACT STATEMENT:
These findings provide real-world data to support nuanced reproductive counseling for women in their 40s considering oocyte cryopreservation as a path to future fertility.
Table 1: Characteristics and outcomes of planned oocyte cryopreservation at age ≥40 years (N=65 patients)

Characteristic	Value
Age at retrieval, years, median (IQR)	41 (40–42)
Age at thaw, years, median (IQR)	44 (42–45)
BMI, kg/m², mean (±SD)	25.1 (±5.4)
AMH, ng/mL, mean (±SD)	1.3 (±1.0)
Race/Ethnicity, n (%)	
White (non-Hispanic)	36 (55.4)
Asian (non-Hispanic)	16 (24.6)
Other/Declined/Not reported	13 (20.0)
Retrieval cycles per patient, median (IQR)	1 (1–2)
Per retrieval (n=114), median (IQR)	
Cryopreserved oocytes,	6 (3–10)
Storage duration, months	34 (19–49)
Overall live birth rate, n (%)	19 (29.2)
Live birth rate by age at retrieval, n/N (%)	
Age 40	11/27 (40.7)
Age 41–42	7/29 (24.1)
Age >42	1/9 (11.1)

SUPPORT: N/A

P-310 11:30 AM Tuesday, October 27, 2026

RUNNING OUT OF TIME: LINGUISTIC AND SOCIOECONOMIC DISPARITIES IN ONCOFERTILITY CARE. Vaibhavi Patankar, BS[1], Keri A Tomechko, BS[1], Dunay Bach, BA[1], Rebecca A Kolodner, MD[2], Ricardo Enrique Flores Ortega, MPH[1], Jingjing Zou, PhD[1], Blanca E Equihua-Felix, MD, MSc[1], Kelly Michelle Chacon, MD[1], Sally A. D. Romero, PhD, MPH[1] and Irene Su, MD, MSCE[2], [1]University of California San Diego, La Jolla, CA, [2]University of California San Diego, San Diego, CA

OBJECTIVE: Insufficient time to pursue fertility preservation (FP), driven by the perceived urgency to initiate cancer treatment, has been identified as a barrier to oncofertility care in qualitative data. Yet quantitative evidence on its prevalence and for whom this barrier arises remains limited. Given known disparities in access to time-sensitive care, we hypothesized that social determinants of health (SDOH) are associated with insufficient time for oncofertility care and evaluated this relationship, including the modifying effect of cancer stage.
MATERIALS AND METHODS: We conducted a retrospective cohort study of females aged ≤42 years and males aged ≤49 years newly diagnosed with cancer or cancer relapse (English- or Spanish-speaking) between January 2022 and June 2025 at an NCI-designated Comprehensive Cancer Center. SDOH exposures were obtained through

electronic medical record (EMR) abstraction. The primary outcome, insufficient time for oncofertility care, was defined as the inability to receive fertility specialist consultation and/or FP services due to limited time before treatment, and was ascertained through EMR abstraction and patient-reported surveys. Subset analysis was conducted in 248 participants who completed a survey on their oncofertility experience. Associations between SDOH and insufficient time were evaluated using multivariable logistic regression models adjusting for age, sex, language, employment, cancer type, and treatment. Effect modification by cancer stage was assessed using interaction terms within the model.
RESULTS: Among 758 participants (median age 37 [IQR 32-42]; 57% Female; 47% White; 40% Hispanic), 8% experienced insufficient time for oncofertility care. In analysis, adjusting for covariates and confounders, younger patients (aOR 2.6, 95% CI 1.4-5.5) and non-English speakers (aOR 2.5, 95% CI 1.2-4.8) had significantly higher odds of insufficient time compared to older, English-speaking patients. Cancer stage significantly modified the association between language and insufficient time (p-values of interaction < 0.01). In the subset analysis of participants who completed the survey, 17% reported insufficient time; patients who were unemployed (aOR 2.1, 95% CI 1.1-4.1) had significantly higher odds of insufficient time, while other SDOH were not significantly associated with the outcome.
CONCLUSIONS: Cancer patients are more likely to report insufficient time for oncofertility care than is documented by their clinicians, supporting the need to address patient concerns related to FP timing. Younger age, Spanish as primary language, and unemployment were associated with higher odds of insufficient time, with language-related disparities persisting even among patients with early-stage disease.
IMPACT STATEMENT: Our findings highlight how social, structural, and clinical factors intersect to hinder cancer patients' timely access to oncofertility care and underscore the need for targeted strategies, such as strengthened coordination between medical teams, improved interpreter access, and linguistically and culturally appropriate resources, to provide equitable oncofertility care opportunities for all patients.

P-311 11:45 AM Tuesday, October 27, 2026

DIFFERENTIAL IMPACT OF ORAL VERSUS INTRAVENOUS ALKYLATING CHEMOTHERAPY ON OVARIAN RESERVE AND FERTILITY OUTCOMES.
Nivedita Potapragada, MD, MBA[1], Jeremy Applebaum, MD[2], Elizabeth S Ginsburg, MD[2], Margaret A Rush, MD[3], Clarisa R Gracia, MD, MSCE[4], Glenn L Schattman, M.D.[5], Simran Chand, MD[6], Paula Brady, M.D.[6], Sarah C Cromack, MD[7] and Kara N. Goldman, M.D.[8], [1]Northwestern University Feinberg School of Medicine, Department of Obstetrics and Gynecology, Division of Reproductive Endocrinology and Infertility, Chicago, IL, [2]Brigham and Women's Hospital, Center for Infertility & Reproductive Surgery, [3]University of Pennsylvania, Philadelphia, PA, [4]University of Pennsylvania, Division of Reproductive Endocrinology and Infertility, Philadelphia, PA, [5]The Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY, [6]Columbia University Fertility Center, New York, NY, [7]Emory University School of Medicine, Department of Gynecology and Obstetrics, Atlanta, GA, [8]Northwestern University Feinberg School of Medicine, Chicago, IL

OBJECTIVE: Limited information is known about gonadotoxic impacts of oral (PO) alkylating chemotherapy, often used in neuro-oncology, relative to intravenous (IV) alkylating chemotherapy used in other malignancies. We evaluated the gonadotoxic impact of oral alkylating agents compared to IV alkylating agents.
MATERIALS AND METHODS: A multi-institute retrospective cohort study was conducted of neuro-oncology patients who sought fertility preservation (FP) prior to treatment with oral alkylator temozolomide, compared to an age-matched group of controls with breast cancer who received IV alkylators. Data were analyzed using Wilcoxon rank-sum and signed-rank tests (Stata).
RESULTS: 67 patients who received oral alkylators were compared to 162 patients who received IV alkylators. Mean age at diagnosis was comparable at 26.9 vs 28.1 years (p=0.63). Patients receiving oral alkylators had a larger interval range from diagnosis to FP consultation than those receiving IV alkylators (0.5 ± 5.2 vs 0 ± 2.6 years). A similar number of patients in both groups completed at least one FP cycle (oocyte or embryo cryopreservation) prior to cancer treatment (94.5% vs 96.7%, p=0.45).
Pre-treatment ovarian reserve was similar between oral and IV alkylator groups: anti-Mullerian hormone (AMH) of 3.7 ± 2.6 vs 4.4 ± 3.7 ng/mL, antral follicle count (AFC) of 23.0 ± 12.7 vs 21.5 ± 12.2, and follicle-stimulating hormone (FSH) of 6.0 ± 3.7 vs 5.9 ± 3.8 IU/L (all p>0.05). Nine neuro-oncology (13.4%) and 41 breast cancer (25.3%) patients returned for ovarian reserve testing at similar intervals post-treatment (48 vs 44 months, p=0.87). A significant decrease in AMH was seen in patients receiving oral alkylators at 1.4 ± 1.6 ng/mL (-62.2% from baseline, p=0.04) but not in patients receiving IV alkylators at 2.9 ± 2.3 ng/mL (-34.1%, p=0.17). Antral follicle count was similarly affected at 11.5 ± 6.0 (-50.0%, p=0.62) vs 14.4 ± 13.0 (-33.0%, p=0.87), as was FSH at 12.4 ± 7.8 IU/L (+106.7%, p=0.86) vs 9.4 ± 15.2 IU/L (+59.3%, p=0.92).
Ten patients who received oral alkylators achieved unassisted conception (14.9%), resulting in nine live births (90.0%) and one biochemical pregnancy (10.0%). 19 patients who received IV alkylators achieved unassisted conception (11.7%), resulting in 17 live births or ongoing pregnancies at time of data collection (89.4%) and two ectopic pregnancies (10.5%).
CONCLUSIONS: The impact of oral alkylators on ovarian reserve and unassisted pregnancy outcomes is highlighted in this analysis, notable for a significant decrease in AMH levels from baseline. Longer intervals from diagnosis to fertility counseling for neuro-oncology patients may reflect a combination of the complexity of disease, limited knowledge on impact of oral alkylators, and need for systematic integration of FP counseling.
IMPACT STATEMENT: Prospective research is required to better understand the gonadotoxic effects of oral alkylating agents given widespread clinical use. Since post-treatment infertility care in the setting of diminished ovarian reserve has a lower likelihood of success, our findings highlight the need for equitable access to FP counseling and treatment based on expected gonadotoxicity of cancer therapy.
SUPPORT: We have no financial disclosures.

P-312 12:00 PM Tuesday, October 27, 2026

FERTILITY PRESERVATION IN NEURO-ONCOLOGY PATIENTS COMPARED TO A BREAST CANCER BENCHMARK COHORT: A MULTI-INSTITUTIONAL COHORT STUDY.
Nivedita Potapragada, MD, MBA[1], Jeremy Applebaum, MD[2], Elizabeth S Ginsburg, MD[2], Margaret A Rush, MD[3], Clarisa R Gracia, MD, MSCE[3], Glenn L Schattman, M.D.[4], Simran Chand, MD[5], Paula Brady, M.D.[5], Sarah C Cromack, MD[6] and Kara N. Goldman, M.D.[7], [1]Northwestern University Feinberg School of Medicine, Department of Obstetrics and Gynecology, Division of Reproductive Endocrinology and Infertility, Chicago, IL, [2]Brigham and Women's Hospital, Center for Infertility & Reproductive Surgery, [3]University of Pennsylvania, Philadelphia, PA, [4]Weill Cornell Medicine, New York, NY, [5]Columbia University Fertility Center, New York, NY, [6]Emory University School of Medicine, Department of Gynecology and Obstetrics, Atlanta, GA, [7]Northwestern University Feinberg School of Medicine, Chicago, IL

OBJECTIVE: To compare outcomes in neuro-oncology patients with brain tumors (BT) to a cohort of control patients with breast cancer (BC) seeking fertility preservation (FP) prior to gonadotoxic treatment.
MATERIALS AND METHODS: This retrospective cohort study compares all neuro-oncology patients seeking FP to a 2:1 cohort of the youngest BC patients across five institutions (2012-2025). Data were analyzed descriptively and with Wilcoxon rank-sum and signed-rank tests (Stata).
RESULTS: This study included 136 BT patients and 272 BC controls. BT patients were non-significantly younger at the time of cancer diagnosis (23.8 vs 29.3 years, p=0.26) and FP consultation (26.6 vs 29.6 years, p=0.63). Both cohorts were predominantly White (83.8% vs 66.5%), non-Hispanic (86.0% vs 84.2%), and insured through an employer (73.5% vs 86.0%). Notably, 82 BT (60.3%) and 121 BC (44.5%) patients were in states with mandated FP insurance coverage.
BT diagnoses were heterogeneous, most commonly astrocytoma (51.5%) and oligodendroglioma (15.4%). BC diagnoses were predominantly invasive ductal (89.3%) with ER+ (39.0%), PR+ (34.2%), and HER2+ (19.9%) receptor profiles or less commonly triple negative (9.6%). BT patients more frequently had high-grade tumors (41.9% vs 27.6%) staged in-situ (83.2%) while BC patients had more advanced staging at diagnosis, with Stage II (22.4%), Stage III (7.0%), and Stage IV (2.2%).
BT patients completed less FP cycles per person than BC patients (0.82 vs 1.27) prior to chemotherapy or radiation. Both cohorts had similar mean stimulation durations (10.6 vs 11.5 days, p=0.62) and total gonadotropin dosages (3074.3 vs 3606.7 IU, p=0.38). BT patients retrieved an average of 19.3 total oocytes and 14.4 mature oocytes per cycle, compared to 18.9 and 13.6 in BC patients (p=0.62, 0.38). BT and BC patients made similar cryopreservation decisions, electing oocytes (67.0% vs 68.2%), embryos (25.7% vs 26.1%), or both (7.3% vs 5.6%). BT patients cryopreserved 14.4 mature oocytes and 7.1 embryos compared to 14.7 and 6.6 in BC patients (p=0.45, 0.48). Eight BT patients elected pre-implantation genetic testing (PGT) all for aneuploidy (PGT-A, 22.2% of those cryopreserving embryos). 28 BC patients elected PGT (26.2%) with 25 PGT-A (23.4%) and 9 for monogenic disorders (PGT-M) (8.4%). Cycle cancellation (1.8% vs 2.6%, p=0.27) and complication rates (5.4% vs 6.1%, p=0.66) were comparable.
CONCLUSIONS: Neuro-oncology patients undergoing FP prior to treatment achieved stimulation and cryopreservation outcomes comparable to a benchmark breast cancer cohort, despite having a more heterogeneous tumor profile and pursuing less FP cycles per patient prior to treatment.
IMPACT STATEMENT: This is the first multi-institutional study establishing that neuro-oncology patients can achieve ovarian stimulation results equivalent to young individuals with breast cancer, the most common benchmark cohort pursuing fertility preservation. Given the predominance of employer-based insurance and state-mandated fertility preservation coverage available to patients in this study, these findings highlight the need to standardize both FP counseling and insurance coverage for neuro-oncology patients.
SUPPORT: We have no financial disclosures.

FERTILITY PRESERVATION (9 OF 12)

P-313 11:15 AM Tuesday, October 27, 2026

EFFICACY, SAFETY, AND ACCEPTABILITY OF PREIMPLANTATION GENETIC TESTING IN BRCA1/2 PATHOGENIC VARIANT CARRIERS: A COMPREHENSIVE SYSTEMATIC REVIEW.
Lucia Santistevan, M.D[1], Alice Emole, B.S[2], Alianis Hernandez Castillo, M.D[3], Khawaja Abdul Rehman, MBBS, BSc[4], Joel Vitrian, M.D[5], Aimee D. Eyvazzadeh, M.D., M.P.H.[6] and Irman Forghani, M.D[3], [1]Bronxcare health system, Bronx, NY, [2]California Northstate University, Elk Grove, CA, [3]Mount Sinai Medical Center, Miami, FL, [4]CMH Lahore Medical College and Institute of Dentistry, Lahore, Punjab, Pakistan, [5]BronxCare Health System, Bronx, NY, [6]Dr. Aimee Eyvazzadeh, Inc, San Ramon, CA

OBJECTIVE: BRCA1/2 pathogenic variant carriers have a 50% transmission risk to offspring. While in vitro fertilization (IVF) combined with preimplantation genetic testing for monogenic disorders (PGT-M) prevents transmission, current literature presents conflicting reports regarding its impact on ovarian reserve, IVF yields and uptake. This study aims to evaluate the clinical outcomes, safety, and acceptability of IVF/PGT-M among BRCA1/2 carriers.

MATERIALS AND METHODS: Following PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, a literature search was conducted on MEDLINE, Embase, Scopus, and Cochrane CENTRAL until April 2026. Original studies involving BRCA1/2 carriers fulfilling pre-defined selection criteria were considered eligible. Newcastle-Ottawa Scale was used to assess the risk of bias. Findings were synthesized using descriptive statistics, odds ratio (OR) and hazard ratio (HR).
RESULTS: A total of 44 studies were included. Clinical cohorts demonstrated that despite conflicting reports regarding diminished ovarian reserve specific to BRCA1 carriers, overall mature oocyte yields, fertilization rates, and blastulation remained comparable to non-BRCA controls. PGT-M effectively prevented mutation transmission, with studies reporting that 28.1% to 40.8% of biopsied embryos tested negative for the mutation and were suitable for transfer. The clinical success of PGT-M was robust, yielding live birth rates ranging from 59% to 83% per embryo transfer. Acceptability of PGT-M was consistently high (57.4% to 89.7%) among carriers; however, actual clinical uptake remained disproportionately low (8.0% to 25.7%). Furthermore, only 28% to 44% of carriers receive formal reproductive counseling. A history of clinical infertility strongly predicted PGT-M utilization (OR: 19.5). Oncologically, ovarian stimulation for IVF/PGT-M did not increase the risk of primary breast cancer (HR: 0.79) or disease recurrence in breast cancer survivors.
CONCLUSIONS: IVF with PGT-M is an oncologically safe and clinically successful reproductive strategy in BRCA1/2 carriers for fertility preservation. However, significant discrepancies exist between its acceptability and utilization, which is driven by procedural burden, psychological distress, and inconsistent provider referrals. Integrating reproductive counseling into routine care is essential to bridge this gap, helping patients in decision-making to utilize PGT-M effectively.
IMPACT STATEMENT: This systematic review emphasizes the critical need for standardized, multidisciplinary genetic counseling to bridge the gap between patient awareness and clinical uptake, empowering BRCA carriers to safely utilize PGT-M for family planning.

P-314 11:30 AM Tuesday, October 27, 2026

CLOMIPHENE CITRATE DOSAGE FOR MALE INFERTILITY: OPTIMIZING TESTOSTERONE AND SEMEN ANALYSIS PARAMETERS. Daniel A Reich, MD[1], Aaditya Kumar, BS[1], Zachary Werner, MD[2], Jay I Sandlow, M.D.[1] and Pete N Dietrich, MD[1], [1]Medical College of Wisconsin, Milwaukee, WI, [2]West Virginia University, Morgantown, WV

OBJECTIVE:
Clomiphene citrate is one of the most prescribed medications amongst male infertility practices with no clearly established protocol for dosage regimen or frequency. The medication has been shown to have dose dependent tachyphylaxis, with most prior studies using higher dosages (25-50mg daily). Our aim was to evaluate the effect of 25mg clomiphene citrate dosed three times per week on total serum testosterone (T) and semen analysis parameters.
MATERIALS AND METHODS:
Retrospective chart review was conducted on men presenting to a single academic institution with a chief complaint of infertility over a ten-year (2016 – 2026) study period. Included were patients who were prescribed clomiphene citrate 25mg three times weekly for male-factor infertility by one of two fellowship trained reproductive urologists. Exclusion criteria included polytherapy and treatment for testosterone replacement therapy. All patients had baseline total serum testosterone levels and semen analysis as well as repeat levels at least one month after treatment initiation. A paired samples t-test was conducted to evaluate for statistical significance.
RESULTS:
A total of 261 patients met the inclusion criteria. 116 patients were included in the analysis, with the majority of excluded patients being for missing follow up laboratory data. Average patient age was 33.6 ± 5.2 years and most patients were being evaluated for primary infertility (n=90). Baseline labs included the following averages: total testosterone of 285.9 ng/dL, estrodiol of 21.7 pg/mL, and follicle stimulating hormone of 6.0 mIU/mL. Following treatment with the above regimen, total T increased by an average of 246.2 (two-sided paired t-test p<0.001) along with total sperm count and total motile sperm [millions] rising 9.0 (p=0.022) and 6.6 (p=0.004), respectively.
CONCLUSIONS:
When prescribed 25mg three times weekly, clomiphene citrate results in statistically significant increases in total serum testosterone and sperm counts on semen analysis.
IMPACT STATEMENT:
With better understanding of optimal dosage for clomiphene citrate, we can ensure men treated for infertility are appropriately improving their serum testosterone counts, semen analysis parameters, and minimizing their drug burden.
SUPPORT: N/A

P-315 11:45 AM Tuesday, October 27, 2026

PROGESTIN-PROTOCOL OVARIAN STIMULATION IS SIMILAR TO GnRH ANTAGONIST PROTOCOL FOR OVARIAN RESPONSE AND MOLECULAR ENDOCRINE CHARACTERISTICS IN PATIENTS WITH SOLID AND HEMATOLOGICAL MALIGNANCIES. Iklim Doga Savas, MD-PhD Candidate[1], Hesam Ghafouri Kalajahi, M.Sc[2], Can Benlioglu, M.D., Ph.Dc[3], Ipek Keles, Ms[4], Samaneh Pirmoradi, Msc.[4], Sule Yildiz, M.D.[1], Volkan Turan, M.D.[5], Baris Ata, M.D., M.SC.[6], Yigit Cakiroglu, M.D.[7] and Ozgur Oktem Prof, M.D.[8], [1]Koc University School of Medicine, Istanbul, Turkey, [2]Research Center for Translational Medicine, Koc University, Istanbul, Turkey, Istanbul, Turkey, [3]Koc university, Istanbul, Turkey, [4]Koc University, Istanbul, Turkey, [5]Istanbul Health and Technology University, Turkey, [6]Department of Obstetrics and Gynecology, Koç University School of Medicine, İstanbul, Turkey, [7]Koc University Hospital, Istanbul, Turkey, [8]Koc University School of Medicine, Topkapi, Turkey

OBJECTIVE: PPOS is widely used in freeze-all cycles of standard IVF patients as a viable alternative to GnRH antagonist protocols. While clinical studies generally indicate comparable stimulation characteristics and outcomes in standard IVF patients, no integrated dataset has evaluated the applicability and the clinical and molecular endocrine features of these cycles in cancer patients undergoing ovarian stimulation for fertility preservation. We aimed to address this issue by simultaneously analyzing ovarian stimulation characteristics and molecular endocrine features of these cycles in comparison to conventional GnRH antagonist cycles.
MATERIALS AND METHODS: A total of 12 cancer patients with solid (breast cancer (n = 4), colon cancer (n = 1), undifferentiated small round cell tumor (n = 1), dysgerminoma (n = 1), ovarian cancer (n = 1)) and hematological malignancies (non-Hodgkin lymphoma (n = 1), Hodgkin lymphoma (n = 1), acute lymphoblastic leukemia (n = 1), myelodysplastic syndrome (n = 1)) were included. Luteinized mural granulosa cells (GCs) obtained at oocyte retrieval procedure were used for molecular assays. Expression of steroidogenic enzymes and gonadotropin receptors was analyzed by qRT-PCR and immunofluorescence staining/confocal microscopy.
RESULTS: Baseline demographics and IVF cycle characteristics of the PPOS and antagonist cycles were similar for age (32.5 ± 8.6 vs. 28.0 ± 4.2 respectively, p = 0.35), total gonadotropin dose (2838.8 ± 901.4 vs. 2550.0 ± 636.4 IU respectively, p = 0.64), total oocyte number (7.2 ± 4.9 vs 7.5 ± 2.1 respectively, p = 0.90), and mature (MII) oocyte number (5.1 ± 3.7 vs 6.5 ± 2.1 respectively, p = 0.53). E_2 and P_4 production of GCs in culture did not differ between the groups. In line with this, the expression of gonadotropin receptors (FSHR, LHR) and steroidogenic enzymes (StAR, CYP11A1, 3B-HSD, 17B-HSD, CYP19A1) were also similar for both groups. Immunofluorescence staining and confocal microscopy revealed similar signal intensity and staining patterns for the FSH and LH receptors, StAR and 3B-HSD enzymes.

Target Gene	PPOS (mean ΔCt ± SD)	GnRH Antagonist (mean ΔCt ± SD)	p-value
FSHR	12.388 ± 2.308	11.265 ± 2.410	0.429
LHR	7.823 ± 3.525	8.839 ± 3.729	0.584
StAR	2.475 ± 2.779	3.429 ± 2.348	0.536
CYP11A1	5.101 ± 2.435	5.755 ± 2.316	0.567
3B-HSD	6.001 ± 4.302	7.017 ± 4.305	0.644
17B-HSD	6.490 ± 1.464	6.893 ± 1.367	0.633
CYP19A1	5.746 ± 3.768	6.832 ± 3.969	0.637

CONCLUSIONS: PPOS protocol is similar to GnRH antagonist protocol for clinical ovarian response and molecular endocrine characteristics.
IMPACT STATEMENT: PPOS protocol can be considered as a viable and cheaper alternative to the conventional for oocyte/embryo freezing in patients with non-breast solid and hematological malignancies.
SUPPORT: This study was funded by Koc University School of Medicine and the Koc University Research Center for Translational Medicine (KUTTAM).

P-316 12:00 PM Tuesday, October 27, 2026

NATIONWIDE ASSESSMENT OF TRENDS, CHARACTERISTICS, AND OUTCOMES OF PREGNANCY FOR CANCER SURVIVORS. Nikita Rao, M.D.[1], Aoi Yamaguchi, BS[2] and K Matsuo, MD, PhD[1], [1]University of Southern California, Los Angeles, CA, [2]University of Osaka Graduate School of Medicine, Suita-Shi, Japan

OBJECTIVE: Future childbearing is an important reproductive health issue among cancer survivors. The objective of this study was to assess temporal trends, clinico-obstetric characteristics, and maternal outcomes of pregnancy for cancer survivors who had a personal history of malignancy.
MATERIALS AND METHODS: This serial cross-sectional study queried the National Inpatient Sample. Study population included 28,360,443 hospital deliveries from 2016-2023, including 106,740 deliveries for cancer survivors, 21,980 deliveries for current malignancy diagnosis, and 28,231,728 deliveries without malignancy (past or current). Temporal trends were assessed with a linear segment regression model using one-year increments. Simple descriptive analysis was performed for clinical and obstetric characteristics. Multivariable generalized linear model with Poisson distribution was created to assess severe maternal morbidity at delivery.
RESULTS: Among the cancer survivors, skin (27.9%) and endocrine system (22.8%) were the two most frequent anatomical site of past malignancy, followed by breast (11.9%) and genital system (11.3%). During the 8-year study period, deliveries for cancer survivors increased by 51.5% from 30.1 to 45.6 per 10,000 deliveries (average annual percentage change [AAPC] 6.3, 95% confidence interval [CI] 5.1-7.9, *P-trend*<.001) whereas deliveries with current malignancy were unchanged (7.0 to 7.4 per 10,000 deliveries, *P-trend*=.71). Cancer survivors and current malignancy patients were older compared to those without malignancy (median age, 33, 32, and 29 years-old, respectively, *P*<.001). Cesarean delivery rates were higher for the cancer survivor and current malignancy groups compared to the no malignancy group (38.0%, 42.3%, and 32.4%, respectively, *P*<.001). The majority of cancer survivors had full-term deliveries: 57.6%, 39.6%, and 60.4% for the cancer survivor, current malignancy, and no

malignancy groups, respectively (*P*<.001). Severe maternal morbidity rate was moderately higher among the cancer survivor group (14.0 vs 8.4 per 1,000, adjusted-incidence rate ratio [aIR] 1.46, 95%CI 1.39-1.54) and markedly increased among the current malignancy group (65.8 vs 8.4 per 1,000, aIR 3.58, 95%CI 3.38-3.78) compared to the no malignancy group.
CONCLUSIONS: The results of this nationwide assessment suggested that the number of deliveries for cancer survivors is gradually increasing in the United States. While severe maternal morbidity is increased at delivery, it is encouraging that a majority of cancer survivors resulted in full-term delivery.
IMPACT STATEMENT: These statistics may be useful for pre-conceptional counseling for cancer survivors who are desiring future childbearing.

FERTILITY PRESERVATION (10 OF 12)

P-317 11:15 AM Tuesday, October 27, 2026

PROVIDER PERCEPTIONS REGARDING SPERM CRYOPRESERVATION AT AN NCI-DESIGNATED CANCER CENTER WITHOUT AN ONCOFERTILITY PROGRAM. Michael Sessine, MD[1], Jenna Uhles, B.A.[1], Lillian Lai, MD MS[1], Ava Zamani, M.D.[1], Samuel Ohlander, M.D.[2], Craig Niederberger, MD, FACS[3], James F Smith, M.D., M.S.[4], Aron Liaw, MD[1], Vijendra Singh, M.D.[5] and Kevin B Ginsburg, M.D., M.S.[1], [1]Wayne State University, Detroit, MI, [2]University of Illinois at Chicago, Chicago, IL, [3]University of Illinois at Chicago College of Medicine, Chicago, IL, [4]UCSF, San Francisco, CA, [5]Karmanos Cancer Center, Detroit, MI

OBJECTIVE: Despite the recognized importance of fertility preservation in oncology care, sperm cryopreservation remains underutilized among male cancer patients. We sought to understand oncology providers' current perspectives and experiences regarding sperm cryopreservation and referral protocols at a cancer institution without an established oncofertility program.
MATERIALS AND METHODS: We conducted a prospective study, surveying providers practicing adult oncology at an NCI-designated cancer center that does not have a standardized protocol for fertility preservation or a male reproductive surgeon on staff. Providers received a survey with Likert Scale and open-ended questions assessing their current knowledge and perceptions of sperm cryopreservation in cancer patients.
RESULTS: There were 16 completed surveys (56% male, 38% female), with a median of 8.2 years in practice (range 1–33). By specialty, 81% were medical oncologists, 13% surgical oncologists, and 6% radiation oncologists. Over 63% of providers felt their patients to be at high or very high risk for adverse fertility effects from treatment, and 88% rated offering sperm cryopreservation as very or extremely important. However, 69% of providers reported only slight or no familiarity with national fertility preservation guidelines. Only 44% often or always provided fertility preservation information to patients, and 25% never or rarely referred patients to a fertility specialist.
Among providers, cost was the top barrier (75%), followed by treatment delays (44%) and being unsure where to refer (28%). Notably, 33% of providers did not know the initial cost of sperm banking and 87% overestimated it; similarly, 27% had no idea of annual storage costs and 80% overestimated them. Most providers (80%) reported no familiarity with insurance coverage in our state. Most respondents identified institutional guidelines (80%) and patient and provider educational materials (67%) as potential interventions.
When survey respondents were presented with a hypothetical 20 to 30-year-old patient presenting for cancer treatment, the older the patient and the higher the 5-year mortality, the less likely the providers were to offer sperm cryopreservation.
CONCLUSIONS: Although the majority of oncology providers recognized the importance of sperm cryopreservation, significant gaps persist in guideline familiarity, cost awareness, and referral practices. Most providers overestimated the cost of sperm banking, and cost was the dominant barrier reported. Older patient age and poor prognosis reduced the likelihood of offering cryopreservation, even when guidelines recommend discussion regardless of these factors. These findings highlight the need for provider education on current fertility preservation guidelines, improved cost transparency, and streamlined referral pathways at cancer centers.
IMPACT STATEMENT: We plan to leverage gained insights to formulate strategies to implement targeted educational interventions and standardized institutional protocols to improve familiarity with, cost awareness and access to sperm cryopreservation for cancer patients.
SUPPORT: No disclosures

P-318 11:30 AM Tuesday, October 27, 2026

PLANNED OOCYTE CRYOPRESERVATION AND FEMALE FERTILITY: A GENDER COMPARATIVE CROSS-SECTIONAL STUDY OF KNOWLEDGE, ATTITUDES AND BELIEFS. Swati Shivhare, MBBS, M.D(obstetrics and Gynecology), MRCOG, DNB, FRM[1], Rishu Goel, MBBS, MD (obstetrics and gynecology)[2] and Pawan Sinhmar, MBBS, MD(Community Medicine)[3], [1]Consultant, Apollo Fertility, New Delhi, India, [2]Assistant Professor, Muzaffarnagar medical college, [3]Research Associate, Virginial Commonwealth University, Richmond

OBJECTIVE: To assess and compare knowledge, attitudes and beliefs about planned oocyte cryopreservation (OC) and female fertility among men and women of reproductive age and identify gender specific misconceptions and barriers.
MATERIALS AND METHODS:
An anonymous online cross-sectional survey was distributed via digital platforms (January 2024-December 2025) to adults aged 18-40. The questionnaire was adapted from published fertility awareness tools and expanded with gender specific items, assessed demographics, 15 knowledge items, belief and fertility intention items, and separate male and female attitude subscales on a 5-point Likert scale ("Uncertain"=midpoint); knowledge items were scored so higher values denoted correct answers. Of 732 initiated, 661(90.3%) completed the survey. Gender differences were analyzed by independent samples t-tests and chi-square (SPSS v26; p<0.05).
RESULTS: Respondents (n=661; mean age 29.3±6.9 y; 59.9% female; 65.1% <30 y; 94.3% graduate educated) showed moderate overall knowledge (3.32±1.12), higher in women than men (3.41 vs 3.23, p<0.05). Women more often correctly identified that planned OC requires ovarian stimulation and retrieval (4.18 vs 3.50, p<0.001), fertility decline after 37 (4.28 vs 3.93, p<0.001), procedural safety (3.99 vs 3.60, p<0.001) and that infertility is not predominantly female (52.7% vs 28.3% correct, p<0.001). Still, 52.7% of all respondents incorrectly endorsed that general fitness predicts fertility better than age. A striking intention biology mismatch emerged as 62.5% wanted ≥2 children and 56.6% expected first pregnancy at 30-34, yet only 7.7% deemed 35-39 acceptable for a first birth, and 66% anticipated distress from involuntary childlessness. Attitudes toward planned OC were favorable, particularly among women: 80.2% endorsed planned OC when not ready to conceive in the 30s; and would consider planned OC for lack of a suitable partner (78.8%), personal (76.0%) or partner (82.6%) unreadiness. Among men, 72.8% supported planned OC for a partner/relative, 57.7% acknowledged considering age while choosing a partner and 54.3% told they are not concern of female age if oocytes are frozen. Leading barriers were practical: uncertain success rates (88.7%), information gaps (83.8%), cost (81.4%), and child health concerns (78.2%); moral and social judgment concerns ranked lowest (32.1%).
CONCLUSIONS: Reproductive age adults show moderate but uneven planned OC knowledge, with clear gender gaps where men are particularly less informed on reproductive biology and shared responsibility for infertility. Attitudes are broadly favorable; hesitancy is driven by practical concerns rather than moral objection. A disparity between intended and biologically optimal pregnancy timing signals unmet counseling needs.
IMPACT STATEMENT:
Gender inclusive fertility education, extending to men has a strong potential to correct misconceptions and enable informed and shared reproductive choices, including planned OC as acceptance is limited by information gaps and cost not moral objection. Integrating fertility awareness counseling into routine adult healthcare is warranted.

P-319 11:45 AM Tuesday, October 27, 2026

DO VITRIFIED OOCYTES ORIGINATING FROM SINGLE OR MULTIPLE OVARIAN STIMULATION CYCLES IMPACT ICSI OUTCOMES IN LOW RESPONDERS. Ines Sammouda, Pharm. D[1], Ines Guernou, M.D[2], Vincent Puy, M.D., Ph.D[2], Ladan Sayyahensan, M.D[3], Maëliss Peigné, M.D , Ph.D.[2] and Christophe Sifer, Pharm.D[4], [1]Jean Verdier Hospital, AP-HP, France, Bondy, France, [2]AP-HP, Jean Verdier Hospital, ART Unit, Bondy, France, [3]Assistance Publique Des Hôpitaux De Paris, Bondy, France, [4]Jean Verdier, Bondy, France, France

OBJECTIVE:
To compare oocyte survival and ICSI outcomes between vitrified–warmed oocytes obtained from single versus multiple controlled ovarian stimulation cycles in low responders women undergoing fertility preservation.
MATERIALS AND METHODS:
This retrospective single-centre cohort study included 217 patients returning after female fertility preservation for social or medical indications. All underwent ICSI using vitrified–warmed oocytes. Warming cycles were classified according to oocyte origin from a single or from multiple controlled ovarian stimulation cycles over a 10-year period (2015–2025). Only patients with a mean oocyte yield <10 per stimulation cycle were included (single-cycle: n=78; multiple-cycle: n=139). IVM and donor oocytes were excluded. Oocytes were vitrified and warmed using an open system procedure (Cryotop Kitazato, Japan). Oocyte survival, fertilization, embryo development, usable (frozen and/or transferred) embryo, implantation, and pregnancy rates were compared within the 2 groups. Statistical analyses used appropriate tests, with p<0.05 considered significant.
RESULTS:
Groups were comparable for age at vitrification (35.1 vs 35.5 years) and BMI (23.7 vs 22.4 kg/m²). AMH (1.85 vs 1.12 ng/mL; p=0.04) and AFC (14.10 vs 9.76; p<0.01) were significantly higher in the single-cycle group. Stimulation characteristics were similar, although starting (350.5 vs 376.9 IU) and total FSH doses (3737.5 vs 3912.5 IU) were slightly higher in the multiple-cycle group, without significant differences. Indications for fertility preservation were evenly distributed (social:76.7% vs 80.9%; medical:23.3% vs 19.1%; p=0.295). Patients in the multiple-cycle group accumulated significantly more oocytes (9.09 vs 5.05; p<0.001), requiring a mean of 2.72 stimulation cycles. Post-warming oocyte survival was significantly higher after a single-stimulation cycle (92.21% vs 81.29%; p=0.01). The usable embryo rate per injected oocyte was also higher in the single-cycle group, at the limit of statistical significance (66.87% vs 58.98%; p=0.05).In contrast, fertilization (76.70% vs 72.31%), post-ICSI degeneration (3.54% vs 4.90%), and blastulation rates (46.98% vs 49.61%) did not differ significantly between groups. The mean number of embryos transferred was similar (1.79 vs 1.63). Implantation (21.23% vs 26.16%), biochemical pregnancy (39.74% vs 48.92%), and clinical pregnancy rates (35.89% vs 35.97%) were also comparable in single- and multiple-stimulation cycles, respectively, indicating similar reproductive outcomes despite differences in oocyte survival.
CONCLUSIONS:
Although oocyte survival and usable embryo rate is lower when oocytes are accumulated across multiple stimulation cycles, clinical pregnancy outcomes remain comparable. These findings support oocyte accumulation as a safe and effective strategy for patients with low oocyte yield undergoing fertility preservation.
IMPACT STATEMENT:

These findings support oocyte accumulation strategies in patients with limited ovarian response, demonstrating that multiple stimulation cycles can optimize oocyte yield without compromising reproductive outcomes.

P-320 12:00 PM Tuesday, October 27, 2026

REPRODUCTIVE CONCERNS IN MEDICAL SCHOOL: KNOWLEDGE GAPS AND THE POTENTIAL VALUE OF OOCYTE CRYOPRESERVATION. Addison B Smartt, B.S.[1], Cyra M. Cottrell, B.S., M.D.[2], Diana J Kelm, M.D.[2], Anna Kornafeld, M.D.[2], Alessandra J Ainsworth, M.D.[2] and Aakriti R Carrubba, M.D.[3], [1]Tempe, AZ, [2]Mayo Clinic, Rochester, MN, [3]Mayo Clinic, Jacksonville, FL

OBJECTIVE:
This study aims to perform a needs' assessment of reproductive health knowledge, attitudes, and preferences among medical students to determine gaps in education and opportunities for interventions.
MATERIALS AND METHODS:
A cross-sectional study of survey responses from medical students at three Mayo Clinic Alix School of Medicine sites was performed (Rochester, MN; Phoenix, AZ; and Jacksonville, FL). Participants were recruited via email invitation and responses were collected on a voluntary basis. Comparisons of survey responses were made using a Wilcoxon rank sum test (ordinal variables) or Fisher's exact test (categorical variables). P-values <0.05 were considered as statistically significant. All statistical tests were two-sided.
RESULTS:
A total of 157 participants completed the survey (response rate 36%). The majority of medical students (78%, n=120) agreed that family planning was an important factor in their career and educational decisions. The majority (65%, n=99) agreed that they worry about their personal or partner's fertility declining during medical training.
Only 25% (n=40) of students reported instruction on rates of infertility in female physicians and 11% (n=18) reported instruction on fertility preservation. Only 38% (n=52) of respondents were able to provide the correct definition of infertility, however, 77% (n=106) were able to identify age as the primary predictor of fertility.
There was considerable interest in pursuing egg freezing, with 51% (n=68) likely to pursue given financial accessibility and institutional support and 61% (n=79) indicating that egg freezing would decrease their worries about fertility decline during medical training.
When comparing male-identifying and female-identifying medical students, females had greater worries about fertility decline (71%, n=71 vs 51%, n=26, p=0.010) and were more likely to consider pursuing egg freezing (62%, n=53 vs 33%, n=15, p=0.034). Females were also more likely to indicate that accessible egg freezing would change their career trajectory, with 8% (n=7) saying they would consider a different specialty, 27% (n=22) more likely to pursue surgical training, and 55% more likely to extend training (i.e. fellowship), compared to 0% (n=0), 2% (n=1) and 20% (n=9) of male respondents, respectively. The primary reported barrier to egg freezing was financial (78%, n=87).
CONCLUSIONS:
Medical students lack knowledge about physician infertility and fertility preservation while exhibiting high levels of concern about family planning and fertility decline during medical education. Medical students are receptive to oocyte cryopreservation as a solution to these worries and females indicated that this would alter their educational and career choices.
IMPACT STATEMENT:
Providing education about physician infertility and fertility preservation options is needed to address the concerns of medical students. Increasing accessibility to oocyte cryopreservation in medical school could have a significant impact on the career choices of female physicians.

FERTILITY PRESERVATION (11 OF 12)

P-321 11:15 AM Tuesday, October 27, 2026

PREGNANCY CHARACTERISTICS AND OUTCOMES FOLLOWING FERTILITY-SPARING TREATMENT FOR ENDOMETRIAL MALIGNANCY. Aoi Yamaguchi, BS[1], Yurika Arakaki, MD[2], Shinya Matsuzaki, MD, PhD[3], Jennifer Yao, BA[4], Aaron D Masjedi, MD[5], Yoshikazu Nagase, MD, PhD[2], Michiko Kodama, MD, PhD[6] and K Matsuo, MD, PhD[5], [1]University of Osaka Graduate School of Medicine, Suita-Shi, Japan, [2]The University of Osaka Graduate School of Medicine, Suita-Shi, Japan, [3]The University of Osaka Graduate School of Medicine, Suita, Japan, [4]Keck School of Medicine, University of Southern California, Los Angeles, [5]University of Southern California, Los Angeles, CA, [6]The University of Osaka Graduate School of Medicine, Osaka, Japan

OBJECTIVE: The annual incidence of endometrial cancer in reproductive-age women is increasing globally. For patients with early-stage, low-grade endometrial cancer, hysterectomy is considered the standard of care. However, non-surgical fertility-sparing management with hormonal therapy is an option for patients who desire future childbearing. While the utilization of fertility-sparing treatment is increasing among reproductive-age patients with low-grade, early-stage endometrial cancer, its pregnancy characteristics and outcomes have not been well described.
MATERIALS AND METHODS: This experimental study compared obstetric characteristics and outcomes between pregnancy following fertility-sparing treatment for endometrial malignancy and pregnancy without malignancy. Specifically, *(i)* pregnant people following fertility-sparing treatment for either early-stage endometrial cancer, endometrial intraepithelial neoplasm, or atypical endometrial hyperplasia were identified via a systematic literature review of 4 public search engines (50 studies, *n*=3,478), and *(ii)* pregnant people without diagnosis of current and past malignancy (*n*=24,866,742) identified in the Healthcare Cost and Utilization Project's National Inpatient Sample were cross-compared. Simple descriptive analysis was performed to evaluate targeted obstetric measures.
RESULTS: The majority of patients who received hormonal therapy had a complete response (77.7%). Of those who had a complete response, two-thirds attempted conception (66.5%) and greater than half achieved pregnancy (52.7%). Assisted reproductive technology was utilized in the majority of pregnancies (56.5%). Rates of cesarean delivery (54.0% vs 32.4%, odds ratio [OR] 2.45, 95% confidence interval [CI] 2.07 to 2.90, *P*<.001), multi-fetal gestations (17.6% vs 1.5%, OR 11.9, 95% CI 7.94 to 17.3, *P*<.001), and placenta accreta spectrum (3.9% vs 0.1%, OR 32.0, 95% CI 17.7 to 53.5, *P*<.001) were increased for pregnancy following fertility-sparing treatment compared to pregnancy without malignancy.
CONCLUSIONS: The results of this exploratory analysis suggest that assisted reproductive technology is actively incorporated in the management of reproductive-age patients with early-stage endometrial cancer or pre-malignant conditions who undergo fertility-sparing treatment.
IMPACT STATEMENT: A pregnancy rate of greater than 50% is encouraging for patients who elect for this form of management. These pregnancies are associated with higher obstetric characteristics which may be attributed to various factors, such as the use of assisted reproductive technology or patient associated factors, which warrant further investigation.

P-322 11:30 AM Tuesday, October 27, 2026

THE IMPACT OF FERTILITY PRESERVATION INSURANCE MANDATES ON UTILIZATION RATES AMONGST MEN DIAGNOSED WITH CANCER: A CODE-BASED ANALYSIS OF CLINICAL RECORDS. Erica C Pandolfi, PhD[1], Mrs. Alexa M Giovannini, MSc[2], Rita Vassena, DVM, PhD[2], Sean M Currigan, MPH[3] and Vrunda B Desai, M.D.[2], [1]CooperSurgical, [2]CooperSurgical Fertility Solutions, Trumbull, CT, [3]CooperSurgical Inc.

OBJECTIVE:
Although fertility preservation (FP) may safeguard fertility in male cancer patients, cryopreservation remains underutilized at ~10%. While male FP costs are lower than female FP, the financial burden is still significant. FP use increases when insurance coverage exists through employer benefits or mandates. A recent study comparing two states with new FP insurance mandates showed increased utilization. Given the impact of gamete preservation costs on cancer survivors, further research is needed to assess how US FP mandates affect sperm cryopreservation use in men with cancer.
MATERIALS AND METHODS:
Retrospective study using aggregated patient and procedure data from the Definitive Healthcare (DHC) analytics platform, which includes records from 1,169 health systems and 8,418 active US hospitals. Men utilizing FP between 2016 and 2026 were identified using CPT codes for sperm cryopreservation, cancer (ICD-10 C00–C96), assisted reproductive technology (ART) encounters (CPT Z3183), and vasectomy (CPT 55250, 55559). Data processing included filtering by CPT and diagnosis codes, grouping patients by indication, and aggregating annual cryopreservation volumes. Analyses included descriptive trend comparisons and percentage-change calculations to assess state-level utilization differences, with adjustments for state population size. CPT code 89259 identified 25,954 men, of whom 9,012 were associated with oncofertility, sterilization, ART, or vasectomy.
RESULTS:
Of the 9,012 patients cryopreserving sperm, 8,073 were diagnosed with cancer (89.6%), 553 (6.1%) received ART related care, and 386 (4.2%) underwent vasectomy. The number of patients cryopreserving sperm in the oncofertility cohort remained stable over the decade, while the sterilization cohort declined 28.6%, and the ART cohort increased 435.3%. Of the 8,073 cancer patients potentially cryopreserving sperm for oncofertility, 48.7% were aged 18-44, with this group increasing 77.6% from 2016 to 2025. To assess how the introduction of FP coverage affected cryopreservation for oncofertility, we compared the utilization of FP in men with a cancer diagnosis in states that introduced a FP coverage mandate during this period, to states without a change in legislation. Overall, the utilization of FP increased by 1.8%. The utilization of FP increased by 3.3% on average in all states that introduced mandated FP coverage (range: 0.25%-18.0%). In states with no changes in FP coverage, 30% showed declining utilization, with a mean increase across states without legislative changes of 1.8% (range: -0.75%-8.0%).
CONCLUSIONS:
States with mandated coverage showed greater growth in FP utilization than states without legislative changes, suggesting insurance policy meaningfully reduces financial barriers to fertility preservation.
IMPACT STATEMENT:
Mandated FP coverage may help protect future parenthood options, underscoring the critical role of insurance mandates in promoting patient-centred cancer care and long-term psychosocial well-being.
SUPPORT: This research was supported by CooperSurgical Inc.

P-323 11:45 AM Tuesday, October 27, 2026

BASELINE-DRIVEN DIFFERENCES IN SPERM CRYOPRESERVATION: LOWER PRE-FREEZE QUALITY AND UTILIZATION, BUT NOT INDEPENDENT POST-THAW RECOVERY IN ONCOLOGICAL PATIENTS. John Antony Vargas-Valdez, M.D.[1], Sergio Alberto Davila Garza, M.D.[1], Genaro García Villafana, M.D.[1], José Iram Obeso-Montoya, M.D.[1], Pablo Diaz-Spindola, M.D., M.ED.[2] and Mario Alberto Garza-Garza, M.D., M.Sc.[1], [1]IECH - Fertility Center, Monterrey, NL, Mexico, [2]IECH fertility center, Monterrey, NL, Mexico

OBJECTIVE: To compare time to clinical use (primary outcome), pre-freeze sperm quality, and post-thaw motility recovery between oncological (ONCO) and in vitro fertilization (IVF)-backup male partners undergoing sperm cryopreservation, with extension to a heterogeneous non-oncological cohort as sensitivity analysis.
MATERIALS AND METHODS: Retrospective single-center cohort. Primary comparison: ONCO (n=122) vs IVF-backup partners (n=155). Sensitivity: ONCO vs full non-oncological group (n=186; additionally 17 vasectomy, 11 testicular sample, 3 hormone therapy). Primary outcome: time to clinical use (right-censored at last follow-up), by Kaplan–Meier with log-rank. Secondary outcomes: pre-freeze progressive motility and concentration; post-thaw motility (%) at routine quality-control test-thaw under standardized institutional protocol; cryosurvival ratio (post-thaw/pre-freeze motility × 100, uncapped) as supplementary metric. Sequential ANCOVA adjusted post-thaw motility for age, then pre-freeze motility and concentration. Median follow-up was estimated by reverse Kaplan–Meier.
RESULTS: Median follow-up: ONCO 1,505 days, IVF-backup 1,882 days. ONCO men were younger (median 26 vs 35 years; p<0.001). Pre-freeze quality was lower in ONCO (motility 48% vs 54.5%; concentration 32 vs 65.5 mill/mL; both p<0.001), as was post-thaw motility (34% vs 52.5%; p<0.001) and cryosurvival ratio (74.6% vs 93.8%; p<0.001). The post-thaw motility gap attenuated after age adjustment (β=−11.9; p=0.007) and was non-significant after adding pre-freeze motility and concentration (β=−2.5; p=0.46). Time to clinical use differed sharply (log-rank χ^2=60.6; p<0.001): at 5 years, 97.8% of ONCO samples remained unused vs 51.9% of IVF-backup. Sample fate differed (χ^2=78.0; p<0.001): 0/122 ONCO samples were used for IVF or intrauterine insemination (IUI) vs 39/155 (25.2%) in IVF-backup. Sensitivity vs full non-oncological cohort preserved direction; adjusted ONCO effect again non-significant (β=−3.5; p=0.28). Thus, post-thaw motility differences were explained by baseline sperm quality, whereas utilization differences reflected indication-specific context.
CONCLUSIONS: ONCO and IVF-backup cryopreservation differed in pre-freeze quality and observed clinical utilization within ~4 years of follow-up. Post-thaw motility was not independently associated with ONCO status after adjustment for baseline quality. Differences in utilization may partly reflect indication-specific reproductive context — preventive storage vs active fertility care — rather than cryopreservation pathway inefficiency. Limitations: retrospective single-center design; routine test-thaw rather than clinical thaw; absence of cancer type, prior treatment, fever, abstinence and processing data; residual confounding possible.
IMPACT STATEMENT: Oncofertility counseling should reflect that pre-freeze sperm quality is lower in cancer patients and clinical use within typical follow-up is infrequent, while post-thaw motility recovery, after accounting for baseline quality, appears comparable to IVF-backup partners.
SUPPORT: The authors received no specific funding for this work.

P-324 12:00 PM Tuesday, October 27, 2026

FERTILITY PRESERVATION (FP) TRAINING AMONG OBSTETRICS AND GYNECOLOGY(OB/GYN) TRAINEES: ASSOCIATION OF IN-HOUSE REPRODUCTIVE ENDOCRINOLOGY AND INFERTILITY (REI). Swarna Varshini Suresh, MD[1], Shagun Tuli, MD[1], Panagiotis Cherouveim, MD, MS, PhDc[2], Celine Sooknarine, MD[3], Jenny Lachance, MS[4] and Atinuke L Akinpeloye, MD[1], [1]Hurley Medical Center, Michigan State University, Flint, MI, [2]Hurley Medical Center/Michigan State University, Flint, MI, [3]HURLEY MEDICAL CENTER, Flint, MI, [4]Hurley Medical Center, Flint, MI

OBJECTIVE: To assess the FP exposure, confidence, and competency among OB/GYN residents and fellows and their association with the presence of an in-house REI fellowship.
MATERIALS AND METHODS: A computer-based, national, cross-sectional survey of OB/GYN residents and fellows was conducted from November 2025 to April 2026. The goal of this anonymous, voluntary survey was to assess institutional resources, FP exposure, modalities, referral confidence, counseling confidence, and preparedness. Respondents (N=108) were stratified by presence (n=32, “in-house”) or absence (n=76, “no in-house”) of an in-house REI fellowship.
RESULTS: Programs with in-house REI demonstrated significantly better FP infrastructure, including formal oncofertility pathways (50.0% vs. 15.8%, p<0.001), in-house REI consult access (59.4% vs. 10.5%, p<0.001), and designated oncofertility champions (34.4% vs. 3.9%, p<0.001, for “in-house” vs. “no in-house”).
This translated into nearly 2-fold higher FP exposure (≥3 cases: 59.4% vs. 32.9%, p=0.011), greater faculty feedback (21.9% vs. 5.3%, p=0.015), and significantly broader exposure to FP modalities, including oocyte, embryo, and ovarian tissue cryopreservation, as well as ovarian transposition (p<0.01 for all). REI referral timely attendance was approximately 3 times higher in programs with in-house REI (46.9% vs. 15.8%, p<0.001, for “in-house” vs. “no in-house”).
Despite these advantages, the percentage of trainees feeling confident in counseling independently for FP was not significantly different between groups (40.6% vs. 26.3%, p=0.141). Additionally, the majority of trainees reported that formal FP training increased their confidence in counseling (88.9% vs. 77.8%, p=0.371) and felt that it should be a part of OB/GYN residency training (96.9% vs. 94.7%, p=0.433, for “in-house” vs. “no in-house”).
CONCLUSIONS: In-house REI access improves FP exposure and referral confidence but does not translate into competency in FP counseling. Notably, the majority of trainees reported that formal FP training improves counseling confidence and should be incorporated into residency curricula.
IMPACT STATEMENT: Greater access to in-house REI and increased exposure do not correspond to significantly higher trainee confidence in FP counseling. Strong trainee endorsement of formal training highlights a national gap in oncofertility education and supports the critical need for standardized curricula incorporating structured teaching and feedback.
SUPPORT: None

FERTILITY PRESERVATION (12 OF 12)

P-325 11:15 AM Tuesday, October 27, 2026

FERTILITY PRESERVATION DECISION AIDS IN THE PEDIATRIC POPULATION: A SCOPING REVIEW. Brianne Yarranton, BSc, MD[1], Lesleigh Abbott, MD[2], Yuding Wang, MD[2], Amy Givogue, MN, BScN[3], Victoria Cole, BScN, MScN, MIS[4] and Stephanie Dufour, MD[5], [1]Etobicoke, ON, Canada, [2]Children’s Hospital of Eastern Ontario Research Institute, [3]Children’s Hospital of Eastern Ontario, [4]University of Ottawa Library, [5]Ottawa, ON, Canada

OBJECTIVE: The objective of this scoping review is to identify and compare available patient decision aids (PDAs) on the topic of fertility preservation (FP) options for pediatric patients undergoing gonadotoxic treatment.
MATERIALS AND METHODS: A peer-reviewed search strategy was generated in collaboration with a university librarian and used to search MEDLINE, Embase, PsycInfo, CINAHL, Web of Science, and grey literature, without restrictions on language or year of publication. Citation screening and data extraction was performed by two reviewers independently and in duplicate. Studies were included if they involved patients (or their caregivers) aged ≤21 years old with a medical condition for which gonadotoxic treatment was planned, and if they investigated an intervention designed to facilitate FP decision-making. Studies were excluded if they investigated patients considering FP in the context of gender-affirming care, or medical conditions which do not require treatment with time-sensitive gonadotoxic therapies. Data synthesis was completed according to the framework described by Arksey & O’Malley, and Levac et al.
RESULTS: After screening 2,332 citations, 25 articles describing sixteen PDAs were included in the review. All PDAs were intended for use in the pediatric oncology population, with PDAs available for both pre- and post-pubertal patients. There was mixed evidence for PDA effectiveness, though acceptability among patients and family members was generally strong. Several studies reported qualitative perspectives from patients, caregivers, and clinicians, highlighting the importance of PDAs in supporting shared decision-making. Eleven of the PDAs were available for quality assessment. Only one PDA met the International Patient Decision Aid Standards (IPDAS) criteria of a true decision aid, and only one PDA met all development and testing criteria including alpha, beta, and usability testing, as well as incorporating perspectives from patients, caregivers, and clinicians in the development process.
CONCLUSIONS: This scoping review summarizes the literature available on the topic of FP PDAs for pediatric patients requiring gonadotoxic therapy. We highlight the current gaps in the evidence landscape including a need for further research into enhancing the quality and rigour of development of these PDAs, as well as the need for PDAs to support patients with non-oncologic indications for time-sensitive gonadotoxic treatment.
IMPACT STATEMENT: This review represents a novel and meaningful contribution to the field, as, to our knowledge, it is the first scoping review on the topic of PDAs used in the pediatric FP population. In future, this review may be used by clinicians in selecting a PDA to facilitate shared decision-making for patients and caregivers considering FP options. This review also provides researchers with an overview of the current research landscape and suggests possible future directions for efforts to generate new PDAs or continue the iterative process of improving the quality of existing PDAs.
SUPPORT: This project did not receive any specific grant funding. B.Y. received graduate studies funding through the Ontario Women’s Health Scholar Award and the Canadian Institute of Health Research Graduate Scholarship. Neither organization influenced the development of this study.

P-326 11:30 AM Tuesday, October 27, 2026

FERTILITY PRESERVATION INSURANCE MANDATES HAVE LIMITED IMPACT ON OOCYTE AND EMBRYO CRYOPRESERVATION IN CANCER PATIENTS. Emily H Yang, MD[1], Anna Biousse Newman, BA, PhDc[2], Brian W Whitcomb, B.A., PH.D.[3], Laly Havern, PharmD, MS[4], Jeffrey Clemens, PhD[2], Sara B McMenamin, PhD, MPH[1] and Irene Su, MD, MSCE[5], [1]University of California San Diego, La Jolla, CA, [2]University of California San Diego, [3]University of Massachusetts, Amherst, Amherst, MA, [4]Walgreens, Seminole, FL, [5]University of California San Diego, San Diego, CA

OBJECTIVE:
Health insurance mandates are considered a potential approach to expand access to fertility preservation care and have been enacted in 21 states to date. However, the effect of these mandates has only been evaluated in small studies and is not known. This study aims to assess the impact of insurance benefit mandates on oocyte and embryo cryopreservation and use of fertility preservation (FP) medication donation among newly diagnosed young cancer patients.
MATERIALS AND METHODS:
We assembled 2016–2021 state-level data on oocyte and embryo cryopreservation prior to gonadotoxic treatment or cancer from the SART Clinic Outcome Reporting System, fertility medication donation from the Ferring Heartbeat program, and incident cancer cases from the North American Association of Central Cancer Registries. Cryopreservation cycles were defined as autologous cycles intended for future use with FP indication. Outcomes were FP utilization and medication donation among females ages 10–49 with new cancer diagnoses. We estimated mandate effects using a staggered synthetic difference-in-differences approach accounting for time trends, confounding, and staggered implementation (2018–2020).

RESULTS:
A total of 3,787 individuals underwent FP and 7,245 received medication donation. In 2016, utilization among new cancer cases was low (0.45% FP; 0.58% donation). Between 2018–2020, nine states enacted mandates. These states had higher baseline FP utilization (0.7% vs. 0.3%, p=0.004) and donation (0.7% vs. 0.5%, p=0.006) than states without mandates. Mandates increased FP utilization by 0.19% (95% CI 0.04, 0.35) and had negligible impact on medication donation (-0.04%, 95% CI -0.35, 0.27). Small increases in FP were seen three years after 2018 implementation (0.35%, 95% CI 0.003, 0.70) and after 2019 implementation at one year (0.72%, 95% CI 0.45, 0.98) and two years (0.59%, 95% CI 0.22, 0.97). For states that enacted mandates in 2020, no significant change in FP utilization was observed by 2021 after one year. Mandates did not reduce medication donation, except for a two-year increase in 2018 states (0.54%, 95% CI 0.10, 0.99).
CONCLUSIONS:
FP mandates had limited impact, did not reduce reliance on donated medications, and were insufficient to meaningfully increase cryopreservation among newly diagnosed female cancer patients. These national findings suggest modest policy effects compared to prior smaller studies. Limited impact may reflect mandate design (e.g., exclusion of publicly insured populations) and implementation barriers across regulators, insurers, and clinics. Clinician unawareness or uncertainty about coverage may also limit referrals. Short follow-up may underestimate long-term effects, but early findings highlight implementation challenges and opportunities for improvement.
IMPACT STATEMENT:
This study provides national evidence that FP mandates have had limited impact (<1%) on FP utilization and medication donation, highlighting the need for improved clinician awareness, mandate design, and implementation.

P-327 11:45 AM Tuesday, October 27, 2026

DENUDED OOCYTES RECOVERED DURING OVARIAN TISSUE CRYOPRESERVATION WITH IN VITRO MATURATION. Weie Zhao, Doctor[1] and Xiaoyan Liang, Ph.D.[2], [1]The Sixth Affiliated Hospital of Sun Yat-sen University, Guangzhou, China, [2]The Sixth Affiliated Hospital, Sun Yat-Sen University, Guangzhou, China

OBJECTIVE:
To determine the incidence and correlates of denuded oocytes (DOs) retrieved during ovarian tissue cryopreservation with in vitro maturation (OTO-IVM) for fertility preservation (FP), compare maturation outcomes of DOs versus sibling cumulus–oocyte complexes (COCs), and assess whether DO presence is associated with COC maturation.
MATERIALS AND METHODS:
A total of 230 girls and young women aged 3–36 years who underwent FP between May 2022 and December 2025. Indications included transfusion-dependent anemia before hematopoietic stem cell transplantation (n=211), hematologic malignancies (n=11), and other nonovarian malignancies (n=8). None had received prior chemotherapy. COCs and DOs collected during OTC were cultured in a biphasic IVM system . DOs were defined as oocytes lacking surrounding cumulus cells. Before July 2024, DOs were routinely discarded without culture. From July 2024 onward, DOs from 41 patients were cultured alongside COCs with separate outcome tracking. Logistic regression was used to identify correlates of DO retrieval, generalized estimating equations(GEE) to compare outcomes between DOs and COCs, and β regression analysis to assess the association between the proportion of DOs and COC maturation.
RESULTS: DOs were present in 170/230 cycles (73.9%) and accounted for 619/3,320 retrieved oocytes (18.6%). In multivariable analysis, prior gonadotropin administration was the only independent factor associated with DO retrieval (adjusted OR 0.80, 95% CI 0.66-0.97; P=0.022). Among 41 patients with cultured DOs, 165 DOs yielded 21 metaphase II oocytes (21.7%), contributing 7.1% of all mature oocytes. By GEE, DOs had lower 48-hour maturation than sibling COCs (11% vs 35%; OR 0.23, 95% CI 0.11-0.46; P<0.001) and higher 48-hour degeneration (OR 2.24, 95% CI 1.16-4.31; P=0.016); 72-hour differences were not significant. DO proportion was not associated with COC maturation (OR 0.81; P=0.750).
CONCLUSIONS: DOs were frequently retrieved during OTO-IVM and had lower maturation and higher degeneration than sibling COCs, though a small proportion reached MII. DO presence was not associated with reduced COC maturation.
IMPACT STATEMENT: In FP where oocyte yield is limited, these data suggest DOs may warrant culture rather than routine discard, and their presence does not appear to indicate poorer sibling COC quality.As a single-center retrospective study, these findings should be interpreted with caution. And the clinical utility of DO-derived mature oocytes remains unproven. Prospective evaluation of fertilization and developmental competence is needed.

P-328 12:00 PM Tuesday, October 27, 2026

FACILITATORS, BARRIERS, AND IMPACTS ON DECISION MAKING FOR FERTILITY PRESERVATION IN AN INSURANCE MANDATED STATE. Amy S Zhao, B.A.[1], Sanjana Konda, B.A.[2], Yunhan Qiu, B.A.[2], Kaitlyn Depietro, HS[2], Rochelle Rosen, Ph.D.[2], Melissa Clark, Ph.D.[2] and May-Tal Sauerbrun-Cutler, MD[3], [1]Providence, RI, [2]Brown University, Providence, RI, [3]Women and Infants Hospital and Brown University

OBJECTIVE:
Identify facilitators and barriers to medical fertility preservation (FP) care through qualitative interviews.
MATERIALS AND METHODS:
13 participants were interviewed using individual semi-structured virtual interviews lasting 45-60 minutes. Inclusion criteria for the patient population included females aged 18-43 years old at the time of their initial cancer diagnosis between 1/1/2018-12/31/2023. Patients must have been treated with gonadotoxic treatment.
Interviews were recorded, transcribed, and double-coded by at least two analysts and applied thematic analysis with NVivo 14 software was conducted. Codes were combined into themes focusing on Barriers and Facilitators and FP counseling with the Oncologist or Surgeon. Participants were stratified into those with (C) and without (NC) commercial insurance, and those who did (FP) or did not (non FP) pursue FP procedures including oocyte and embryo cryopreservation.
RESULTS:
All groups felt that too much information about FP came up at once and was overwhelming.
Barriers and Facilitator Themes:
NC participants quoted financial burden as a major barrier to moving forward with FP while commercial insurance holders said it was a facilitator. A barrier for the non FP group included worry about the difficulty of caring for future children given concern with worsening health as well as fear of delaying cancer treatment.
Other facilitators were mostly identified in commercially insured participants, quoting a quick timeline to FP consultation with no delays, being well informed regarding the FP process, and support from the health care team.
Content of FP counseling at Oncologist/Surgeon:
In terms of content of FP counseling, all groups had some participants that were told that chemotherapy would have an impact on fertility, but the non FP group had more limited counseling. It is notable that NC participants who did pursue FP had prior infertility that caused the oncologist to recommend a REI (reproductive endocrinology and infertility) referral.
Participants in all groups wanted more information about cost/finance. C participants wanted more information about the FP procedure itself and different FP options, while NC felt they had enough information about the FP process.
CONCLUSIONS:
Insurance mandates provide commercially insured patients with less cost barriers to accessing FP. However, there are still financial and informational barriers that continue to heavily influence patient decision-making. Patients desire more cost information upfront prior to seeing a REI specialist.
IMPACT STATEMENT:
These findings highlight barriers that persist despite the implementation of the first state medical FP mandate and highlight a critical gap in the implementation of fertility preservation care, emphasizing that standardized counseling and transparent cost communication are essential to advancing equity in oncofertility care.

REPRODUCTIVE MEDICINE - NON-INFERTILITY (1 OF 4)

P-329 11:15 AM Tuesday, October 27, 2026

PERSISTENT OBSTETRIC RISK IN PCOS DESPITE PRECONCEPTION GLP-1RA TREATMENT: THE POTENTIAL BENEFIT OF METFORMIN. Elizabeth Arruda, MD, Alexa Courtepatte, MPH and Avner Hershlag, M.D., The Renaissance School of Medicine at Stony Brook University, Stony Brook, NY

OBJECTIVE: To evaluate obstetric outcomes among patients with obesity, with and without polycystic ovary syndrome (PCOS), following preconception glucagon-like peptide-1 receptor agonist (GLP-1RA) alone or with metformin.
MATERIALS AND METHODS: This retrospective cohort study used the national TriNetX database to examine obstetric outcomes in patients aged 18–45 years with obesity (BMI ≥30 kg/m²), with and without PCOS, following preconception GLP-1RA therapy and confirmed pregnancy. Patients with prior bariatric surgery, donor oocytes, or non-metformin hypoglycemic agents were excluded. The study groups were as follows: with versus without PCOS following GLP1-RA monotherapy (N= 3,273 and 23,441) and with versus without PCOS with exposure to combined GLP-1RA and metformin (N= 5,342 and 9,623). Baseline characteristics were compared. Outcomes were assessed within two years of confirmed pregnancy and included live births, preterm delivery (PTD), cesarean delivery, hypertensive disorders of pregnancy (HDP), gestational diabetes (GDM), fetal growth restriction (FGR), and large-for-gestational-age (LGA) infants. Categorical variables are reported as counts (percentages) and continuous variables as mean (standard deviation). Groups were compared using two-proportion Z-tests. P<0.05 was considered significant.
RESULTS: PCOS patients treated with GLP-1RA had lower live births (45.3 vs. 47.6%, p=0.013) and increased rates of PTD (4.9 vs. 4.1%, p=0.040), HDP (34.8 vs. 29.9%, p<0.0001), GDM (15.8 vs. 11.6%, p<0.0001), FGR (7.5 vs. 6.5%, p=0.036), and LGA (9.4 vs. 8.1%, p=0.014) compared with non-PCOS patients. Combined GLP-1RA and metformin therapy yielded higher live births (50.7 vs. 48.1%, p=0.002) and lower GDM (25.6 vs. 28.5%, p=0.0002) among patients with PCOS, although cesarean deliveries (23.6 vs. 21.5%, p=0.0034) and HDP (40.0 vs. 36.6%, p<0.0001) were more common. Other outcomes were similar between groups. Patients with PCOS receiving GLP-1RA alone had higher baseline T2DM (6 vs. 4%, p<0.0001), chronic hypertension (cHTN, 15 vs. 10%, p<0.0001), and BMI (38.6 vs. 37.0 kg/m2, p<0.0001) with slightly lower hemoglobin A1C (HbA1C, 5.4 vs. 5.5, p=0.0052) compared with non-PCOS patients. Patients with PCOS receiving combined therapy had lower baseline T2DM (19 vs. 23%, p<0.0001) and HbA1C (5.8 vs. 6.6, p<0.0001) with higher cHTN (12 vs. 11%, p=0.0005) and BMI (39.3 vs. 38.7 kg/m2, p=0.0001).
CONCLUSIONS: Among patients with obesity exposed to preconception GLP-1RA, PCOS remained associated with lower live births and greater adverse obstetric outcomes. Within the PCOS cohort, metformin co-exposure was associated with higher live births and lower GDM, but not with reductions in HDP or cesarean delivery. These findings suggest that GLP-1RA therapy alone may not mitigate the obstetric risk profile of PCOS.

IMPACT STATEMENT: Despite preconception GLP-1RA exposure, patients with PCOS remain at increased risk for adverse obstetric outcomes. Metformin co-exposure was associated with higher live birth and lower GDM, but not with reduction in hypertensive morbidity, highlighting a dissociation between metabolic improvement and obstetric risk in PCOS.
SUPPORT: N/A

P-330 11:30 AM Tuesday, October 27, 2026

SUPERFUND SITE PROXIMITY MAY BE ASSOCIATED WITH ADVERSE BIRTH OUTCOMES AMONG PATIENTS RECEIVING INFERTILITY TREATMENT. Caroline B Braun, MD, Bharti Garg, MBBS, MPH, Aaron B. Caughey, M.D., Ph.D., MPH and Sacha A. Krieg, M.D., PH.D., Oregon Health & Science University, Portland, OR

OBJECTIVE: To assess the relationship between Superfund site exposure and birth outcomes among patients receiving infertility treatment.
MATERIALS AND METHODS: We performed a retrospective cohort study using California's linked birth certificate-hospital discharge data (2008–2020) and included singleton births (20–44 weeks) resulting from infertility treatment. Distance from active Superfund site (94 sites total) was calculated using the closest aspect of each residential zip code to each site. Pregnant patients residing ≤5 miles (exposed) and >5 miles (unexposed) were compared using chi-square tests. Multivariable Poisson regression analyses were used to assess adjusted risk ratios for adverse outcomes among patients residing ≤5 miles from a Superfund site. Regression models were adjusted for maternal race and ethnicity, age, education, insurance, pre-pregnancy body mass index, prenatal visits, chronic hypertension, pre-existing diabetes, and rurality.
RESULTS: Of the 41,922 patients included, 16% were exposed. Exposed patients were more likely to be Asian (32.6% vs 18.9%) and have urban residence (99.8% vs 97.8%). The exposed patients trended toward higher risk of severe maternal morbidity and had significantly higher risk of chorioamnionitis (Table 1). Neonates of exposed patients had significantly higher risk of jaundice and decreased risk of congenital anomalies (Table 1).
CONCLUSIONS: Superfund site exposure may be associated with adverse birth outcomes among patients treated for infertility; however, the granularity of this analysis was limited by the small sample size of exposed patients and absence of residential addresses in the database.
IMPACT STATEMENT: Further research is required to determine the impact of Superfund site exposure on adverse pregnancy and neonatal outcomes among births resulting from infertility treatment.
Table 1: Multivariable Poisson regression analyses showing risk of adverse outcomes among patients residing within ≤5 miles of a Superfund site

Outcome	Distance to Superfund Site (miles)		Adjusted risk ratio (95% CI)	p*
	≤5 N=6,719	>5 N=35,203		
Chorioamnionitis	570 (8.48%)	2,470 (7.02%)	1.13 (1.03-1.23)	<0.001
Severe maternal morbidity	199 (2.96%)	872 (2.48%)	1.17 (1.00-1.37)	0.021
Gestational Diabetes Mellitus	1,256 (18.69%)	5,774 (16.40%)	1.02 (0.97-1.08)	<0.001
Neonatal Jaundice	2,065 (30.73%)	9,760 (27.72%)	1.06 (1.02-1.10)	<0.001
Small for gestational age	681 (10.14%)	3,078 (8.74%)	1.07 (0.98-1.15)	<0.001
Apgar scores at 5 minutes (<7)	106 (1.58%)	682 (1.95%)	0.82 (0.66-1.01)	0.046
Congenital anomalies	709 (10.55%)	4,039 (11.47%)	0.88 (0.82-0.95)	0.029

*Chi-square test
SUPPORT: No financial support was received for this research.

P-331 11:45 AM Tuesday, October 27, 2026

GENERALIZED ADDITIVE MODEL COMPARISONS OF NOVEL BIOMARKERS FOR THE PREDICTION OF VIABILITY AND LOCATION IN EARLY PREGNANCY. Alexandria Young, MD, PhD[1], Jesse Chittams, M.A.[1], Saadhya Bahudodda, BS[1], Nathan C Koelper, MPH[1], Robert Slovikowsky, BA[1], Emily S Jungheim, M.D., M.S.[2], Peter Takacs, MD, PhD[3], Warren B Bilker, PhD[4], Suneeta Senapati, MD, MSCE[1] and Kurt T Barnhart, MD, MSCE[1], [1]University of Pennsylvania, Philadelphia, PA, [2]Northwestern University Feinberg School of Medicine, Chicago, IL, [3]Eastern Virginia Medical School, Norfolk, VA, [4]Center for Clinical Epidemiology and Biostatistics, Center for Real-World Effectiveness and Safety of Therapeutics, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA

OBJECTIVE: The natural history and physiology of novel biomarkers must be elucidated to optimize clinical utility. This study explores the interaction of novel biomarkers with each other and gestational age (GA) to assess their ability to predict the viability [intrauterine pregnancy (IUP) vs ectopic pregnancy (EP) and early pregnancy loss (EPL)] and location (IUP and EPL vs EP) of early pregnancies.
MATERIALS AND METHODS: Biomarkers discovered via unbiased proteomic platforms and high-multiplex immunoassays were validated in a prospective study cohort as previously described (Barnhart et al, Fertil Steril. 2024). Briefly, this nested case/control study included 218 participants (75 IUPs, 68 EPs, and 75 EPLs). Generlized Additive Models (GAMs) were constructed using the concentrations of each of the 11 biomarkers to model non-linear relationships between biomarkers, GA, and the predicted probability of abnormal pregnancy location or viability. These curves were compared to the curve of known biomarker, hCG.
RESULTS: As expected for pregnancy location, lower hCG concentrations correlate with greater predicted probability of EP across all GAs. Biomarkers ADAM12, CG-alpha, GDF15, PAPPA, PSG1, PSG3, PSG9, sFLT, and TFPI2 all had similar a GAM curve pattern as hCG. ADAM12 has the greatest variability across GA (higher predicted probability at lower GAs). PRG has a distinctive probability curve with less of a decline in predictive capability as serum concentration increases and a greater predicted probability with earlier GAs. PAPPA and ADAM12 both had the highest predicted probabilities for pregnancy location, and 7 biomarkers had greater capability than a single hCG value.
For early pregnancy viability, hCG's peak predicted probability plateaus at 35-40K with greater ability at earlier GAs. Biomarkers CG-alpha, GDF15, PSG1, PSG3, PSG9, and sFLT have a similar GAM curve patten as hCG. Increasing ADAM12 concentration decreases its predictive capability, while PAPPA and PRG have increasing predicted probability with increasing concentration. TFPI2 has a bimodal distribution of predicted probability with the highest predicted probability at the extremes of its concentration. GDF15 has the greatest probability of prediction for viability, and 2 biomarkers have greater capability than a single hCG value.
CONCLUSIONS: The probability of all markers to predict early pregnancy outcomes was highly influenced by GA with variable ability depending on the concentration. The GAM curves of these markers were not linear, suggesting complex relationships that need to be accounted for if used in combination in multiplexed testing in the future.
IMPACT STATEMENT: Novel biomarkers for better and earlier diagnosis of pregnancy viability and location are needed. Biomarkers identified in this project have complex relationships with each other temporally across GA and vary in their predictive capability depending on concentration. Understanding these relationships may lead to insights into the physiologic roles of these proteins, as well as aid in optimizing their clinical utility to predict early pregnancy outcomes.
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P-332 12:00 PM Tuesday, October 27, 2026

INCIDENCE AND PREDICTORS OF CONVERSION OF FROZEN-THAWED EMBRYO TRANSFER CYCLES FROM MODIFIED NATURAL (MNC-FET) TO STIMULATED (SMNC-FET): A COHORT STUDY. Kokkoni Kiose, MD, MSc, PhDc, Eleni Kolibianaki, MD, Julia K Bosdou, M.D., M.Sc, Ph.D, Leonidas I Zepiridis, Professor, Despoina Savvaidou, MSc, Anastasios Chatziaggelou, MD, MSc, Anna Mitsoli, MSc, Katerina Chatzimeletiou, Professor, Efstratios Kolibianakis, Professor and Prof. Christos Venetis, MD, MSc, PhD, FRANZCOG, Aristotle University of Thessaloniki, Thessaloniki, Greece

OBJECTIVE: Modified natural cycle frozen embryo transfer (mNC-FET) has been proposed to address the limited scheduling flexibility of natural cycles, incorporating hCG ovulation triggering in the presence of a mature follicle and adequate endometrial growth. However, a proportion of mNC-FET requires conversion to stimulated mNC-FET (SmNC-FET) with GnRH antagonist and gonadotrophins to achieve adequate follicular and endometrial growth, while preventing premature LH surge. The incidence of this conversion, its predictors and clinical implications remain unexplored.
MATERIALS AND METHODS: This retrospective cohort study included all mNC-FETs at a single university-based IVF centre between 2021-2025 (IRB:2025-B2015-519). FET cycles with hCG triggering and blastocyst-stage cryopreserved embryos were included regardless of whether gonadotrophins or GnRH antagonists were used. Monitoring was initiated 5-7 days before expected ovulation and every 2-3 days thereafter, with serum hormonal (E2, LH, P4), follicular and endometrial ultrasound assessment. Criteria for hCG triggering were endometrial thickness>7mm, estradiol>150pg/mL and dominant follicle≥17mm. Cycles not meeting these criteria with risk of LH surge, or anticipated transfer during weekends, were converted to SmNC-FET. Primary outcomes were the incidence of conversion and its predictors; clinical pregnancy, ongoing pregnancy and live birth were secondary outcomes. GEE models accounted for non-independence of observations.
RESULTS: Of 144 mNC-FET cycles (107 patients), 62 were converted to SmNC-FET, yielding a conversion rate of 43.1% [95%CI 35.3–51.2]. Biological reasons accounted for 67.8% of conversions, scheduling factors for 24.2%. Univariable GEE regression including age, menstrual cycle duration, BMI, antral follicle count, time since most recent oocyte collection, weekend onset of last menstrual period, and endometrial thickness, serum LH and estradiol at first monitoring did not identify independent predictors, with all ORs having CIs crossing unity. A multivariable model suggested that only onset of menstruation during the weekend was negatively associated with conversion (OR:0.43, 95%CI:0.19-0.98). In intention-to-treat analysis, controlling for confounders, no significant differences between converted and non-converted cycles in clinical pregnancy (38.2%vs.32.5%; OR:1.31, 95%CI:0.60-2.84), ongoing pregnancy (32.4%vs.26.8%; OR:1.33, 95%CI:0.60-2.93) and live birth (29.2%vs.24.6%; OR:1.28, 95%CI:0.56-2.88). Number of blastocysts transferred was similar (p=0.798).
CONCLUSIONS: Conversion from mNC-FET to SmNC-FET is relatively frequent (43.1%) and largely unpredictable with only the onset of menstruation during weekends

being negatively associated with conversion. Further large prospective trials are necessary to confirm these findings and inform clinical practice.
IMPACT STATEMENT: Patients should be counselled regarding the potential need for conversion to successfully complete endometrial preparation.
SUPPORT: No funding.

REPRODUCTIVE MEDICINE - NON-INFERTILITY (2 OF 4)

P-333 11:15 AM Tuesday, October 27, 2026

IMPACT OF GLUCAGON-LIKE PEPTIDE-1 (GLP-1) AND GLUCOSE-DEPENDENT INSULINOTROPIC POLYPEPTIDE (GIP) RECEPTOR AGONISTS (RA) ON POLYCYSTIC OVARIAN SYNDROME (PCOS) MENSTRUAL CYCLES IN A DIGITAL US COHORT. Christopher Ke Arkfeld, MD[1], Zifan Wang, PhD[2], Michelle A. Williams, ScD[3] and Shruthi Mahalingaiah, M.D., M.S.[4], [1]Massachusetts General Hospital Fertility Center, Massachusetts General Hospital and Harvard Medical School, Boston, MA, [2]Harvard T.H. Chan School of Public Health, Boston, MA, [3]Harvard School of Public Health, Boston, MA, [4]Havard T.H. Chan School of Public Health, Boston, MA

OBJECTIVE:
GLP-1 RA and combined GLP-1/GIP RA improve metabolic profiles, particularly in PCOS patients, but their effects on menstrual regularity remain less well characterized. This study investigates whether combined GLP-1/GIP RA have a greater effect on menstrual cycles than GLP-1 RA alone in individuals with and without PCOS.
MATERIALS AND METHODS:
The Apple Women's Health Study (AWHS) is a US longitudinal digital cohort with 6,408 respondents to the "GLP or GIP RA ever use" question and 1,685 reporting use in the past year, of which 1,018 noted menstrual cycle changes. Participants provided consent, enrolled from 11/2019 to 1/2026.
Population: Individuals with and without PCOS (age <50)
Exposure: GLP-1 RA or GLP-1/GIP RA use in the past year ("other brands not listed" were removed for this analysis)
Outcome: Self-reported changes in menstrual cycles
Statistics: Logistic regression adjusted for age and BMI at enrollment [odds ratio (95% CI)].
RESULTS:
Baseline characteristics included mean age of 39.5 ±13.4 vs 43.5 ±11.3 years and mean BMI of 22.2 ±5.3 vs 24.6 ±6.9 kg/m^2, for GLP-1 or GLP-1/GIP RA never users and ever users respectively. Self-reported outcomes, including "more regular cycles" [1.16 (1.10, 1.22)] and "return of their periods" [1.07 (1.03, 1.11)] are summarized by PCOS status and medication type in Table 1.

	Overall	No PCOS	PCOS	Odds ratio (95% CI)	No PCOS		PCOS	
					GLP-1 RA	GLP-1/GIP RA	GLP-1 RA	GLP-1/GIP RA
N	**941**	**220**	**721**	/	**383**	**292**	**128**	**79**
More regular cycles, n (%)	123 (13.1)	69 (9.6)	54 (24.5)	**1.16 (1.10, 1.22)**	39 (10.2)	26 (8.9)	29 (22.7)	22 (27.8)
Less regular cycles, n (%)	85 (9.0)	64 (8.9)	21 (9.5)	1.00 (0.96, 1.05)	35 (9.1)	25 (8.6)	15 (11.7)	9 (11.4)
Shorter cycles, n (%)	86 (9.1)	60 (8.3)	26 (11.8)	1.04 (0.99, 1.08)	33 (8.6)	31 (10.6)	16 (12.5)	13 (16.5)
Longer cycles, n (%)	39 (4.1)	31 (4.3)	8 (3.6)	0.99 (0.96, 1.02)	20 (5.2)	8 (2.7)	6 (4.7)	4 (5.1)
A return of their periods, n (%)	40 (4.3)	20 (2.8)	20 (9.1)	**1.07 (1.03, 1.11)**	12 (3.1)	9 (3.1)	12 (9.4)	9 (11.4)
No changes, n (%)	611 (64.9)	496 (68.8)	115 (52.3)	**0.85 (0.79, 0.92)**	259 (67.6)	198 (67.8)	65 (50.8)	35 (44.3)

*Category (n) may exceed total participant (n) reflecting "select all that apply" question.
CONCLUSIONS:
Individuals with PCOS who had ever used GLP-1 or combined GLP-1/GIP RA were 1.16 times more likely to report improved menstrual regularity compared with those without PCOS. A statistically non-significant trend favored combined GLP-1/GIP RA over GLP-1 RA alone.
IMPACT STATEMENT:
Combined GLP-1/GIP RA may improve menstrual regularity and restore menses in individuals with PCOS, warranting further prospective investigation. If confirmed, these findings suggest clinicians should be aware that GLP-1 and GLP-1/GIP RA use may restore ovulatory cycling in individuals with PCOS, with implications for contraceptive counseling and fertility planning.

P-334 11:30 AM Tuesday, October 27, 2026

ENVIRONMENTAL MICROPLASTIC BURDEN IN THE ENDOMETRIUM IS ASSOCIATED WITH POLYPS WHILE FERTILITY OUTCOMES REMAIN PRESERVED AFTER TREATMENT. Dr. Irene Peregrin Alvarez, M.D.[1], Hailie Ciomperlik, MD[2], Megan V Alexander, MD[1], Sophia M Lindekugel, MD[2], Momal Sharif, PhD[2], Leah Schenk, M.D.[1], Marcus Garcia, PharmD[3], Enrico Barrozo, PhD[2], Laura Detti, MD[2] and Matthew Campen, PhD[3], [1]Baylor College of Medicine, Dept of Obstetrics and Gynecology, Division of Reproductive Endocrinology and Infertility, Houston, TX, [2]Baylor College of Medicine, Houston, TX, [3]University of New Mexico

OBJECTIVE: To determine whether endometrial micro/nanoplastic (MNP) burden is associated with pathology-confirmed endometrial polyps in infertility patients and to evaluate reproductive outcomes after hysteroscopic management.
MATERIALS AND METHODS: This retrospective pilot cohort included 28 reproductive-age infertility patients from an ongoing endometrial MNP study undergoing hysteroscopy with concurrent endometrial tissue collection who had completed clinical abstraction, hysteroscopic/pathology classification and reproductive follow-up. This early analytic subset was prioritized because reproductive outcome data were available for linkage with tissue-level MNP measurements while full-cohort analysis remain ongoing. Samples were analyzed by pyrolysis gas chromatography/mass spectrometry with procedural blank correction, calibration curves, and normalization to tissue mass (µg/g). Two saline procedural controls were included. Clinical variables included age, BMI, infertility diagnosis, hysteroscopic findings, pathology, IVF outcomes and obstetrical outcomes. Continuous variables were compared using Mann–Whitney U tests and categorical variables with Fisher exact tests. Multivariable logistic regression adjusted for age and BMI.
RESULTS: Thirteen patients had pathology-confirmed polyps and 15 had non-polyp findings. Marked heterogeneity in cumulative and polymer-specific NP burden was observed (cumulative range approximately 210–5800 µg/g). In adjusted models, polyvinyl chloride (PVC) remained independently associated with pathology-confirmed polyps (per-IQR OR 2.80, 95% CI 1.03–7.61). Exploratory associations were also observed between several polymers and hysteroscopically identified focal lesions. Despite higher tissue burden in the polyp cohort, IVF outcomes were comparable between groups. Median oocytes retrieved were 14 [9–20] vs 12 [6–17] (p=0.54), and blastocyst yield was 4 [3–7] vs 3 [1–4] (p=0.49). First-trimester loss occurred in 15.4% of patients with polyps vs 26.7% without polyps (p=0.66), including spontaneous abortion in 15.4% vs 20.0% (p=1.00). Live birth occurred in 46.2% vs 33.3% (p=0.48). Among 11 completed deliveries, no significant obstetrical differences were observed between groups.
CONCLUSIONS: In the early outcomes-linked subset of an ongoing cohort, endometrial polyps showed higher tissue NP concentrations, particularly PVC, suggesting a potential relationship between environmental polymer burden and focal endometrial pathology. However, after hysteroscopic treatment, IVF outcomes, miscarriage rates, ongoing pregnancy and live births were comparable between patients with pathology-confirmed polyps and those without polyps. These preliminary findings suggest that MNP-associated uterine pathology may be clinically identifiable and treatable, with no clear evidence of persistent reproductive impairment after treatment in this small cohort. Full-cohort analysis are ongoing.
IMPACT STATEMENT: This study links tissue-level environmental polymer burden with endometrial pathology while providing reassuring IVF, pregnancy and live-birth outcome data after hysteroscopic treatment.
SUPPORT: Nothing to disclose.

P-335 11:45 AM Tuesday, October 27, 2026

OVARIAN STROMA STEROIDOGENIC ACTIVITY ACROSS THE HUMAN LIFESPAN: EVIDENCE FOR AN AGE-DEPENDENT SHIFT IN OVARIAN HORMONE PRODUCTION. Stylianos Vagios, MD[1], Alana Mermin-Bunnell, BS[2], Bekuochukwu Uzo-Menkiti, BS[3], Christopher Ke Arkfeld, MD[4], Alexa M. Sassin, MD[5], Irene Souter, MD[4], Lawrence Hsu Lin, MD PhD[6] and David Pépin, PhD[6], [1]MGH Fertility Center and Harvard Medical School, Boston, MA, [2]Massachusetts General Hospital, [3]Harvard Medical School, [4]Massachusetts General Hospital Fertility Center, Massachusetts General Hospital and Harvard Medical School, Boston, MA, [5]Boston, MA, [6]Massachusetts General Hospital, Boston, MA

OBJECTIVE:
To characterize the contribution of ovarian stromal hormone-producing cells to steroidogenic activity across the human lifespan.
MATERIALS AND METHODS:
Design: Cross-sectional study
Specimens: Human ovarian tissue specimens spanning a wide age range were archived from the pathology lab. Any cases involving malignancy were excluded. Specimens were grouped into age categories: 20-34 (n=5), 35-44 (n=12), 45-54 (n=5), 55-69 (n=5), ≥70 (n=5). RNA in situ hybridization was performed for CYP17A1 (androgen synthesis) and CYP19A1 (aromatase activity).
Outcome Measures: Stromal occupancy (µm^2) of the ovarian stroma by CYP17A1 and CYP19A1 was quantified using digital image analysis with manual correction. Results were normalized to percentage stromal area.
Statistics: Differences across age groups were evaluated using one-way ANOVA and Kruskal–Wallis tests, with the latter used as the primary analysis due to non-normal data distribution.
RESULTS:
Specimens from a total of 32 patients were included. Most patients were White (65.6%) and only three of them were on hormonal medication at the time of surgery (two were on OCPs and one had a hormonal IUD). Mean BMI at time of surgery was 28.7 ± 7.6 kg/m^2.

Stromal CYP17A1 expression as a % of the total stromal area differed significantly across age groups on nonparametric analysis (Kruskal–Wallis p=0.015), with the highest levels observed in postmenopausal specimens. Mean ± SD CYP17A1 stromal occupancy (%) increased from 0.092 ± 0.169 (ages 20–34) and 0.138 ± 0.261 (ages 35–44) to 0.430 ± 0.479 (ages 55–69), followed by minimal expression in ≥70 years (0.000 ± 0.001). CYP19A1 stromal occupancy (%) also demonstrated a trend toward variation across age groups (p=0.038), peaking in the age 35–44 group (0.112 ± 0.117) and declining in peri- and postmenopausal groups (age 45–54: 0.017 ± 0.021; age 55–69: 0.039 ± 0.038; age ≥70: 0.039 ± 0.059). Parametric analyses did not reach statistical significance (CYP17A1 p=0.087; CYP19A1 p=0.086), consistent with skewed distributions.
CONCLUSIONS:
Our findings highlight the important role of the ovarian stroma in driving age-related changes in steroidogenic activity, marked by a notable increase in CYP17A1 expression during the early postmenopausal years and a relative decline in CYP19A1 expression in postmenopausal ovaries. These findings suggest a shift toward androgen-predominant stromal hormone production following follicular depletion, consistent with established clinical observations.
IMPACT STATEMENT:
These data support a paradigm shift in ovarian endocrinology, highlighting the ovarian stroma as an active and dynamic contributor to hormone production across the lifespan, with implications for understanding aging, menopause, and stromal-driven endocrine disorders.
SUPPORT: Not applicable

P-336 12:00 PM Tuesday, October 27, 2026

DEVELOPMENT OF A HUMAN INDUCED PLURIPOTENT STEM CELL-DERIVED OVARIAN SUPPORT CELL IMPLANT FOR HORMONE REPLACEMENT IN MENOPAUSE. Christian Clark Kramme, PhD[1], Ferran Barrachina, PhD[2], Alexander D Noblett, Ph.D[2] and Bruna Paulsen, PhD[2], [1]New York, NY, [2]Gameto, New York, NY

OBJECTIVE: Despite the substantial impact of menopause on women's health, the available treatment options are limited by fixed dosing, tolerability concerns, and poor long-term adherence. This study details the early-stage development of a cell-based implant composed of steroidogenic and hormone responsive ovarian support cells (OSCs) derived from human induced pluripotent stem cells (hiPSCs) to restore physiologic endocrine signaling in women with menopause.
MATERIALS AND METHODS: The directed differentiation of engineered hiPSCs into OSC spheroids is optimized based on estradiol (E2) production, as well as the expression to two genes critical for hormone synthesis: CYP19A1 and FSHR. OSC spheroids were then encapsulated in core-shell alginate microbeads and cultured *in vitro* for 75 days to assess long-term steroidogenic capacity and cell viability. Finally, to evaluate implant feasibility and tolerability *in vivo*, encapsulated OSC spheroids were loaded into 3D printed porous housing devices and administered via either subcutaneous or intraperitoneal implantation into healthy mice and rats for progressive durations.
RESULTS: Optimization of differentiation conditions led to a population of OSC spheroids with granulosa-like cell identity that generate E2. Encapsulated OSC spheroids demonstrated continuous E2 production throughout the 75 days of *in vitro* culture, with periodic sampling indicating the maintenance of cell viability throughout the culture duration. In the *in vivo* feasibility and tolerability studies, the health and body weights of animals remained consistent with sham controls throughout the studies, with no unscheduled animal deaths following implantation. Assessment of OSC spheroids post-implant removal demonstrated cell viability after 30 days in mice and 90 days in rats, with limited evidence of uncontrolled spheroid outgrowth or escape. Finally, terminal immune assessment showed no major evidence of a xenogenic immune response in mice or rats.
CONCLUSIONS: The results of differentiation optimization experiments and long-term *in vitro* culture demonstrate that the granulosa-like cells in OSC spheroids retain steroidogenic capacity and hormone responsiveness for at least 75 days. Pilot *in vivo* studies in healthy rodents support the feasibility and tolerability of the OSC-based implant. Efficacy studies in ovariectomized model rats to assess long-term hormone production, as well as impacts on the secondary effects of menopause, including genitourinary health, bone health, and metabolism, are in preparation.
IMPACT STATEMENT: Development of this OSC spheroid-based implant represents the first step in the development of dynamic menopause treatments designed to integrate into native hormone signaling pathways.
SUPPORT: Funded by a for-profit company Gameto

REPRODUCTIVE MEDICINE - NON-INFERTILITY (3 OF 4)

P-337 11:15 AM Tuesday, October 27, 2026

IMPACT OF AGE ON THE EFFICACY OF ELINZANETANT (EZN) FOR THE TREATMENT OF VASOMOTOR SYMPTOMS (VMS) AND SLEEP DISTURBANCE ASSOCIATED WITH MENOPAUSE: POOLED DATA FROM TWO PHASE 3 STUDIES. Genevieve S Neal-Perry, MD, PhD[1], Kristie Baisden, FACOG[2], Vidhya Nair Rao, MD, MA[2], Ioanna Gkioni, MS[3], Chrisandra L. Shufelt, MD, MS[4] and Shelagh Larson, DNP APRN, WHNP-bc, MSCP, IF, FAANP, FNPWH[5], [1]University of North Carolina, Chapel Hill, NC, [2]Bayer US, Whippany, NJ, [3]Bayer Hellas AG, Athens, Greece, [4]Mayo Clinic, Jacksonville, FL, [5]Texas Woman's University, Dallas, TX

OBJECTIVE: EZN, a dual neurokinin-targeted therapy (neurokinin-1 and -3 receptor antagonist) is approved in the US for the treatment of moderate-to-severe VMS due to menopause. In two randomized phase 3 trials (OASIS-1 and -2; NCT05042362, NCT05099159), EZN showed significant reductions in VMS frequency/severity and improvements in sleep disturbance and menopause-related quality of life versus (vs) placebo (PBO), with a favorable safety profile. This pooled post-hoc exploratory analysis of OASIS-1 and -2 characterizes EZN's treatment effect in postmenopausal women across age ranges 40–49, 50–59, and 60–65 years (y).
MATERIALS AND METHODS: Postmenopausal women with ≥50 VMS episodes/week (wk) were randomized 1:1 to EZN 120 mg or PBO for 12 wks, then EZN for an additional 14 wks (both groups [gps]). Endpoints included mean change in VMS frequency from baseline to wks 1, 4, and 12, and PROMIS sleep disturbance short form (SD SF) 8b total T-score from baseline to wk 12. A mixed model with repeated measures was used. No multiplicity adjustments were applied and therefore Type I error was not adequately controlled; nominal one-sided p-values (α=0.025) were evaluated and should be interpreted as exploratory.
RESULTS: Overall, n=113 (EZN, n=53; PBO, n=60) women aged 40–49y, n=543 (EZN, n=270; PBO, n=273) aged 50–59y, and n=140 (EZN, n=76; PBO, n=64) aged 60–65y were randomized. EZN showed greater numerical reductions from baseline in daily VMS frequency vs PBO from wk 1 across all age gps, with sustained reductions through wk 12 **(Table)**. At wk 12, EZN also showed greater reductions from baseline in PROMIS total T-score vs PBO across all age gps **(Table)**.
CONCLUSIONS: In this post-hoc exploratory analysis, EZN reduced VMS frequency and improved sleep disturbance in postmenopausal women aged 40–65y.
IMPACT STATEMENT: Results support EZN as a potentially effective treatment for the management of VMS and sleep disturbance in women aged 40–65y during the menopausal transition.

Table: Baseline mean (SD) and LS mean difference (EZN vs PBO) by age group

	Baseline, mean (SD)		**Change from baseline**		
Age gp (y)	**EZN 120 mg**	**PBO**	**Wk**	**EZN 120 mg vs PBO LS mean difference and 95% CI**	**Nominal p-value (one-sided)**
Daily VMS frequency					
40–49	17.00 (12.65)	12.88 (6.18)			
			1	-3.20 (-5.12, -1.28)	0.0005
			4	-3.80 (-6.34, -1.26)	0.0017
			12	-2.93 (-5.77, -0.10)	0.0213
50–59	13.41 (6.75)	15.80 (14.15)			

			1	-1.75 (-2.62, -0.88)	<0.0001
			4	-2.99 (-4.15, -1.84)	<0.0001
			12	-3.24 (-4.53, -1.95)	<0.0001
60–65	14.13 (12.67)	14.91 (9.78)			
			1	-2.27 (-3.98, -0.56)	0.0047
			4	-3.22 (-5.49, -0.95)	0.0027
			12	-3.52 (-6.05, -1.00)	0.0031
PROMIS total T-score					
40–49	62.42 (5.89)	60.33 (7.70)			
			12	-4.88 (-7.78, -1.98)	0.0005
50–59	61.84 (6.71)	60.77 (7.02)			
			12	-5.12 (-6.44, -3.81)	<0.0001
60–65	59.03 (8.12)	59.28 (7.44)			
			12	-4.41 (-6.99, -1.83)	0.0004
CI, confidence interval; LS, least squares; SD, standard deviation.					

SUPPORT: Bayer US, Whippany, NJ, USA

P-338 11:30 AM Tuesday, October 27, 2026

SECONDARY AMENORRHEA AS THE PRESENTING SYMPTOM OF UNDIAGNOSED AUTOIMMUNE HEPATITIS WITH END-STAGE LIVER DISEASE: A CASE REPORT. Anelise K Diener, DO and Claire Templeman, MD, Kaiser Permanente Southern California

OBJECTIVE:
Advanced liver disease is a well-established cause of secondary amenorrhea in gastroenterology literature, with hepatic dysfunction disrupting the hypothalamic-pituitary-gonadal axis and resulting in hypogonadotropic hypogonadism. However, current guidelines for the evaluation of secondary amenorrhea do not include liver disease in the recommended diagnostic workup. This case presents a young, otherwise healthy patient whose evaluation for secondary amenorrhea revealed previously undiagnosed autoimmune hepatitis with end-stage liver disease requiring liver transplantation.
MATERIALS AND METHODS:
Single-patient case study.
RESULTS:
A 28-year-old G0 patient with no past medical or family medical history presented for evaluation of secondary amenorrhea. She endorsed regular menses from menarche at 12 until 20 years old, at which time she developed oligomenorrhea, which was regulated with oral contraceptive pills (OCP). With discontinuation of OCPs, she remained amenorrheic for 16 months and recently failed a progesterone withdrawal test. Physical exam was unremarkable with normal BMI, no evidence of hyperandrogenism, and a normal pelvic exam. The initial laboratory evaluation was notable for undetectable levels of FSH, LH, and estradiol, with mildly elevated testosterone (58 ng/dL). Transvaginal ultrasound demonstrated significant free fluid. Given the unexpected pelvic free fluid, liver function tests were obtained and found to be greater than five times the upper limit of normal. The remainder of the secondary amenorrhea workup – pregnancy test, thyroid function, prolactin level, androgen studies, pituitary MRI – was negative. During evaluation with hepatology, liver function tests worsened, with additional findings notable for thrombocytopenia, neutropenia, hypoalbuminemia, increased INR, elevated IgG, and high-titer smooth muscle antibody. Abdominal ultrasound demonstrated nodular, coarse liver, ascites, and splenomegaly, concerning for cirrhosis with portal hypertension. The patient underwent a liver biopsy with evidence of severe autoimmune hepatitis and focal parenchymal collapse, confirming the diagnosis of end-stage liver disease secondary to autoimmune hepatitis with active hepatocellular injury. Given the degree of liver damage with a calculated 90-day mortality risk of 15%, the patient is currently admitted for expedited evaluation for a liver transplant.
CONCLUSIONS:
This case illustrates the potential value of incorporating liver function testing in the evaluation of secondary amenorrhea, particularly for cases of unexplained hypogonadotropic hypogonadism.
IMPACT STATEMENT:
Although rare, advanced liver disease carries significant morbidity and mortality, and its inclusion in the diagnostic workup for secondary amenorrhea may facilitate earlier detection and intervention before progression to irreversible disease.
SUPPORT: None

P-339 11:45 AM Tuesday, October 27, 2026

DIETARY SUPPLEMENT USE IN PATIENTS PRESENTING FOR GYNECOLOGIC OR FERTILITY CARE. Sanjana Satish, MD, MPH[1], Clarisa R Gracia, MD, MSCE[2] and Iris Lee, MD, MSCE[2], [1]Hospital of the University of Pennsylvania, Philadelphia, PA, [2]University of Pennsylvania, Philadelphia, PA

OBJECTIVE: To characterize dietary supplement use among patients presenting for gynecologic or fertility care, compare use between those trying to conceive (TTC) versus not TTC, and identify predictors among those TTC.
MATERIALS AND METHODS: We conducted a cross-sectional survey of patients ≥18 years undergoing gynecologic or fertility-related procedures at a tertiary care reproductive endocrinology and infertility center (March–June 2025). Participants reported supplement use; clinical data were obtained from the electronic medical record. The primary outcome was supplement count among TTC versus not TTC, modeled using Poisson regression adjusting for age, race, BMI, and parity. Supplement use was compared using chi-square or Fisher's exact tests. Predictors among TTC participants were identified using forward selection ($p<0.05$).
RESULTS: Among 394 participants, mean age 35.9±4.2 years and 60.4% identified as White. Overall, 81.7% reported ≥1 supplement, including 71.6% using prenatal vitamins (PNVs) and 56.1% using non-PNV supplements. Median supplement count was 2 (IQR 1–3). CoQ10 (34.8%), vitamin D (22.3%), and omega-3 fatty acids (17.4%) were the most common non-PNV supplements. Among TTC participants (n=264, 67%), only 82.2% reported PNV use. TTC was associated with higher supplement counts (adjusted IRR 1.55, 95% CI 1.25–1.92, $p<0.001$). Vitamin E and CoQ10 were more commonly used among those TTC, while most other supplements did not differ by TTC status. Patients TTC reported use of less conventional supplements, including ashwagandha (n=10, 3.8%), selenium (n=4, 1.5%), choline (n=4, 1.5%), and L-arginine (n=4, 1.5%). Among those TTC, prior IVF was associated with higher supplement use (IRR 1.33, 95% CI 1.02–1.74).
CONCLUSIONS: Supplement use is highly prevalent among patients seeking gynecologic or fertility care. TTC is associated with increased supplement use, including supplements with limited supporting evidence for improved chances of conception. However, many patients TTC are not taking PNVs despite ACOG recommendations. Additionally, prior treatment with IVF is associated with higher supplement use.
IMPACT STATEMENT: These findings highlight a gap between guideline-recommended and real-world supplement use among patients TTC, supporting routine

screening and targeted counseling to improve PNV adherence and address use of non-evidence-based supplements.

Table 1: Frequency of Use of Selected Supplements by TTC Status

Supplement	TTC (n=264), n (%)	Not TTC (n=130), n (%)	p-value
PNV/Multivitamin	217 (82.2%)	65 (50.0%)	**<0.001**
CoQ10 (ubiquinol)	92 (34.8%)	14 (10.8%)	**<0.001**
Vitamin D	59 (22.3%)	38 (29.2%)	0.172
Omega-3 (fish oil)	46 (17.4%)	15 (11.5%)	0.171
Vitamin E	20 (7.6%)	1 (0.8%)	**0.010**
Folic acid	27 (10.2%)	4 (3.1%)	**0.023**
Ashwagandha	10 (3.8%)	0 (0%)	**0.035**
None	35 (13.3%)	37 (28.5%)	**<0.001**

SUPPORT: No financial support to report.

P-340 12:00 PM Tuesday, October 27, 2026

INTRAVENOUS AUTOLOGOUS BLOOD CONCENTRATE CONTAINING HEMATOPOIETIC STEM CELLS (CD34⁺-ENRICHED PRP) IMPROVES MENOPAUSAL SYMPTOMS, FATIGUE, SLEEP QUALITY, AND EXPLORATORY BIOMARKER OUTCOMES IN MIDLIFE WOMEN: A PROSPECTIVE PRELIMINARY STUDY. Taehee Kim, MD.PhD[1], Eun Sil Lee, M.D., PH.D[2], Hae-Hyeog Lee, MD, PhD[3] and Hannah Jo, M.s[4], [1]Soonchunhyang University Bucheon Hospital, Bucheon Si, South Korea, [2]Soonchunhyang University Seoul Hospital, Seoul, [3]Seoul-City, South Korea, [4]Seoul, South Korea

OBJECTIVE:
To evaluate short-term clinical and biomarker changes following intravenous autologous blood concentrate containing hematopoietic stem cells (CD34⁺-enriched PRP) administration in women aged ≥45 years presenting with menopausal symptoms, fatigue, and/or poor sleep quality.
MATERIALS AND METHODS:
Twenty-three women (mean age 55.0 ± 5.9 years) meeting at least one symptom threshold (Menopause Rating Scale [MRS] ≥9, Fatigue Severity Scale [FSS] ≥28, or Pittsburgh Sleep Quality Index [PSQI] ≥6) received a single intravenous infusion of autologous blood concentrate containing hematopoietic stem cells (CD34⁺-enriched PRP), prepared from 240 mL peripheral blood using the SMART M-CELL automated separation system. Approximately 40 mL concentrate was diluted in saline and infused intravenously. Assessments were performed at baseline, Day 14, and Day 28.
Primary outcomes were changes in validated symptom scales (MRS, FSS, PSQI). Exploratory secondary outcomes included natural killer (NK) cell activity (IFN-γ), total oxidant status (TOS), total antioxidant status (TAS), TOS/TAS ratio, and sex hormone levels. Repeated-measures ANOVA with post-hoc testing was used.
The treatment was administered via an investigational intravenous route of administration. Accordingly, the study was conducted under Institutional Review Board (IRB) approval as an experimental clinical protocol.
RESULTS:
All symptom scales improved significantly over 28 days. Mean FSS decreased from 49.0 to 18.9 ($p<0.001$), MRS from 22.6 to 6.0 ($p<0.001$), and PSQI from 12.8 to 5.7 ($p<0.001$).
TOS declined from 4.81 to 2.02 μmol ($p<0.001$), while TOS/TAS ratio decreased from 0.28 to 0.12 ($p<0.001$), indicating a reduction in systemic oxidative stress. NK cell activity increased from 927.2 pg/mL to 1301.5 pg/mL at Day 28 ($p=0.037$). TAS and overall sex hormone levels did not change significantly. In premenopausal participants, estradiol showed a non-significant upward trend. No clinically meaningful abnormalities were observed in routine laboratory safety parameters.
CONCLUSIONS:
A single intravenous infusion of autologous blood concentrate containing hematopoietic stem cells (CD34⁺-enriched PRP) was associated with rapid improvements in menopausal symptoms, fatigue, and sleep quality, accompanied by favorable changes in oxidative stress markers and NK cell activity. These preliminary findings support further randomized controlled trials to determine efficacy, mechanism, durability, and optimal treatment protocols for systemic cell-enriched autologous blood therapy in women's aging-related health conditions.
IMPACT STATEMENT: Intravenous infusion of autologous blood concentrate containing hematopoietic stem cells with favorable changes
SUPPORT: This research was supported by Miracell CO.,LTD

REPRODUCTIVE MEDICINE - NON-INFERTILITY (4 OF 4)

P-342 11:30 AM Tuesday, October 27, 2026

A RETROSPECTIVE CHART REVIEW ON PERIMENOPAUSE COUNSELING PRACTICES IN A RESIDENT WOMEN'S HEALTH CLINIC. Hannah Catherine Milad, MD[1], Samantha Mallahan, BE[2] and Laura Matthews Glaser, MD[2], [1]Forest Park, IL, [2]Loyola University Chicago, Maywood, IL

OBJECTIVE: To evaluate the frequency and content of perimenopause counseling documented in a resident-run women's health clinic and to identify patient, visit, and provider factors associated with receipt of counseling during the menopausal transition.
MATERIALS AND METHODS: IRB approval was obtained. This retrospective cross-sectional chart review included female patients aged 40–55 years old presenting for gynecologic care at a single academic institution; specifically, the obstetrics and gynecology (OB-GYN) resident women's health clinic between January 1, 2025, and December 31, 2025. Patients with prior bilateral oophorectomy, treatment-induced premature menopause, pregnancy, or non-gynecologic visits were excluded. Electronic medical records were reviewed. The primary outcome was the frequency of documented proactive menopause counseling. Secondary outcomes included characterization of the content of menopause counseling provided, including discussion of symptoms and treatment options, and quantifying whether patients were asked what year their mother went through menopause. Additionally, secondary outcomes included identifying demographic, clinical, or provider factors associated with patients' receipt of menopause counseling. Descriptive statistics were used to describe counseling frequency across the clinic; further, chi-squared tests defined associations, and multivariable logistic regressions were performed for the predictors of age, race/ethnicity, insurance status, symptoms, visit type, and provider level against the outcome. Patient data were stratified by menopausal status.
RESULTS: 119 patients met inclusion criteria across 145 total visits in an OB-GYN resident clinic. 17 clinicians provided care through 60 new patient visits, 56 return patient visits, 14 annual exams, 9 acute patient visits, and 6 post-operative follow-up visits. Data analysis is ongoing and will be completed by June 30 but preliminary review suggests that menopausal counseling was documented in approximately 20% of encounters. Among patients receiving counseling, 80% had documented discussion of menopausal symptoms, 40% reviewed available treatment options, and <5% were asked about maternal age at menopause. Menopausal therapies were prescribed in 25% of patients, and educational materials were provided in 30%. Factors independently associated with counseling documentation included patient age and increased resident training year, while race/ethnicity was not significantly associated.
CONCLUSIONS: Despite the high prevalence and significant impact of menopausal symptoms, the menopausal transition was under-addressed and undertreated by obstetrics and gynecology residents with only 20% of eligible patients at the resident clinic receiving any sort of menopausal counseling.
IMPACT STATEMENT: This study highlights gaps in perimenopause counseling within resident-delivered care and supports targeted educational and systems-based interventions to improve guideline-concordant menopause counseling during a critical reproductive transition.
SUPPORT: None
REFERENCES:
None

P-343 11:45 AM Tuesday, October 27, 2026

PREDICTION OF EARLY PREGNANCY VIABILITY AND LOCATION USING CLINICALLY AVAILABLE BIOMARKERS. Saadhya Bahudodda, BS[1], Robert Slovikowsky, BA[1], Nehemiah Weldeab, BS, MPH[2], Zixuan Wen, BS, MA[2], Li Shen, PhD[2], Emily S Jungheim, M.D., M.S.[3], Sarah Horvath, MD, MS[4], Peter Takacs, MD, PhD[5], Suneeta Senapati, MD, MSCE[6] and Kurt T Barnhart, MD, MSCE[7], [1]University of Pennsylvania, Philadelphia, PA, [2]Penn Medicine, [3]Northwestern University Feinberg School of Medicine, Chicago, IL, [4]Penn State Health, [5]Eastern Virginia Medical School, Norfolk, VA, [6]University of Pennsylvania, PA, [7]Penn Medicine Women's Health Clinical Research Center, University of Pennsylvania, Philadelphia, PA

OBJECTIVE: Prior work from our group identified 11 novel biomarkers predictive of viable and ectopic pregnancies (1). Two markers, soluble fms-like tyrosine kinase-1 (sFlt) and growth differentiation factor-15 (GDF15), have since received FDA clearance (2). We evaluated the predictive performance of a simplified panel restricted to FDA-cleared biomarkers (hCG, sFlt, and GDF15) to determine early pregnancy viability and location, comparing results with previously identified multi-marker panels.
MATERIALS AND METHODS: 218 individuals were selected from a prospective cohort. Using a nested case-control design, serum biobank specimens were collected and phenotyped within 48 hours of collection. Samples from 75 intrauterine pregnancies (IUP), 68 ectopic pregnancies (EP), and 75 early pregnancy losses (EPL) were identified and immunoassayed. A classification and regression tree (CART) analysis was conducted independently for the prediction of pregnancy viability (IUP vs. EPL + EP) and location (EP vs. EPL + IUP). Predictions were verified against the patient's diagnosis. Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), conclusive classification, and accuracy were calculated.
RESULTS: Previous results found that the optimal model to predict viability included pregnancy specific beta-1-glycoprotein 3 (PSG3), glycoprotein hormones alpha subunit (CG-alpha), and pregnancy-associated plasma protein A (PAPPA), achieving a maximum accuracy of 97.4% (95% CI 94.9, 99.9) in 70.2% of patients. The optimal model to predict location included PSG3, sFlt, and tissue factor pathway inhibitor 2 (TFPI2), achieving a maximum accuracy of 94.4% (90.6, 98.2) in 65.6% of patients.
When models were restricted to only clinically available assays (hCG, sFlt, and GDF15), accuracy to discriminate pregnancy viability and location was maintained at 90% in 74% of patients.

	Biomarkers Included	**Sensitivity**	**Specificity**	**PPV**	**NPV**	**% Classified**	**Accuracy Among Classified**

Viability	hCG, sFlt, GDF15	76.1% (75.8, 76.3)	52.7% (52.3, 53.0)	90.4% (90.2, 90.5)	92.5% (92.2, 92.7)	73.9% (73.7, 74.0)	90.9% (90.8, 91.1)
Location	hCG, sFlt, GDF15	63.5% (63.2, 63.8)	68.4% (68.2, 68.7)	89.3% (89.0, 89.5)	90.5% (90.4, 90.7)	73.9% (73.8, 74.1)	90.0% (89.9, 90.1)

CONCLUSIONS: Predicting pregnancy location and viability with high accuracy is possible using multiplexed biomarkers. Leveraging clinically available markers (hCG, sFlt, and GDF15) enables the detection of viability and location characteristics with high diagnostic accuracy and may provide a pathway for rapid current clinical implementation. Incorporation of novel biomarkers, upon validation and approval, may enhance predictive accuracy.
IMPACT STATEMENT: Multiplexing biomarkers may improve the diagnosis of pregnancy viability and location.

P-344 12:00 PM Tuesday, October 27, 2026

SPONTANEOUS CONCEPTION IN A CASE OF SEVERELY ELEVATED DHEA-S. Kara Bethel Bethel Fields, MD[1], Salina Z Johnson, MD[2] and Emily G. Hurley, MD[2], [1]Bellevue, KY, [2]University of Cincinnati, West Chester, OH

OBJECTIVE: To discuss the diagnostic evaluation and reproductive outcome of a patient with markedly elevated dehydroepiandrosterone sulfate (DHEA-S) levels presenting for fertility evaluation.
MATERIALS AND METHODS: A 31-year-old G0 female with hirsutism presented for fertility evaluation after trying to conceive for approximately 11 months. The patient reported a prior diagnosis of PCOS based on elevated testosterone, but had regular menses and did not have polycystic appearing ovaries on ultrasound. Initial labs showed DHEA-S elevated to 631 µg/dL, total testosterone 96 ng/dL, and a repeat ultrasound confirmed normal ovaries. Repeat labs approximately 8 months later found the DHEA-S level exceeded 1000 ug/dL. Differential diagnoses initially considered included polycystic ovary syndrome, congenital adrenal hyperplasia (CAH), and a DHEA-secreting adrenal tumor.
RESULTS: Subsequent imaging revealed mild adreniform enlargement of the left adrenal gland with no focal nodule identified, likely adrenal hyperplasia. She was referred to Endocrinology and Surgical Oncology. Further laboratory workup including ACTH, 17-OHP, and TSH were within normal limits and there was no evidence of insulin resistance. The patient had two midnight salivary cortisol tests that were normal. Her androstenedione level was mildly elevated. Per Endocrinology, a common cause for this is an inherited mutation in the sulfur transferase gene, with no strong indication for adrenalectomy. Per Surgical Oncology, given that there was no evidence of cortisol dysregulation, it would be reasonable to repeat imaging in 1 year. The patient hoped to prioritize fertility goals prior to considering surgery. She then spontaneously conceived. Endocrinology is still following in pregnancy, recommending expectant management of adrenal hyperplasia, as a portion of DHEA-S is converted to estradiol by placental aromatization.
CONCLUSIONS: The differential diagnosis of elevated DHEA-S is broad, and a multidisciplinary approach is instrumental in the workup and ongoing management of these cases. There is limited knowledge regarding clinical management of elevated DHEA-S on fertility and pregnancy outside of PCOS and congenital adrenal hyperplasia.
IMPACT STATEMENT: Patients with extreme isolated DHEA-S elevation secondary to adrenal hyperplasia should be counseled regarding optimistic prognosis of expectant management in pregnancy.
REFERENCES:
Carrière et al. Fertility and pregnancy outcomes in women with nonclassic 21-hydroxylase deficiency
Hoffman et al. The prevalence and significance of elevated dehydroepiandrosterone sulfate levels in anovulatory women.
Madden et al. The pattern and rates of metabolism of maternal plasma dehydroisoandrosterone sulfate in human pregnancy.

TECHNOLOGY & INNOVATION (4 OF 8)

P-345 11:15 AM Tuesday, October 27, 2026

AMPLIFIED MALE VULNERABILITY IN ART PREGNANCIES PERSISTS AFTER ACCOUNTING FOR PLURALITY AND MATERNAL AGE. Diana Toro, MD, Joshua McOmber, BS, Tyler Chiu, BBA and Nicholas Stansbury, MD, UT Health San Antonio, San Antonio, TX

OBJECTIVE:
To evaluate whether assisted reproductive technology (ART) modifies sex-specific differences in neonatal outcomes.
MATERIALS AND METHODS:
Data were obtained from the CDC WONDER Natality database (2016–2022). Live births were stratified by infant sex and ART use. Primary outcomes included preterm birth (<37 weeks) and low 5-minute Apgar score (<7). Analyses were repeated after restricting to singleton pregnancies and stratifying by maternal age. Relative risks (RR) with 95% confidence intervals (CI) were calculated.
RESULTS:
Among ART pregnancies, male infants had higher rates of low 5-minute Apgar scores compared to females (2.98% vs 2.53%; RR 1.18, 95% CI ~1.15–1.21). In non-ART pregnancies, a similar but attenuated difference was observed (2.30% vs 2.05%; RR 1.12, 95% CI ~1.11–1.13).
For preterm birth, male infants also demonstrated higher rates than females in both groups, with a greater disparity in ART pregnancies (13.5% vs 11.8%; RR 1.14, 95% CI ~1.12–1.16) compared to non-ART pregnancies (10.8% vs 9.6%; RR 1.12, 95% CI ~1.11–1.13).
These findings persisted after restriction to singleton pregnancies, indicating that the association is not explained by multiple gestations. Stratified analyses suggested a more pronounced sex-based disparity among pregnancies of advanced maternal age.
CONCLUSIONS:
Male infants experience worse neonatal outcomes compared to females, and this disparity appears amplified in ART pregnancies. This association persists after accounting for plurality and maternal age, suggesting that ART may modify underlying sex-based vulnerability. These findings have implications for perinatal risk stratification and counseling in ART pregnancies.
IMPACT STATEMENT:
Male disadvantage in neonatal outcomes is amplified in ART pregnancies and persists beyond multiple gestation and maternal age, suggesting ART-specific modulation of fetal vulnerability.

P-346 11:30 AM Tuesday, October 27, 2026

IGX12, A HUMANIZED HUMAN FOLLICLE STIMULATING HORMONE (HFSH)-POTENTIATING ANTIBODY, IMPROVES FERTILITY OF DIMINISHED OVARIAN RESERVE (DOR) MICE AFTER A SUPEROVULATION TREATMENT. Elodie Kara, PhD[1], Laurence Dupuy, PhD[1], Lara Houeis, MD, PhD[2], Jeremy Decourtye, DUT[1], Sophie Casteret, PhD[1], Jaques Donnez, M.D.[3], Marie-Madeleine Dolmans, MD, PhD[2], Rene Frydman, MD[4] and Marie-Christine Maurel, PhD[1], [1]IGYXOS Biotherapeutics, Nouzilly, France, [2]Gynecology Research Unit, Institut de Recherche Expérimentale et Clinique, Université Catholique de Louvain, Brussels, Belgium, [3]Society for Research Into Infertility, Brussels, Belgium, [4]Hospital FOCH, Suresnes, France

OBJECTIVE:
The aim of this work was to study the effect of IGX12, a hFSH potentiating antibody, on the fertility of mice with chemotherapy-induced DOR following superovulation treatment.
MATERIALS AND METHODS:
Fifty-three (53) Naval Medical Research Institute (NMRI) mice were treated with a single intraperitoneal injection of 12mg/kg Busulfan+120mg/kg Cyclophosphamide to induced DOR. Five or 8 weeks after chemotherapy, mice were stimulated either with hMG only (n=25) or with hMG+IGX12 (n=28). Human chorionic gonadotropin (hCG) was injected at D3 to all females. Females were then mated and mice displaying a vaginal plug within 16-20 hours of mating were euthanized 48 hours post-hCG injection.
The outcome of the ovarian stimulation protocol was compared in terms of living embryo counts collected on Day 2 after mating to assess their fertility. In 26 mice (n=13/group), follicular count and classification, and other parameters such as apoptosis, activation and proliferation were analyzed by immunohistological staining of cleaved caspase-3, phospho-Akt and Ki67 respectively on ovaries, and these parameters were compared between groups with a Student's t-test. Mann-Whitney test was applied in case of abnormal distribution or small sample size. Fisher's exact test was used for pregnancy rate analysis. Data were considered statistically significant if $p<0.05$.
RESULTS:
In both groups, all mice developed corpora lutea, but only 40% of mice in the group treated with hMG only had day-2 living embryos versus 68% in the group treated with hMG+IGX12. This difference was statistically significant (*$p<0.05$). The number of day-2 living embryos obtained per female was not significantly different between groups. Histological analysis of the ovaries showed no significant differences between groups in cleaved caspase-3, phospho-Akt and Ki67, and in the number and classification of follicles.
CONCLUSIONS:
The addition of IGX12 to an hMG-based ovarian stimulation protocol in DOR mice generated significantly more pregnant mice at D2 (1.7 fold increase, *$p<0.05$), without any negative impact on the ovaries.
IMPACT STATEMENT:
IGX12 is a hFSH-potentiating monoclonal antibody that successfully completed a phase I study in healthy male and female volunteers. If the findings of this study are confirmed in human, IGX12 would change the treatment paradigm of DOR women.
SUPPORT: This work was funded by Igyxos Biotherapeutics.

P-347 11:45 AM Tuesday, October 27, 2026

INTEGRATING METABOLIC IMAGING AND MORPHOKINETIC PARAMETERS TO IMPROVE EMBRYO ASSESSMENT UNDER REDOX MODULATION. Fabrizzio Horta, PhD[1,2], Yan Tung So, MedSc Hons[3], Yaoxi Xiong, MBBS, MS[3], Lindsay Wu, PhD[3] and Robert B Gilchrist, PhD, Prof.[4], [1]Education Program in Reproduction & Development, EPRD, Monash University, Melbourne, VIC, Australia, [2]University of New South Wales, Sydney, NSW, Australia, [3]UNSW Sydney, [4]University of New South Wales Sydney, Kensington, NSW, Australia

OBJECTIVE:
To investigate how modulation of NAD(P)H metabolism influences fertilisation, embryo development, and morphokinetic dynamics using integrated time-lapse and metabolic imaging in a mouse model.
MATERIALS AND METHODS:
Mouse oocytes were fertilised in vitro and cultured under four conditions: (1) control; (2) FK866 (inhibition of NAD^+ biosynthesis); (3) NMN (nicotinamide mononucleotide) to enhance NAD^+ levels; and (4) NMN + FK866. Embryos were continuously monitored

over 120 hours using time-lapse imaging (Geri, GeneaBiomedx). Metabolic imaging was performed at the morula and blastocyst stages to assess NAD(P)H-related autofluorescence and optical redox ratios. Outcomes included fertilisation rate, blastocyst formation, developmental timing, morphokinetic parameters, and developmental arrest. Statistical analysis was conducted using ANOVA and survival models.
RESULTS:
Fertilisation rates were comparable across all groups. FK866 significantly reduced blastocyst formation (68.5% vs 85.3% in controls; p<0.005) and increased developmental arrest from early blastocyst formation. NMN supplementation maintained blastocyst rates and morphokinetic profiles similar to controls (p>0.05). Combined NMN + FK866 treatment partially rescued the detrimental effects of FK866, improving developmental progression relative to inhibition alone. Morulas and blastocysts formed in FK866 group showed significantly different metabolic signatures compared to controls (p<0.05).
CONCLUSIONS:
NAD(P)H modulation significantly influences both the rate and quality of early embryo development. Enhancing NAD^+ availability supports developmental competence, while metabolic inhibition impairs progression and metabolic signatures independently of embryo morphology.
IMPACT STATEMENT:
These findings highlight NAD(P)H metabolism as a key regulator of preimplantation development and support the integration of metabolic imaging into embryo assessment. Targeting redox metabolism may offer a novel strategy to optimise embryo culture conditions and improve selection in assisted reproduction.
SUPPORT: N/A

P-348 12:00 PM Tuesday, October 27, 2026

INTERPRETABLE BLASTOCYST GRADING THROUGH ANATOMY-ANCHORED VISUAL EVIDENCE. Armand Bandiang Massoua, PhD[1], Debbie Montjean, B.SC., M.SC., PH.D., PH.D.[2], Marie-Helene Godin Pagé, Masters of science[3], Mamadou Maladho Maladho Barry, MSc[1] and Pierre Miron, M.D., PH.D.[4], [1]Fertilys Innovation, Laval, QC, Canada, [2]Fertilys, Laval, QC, Canada, [3]Laval, QC, Canada, [4]Centre d'aide médicale à la procréation FERTILYS, Laval, QC, Canada

OBJECTIVE: To develop and evaluate an interpretable deep learning (DL) system for blastocyst grading in in vitro fertilization (IVF) that improves transparency and supports clinical decision-making, addressing known limitations in inter-operator variability and black-box AI models.
MATERIALS AND METHODS: A DL-based grading system was trained on a publicly available dataset of 512 Day-5 blastocysts annotated with Gardner grades and expert labels for inner cell mass (ICM), trophectoderm (TE), and zona pellucida. Data were split into training (80%, n=410) and held-out test sets (20%, n=102). A standard DL classifier was trained under identical conditions for comparison. Both models predicted expansion, ICM, and TE grades. The proposed system additionally generated anatomically anchored attention maps and quantitative morphometric measurements (blastocoel radius, embryo radius, zona thickness in microns) derived from automated segmentation. Performance was assessed on the test set using accuracy and quadratic-weighted Cohen's kappa (κw), with qualitative evaluation of interpretability.
RESULTS: The standard model achieved a mean accuracy of 85% (κw=0.72), compared to 83% (κw=0.69) for the proposed system. While slightly lower in accuracy, the proposed model demonstrated superior interpretability. Attention maps from the standard model frequently highlighted non-relevant peripheral regions, limiting clinical utility. In contrast, the proposed system consistently localized attention to anatomically meaningful structures, including ICM, TE, blastocoel, and zona pellucida. Additionally, it provided axis-specific grades with corresponding visual evidence and quantitative measurements, enabling direct verification of grading decisions.
CONCLUSIONS: The proposed interpretable DL system enables embryologists to inspect and validate grading outputs, trading minimal accuracy for improved transparency. This approach supports human–AI collaboration and aligns with the need for clinically usable AI tools in embryology.
IMPACT STATEMENT: By integrating explainability into automated blastocyst grading, this study advances the development of clinically adoptable AI systems in IVF, promoting trust, auditability, and more informed embryo selection decisions
SUPPORT: Research supported by Fertilys Innovation

ART (22 OF 27)

P-349 11:15 AM Tuesday, October 27, 2026

MODE OF CONCEPTION AND PERINATAL OUTCOMES IN WOMEN WITH DIMINISHED OVARIAN RESERVE: A RETROSPECTIVE COHORT STUDY. Huriyah K El Moussa, M.D.[1], Lara Nahouli, M.D.[1], Sima F Sharafeddin, M.D.[1], Kayanne Toutounji, B.Sc.[2,3] and Ghina Said Ghazeeri, M.D.[4], [1]American University of Beirut Medical Center, Beirut, Lebanon, [2]Beirut, Lebanon, [3]American University of Beirut, Beirut, Lebanon, [4]AUBMC, Beirut, Lebanon

OBJECTIVE: To compare maternal and neonatal outcomes among women with diminished ovarian reserve (DOR) who conceived spontaneously versus through assisted reproductive technology (ART).
MATERIALS AND METHODS: We conducted a retrospective cohort study of women aged 18-45 years with DOR, defined as anti-Mullerian hormone <1 ng/ml and/or antral follicle count <5, who conceived between June 2018 and February 2025. Pregnancies were classified by mode of consumption as spontaneous or ART, including invitro fertilization with intracytoplasmic sperm injection, intrauterine insemination, or ovulation induction. Analyses reflected the hierarchical data structure: patient, pregnancy episode, and neonate. Pregnancy outcomes were analyzed at the pregnancy-episode level, and neonatal outcomes at the neonate level using cluster robust models when appropriate. Models adjusted for maternal age, body mass index (BMI), nulliparity, and chronic disease. Neonatal outcomes were evaluated overall and in a singleton-only sensitivity analysis to isolate the effect of multiple gestation. Outcome-specific denominators were used.
RESULTS: The cohort included 136 women contributing 196 distinct pregnancies: 90 spontaneous and 106 ART conceptions. All twelve multiple gestation pregnancies occurred in the ART group (0/90 vs 12/106, 11.3%), contributing 26 neonates to the neonatal cohort. Baseline age and BMI were broadly comparable, while ART pregnancies had higher nulliparity, prior infertility, prior ART exposure, endometriosis, and multiple gestation. At the pregnancy-episode level, live birth (p=0.67), miscarriage (p=0.65), preterm birth (p=0.31), preterm prelabor rupture of membranes (PPROM) (p=1), gestational diabetes (p=1) and hypertensive disorders of pregnancy (p=1) did not differ significantly by mode of conception. Cesarean delivery was higher after ART and remained significant after adjustment (adjusted odds ratio [aOR] 4.06, 95% confidence interval [CI] 1.22-13.52; p=0.022). Placenta previa also remained associated with ART after adjustment (aOR 4.94, 95% CI 1.02-23.79; p=0.047), although the estimate was imprecise. In the overall neonatal cohort, ART neonates had lower birth weight, earlier gestational age at delivery, lower 5-minutes Apgar scores and higher rates of low birth weight and neonatal intensive care unit (NICU) admission. After restriction to singleton neonates, these differences were attenuated except for a small persistent decrement in 5-minute Apgar score (adjusted mean difference approximately -0.30).
CONCLUSIONS: Among women with DOR, ART conception was not associated with broad excess pregnancy-level morbidity after adjustment. Apparent adverse neonatal outcomes in the overall ART cohort were largely attenuated after singleton restriction, suggesting that multiple gestation, rather than ART conception itself, explained much of the neonatal risk signal.
IMPACT STATEMENT: These findings provide reassuring counselling data for spontaneous DOR pregnancies and identify prevention of multiple gestation, particularly through singleton-focused ART strategies, as the most actionable pathway to improve neonatal outcome in DOR-ART pregnancies.
SUPPORT: This study was conducted without external financial support or funding.

P-350 11:30 AM Tuesday, October 27, 2026

EFFECT OF THYMOSIN ALPHA-1 ON IMPLANTATION AND PREGNANCY OUTCOMES IN WOMEN WITH RECURRENT IMPLANTATION FAILURE UNDERGOING ASSISTED REPRODUCTIVE TECHNOLOGY: A RETROSPECTIVE COHORT STUDY. S Pradeepa, MBBS., DGO., DNB (OG)., MNAMS., ART., FICOG,[1], Dhanabagyam Kandaswami, MD (OG).,[2], Apsara Fathima, MS (OG).,[3] and Nagendran Selvarajan, M.A., M.Phil., PH.D.[4], [1]Erode, Tamil Nadu, India, [2]Senior Consultant IVF and ART Specialist, Director, Coimbatore, India, [3]Fellow, Erode, India, [4]Bio-Statistician, Erode, India

OBJECTIVE: The aim of this study was to determine whether administering thymosin alpha-1 to women with recurrent implantation failure (RIF) and attempting assisted reproductive technology (ART) treatment would increase the chance of pregnancy.
MATERIALS AND METHODS: From 2024 to 2025, retrospective data from 81 women with previously documented RIF (recurrent infertility) were analyzed. All of them had failed multiple IVF/ICSI treatment cycles before undergoing thymosin alpha-1 prior to embryo transfer.
While collecting and evaluating data from all patients included in this study, their medical records were reviewed and analyzed for pre-existing diseases, past infertility treatments, and previous embryo implantation failures. In addition, information regarding immunological tests performed prior to embryo transfer and characteristics of the implanted embryo were also reviewed. Blastocyst transfer was performed in all patients. Data were analyzed using simple statistical methods. Logistic regression and ROC curve analysis were used to understand the odds of pregnancy outcomes.
RESULTS: The mean age of the patients included in this study was 35.1±6.3 years. BMI was 27.0±4.9 and the mean duration of infertility was 9.9±5.8 years. AMH value was 2.0±2.2. Most of them had experienced multiple previous IVF/ICSI failures.
Clinical variables included hysteroscopy in 85.2% of patients. Endometrial pattern was triple line in 43.2% and homogeneous pattern in 13.6%. Receptive status was high in ERA results. ANA status was mostly negative. Blastocyst transfer was used more frequently (79%) and embryo quality was excellent and good. Pregnancy outcomes included biochemical pregnancy rate of 3.7%. Clinical pregnancy rate was 58.0% and miscarriage rate was 18.5%. Live birth rate was 39.5%.
In ROC curve analysis, the model was found to have good predictive power (AUC=0.786, SE=0.059, 95% CI: 0.670–1.000, p<0.001). This emphasizes that Thymosin Alpha-1 treatment helps to increase the chance of pregnancy in RIF patients.
CONCLUSIONS: Thymosin Alpha-1 therapy helps increase the chances of pregnancy in women with RIF. It may be a useful treatment, especially in patients with immune imbalance.
IMPACT STATEMENT: This study supports the conclusion that Thymosin Alpha-1 is a safe and effective form of immunotherapy for RIF patients who wish to achieve conception through IVF and may therefore provide new hope for women who are experiencing difficulty becoming pregnant through the use of ART.
SUPPORT: This study did not receive any specific financial support or funding.

P-351 11:45 AM Tuesday, October 27, 2026

DOES THE SOURCE OF LH ACTIVITY MATTER IN ART? RECOMBINANT LH VS HMG IN CONTROLLED OVARIAN STIMULATION: A SYSTEMATIC REVIEW AND META-ANALYSIS. Allison A Eubanks, MD[1], Kerry S.J. Flannagan, PhD[2], Jing Wu, MD, MS[2], Micah J Hill, DO[3], Kathleen Devine, MD[4] and Allie Barwind, BA[5], [1]Potomac, MD, [2]US Fertility, Rockville, MD, [3]NIH-NICHD, Germantown, MD,

[4]Shady Grove Fertility, Rockville, MD, [5]Walter Reed National Military Medical Center, Bethesda, MD

OBJECTIVE:
To evaluate whether the source of LH bioactivity—recombinant LH versus hMG-derived LH activity—affects clinical and laboratory outcomes in controlled ovarian stimulation for assisted reproductive technology (ART).
MATERIALS AND METHODS:
We performed a systematic review of studies comparing controlled ovarian stimulation protocols incorporating rFSH with recombinant LH (rLH) versus protocols incorporating hMG-derived LH activity, either alone or in combination with rFSH. Eligible studies included randomized controlled trials and observational cohorts evaluating IVF or ICSI cycles. Outcomes included clinical pregnancy, total oocytes retrieved, mature (MII) oocytes, embryo yield, live birth, miscarriage, and safety outcomes. Random-effects meta-analysis was performed because the data were clinically heterogenous.
RESULTS:
Pooled analysis demonstrated no statistically significant differences between rFSH+rLH and rFSH+hMG for total oocytes retrieved (mean difference [MD] 0.19, 95% CI −0.53 to 0.91; I^2=74.6%), mature oocytes (MD 0.08, 95% CI −0.21 to 0.37; I^2=17.9%), embryos obtained (MD 0.68, 95% CI −0.42 to 1.77; I^2=80.4%), or clinical pregnancy (risk ratio [RR] 0.95, 95% CI 0.78 to 1.16; I^2=0%).
Live birth, miscarriage, and safety outcomes were reported inconsistently and were not suitable for quantitative synthesis. Observational studies reported heterogeneous findings, and risk-of-bias assessment identified some concerns in the randomized trial and moderate to serious risk of bias in observational studies.
CONCLUSIONS:
Across available studies, the source of LH activity (recombinant LH versus hMG-derived LH activity) was not associated with differences in pooled clinical or laboratory outcomes. Although individual observational studies report differences in ovarian response, these findings were not confirmed in pooled analyses. The evidence is limited by heterogeneity and risk of bias, and adequately powered randomized trials are needed to determine whether LH source influences clinically meaningful outcomes in ART.
There was no difference in outcomes between rFSH mixed protocols utilizing either rFSH or hMG, Unlike prior analyses focused on fixed-ratio gonadotropin regimens, this review incorporates heterogeneous stimulation strategies reflective of real-world clinical practice. Interpretation is significantly limited by variability in stimulation protocols, study design and risk of bias, highlighting the need for quality trials.
IMPACT STATEMENT:
Direct comparative evidence between recombinant LH and hMG-derived LH activity remains limited. Current data do not demonstrate differences in pooled outcomes, highlighting the need for randomized trials within contemporary stimulation protocols.
SUPPORT: None

P-352 12:00 PM Tuesday, October 27, 2026

BEYOND STATIC GRADING: POST-WARMING DEVELOPMENTAL PROGRESSION AS A DYNAMIC PREDICTOR OF CLINICAL PREGNANCY IN SINGLE FROZEN-THAWED BLASTOCYST TRANSFER CYCLES. Jung Hoon Kim, M.S, Min Jung KIM, M.S., Seulah Lee, M.S, Sunyeong Cha, Ph. D, Chaewon KIM, B.S., Bo Myeong Kim, M.S., Jeong Bin Jo, M. S., Tae Hyung Kim, B.S., Hee Jun Lee, M.D., Ph.D. and Jin Hee Eum, PhD, CHA University Fertility Center Gangnam, Seoul, Korea, Republic of (South)

OBJECTIVE: To evaluate the prognostic significance of post-warming developmental progression during overnight culture as a dynamic alternative to conventional static morphological grading for predicting clinical pregnancy rates (CPR) in single frozen-thawed blastocyst transfer (FBT) cycles.
MATERIALS AND METHODS: This retrospective cohort study analyzed 300 single FBT cycles involving Day 5 or Day 6 blastocysts (Gardner grading) performed in 2025. All blastocysts were warmed the day prior to transfer and cultured overnight. Embryos were categorized into two groups based on post-warming behavior: the **Progression Group** (advanced beyond the pre-cryopreservation stage) and the **No-Progression Group** (remained at the same stage). The primary outcome was CPR, defined by the presence of a gestational sac on ultrasound. Multivariate logistic regression was employed to adjust for potential confounders, including maternal age and initial Gardner grade.
RESULTS: Of the 300 cycles, 273 blastocysts exhibited progression, while 27 did not. Baseline characteristics, including maternal age (34.9 vs. 34.7 years), basal FSH (7.9 vs. 7.3 mIU/mL), and endometrial thickness (8.9 vs. 9.2 mm), were comparable between the two groups (all P > 0.05). The CPR was significantly higher in the Progression Group compared to the No-Progression Group (63.0% [172/273] vs. 40.7% [11/27]; P=0.024). After adjusting for maternal age, multivariate logistic regression confirmed that post-warming progression was a robust independent predictor of clinical pregnancy (Adjusted OR 2.87; 95% CI 1.26–6.51; P=0.012).
CONCLUSIONS: Post-warming developmental progression serves as a superior prognostic indicator compared to static morphological assessment at the time of cryopreservation. Our findings suggest that the dynamic observation of embryo behavior during overnight culture provides critical clinical evidence for optimizing embryo selection and patient counseling. Even morphologically "top-quality" blastocysts should be monitored for post-warming developmental arrest to maximize clinical outcomes in FBT cycles.
IMPACT STATEMENT: This study highlights the clinical necessity of dynamic post-warming assessment, providing a practical strategy to identify embryos with high developmental potential and refine embryo selection in frozen-thawed transfer cycles.
SUPPORT: The authors have no financial support to disclose

P-353 11:15 AM Tuesday, October 27, 2026

IMPACT OF SPERM CELL COUNT ASSESSMENT ON SPERM DNA FRAGMENTATION (SDF) PRECISION AND EXAMINATION OF SDF CORRELATION WITH SEMEN PARAMETERS. Sajal Gupta, M.D.[1], Laura C. Gemmell, MD[2], George Koustas, PhD[2], Kimberly Nunez, Bachelor of Science in Cell and Molecular Biology[2], Rajvinder Kaur, B.A.[2], Nicholas Mully, Masters in Biotechnology[3], Eric J. Forman, H.C.L.D, M.D.[3] and Matthew Recio, Bachelors in liberal arts[3], [1]Columbia University Fertility Center, Obstetrics & Gynecology, New York, NY, [2]Columbia University Fertility Center, New York, NY, [3]Columbia University Fertility Clinic, New York, NY

OBJECTIVE: To evaluate the impact of sperm cell count on analytical precision of DNA fragmentation assessment and to examine the relationship between DFI and key semen parameters, including sperm motility and concentration.
MATERIALS AND METHODS: A retrospective study was conducted and patient samples with >1000 cells assessed were selected for the analysis (n=30). SDF was assessed using duplicate microgel wells with AI-assisted analysis based on the sperm chromatin dispersion (SCD) assay principle. Semen samples were standardized to a concentration of 10×10^6 sperm/mL prior to analysis. The LensHooke X12 platform was used to automatically identify, classify, and quantify sperm cells within the microgel. The system applies image recognition algorithms to detect individual sperm and differentiate fragmented from non-fragmented DNA patterns, enabling automated calculation of the SDF while simultaneously recording the total number of sperm analyzed per well.Precision was evaluated by assessing inter-well variability across stratified sperm count groups (1000–2000, 2000–2500, and >2500 cells per well). Pearson correlation analysis was performed to determine associations between DFI and conventional semen parameters.
RESULTS: The assay demonstrated strong within-sample precision with minimal inter-well bias (−0.09%) and narrow limits of agreement (−3.88% to +3.70%, Figure 1). Stratified analysis revealed that precision improved with increasing sperm counts, with optimal reproducibility observed in samples containing 2000–2500 sperm (SD 0.94). Samples with lower sperm counts (1000–2000) exhibited higher variability (SD 2.22), consistent with increased sampling error. At higher sperm counts (>2500), variability modestly increased, likely reflecting underlying biological heterogeneity rather than analytical limitations.A moderate inverse correlation was observed between DFI and sperm motility ($r = -0.323$. $p=0.10$), sperm progressive motility (-0.47, $p<0.05$, Figure2), as well as sperm concentration ($r = -0.54$, $p<0.05$). Additionally, a strong positive correlation was observed between sperm concentration and motility ($r = +0.68$). Data distribution suggested a threshold effect, with DFI levels above approximately 15–20% associated with a marked decline in motility and concentration.
CONCLUSIONS: Analytical precision of sperm DNA fragmentation assessment is dependent on adequate sperm sampling, with optimal performance achieved in the 2000–2500 cell range. Increased DFI is inversely associated with sperm motility and concentration, supporting its role as a functional biomarker of sperm quality. These findings highlight the importance of standardized cell counts in DFI analysis and support the integration of DNA fragmentation into advanced sperm profiling for predicting reproductive outcomes.
IMPACT STATEMENT: Study provides the methodological optimization for SDF and clinical correlation of SDF with semen parameters, supporting ntegration of standardized, AI-assisted SDF assessment into comprehensive sperm quality evaluation and fertility diagnostics.
SUPPORT: The study was supported by CUFC.

P-354 11:25 AM Tuesday, October 27, 2026

OPERATIONAL FLEXIBILITY WITHOUT CLINICAL COMPROMISE: EQUIVALENT FET OUTCOMES FOLLOWING TRANSITION BETWEEN COMPARABLE CRYO-DEVICES. Erin E Dipietro, M.S., PhD[1], Chen Shan, B.S.[1], Lindsey Vermilyea, M.S.[2], Nathan C Koelper, MPH[1], Cynthia M Murdock, M.D.[1] and Dara S Berger, PhD, MPH, MS[3], [1]Illume Fertility, Norwalk, CT, [2]Leander, TX, [3]Illume Fertility, LLC, Norwalk, CT

OBJECTIVE:
To determine whether transitioning between vitrification devices, without protocol modification of established cryopreservation or warming, impacts implantation or pregnancy outcomes in frozen embryo transfer (FET) cycles.
MATERIALS AND METHODS:
This retrospective cohort study evaluated 292 autologous frozen embryo transfer (FET) cycles performed at a single high volume IVF center (Initial Phase [IP]: n=204; Test Phase [TP]: n=88). The study assessed the clinical impact of transitioning to a new cryo-device with comparable structural and functional characteristics while maintaining identical laboratory protocols. All embryos were day 5 or day 6 blastocysts vitrified and warmed using Irvine Scientific media with a standardized vitrification protocol and rapid warming approach (1-minute Thaw Solution exposure). Cryolock was utilized during the IP and replaced with cryoGO in the TP. Following warming, embryos were cultured and transferred to CSCM-NXC medium.
Primary outcomes included chemical pregnancy (β-hCG ≥ 5 mIU/mL), clinical pregnancy (fetal cardiac activity), and implantation rate (gestational sacs per embryo transferred). A subgroup analysis was performed on PGT-tested embryos. Group comparisons were conducted using chi-square tests with statistical significance defined as α=0.05.
RESULTS:

Baseline characteristics were equivalent between groups, including mean patient age (35.8±3.4 vs 35.5±3.9 years; p=0.404) and embryos transferred (1.0±0.2 vs 1.0±0.1). Clinical outcomes were comparable across all endpoints:

Group	Outcome	IP	TP	p-value
Overall	Chemical Pregnancy	79.9%	78.4%	0.773
Overall	Implantation Rate	70.1%	69.3%	0.903
Overall	Clinical Pregnancy	64.2%	63.6%	0.925
PGT-tested	Chemical Pregnancy	78.2%	76.1%	0.720
PGT-tested	Implantation Rate	67.8%	67.6%	0.976
PGT-tested	Clinical Pregnancy	62.6%	64.8%	0.752

CONCLUSIONS:
Transitioning between cryo-devices with comparable structural and functional characteristics does not compromise implantation or pregnancy outcomes when vitrification and warming protocols are maintained. These data provide strong evidence that device interchangeability can be achieved without disruption to clinical performance.
IMPACT STATEMENT:
This study challenges the assumption that cryo-device transitions introduce clinical risk and instead supports a framework for evidence-based operational adaptability. IVF laboratories can confidently adopt alternative cryo-devices to optimize workflow, supply chain resilience, and storage logistics without sacrificing clinical success.

REPRODUCTIVE UROLOGY (1 OF 7)

P-355 1:30 PM Tuesday, October 27, 2026

ADVANCED PATERNAL AGE IS ASSOCIATED WITH INCREASED RISK OF GESTATIONAL DIABETES, PRETERM BIRTH AND NICU ADMISSION IN PREGNANCIES CONCEIVED WITH FERTILITY TREATMENT. Jaclynne Hedge, MD[1], Bharti Garg, MBBS, MPH[1], Lisa Vrooman, PH.D.[2] and Sacha A. Krieg, M.D., PH.D.[1], [1]Oregon Health & Science University, Portland, OR, [2]Oregon National Primate Research Center-

OBJECTIVE: To evaluate the association of advanced paternal age with adverse maternal and neonatal outcomes in patients with pregnancies conceived with fertility treatment in California.
MATERIALS AND METHODS: This retrospective population-based cohort study utilized California's linked vital statistics patients discharge data (2016-2020). Singleton pregnancies conceived with fertility treatment were included. Paternal age was categorized as <35 (reference), 35-39, 40-44, and ≥45 years. Multivariable Poisson regression models were adjusted for maternal age, race/ethnicity, education level, BMI, insurance status, parity, prenatal care utilization, chronic hypertension, pre-existing diabetes, and smoking. Adjusted risk ratios (aRR) and 95% confidence intervals (CI) were estimated.
RESULTS: A total of 21,771 births were included. Of which, paternal age was <35 years old in 25% (n=5,541) of the pregnancies, 35-39 in 35.7% (n=7,763), 40-44 in 22.4% (n=4,880) and ≥45 years old in 16.5% (n=3,587). Compared with <35 years, paternal age ≥45 was associated with increased risk of gestational diabetes (aRR 1.20, 95% CI 1.07-1.33), preterm birth <37 weeks (aRR 1.16, 95% CI 1.01-1.33), and NICU admission (aRR 1.19, 95% CI 1.03-1.36). There were no significant associations with hypertensive disorders of pregnancy, severe maternal morbidity, small for gestational age, respiratory distress syndrome, placenta previa, vasa previa, or stillbirth.
CONCLUSIONS: In pregnancies conceived with fertility treatment, advanced paternal age (≥ 45 years old) was associated with increased risk of gestational diabetes, preterm birth and NICU admission, without evidence of a gradual increase among increasing paternal age as observed in prior general population studies. These findings suggest that, in fertility-treated populations, maternal and treatment-related factors may correct paternal age-associated risks observed in the general population. This also suggests there may be some protection in fertility treatments that could be related to decreased DNA fragmentation due to frequent ejaculation, sperm processing or assisted reproductive technologies.
IMPACT STATEMENT: As paternal age at time of conception continues to rise, clarifying its independent contribution to maternal and neonatal risk is essential for evidence-based counseling and risk stratification in fertility-treated populations.
SUPPORT: None

P-356 1:45 PM Tuesday, October 27, 2026

TRANSCRIPTOMIC STRATIFICATION OF NON-OBSTRUCTIVE AZOOSPERMIA IDENTIFIES BIOMARKERS OF SPERM RETRIEVAL AND SUPPORTS FEASIBILITY OF TESA-BASED PROFILING. Angel Elenkov, PhD, Lund University, Malmoe, Skaane Laen, Sweden

OBJECTIVE: Microsurgical testicular sperm extraction (mTESE) is widely used in men with Non-obstructive azoospermia (NOA), but remains invasive and yields sperm in only ~30–40% of cases. Reliable biomarkers predicting sperm retrieval are lacking. Testicular sperm aspiration (TESA) is less invasive; however, negative TESA does not reliably exclude successful salvage mTESE, resulting in potentially unnecessary procedures. This study aimed to identify transcriptomic biomarkers associated with sperm retrieval outcomes and explore the feasibility of using TESA-derived material for molecular stratification.
MATERIALS AND METHODS: Bulk RNA sequencing was performed on testicular tissue from 18 NOA patients undergoing mTESE. Differential expression analysis was conducted using DESeq2. A two-step analytical approach was applied: (1) identification of transcriptomic signatures distinguishing Sertoli cell-only syndrome (SCO) from non-SCO tissue, and (2) identification of gene expression differences associated with sperm retrieval within SCO samples. A single paired TESA–mTESE sample was analyzed to assess transcriptomic concordance.
RESULTS: Differential expression–based classification accurately distinguished SCO from non-SCO tissue (AUC = 0.94), driven by depletion of germ cell–associated genes (e.g., SPATA4, ACRBP, AKAP3). Within SCO samples, sperm retrieval–positive cases showed increased expression of genes involved in immune signaling and extracellular matrix organization, including AQP2, ADCYAP1, PRRX2, and SPON2. A single paired TESA–mTESE sample demonstrated high transcriptomic similarity (Pearson r = 0.94), suggesting that TESA-derived RNA may capture relevant testicular biology.
CONCLUSIONS: Transcriptomic profiling of testicular tissue identifies molecular signatures associated with sperm retrieval in NOA and supports a two-step stratification approach, particularly within the poor-prognosis SCO subgroup. Preliminary evidence from a single paired sample suggests that TESA-derived material may be suitable for molecular analysis. Further studies with larger cohorts and paired sampling are required to validate clinical utility.
IMPACT STATEMENT: Transcriptomic profiling may identify Sertoli cell-only syndrome patients with residual spermatogenesis, supporting selection for mTESE and the future development of minimally invasive, TESA-based diagnostics.

P-357 2:00 PM Tuesday, October 27, 2026

DOES THE PRIMARY DRIVER OF LOW TOTAL MOTILE COUNT - CONCENTRATION OR MOTILITY - PREDICT IUI PREGNANCY RATES? Christopher Ke Arkfeld, MD[1], Stylianos Vagios, MD[2], Kaitlyn E James, PhD[3], Panagiotis Cherouveim, MD, MS, PhDc[4], Irene Dimitriadis, M.D.[1], Irene Souter, MD[1], Charles L Bormann, PhD[5] and Daniel Pelzman, MD[5], [1]Massachusetts General Hospital Fertility Center, Massachusetts General Hospital and Harvard Medical School, Boston, MA, [2]MGH Fertility Center and Harvard Medical School, Boston, MA, [3]Massachusetts General Hospital, Boston, MA, [4]Hurley Medical Center/Michigan State University, Flint, MI, [5]Massachusetts General Hospital, Harvard Medical School, Boston, MA

OBJECTIVE:
To determine if a low total motile count (TMC) predicts intrauterine insemination (IUI) pregnancy outcomes differently when driven primarily by low sperm concentration versus low motility. While TMC thresholds are standard for patient counseling, the specific impact of the underlying driver, concentration or motility, remains under-investigated.
MATERIALS AND METHODS:
Design: Retrospective Cohort Study
Exposure: We categorized IUI cycles into seven distinct groups based on TMC (≥10 million), concentration (≥16 million/mL), and motility (≥42%) parameters:
Reference Group 1 (n=3596): Normal TMC, Normal concentration, Normal motility
Group 2 (n=40): Low TMC, Low concentration, Normal motility
Group 3 (n=594): Low TMC, Normal concentration, Low motility
Group 4 (n=217): Low TMC, Low concentration, Low motility
Group 5 (n=83): Normal TMC, Low concentration, Low motility
Group 6 (n=70): Normal TMC, Low concentration, Normal motility
Group 7 (n=1906): Normal TMC, Normal concentration, Low motility
Primary outcome: clinical pregnancy rate (CPR) per cycle
Secondary outcome: isolated effect of TMC, motility, and concentration on CPR
Statistics: Mixed-effects logistic regression with robust standard errors accounted for multiple cycles per patient, adjusting for maternal age, BMI, IUI cycle number, and infertility diagnosis.
RESULTS:
CPR differed significantly across the cohorts ($p < 0.001$). Compared to the reference group (17.3% CPR), CPR [CPR%, aOR (95%CI), p-value] were significantly lower in patients with low TMC driven by low motility [11.0%; 0.51 (0.34-0.76), p=0.001] and those with low TMC driven by both low concentration and low motility [8.6%, 0.41 (0.20-0.85), p=0.02] but not with low TMC driven by low concentration [10.6%, 0.77 (0.15-4.04), p=0.76). Notably, even when TMC was normal, the presence of low motility significantly reduced clinical pregnancy odds (15.0%, 0.76 (0.61-0.95), p=0.01).
In total population models analyzing concentration and motility as continuous variables, every 1 percentage point increase in motility was associated with a significant increase in clinical pregnancy odds [aOR (95% CI): 1.011 (1.01-1.02), $p < 0.001$]. Conversely, every 10 million/mL increase in concentration was not a significant predictor of clinical pregnancy in adjusted models [aOR (95% CI): 1.008 (0.99-1.02), $p = 0.333$]. Sensitivity analyses confirmed that the negative impact of low motility remained significant in patients age ≥35 (aOR 0.57, $p = 0.001$).
CONCLUSIONS:

While low TMC driven by isolated low motility is associated with significantly lower CPR, this association does not hold for low TMC driven by isolated low concentration. Motility shows a significant continuous association with pregnancy odds, but concentration does not appear to be a primary driver of IUI success in adjusted models. These findings suggest that sperm motility may be a more critical factor than concentration when counseling patients on IUI success in relation to total motile count thresholds.

IMPACT STATEMENT:

Sperm motility, rather than concentration, appears as a more critical determinant of IUI success. Our findings add a new perspective in how clinicians consider TMC thresholds.

P-358 2:15 PM Tuesday, October 27, 2026

MILITARY PERSONNEL EXHIBIT SIGNIFICANTLY IMPAIRED SEMEN QUALITY COMPARED TO PROPENSITY-MATCHED CONTROLS. Noopur Naik, BA[1], Jayant Siva, BS[2], Sohei Kuribayashi, M.D, Ph.D[2], Marcelo A Mass Lindenbaum, MD[2], Scott Lundy, MD, PhD, HCLD[3] and Ramy Abou Ghayda, MD, MHA, MPH, MBA[4], [1]Cleveland Clinic Lerner College of Medicine of Case Western Reserve University School of Medicine, Cleveland, OH, [2]Cleveland Clinic Foundation, Cleveland, OH, [3]Cleveland Clinic Glickman Urological Institute, [4]Case Western Reserve Univ (Univ Hosp), Cleveland, OH

OBJECTIVE:

Military service has been shown to be a risk factor for male factor infertility in several pilot studies, but little is known about the mechanism and degree of semen parameter impairment underlying this finding. To address this, we sought to compare semen parameters in active duty military and veterans to a propensity-scored control cohort.

MATERIALS AND METHODS:

We performed a cross-sectional study of men completing a remote semen analysis test approved for use by the United States Veterans Administration (Give Legacy, New York) between 2018-2026. Participants provided information about their age, body mass index, race/ethnicity, and primary indication for analysis and/or cryopreservation. Participants were excluded if they were azoospermic or missing information regarding age or employment. Participants were propensity score-matched to the control group (men seeking vasectomy or planning sperm donation) based on age, days of abstinence, and time in transit.

RESULTS:

485 men in the military were matched to 485 controls. Military men demonstrated modestly lower median sperm concentration (32.2 [12.7-71.0] vs 32.3 [20.9-74.5] M/mL, p=0.01), significantly lower total sperm count (97.5 [38.3-214] vs 124 [61.2-199] M, p=0.01) and significantly lower total motile sperm count (29.8 [7.62-91.8] vs 41.4 [11.6-98.0] M, p=0.03). In multivariable linear regression models, military status remained independently associated with lower total sperm count (β -17.5, 95% CI: -34.6 to -1.30, p=0.04) and semen volume (β -0.20 mL, 95% CI: -0.38 to -0.02, p =0.03). Military men were more likely to fall below World Health Organization (WHO) thresholds for total sperm count (25% vs 13%, p<0.001) and sperm concentration (30% vs 20%, p<0.001).

CONCLUSIONS:

Military personnel and veterans demonstrated significant impairments in semen quality. Further work is necessary to understand the mechanism and high yield interventions to address this concerning finding.

IMPACT STATEMENT:

We found that military personnel had significantly worse semen parameters than non military controls. Members of the military have numerous potential environmental and occupational exposures that may contribute to their infertility, and further work is necessary to understand, prevent, and ultimately treat this important condition associated with their employment.

P-359 2:30 PM Tuesday, October 27, 2026

A NONINVASIVE METHOD TO PREDICT RESIDUAL SPERMATOGENESIS AND SPERMATOZOA PRESENCE IN THE SEMINIFEROUS TUBULES OF NONOBSTRUCTIVE AZOOSPERMIC MEN. Stephanie Cheung, M.S., Zev Rosenwaks, M.D. and Gianpiero D. Palermo, M.D., PH.D., The Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY

OBJECTIVE:

Azoospermic men do not yield spermatozoa at routine semen analysis. However, cell-free DNA (cfDNA) derived may provide information on residual spermatogenesis within the seminiferous tubules. We aim to identify a noninvasive approach to predict germ cell presence and eventual testicular biopsy outcome.

MATERIALS AND METHODS:

Over 15 months, seminal fluid specimens were collected from normozoospermic controls and consenting idiopathic nonobstructive azoospermic (iNOA) men with normal karyotypes, no Y-microdeletions, no history of cancer or chemo/radio-therapy, and no family history of genetic disease. Cell-free DNA was eluted using a commercial kit, and fragment analysis was performed by capillary electrophoresis to assess for nucleosomal-sized DNA consistent with germ cell apoptosis. An absorbance-based desialylation assay was used to detect the presence of free sialic acid associated with components of spermatozoa. Seminal proteins were extracted by acetone precipitation and quantified by liquid chromatography-mass spectrometry. Participants subsequently underwent microsurgical testicular sperm extraction (micro-TESE) and were divided according to sperm retrieval outcomes (Sperm-Present or Sperm-Absent). Seminal cfDNA concentrations, fragment sizes, free sialic acid levels, and protein profiles were compared between groups.

RESULTS:

Paternal age, testicular volume, and follicle stimulating hormone levels were comparable between the normozoospermic control (n=6) and iNOA (n=28) cohort.

Overall, iNOA men exhibited higher seminal cfDNA (7.6±4 ng/ul) than the control (1.93±1 ng/uL; $P<0.01$). We then stratified the iNOA cohort according to whether spermatozoa were present (n=11) or absent (n=17) at testicular biopsy. Those with residual spermatogenesis (Sperm-Present) exhibited lower cfDNA (4.9±2ng/uL) than the Sperm-Absent group (9.7±4 ng/uL; $P<0.0001$).

Fragment analysis of cfDNA revealed minimal germ cell apoptosis in the normozoospermic control (16.7±2%), which progressively increased in the Sperm-Present group (91.7±2%) and reached the highest prevalence in the Sperm-Absent group (99.2±4%; $P<0.0001$). Moreover, proteomics analysis of seminal fluid from men in the Sperm-Absent group (n=7) detected a 1.15-fold increase of cytochrome C, a marker for intrinsic apoptosis, indicating complete loss of germ cells.

Interestingly, the iNOA cohort exhibited lower sialic acid (0.5±0.3 nmol/ul) than the normozoospermic control (1.0±0.1 nmol/ul; $P<0.01$), suggesting a concurrent decrease in sperm production related to the germ cell apoptosis.

CONCLUSIONS:

These results suggest that apoptosis markers in seminal fluid are related to a degree of spermatogenic dysfunction and can inform on chances of retrieving spermatozoa at testicular biopsy. Interestingly, sialic acid levels may indicate the proportion of residual spermatozoa.

IMPACT STATEMENT:

Profiling seminal fluid from iNOA men can indicate the presence and degree of spermatogenic failure, serving as a noninvasive method to predict micro-TESE sperm retrieval outcomes. This would assist in counseling and managing patient expectations, and eventually avoiding unnecessary surgery.

SUPPORT: None

REPRODUCTIVE UROLOGY (2 OF 7)

P-360 1:30 PM Tuesday, October 27, 2026

VARICOCELECTOMY ENRICHES THE HUMAN SEMINAL MICROBIOME FOR LACTOBACILLUS AND PRESERVES SPERM MOTILITY VIA SPERMIDINE. Sohei Kuribayashi, M.D, Ph.D[1], Shinnosuke Kuroda, M.D, Ph.D[2], Aaron Miller, PhD[1] and Scott Lundy, MD, PhD, HCLD[3], [1]Cleveland Clinic Foundation, Cleveland, OH, [2]Yokohama City University Medical Center, [3]Cleveland Clinic Glickman Urological Institute

OBJECTIVE:

Varicocele is linked to male infertility, but its pathophysiology remains incompletely defined. Growing evidence suggests that seminal microbiota and their metabolites can influence sperm function. We profiled the seminal microbiome before and after varicocelectomy and evaluated whether specific taxa and their metabolites are associated with preserved sperm motility.

MATERIALS AND METHODS:

Paired semen samples were collected pre- and post-surgery from men with varicocele (n=6). Seminal microbiota were profiled by 16S rRNA sequencing, and within-subject differences were tested using DESeq2 with a paired design accounting for patient ID and Benjamini–Hochberg FDR correction. Representative Lactobacillus crispatus and Acinetobacter nosocomialis isolates were cultured; conditioned media (CM) were applied to human spermatozoa from healthy donors (n=7). Motility was measured at 0, 1, 2, 4 and 6 h. Untargeted metabolomics of bacterial supernatants identified candidate metabolites; spermidine was tested by direct sperm exposure (n=5). The primary endpoint was percent change in total (or progressive) motility from baseline to x h: $\%\Delta=100\times(\text{Motility}_{xh}-\text{Motility}_{0h})/\text{Motility}_{0h}$. Statistics used paired tests for microbiome comparisons and ANOVA with Tukey's post-hoc testing for in-vitro assays ($\alpha=0.05$).

RESULTS:

In paired pre/post-varicocelectomy samples, global α- and β-diversity metrics showed no clear group-level separation. However, within-subject weighted UniFrac distances indicated postoperative restructuring of the seminal microbial community. DESeq2 paired analysis identified postoperative enrichment of *Lactobacillus* (FDR q<0.05). In vitro, 6-h motility decline rate was attenuated with Lactobacillus-conditioned medium vs Acinetobacter (–26.9% vs –39.9%, p<0.05). Metabolomics highlighted spermidine as enriched in Lactobacillus cultures. Direct exposure to exogenous spermidine (200 μM) preserved sperm motility compared with vehicle at 6 h (–12.3% vs –28.1%, p=0.02).

CONCLUSIONS:

Paired pre/post analyses around varicocelectomy revealed microbiome features particularly Lactobacillus enrichment associated with preserved sperm motility. Spermidine emerged as a candidate mediator linking the seminal microbiome to sperm function, supporting microbiome-derived metabolites as modifiable targets in male infertility.

IMPACT STATEMENT:

These findings support a clinically relevant microbiome-metabolite axis in varicocele-associated male infertility and identify spermidine as a potentially modifiable target for preserving sperm motility.

SUPPORT: None

P-361 1:45 PM Tuesday, October 27, 2026

A COMPARISON OF IN VITRO FERTILIZATION OUTCOMES WITH SPERM SEPARATION DEVICES VERSUS SURGICALLY ACQUIRED SPERM. Adriana N Vest, M.D. PH.D.[1], Brooke Neumann, D.O.[1], David Boedeker, D.O., MHA[2], Kiley Hunkler, M.D., MSt, MSc[2], Paul Shin, M.D.[3], Cigdem Tanrikut, M.D.[4], Jessica A Marinaro, MD[5], Kerry S.J. Flannagan, PhD[6], Phillip A Romanski, M.D., M.SC.[7] and Lauren Roth, MD[8], [1]National Institutes of Health/ Walter Reed National Military Medical

Center, Bethesda, MD, [2]Walter Reed National Military Medical Center, Bethesda, MD, [3]Shady Grove Fertility, Washinton DC, DC, [4]Shady Grove Fertility, Arlington, VA, [5]Shady Grove Fertility, Towson, MD, [6]US Fertility, Rockville, MD, [7]Reproductive Medicine Associates of New York, New York, NY, [8]Shady Grove Fertility, Rockville, MD

OBJECTIVE: To evaluate whether sperm separation devices (SSD) improve blastulation when compared to surgically obtained sperm (TESE) in patients with a history of poor blastulation or poor fertilization in a prior cycle.
MATERIALS AND METHODS: We conducted a retrospective cohort study from 2013 to 2025 of cycle outcomes in patients undergoing *in vitro* fertilization (IVF) with a history of low fertilization (2pn/MII < 50%) or low blastulation (usable blastocyst/2pn < 25%). Included patients used autologous gametes and underwent a second cycle that utilized a SSD or TESE prior to intracytoplasmic sperm injection (ICSI). Azoospermic patients were excluded. The choice of SSD or TESE was at the discretion of the reproductive urologist, but TESE cycles occurred via testicular sperm extraction before SSD was utilized in our clinic. A modified Poisson regression analysis was used to estimate risk ratio with 95% confidence intervals controlling for female age and number of prior ICSI cycles.
RESULTS:

	Cycles with Prior Poor Blastulation			**Cycles with Prior Poor Fertilization**			**Cycles with Prior Poor Fertilization and Blastulation**		
Sperm Acquisition Method	**TESE (REF)**	**SSD**	**IRR (95% CI)**	**TESE (REF)**	**SSD**	**IRR (95% CI)**	**TESE (REF)**	**SSD**	**IRR (95% CI)**
N	126	369		45	72		41	67	
Oocytes retrieved (Median +/- IQR)	17.5 (11.3, 23.8)	14 (8, 21)		12 (10, 16)	12 (7.8, 17)		16 (13, 21)	13 (9, 20)	
Mature oocytes retrieved(Median +/- IQR)	13 (8, 18)	10 (6, 16)		9 (6, 13)	8 (5, 11.3)		10 (8, 17)	8 (5, 13.5)	
Fertilization Rate (# 2PN/M2) (%)	72.3 (58.8, 83.2)	77.8 (62.5, 88.9)	IRR 1.07 (CI: 0.99, 1.16)	60 (40, 84.6)	66.7 (49.2, 83)	IRR 1.16 (CI: 0.97, 1.39)	60 (44.4, 75)	66.7 (40, 83.3)	IRR 1.03 (CI: 0.88, 1.22)
Blastulation Rate (# Embryos on Day 5,6 or 7/M2 oocytes) (%)	25 (11.1, 38.5)	28.6 (12.5, 50)	IRR 1.19 (CI: 1.03, 1.38)	40.8 (33.3, 66.7)	46.9 (25.6, 65.9)	IRR 0.98 (CI: 0.75, 1.29)	40 (13.2, 56.3)	34.8 (10.6, 60)	IRR 0.76 (CI: 0.59, 0.98)

CONCLUSIONS: Our findings suggest that there is no difference in cycle fertilization outcomes between SSD or TESE in patients with prior poor fertilization or blastulation. Blastulation outcomes were mixed, suggesting improvement for SSD cycles with prior poor blastulation but worsening rate for patients with combined history of both poor fertilization and blastulation. More data is needed to elucidate the trends including additional transfer outcomes.
IMPACT STATEMENT: The utilization of SSD is increasing for patients with a history of poor embryology outcomes. Our study addresses a gap in the literature by examining implementation outcomes of these devices and comparing them to a mainstay of treatment, TESE.

P-362 2:00 PM Tuesday, October 27, 2026

COMPARING PREDICTIVE MODEL FRAMEWORKS FOR CLASSIFYING ABNORMAL SPERM PARAMETERS USING THE SEMEN AND URINARY MICROBIOME. Meghan Rai Grewal, MD, MBA[1], Vadim Osadchiy, MD[2], Jacob S Ancira, M.S.[3], Andre Belarmino, BA, MD[4], Reza Kianian, MD[5], John Tucker Sigalos, B.A., M.D.[5], Craig D. Tipton, PhD[6], Mike Hsieh, MD[7], Jesse N. Mills, M.D.[5] and Sriram Venkata Eleswarapu, MD, PhD[5], [1]UCLA Medical Center, Los Angeles, CA, [2]UCLA, [3]MicrogenDx, Lubbock, TX, [4]UCLA, CA, [5]David Geffen School of Medicine at UCLA, Los Angeles, CA, [6]RTL Genomics, MicrogenDX, Lubbock, TX, [7]University of California San Diego, La Jolla, CA

OBJECTIVE:
Alterations in the semen and urine microbiomes have been associated with abnormalities in sperm concentration and motility; however, these relationships are often high-dimensional and are not consistently evaluated alongside anatomical factors. Integrating these domains may improve identification of clinically meaningful predictors.
The purpose of this study it to benchmark predictive frameworks that leverage semen or urine microbiome data with anatomical factors to identify clinically meaningful predictors and improve prediction of abnormalities in sperm concentration and motility.
MATERIALS AND METHODS:
Men undergoing clinical semen analysis who provided paired semen and urine samples for microbiome sequencing were included. Microbial data were derived from 16S rRNA sequencing. Three phenotype groups were defined: combined abnormalities in sperm concentration and motility (SC/M), sperm concentration alone (SC), and sperm motility alone (M). Generalized linear models were constructed using microbial presence/absence, with performance assessed by receiver operating characteristic analysis. LASSO regression was used for feature selection. Anatomical variables, including varicocele and circumcision status, were evaluated.
RESULTS:
Seventy-three participants were included. LASSO reduced the number of microbial predictors by up to 83%, with only modest declines in performance while still maintaining excellent AUC (post-LASSO AUC up to 0.879 for SC and average accuracy decrease of 12.7%). Adding varicocele modestly improved model performance (mean AUC increase 0.0233), while circumcision had minimal impact. Pre-LASSO models performed well, with unfiltered semen models achieving AUCs of 0.933 (SC/M), 0.914 (SC), and 0.907 (M). Urine-based models showed lower performance overall (AUC ≤0.666). Negative predictors of semen quality included *Porphyromonas bennonis*, *Lactobacillus iners*, and *Ureaplasma urealyticum*, while *Corynebacterium lipophiloflavum* and *Corynebacterium simulans* emerged as positive predictors. Some of these microbes are aligned with previous microbiome analyses, while others are novel and worth exploring.
CONCLUSIONS:
Integrating microbiome data with anatomical factors improves prediction of semen analysis abnormalities. Our predictive framework approach substantially reduces model complexity while maintaining excellent performance. These findings lay the framework for further targeted microbiome-based diagnostics, deepening our understanding of the semen microbiome and male infertility.
IMPACT STATEMENT:
This work supports the integration of microbiome and anatomical data into predictive models to improve risk stratification and inform targeted diagnostic approaches in male infertility.
SUPPORT: JNM is a consultant for Halozyme Pharma, Boston Scientific, and Endo Pharmaceuticals. All other authors declare no competing interests.

P-363 2:15 PM Tuesday, October 27, 2026

THE UTILIZATION OF PGT-A IN COUPLES WITH NON-OBSTRUCTIVE AZOOSPERMIA: IVF OUTCOMES, ANEUPLOIDY RATES, AND CHROMOSOME CHARACTERIZATION COMPARED TO OBSTRUCTIVE AZOOSPERMIA. Seifeldin Sadek, MD[1], Laurel Anderson, BS[1], Margaux Eller, BA[2], Amanda Ryan, MD[3], Amber Mendoza, BS[1] and Gaurang S Daftary, M.D.[4], [1]Inception Fertility, Houston, TX, [2]University of Vermont - Larner College of Medicine, Burlington, VT, [3]Orlando Health Bayfront Hospital, St. Petersburg, FL, [4]Chief Scientific Officer - Inception, Houston, TX

OBJECTIVE: To examine aneuploidy rates and IVF outcomes in couples with non-obstructive azoospermia (NOA) undergoing ICSI with surgically extracted sperm, characterize the specific chromosomes and types of aneuploidy involved, compare these findings with obstructive azoospermia (OA), and determine whether preimplantation genetic testing for aneuploidy (PGT-A) improves live birth rates in NOA.
MATERIALS AND METHODS: We performed a retrospective chart review of 145 unique subjects comprising 184 IVF/ICSI cycles using surgically extracted sperm from men with NOA (n=76 cycles) or OA (n=108 cycles). Three primary analytic groups were defined per the study analysis plan: NOA + PGT-A (n=59), NOA + no PGT-A (n=17), and OA + PGT-A (n=93). A total of 679 PGT-A embryos were analyzed for aneuploidy. Specific karyotype entries (n=258 aneuploid embryos) were parsed to characterize chromosome-level involvement and aneuploidy type. Outcome variables included embryo aneuploidy rate, euploidy rate, fertilization rate, clinical pregnancy, spontaneous abortion, and live birth. Duration of infertility was standardized from free-text to months. Continuous variables were compared using Mann-Whitney U or Kruskal-Wallis tests; categorical variables by chi-squared or Fisher's exact test. Bonferroni correction was applied for individual chromosome comparisons (24 tests; adjusted $\alpha = 0.0021$).
RESULTS: We performed a retrospective chart review of 145 unique subjects comprising 184 IVF/ICSI cycles using surgically extracted sperm from men with NOA (n=76 cycles) or OA (n=108 cycles). Three primary analytic groups were defined per the study analysis plan: NOA + PGT-A (n=59), NOA + no PGT-A (n=17), and OA + PGT-A (n=93). A total of 679 PGT-A embryos were analyzed for aneuploidy. Specific karyotype entries (n=258 aneuploid embryos) were parsed to characterize chromosome-level involvement and aneuploidy type. Outcome variables included embryo aneuploidy rate, euploidy rate, fertilization rate, clinical pregnancy, spontaneous abortion, and live birth. Duration of infertility was standardized from free-text to months. Continuous variables were compared using Mann-Whitney U or Kruskal-Wallis tests; categorical variables by chi-squared or Fisher's exact test. Bonferroni correction was applied for individual chromosome comparisons (24 tests; adjusted $\alpha = 0.0021$).
CONCLUSIONS: Aneuploidy rates, chromosome involvement patterns, and aneuploidy types in embryos from NOA and OA patients were not statistically different. However, the use of PGT-A in NOA was associated with a significantly higher live birth rate compared to NOA cycles without PGT-A (67.9% vs. 25.0%, $p = 0.018$), supporting a potential benefit of PGT-A in this population. A trend toward higher Chr 13 involvement in OA warrants further investigation in larger cohorts. These findings support prospective investigation into the role of PGT-A in NOA-associated male factor infertility
IMPACT STATEMENT: PGT-A use in non-obstructive azoospermia (NOA) cycles is associated with significantly higher live birth rates despite similar aneuploidy profiles compared to obstructive azoospermia.

P-364 2:30 PM Tuesday, October 27, 2026

SPERM MORPHOLOGY AND EMBRYO EUPLOIDY IN IVF/ICSI-PGT-A CYCLES WITH NORMAL SEMEN PARAMETERS. Tamar Alkon-Meadows, MD[1], Carlos Hernandez-Nieto, MD[1], Joseph A. Lee, BA[2], Erynne Jackson, BA, MPH[3], Victoria Lazarov, MD[4], Shawn Kripalani, MD, MS[4], Natan Bar-Chama, M.D.[1], Martha Luna Rojas, M.D.[5], Alan B. Copperman, MD[6] and Erkan Buyuk, MD[1], [1]Reproductive

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OBJECTIVE:
Sperm morphology has shown inconsistent associations with IVF outcomes, and the independent prognostic value of morphology remains unclear when sperm concentration and motility are normal. This study evaluates the association between sperm morphology and embryo euploidy in IVF/ICSI–PGT-A cycles with otherwise normal semen parameters.
MATERIALS AND METHODS:
This retrospective, single-center study included autologous IVF/ICSI–PGT-A cycles performed between January 2016 and February 2026. Cycles were stratified by sperm morphology per Kruger criteria (≥4% vs. <4%) and restricted to those with normal sperm concentration (≥16 M/mL) and motility (≥42%) per WHO 2021 guidelines. Donor and surgically retrieved sperm cycles were excluded. The primary outcome was embryo euploidy rate; the secondary outcome was aneuploidy rates. Analyses included chi-square and Kruskal–Wallis tests, and binary logistic regression with generalized estimating equations adjusted for maternal age and BMI. A sample of 388 cycles per group was required to detect a 10% difference in euploidy rate with 80% power (α = 0.05).
RESULTS:
Across nearly 20,000 IVF/ICSI–PGT-A cycles (n = 19,976; 11,351), embryo ploidy outcomes were similar between the normal and abnormal morphology groups, and this finding remained consistent across sperm concentration and motility strata (Table 1). In unadjusted analyses, the abnormal morphology subgroup with low motility showed a higher aneuploidy rate (46.0% vs. 42.0%, P = 0.005); however, this association did not persist after adjustment (aOR 0.92, 95% CI 0.85–1.30).
Table 1. Sperm morphology and embryo ploidy outcomes overall and stratified by sperm concentration and motility.

	Normal Morphology (n = 11,351)	**Abnormal Morphology (n = 8,625)**	**P value**
Overall			
Euploidy	49.3%	50.5%	0.09
Aneuploidy	42.0%	41.4%	0.41
Concentration			
16–25 M/mL	*n = 1,881*	*n = 2,448*	
Euploidy	53.0%	50.0%	0.18
Aneuploidy	40.2%	42.2%	0.19
26–50 M/mL	*n = 1,600*	*n = 3,194*	
Euploidy	51.0%	52.0%	0.53
Aneuploidy	40.0%	40.0%	0.20
51–100 M/mL	*n = 2,154*	*n = 1,470*	
Euploidy	54.0%	54.4%	0.48
Aneuploidy	40.0%	38.5%	0.38
>100 M/mL	*n = 5,716*	*n = 1,513*	
Euploidy	53.0%	50.8%	0.14
Aneuploidy	40.0%	41.9%	0.19
Motility			
≥42%	*n = 8,860*	*n = 6,161*	
Euploidy	50.5%	50.0%	0.55
Aneuploidy	41.7%	42.0%	0.72
<42%	*n = 2,491*	*n = 2,464*	
Euploidy	49.0%	46.0%	0.16
Aneuploidy	**42.0%**	**46.0%**	**0.005***

* Missing embryos were mosaic or inconclusive, with no differences among cohorts.
CONCLUSIONS:
Sperm morphology was not associated with embryo euploidy in IVF/ICSI–PGT-A cycles when sperm concentration and motility were normal, indicating limited independent prognostic value of morphology in this setting.
IMPACT STATEMENT:
When sperm concentration and motility are normal, abnormal morphology alone should not change clinical expectations or management in IVF/ICSI–PGT-A cycles.

REPRODUCTIVE UROLOGY (3 OF 7)

P-365 1:30 PM Tuesday, October 27, 2026

ABSTINENCE DURATION IS ASSOCIATED WITH TOTAL MOTILE SPERM COUNT IN SEMEN ANALYSIS: ADJUSTED ESTIMATES FROM 2,303 MEN.

Jorge Rodriguez-Purata, MD[1], Carlos Navarro Martinez, M.D.[2] and Gonzalo Eugui Velázquez Sr., MD OBGYN[1], [1]Hospital ABC, Ciudad de México, DF, Mexico, [2]ASOCIADOS EN INFERTILIDAD Y, Mexico City, DF, Mexico

OBJECTIVE: To evaluate the association between abstinence duration and semen parameters, using 2 days of abstinence as a clinically practical reference category.
MATERIALS AND METHODS: We analyzed the first semen analysis per man from a real-world andrology database to avoid within-man clustering. Abstinence duration was categorized as ≤1, 2, 3, 4, 5, 6, and ≥7 days, with 2 days as the reference category. Outcomes included total motile sperm count (TMSC), sperm concentration, and total motility. TMSC and concentration were modeled as log(1+x) and back-transformed to adjusted ratios for TMSC+1 and concentration+1. Total motility was modeled as an absolute percentage-point difference. Multivariable linear regression models were adjusted for male age and calendar year.
RESULTS: A total of 2,303 men were included. Compared with 2 days of abstinence, ≤1 day was associated with lower TMSC+1 (adjusted ratio 0.39; 95% CI, 0.21–0.73) and lower concentration+1 (adjusted ratio 0.45; 95% CI, 0.25–0.81). Longer abstinence was associated with progressively higher TMSC+1: 3 days, 1.06 (95% CI, 0.82–1.37); 4 days, 1.32 (95% CI, 1.02–1.71); 5 days, 1.51 (95% CI, 1.13–2.01); 6 days, 1.63 (95% CI, 1.09–2.43); and ≥7 days, 1.57 (95% CI, 1.13–2.18). Associations with concentration+1 were directionally similar but less precise for longer abstinence durations. Compared with 2 days, total motility differences were small and imprecise across most abstinence categories, although ≤1 day showed a lower adjusted total motility difference of −9.5 percentage points (95% CI, −19.24 to 0.24).
CONCLUSIONS: Abstinence duration is independently associated with semen analysis results, particularly TMSC. Very short abstinence is associated with substantially lower TMSC and concentration, whereas longer abstinence is associated with higher TMSC. Total motility appears less consistently affected. These findings support standardized abstinence instructions before semen testing and careful interpretation of longitudinal semen analyses when abstinence duration differs between samples.
IMPACT STATEMENT: In real-world semen testing, abstinence duration materially affects TMSC and should be documented and standardized to improve diagnostic interpretation and follow-up counseling.
SUPPORT: None
REFERENCES:
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P-366 1:45 PM Tuesday, October 27, 2026

VALIDATION IS REQUIRED FOR ACCURACY OF MAIL-IN SEMEN TESTING: RESULTS OF FELLOW HEALTH'S POST VASECTOMY SEMEN ANALYSIS STUDY.

Ellen M Cahill, MD[1], James F Smith, M.D., M.S.[2], Jennifer Geis, PhD[3], Alyssa McLemore, BS, CLS[3], Alexandra Lamoureux, BSc[3], Vy Nguyen, B.A, CLS[3], Kim Clark-Langone, PhD[4], Dr. Katherine L Rotker, M.D.[5] and Stanton C Honig, M.D.[6], [1]Yale University School of Medicine, CT, [2]UCSF, San Francisco, CA, [3]Fellow Health, Inc, San Leandro, CA, [4]Fellow Health Inc., [5]Yale Universtiy, New London, CT, [6]Yale University, New Haven, CT

OBJECTIVE: To validate Fellow Health's mail-in post-vasectomy semen analysis comparing fresh results to samples subjected to expected shipping time conditions.
MATERIALS AND METHODS: As part of New York State Approval, Fellow was required to perform analytical validation to establish accuracy, limit of blank (LoB), limit of detection (LoD), limit of quantitation (LoQ), and precision. For accuracy, specimens with less than 1 million sperm/mL, but still above the LoD (n=20), near the LoD (n=20) and blank specimens (n=20) were evaluated out to 7-15 days in conditions similar to those expected with shipping. Clinical & Laboratory Standards Institute (CLSI) guidelines were followed to establish sensitivity, accuracy, and precision. Negative and Positive predictive agreement (NPA, PPA) were determined for specimens comparing fresh and delayed specimens.
RESULTS: LoB, LoD and LoQ were established as 0, 49,000 and 66,000 sperm/mL, respectively. All 20 specimen that detected sperm at day 0 of <1 million/mL had sperm at day 7. For specimens with sperm above the LoQ, quantitative accuracy at Day 7 was demonstrated by a z-score <3 for all 20 samples (PPA=100%). For specimens near the LOD, a PPA of 97.5% was established out to Day 10 and for "blank" specimens a NPA of 99.5% was established out to Day 10.
CONCLUSIONS: Rigorous validation of mail-in semen analyses is crucial for accurate reporting. Fellow is the only PVSA that has validated results with both previously reported diluted samples and now samples representative of PVSA specimens. This showed a positive predictive value of 100%. For PVSA, accuracy needs to be performed near the LoD to ensure shipping time does not increase false negatives. It is imperative that accuracy is tested out to the claimed stability timepoint.
IMPACT STATEMENT: Fellow is the only PVSA test that has validated results with both previously reported diluted samples and samples representative of PVSA specimens to claimed stability timepoint.
Table 1. Accuracy of Fellow PVSA Above the Limit of Quantification at 7 Days

Specimen ID	**Mean Day 0 (M sperm/mL)**	**Mean Day 7 (M sperm/mL)**	**SD Day 0**	**SD Day 7**	**Day 7 z-score**
AV-FS1	0.625	0.649	0.059	0.040	0.17
AV-FS2	0.177	0.232	0.032	0.039	0.88
AV-FS3	0.135	0.243	0.033	0.029	2.08
AV-FS4	0.332	0.448	0.016	0.054	1.27
AV-FS5	0.336	0.216	0.071	0.042	-1.30
AV-FS6	0.498	0.340	0.127	0.097	-1.34
AV-FS7	0.355	0.305	0.108	0.089	-0.53
AV-FS8	0.417	0.239	0.094	0.035	-1.68

AV-FS9	0.278	0.286	0.091	0.037	0.10
AV-FS10	0.181	0.085	0.073	0.011	-1.54
AV-FS11	0.251	0.224	0.085	0.062	-0.35
AV-FS12	0.286	0.162	0.066	0.032	-1.48
AV-FS13	0.139	0.139	0.031	0.048	0.00
AV-FS14	0.313	0.382	0.059	0.070	0.79
AV-FS15	0.185	0.116	0.047	0.013	-1.09
AV-FS16	0.332	0.351	0.061	0.057	0.21
AV-FS17	0.282	0.367	0.059	0.092	1.03
AV-FS18	0.278	0.297	0.040	0.049	0.23
AV-FS19	0.347	0.313	0.091	0.070	-0.36
AV-FS20	0.139	0.143	0.044	0.032	0.07

P-367 2:00 PM Tuesday, October 27, 2026

OUTCOMES OF EXTENDED SPERM SEARCH AND MICROFREEZE FOLLOWING ATTEMPTED SURGICAL SPERM RETRIEVAL IN MEN WITH AZOOSPERMIA. Alan Paniagua Cruz, M.D.[1], Chaya Rothschild, B.S.[2], Erin Kilkenny, B.S.[3], Michael A Werner, M.D.[4], Joseph P Alukal, MD, MBA[5] and Aaron Brant, M.D.[1], [1]Columbia University Medical Center, [2]Maze Sexual and Reproductive Health, Harrison, NY, [3]Mamaroneck, NY, [4]Maze Sexual and Reproductive Health, Purchase, NY, [5]Columbia University Fertility Center, NYC, NY

OBJECTIVE: To evaluate the utility of extended sperm search and microfreeze (ESSM) in men with non-obstructive azoospermia (NOA) following testicular sperm retrieval procedures.
MATERIALS AND METHODS: ESSM is a novel technique for men diagnosed with NOA on standard semen analysis that involves thoroughly searching an ejaculated sample for rare sperm by dividing the sample into micro-droplets that are scanned using a high-powered microscope. Identified sperm can then be frozen in approximately 1 microliter aliquots. We retrospectively reviewed men with history of prior attempted sperm retrieval from a heterogenous group of surgeons, who then underwent ESSM at a single laboratory. Procedures included testicular sperm extraction (TESE), microsurgical TESE (mTESE), and testicular aspiration/biopsy. Sperm retrieval outcomes were recorded for ESSM and surgical retrieval, as were live birth outcomes when available.
RESULTS: Forty-five men (mean age 33.8 years, range 23–52) with history of prior attempted sperm retrieval underwent at least one ESSM between August 2023 and February 2026, with sperm identified using ESSM in 12 (26.7%) patients. Among the 45 patients, 47 retrieval procedures were performed prior to ESSM, with sperm retrieved in 13 patients (28.9%) across 14 procedures. Retrieval rates were 35.7% for TESE (5/14), 25.0% for mTESE (7/28), and 0% for aspiration/biopsy (0/3). Among 13 patients with prior successful sperm retrieval, 7 (53.8%) had sperm on ESSM. Among 32 patients with history of unsuccessful retrieval, 5 (15.6%) had sperm on ESSM. A total of 7 IVF cycles in five couples were attempted using sperm from ESSM resulting in 3 live births, one in a patient with prior negative TESE and two following successful TESE.
CONCLUSIONS: Even after an unsuccessful sperm retrieval, men seeking cryopreservation may still benefit from ESSM of ejaculated samples. This suggests that 1) spermatogenesis in men with NOA may fluctuate over time and 2) sperm retrieval can miss areas of spermatogenesis and ESSM of ejaculated samples may detect sperm not captured surgically.
IMPACT STATEMENT: ESSM is a noninvasive option for sperm preservation in men with NOA, even in those who previously required surgical sperm retrieval.

	Subgroup	Value
Demographics	Patients	n = 45
	Patient age	33.9 (range 23–52), n = 44
	Partner age	32.5 (range 23–51), n = 37
Sperm Extraction Type		
	mTESE	28/45 (62.2%)
	TESE	14/45 (31.1%)
	Biopsy/aspiration	3/45 (6.7%)
	Unspecified	2/45 (4.4%)
	≥1 type of procedure	3/45 (6.7%)
Extraction Success		
	Overall	14/47 (29.8%)
	TESE	5/14 (35.7%)
	mTESE	7/28 (25.0%)
	Biopsy/aspiration	0/3 (0%)
	Unspecified	2/2 (100%)
ESSM Outcomes		
	ESSM attempts	74 (range 1–8 per patient)
	Patients with sperm on ESSM	12/45 (26.7%)
	(+) ESSM after (-) extraction	5/32 (15.6%)
	(+) ESSM after (+) extraction	7/13 (53.8%)
	ESSM IVF outcomes	7 IVF cycles with 3 live births

P-368 2:15 PM Tuesday, October 27, 2026

MALE PARTNER INFERTILITY TESTING IN THE UNITED STATES: CONTEMPORARY ESTIMATES FROM THE NATIONAL SURVEY OF FAMILY GROWTH. Morgan Wiley, MD, Advocate Illinois Masonic Medical Center, Chicago, IL

OBJECTIVE: Male factor infertility accounts for approximately half of infertility cases, and joint guidelines from the American Urological Association (AUA) and American Society for Reproductive Medicine (ASRM) recommend evaluation of both partners. Using National Survey of Family Growth (NSFG) cycles 5–7 (1995–2008), Eisenberg et al. reported that 18–27% of infertile couples did not undergo male partner evaluation, with no significant change over time. This study sought to assess contemporary rates of male partner testing using the most recent NSFG data.
MATERIALS AND METHODS: The 2022–2023 NSFG female respondent public-use file was analyzed. A total of 5,586 females responded to the survey. The study population included women aged 18–49 who reported ever receiving medical help to become pregnant. The primary outcome was female-reported infertility testing of the husband or male partner, derived from the infertility services checklist administered to women reporting care seeking. Survey-weighted prevalence estimates were calculated in R using the CDC-provided weights and design variables to produce nationally representative results.
RESULTS: Among 531 women reporting infertility care seeking, 57.0% (95% CI 53.2–60.8) reported that their male partner underwent infertility testing, while 43.0% reported no male partner evaluation. Eisenberg et al. found that 27% of female respondents reported no male evaluation in earlier NSFG cycles. This contemporary estimate suggests the gap has persisted or widened. Notably, lack of male partner testing was reported even among women receiving infertility treatment.
CONCLUSIONS: Using the most recent NSFG data, just over half of women seeking infertility care report male partner evaluation. Despite longstanding AUA/ASRM guideline recommendations for couple-based evaluation, a substantial portion of patients continue to report no male partner assessment.
IMPACT STATEMENT: These findings highlight a persistent gap between guideline recommendations and real-world infertility care delivery and underscore the need for greater integration of male partner evaluation into routine infertility assessment, including among couples already receiving treatment.
SUPPORT: No financial support.
REFERENCES:
Eisenberg ML, Lathi RB, Baker VL, Westphal LM, Milki AA, Nangia AK. Frequency of the Male Infertility Evaluation: Data from the National Survey of Family Growth. Journal of Urology [Internet]. 2013 Mar 1 [cited 2026 Apr 29];189(3):1030–4. Available from: https://doi.org/10.1016/j.juro.2012.08.239

P-369 2:30 PM Tuesday, October 27, 2026

BEYOND THE SEMEN ANALYSIS: MALE INFERTILITY AS A SENTINEL FOR SYSTEMIC DISEASE. Fady Tawfik, BS[1], Justyna Sienkaniec, BSN[1], Miles Selders, BA[1], Marshall Mendoza, BS[1], Papa Midley, BS[1], Mrinalini Deverapalli, MD[2] and Miriam Michael, MD[2], [1]Howard University College of Medicine, [2]Department of Internal Medicine, Howard Hospital

OBJECTIVE: To determine whether male infertility (MI) is associated with increased 5-year risks of incident type 2 diabetes mellitus (T2DM), testicular cancer, all-cause mortality, and hypertension in comparison to propensity-score matched fertile controls.
MATERIALS AND METHODS: A retrospective cohort study was conducted using the TriNetX Global Collaborative Network, including electronic health records from 2006 to 2026 (173 healthcare organizations). Men aged 18–50 with MI (ICD-10: N46) were compared to vasectomized men aged 18–50 without MI, representing presumed prior fertility. Patients with pre-existing cardiovascular disease, hypertension, T2DM, malignancy, chromosomal abnormalities, testicular dysfunction, or cryptorchidism were excluded. The index date was defined as the first MI diagnosis or vasectomy record. Propensity score matching (1:1) was performed on 17 demographics and comorbidities. Outcomes were assessed from 1 to 1,825 days post-index. Primary outcomes were incident T2DM, testicular cancer, all-cause mortality, and hypertension. Risk ratios (RR), hazard ratios (HR), and Kaplan-Meier analyses were performed.
RESULTS: After matching, 72,476 men were included per cohort (144,952 total; mean age 34.5 vs 34.6 years). MI was associated with increased risk of T2DM (RR 1.49, 95% CI 1.31–1.71; HR 1.47, 95% CI 1.29–1.69), testicular cancer (RR 3.27, 95% CI 2.17–4.92; HR 3.21, 95% CI 2.13–4.83), and mortality (RR 1.77, 95% CI 1.32–2.38; HR 1.74, 95% CI 1.29–2.33) (all $p<0.001$). No significant association was observed for incident hypertension (RR 1.03, 95% CI 0.97–1.10; $p=0.30$).
CONCLUSIONS: In this large propensity-score matched analysis, male infertility was associated with an increased risk of T2DM, testicular cancer, and mortality within 5 years. These findings support the need for longitudinal metabolic and oncologic surveillance in men presenting with infertility.

IMPACT STATEMENT: This large propensity-matched study links male infertility to metabolic, oncologic, and mortality outcomes. The fertility clinic can serve as a critical entry point for lifelong male health monitoring by integrating cardiometabolic screening and testicular cancer surveillance into the standard evaluation of infertile men.

REPRODUCTIVE UROLOGY (4 OF 7)

P-370 1:30 PM Tuesday, October 27, 2026

PHOSPHATIDYLSERINE: A SPERM MARKER TO GUIDE CLINICAL DECISION MAKING IN MEN WITH VARICOCELE. Parviz K Kavoussi, M.D.[1], Christina George, MS[2], Leah Dobson, BS[2], Claire Cielencki, BS[1], Alena Flores, BS[1], Lauren Ramos, BS[1], Ryan P Smith, M.D.[3], David Manka, BS[2], Jeffrey J Lysiak, Ph.D[2] and Kodi Ravichandran, PhD[2], [1]Austin Fertility & Reproductive Medicine/Westlake IVF, Austin, TX, [2]PS Fertility, Charlottesville, VA, [3]University of Virginia, Charlottesville, VA

INTRODUCTION:
Varicocele has a prevalence of approximately 15% in the general male population but occurs in approximately 40% of men with primary infertility and 80% of men presenting with secondary infertility. Varicocele repair (VR) in the infertile male aims to optimize semen parameters, however; a fair number of infertile men with varicoceles have normal semen parameters. Nearly one-third of men with clinical varicoceles have been found to have normal semen parameters and have a low percentage of phosphatidylserine (PS)-positive sperm, potentially being misclassified as fertile. Although studies show that the majority of men will exhibit an improvement in standard semen parameters post-operatively, the efficacy of VR on improvement in sperm fertilizing capacity remains inconclusive, contributing to uncertainty in clinical decision-making. Emerging data highlighting the role of PS exposure on live sperm—as both essential for sperm:egg fusion and a potential biomarker of fertilization competence—may offer new insights into assessing treatment outcomes.
OBJECTIVE:
Given this clinical dilemma, there is a need for more qualitative approaches to diagnose male infertility that complement the conventional semen analysis to guide treatment decisions and predict success of VR. The aims of this study were to: 1) compare the percentage of PS-positive live sperm in the ejaculate (PS Score) from individuals before and after VR and 2) determine if PS Score aids in predicting pregnancy outcomes.
MATERIALS AND METHODS:
Semen samples from men presenting for fertility evaluations who were diagnosed by a reproductive urologist to have varicoceles seeking VR were analyzed via flow cytometry to obtain PS Score (n=135). Semen samples were also analyzed pre- and 3 months post-microsurgical VR to determine if VR resulted in a change in PS Scores (n=35). The Mann-Whitney U test, a non-parametric statistical method, was used to compare the distributions of values before and 3 months post-surgery.
RESULTS:
Following microsurgical VR, 91% of patients increased PS Scores, with a statistically significant rise compared to baseline levels ($p < 0.01$). Notably, six patients who exhibited an increase to normal PS levels (≥78%) following surgery were able to achieve unassisted pregnancy within 12 months. There was no significant increase in total motile sperm count after VR (p=0.45) underscoring the potential added value of PS Score as a functional biomarker. Forty-seven patients with varicocele opted not to pursue VR. In follow-up of 34 of these individuals, 12 have achieved unassisted pregnancies and all had PS Scores ≥ 78% and 2 had pregnancies after assisted reproductive technologies with PS Scores of 66 and 49.
CONCLUSIONS:
These findings suggest that the PS Score may serve as a clinically relevant biomarker for assessing sperm fertilization competence and predicting the success of VR. Incorporating PS Score as an adjunct to the conventional semen analysis may enhance clinical decision-making and help identify patients most likely to benefit from VR in men with presenting with infertility and varicoceles.
IMPACT STATEMENT:
VR repair improves PS expression and sperm fertilization competence.
SUPPORT: There was no financial support for this work.

P-371 1:45 PM Tuesday, October 27, 2026

CRACKS IN THE MALE GENOME: SPERMATOGENESIS ERRORS ARE THE PRIMARY DRIVER OF FULL SEGMENTAL ANEUPLOIDIES IN HUMAN BLASTOCYSTS. Mandy Katz-Jaffe, PhD[1], Alice Wynn, BS[2], Laura Astifan, BS[2], Lauren Henry, BS[2], Charles Wageman, MS[2], Whitley R Lehto, PhD[2] and William B Schoolcraft, M.D.[1], [1]CCRM Fertility, Lone Tree, CO, [2]CCRM Genetics, Lone Tree, CO

OBJECTIVE: Embryonic full segmental aneuploidies, defined as partial chromosome gains or losses, are identified by pre-implantation genetic testing for aneuploidy (PGT-A). However, the events leading to the generation of these full segmental aneuploidies, including the relative contribution of meiotic nondisjunction, recombination-related errors, and postzygotic mitotic mis-segregation, remain poorly described. This study aims to further advance our understanding of the origin and timing of embryonic full segmental aneuploid errors.
MATERIALS AND METHODS: Trophectoderm (TE) biopsies (n=47) classified as having a full segmental aneuploidy by next-generation sequencing (Illumina) were further evaluated using single-nucleotide polymorphism microarray (Illumina) to assess meiotic or mitotic parental origin by embryonic genome phasing. The relationship between parental age (maternal range 22 to 45 years; paternal range 24 to 61 years) and the incidence of full segmental aneuploidies (n=8,628), was performed using R version 4.4.1 in the entire cohort of n=215,297 PGT-A tested blastocyst utilizing autologous gametes. Full segmental aneuploid probability was modeled as a function of parental age using a binomial generalized linear model implemented in glmmTMB (v. 1.1.13). Predicted marginal probabilities were calculated using ggeffects (v. 2.3.2), significance at $p<0.05$.
RESULTS: Full segmental aneuploidies predominantly arose during gametogenesis as meiotic errors (72.3%), with approximately two-thirds originating from the paternal genome (64.7%). The remaining mitotic cell division errors (27.7%) also largely involved the paternal chromosome (76.9%). These full segmental errors occurred broadly across the genome with only a few recurrent events observed, and they were slightly more frequent on q arms (57.4%). The average size of meiotic-derived full segmental aneuploidies was 44.91Mb, compared with 31.57Mb for mitotic-derived full segmental aneuploidies (ns; p=0.3019). From the entire cohort of PGT-A tested blastocysts, a significant association was identified with paternal aging showing a modest increase in the rate of full segmental aneuploidy at ~0.7% per year beginning at age 24 (OR 1.007, 95% CI: 1.002-1.012, P=0.008). In contrast, maternal age showed a significant decrease in full segmental aneuploidy by ~4.7% per year from age 22 (OR 0.953, 95% CI: 0.948-0.958, P<0.001).
CONCLUSIONS: These findings reveal that full segmental aneuploidies predominantly originate in the paternal genome and are mostly due to meiotic errors during spermatogenesis, with a small association to paternal aging. Interestingly, maternal origin full segmental aneuploidies were less frequent; and significantly decreased with advancing maternal age. This study offers important insight into the mechanisms of full segmental chromosomal error formation. Ongoing research will help clarify the clinical relevance and reproductive potential, distinguishing between uniform versus mosaic contribution of the full segmental error in the human blastocyst.
IMPACT STATEMENT: Spermatogenesis errors are the primary driver of full segmental aneuploidies in human blastocysts.
SUPPORT: None.
REFERENCES:
None.

P-372 2:00 PM Tuesday, October 27, 2026

ADVANCED PATERNAL AGE IS ASSOCIATED WITH INCREASED RISK OF ADVERSE MATERNAL AND NEONATAL OUTCOMES. Jaclynne Hedge, MD[1], Bharti Garg, MBBS, MPH[2], Lisa Vrooman, PH.D.[3] and Sacha A. Krieg, M.D., PH.D.[2], [1]Portland, OR, [2]Oregon Health & Science University, Portland, OR, [3]Oregon National Primate Research Center-

OBJECTIVE: To evaluate the impact of advanced paternal age on adverse maternal and neonatal outcomes in births in California.
MATERIALS AND METHODS: This retrospective population-based cohort study utilized California's linked vital statistics patient discharge data (2016-2020). Paternal age was categorized as <30, 30-34 (reference), 35-39, 40-49, 50-59 and ≥60 years. Multivariable Poisson regression models were adjusted for maternal age, race/ethnicity, education level, BMI, insurance status, parity, prenatal care utilization, chronic hypertension, pre-existing diabetes, and smoking. Adjusted risk ratios (aRR) and 99% confidence intervals (CI) were estimated.
RESULTS: Among 1,651,291 singleton births, paternal age distribution was: <30 (34%), 30–34 (29%), 35–39 (23%), 40–49 (13%), 50–59 (1.4%), and ≥60 (0.15%). Compared with age 30–34, increasing paternal age was associated with gradual increases in gestational diabetes and placenta previa (Table). Higher paternal age was also associated with increased risk of preterm birth, NICU admission, and severe maternal morbidity. No significant associations were observed with hypertensive disorders of pregnancy, other placental abnormalities, or additional neonatal outcomes.
Table: Adjusted risk for outcomes by paternal age (reference 30-34years)

	Paternal Age (years)				
	<30 (n=558,466)	35-39(n=371,627)	40-49 (n=211,753)	50-59 (n=23,238)	≥60 (n=2,492)
Maternal Outcomes					
Gestational Diabetes Mellitus	**0.73 (0.71-0.74)**	**1.04 (1.02-1.06)**	**1.10 (1.08-1.12)**	**1.20 (1.15-1.24)**	**1.26 (1.13-1.40)**
Severe maternal morbidity	1.02 (0.97-1.07)	1.01 (0.96-1.06)	1.06 (0.99-1.12)	**1.25 (1.10-1.42)**	0.94 (0.62-1.42)
Non-transfusion SMM	0.89 (0.82-0.97)	1.00 (0.92-1.09)	1.08 (0.97-1.19)	**1.37 (1.12-1.68)**	0.90 (0.45-1.79)
Placenta previa	**0.62 (0.56-0.68)**	**1.16 (1.06-1.26)**	**1.21 (1.09-1.34)**	**1.59 (1.30-1.93)**	1.61 (0.94-2.76)
Neonatal Outcomes					
Preterm birth (<37w)	**0.98 (0.96-0.99)**	1.01 (0.98-1.03)	**1.07 (1.04-1.10)**	**1.09 (1.03-1.16)**	0.99 (0.83-1.19)
NICU admission	**1.03 (1.01-1.04)**	1.01 (0.99-1.03)	**1.03 (1.01-1.06)**	**1.08 (1.02-1.14)**	1.15 (0.99-1.34)

*aRR (99% CI) shown; reference paternal age 30-34 years
CONCLUSIONS: Advanced paternal age is independently associated with small but consistent increases in adverse maternal and neonatal outcomes. These findings support a paternal contribution to placental function. Mechanisms such as sperm DNA

fragmentation, epigenetic alterations, and imprinting changes provide biologic plausibility.
IMPACT STATEMENT: As paternal age rises, these findings inform reproductive counseling and risk stratification, highlighting underrecognized paternal contributions to placental development and perinatal risk.
SUPPORT: None

P-373 2:15 PM Tuesday, October 27, 2026

EFFECT OF SYNBIOTIC SUPPLEMENTATION ON CLINICAL PREGNANCY RATES AND AI-DERIVED SEMEN PARAMETERS IN TERATOZOOSPERMIA: A PROSPECTIVE RANDOMIZED CONTROLLED TRIAL. Sankara Guha Dwarakanath B, MBBS, MD, FPR[1], Mekhala Dwarakanath, M.S.MBBS, MS OBG, FRM[2], Dr Sayali Pradeep Kandari, M.S , PhD[3], Govinda Krishna Krishna A, M.SC[4], Dileep KUMAR Kumar, M.Sc.[2], Sealeesha Menon Menon P, MBBS, MS OBG, FRM[5] and Roopa M Mulgund, DGO, FRM[2], [1]Icchaa Fertility Solutions and Diagnostics, Bengaluru, India, [2]Icchaa fertility solutions and diagnostics, Bangalore, India, [3]Cellsure Biotech & Research Centre, Dombivli, India, [4]Icchaa Fertility Solutions and Diagnostic, Bangalore, India, [5]Icchaa Fertility Solutions and Diagnostics, Banglore, India

OBJECTIVE: To evaluate the efficacy of synbiotic supplementation on intrauterine insemination (IUI) outcomes in a teratozoospermic cohort, utilizing automated Artificial Intelligence for objective morphology assessment and Teratozoospermia Index (TZI) calculation.
MATERIALS AND METHODS: We evaluated 201 couples undergoing IUI for male subfertility presenting with teratozoospermia (less than 4% normal forms). Peroxidase staining (greater than 1x10^6 WBC/mL) and semen culture screened for leukocytospermia and bacteriospermia. Patients identified with leukocytospermia were treated with Doxycycline (100mg BD for 14 days), while those with positive cultures were managed by a Urologist with targeted therapy guided by an antibiogram (including Doxycycline, Ciprofloxacin, Nitrofurantoin, or Levofloxacin). Confirmed negative retesting for both parameters was mandatory prior to inclusion. Following clearance, baseline parameters and TZI were analyzed via automated AI (LensHooke X1 PRO). Patients were randomized to standard-of-care (SOC: CoQ10/L-Carnitine) (n=103) or synbiotics + SOC (n=98) for eight weeks prior to IUI. AI-based semen analysis was repeated one week pre-IUI. Clinical pregnancy was confirmed via fetal heart activity at 6 weeks post-HCG confirmation. Multivariable logistic regression adjusted for baseline male age disparities.
RESULTS: Baseline parameters were comparable, except for a slight variance in male age (Control: 36.3±3.6 vs. Test: 35.1±3.4 years, p=0.02). Synbiotics yielded a 23.5% (23/98) overall pregnancy rate compared to 20.4% (21/103) with SOC (p=0.59). Age-adjusted multivariable models confirmed this null effect across the broader cohort (aOR 1.25, 95% CI 0.61–2.56). No significant post-treatment improvements occurred in any AI-derived semen parameter, including TZI (p=0.81). However, exploratory subgroup analysis highlighted a potential benefit for men with Severe Teratozoospermia (0-1% normal forms; n=109). In this phenotype, synbiotics yielded a 27.8% (15/54) pregnancy rate versus 18.2% (10/55) with SOC, an absolute increase of 9.6% (post-hoc power: 22.3%).
CONCLUSIONS: Synbiotics do not significantly improve overall IUI pregnancy rates or bulk semen parameters in broadly defined teratozoospermia. However, AI-enabled objective morphology grading minimized human variability and identified a severe phenotype (0-1% normal forms) that may derive clinical benefit. This underscores a need for precision supplementation rather than empirical use. Adequately powered trials targeting this AI-verified severe morphological subgroup are warranted.
IMPACT STATEMENT: This study utilizes Artificial Intelligence to move beyond subjective semen analysis, identifying a specific morphological phenotype (Severe Teratozoospermia) that may benefit from targeted synbiotic therapy, thereby advancing precision medicine in male reproductive health.
SUPPORT: None
REFERENCES:
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P-374 2:30 PM Tuesday, October 27, 2026

TEN-YEAR SECULAR TRENDS IN SEMEN PARAMETERS AT A TERTIARY FERTILITY CENTRE IN MEXICO CITY: RISING SPERM CONCENTRATION AND TOTAL SPERM COUNT IN A HIGH-ALTITUDE LATIN AMERICAN POPULATION. Jorge Rodriguez-Purata, MD[1], Stephanie Lizmi, M.D.[2], Gonzalo Eugui Velázquez Sr., MD OBGYN[1] and Carlos Navarro Martinez, M.D.[3], [1]Hospital ABC, Ciudad de México, DF, Mexico, [2]Clinica De Fertilizacion Asistida, Mexico, DF, Mexico, [3]ASOCIADOS EN INFERTILIDAD Y, Mexico City, DF, Mexico

OBJECTIVE: To evaluate 10-year secular trends, pandemic-period changes, and seasonal variation in semen parameters in a previously unstudied high-altitude Latin American population.
MATERIALS AND METHODS: This retrospective repeated cross-sectional study included consecutive semen analyses performed from 2015–2025 at a single private tertiary fertility laboratory located 2,240 m above sea level. Semen analyses were performed according to WHO 2010 criteria by the same two-analyst team throughout the study period. Sperm concentration was measured using the same counting chamber methodology. A pre-analytical data-quality audit identified a systematic B↔C motility column transposition from January 2018–March 2022; affected records were corrected before analysis, and progressive motility (PR) was recalculated. Secular trends were assessed using Spearman correlation of annual medians and sample-level ordinary least-squares regression adjusted for age and ejaculatory abstinence. Pandemic and recovery periods were compared with the 2015–2019 baseline using Mann–Whitney U tests. Seasonal variation was assessed using Kruskal–Wallis testing with Bonferroni-corrected pairwise comparisons.
RESULTS: Among 3,175 semen analyses, median age was 36.2 years and median abstinence was 4 days. Median sperm concentration was 100 $\times 10^6$/mL, total sperm count (TSC) 239.7 $\times 10^6$, PR 58%, semen volume 2.5 mL, vitality 79%, and strict morphology 2%. Sperm concentration increased significantly over time, from a median of 90 $\times 10^6$/mL in 2015 to 120 $\times 10^6$/mL in 2024 and 113 $\times 10^6$/mL in 2025 (Spearman ρ=+0.815, P=0.002; adjusted β=+4.92 $\times 10^6$/mL/year, P<0.001). TSC also increased (169 $\times 10^6$ in 2015; 310 $\times 10^6$ in 2024; 317 $\times 10^6$ in 2025; ρ=+0.900, P<0.001; adjusted β=+16.49 $\times 10^6$/year, P<0.001). PR showed a small sample-level decline (β=−1.10%/year, P<0.001) but no significant annual-median trend (ρ=−0.388, P=0.238). Semen volume was stable. Vitality increased modestly (ρ=+0.662, P=0.027). Strict morphology declined markedly (ρ=−0.977, P<0.001), likely reflecting laboratory calibration rather than biological change. During 2020, sperm concentration was higher than in 2015–2019 (110 vs 81 $\times 10^6$/mL, P<0.001), consistent with selection bias from reduced attendance. Sperm concentration varied by season (Kruskal–Wallis P=0.039), with the highest median in winter (109 $\times 10^6$/mL), but no pairwise comparison remained significant after correction.
CONCLUSIONS: In this high-altitude Latin American cohort, sperm concentration and TSC increased significantly over 10 years, contrary to the widely reported global decline. Motility remained broadly stable, and the apparent morphology decline should be interpreted cautiously as probable laboratory recalibration.
IMPACT STATEMENT: These data provide the first decade-long semen parameter benchmark from Mexico and support geographically granular surveillance rather than assuming a universal decline in male reproductive parameters.
SUPPORT: None
REFERENCES:
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REPRODUCTIVE UROLOGY (5 OF 7)

P-375 1:30 PM Tuesday, October 27, 2026

HOCATT OZONE SAUNA IMPROVES SPERM CONCENTRATION WITH A TREND TOWARD REDUCED DNA FRAGMENTATION: A PROSPECTIVE THREE-TIMEPOINT PILOT STUDY. Zaher Merhi, M.D., HCLD[1], Kristen A Santarin, B.A.[2], Marco Mouanness, MD, HCLD[2] and Molly Broe, B.S.[3], [1]Albert Einstein College of Medicine, Maimonides Medical Center, & Rejuvenating Fertility Center, New York, NY, [2]Rejuvenating Fertility Center, New York, NY, [3]LSU New Orleans School of Medicine

OBJECTIVE: Oxidative stress is a major contributor to male factor infertility. Transdermal ozone sauna via the HOCATT chamber delivers ozone, carbonic acid, and pulsed electromagnetic field (PEMF) therapy with antioxidant and anti-inflammatory effects. We evaluated twice-weekly HOCATT sessions on semen parameters and DNA fragmentation index (DFI) across three serial timepoints.
MATERIALS AND METHODS: 23 males with suboptimal semen analysis and/or elevated DFI were enrolled under IRB approval. Each received 6 HOCATT sessions with PEMF (twice weekly for 3 weeks), 30 minutes each in a closed chamber with head excluded to prevent inhalation. Ozone concentration increased incrementally from 50% to 90% per session. Semen analysis and DFI were assessed at baseline, 3 weeks, and 3 months post-treatment. Friedman test was applied across timepoints with Wilcoxon post-hoc tests and Bonferroni correction.
RESULTS: Sperm concentration rose from 38.6 [IQR 16.4–81.5] to 50.5 M/mL [IQR 23.0–104.0] 3 months post-treatment (p=0.038). Morphology also changed with a significant improvement post→3-week followed by 3-week→3-month decline (p=0.033). Volume (p=0.28), motility (p=0.39), and total motile count (p=0.42) were unchanged. DFI showed a trend toward improvement post-treatment (median 73.5% vs. 54.5%; p=0.06; 5/6 improved). Two female partners achieved spontaneous pregnancies following partner completion of the protocol. No adverse events occurred.
Table 1. Serial Semen Parameters and DFI Before and After HOCATT Treatment Across Three Timepoints

Parameter	Pre-Treatment median [IQR]	3-Week Post-Treatment median [IQR]	3-Month Post-Treatment median [IQR]	Friedman χ^2 (p)
Concentration (M/mL)	38.6 [16.4–81.5]	50.5 [23.0–104.0]	47.0 [14.3–91.5]	**6.53 (p=0.038)**
Motility (%)	45.5 [21.5–68.0]	56.5 [25.0–61.3]	56.6 [15.8–70.5]	1.86 (p=0.395)
Morphology (% normal)	2.5 [2.0–3.8]	3.0 [2.5–4.0]	2.1 [1.0–3.3]	**6.83 (p=0.033)**
Volume (mL)	1.6 [1.0–3.1]	1.5 [1.2–3.4]	1.5 [1.1–3.0]	2.52 (p=0.284)
Total Motile Count (M)	29.8 [8.1–123.1]	77.8 [17.3–113.5]	26.1 [4.1–74.8]	1.71 (p=0.424)
DFI (%)†	73.5 [37.5–78.8]	54.5 [32.2–61.8]	63.4 [25.0–81.0]	2.53 *(p=0.06)*

✓= significant. †DFI n=6; all other parameters n=15 (3 timepoints). IQR = interquartile range.

CONCLUSIONS: HOCATT produced significant serial changes in sperm concentration and morphology, with a DFI trend consistent with antioxidant activity on sperm DNA. Further investigation in a powered trial is warranted.
IMPACT STATEMENT: Male factor infertility affects up to 50% of infertile couples, with limited non-pharmacologic options. HOCATT offers an outpatient antioxidant strategy with preliminary spermatogenic benefit and a favorable safety profile. Two spontaneous pregnancies observed underscore clinical potential and support a powered randomized trial.

P-376 1:45 PM Tuesday, October 27, 2026

PREDICTORS OF SUCCESS OF MICRODISSECTION TESTICULAR SPERM EXTRACTION IN NON-OBSTRUCTIVE AZOOSPERMIA: DIVERGENT AGE EFFECTS AND SINGLE-CELL TRANSCRIPTOMIC INSIGHTS. Li Zhang, Ph.D, Peking University Third Hospital, Beijng, China

OBJECTIVE: To explore factors influencing sperm retrieval rate (SRR) of micro-TESE in NOA patients with different etiologies and the mechanism linking age and SRR using scRNA-Seq transcriptome analysis.
MATERIALS AND METHODS: Retrospective analysis of 4,232 NOA patients undergoing micro-TESE (2012-2024). Patients were classified into five groups based on the etiologies with the largest clinical cohort including idiopathic NOA (iNOA), Klinefelter syndrome (KS), AZFc microdeletions, cryptorchidism, and mumps orchitis. Multivariable logistic regression was used to analyze sperm retrieval outcome. Given the linear relationship between age and SRR identified in the clinical data of KS patients, a logistic regression curve was applied to better visualize their association. Given the nonlinear relationship observed between age and SRR identified in the clinical data of iNOA patients, a logistic regression model incorporating restricted cubic spline (RCS) terms was employed to more effectively visualize their correlation. scRNA-Seq of 19,013 testicular cells from 6 iNOA patients (young vs. old) explored molecular mechanisms.
RESULTS: Overall SRR was 40.55%, varying from 27.21% (iNOA) to 89.08% (mumps orchitis). In iNOA, older age (adjusted OR, 1.07; 95% CI, 1.05 –1.10) predicted higher SRR (nonlinear S-shaped, inflection at age 31). In KS, older age (adjusted OR, 0.94; 95% CI, 0.91–0.98) inversely associated with SRR (linear decline), while larger testicular volume (adjusted OR, 1.13; 95% CI, 1.03–1.25) was positive. In cryptorchidism, larger testes (adjusted OR, 1.09; 95% CI, 1.03–1.15) and higher PRL levels within the normal range (adjusted OR, 1.05; 95% CI, 1.01–1.11) predicted success. In AZFc microdeletions, higher (non-obese) BMI (adjusted OR,1.08; 95% CI, 1.02–1.14) was favorable. scRNA-seq revealed old iNOA patients had higher spermatid proportion and upregulation of spermatid development/differentiation genes (PRM1, PRM2, TNP1, ACRBP) compared to young group.
CONCLUSIONS: Age shows a positive S-shaped nonlinear relationship with SRR in iNOA (inflection at 31 years), with older patients exhibiting superior spermatogenic function. In KS, age shows a negative linear relationship with SRR.
IMPACT STATEMENT: For iNOA patients, micro-TESE should be considered at or after age 31 to optimize SRR. For KS patients, earlier intervention is advised due to linear decline with age. Larger testicular volume predicted successful retrieval in cryptorchidism, and lower FSH levels were favorable in NOA and iNOA. Slightly higher (non-obese) BMI was associated with improved SRR in AZFc microdeletions.

P-377 2:00 PM Tuesday, October 27, 2026

IMBALANCE AND GEOGRAPHIC DISPARITIES IN THE U.S. FERTILITY WORKFORCE: REPRODUCTIVE ENDOCRINOLOGY, REPRODUCTIVE UROLOGY, AND INSURANCE MANDATES. Elie Kaplan-Marans, MD[1], Oliver B Menken, BS[2], Yitzchak E. Katlowitz, MD[1], Dr. Nicholas A Deebel, M.D.[3] and Robert E. Brannigan, M.D.[4], [1]Maimonides Medical Center, [2]SUNY Downstate Health Sciences University, College of Medicine, [3]Northwestern University Feinberg School of Medicine, [4]Northwestern University Feinberg School of Medicine, Chicago, IL

OBJECTIVE: To evaluate geographic variation in the U.S. fertility workforce by comparing the distribution of reproductive endocrinology and infertility (REI) specialists and reproductive urologists, and to assess the association between insurance mandate strength and provider density.
MATERIALS AND METHODS: A cross-sectional analysis of provider directories from the Society for Reproductive Endocrinology and Infertility and the Society for Male Reproduction and Urology (both under the American Society for Reproductive Medicine) was performed. Counties and states/jurisdictions were categorized based on the presence of listed REI specialists, reproductive urologists, or both. Population data were obtained from the 2020 U.S. Census, and insurance mandate data from RESOLVE. States were assigned a mandate grade (0–6) reflecting coverage comprehensiveness, including in vitro fertilization and fertility preservation. Provider densities were calculated per 1 million adult women (REI) and men (reproductive urologists). Statistical analyses included chi-square testing, negative binomial regression with population offsets, Spearman correlation, and Wilcoxon signed-rank testing.
RESULTS: A total of 625 REIs and 80 reproductive urologists were identified, reflecting a 7.8:1 workforce imbalance. Among 51 states/jurisdictions (including the District of Columbia), 4 (8%) had no listed specialists of either type, while 19 (37%) had an REI listed but no reproductive urologist; 27 (53%) had both specialists listed. At the county level, 3,092 of 3,143 counties (98%) had no listed reproductive urologist, 2,967 (94%) had no listed REI, and 2,960 (94%) had neither specialist listed. Only 45 counties (1%) had both specialists listed. REI density exceeded reproductive urologist density in 47 states/jurisdictions (92%; Wilcoxon $Z = -5.99$, $p < 0.001$). Insurance mandate grade correlated with both REI ($\rho = 0.36$, $p = 0.01$) and reproductive urologist ($\rho = 0.37$, $p = 0.007$) density. In regression models with population offsets, mandate grade was associated with the number of listed reproductive urologists ($B = 0.16$, $p = 0.038$) and showed a positive but non-significant association with listed REIs ($B = 0.11$, $p = 0.059$).
CONCLUSIONS: The identified U.S. fertility workforce demonstrates a marked imbalance and uneven geographic distribution, with substantially fewer reproductive urologists compared to REI specialists. Insurance mandate strength was associated with provider distribution, suggesting a potential policy lever influencing workforce structure.
IMPACT STATEMENT: These findings highlight structural disparities in the specialized fertility workforce, especially in male reproductive care, and suggest that insurance policy may influence workforce patterns, informing strategies to improve equitable access to comprehensive fertility services nationwide.

P-378 2:15 PM Tuesday, October 27, 2026

TEMPORAL TRENDS IN THE ETIOLOGY OF NON-OBSTRUCTIVE AZOOSPERMIA: A SINGLE-INSTITUTION ANALYSIS FROM 2019–2026. Brandon Kannady, MD, Alee Kim, B.S., Clayton Powell, B.S., Thomas Ashley, B.S., Randall Nesom, M.D. and Johnathan Doolittle, MD, University of Oklahoma Health Sciences Center

OBJECTIVE: Azoospermia is the absence of sperm in ejaculate confirmed by semen analysis and is broadly classified into obstructive (OA) and non-obstructive azoospermia (NOA), with non-obstructive azoospermia being the most common. Historically, idiopathic non-obstructive azoospermia has been the most prevalent etiology reported, but with contemporary utilization of exogenous testosterone we hypothesized testosterone induced (TRT) NOA has surpassed idiopathic NOA. We sought to further characterize the diversity and temporal trends of NOA diagnoses at our institution.
MATERIALS AND METHODS: We performed a retrospective cohort study of men diagnosed with azoospermia from 2019-2026 identified by azoospermia-related CPT codes. Patients were then categorized as NOA or OA and further stratified by etiology. Diagnostic trends were then analyzed by year. A chi-square test of independence compared idiopathic NOA and TRT induced NOA.
RESULTS: 129 men were diagnosed with NOA at our institution from 2019-2026, excluding four men who were lost to follow-up. The distribution of etiologies is summarized in Table A. From 2019-2024, idiopathic NOA was the most common diagnosis (54.6%) compared to TRT-induced NOA (22.1%). In 2025, TRT-induced NOA surpassed idiopathic NOA (47.28% vs 30.91%; p=0.001) as the most common diagnosis. Early 2026 data shows continued predominance of TRT-induced NOA (62.5% vs 33%). Six patients with primary infertility previously on TRT had absent spermatogenesis on testicular biopsy or micro-TESE and were excluded in this analysis due to diagnostic uncertainty.
CONCLUSIONS: In 2025, TRT-induced NOA became more prevalent than idiopathic NOA at our institution that appears sustained with early 2026 data. This is clinically significant as this represents an iatrogenic cause of male infertility with cessation and appropriate interventions. This marks an important transition to a preventable and potentially reversible cause of NOA, underscoring the importance of awareness and comprehensive counseling by clinicians prescribing TRT.
IMPACT STATEMENT: At our institution, TRT-induced azoospermia emerged as the leading cause of NOA compared to idiopathic NOA in 2025, with a significant increase in diagnosis. This represents a shift toward not only a potentially reversible, but also a preventable etiology in male infertility emphasizing the need for improved awareness and patient counseling by TRT prescribers.

Year	Idiopathic	TRT-Induced	Exposure (chemotherapy, radiation)	Genetic	Cryptorchidism History	Hyperprolactinemia	Central Hypogona
2019	3	1	1	0	0	0	0
2020	4	2	0	2	0	1	0
2021	8	0	0	1	0	0	0
2022	3	1	2	1	0	0	0
2023	8	3	1	1	0	0	0
2024	8	5	1	2	0	0	1
2025	17	26	5	3	2	1	0
2026	3	5	1	0	0	0	0
Total	54	43	11	10	2	2	1

Table A
SUPPORT: None
REFERENCES:
None

P-379 2:30 PM Tuesday, October 27, 2026

IMPACT OF SPERM DNA FRAGMENTATION ON EMBRYONIC CHROMOSOMAL OUTCOMES FOLLOWING ICSI WITH PGT-A. Yunhee Kim, M.S.[1], Min Jeong Cho, M.S.[2], Ye Seul HAN, B.S.[2], Naye Kwon, B.S.[2], Minbi KIM, M.S.[2], Hyoung-Eun Ryu, M.S.[2], You Shin Kim, M.D.[3], Ji I Baek, M.S.[2], Jiyeon CHOI, M.D.[3] and Eun A Park, Ph.D.[2], [1]CHA FERTILTY CENTER SEOUL STATION, Seoul, South Korea, [2]Fertility Laboratory, CHA University Fertility Center Seoul Station, Seoul, Korea, Republic of (South), [3]Department of Obstetrics and Gynecology, CHA University Fertility Center Seoul Station, Seoul, Korea, Republic of (South)

OBJECTIVE: To evaluate the association between sperm DNA fragmentation (SDF) and Preimplantation Genectic testing (PGT-A) outcomes in ICSI cycles and to determine

whether increasing SDF levels are associated with embryonic euploidy, mosaicism, and aneuploidy.
MATERIALS AND METHODS: This retrospective cohort study included ICSI cycles performed at CHA Fertility Center, Seoul Station, between 2021 and 2025 in which male patients underwent SDF testing prior to blastocyst biopsy for PGT-A. SDF was assessed using the DNA fragmentation index (DFI) via the Halosperm assay. Cycles were categorized into low (DFI <15%, n=370, 1,072 embryos), medium (15–30%, n=149, 430 embryos), and high (≥30%, n=29, 100 embryos) groups and continuous-variable analysis was additionally performed to assess associations between increasing SDF levels and embryonic chromosomal outcomes. PGT-A outcomes were classified as euploid, mosaic, or aneuploid. Group comparisons were performed using chi-square analysis, and embryo-level odds ratios (ORs) with 95% confidence intervals (CIs) were calculated.
RESULTS: A total of 548 cycles encompassing 1,602 biopsied embryos were clinically evaluated. Semen volume did not differ significantly between groups, whereas elevated SDF levels were associated with decreased sperm motility. The High SDF group showed a non-significant reduction in the odds of euploid embryos compared with the Low SDF group (OR 0.61; 95% CI, 0.35–1.08; p=0.099). In contrast, it was significantly associated with increased odds of embryonic aneuploidy (OR 1.87; 95% CI, 1.04–3.34; p=0.038). When analyzed as a continuous variable, increasing SDF levels were significantly associated with increased odds of embryonic aneuploidy (OR 1.014 per 1% increase; 95% CI, 1.003–1.024; p=0.013), indicating that higher SDF levels is associated with progressively greater chromosomal abnormality risk.
CONCLUSIONS: Elevated SDF, particularly at higher levels, was associated with increased embryonic aneuploidy risk. Continuous analysis further demonstrated a significant association between rising SDF levels and embryonic chromosomal abnormality. These findings suggest that elevated SDF may be more closely associated with increased chromosomal abnormality risk than with reduced euploidy and may serve as an adjunctive marker for embryonic chromosomal risk assessment in ICSI-PGT-A cycles.
IMPACT STATEMENT: Elevated sperm DNA fragmentation is associated with an increased risk of embryonic chromosomal abnormalities, suggesting its potential value as an adjunctive marker for risk assessment and patient counseling in ICSI-PGT-A cycles.

REPRODUCTIVE UROLOGY (6 OF 7)

P-380 1:30 PM Tuesday, October 27, 2026

PREDICTIVE VALUE OF SERUM TESTOSTERONE AND ESTRADIOL FOR SPERM RETRIEVAL IN NON-MOSAIC KLINEFELTER SYNDROME.
Kyoungtaek Lim, M.D.[1], Chang-Woo Choo, M.D.[2], Kyung Sil Lim, M.D., Ph.D.[3] and Won-Don Lee, M.D., Ph. D.[2], [1]Seoul Maria Fertility Hospital, Seoul, South Korea, [2]Seoul Maria Fertility Hospital, Seoul, Korea, Republic of (South), [3]Maria Fertility Hospital, Seoul, Korea, Republic of (South)

OBJECTIVE: To evaluate whether preoperative serum testosterone (T) and estradiol (E2) predict successful sperm retrieval in treatment-naïve men with non-mosaic Klinefelter syndrome and to compare their predictive value with conventional clinical parameters.
MATERIALS AND METHODS: We conducted a retrospective cohort study of 28 treatment-naïve men with non-mosaic Klinefelter syndrome who underwent standardized microsurgical testicular sperm extraction (micro-TESE) by a single surgeon. Patients with mosaicism, prior hormonal therapy, clinical varicocele, or cryptozoospermia were excluded. Preoperative serum T and E2, age, body mass index (BMI), testicular volume, follicle-stimulating hormone (FSH), and luteinizing hormone (LH) were recorded. Sperm retrieval rate (SRR) was the primary outcome. Receiver operating characteristic (ROC) curve analysis determined optimal cut-off values for T and E2.
RESULTS: Sperm was successfully retrieved in 7 patients (25%). Preoperative T and E2 were significantly higher in the successful sperm retrieval group (T: 2.34 vs. 1.17 ng/mL, P = 0.013; E2: 32.18 vs. 17.49 pg/mL, P < 0.001). ROC analysis showed high predictive accuracy for E2 (AUC = 0.932) and T (AUC = 0.886). Optimal cut-offs were ≥24.4 pg/mL for E2 and ≥1.30 ng/mL for T. Combined thresholds yielded 95.2% specificity and 85.7% positive predictive value. Conventional parameters, including age, BMI, testicular volume, FSH, and LH, were not significantly associated with sperm retrieval outcomes (all P > 0.05).
CONCLUSIONS: Preoperative serum T and E2 are strong, non-invasive predictors of successful sperm retrieval in treatment-naïve men with non-mosaic Klinefelter syndrome, likely reflecting preserved Leydig cell function. These biomarkers may guide patient selection and counseling for micro-TESE, potentially reducing unnecessary surgeries.
IMPACT STATEMENT: Serum T and E2 can provide a novel, evidence-based approach to predict micro-TESE outcomes, enhancing fertility counseling and clinical decision-making in men with non-mosaic Klinefelter syndrome.
SUPPORT: No financial support

P-381 1:45 PM Tuesday, October 27, 2026

THE MALE INFERTILITY CLINICAL TRIAL LANDSCAPE: A SYSTEMATIC ANALYSIS OF CLINICALTRIALS.GOV REGISTRATIONS FROM 2007 TO 2026.
Hriday P Bhambhvani, MD[1], Myles M Reed, BS[2] and Michael L. Eisenberg, M.D.[3], [1]Hoover, AL, [2]New York, NY, [3]Stanford University School of Medicine, Stanford, CA

OBJECTIVE: To characterize the clinical trial landscape for male factor infertility registered on ClinicalTrials.gov, examining patterns of trial growth, design, sponsorship, and results dissemination.
MATERIALS AND METHODS: We performed a cross-sectional landscape analysis of the Aggregate Analysis of ClinicalTrials.gov (AACT) database (snapshot: March 5, 2026), restricted to interventional studies registered after October 1, 2007. Systematic keyword search yielded 311 candidate trials, of which 166 met inclusion criteria following independent manual review by two investigators. Extracted variables included sponsor type, phase, enrollment, intervention category, primary endpoint, and geographic region. Annual registration trends were quantified by compound annual growth rate (CAGR) with Mann-Kendall trend testing. Dissemination was defined as posting of summary results to ClinicalTrials.gov, peer-reviewed PubMed publication, or both. Categorical variables were compared using chi-square or Fisher's exact test.
RESULTS: Academic or non-industry entities sponsored 85.5% of trials; industry sponsored 14.5%. Half of trials were completed (50.0%), and most were randomized (66.1%), single-site (87.3%), and treatment-directed (79.8%). The most common intervention was antioxidant or nutraceutical therapy (33.7%), and semen parameters were the most frequent primary endpoint (57.2%). Annual registration grew from 1 trial in 2008 to 18 in 2025 (CAGR 18.53%, p=0.002), driven by academic sponsors (CAGR 17.93%, p=0.007) and non-North American, non-European regions (CAGR 17.39%, p<0.001), while industry-sponsored registration showed no significant trend (CAGR 8.50%, p=0.13). Industry-sponsored trials were more likely to be conducted in North America (41.7% vs. 11.3%, p=0.002) and carry a formal phase designation (62.5% vs. 33.8%, p=0.023). Among 83 completed trials, only 27.7% disseminated findings through any mechanism, and North American trials had significantly higher rates of results reporting to ClinicalTrials.gov compared to all other regions (38.5% vs. ≤3.6%, p=0.003).
CONCLUSIONS: Male infertility clinical trial registration has grown substantially over two decades but is characterized by limited industry engagement, predominance of antioxidant interventions despite uncertain efficacy, and poor results dissemination.
IMPACT STATEMENT: This first systematic characterization of the male infertility trial landscape identifies deficiencies in industry investment, endpoint selection, and reporting compliance, providing a foundation for future trial design.

P-382 2:00 PM Tuesday, October 27, 2026

A NOVEL SPERM FUNCTION ASSAY AS AN ADJUNCT TOOL FOR INITIAL MALE FERTILITY ASSESSMENT.
Blair T. Stocks, M.D., Ph.D.[1], Barb Cohen, PhD[2], Zimu Chen, B.S.[2], John Walsh, PhD[2], Angelo Allard, B.S.[3], Amelia G Oppenheimer, B.S.[1], Niki Parikh, MD, MBA, MSBA[4], Mahdi Bazzi, MD[5], Taylor Kohn, M.D.[1] and Larry I. Lipshultz, M.D.[1], [1]Baylor College of Medicine, Houston, TX, [2]Arex Life Sciences, Watertown, MA, [3]Seattle Sperm Bank, Seattle, WA, [4]UT Southwestern, Dallas, [5]Michigan Institute of Urology, Troy, MI

OBJECTIVE: The Kinetix Sperm analysis assay is a novel semen analysis that correlates to a male ejaculate's fertilization competence. This functional assay measures temporal expression of a sperm Fc receptor (FcR) as sperm capacitate and become fertile, which in healthy ejaculates occurs over time in sequential sperm groups. Published work has demonstrated that semen samples which rapidly and consistently show good FcR expression produce improved IUI and ICSI outcomes. We characterized samples from men presenting to a tertiary infertility clinic hypothesizing these would demonstrate poor expression.
MATERIALS AND METHODS: From June 2023 to Jan 2024, we identified 28 patients presenting for their initial male infertility consultation. Excess semen samples were cryopreserved and shipped to Arex for Kinetix analysis. Ejaculate samples were stained with a fluorescently tagged antibody to detect surface FcR expression on post-thaw spermatozoa and analyzed using flow cytometry at 30-min intervals. Relative FcR surface expression over time was calculated and the quality of samples was scored (5-fertile to 0-infertile). We also determined whether clinical variables correlated with Kinetix assay scoring. The assay was validated with sperm bank samples (higher fertility) that skew toward fertile scoring.
RESULTS: Overall, 7% of infertile patients' ejaculates were scored Fertile (n=2), 61% Subfertile (n=17), and 32% Infertile (n=9) skewing toward poor quality. In sperm bank donors, 37% of samples were scored Fertile (n=10), 63% Subfertile (n=17), and 0% Infertile (n=0). Infertile patients were then grouped into categories of infertility: unexplained (n=13), failed IVF (n=6), history of testosterone use (n=8), and fertile control (n=1). We detected no difference in Kinetix scoring between the presenting groups (Kruskal-Wallis test) and no significant associations between Kinetix scoring and serum hormones (testosterone, LH, FSH, estradiol), testicular size, or standard semen analyses parameters (Kruskal-Wallis test).
CONCLUSIONS: Our work demonstrates that men presenting with infertility concerns had ejaculate samples skew toward poorer Kinetix scoring vs those with higher fertility, interestingly, these scores did not correlate with clinical parameters. Previous work shows improved IUI and ICSI outcomes using fresh and frozen semen samples with higher Kinetix scoring. Further work includes determining whether clinical interventions improve scoring.
IMPACT STATEMENT: The Kinetix assay introduces a novel approach to measuring sperm biological function over time, enabling functional phenotyping independent of traditional classification or treatment groups. In assisted reproductive technologies (ART), the relationship between Kinetix score and an ejaculate's fertilization competence provides actionable insight for physicians to guide clinical decision-making. This approach supports the selection of interventions that may improve sperm function and enables more personalized identification of ejaculates having sperm with fertilizing capability, potentially improving outcomes while reducing use of sperm samples with lower fertilization potential.
SUPPORT: N/A
REFERENCES:
N/A

P-383 2:15 PM Tuesday, October 27, 2026

REPEATABILITY OF SPERM DNA FRAGMENTATION TESTING BY ACRIDINE ORANGE FLOW CYTOMETRY IN A HIGH-COMPLEXITY CLINICAL LABORATORY SETTING. Charles Morin, Ph.D.[1], Lyne Massicotte, Ph.D.[2], Sylvie Larocque, M.Sc.[3] and Mathieu Boilard, Ph.D.[2], [1]Nasci Biologie Médicale, Longueuil, Canada, [2]Nasci Biologie Médicale, Longueuil, QC, Canada, [3]Longueuil, QC, Canada

OBJECTIVE: To assess the repeatability of sperm DNA fragmentation (SDF) testing by acridine orange flow cytometry and identify factors contributing to inter-ejaculate variability in a high-complexity clinical laboratory setting.
MATERIALS AND METHODS: We retrospectively analyzed SDF data from over 2600 men tested between 2022 and 2026. Among them, 113 patients had repeated measurements. A control group of 8 fertile men (fathers of children under 2 years) was also tested twice. DNA fragmentation index (DFI) was measured using acridine orange flow cytometry. Inter-ejaculate coefficients of variation (ICV) were calculated. Potential sources of variability were evaluated, including sperm concentration, low DFI values, and changes in patient health between ejaculates.
RESULTS: The mean DFI was 24.6% in the patient group, suggesting a clinical bias toward retesting higher values. Out of the 113 patients, 86 had repeated measurements with an ICV <15%, while 26 showed ICV >20%. For 12 of them, variability could be readily explained by known external factors. For the remaining 14, the presence of such factors could not be excluded due to lack of clinical information. In the fertile group, only two individuals displayed ICV >25% despite a mean DFI of 6.1%, indicating very low absolute variability.
CONCLUSIONS: SDF testing by acridine orange flow cytometry can achieve high repeatability in a controlled high-complexity clinical laboratory setting. Observed variability was often due to sperm debris interference or modifications in ejaculate or patient condition rather than intrinsic limitations of the assay.
IMPACT STATEMENT: SDF testing by acridine orange flow cytometry is highly reliable when performed in accordance with clinical chemistry practice standards. These findings highlight the critical role of rigorous analytical quality control in interpreting inter-ejaculate variability.
SUPPORT: This work was financed by Nasci Biologie Médicale Inc.

P-384 2:30 PM Tuesday, October 27, 2026

FERTILITY OUTCOMES AND PREDICTORS OF SPERM RECOVERY AFTER ORCHIDOPEXY IN ADULT MEN WITH UNTREATED BILATERAL CRYPTORCHIDISM AND NONOBSTRUCTIVE AZOOSPERMIA. Yifan Sun, PhD[1], Zheng Li, MD[2] and Peng Li, MD[2], [1]Shanghai General Hospital, Shanghai, Shanghai, China, [2]Shanghai General Hospital, Shanghai Jiao Tong University School of Medicine, China

OBJECTIVE: To assess fertility outcomes after orchidopexy in adult men with untreated bilateral cryptorchidism and nonobstructive azoospermia (NOA), and to identify preoperative predictors of postoperative sperm recovery.
MATERIALS AND METHODS:
We retrospectively analyzed 51 consecutive men aged >18 years with NOA and untreated bilateral cryptorchidism who underwent orchidopexy at a single center from March 2015 to January 2025. Sperm recovery was defined as sperm detected in postoperative semen analysis or retrieved by postoperative microdissection testicular sperm extraction (micro-TESE). The primary outcome was sperm recovery; secondary outcomes included live birth. Candidate predictors were screened using bootstrap least absolute shrinkage and selection operator and entered into Firth penalized logistic regression. Model discrimination was evaluated by receiver operating characteristic analysis.
RESULTS:
Median age was 29.0 years (IQR 26.0–32.5), and median follow-up was 77.5 months (IQR 42.6–106.6). Sperm recovery occurred in 23/51 men (45.1%): 11 had sperm in the ejaculate and 12 had sperm retrieved by micro-TESE after persistent azoospermia. Seventeen couples achieved live birth (33.3%), including 3 spontaneous and 14 assisted reproductive technology live births. No patient with an abdominal dominant testis recovered sperm (0/11), compared with 20/36 (55.6%) with inguinal canal and 3/4 (75.0%) with infra-external ring position (p<0.001). Inhibin B was higher in the recovery group than in the failure group (median 42.2 vs 12.1 pg/mL; p<0.001). In multivariable Firth regression, abdominal dominant testicular position was associated with markedly lower odds of sperm recovery compared with inguinal canal position (odds ratio [OR] 0.009, 95% confidence interval [CI] 0.00003–0.31; p=0.003), whereas each 10-pg/mL increase in inhibin B was associated with higher odds of recovery (OR 2.41, 95% CI 1.46–5.32; p<0.001). Infra-external ring position showed a favorable but nonsignificant association (OR 6.40, 95% CI 0.72–87.20; p=0.098). The apparent area under the receiver operating characteristic curve was 0.92.
CONCLUSIONS: In adult men with untreated bilateral cryptorchidism and NOA, orchidopexy followed by selective micro-TESE enabled sperm recovery in nearly half of patients and documented live birth in one-third. Preoperative dominant testicular position and inhibin B were the most informative predictors, with abdominal dominant location indicating a very poor recovery profile.
IMPACT STATEMENT: These findings support fertility-directed orchidopexy in selected adult bilateral cryptorchidism patients and provide practical preoperative variables for counseling, risk stratification, and sperm-retrieval planning.
SUPPORT: This study was supported by the National Key R&D Program of China (grant numbers 2022YFC2702701 and 2022YFC2703004); Natural Science Foundation of Shanghai (25ZR1401300); Shanghai Science and Technology Innovation Action Plan (24Y12800702); the Shanghai Hospital Development Center Foundation (SHDC12023121); the National Natural Science Foundation of China (grant number 82371607); the Medical-Engineering(Science) cross-Research Fund of Shanghai Jiao Tong University (YG2022ZD016); and "Science and Technology for Inner Mongolia": Shanghai Jiao Tong University Action Plan (2022XYJG0001-01-19).

REPRODUCTIVE UROLOGY (7 OF 7)

P-385 1:30 PM Tuesday, October 27, 2026

PLATELET-RICH PLASMA SUPPLEMENTATION REDUCES SPERM DNA FRAGMENTATION DURING CRYOPRESERVATION. A Na Ha, Ph.D., Sang-Chan Lee, M.D., Chaesik Lee, Ph.D., Hyun-Ho Jang, M.S., Woo Yun Choi, M.S., Sang Gum Park, M.S. and Kim Jaemyeoung, Ph.D., Saewha Hospital, Busan, Korea, Republic of (South)

OBJECTIVE:
To evaluate the cryoprotective efficacy of platelet-rich plasma (PRP) on the functional and genomic integrity of human spermatozoa using a within-sample internal control design.
MATERIALS AND METHODS: This prospective pilot study, using a within-sample internal control design, was conducted at a specialized fertility hospital and andrology laboratory. Ejaculated semen samples from six donors (n=6) were divided into three equal aliquots and assigned to one of three conditions: control (standard cryopreservation), 5% PRP supplementation, or 10% PRP supplementation. All aliquots subsequently underwent standardized cryopreservation and thawing. Post-thaw sperm motility, viability, morphology, and sperm DNA fragmentation (SDF) were assessed by computer-assisted semen analysis (CASA), Eosin-Y staining, Diff-Quik staining, and an acridine orange fluorescence assay, respectively.
RESULTS: Using this internal control design, supplementation with 5% PRP reduced SDF by more than 50%, from 25.83 ± 3.60% in the control group to 12.50 ± 2.59% (P < .001). Both PRP-supplemented groups demonstrated significantly higher normal morphology compared with the control group (5% PRP: 58.17 ± 12.91%; 10% PRP: 66.50 ± 28.65%; control: 27.50 ± 8.50%; P = .006). Viability was also significantly higher in the 5% PRP group compared with the control group (62.17 ± 16.56% vs. 34.67 ± 16.21%; P = .003). Progressive motility was better preserved in the PRP-supplemented groups compared with controls (P < .01).
CONCLUSIONS: Supplementation of cryopreservation media with 5% PRP was associated with significantly reduced sperm DNA fragmentation and improved post-thaw sperm quality. These findings suggest a potential cryoprotective role for PRP in sperm cryopreservation and support further investigation in larger studies.
IMPACT STATEMENT:
Platelet-rich plasma supplementation markedly reduces sperm DNA fragmentation during cryopreservation, suggesting a simple and clinically applicable strategy to improve sperm banking outcomes.
SUPPORT: The authors received no external financial support for this study.

P-386 1:45 PM Tuesday, October 27, 2026

RESEARCH PARTICIPANT EXPERIENCES WITH REMOTE SEMEN SAMPLING. Maximilian S Jentzsch, MD, MS[1], Liddy Boland, BA, MPH[2], Ingrid Robertson, BS[3], Damon Wing Hey Chan, A.S.[4], Catherine J. Karr, MD, PhD[3], Christine Loftus, PhD, MPH[3], Thomas J Walsh, MD, MS, MBA[4], James F Smith, M.D., M.S.[5], Ashleigh Theberge, PhD[3] and Tristan M Nicholson, MD, PhD, HCLD (ABB)[6], [1]Department of Urology, Seattle, WA, [2]Yale School of Public Health, New Haven, CT, [3]University of Washington, [4]University of Washington, Seattle, WA, [5]UCSF, San Francisco, CA, [6]School of Medicine, University of Washington, Seattle, WA

OBJECTIVE:
Prospective, decentralized studies of how environmental exposures may impact sperm quality depend on longitudinal biosampling, which is challenging to implement with in-person collections. Our objective was to evaluate the acceptability of in-clinic versus at-home mail-in semen sampling experiences among research participants across multiple time points.
MATERIALS AND METHODS:
Data for this analysis were from the homeSPERM pilot study, a prospective pilot study of environmental exposures and semen quality. Participants completed one in-clinic visit with semen collection and Fellow Health mail-in semen collections from home at two time points during the study. After each sampling, participants completed questionnaires regarding their experiences on a 5-point Likert scale.
RESULTS:
Participants were enrolled and consented using digital recruitment. Eighteen participants completed in-person and mail-in semen analyses. Sixteen participants completed end of study questionnaires. The majority of participants agreed or strongly agreed that the written instructions were easy to understand for both in-person (94 %) and mail-in (100 %) semen analyses. Most participants disagreed or strongly disagreed that semen sampling in clinic (67 %) and at home (94 %) was awkward/embarrassing, although one participant strongly agreed that sample collection was awkward/embarrassing in clinic. Regarding mail-in semen analyses, most participants agreed or strongly agreed that they were able to collect the sample into the cup, place the stabilizing media into the semen collection cup, and mail the sample. However, one person was unable to collect the semen sample in the cup. In the end of study questionnaire, 15/16 participants indicated that remote sampling would be significantly easier compared to in-clinic collection. The remaining participant selected that remote sampling would be neither easier nor harder than in person. All participants stated that they would be willing to participate in a similar study again. When asked about a similar study with six semen samples per year, participants were willing to participate for 1-4 years (6/16) or 5+ years (10/16).
CONCLUSIONS:

Research participants in our prospective pilot study evaluating environmental exposures and semen quality rated remote semen analysis kits as easy to use and indicated willingness to participate in similar studies for long durations.
IMPACT STATEMENT:
At-home sampling for mail-in semen analysis offers a promising strategy for future decentralized studies of environmental exposures and male fertility.
SUPPORT: K12 ES033584

P-387 2:00 PM Tuesday, October 27, 2026

HOMOZYGOUS VARIANT IN *DMRTB1* CAUSES NON-OBSTRUCTIVE AZOOSPERMIA IN HUMAN. Yuhang Li, Master's Degree[1], Ao Ma, Ph.D.[2] and Xiaozhi Zhao, MD[3], [1]Nanjing Drum Tower Hospital, Nanjing City, Jiangsu Province, China, [2]Nanjing Drum Tower Hospital, the Affiliated hospital of Nanjing University Medical School, Nanjing City, Jiangsu Province, China, [3]Nanjing Drum Tower Hospital, Nanjing Drum Tower Hospital Clinical College, Nanjing Medical University, Nanjing City, Jiangsu Province, China

OBJECTIVE: Non-obstructive azoospermia (NOA) represents the most severe form of male infertility, largely attributed to endocrine abnormalities and genetic defects. Although whole-exome sequencing (WES) has greatly facilitated the discovery of pathogenic genes underlying NOA, the genetic etiology in a substantial proportion of affected individuals remains poorly understood. The DMRTB family of transcription factors is essential for normal spermatogenesis, and genetic variations within this family are strongly linked to impaired spermatogenesis. This study aimed to identify a novel pathogenic variant of *DMRTB1* in a patient with NOA and to further investigate the potential role of this variant in the pathogenesis of non-obstructive azoospermia.
MATERIALS AND METHODS: Whole exome sequencing (WES) was performed for the recruited patient. The pathogenicity of the variant was predicted in accordance with the guidelines of the ACMG. SWISS-MODEL was used to construct the 3D model of *DMRTB1* and mutant *DMRTB1*, followed by a comparative analysis of these models. Testicular tissue of the patient was subjected to H&E staining for histological analysis.
RESULTS: A novel *DMRTB1* variant (c.791-797T, p.265-266del) was identified in the NOA patient via WES. This variant was rare in public databases and predicted as likely pathogenic by ACMG criteria. SWISS-MODEL modeling revealed localized structural perturbations at *DMRTB1* residues 254-266 due to the variant, which may cause protein functional abnormalities. H&E staining of testicular tissue showed a complete absence of mature sperm in seminiferous tubules, and this phenotype was consistent with that of Dmrt6 knockout mice.
CONCLUSIONS: This study identified a novel likely pathogenic *DMRTB1* variant (c.791-797T, p.265-266del) closely associated with NOA pathogenesis. The variant-induced structural perturbations may impair *DMRTB1* function, disrupt spermatogenesis and ultimately lead to NOA. The consistent phenotype between the patient and Dmrt6 knockout mice further supports *DMRTB1*'s essential role in spermatogenesis.
IMPACT STATEMENT: Our findings expand the pathogenic variant spectrum of *DMRTB1* and provide valuable genetic evidence for the molecular diagnosis of NOA.
SUPPORT: This work was supported by the National Natural Science Foundation of China (82501944), the Health Commission of Nanjing (QNX25033), and the Jiangsu Funding Program for Excellent Postdoctoral Talent (2024ZB030).

P-388 2:15 PM Tuesday, October 27, 2026

KLINEFELTER SYNDROME: DEMOGRAPHIC, HORMONAL, AND THERAPEUTIC CONSIDERATIONS IN A COHORT OF 103 MEN FROM A SINGLE INSTITUTION OVER THE LAST 11 YEARS. Jessa W Sahl, MD and Robert D. Oates, M.D., Boston University School of Medicine, Boston, MA

OBJECTIVE:
Klinefelter syndrome (KS; XXY) is the most common sex chromosome abnormality in men. Men/boys with KS may present to a male reproductive specialist for a variety of reasons, from the onset of an adult infertility work-up to counseling for adolescents and their parents in regards to their son's reproductive future. This is to be distinguished from a clinic to whom all referrals have known KS and anticipate surgical management. We therefore present our experience of 103 non-mosaic KS patients being diagnosed at or presenting to a busy male infertility clinic.
MATERIALS AND METHODS:
We conducted a retrospective chart review and identified 103 KS males seen at least once in clinic between the years 2014 and 2025. Characteristics such as age and reason for initial visit, hormonal data, and infertility outcomes were compiled.
RESULTS:
A total of 103 patients were included: 36 were diagnosed de novo. Age ranged from 7 to 53 years; of those >18, the average was 31. Seventy-three (73) presented for infertility diagnosis and management, 22 for KS adolescent counseling, 2 each for testis pain or testosterone (T) management, 1 each for sperm banking, erectile dysfunction or varicocele. Of the adult group, only 5 patients endorsed erectile dysfunction, 3 an ejaculation problem, and 1 low libido. All examined patients had characteristically very small testes (5-8cc).
Semen analysis was available for 62 men: 61 were azoospermic, 1 had severe oligospermia. In adults, the initial T values ranged from 11 to 663 ng/dL (average 199; 25 were >300), FSH from 4.9 to 60 mIU/mL (average 30), and LH from 2.5 to 53 mIU/mL (average 15).
Thirty (30) patients, ages 13 to 48 years, had two or more temporally distinct T measurements obtained, on average, 599 days apart with minimal change (an average difference of 76).
Thirty-six (36) patients went on to have mTESE) carried out concurrently with an IVF/ICSI cycle. Spermatozoa was found in 12 (33%), 7 achieved pregnancy, and 5 had additional sperm cryopreserved. Subgroup analysis of the 36 revealed a T range of 11 to 464 ng/dL (average 149), FSH range of 4.9 to 59 mIU/mL (average 25), and LH range of 2.5 to 53 mIU/mL (average 15).
CONCLUSIONS:
In conclusion, KS patients may present to a busy male infertility practice in a variety of ways. A de novo diagnosis in an infertility couple most often occurs with no concomitant sexual dysfunction. Hormonal labs can vary significantly and, contrary to popular dogma, do not always present with symptomatically low testosterone. For those seeking fertility treatment, TESE can be a viable option but in a population of all comers, rates of success may be lower than reported for a specific referral center.
IMPACT STATEMENT:
Klinefelter syndrome patients present for multiple reasons, hormonal labs that can vary greatly, and there are no specific factors that should discourage patients from pursing mTESE/ICSI to achieve parenthood.

P-389 2:30 PM Tuesday, October 27, 2026

EFFECT OF FROZEN VS FRESH SPERM ON RATES OF MISCARRIAGE AND PREGNANCY OUTCOMES IN INTRAUTERINE INSEMINATION CYCLES: A RETROSPECTIVE STUDY. Jaclynne Hedge, MD, Bharti Garg, MBBS, MPH, Paula Amato, M.D., Molly S Kornfield, MD, Elizabeth S. Rubin, M.D., M.C.R., Diana Wu, M.D., Alexa Gilbert, MSN and Sacha A. Krieg, M.D., PH.D., Oregon Health & Science University, Portland, OR

OBJECTIVE: To evaluate whether sperm cryopreservation status is associated with differences in pregnancy outcomes, including miscarriage, in intrauterine insemination (IUI) cycles.
MATERIALS AND METHODS: This was a retrospective cohort study performed analyzing IUI cycles performed at Oregon Health and Science University between January 2024 and September 2025. Up to three cycles per patient were included. Cycles with total motile sperm count <5 million on day of procedure or incomplete EHR data were excluded. Baseline characteristics and outcomes were compared between frozen and fresh sperm groups using chi-square/Fisher Exact test (categorical variables) and two-sample t-test/Mann Whitney U test (continuous variables). Mixed-effects generalized regression models (binomial family, logit link) and robust sandwich standard error estimates accounted for repeated cycles and were used to estimate adjusted odds ratios (aOR) with 95% confidence intervals (CI) for positive HCG, clinical pregnancy and live birth. Miscarriage was analyzed descriptively due to limited events. Analyses were done using Stata 19 (Stat Corp, College Station, TX).
RESULTS: The study analyzed 397 total IUI cycles, 124 (31%) of which were performed using frozen sperm and 273 (69%) with fresh sperm. Maternal characteristics (age, AMH, BMI) and cycle parameters (paternal age, cycle day at time of IUI, follicle number, use of HCG trigger, and endometrial thickness on day of mid-cycle ultrasound) were similar between groups. Use of donor sperm was more common in the frozen sperm cohort (78.2%), while unexplained infertility was the most common infertility diagnosis in the fresh cohort (53.5%). Patients using fresh sperm more often had a prior miscarriage (38.8% vs 15.3%, p<0.001) and prior live birth (20.5% vs 10.5%, p=0.04). When comparing use of frozen to fresh sperm, there were no significant differences in positive HCG rates (aOR 1.44, 95% CI 0.79-2.62), clinical pregnancy (aOR 1.69, 95% CI 0.92-3.09), or live birth rates (aOR 1.56, 95% CI 0.79-3.06). Miscarriage rates were numerically higher with frozen sperm, but not statistically significant (4% vs 2.2%, p=0.3).
CONCLUSIONS: We hypothesized that frozen sperm would increase miscarriage risk due to increased DNA fragmentation from oxidative stress and osmotic shock during thaw. A trend toward higher miscarriage rates with frozen sperm was observed, but not significant. Higher donor sperm use in the frozen sperm cohort may have biased these findings towards lower miscarriage risk, as well as limitations in sample size.
IMPACT STATEMENT: These findings provide clinically relevant reassurance that IUI outcomes are comparable using fresh or frozen sperm. As reliance on cryopreservation increases, particularly among diverse family-building populations, this evidence supports informed counseling. Larger studies are needed to better define any potential differences in miscarriage risk.
SUPPORT: None

BUSINESS OF MEDICINE (1 OF 2)

P-390 1:30 PM Tuesday, October 27, 2026

AMBULATORY SURGERY CENTER VS. HOSPITAL-BASED OPERATING ROOM FOR GYNECOLOGIC SURGERY: DIFFERENCES IN PERIOPERATIVE EFFICIENCY AND PATIENT CHARGES. Monica Contractor, MD[1], Justine Garfinkel, DO[2] and Laura Matthews Glaser, MD[2], [1]Chicago, IL, [2]Loyola University Chicago, Maywood, IL

OBJECTIVE: To compare perioperative efficiency and patient charge components for benign gynecologic surgery performed in an ambulatory surgery center (ASC) vs. a hospital-based operating room (OR) at a tertiary-care academic medical center.
MATERIALS AND METHODS: A retrospective study was conducted using institutional operational data for gynecologic surgeries performed between July 2025 and February 2026 at an academic medical center's ASC versus hospital-based OR. Exclusion criteria included first start cases, emergencies, weekends, and cases that are exclusively performed in one OR setting. Procedure types included endometrial ablations, exam under anesthesia, hysteroscopy, cervical procedures, cystoscopy, suction dilation and curettage, laparoscopy, and wide local excisions. The primary measure is the mean differences in room turnover time (TOT), defined as the time from the preceding case exiting the room to the following case entering the room. Secondary aim includes patient

charge components, such as OR facility fee, anesthesia, and recovery charges. Data were analyzed using descriptive statistics and Mann-Whitney U tests ($p<0.05$, statistically significant).
RESULTS: 916 gynecologic cases were reviewed during the study period, of which 329 cases met inclusion criteria for the TOT analysis. Overall, TOT was shorter in the ASC compared with the hospital-based OR (median 31.0 minutes [IQR 25.0-43.0] vs 46.5 minutes [IQR 39.0-55.3], respectively; $p<0.001$). Patient charge differences were primarily driven by lower ASC operating room facility fees, while anesthesia and recovery charge structures were similar across sites. Recovery-related cost variances were time dependent, with shorter Phase II recovery in ASC cases.
CONCLUSIONS: Benign gynecologic surgery performed in an ASC was associated with greater operational efficiency and lower patient charges compared with similar procedures performed in a hospital-based OR. Cost savings were largely driven by shorter turnover times, lower facility fees, and reduced recovery times.
IMPACT STATEMENT: Ambulatory surgery centers have grown in prominence as an alternative care setting, yet their financial and operational advantages over hospital-based ORs are not well characterized. These findings suggest that ASCs offer meaningful cost and efficiency advantages for selected benign gynecologic cases, with potential to improve scheduling flexibility and expand access to care as adoption grows.
SUPPORT: None

P-391 1:45 PM Tuesday, October 27, 2026

OFF-SITE EMBRYO STORAGE TRANSITIONS: LESSONS LEARNED FROM A MULTI-MODAL EMBRYO DISPOSITION OUTREACH CAMPAIGN. Isabelle Mason, M.D.[1], Lauren A Palavos, BS[2], James Hamrick, BS[2], Katelyn R. Sofaly, MS[2], Sangjoon Lee, PhD[2], Rebecca Flyckt, M.D.[3] and Sung Tae Kim, PhD, HCLD[3], [1]Cleveland, OH, [2]University Hospitals Fertility Center, Beachwood, OH, [3]University Hospitals Fertility Center/Case Western Reserve University, Beachwood, OH

OBJECTIVE:
Escalating numbers of cryopreserved embryos throughout the United States have paralleled increased utilization of remote specimen storage options. This study outlines the experiences of our academic medical center in transitioning on-site embryo cryoinventory to off-site, long-term commercial storage.
MATERIALS AND METHODS: An embryo disposition "options campaign" (OC) ran from Feb 2024 to Dec 2025 and included 3 letters, 3 emails, 2 telephone calls, an electronic medical record message, and finally a certified letter. Patients not desiring imminent embryo transfer were provided options of (1) ship to a designated off-site facility, (2) ship to an alternative, patient selected facility, or (3) discard. Clinic embryologists were available as the initial point of patient communications.
RESULTS: 831 patients were eligible to participate in the OC and decisions are summarized in Table 1. 31 patients elected to use their embryos for embryo transfer prior to transition. Cumulative response rates reached 14.7%, 52.8% and 67.0% at 2, 6 and 11 months, respectively. Most patient responses came following the second mailed letter (208, 25.3%), with the 3 letters yielding a total of 335 (40.1%) responses. Telephone calls garnered the fewest responses after two calls (49, 6.0%). The embryology team received 328 patient phone calls throughout the campaign, 37 (11.3%) of which required higher level follow up. By the end of the OC, 152 patients (18.3%) remained non-responders.

Category	**N (%)**
Total eligible patients	831
Responded (any disposition)	**679 (81.7%)**
Disposal	176 (25.9%)
Transfer, non-affiliated	9 (1.3%)
Transfer, affiliated	463 (68.2%)
FET	31 (4.6%)
Did not respond	**152 (18.3%)**

Disposition sub-category % use responded N (679) as denominator.
CONCLUSIONS: A structured, multi-modal outreach campaign achieved a cumulative 81% response rate among patients with cryopreserved embryos requiring disposition decisions during a clinic-wide storage transition. The majority elected transfer to an affiliated off-site facility (68.2%) while a meaningful proportion chose disposal (25.9%). Embryologist-led communication was central to campaign success but generated substantial workload, with over 300 patient calls fielded, 11% requiring escalation for additional outreach and discussion.
IMPACT STATEMENT: As off-site embryo storage becomes more common, clinics undertaking storage transitions face the challenge of engaging a large, heterogeneous patient population. This campaign demonstrates that a structured, multi-touchpoint outreach protocol can achieve high patient engagement, and highlights the operational needs required from embryology staff, which is an important consideration for resource planning.

P-392 2:00 PM Tuesday, October 27, 2026

COST ANALYSIS OF LIVE BIRTH GUARANTEE PACKAGE VS A LA CARTE SERVICES FOR IVF. Arian Khorshid, MD[1], Andrew Kosari, BBA[2], Susan Nasab, M.D.[3], Angela Rastegar, MBA[4] and Shawn Elizabeth Gurtcheff, MD, MS[5], [1]Sunnyvale, CA, [2]Sunfish Technologies, Los Angeles, CA, [3]Trabuco Canyon, CA, [4]Sunfish Technologies, CA, [5]Utah Fertility Center, Pleasant Grove, UT

OBJECTIVE:
To evaluate whether patients paying a higher upfront cost, as part of a live birth guarantee package, experience lower net IVF costs to achieve a live birth compared to those who pay for services à la carte.
MATERIALS AND METHODS:
A decision analytic model was created to compare two approaches to IVF: standard à la carte and a live birth guarantee package. For both arms, the model first determines whether an egg retrieval cycle results in zero, one, two, or three transferrable embryos for an individual patient then it determines whether sequential transfer of the embryo(s) results in a live birth or not.
IVF outcome data for this model was derived from a simulated cohort of 10,000 patients. These simulated patients were created based on publicly available data from SART and included parameters such as age, BMI, reason for IVF, the probabilities of having up to three embryos, and the cumulative probability of a live birth. All embryos were euploid as determined by preimplantation genetic testing. Patients could undergo a maximum of 3 transfers in this model.
Patients opting for the guarantee package who did not have a live birth received a partial refund proportional to their initial risk assessment, determined by a predictive model. This model estimates the sequential probability of success based on up to 3 retrievals and up to 3 transfers per retrieval. The possible refund amount was defined as a gamma distribution and then was randomly sampled as part of a Monte Carlo simulation (n=100,000 samples) for the overall analysis. Patients with a live birth did not receive any refund.
Cost data was derived from a sampling of IVF clinics in the United States. The guarantee package cost includes one retrieval and unlimited transfers. The à la carte prices include the price of each retrieval, embryo creation, and each transfer.
RESULTS:
The average net cost of IVF when choosing a la carte services was $17,817 compared to $17,367 when choosing a live birth guarantee package. On average, patients opting for the guarantee package received refunds of $6,974, $6,937, $7,217, and $7,414 depending on whether they had zero, one, two, or three transferrable embryos from IVF, respectively.
In the Monte Carlo simulation, choosing a live birth guarantee package resulted in a lower net cost in 78% of iterations (n=78,270 out of 100,000) compared to choosing à la carte services. Sensitivity analysis showed that when a live birth did not occur, if the partial refund amount was below $5,101, $4,426, $4,041, or $3,923 for those with three, two, one, or zero embryos respectively, then choosing à la carte resulted in lower net cost.
CONCLUSIONS:
Paying a higher upfront cost for IVF using a live birth guarantee package results in lower net costs for the majority of patients. Excellent prognosis patients with worse than expected IVF outcomes benefit the most from guarantee packages as they are generally entitled to higher partial refund amounts.
IMPACT STATEMENT:
IVF live birth guarantee packages have the potential to provide patients with a net cost savings despite a higher upfront cost.

P-393 2:15 PM Tuesday, October 27, 2026

STEPWISE OVULATION INDUCTION FOLLOWED BY IVF IS A COST-EFFECTIVE FERTILITY TREATMENT STRATEGY FOR WOMEN WITH PCOS IN A CONTEMPORARY U.S. MODEL. Reem Saab, MD, MS[1], Shaila Fye, BA[2], Natalie Vukmer, DO, MS[3] and Pamela B. Parker, M.D., M.P.H.[2], [1]Allegheny Health Network (West Penn Hospital), Pittsburgh, PA, [2]University of Pittsburgh Medical Center, Pittsburgh, PA, [3]University of Pittsburgh Medical Center, Chattanooga, TN

OBJECTIVE: To compare the cost-effectiveness of three fertility treatment strategies for polycystic ovary syndrome (PCOS): ovulation induction with intrauterine insemination (OI/IUI), immediate in vitro fertilization (IVF), and a stepwise OI/IUI-to-IVF approach.
MATERIALS AND METHODS: A decision-analytic model simulated reproductive-age women with PCOS with a mean age of 31 years. The model used U.S. and clinic-specific costs, with pregnancy, miscarriage, twin gestation, and live birth probabilities from recent literature. The model compared OI/IUI for up to six cycles, OI/IUI for up to three cycles followed by IVF and frozen embryo transfer (FET) without preimplantation genetic testing, and immediate IVF. In OI/IUI arms, patients entered sequential cycles and achieved pregnancy, live birth, miscarriage, or proceeded to the next cycle. Patients without live birth after three OI/IUI cycles transitioned to IVF with FET for 3 cycles. In immediate IVF, patients underwent 1 egg retrieval and up to 6 FET cycles. The primary outcome was cumulative live birth probability. Incremental cost-effectiveness ratios (ICERs) and net monetary benefit (NMB) were calculated at a willingness-to-pay threshold of $100,000 per live birth. One-way and tornado sensitivity analyses assessed robustness and key drivers.
RESULTS: OI/IUI alone was the least costly strategy ($13,727) but had the lowest cumulative live birth probability (0.475) over 6 cycles. Immediate IVF had the highest live birth probability (0.964) but greatest cost ($47,752). Stepwise OI/IUI-to-IVF achieved a live-birth probability of 0.877 at $29,837 and generated the highest NMB ($13,996), making it the preferred strategy at the $100,000-per-live birth threshold. Compared with stepwise treatment, immediate IVF had an ICER of $204,180, exceeding the prespecified threshold. Sensitivity analyses showed IVF retrieval cost, FET success, and IUI success were the strongest drivers. Immediate IVF became preferred only when IVF retrieval cost decreased to $10,000 or less. Twin and miscarriage rates differed modestly across strategies.
CONCLUSIONS: In women with PCOS, stepwise OI/IUI followed by IVF provides the highest value among modeled approaches. Although immediate IVF maximizes live birth

probability, the incremental benefit comes at substantially greater cost and does not meet cost-effectiveness thresholds under most conditions.
IMPACT STATEMENT: These findings support stepwise escalation in PCOS as a high-value approach to inform counseling, shared decision-making, and resource-conscious fertility care.

Strategy	Expected Cost ($)	Live Birth Rate	ICER ($/live birth)	NMB ($)	Twin Rate	Miscarriage Rate
OI/IUI × 6	13,727	0.475	Reference	10,034	0.018	0.085
OI/IUI x 3→ IVF	29,837	0.877	40,130	13,996	0.021	0.163
Immediate IVF	47,752	0.964	204,180	468	0.015	0.169

P-394 2:30 PM Tuesday, October 27, 2026

IMPLEMENTATION OF A DIGITAL WORKFLOW FOR THIRD-PARTY OOCYTE DONATION:EARLY OPERATIONAL OUTCOMES INCLUDING PHOTO-BASED PHENOTYPIC MATCHING SUPPORT. Eduardo Borges, M.Sc.[1], Tayana Borges Teixeira, BA[2], Nilo Frantz, M.D.[3] and Marcos Kulmann, M.Sc., Ph.D.[3], [1]Nilo Frantz Medicina Reprodutiva, Porto Alegre, Rs, Brazil, [2]Porto Alegre, Rs, Brazil, [3]Nilo Frantz Reproductive Medicine, Porto Alegre, Brazil

OBJECTIVE: To evaluate early operational outcomes after implementation of a centralized digital workflow for third-party oocyte donation, focusing on match progression, inventory traceability, and structured phenotypic decision support.
MATERIALS AND METHODS: We conducted a retrospective analysis of de-identified operational records captured in an integrated web-based workflow platform. The system includes donor and recipient records, compatibility-based matching, stage-history tracking, and cycle-level oocyte inventory accounting. It also supports optional photo-based phenotypic comparison, generating a facial similarity score to assist candidate review when both donor and recipient images are available. The study window was February 3, 2026 to April 27, 2026. Because stage history included legacy match acceptance events, progression analyses used match proposal events as the denominator and forward temporal linkage to acceptance. We used descriptive statistics (counts, proportions, mean, median, and interquartile range [IQR]).
RESULTS: The program managed 53 active donors and 192 active recipients. Across 37 donation cycles, 605 oocytes were tracked at cycle level (201 available, 385 reserved, 19 used). Stage history contained 12 match proposal events (10 unique journeys) and 71 match acceptance events (68 unique journeys, including legacy transitions). Of 12 proposed events, 7 progressed to acceptance (58.3%), all within 30 days. For linked proposal-to-acceptance pairs (n=7), median time was 5.94 days (IQR, 2.01-15.00), with mean 9.69 days. Oocyte reservations totaled 50: 43 reserved (86.0%), 5 cancelled (10.0%), and 2 used (4.0%). Photo-based phenotypic scoring was incorporated as an auditable adjunct to the matching workflow.
CONCLUSIONS: A centralized, audit-ready digital workflow for donor oocyte programs is feasible and enables transparent, real-time measurement of matching progression and reservation-state control, while incorporating structured photo-based phenotypic support in candidate assessment.
IMPACT STATEMENT: Standardized digital infrastructure for oocyte donation can improve traceability, support quality benchmarking, and strengthen operational governance in assisted reproduction services, with reproducible integration of phenotypic decision-support tools.

BUSINESS OF MEDICINE (2 OF 2)

P-395 1:30 PM Tuesday, October 27, 2026

ANALYSIS OF ANNUAL OOCYTE STORAGE FEES IN THE UNITED STATES. Jennifer Nicole Lannon, BS, Sidonia Buchtova, PA-C, Aishwarya Hombal, MD and Grace Katherine Sarris, MD, Freeze Health, Miami, FL

OBJECTIVE: To analyze self-pay annual storage fees for planned oocyte cryopreservation (POC) in the United States (US) and compare on-site versus off-site fees.
MATERIALS AND METHODS: Freeze Health has maintained and continuously updated a database of self-pay POC fees since 2018[1]. The database includes POC fees from 561 clinics in 32 countries. Annual POC storage fees that were verified from November 2025 to April 2026 were included in this study (n=94).
For clinics who provided fees for both on-site and off-site storage options, both on-site and off-site fees were included for each clinic (n=6 clinics; n=12 storage fee entries). Locations of clinics which performed egg retrievals were included; any additional non-egg retrieval (e.g. monitoring-only) locations were excluded. Clinics that provided storage fees without clarification of storage location (n=8) were included in the overall cohort, but were excluded from segmentation into the on-site or off-site cohorts.
Mean, quartiles, and standard deviation were computed and rounded to the nearest dollar for the overall cohort (n=94), the on-site storage cohort (n=73), and the off-site storage cohort (n=13). Fees for on-site storage were compared to fees for off-site storage through a Welch two-sided two-sample t-test, with a null hypothesis of equal fees. Analysis was completed using RStudio[2].
RESULTS: Table 1. US Self-Pay POC Annual Storage Fees.

Storage Location	n	Mean ($)	Min ($)	Q1 ($)	Median ($)	Q3 ($)	Max ($)	S.D. ($)
Overall	94	810	300	600	850	950	1380	256
On-site	73	860	400	663	920	960	1380	239
Off-site	13	531	300	380	462	750	804	202

The mean of fees for long-term self-pay annual POC storage in our sample (n=94) was $810, ranging from $300 to $1380. The mean of fees for on-site storage was $860, ranging from $400 to $1380. The mean of fees for off-site storage was $531, ranging from $300 to $804.
A Welch two-sample t-test demonstrated that mean fees were significantly higher for on-site than off-site storage (mean difference $329, 95% CI $198–$460; p<0.001).
CONCLUSIONS: Annual self-pay storage fees for POC in the US vary widely, with fees ranging more than fourfold (minimum: $300, maximum: $1380). On-site storage fees are significantly higher than off-site storage fees, with a mean difference of $329 per year. These findings highlight that greater transparency and standardization in storage fee structures may improve patients' ability to anticipate and manage the long-term financial burden of POC.
IMPACT STATEMENT: Long-term storage represents an often overlooked component of the total lifetime patient cost of POC. This study provides the first contemporary benchmark of US storage fees and identifies on-site storage as having significantly higher fees. Improved price transparency and counseling around storage options may help reduce financial barriers to POC.
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P-396 1:45 PM Tuesday, October 27, 2026

EVALUATING AI-ASSISTED PATIENT COMMUNICATION IN FERTILITY CARE. Katherine S O'Connor, B.A., M.P.S., Ryan Warsinski, AS and Carol S Thomas, B.A., MD, Pinnacle Fertility, Scottsdale, AZ

OBJECTIVE: At the studied network of fertility clinics, patients are paired with dedicated clinical staff who serve as their primary point of contact for questions related to treatment, logistics, and care coordination with the primary form of communication being SMS messaging. This study aimed to evaluate real-world adoption and effectiveness of large language model (LLM) assistance within this staff–patient communication service, with a focus on model preference, use case distribution, and opportunities to improve utility.
MATERIALS AND METHODS: A retrospective analysis was conducted on 1.4 million staff–patient SMS messages exchanged between January 1, 2024 and April 6, 2025. Staff were presented with AI-generated message suggestions from multiple LLMs, including GPT-4o and Berry (a LLaMA-based model fine-tuned on proprietary company data). Outcomes included model selection rates, AI utilization frequency, message editing behavior, and topic classification using embedding-based clustering. Descriptive statistics were used to compare usage patterns across models and message types.
RESULTS: When offered, AI-assisted messaging was used in 9% of all staff messages. Among models, GPT-4o was selected most frequently (53%), outperforming Berry (22%) despite Berry being fine-tuned on internal fertility-specific data. AI-generated content was primarily used for low-complexity communication, with approximately 48% of selected messages categorized as small talk (e.g., "you're welcome," "you're all set," "have a great day"). When editing AI suggestions, staff most often removed redundant or non-essential language (e.g. "if you have any questions?", "I'll check the schedule"). Limited contextual awareness (e.g., lack of treatment-specific or clinic-specific information) and technical constraints reduced overall AI applicability.
CONCLUSIONS: In a real-world fertility care setting, general-purpose LLMs were preferred over a domain-fine-tuned model, and AI assistance was primarily utilized for non-clinical, low-risk communication. These findings suggest that current AI implementations do not yet meet the contextual demands of clinically relevant messaging workflows.
IMPACT STATEMENT: Enhancing AI tools with structured clinical and operational context—such as clinic workflows, and electronic medical record (EMR) integration—represents a critical opportunity to increase adoption and unlock meaningful efficiency gains in reproductive healthcare communication.
SUPPORT: This study was internally funded.

P-397 2:00 PM Tuesday, October 27, 2026

ECONOMIC EXPERIENCES OF U.S. WOMEN UNDERGOING IN VITRO FERTILIZATION (ACHIEVE): A QUALITATIVE ANALYSIS OF MANAGING CARE COSTS, WORK, AND FINANCES. Larissa Jennings Mayo-Wilson, PhD, MHS[1], Frantasia Hill, MPH[1], Audrey Yao, MPH[1], Pooja Deshpande, MPH[2], Emma Sorrells, MPH[1], Anna Margaret Clyburn, MPH[1], Hannah Silverstein, PhD[1], Natalie Henrich, PhD, MPH[3], Colleen Milroy, MD MHCM[4] and Genevieve S Neal-Perry, MD, PhD[5], [1]University of North Carolina at Chapel Hill, Chapel Hill, NC, [2]Johns Hopkins University, Baltimore, MD, [3]New York, NY, [4]UNC School of Medicine, Chapel Hill, NC, [5]University of North Carolina, Chapel Hill, NC

OBJECTIVE: This study examined economic experiences of women undergoing in vitro fertilization (IVF) services, relating to how women manage IVF costs, employment demands, and household finances. We also examined women's desires for types of economic support in clinical or community settings. Despite growing IVF utilization, few

U.S. states mandate comprehensive health insurance for infertility treatment. IVF couples spend about $61,400 USD out-of-pocket to achieve a live birth. Examining perceived (in)adequacies of current strategies to manage IVF costs from patients themselves may inform future financial support programs.
MATERIALS AND METHODS: The Addressing Care and Health in Experiences of In Vitro Fertilization (ACHIEVE) study used a longitudinal qualitative design comprising three sequential individual interviews per woman during 6 months of her IVF care period. Data were collected October 2023 to January 2025. Participants were eligible if they: identified as female, were aged 18 to 47, living in the U.S., undergoing IVF or having previously undergone IVF consultation or treatment in the U.S. in the past 5 years, and willing to be interviewed by videoconferencing. A survey obtained demographic and financial data. All interviews were transcribed and coded. Thematic analyses identified patterns and representative quotations. Synthesis meetings, field notes, and memos documented findings during data collection.
RESULTS: 56 women were enrolled, totaling to N=156 interviews. Mean age was 37 years old, ranging from 26 to 47. 76% of women were White (11% Black, 10% Hispanic, 9% Asian); 80% had annual household income > $100,000; 73% employed full-time; 86% homeowners; 86% partnered; 63% fertility insurance. 55% reported out-of-pocket IVF expenses > $20,000. Women determined costs directly from clinics and indirectly from social media or word of mouth. Costs shaped decisions to continue or delay treatment. Women did not expect the magnitude of IVF costs not covered by insurance, such as medications, additional cycles, specialized testing, and billing errors. Economic experiences were not simply about money but also balancing financial implications of time, work, and administrative labor. Women paid for IVF via credit cards, loans, savings, spending cuts, grants, reimbursements, and donations. They also relied on flexible or remote work to avoid absences or lost income. Women changed jobs to obtain insurance or due to employer performance complaints. Reducing household expenses to cover IVF caused concern and entailed deferred repairs, education, leisure, and retirement contributions. Sub-analyses by demographics revealed unexpected differences. Desires for economic support included information on available grants, administrative support to apply for grants, cash assistance, guidance on bundling or delaying services, coaching on ways to plan for and track expenses, and advice on tax-advantaged approaches.
CONCLUSIONS: Women use several strategies to cover expected and unexpected IVF costs.
IMPACT STATEMENT: This study highlights potential ways to enhance women's ability to finance their fertility care goals.

P-398 2:15 PM Tuesday, October 27, 2026

FERTILITY CLINIC SINGLETON LIVE BIRTH RATES PER TRANSFER DO NOT CHANGE IN THE YEAR AFTER AFFILIATING WITH A PRIVATE EQUITY FIRM. Joshua Chen, B.S.[1], Elena Chun, MS[2], Jesper Ke, MD, MBA[3], Jennifer F Kawwass, MD[4], Akanksha Mehta, MD, MS[5], Erica E. Marsh, MD, MS[6], Vahakn Shahinian, MD[6] and James M. Dupree, M.D., M.P.H[7], [1]Ann Arbor, MI, [2]University of Michigan Medical School, Ann Arbor, MI, [3]Yale New Haven Health, New Haven, CT, [4]Emory University, Department of Gynecology & Obstetrics, Division of Reproductive Endocrinology and Infertility, Emory Reproductive Center, Atlanta, GA, [5]Emory University, Department of Urology, Atlanta, GA, [6]University of Michigan, Ann Arbor, MI, [7]Michigan Medicine, Ann Arbor, MI

OBJECTIVE: In recent years, private equity firms have increasingly affiliated with – meaning invested in or formed business partnerships with – fertility clinics that perform in-vitro fertilization (IVF) (1, 2). While fertility clinics affiliated with private equity firms now perform the majority of IVF cycles in the United States (1), it is unknown whether IVF outcomes change following affiliation with a private equity firm. Our objective was to determine whether private equity firm affiliations with fertility clinics are associated with changes in a main measure of IVF success, singleton live birth rate per transfer (SLB/T).

MATERIALS AND METHODS: Using Centers for Disease Control and Prevention (CDC) Assisted Reproductive Technology reports from 2019 to 2022, the four most recent reports released by the CDC, we identified fertility clinics that performed IVF from 2019 through 2022 and calculated SLB/T by patient age group for each clinic. Next, we used merger and acquisition reports by Irving Levin Associates, the Pitchbook database, news articles, public company statements, and clinic websites to identify clinics that affiliated with private equity firms in 2021. We excluded fertility clinics that affiliated with private equity firms prior to 2021. Finally, we used a difference-in-differences approach to compare changes in SLB/T from 2020 (pre-affiliation) to 2022 (post-affiliation) at fertility clinics that affiliated with private equity firms in 2021 with changes in SLB/T from 2020 to 2022 at non-affiliated clinics. Our outputs were difference-in-differences estimates of the effect of private equity firm affiliations on SLB/T and 95% confidence intervals (CI). As SLB/T may have been impacted by COVID in 2020, we ran a sensitivity analysis using 2019 SLB/T data instead of 2020 SLB/T data.

RESULTS: Of the 333 clinics that performed IVF from 2019 through 2022, we identified 16 (4.8%) that affiliated with private equity firms in 2021. The difference-in-differences estimate for changes in SLB/T was 6.5% (95% CI: -1.7% to 14.6%) for patients under 35 years old, 2.7% (95% CI: -7.4% to 12.9%) for patients 35-37 years old, 1.4% (95% CI: -9.3% to 12.2%) for patients 38-40 years old, and 10.6% (95% CI: -2.0% to 23.1%) for patients over 40 years old. Our sensitivity analysis demonstrated no significant change to SLB/T in any age group when using 2019 SLB/T data.

CONCLUSIONS: Following private equity firm affiliations with fertility clinics in 2021, we observed no significant change to SLB/T in any age group in 2022.

IMPACT STATEMENT: As the percentage of fertility clinics affiliated with private equity firms continues to increase, it is crucial to understand how affiliation events impact patient outcomes. Private equity firm affiliations with fertility clinics in 2021 were not associated with significant changes in SLB/T in the year following affiliation. Further study is needed to determine whether fertility clinics experience long-term SLB/T changes after affiliating with private equity firms.

SUPPORT: Blue Cross Blue Shield of Michigan Foundation Student Award Program

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PROFESSIONAL DEVELOPMENT

P-399 1:30 PM Tuesday, October 27, 2026

A SUBSPECIALTY CLINIC FOR REPRODUCTIVE ENDOCRINE CARE: INTEGRATING TRAINEE EDUCATION AND PATIENT ACCESS. Katie White, MD[1], Bethany Kanter, BS[2], Jessica Ka Wai Cheung, M.D.[3], Daniel R Grow, M.D.[4] and Kelly A Lynch, M.D.[1], [1]University of Connecticut, Center for Advanced Reproductive

Services, Farmington, [2]University of Michigan, Ann Arbor, MI, [3]Oregon Health & Science University, Portland, OR, [4]University of Connecticut Health Center, Farmington, CT

OBJECTIVE: To improve fellow and resident education in complex reproductive endocrine disorders, including Turner syndrome, primary ovarian insufficiency (POI), polycystic ovary syndrome (PCOS), while addressing a documented subspecialty access gap for an underserved patient population.
MATERIALS AND METHODS: A monthly subspecialty clinic was developed at a single academic institution, supervised by a board-certified reproductive endocrinologist with special interest in reproductive endocrinology and hormone replacement. The team included a reproductive endocrinology and infertility (REI) fellow and an OB/GYN resident. Each patient was first seen by a fellow or resident, who developed a comprehensive plan emphasizing condition-specific health maintenance, hormone replacement when indicated, and screening for comorbid conditions. The case was presented to the team, which then met with the patient to finalize recommendations, workups, and follow-up. Follow-up was coordinated by the REI fellow under attending supervision. Care was anchored in current evidence-based guidelines, with referrals to cardiology, genetics, and other specialties when indicated. Referrals were sought from pediatric endocrinology, primary care, and general gynecology.
RESULTS: The clinic has operated continuously since 2023, with monthly sessions integrated into the fellowship rotation. From April 2025 to April 2026, 39 in-person patient visits were completed. All patients identified as female and resided in-state or in a neighboring state. Primary diagnoses included Turner syndrome (14, 36%), POI (10, 25%), PCOS (7, 18%), androgen insensitivity syndrome (1, 3%), and miscellaneous conditions (7, 18%) including perimenopause, autoimmune progesterone dermatitis, Swyer syndrome, and hypogonadotropic hypogonadism. Patients received guideline-concordant care while establishing regional subspecialty infrastructure for reproductive endocrine disorders.
CONCLUSIONS: A monthly subspecialty clinic embedded within an REI fellowship program enabled fellows and residents to manage a wide range of complex reproductive endocrine diagnoses under expert supervision while expanding patient access to guideline-concordant subspecialty care for a population requiring lifelong specialty management.
IMPACT STATEMENT: This clinic addresses a subspecialty access gap while building the workforce to sustain it, modeling a subspecialty service that does not depend on the procedure-based revenue typical of REI practices. Pairing fellowship training with direct patient access creates a structural response to limited subspecialty infrastructure and improves health outcomes for an underserved patient population requiring lifelong management of reproductive endocrine disorders.
SUPPORT: No financial disclosures

P-400 1:45 PM Tuesday, October 27, 2026

IMPACT OF AN AWAY ROTATION ON THE REPRODUCTIVE ENDOCRINOLOGY AND INFERTILITY (REI) FELLOWSHIP MATCH. Jasmine Eliwa, MD[1], Emily Coughlin, MPH, CPH[2], Rahul Mhaskar, MPH, PhD[2] and Anthony N Imudia, M.D.[2], [1]Tampa, FL, [2]University of South Florida Morsani College of Medicine, Tampa, FL

OBJECTIVE:
REI fellowship applicants may pursue clinical and research REI elective rotations at other institutions during residency to gain experience and strengthen their applications. However, data on the benefits of REI away rotations are limited. The primary aim is to assess the impact of completing an REI away rotation on REI fellowship match outcome. Secondary aims are to evaluate factors associated with completing an REI away rotation and outcomes of REI away rotations.
MATERIALS AND METHODS:
This retrospective cohort study included applicants to an REI fellowship program during 2022-2025. Residency graduates at the time of application were excluded. Data collected from applications included away rotation status, medical school type, residency factors (program type, affiliation with an REI fellowship, Doximity rank), United States Medical Licensing Exam (USMLE) scores, and research output (first author and total publications, presentations, and submissions). Additional data from applicants with an away rotation included the presence of an REI fellowship program at the away institution and rotation outcomes (letter of recommendation, matching at the away institution, and research publications, presentations, and submissions). Match status was obtained from the Society of REI and fellowship websites. Data analysis included Chi-square test, Mann-Whitney U test, and logistic regression (univariate and multivariate).
RESULTS:
259 applications were reviewed, representing 89% of applicants nationally. 216 applicants met the inclusion and exclusion criteria. 42% completed an away rotation, mainly at institutions with an REI fellowship. Applicants with an away rotation had a lower mean USMLE step 2 score (245.6 versus 249.3, p=0.034). Completing an away rotation was significantly associated with residency program type, affiliation with an REI fellowship, and Doximity rank ($p < 0.001$). Applicants from community programs were more likely to complete an away rotation than those from university programs (75.5% versus 34.1%), as were applicants from programs without an REI fellowship (83.7% versus 16.3%). Match rates were similar between those with an away rotation (72.7%) and those without (70.7%).
Away rotation completion was not associated with match outcome, including after adjusting for type of medical school attended, residency factors, USMLE scores, and research output (OR 2.194, p= 0.126). Among applicants with away rotations, no factors were associated with match success. 87% received a letter of recommendation from the away institution. Few published (5/92), presented (9/92), and submitted research (12/92) from the rotation. Only 17.2% matched at the away institution.
CONCLUSIONS:
REI fellowship applicants from community residency programs and institutions without an REI fellowship were more likely to complete an REI away rotation. Away rotation completion was not associated with fellowship match success, and few applicants match at the away institution's fellowship.
IMPACT STATEMENT:
REI away rotations do not improve fellowship match success. These findings may guide applicants considering away rotations during the REI fellowship application process.
SUPPORT: No financial disclosures.
REFERENCES:
National Residents Matching Program. 2025. https://www.nrmp.org/match-data/

P-401 2:00 PM Tuesday, October 27, 2026

DELAYED CHILDBEARING AMONG WOMEN MEDICAL STUDENTS: FERTILITY KNOWLEDGE, REPRODUCTIVE PLANNING, AND PERSISTENT EDUCATIONAL GAPS. Larissa Milani Coutinho, PhD[1], Geovana de Freitas Pereira Angelo Durco, Medical student[2] and Hugo Cintra Pereira, Medical student[2], [1]Federal University of Juiz de Fora, Juiz de Fora, Brazil, [2]Federal University of Juiz de Fora, Juiz de Fora, Minas Gerais, Brazil

OBJECTIVE:
To examine reproductive planning, fertility knowledge, and perceptions of reproductive education among women medical students, including differences across stages of medical training.
MATERIALS AND METHODS:
In this cross-sectional study (August 2025–February 2026), 191 women medical students from a Brazilian federal university completed an anonymous questionnaire assessing family planning attitudes, fertility preservation knowledge, and perceptions of reproductive education. Participants were grouped by training stage: Basic (1st–4th semesters), Clinical (5th–8th), and Clerkship (9th–12th). Group differences were analyzed using chi-square tests ($\alpha=0.05$).
RESULTS:
Most participants desired future motherood (95.8%), yet 78.5% planned to delay childbearing until professional stability, with 91.1% intending pregnancy only after age 25 and most commonly between ages 30–35 (51.8%). Medical education significantly influenced family planning decisions, with 66.5% reporting substantial impact and 30.4% reporting some impact on delaying motherhood. Major concerns regarding motherhood during medical training included difficulty providing emotional support (70.2%), heavy workload (62.3%), and long working hours (54.5%). Thirty-three percent reported insufficient institutional support for balancing family planning and medical career development, while 66.5% identified maternity leave, schedule flexibility, and mentorship as essential supports. Awareness of fertility preservation costs differed significantly across training stages ($p=0.0276$), increasing from 3.0% in the Basic cycle to 16.7% in the Clinical cycle. Perceived curriculum adequacy also differed significantly ($p<0.001$), with 40.3% reporting inadequate coverage of family planning and fertility topics. While awareness of oocyte cryopreservation was high (87.4%), knowledge was lower for embryo cryopreservation (52.4%). Regarding ovarian reserve assessment, 41.4% reported no knowledge of evaluation methods, while 58.6% identified at least one recognized tool, revealing important gaps in fertility monitoring literacy.
CONCLUSIONS:
Although women medical students demonstrate substantial biological fertility awareness, significant gaps persist in practical reproductive planning, fertility preservation literacy, and institutional support. Earlier integration of fertility counseling, family planning education, and structured institutional support into medical curricula may better promote reproductive autonomy and informed career-family decision-making among future physicians.
IMPACT STATEMENT:
Medical training shapes reproductive decision-making early, yet insufficient practical fertility education and institutional support may contribute to delayed childbearing among future women physicians.
SUPPORT: This study was self-funded by the researchers. The authors declare no competing interests.

P-402 2:15 PM Tuesday, October 27, 2026

FERTILITY CARE COVERAGE IN HEALTHCARE EDUCATION: IDENTIFYING UNMET NEEDS AND KNOWLEDGE GAPS AMONG HEALTH PROFESSIONAL STUDENTS. Lailie Kahsai, BS[1], Olumayowa M. Dayo, MD, MPH[2], Carissa J. Pekny, B.S., M.D.[3] and Rachel Whynott, MD[4], [1]Rancho Palos Verdes, CA, [2]San Diego, CA, [3]University of California San Diego, La Jolla, CA, [4]University of California, San Diego, San Diego, CA

OBJECTIVE:
To evaluate baseline fertility knowledge, attitudes, and decision-making about family planning and planned fertility preservation (pFP) among health professional students.
MATERIALS AND METHODS:
A cross-sectional study was conducted at a large academic medical center. A survey was distributed via email and messaging applications to the Schools of Medicine, Pharmacy, and Physician Assistant (PA) programs. The survey assessed baseline fertility knowledge, and evaluated health insurance knowledge, reproductive planning, parenthood intentions, fertility risk perception, and decision-making regarding pFP. The primary outcome was participants' current desire for pFP; secondary outcomes included fertility knowledge, risk perception, and decision-making conflict. Variables were summarized as means or medians, and categorical variables as proportions. Comparative analyses used Wilcoxon

rank-sum and chi-square tests and multivariable logistics regression. Analyses were conducted in RStudio (Version 2024.12.1).

RESULTS:

Among 123 respondents (71% Medical, 17% Pharmacy, 12% PA) the mean age was 26 years and 83% were born with oocytes. Primary drivers for pursuing pFP included delayed childbearing (51%), reproductive aging concerns (50%), and cost (41%) with an overall strong preference for pFP now (52%). Those reporting an ideal age for pFP as age ≤30 (65.4%) were more likely to pursue immediate pFP, whereas those with ideal age >30 (26.2%) had significantly lower odds of choosing immediate pFP (OR 0.19, 95% CI [0.08, 0.43], p< .001). Respondents with higher fertility risk perception (69.7%) were 4.89 times more likely to choose fertility preservation now when compared to those with low risk perception (OR 4.89, 95% CI [2.30, 10.80], p < .001). Participants selected more motivators (delayed childbearing, insurance coverage, reproductive aging; OR 1.74, 95% CI [1.15, 2.67], p< .01) than barriers (unpartnered, cost of procedure, medical procedure of pFP; OR 1.10, 95% CI [0.71, 1.73], p=.67) to decision for fertility preservation. Most participants, 76% (94 out of 123) experienced high decisional conflict (score ≥ 50), suggesting many found it difficult to choose pursuing immediate pFP. The most affected domains were lack of information (mean 60.8±24.5), uncertainty (mean 55.0±25.4), and the clarity of values on pFP and family planning (mean 54.7±23.3).

CONCLUSIONS:

Health professional students are a unique population whose demanding career paths influence family planning decisions. Facilitating risk factors played a greater role than barriers in pFP decision-making. High decision conflict scale scores reveal a significant burden in decision making about immediate pFP based on current knowledge.

IMPACT STATEMENT:

This study reveals high interest but significant decisional conflict around pFP among health professional students. Identifying key drivers such as risk perception, cost, and delayed childbearing and decision conflict domains highlights targets for intervention, including education, values clarification, and financial support to improve decision-making.

P-403 2:30 PM Tuesday, October 27, 2026

DELAYED CHILDBEARING AND USAGE OF ASSISTED REPRODUCTIVE TECHNOLOGIES AMONG FEMALE SURGICAL TRAINEES: A SINGLE HEALTH SYSTEM PILOT STUDY. Samantha L Irizarry, PhD, Vanessa Ocon, MD, Alexandra M. Selberg, MD, Kathleen Beebe, MD and Sara Sinha Morelli, M.D., PH.D., Rutgers New Jersey Medical School, Newark, NJ

OBJECTIVE: This study aims to identify factors influencing childbearing decisions and assisted reproductive technology (ART) use among female surgical trainees, and to evaluate barriers to fertility preservation. We hypothesize that surgical training significantly influences family planning decisions and that trainees face substantial barriers to accessing fertility preservation services.

MATERIALS AND METHODS: An anonymous survey was distributed to surgical trainees identifying as female in the National Provider Identifier Registry in 34 training programs at 8 clinical sites across a single health system. The survey captured data in four key domains: family planning intentions and the influence of training on these decisions, oocyte and embryo cryopreservation use and consideration, insurance coverage and access to reproductive endocrinology and infertility services, and perceived impact of maternity leave on co-trainees. Responses were analyzed using nonparametric and proportion-based statistical testing, and thematic analysis was performed on open-ended responses.

RESULTS: Of 203 surveys distributed, 40 trainees across 10 surgical specialties (19.7%) participated. Most respondents (83%) had or planned to have biological children. 57% strongly or extremely agreed that training influenced their family planning decisions; overall responses were significantly skewed toward agreement (p<0.05). 23% had undergone oocyte or embryo cryopreservation, yet only 5% had pursued fertility treatments. Fewer than 20% reported insurance coverage for cryopreservation or storage, while 40–50% were unaware of whether their benefits covered fertility preservation. 63% believed maternity leave would negatively affect co-trainees. Over half of respondents (n=27) provided open-ended responses, revealing themes of delayed childbearing, financial and time constraints, age-related fertility decline, and proactive consideration of preservation due to training.

CONCLUSIONS: Female surgical trainees report that training significantly influences family planning, yet they face substantial barriers to fertility preservation, including limited and poorly understood insurance coverage, financial constraints, and insufficient time. Despite awareness of age-related fertility decline, few pursue fertility treatments during training. The widespread perception that maternity leave negatively impacts colleagues further compounds pressure to delay childbearing.

IMPACT STATEMENT: This study underscores the obstacles female surgical trainees experience when balancing reproductive decisions with program responsibilities, peer dynamics, and financial barriers. The high rate of open-ended engagement emphasizes the salience of this issue to trainees. These findings reflect the need for additional program support of trainees' reproductive choices across the spectrum of family planning, and identify actionable barriers including insurance gaps and limited awareness of available benefits.

SUPPORT: N/A

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PATIENT CENTERED CARE (1 OF 6)

P-404 1:30 PM Tuesday, October 27, 2026

OUT-OF-POCKET COSTS FOR LIVE BIRTH FROM IN VITRO FERTILIZATION (IVF) AMONG PRIVATELY INSURED PATIENTS WITH INSURANCE COVERAGE FOR IVF. Phyllis Yan, B.S., M.A.[1], Rodney L. Dunn, B.A., M.S.[2], David Suh, MPH[2], Brandon T Swinney, MPH[2], Anjelica Gangaram, Ph.D[2], Clayton Shuman, B.A., M.S.N., Ph.D, RN[2], Edward C Norton, A.B., Ph.D[2], Vanessa Dalton, MD, MPH[2], Marissa Steinberg Weiss, M.D., M.SC.[3] and James M. Dupree, M.D., M.P.H[1], [1]Michigan Medicine, Ann Arbor, MI, [2]University of Michigan, Ann Arbor, MI, [3]University of Pennsylvania, Philadelphia, PA

OBJECTIVE: Although insurance coverage for IVF has expanded, the out-of-pocket (OOP) costs of having a live birth from IVF remains unknown. This data may be especially relevant for patients with advanced maternal age, who face more complications during pregnancy and childbirth. Our objective was to characterize OOP costs for patients with insurance coverage for IVF who had a live birth from IVF.

MATERIALS AND METHODS: Using Optum's de-identified Clinformatics® Data Mart Database, we identified women aged 21–44 years who underwent an IVF cycle between 2013 - 2019 and had a live birth within 22 months of the oocyte retrieval. IVF cycles were identified using oocyte retrieval claims, excluding retrievals performed for fertility preservation. For each patient, we summed OOP costs (coinsurance, copayments, deductibles) for claims from the IVF cycle, including IVF prescriptions, up through the newborn's first year of life. We divided costs into four categories: IVF, pregnancy, delivery, and newborn care. Pregnancy costs included claims 11 days after the embryo transfer until pregnancy loss or delivery. Delivery costs included claims from admission for delivery through 30 days post-discharge. Newborns were linked to patients using family identification codes. Median OOP costs were stratified by patient age groups and inflation adjusted to 2019 dollars.

RESULTS: We identified 3,349 patients with an IVF cycle between 2013 - 2019. Median OOP costs for IVF were $1,509 and ranged from $1,442 to $1,647 across age groups (Table). Median total OOP costs for a live birth were $6,740 [Interquartile Range (IQR): $3,737-$10,444], and were similar across age groups, ranging from $6,551 to $6,982 (p = 0.8).

CONCLUSIONS: We found that for patients with coverage for IVF, the OOP costs for IVF were about $1,500 and >20% of the total OOP costs for a live birth. While insurance coverage for IVF reduces patients' IVF costs, the total OOP costs for a live birth was still >$6,500. Costs were similar across age groups, possibly because older patients who achieve a live birth are a healthier cohort.

IMPACT STATEMENT: Efforts to improve IVF affordability have focused mainly on expanding insurance coverage for IVF to reduce patients' costs. However, even among patients with insurance coverage for IVF, we found that substantial OOP costs for IVF remain. Patients with insurance coverage for IVF should plan for these IVF OOP costs, in addition to the OOP costs of pregnancy, live birth, and the newborn's first year of life.

Table: Median OOP costs (in US$) by patient age group and phase of care

	<35 (n=1,784)	35-37 (n=808)	38-40 (n=550)	≥41 (n=207)
IVF cycle	1,485	1,442	1,647	1,610
Pregnancy	811	889	930	859
Delivery	1,423	1,093	1,273	1,212
1st year of newborn care	1,277	1,287	1,068	1,109
Total (IQR)	6,728 (3,794-10,515)	6,551 (3,612-10,310)	6,974 (3,839-10,284)	6,982 (3,486-10,707)

SUPPORT: Eunice Kennedy Shriver National Institute of Child Health & Human Development - 1R01HD103603

P-405 1:45 PM Tuesday, October 27, 2026

WORK ABSENCE ACROSS THE REPRODUCTIVE CONTINUUM: A NARRATIVE REVIEW OF FERTILITY TREATMENT, PREGNANCY, AND POSTPARTUM LEAVE. Zachary S. Anderson, M.D.[1], Aaron D Masjedi, MD[2], Sarah C Cromack, MD[1] and Heather S Hipp, MD[1], [1]Emory University School of Medicine, Department of Gynecology and Obstetrics, Atlanta, GA, [2]University of Southern California, Los Angeles, CA

OBJECTIVE:

The objective of this study is to characterize the aggregate time off work required from initial infertility treatment with assisted reproductive technology (ART) through pregnancy and the postpartum period.

MATERIALS AND METHODS:

A systematic search of the literature was performed using PubMed/Medline and Google Scholar. We reviewed existing literature describing time off work during four intervals: 1) infertility treatment and the preconception period, 2) antepartum, 3) delivery, and 4) postpartum. Descriptive statistics were used to summarize synthesized estimates of treatment burden (appointments/hospitalization) and work absence.

RESULTS:

Infertility evaluation and treatment require a mean of 3–9 days per ART cycle away from work. In the U.S., patients average 125 hours of time off over an 18-month span pursuing fertility care (e.g. 15.6 days assuming an 8-hour workday). Factors driving this include approximately 5.3 work-week appointments in addition to travel time to the clinic (mean of 561 minutes per cycle in one study), and much longer in some areas given that many

patients live a significant distance from a fertility treatment center. Routine antepartum care typically involves 12–14 appointments, which aggregates to 3–5 days off of work. However, pregnancies conceived via in vitro fertilization are often managed as high-risk, requiring additional monitoring appointments such as fetal echocardiograms and antenatal testing. This can increase prenatal absences to over 20 appointments in total. Additionally, 63% of women take an average of 1-4 weeks of leave in the weeks leading up to delivery. For delivery and postpartum care, patients typically require 1–5 days of hospitalization and take an average of 6–8 weeks of parental leave. The cumulative time off work from the start of infertility treatment until postpartum return to work is approximately 15 weeks.

CONCLUSIONS:

Time away from work across the reproductive journey for one pregnancy is substantial, multifactorial, and often unpredictable. This can be significantly more disruptive for those with infertility utilizing ART to conceive, especially for patients who are remote from a major city where either fertility treatment and/or prenatal care can be accessed. Under the Family and Medical Leave Act, eligible employees may take up to 12 weeks of unpaid leave from work for medical treatment such as this, however 40% of women of childbearing age are not eligible. Current national leave policies for most women fail to account for the cumulative burden of absences during the pre-pregnancy and antenatal periods.

IMPACT STATEMENT:

These findings underscore the critical need for national efforts to codify flexible workplace policies and expanded leave protections that can accommodate the unique clinical demands of infertility treatment and high-risk obstetric care. Moreover, reproductive endocrinologists should strive to ease the treatment burden on our patients, expanding access to telehealth care platforms to reduce location-based disparities, designing protocols that minimize monitoring appointments while maintaining outcomes, and promoting research on and adoption of home monitoring technologies.

P-406 2:00 PM Tuesday, October 27, 2026

IMPACT OF ENGAGEDMD NAVIGATE TOOL ON CONVERSION TO IVF TREATMENT. Adriana C Báez, MD, JD[1], Saira Kothari, MD[2], Nigel Pereira, M.D.[3], Peter Kovacs, M.D., PH.D.[4], Dr. John C Petrozza, MD[5] and Steven R. Lindheim, M.D.[6], [1]Thomas Jefferson University Hospital, Philadelphia, PA, [2]University of Central Florida, Orlando, [3]Division of Gynaecologic Reproductive Endocrinology and Infertility, University of Toronto, Toronto, ON, Canada, [4]Dunamenti REK Istenhegy IVF Center, Budapest, Hungary, [5]Massachusetts General Hospital, Boston, MA, [6]University of Central Florida, Orlando, FL

OBJECTIVE: EngagedMD, a patient journey management platform, has recently launched a Navigate component, an interactive patient action plan that guides patients through various stages of fertility care, including intake, diagnostic workup, and procedure preparation. Patients receive and complete comprehensive, directive instructions at each stage, which simultaneously provides visibility, tracking and analytics, and coordination tools for clinic staff. Our primary objective was to assess the effect of Navigate usage on 90-day conversion to in vitro fertilization (IVF) treatment.

MATERIALS AND METHODS: Retrospective analysis of new patients created in EngagedMD from a single multi-site fertility practice from July to November 2025, prior to widespread adoption of the platform. Patients were offered complimentary access to Navigate and subsequently analyzed with respect to Navigate (standard care plus Navigate) or Non-Navigate (standard care) use. Excluded were patients created in EngagedMD prior to 2025, existing patients, patients that deviated from the conventional visit type structure, or those pursuing treatment other than IVF. Patient-level data were constructed by linking EngagedMD enrollment date after initial consultation to Navigate assignment and future appointment by status and type. Conversion to IVF was defined as the first appointment where patients received teaching and medication instructions.

RESULTS: A total of 150 patients were included (Navigate n=55, Non-Navigate n=95). Groups did not differ with respect to age (37.5 vs. 36.7 years, $p = 0.35$), insurance status, race, gravity, and parity, but differed significantly by ethnicity, where Hispanic/Latino patients were less represented in the Navigate group (32.7% vs. 60.0%, p = 0.015). Overall, 34 (22.7%) converted to IVF (Navigate 29.1%, n=16, non-Navigate 18.9%, n=18, $p = .13$). Navigate patients were more likely to convert within 90 days (27.3% vs. 13.7%; $p = .04$; OR 2.37, 95% CI 1.03–5.44). Days to PreMed were fewer in the Navigate group, though this failed to reach significance (55.3 vs. 75.6 days, $p = .11$). In multivariable logistic regression, use of Navigate remained an independent predictor of 90-day conversion after adjustment for age and ethnicity (adjusted OR 2.57, 95% CI 1.04–6.35, $p = .04$).

CONCLUSIONS: The data suggest that interactive, personalized platforms like Navigate appear to facilitate faster time to IVF treatment, with the potential of enhanced cycle starts within a given period, expanded patient access, and operational efficiency.

IMPACT STATEMENT: Platforms like Navigate have the potential to drive user engagement with their care, hasten time to treatment, improve clinic efficiency, and generate higher financial returns; however, its potential warrants further study.

P-407 2:15 PM Tuesday, October 27, 2026

SEVERE HEMOPERITONEUM AFTER TRANSVAGINAL OOCYTE RETRIEVAL (TVOR): A SYSTEMATIC REVIEW AND COHORT STUDY. Sara H Parikh, B.A.[1], Lydia Hughes, MD[2], Ecem Esencan, M.D.[3], Emily S Jungheim, M.D., M.S.[1], Sarah C Cromack, MD[4], Molly Beestrum, MLIS[5] and Jessica R Walter, MD, MSCE[3], [1]Northwestern University Feinberg School of Medicine, Chicago, IL, [2]Northwestern University Feinberg School of Medicine, Department of Obstetrics and Gynecology, Division of Reproductive Endocrinology and Infertility, Chicago, IL, [3]Northwestern University Feinberg School of Medicine, Obstetrics and Gynecology, Reproductive Endocrinology and Infertility, Chicago, IL, [4]Emory University School of Medicine, Department of Gynecology and Obstetrics, Atlanta, GA, [5]Northwestern University, Chicago, IL

OBJECTIVE: Bleeding is a rare but potentially serious complication of TVOR. Historical literature reports a 0.08–0.22% incidence of severe hemoperitoneum after TVOR. However, current controlled ovarian hyperstimulation (COH) protocols are aggressive raising concern for higher risk of complication. Given this, we conducted a systematic review of the literature alongside an institutional cohort study to understand contemporary risk and management of clinically relevant bleeding after TVOR.

MATERIALS AND METHODS: PubMed (MEDLINE), Embase (Elsevier), Scopus (Elsevier), and the Cochrane Library (Wiley) were searched from inception through March 11, 2025 for English-language studies of hemoperitoneum after TVOR (PROSPERO: CRD420251002332).

In parallel, we prospectively identified patients with hemoperitoneum requiring hospital admission after TVOR at our institution (8/2022–3/2025). We compared demographic, clinical, and cycle characteristics of cases to other autologous retrievals in the same period using appropriate bivariate statistics.

RESULTS: We identified 424 studies. 84 duplicates were removed, and 340 unique citations were independently screened by three blinded investigators. 47 abstracts met inclusion criteria. Most were case reports or small case series, with additional retrospective cohort studies, prospective cohorts, and review articles. Hemoperitoneum incidence was low, and no consistent management strategy was identified.

Our institutional cohort included 30 hospital admissions for hemoperitoneum after TVOR, comprising 0.38% (30/7894) of all retrievals. Mean age (± SD) was 34.5±4.0 years and BMI 25.1±4.3 kg/m² for cases versus 36.2±4.4 years and BMI 26.6±6.3 kg/m² for others. Median oocyte yield was higher for cases versus others (18 [13,31] vs.15 [9,22], p=0.04). Mean total gonadotropin dose was lower in cases (3480 ± 1370 IU) versus others (4124 ± 1597 IU, p=0.03). 53% of admissions occurred after the first retrieval. 1 patient experienced hemoperitoneum twice. Symptom onset occurred 1-16 hours after TVOR with half of patients (n=15) experiencing symptoms within 8 hours of TVOR. Mean hemoglobin nadir was 8.7±1.1 g/dL, improving to >10 g/dL 2-15 days in retested patients (n=25). 11 patients (36.7%) required supportive care only, 11 (36.7%) required transfusion of packed red blood cells, and 5 (16.7%) were treated with intravenous iron. 3 (10%) patients required surgical intervention: 2 underwent laparoscopic evacuation of hemoperitoneum and 1 required exploratory laparotomy and oophorectomy.

CONCLUSIONS: While severe hemoperitoneum after TVOR was rare, our findings suggest incidence is higher among individuals with high ovarian reserve. Our review of the literature failed to provide a consistent management strategy for severe hemoperitoneum. Conservative management with supportive care was successful for most patients in our experience.

IMPACT STATEMENT: High ovarian reserve and high oocyte yield may be risk factors for severe hemoperitoneum after TVOR. Protocols for early recognition and management strategies including conservative management are important.

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P-408 2:30 PM Tuesday, October 27, 2026

FREQUENCY OF UNANTICIPATED MULTIPLES FOLLOWING EMBRYO TRANSFER. Dara S Berger, PhD, MPH, MS[1], Nathan C Koelper, MPH[1], Nicole Guardino, MS[2], Suleena K Kalra, MD, MSCE[3] and Marissa Steinberg Weiss, M.D., M.SC.[1], [1]University of Pennsylvania, Philadelphia, PA, [2]Philadelphia, PA, [3]University of Pennsylvania, Bryn Mawr, PA

OBJECTIVE:

This study aimed to examine how often embryo transfers result in more gestations than the number of embryos transferred.

MATERIALS AND METHODS:

This retrospective study reviewed all embryo transfer cycles conducted at a single academic center between May 1, 2016 and December 31, 2025. Embryo transfers resulting in more gestations than embryos transferred were classified as 'unanticipated multiples.' The study assessed the chorionicity of these unexpected multiples, categorizing them as monochorionic, dichorionic, or trichorionic. Per standard protocol, patients were counseled to abstain from intercourse prior to embryo transfer. Data collected included patient demographics, cycle protocols, number of embryos transferred, and early pregnancy ultrasound findings. Statistical analysis was performed using Fisher's exact test for categorical variables and t-tests for continuous variables, with significance set at p<0.05.

RESULTS:

During the study period, 9,070 embryo transfers were performed. Of these, 2,922 (32.2%) were fresh embryo transfers, 1,844 (20.3%) were natural frozen embryo transfers (FET), and 4,304 (47.5%) were programmed FETs. The overall incidence of unanticipated multiple gestation was 0.95% (86/9,070). Of these 86, 43 (50.0%) resulted in a monochorionic pregnancy, 40 (46.5%) in dichorionic pregnancy, and 3 (3.5%) in trichorionic pregnancy. The incidence of unanticipated multiple gestation differed significantly by cycle type: 15/2,922 (0.5%) for fresh cycles, 29/1,844 (1.6%) for natural FETs, and 42/4,304 (1.0%) for programmed FETs (p<0.01). Of cycles resulting in unanticipated multiples, 73 involved single embryo transfer and 13 involved double embryo transfer. On average, patients with unanticipated multiple pregnancies were 1.5 years younger than those without (35.3 vs 36.5 years, p=0.007). The overall multiple gestation rate was 3.7% for both natural FETs (n=68) and programmed FETs (n=160). Unanticipated multiples accounted for 29/68 (42.6%) of natural FET multiple gestations compared to 42/160 (26.3%) of programmed FETs multiple gestations (p<0.01).

CONCLUSIONS:
Unanticipated multiples, though rare overall, may occur at significantly higher rates in natural FETs than programmed FETs, suggesting that unassisted conception through intercourse is a primary contributing mechanism. Embryo splitting (zygotic twinning) may also play a role, particularly in programmed cycles.
IMPACT STATEMENT:
Understanding the factors contributing to unanticipated multiple gestations is crucial for improving counseling and management of early pregnancies in assisted reproductive technology. This study emphasizes the importance of tailoring counseling about multiple gestation risk based on cycle type, as well as the potential for co-occurring unassisted conception in natural FET cycles.
SUPPORT: No financial support

PATIENT CENTERED CARE (2 OF 6)

P-409 1:30 PM Tuesday, October 27, 2026

EXPERT VIEWS ON PREVENTING AGE-RELATED INFERTILITY THROUGH IMPROVED COUNSELING IN PRIMARY CARE AND GYNECOLOGY: A QUALITATIVE STUDY. Michelle J. Bayefsky, MD[1], Preeta A Kamat, BA[2], Nina G Faynshtayn, BA[1], Joseph A. Lee, BA[3], Alan B. Copperman, MD[4], Kara N. Goldman, M.D.[2] and Maya Korin, PhD, MS[5], [1]Icahn School of Medicine at Mount Sinai, New York, NY, [2]Northwestern University Feinberg School of Medicine, Chicago, IL, [3]RMANY || US Fertility, New York, NY, [4]Reproductive Medicine Associates of New York LLP, New York, NY, [5]Icahn School of Medicine at Mount Sinai

OBJECTIVE: As the mean age at first birth rises globally, the prevalence of age-related infertility is increasing. Prior studies show limited patient knowledge of age-related fertility decline (ARFD). This study explored expert perspectives on preventing age-related infertility through improved patient counseling on ARFD.
MATERIALS AND METHODS: This was a qualitative study conducted by researchers across two urban academic medical centers. Experts in reproductive endocrinology & infertility (REI), general obstetrics & gynecology (OB/GYN), women's health advocacy, family medicine, internal medicine, maternal fetal medicine (MFM), and family planning were recruited through professional networks to participate in a Zoom interview. Semi-structured interviews were conducted in January-March 2026. Verbatim transcripts were created and analyzed using a defined code book and the constant comparison method.
RESULTS: 27 interviews were conducted with 10 REIs, 4 general OB/GYNs, 4 family medicine physicians, 4 women's health nonprofit leaders, 3 internal medicine physicians, 1 MFM, and 1 family planning physician. Participants came from 11 states and 22 institutions and included national leaders in women's health. Six themes emerged: (1) Participants consistently described low patient awareness of ARFD and gaps in current counseling. (2) General OB/GYNs and primary care providers (PCPs) were viewed as the best suited medical practitioners to assess patients' fertility goals and introduce the topic of ARFD. (3) Participants emphasized the importance of incorporating ARFD counseling into routine care, despite acknowledgement of time constraints. They most commonly favored verbal discussions during annual visits, with some recommending a pre-visit screening questionnaire to facilitate the conversation. (4) Views regarding optimal timing of counseling varied, with recommendations ranging from the early 20s to early 30s. Participants agreed that counseling should include individuals regardless of parity. (5) Participants highlighted the significance of framing to foster patient understanding and mitigate potential distress: counseling should emphasize clear, fact-based information, avoid prescriptive messaging, normalize ARFD as part of the natural aging process, and present available options. (6) Basic counseling on oocyte cryopreservation was viewed as within the purview of general OB/GYNs and PCPs, although participants expressed concern that patients may feel pressured to undergo the procedure, which could affect the therapeutic relationship.
CONCLUSIONS: Experts in this study supported integrating clinician-initiated ARFD counseling into routine gynecologic and primary care to prevent age-related infertility driven by limited patient awareness. Although views regarding optimal timing varied, there was broad agreement that ARFD should be addressed with all patients, regardless of parity.
IMPACT STATEMENT: Findings from this study can inform the development of patient-centered counseling strategies on ARFD in order to reduce preventable, age-related infertility.
SUPPORT: The authors have no financial interests to disclose.

P-410 1:45 PM Tuesday, October 27, 2026

PATIENT ACCESS TO LIVE EMBRYO DEVELOPMENT VIDEOS INFLUENCES UNDERSTANDING, IVF EXPERIENCE, AND CLINIC SELECTION DECISIONS. Meryem Bousfiha, BS, MBA[1], Phoebe Hyland, BA[2], Denis A Vaughan, MD[3], Emily Mortell, BS, MS[4], Alicia Broussard, PhD[5], Iris Rrokaj, BS[5], Sanjna Battepati, BA[5], Haneen Taha, BS[6], Anya Lysenko-Brockman, MS[6] and Fady I Sharara, MD[6], [1]Fairtility, Tel Aviv, Israel, [2]Cambridge, MA, [3]Terra Fertility, MA, [4]Terra Fertility, [5]Generation Next Fertility, New York, [6]Virginia Center for Reproductive Medicine, Reston, VA

OBJECTIVE: To evaluate whether patient access to a novel, patient facing technology, live embryo development videos, improves understanding and IVF experience and influences patient decision-making.
MATERIALS AND METHODS: A multicenter cross-sectional survey was conducted across three fertility centers in the United States among IVF patients who were provided remote access, via a mobile application, to live time-lapse videos of their embryos during in vitro culture. Patient-reported understanding of treatment and overall IVF experience were assessed using exploratory 0–10 scales. Additional outcomes included overall perception of video access and whether access would influence future fertility clinic selection. Descriptive statistics were calculated. Associations between continuous variables were evaluated using Pearson correlation. Clinically meaningful thresholds were explored using dichotomized outcomes (≥8 vs <8).
RESULTS: 56 complete responses were collected. Patients reported high levels of understanding (8.2±2.4) and improved IVF experience (8.0±2.6), with both outcomes demonstrating a skew toward higher scores. Understanding was moderately correlated with IVF experience (r=0.57), indicating that improved comprehension of embryo development was associated with a more positive treatment experience.
Overall, 79.3% of patients reported a net beneficial perception of access to embryo development videos, while a minority reported neutral or negative perceptions. 62.3% reported that availability of embryo development videos would influence their choice of fertility clinic.
When applying clinically meaningful thresholds, patients reporting high understanding (≥8) were 15-fold more likely to indicate that video access would influence clinic selection, highlighting a strong association between perceived informational benefit and decision-making behavior.
CONCLUSIONS: Access to embryo development videos via a mobile application is associated with higher patient-reported understanding and more positive IVF experience with downstream effects on potential patient decision-making. These findings support a model in which increased transparency into embryo development may enhance patient-centered care and inform how patients evaluate fertility providers. Further studies are currently underway to increase sample size and validate these findings across broader patient populations.
IMPACT STATEMENT: Patient-facing visualization technologies that provide real-time insight into embryo development represent a scalable approach to enhancing patient-centered care and may play a decisive role in how patients evaluate and select fertility providers.

P-411 2:00 PM Tuesday, October 27, 2026

END-OF-MONTH OUTREACH OF INFERTILITY CONSULTATION PATIENTS HELPS IDENTIFIES BARRIERS TO CARE. Ali A Bazzi, M.D.[1], Mohamad Bazzi, MS, MD[2] and Fady I Sharara, MD[3], [1]Michigan Fertility Institute, Livonia, MI, [2]Trinity Health, Livonia, MI, [3]Virginia Center for Reproductive Medicine, Reston, VA

OBJECTIVE: To evaluate the impact of a structured end of the month follow up to help identify obstacles and barriers to initiation of care in addition to reengaging patients who have not completed, or even begun, their infertility evaluation.
MATERIALS AND METHODS: In a private infertility clinic, all patients who completed a new patient infertility consultation from September 2025 until January 2026 were included in the study. A monthly phone call (standardized script) outreach initiative was implemented that focused on patients who had not initiated or completed their recommended testing outline/evaluation within 30 days of the initial consultation. Data that was abstracted included reasons for non-completion and whether there was initiation of the evaluation after the phone call. Barriers categories included financial reasons, gaps in communication, not understanding the next steps or "other reasons" after the initial consultation.
RESULTS: Fifty eight (62.4%) out of a total of 93 patients who had not initiated or completed evaluation within 30 days were successfully contacted and assessed. Multiple of these factors were frequently reported in the same patients. The patient reported barriers included financial concerns (45.1%), communication issues (32.9%) and a limited understanding of next steps (30.2%). Other reasons accounted for 17.2%. Following outreach, 27 patients (46.6%) initiated or completed evaluation within 30 days. Patients cited thorough discussion of financing, improvement in clarity and effective communication as the driving forces behind them resuming care.
CONCLUSIONS: Overall, attrition rates after the initial consultation can be as high as 40%. Although there may be many contributable factors, certain reasons are frequently cited such as costs, communication and lack of understanding. This outreach assessment helped identify important barriers to initiation of care after the initial infertility consultation. Overall, the structured targeted phone follow up was associated with notable resumption of care and identified important barriers for clinics to address in the initial consultation.
IMPACT STATEMENT: In an attempt to reduce clinic attrition, a monthly follow up strategy can help improve patient engagement in an infertility practice.

P-412 2:15 PM Tuesday, October 27, 2026

A COMPARISON OF PERCEIVED BASELINE STRESS IN INDIVIDUALS UNDERGOING ELECTIVE EGG BANKING AND IVF. Riley Bonaccorsi, BA, MA[1,2], Ecem Esencan, M.D.[3], Brianna C Borger, BS[4], Alexandra M Herweck, MD, MPH[5,6], Allison S Komorowski, M.D.[7], Joan K. Riley, HCLD, PhD[8], Emily S Jungheim, M.D., M.S.[2] and Jessica R Walter, MD, MSCE[2], [1]Research Study Coordinator, Chicago, IL, [2]Northwestern University Feinberg School of Medicine, Chicago, IL, [3]Northwestern University, Feinberg School of Medicine, Chicago, IL, [4]Northwestern University, Chicago, [5]Houston, TX, [6]Northwestern University Feinberg School of Medicine, Obstetrics and Gynecology, Reproductive Endocrinology and Infertility, Chicago, IL, [7]Northwestern University Feinberg School of Medicine, [8]Northwestern University, Chicago, IL

OBJECTIVE: To better understand perceived stress in individuals undergoing oocyte cryopreservation and IVF with the goal of informing tailored psychosocial support strategies for these patients, and to understand how stress impacts clinical outcomes in these patients.
MATERIALS AND METHODS:

We compiled data from participants in two prospective cohort studies, the **PRO**spective study of **M**others' and **I**nfants' **S**ocial and **E**pidemiologic determinants of health (PROMISE) and the **RESERVE Study:** Ovarian Reserve and Association with Environment, Stress, Exposures, Residential Address, Social Vulnerability and Eating Patterns (RESERVE). PROMISE includes patients undergoing their first IVF cycle for infertility, while RESERVE includes patients undergoing elective oocyte cryopreservation. All patients received care at a single academic center and completed the Perceived Stress Scale (PSS), a validated instrument to measure feelings of uncontrollable stress in the preceding month, prior to the start of their fertility treatment. Continuous variables were compared using the Wilcoxon rank-sum test (t-test for AMH), and categorical variables using chi-square or Fisher's exact test. The primary outcome was a comparison of median baseline PSS scores between the two cohorts. We also evaluated whether elevated baseline stress was associated with ovarian response to stimulation, defined by total mature oocytes retrieved, using linear regression adjusted for age, BMI, and AMH.
RESULTS: Of the 276 patients included (PROMISE n = 208, RESERVE n = 68), PROMISE patients were slightly older (median 35 vs 34 years, p=0.003). There were no other significant differences in BMI, AMH, oocytes retrieved, or socioeconomic status (ADI). There were no differences in reported PSS scores (PROMISE median score of 14 (IQR 10-19) vs RESERVE median score of 13 (IQR 9-18), p = 0.47). In adjusted analyses, higher stress (categorized as PSS >13) was associated with a lower number of mature oocytes retrieved in the PROMISE cohort (β −2.77, p=0.015), independent of age, BMI, and AMH. No such association was observed in the RESERVE cohort (p=0.60).
CONCLUSIONS: Baseline perceived stress is similar between patients undergoing IVF for infertility and those pursuing elective oocyte cryopreservation, suggesting that stress is not driven by treatment indication alone. However, higher stress may be associated with reduced ovarian response in patients undergoing IVF, highlighting a potential biologic or behavioral link between stress and treatment outcomes.
IMPACT STATEMENT: These findings support the need for baseline psychological support across fertility populations. These results also suggest stress may influence treatment outcomes in infertility patients, underscoring the importance of integrating stress assessment and management into fertility care.

P-413 2:30 PM Tuesday, October 27, 2026

DECOUPLING ULTRASOUND ACQUISITION FROM CLINICAL WORKFLOW IN IVF MONITORING USING AUTOMATED SELF-OPERATED IMAGING. Pietro Bortoletto, MD, MSc[1], Beatrice Chemla, PharmD[2], Tal Shavit, MD[3], Johanna Zerbib, PharmD[4], Eric Eskey, BS MBA[5], Yael Corcos, PhD[6], Dr. John C Petrozza, MD[7] and Nadia Prisant, MD, MSc[8], [1]Terra Fertility, Dedham, MA, [2]Raanana, Central, Israel, [3]Assuta Medical Center, Tel Aviv, Israel, [4]Gray Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel, [5]Dark Horse works, Mesa, AZ, [6]A.Y. Impact, Petah Tikva, Israel, [7]Fertility Centers of New England, Reading, MA, [8]Paris, France

OBJECTIVE:
To evaluate whether automated self-operated ultrasound enables separation of image acquisition from real-time clinical workflow in IVF monitoring.
MATERIALS AND METHODS:
Prospective pilot study conducted in a high-volume private IVF center. Ten women undergoing ovarian stimulation (mean age 33.1 ± 5.1 years; BMI 22.1 ± 3.5 kg/m²) performed supervised automated self-operated transvaginal ultrasound scans in a home-like environment without real-time guidance.
Workflow feasibility was assessed based on scan interpretability, need for operator intervention, and compatibility with asynchronous physician review.
RESULTS:
All evaluable scans (18/18, 100%) yielded clinically interpretable imaging.
Counts of follicles ≥14 mm demonstrated correlation with mature oocyte recovery rate comparable to real-time clinical workflow measures. Endometrial thickness measurements showed correlation and strong agreement in clinically relevant categories (93% with Cohen's κ≈0.85).
No scan failures were attributable to patient handling, and no real-time operator intervention or guidance was required for image acquisition.
In conventional IVF workflows, ultrasound acquisition requires real-time clinician involvement. In this study, acquisition was performed without such constraints while maintaining clinical interpretability.
Automated self-operated ultrasound enabled standardized image acquisition independent of operator expertise, and allowing asynchronous interpretation.
CONCLUSIONS:
Automated self-operated ultrasound enables standardized, operator-independent image acquisition and separation from real-time clinical workflow, supporting asynchronous review and reducing dependence on immediate clinical resources.
IMPACT STATEMENT:
Standardized automated self-operated ultrasound may enable more flexible and scalable IVF monitoring by reducing operator dependency and decoupling acquisition from clinical workflow.
SUPPORT: This study was funded by IMMA Health.

PATIENT CENTERED CARE (3 OF 6)

P-414 1:30 PM Tuesday, October 27, 2026

VITAMIN D DEFICIENCY IS ASSOCIATED WITH INCREASED PREVALENCE OF POSITIVE GENITAL TRACT MICROBIOLOGICAL FINDINGS IN WOMEN UNDERGOING IVF WORK-UP. Tomas Caballero, MD[1], Juan Ignacio Lorenzo, MD[2], Alcira Cecilia Palacios, MD[3], Ingrid Paola Benitez Salazar, MD[3], Lisette Lascano, MD[2] and Fabian Omar Lorenzo, MD[4], [1]IFER Institute., Buenos Aires, Argentina, [2]IFER, C.A.B.A., Argentina, [3]Ciudad Autonoma Buenos Aires, Capital Federal, Argentina, [4]IFER, Ciudad Autonoma de Buenos Aires, Argentina

OBJECTIVE: To evaluate the association between vitamin D deficiency and genital tract microbiological alterations, as well as treatment response and persistence, in infertile women undergoing IVF work-up.
MATERIALS AND METHODS:
This retrospective cohort study included 100 infertile women undergoing evaluation prior to IVF at a tertiary reproductive medicine center. All patients underwent serum vitamin D measurement and genital tract microbiological testing (including culture and molecular methods) as part of routine pre-IVF assessment prior to hysterosalpingography.
Vitamin D deficiency was defined as serum levels <20 ng/mL to identify clinically meaningful deficiency. Patients were categorized into vitamin D deficient (<20 ng/mL) and non-deficient (≥20 ng/mL) groups.
Patients with positive microbiological findings received antibiotic treatment according to routine clinical practice and were subsequently reassessed. Persistence was defined as the need for repeated antimicrobial therapy or delayed microbiological clearance.
Categorical variables were compared using chi-square or Fisher's exact test. Associations were expressed as odds ratios (OR) and relative risks (RR) with 95% confidence intervals (CI). A two-sided p-value <0.05 was considered statistically significant.
RESULTS:
Vitamin D deficiency was identified in 58% of patients. Positive microbiological findings were significantly more frequent in vitamin D deficient patients compared with non-deficient patients (41.4% [24/58] vs 19.0% [8/42], p = 0.02).
Vitamin D deficiency was associated with increased odds and risk of microbiological alterations (OR: 3.0, 95% CI: 1.2–7.2; RR: 2.18).
The microbiological profile was predominantly characterized by Ureaplasma (~60–70%) and Mycoplasma (~20–30%) species.
Among patients with positive findings, persistence was more frequent in vitamin D deficient patients compared with non-deficient patients (approximately 25–35% vs 10–15%). This effect appeared more pronounced in patients with more severe deficiency (<15 ng/mL), suggesting a possible dose–response relationship.
CONCLUSIONS:
Vitamin D deficiency is associated not only with increased prevalence of genital tract microbiological alterations but also with persistence after antimicrobial treatment in infertile women undergoing IVF work-up.
These findings support a role of vitamin D in genital mucosal immune competence and suggest that vitamin D status may influence treatment response and infection clearance. Optimization of vitamin D levels prior to IVF may represent a clinically relevant and modifiable factor in reproductive care.
IMPACT STATEMENT:
Vitamin D deficiency may represent a modifiable determinant of genital immune function in infertile women. Routine assessment and optimization of vitamin D status during IVF work-up could improve microbiological clearance, reduce repeated antimicrobial therapy, and enhance pre-treatment optimization strategies in reproductive medicine.
SUPPORT: The authors recieved no financial support for this study.
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1. Witkin SS, et al. Influence of vitamin D on the vaginal microbiome. Am J Obstet Gynecol. 2017.
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P-415 1:45 PM Tuesday, October 27, 2026

MANAGING MEDICAL, SURGICAL, AND SOCIAL COMPLEXITY IN REPRODUCTIVE MEDICINE, REPRODUCTIVE SURGERY, AND FERTILITY PRESERVATION: A CLINICAL SYSTEMS FRAMEWORK APPROACH. James Michael Niall Michael Niall Duffy, BSc (Hons) MB ChB MRes DPhil MRCOG PG Dip PG Cert HCL[1], Sepideh Samaee, MBBS[2] and Dr. Yusuf Beebeejaun, MRCOG MHDL MBBS BSc(Hons)[3], [1]London, AL, [2]Queen's Hospital, Romford, United Kingdom, [3]IVI RMA UK, London, United Kingdom

OBJECTIVE: Increasing numbers of fertility patients present with intersecting medical, surgical, and social factors that influence treatment timing, reproductive outcomes, safety, and healthcare utilization. Existing fertility literature largely evaluates these risks in isolation, with limited guidance on managing patients with multiple interacting complexities. This study aimed to evaluate how complexity is currently addressed across reproductive medicine, reproductive surgery, and fertility preservation, and to develop a practical framework for clinical decision making and patient management.
MATERIALS AND METHODS: A systematic review with narrative synthesis was conducted in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology. bibliographical databases, including CENTRAL, Embase, and MEDLINE databases, were searched from January 2016 to January 2026. Studies evaluating medical complexity, surgical complexity, or social complexity in reproductive medicine, reproductive surgery, and fertility preservation were included. Two reviewers independently screened studies and extracted data. Iterative descriptive synthesis identified recurring themes, management approaches, and local and national health system level gaps.
RESULTS: Of 4,286 records identified, 312 studies (0.07%) met inclusion criteria. Most studies evaluated isolated medical (143 studies, 46%) or surgical (118 studies, 38%) factors. A minority assessed social complexity (21 studies, 7%) and fewer evaluated interactions across multiple factors (16 studies, 5%). Recurrent themes included delayed treatment initiation, fragmented multidisciplinary care, inconsistent risk stratification, avoidable surgical interventions, and inequitable access to fertility treatment. Patients with overlapping complexity demonstrated higher rates of treatment delay, cycle cancellation, increased procedural burden, and more frequent need for multidisciplinary

input. A novel Fertility Complexity Framework was iteratively developed, incorporating: (1) complexity identification, (2) multi domain risk stratification, (3) interaction mapping, (4) reproductive strategy selection, and (5) delivery pathway planning.
CONCLUSIONS: Current fertility care models inadequately address interacting medical, surgical, and social complexity. Existing evidence remains fragmented and predominantly disease specific. A structured complexity framework may improve treatment sequencing, reduce avoidable interventions, and support more effective, safer, and personalized fertility care.
IMPACT STATEMENT: As fertility patients become increasingly complex, reproductive healthcare requires integrated decision frameworks that move beyond single diagnosis models toward more effective, safer, and equitable care.
SUPPORT: No specific funding was obtained or required.
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P-416 2:00 PM Tuesday, October 27, 2026

AUTOMATED TEXT MESSAGING REDUCES TIME TO RETURN VISIT AND MANUAL STAFF COMMUNICATIONS DURING THE INFERTILITY WORKUP: THE FAST TRACK TO FERTILITY RANDOMIZED CONTROLLED TRIAL (FTF RCT). Dr. Benjamin J Peipert, MD, MSHP[1], Katharine T Song, BA[2], Iris Tienlynn Lee, MD MSCE[3], Suneeta Senapati, MD, MSCE[4] and Anuja Dokras, MD, MHCI, PhD[5], [1]University of Pennsylvania, Division of Reproductive Endocrinology and Infertility, Philadelphia, [2]University of Pennsylvania Perelman School of Medicine, [3]University of Pennsylvania, Division of Reproductive Endocrinology and Infertility, Philadelphia, PA, [4]University of Pennsylvania, Philadelphia, PA, [5]University of Pennsylvania Perelman School of Medicine, Philadelphia, PA

OBJECTIVE: The infertility diagnostic workup requires multiple precisely timed tests, and delays increase patient stress, reduce satisfaction, and contribute to attrition. Automated text messaging has improved care coordination in other medical disciplines,[1-2] yet data specific to the infertility workup remain limited. We developed Fast Track to Fertility (FTF), a cycle-adaptive automated text messaging platform delivering timed prompts to report start of menses, schedule testing, and access educational videos. We conducted a prospective randomized controlled trial (RCT) to evaluate whether FTF improves workup efficiency, accelerates time to the return visit, and reduces manual staff communications compared to usual care (print and electronic educational materials).
MATERIALS AND METHODS: New patients requiring ≥3 workup elements (bloodwork, imaging, and semen analysis [SA]) were eligible. Participants underwent block randomization by age and race; sample size was calculated from pre-RCT clinic data (80% power, α=0.05), with enrollment inflated 10% for unassisted conception and 10% for FTF discontinuation. Intention-to-treat (ITT) and per-protocol (PP) analyses were performed. The primary outcome was workup completion at 60 days.
RESULTS: Of 162 enrolled participants, 82 were randomized to FTF and 80 to usual care. Mean age was 34.5 years with a mean infertility duration of 19.5 months. In the ITT analysis, the FTF group demonstrated higher workup completion at 30 days (43.9% vs. 33.8%) and 60 days (62.2% vs. 56.3%); however, these differences did not reach statistical significance (p=0.2 and 0.4, respectively). Mean time from new to return visit was significantly shorter in the FTF group (51.0 vs. 55.6 days, p=0.03). Although time to complete bloodwork and imaging was similar between groups, SA completion was significantly faster in the FTF group (23.4 vs. 34.8 days, p=0.02). The FTF group also required significantly fewer staff-initiated workup reminders (21 vs. 43, p=0.015) and generated fewer related staff messages (33 vs. 88, p=0.008). The PP analysis excluded 10 FTF and 9 usual care participants with unassisted pregnancies and 8 FTF participants who unenrolled prior to workup completion; results were consistent with the ITT analysis. Patient engagement was high, with a mean of 9.8 inbound texts per patient and a mean likelihood-to-recommend score of 8.2/10 (SD 2.3).
CONCLUSIONS: Although 60-day workup completion rates were similar between groups, the FTF platform significantly reduced time to SA completion, shortened the interval between new and return visits, and decreased the volume of staff outreach required to complete the infertility evaluation.
IMPACT STATEMENT: Integrating cycle-adaptive automated messaging into fertility care may improve diagnostic efficiency and compress the new-to-return-visit interval for reproductive-age patients facing time-sensitive fertility decisions. These platforms reduce redundant manual labor while sustaining high patient engagement. Future research should assess whether artificial intelligence-driven systems can achieve comparable or superior outcomes.
SUPPORT: This randomized controlled trial was supported by a research grant from Ferring Pharmaceuticals.
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P-418 2:30 PM Tuesday, October 27, 2026

THE GAP IN INTIMATE PARTNER VIOLENCE RESOURCES: FERTILITY CLINIC WEBSITE ANALYSIS. Monica Contractor, MD[1], Nicole P Zakskorn, BA, MA[2] and Thythy Pham, MD, MA[3], [1]Chicago, IL, [2]Loyola University Chicago, [3]Loyola University Chicago, Maywood, IL

OBJECTIVE: To evaluate patient education and resources on intimate partner violence (IPV) on fertility clinic websites
MATERIALS AND METHODS: Fertility clinic websites were identified through the Society for Assisted Reproductive Technology (SART) public registry. Website content was independently reviewed by two reviewers using a standard codebook; discrepancies were resolved by a third reviewer. Websites were systematically evaluated for IPV content, including resources, safety planning options, patient education, and counseling services. Data were analyzed using descriptive statistics and Fisher's exact tests, with $p<0.05$ considered statistically significant.
RESULTS: Of 296 SART-affiliated clinic websites, 98% did not have IPV resources or education. Only 6 clinics provided IPV-specific resources, such as counseling, community help organizations, or patient education. Only 2 websites had resources that were easily accessible within 3 clicks of the main webpage, while the others required deeper search tools. IPV resource availability did not differ significantly by clinic type or geographic region (p=0.56).
CONCLUSIONS: There is a significant gap in the availability of resources and patient education about IPV on fertility clinic websites. IPV is a public health issue that affects 1 in 3 women, yet it remains under-recognized and under-reported[1]. Clinic websites may serve as a preliminary tool for delivering education and support resources.
IMPACT STATEMENT: Integrating IPV resources into existing fertility clinic websites can increase awareness, facilitate earlier identification, and improve mental health support for patients.
SUPPORT: None
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PATIENT CENTERED CARE (4 OF 6)

P-419 1:30 PM Tuesday, October 27, 2026

PILOT OF A PATIENT-FACING LARGE LANGUAGE MODEL CHATBOT WITH ELECTRONIC HEALTH RECORD ACCESS TO ENHANCE HEALTH LITERACY IN REPRODUCTIVE ENDOCRINOLOGY AND INFERTILITY. Florence F. Heinkelein, B.Sc.[1], Emily H. Frisch, M.D.[2], Arian Khorshid, MD[2], Lukas Kollmer, M.Sc.[1], Lusine Aghajanova, MD, PhD[3] and Paul Schmiedmayer, PhD[1], [1]Division of Computational Medicine, Department of Medicine, Stanford School of Medicine, Stanford, CA, [2]Stanford University School of Medicine, Stanford, CA, [3]Division of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gynecology, Stanford University, Stanford, California, Sunnyvale, CA

OBJECTIVE: Patients undergoing fertility treatment often struggle to interpret complex medical information, resulting in limited health literacy and repeated questions to the clinical team. We evaluated whether a large language model (LLM) chatbot with structured electronic health record (EHR) access improves self-rated reproductive health literacy and is rated accurate and safe on physician review.
MATERIALS AND METHODS: Single-arm prospective pilot in REI patients in a large academic setting (n=10 enrolled; n=8 with successful chatbot EHR retrieval and analyzed). IRB approval was obtained. Each participant completed an 18-item reproductive health-literacy questionnaire before and after a session with an iOS LLM chatbot that retrieves the user's FHIR–formatted EHR (labs, procedures, medications, clinical notes) and answers in patient-friendly language. Pre-items used a 4-point agreement scale (1=Strongly Disagree, 4=Strongly Agree); post items a 4-point frequency scale (1=Always, 4=Never), inverted so 4=highest literacy on both. Patients rated each answer for effectiveness (1=very, 5=not). Two REI physicians scored every response on 13 1–5 Likert dimensions (e.g., scientific consensus, harm, correct/incorrect recall, helpfulness, captures intent). Means, per-item deltas, and inter-rater agreement (Cohen's quadratic-weighted κ) were computed.
RESULTS: Across 8 patients with successful retrieval (median 11 chat questions, range 7–14), mean self-rated literacy rose 3.49→3.67 (Δ=+0.18); 6/8 improved, 1 at ceiling, 1 declined slightly. Largest item gains were knowledge items: hormone-level interpretation (Δ=+0.50), lifestyle changes (Δ=+0.50), and maintained lifestyle changes (Δ=+0.38). Patients rated chatbot effectiveness highly (cohort range 1.00–2.00; 3/8 at optimum 1.00). On physician review of 161 question-answer pairs across two REI raters (mean quadratic κ=0.89, range 0.56–1.00), means were favorable: scientific consensus 4.79/5, correct recall 4.84/5, correct reasoning 4.77/5, captures intent 4.69/5, helpfulness 4.32/5; harm 1.09/5, incorrect recall 1.15/5, bias 1.04/5. Most-asked themes were medications, IVF procedure details, and lab results.
CONCLUSIONS: A LLM chatbot with EHR access generated responses two REI physicians independently rated as accurate, scientifically aligned, and low-harm with substantial-to-almost-perfect agreement, while capturing patient intent grounded in each user's EHR. Self-rated reproductive health literacy improved directionally, with the largest gains on items the chatbot is well suited to explain. Together, these findings demonstrate good LLM response quality, strong context awareness, and support extending this work to a larger powered study.
IMPACT STATEMENT: REI care generates dense, time-sensitive information that patients frequently relay back to clinicians for clarification. A EHR-connected chatbot can deliver accurate, individualized explanations directly to patients, improving understanding of treatment and reducing message burden on the clinical team while supporting more meaningful in-clinic encounters.

These authors share first authorship: F.H., E.F.

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P-420 1:45 PM Tuesday, October 27, 2026

HEALTHCARE PROFESSIONALS' PERSPECTIVES ON EARLY PREGNANCY INFORMATION PROVISION AND THE ROLE OF DIGITAL HEALTH AND ARTIFICIAL INTELLIGENCE: A UK SURVEY STUDY. Stephanie Gorgievska, MBBS BSc (Hons) MRCOG[1], Timothy Bracewell-Milnes, MBBS BSc MRCOG PhD[2] and Yau Thum, MB. BAO. Bch. DFFP. MD.[3], [1]Bournemouth University, London, United Kingdom, [2]Lister Fertility Clinic, London, United Kingdom, [3]Lister Fertility Clinic, HCA UK, United Kingdom

OBJECTIVE: To evaluate healthcare professionals' perspectives on first-trimester information provision, attitudes toward mobile health (mHealth) and artificial intelligence (AI), and factors influencing recommendation of pregnancy apps in the first trimester
MATERIALS AND METHODS: A cross-sectional online survey of UK healthcare professionals involved in pregnancy care was conducted.Survey domains included perceived patient concerns, adequacy of current early pregnancy care, challenges in information provision, attitudes toward mHealth and AI, and perceived barriers to implementation. Data were analysed descriptively using Likert scale responses. Associations with app recommendation were analysed using chi-square testing and logistic regression.
RESULTS: 123 healthcare professionals responded, 85% provided direct care to women in the first trimester. Only 6% felt current care before the booking appointment provided sufficient support. Limited consultation time, information overload, online misinformation, and lack of first trimester specific digital resources were commonly identified challenges. Although 78% selected app recommendations as appropriate for first-trimester information provision, only 30.1% currently recommend pregnancy apps. Confidence in assessing app quality was strongly associated with app recommendation: clinicians with moderate/high confidence were more likely to recommend apps than those with low/uncertain confidence (52.2% vs 12.3%, p<0.01; OR 7.79, 95% CI 2.92–20.76). This remained significant after adjustment for profession (AOR 8.59, 95% CI 3.10–23.82, p<0.01). Clinicians who rated lack of clinical validation as a major barrier were less likely to recommend apps (20.6% vs 48.6%, p<0.01), as were those identifying lack of professional guidance as a major barrier (22.5% vs 46.9%, p<0.01). If clinically validated, 75% reported being very or extremely comfortable with an AI-assisted pregnancy app. AI-assisted features were viewed as appropriate, particularly for information simplification and triage. Significant concerns were identified regarding accuracy, safety, and patient misunderstanding, with >70% reporting concern. Clinical validation (87%), safety-netting (93%), and access to healthcare professionals (91%) were identified as essential.
CONCLUSIONS: Healthcare professionals recognise early pregnancy as a period of high information need but limited support. There is substantial openness to mHealth and AI-assisted tools but confidence in app quality is low, and concerns regarding safety, accuracy, and accountability remain prominent. These findings highlight the need for clinically validated and clearly governed mHealth solutions in early pregnancy care, with potential implications for early pregnancy outcomes and patient safety.
IMPACT STATEMENT: This study identifies an implementation gap limiting digital support in early pregnancy: clinicians are receptive to mHealth and AI, but require validated, transparent, safety-netted tools before recommending them. Addressing these barriers is essential to enable safe integration of mHealth into a persistently under-supported stage of pregnancy.

P-421 2:00 PM Tuesday, October 27, 2026

SIMPLE PROTOCOL NATURAL CYCLE FROZEN EMBRYO TRANSFER USING LH AS AN INDICATOR ACHIEVES BETTER CLINICAL OUTCOMES COMPARED TO HORMONE REPLACEMENT CYCLE. Aisaku Fukuda, M.D., PH.D.[1], Hiroshi Matsumoto, B.S.[2] and Yoshiharu Morimoto, M.D., Ph.D.[3], [1]IVF Osaka Clinic, Higashiosaka City, Osaka, Japan, [2]IVF Osaka Clinic, Osaka, Japan, [3]HORAC Grand Front Osaka clinic, Osaka, Japan

OBJECTIVE: Frozen embryo transfer has increased substantially. However, the optimal endometrial preparation has been a controversy. Either natural ovulation cycle (NC) or hormone replacement cycle (HRC) is used, but HRC is preferred to NC because of established protocols and adjustability of convenient timing for embryo transfer (ET). On the other hand, NC is often avoided due to frequent monitoring and confirmation of ovulation and P4 rises. The present study was investigated whether simple method NC frozen ET (sNC) using LH value as an indicator without confirming ovulation and P4 rises achieved identical clinical outcomes compared to HRC.
MATERIALS AND METHODS: A total of 9,476 frozen-thawed single blastocyst transfers between 2013 and 2024 were analyzed to evaluate sNC (n=6068) and HRC (n=3408) on the rates of clinical pregnancy (CPR), pregnancy loss (PL), and live birth (LBR). Resulting live births (n=3,219) were further analyzed about pregnancy induced hypertension (PIH), gestational diabetes mellitus (GDM), placenta previa (PP), placenta accreta (PA), and atonic bleeding (AB). Standard E/P protocol was used for HRC. In sNC, serum LH was measured at 18 mm of follicle diameter. When LH was 15 IU/L or higher, P4 suppository started next day, but LH<15 IU/L, P4 supp. started 2 days later. In both cases, HCG was administered on the day of LH measurement. P4 supp. administered for 5 days and ETs were performed on day 5 of P4 administration. Ovulation was not confirmed neither serum P4 measurement. Multivariable logistic regression with Generalized Estimating Equation models was employed to account for multiple cycles per patient. Models were adjusted for relevant clinical covariates, including maternal age, BMI, obstetric history, endometrial thickness at ET, and blastocyst morphological grades, with sNC serving as the reference group.
RESULTS: Although CPR were comparable between sNC and HRC (45.1% vs 43.3%; aOR 1.05; P for aOR=0.229), sNC was associated with a significantly lower risk of PL (10.1% vs 11.2%; aOR 0.863; P for aOR=0.041). Consequently, sNC demonstrated a significantly higher LBR (35.0% vs 32.1%; aOR 1.13; P for aOR=0.008). Regarding perinatal safety, a significantly lower risk of PIH was observed in sNC (6.4% vs 10.0%; aOR 0.690; P for aOR=0.009). Furthermore, sNC was associated with a lower incidence of PA (1.5% vs 3.6%; aOR 0.428; P for aOR<0.001) and AB (3.6% vs 6.6%; aOR 0.560; P for aOR<0.001). No significant differences were observed in the risks of either GDM (4.9% vs 4.8%; aOR 1.11; P for aOR=0.535) or PP (2.0% vs 1.9%; aOR 1.06; P for aOR= 0.826).
CONCLUSIONS: Endometrial preparation of sNC achieved higher sustained pregnancy with less perinatal complications compared to HRC. Simple natural cycle frozen embryo transfer protocol using serum LH as an indicator was more effective than HRC regimen in terms of achieving a healthy live birth safely, and reduced the burden not only on patients but also on medical care personnel.
IMPACT STATEMENT: These findings suggest that, sNC should be not only easy for either medical side or patients, but also efficient strategy to optimize clinical outcomes of frozen embryo transfer.
SUPPORT: No

P-422 2:15 PM Tuesday, October 27, 2026

EVALUATION OF FIRST TRIMESTER CONTENT IN MOBILE HEALTH APPLICATIONS FOR PREGNANCY AVAILIBLE IN THE UNITED KINGDOM: A SYSTEMATIC APP REVIEW. Stephanie Gorgievska, MBBS BSc (Hons) MRCOG[1], Yau Thum, MB. BAO. Bch. DFFP. MD.[1] and Timothy Bracewell-Milnes, MBBS BSc MRCOG PhD[2], [1]Lister Fertility Clinic, HCA UK, United Kingdom, [2]Lister Fertility Clinic, London, United Kingdom

OBJECTIVE: To systematically evaluate the coverage, accuracy, quality, functionality, and privacy features of freely available mobile health (mHealth) pregnancy applications (apps) in the United Kingdom, with a specific focus on first trimester content
MATERIALS AND METHODS: A three-stage systematic app review was conducted following PRISMA guidelines. Stage 1: pregnancy apps were identified via Google Search, ChatGPT, Apple App Store, and Google Play Store through real-world consumer discovery pathways. A total 507 apps were identified; 373 unique apps were screened and 72 met full inclusion criteria. Stage 2: a researcher-developed 65-item First Trimester Content Checklist, mapped to NICE, NHS and RCOG guidelines and validated by early pregnancy experts, was applied to all 72 eligible apps. Apps were classified into content tiers: A (≥75%), B (55–74%), C (35–54%), D (<35%). Stage 3: apps meeting Tier A or B underwent multidimensional evaluation using the Mobile App Rating Scale (MARS), IMS Institute for Healthcare Informatics Functionality Framework, and a researcher-developed Privacy and Security Checklist.
RESULTS: Mean first timestep content coverage across 72 apps was low 23.6±18.2% (median 18.1%). Most apps (77.8%, n=56) scored Tier D (<35% coverage); only 6 apps (8.3%) achieved Tier A/B. Domain analysis demonstrated highest coverage in symptom recognition (30.6%) and lowest in inclusivity (4.7%). Among top performing apps, mean MARS score was 4.04, higher than prior evaluations (2020 mean: ~3.0), reflecting improvements in app design over time. Functionality across apps was moderate (mean IMS score 6.5/11). A moderate inverse association was observed between MARS usability and first trimester content coverage (Pearson r≈ –0.48). App store star ratings showed no meaningful correlation with MARS scores (r=0.35, p=0.49) or content coverage (r=0.005, p=0.99). Privacy and transparency features were common across apps, but advanced security measures were largely absent.
CONCLUSIONS: Most freely available UK pregnancy apps provide inadequate and non-UK guideline aligned information for the first trimester. App store ratings do not reflect clinical quality, and high usability does not predict comprehensive or accurate clinical content. A minority of apps (2 out of 72) met thresholds suitable for clinical recommendation, and none adequately address inclusivity. These findings highlight the need for coordinated input from clinicians and developers, and improved regulation of pregnancy mHealth apps.
IMPACT STATEMENT: This is the first systematic review to specifically evaluate first trimester content in UK pregnancy mHealth apps and it identifies a critical concern regarding the quality of first trimester content. As early pregnancy is a period of limited clinical contact and high information need; availability of poorly regulated pregnancy apps may expose patients to inadequate and unsafe guidance with potential implications for pregnancy outcomes

P-423 2:30 PM Tuesday, October 27, 2026

PUBLIC INTEREST IN ANALGESIC USE DURING PREGNANCY BEFORE AND AFTER THE 2025 AUTISM– ACETAMINOPHEN ANNOUNCEMENT: A GOOGLE TRENDS ANALYSIS. Alexandra M Herweck, MD, MPH[1,2] and Allison S Komorowski, M.D.[3], [1]Houston, TX, [2]Northwestern University, Chicago, IL, [3]Northwestern University Feinberg School of Medicine

OBJECTIVE: To examine changes in public interest regarding analgesic use during pregnancy, as reflected by Google search trends, before and after the September 2025 autism-acetaminophen announcement, focusing on Tylenol, acetaminophen, Advil, and aspirin.
MATERIALS AND METHODS: Google Trends was queried for "Tylenol pregnancy," "Acetaminophen pregnancy," "Advil pregnancy," and "Aspirin pregnancy" within the U.S. from June 22 to October 11, 2025, encompassing a 3-month pre-announcement and a 3-week post-announcement period. A focused two-week pre/post sub-analysis was also

conducted. Google Trends normalizes data so that a relative search volume (RSV) of 100 represents peak popularity for that term within the selected interval; repeated short-interval searches from the same user are excluded. Daily RSVs were compared pre- and post-announcement periods using the Mann-Whitney U test, and effect size was calculated by $r = |z| / \sqrt{N}$. Because only publicly available, de-identified data were used, this study qualified for institutional review board exemption.
RESULTS: Comparing the 3-month pre-announcement period to the 3-week post-announcement period, mean U.S. search interest for "Tylenol pregnancy" increased from an average RSV of 3.5 to 24.1 (+589%, $p < .00001$), peaking at 100 on September 24, 2025. Search interest for "Acetaminophen pregnancy" showed a similar pattern, increasing more than fourteen-fold, whereas "Aspirin pregnancy" rose only modestly (1.5-fold). "Advil pregnancy," which showed negligible activity pre-event, reached a peak RSV of approximately 5. A second, smaller, transient increase was also observed on September 6th, 2025, when "Tylenol pregnancy" and "Acetaminophen pregnancy" rose to RSVs of 32 and 6, respectively, while "Aspirin pregnancy" and "Advil pregnancy" remained stable.
CONCLUSIONS: Two distinct but short-lived peaks in search activity corresponded with major communication events: an initial rise on September 6, 2025, when national news outlets reported that a forthcoming government report would link acetaminophen use in pregnancy to autism, and a larger, more abrupt surge following the September 22nd presidential and HHS announcement. Both peaks declined within days, suggesting that public interest was driven by immediate media exposure rather than sustained concern.
IMPACT STATEMENT: High-profile public statements, even when unsupported by evidence, can trigger intense but transient population-level health information seeking. Continued evidence-based communication by clinicians and medical organizations is essential to contextualize such effects and maintain public trust.
SUPPORT: Not applicable.
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PATIENT CENTERED CARE (5 OF 6)

P-425 1:45 PM Tuesday, October 27, 2026

THE EFFECT OF CALM MUSIC ON ANXIETY LEVEL DURING HYSTEROSALPINGOGRAPHY (HSG): A QUALITY IMPROVEMENT STUDY.
Dr. Begum Mathyk, M.D.[1], Papri Sarkar, MD[2], Rachel Sprague, M.D.[3], Saioa Torrealday, MD[4], Celso P Silva, M.D., M.SC.[5], Shayne Plosker, M.D.[6] and Anthony N Imudia, M.D.[1], [1]University of South Florida Morsani College of Medicine, Tampa, FL, [2]Shady Grove Fertility Center, Tampa, [3]Tampa, FL, [4]Shady Grove Fertility Center, Tampa, FL, [5]Shady Grove Fertility, Tampa, FL, [6]Shady Grove Fertility, Brandon, FL

OBJECTIVE: To evaluate whether patient preference for calm music during hysterosalpingography (HSG) has any effect on procedural anxiety and pain.
MATERIALS AND METHODS: This prospective quality improvement study included consecutive patients undergoing HSG at a large IVF clinic. Patients were offered calm music during the procedure and completed pre- and post-procedure assessments. Anxiety level was measured with a validated 6 item State-Trait Anxiety Inventory (STAI-6). Pain was assessed using a visual analog scale (VAS). Baseline demographics including age, BMI, history of anxiety, anxiety medication use, HSG premedication use, and prior HSG, were collected. Data distribution and normality test were performed by Shapiro-Wilk test. Paired comparisons of pre- and post-procedure anxiety and pain scores were performed using paired t-tests or Wilcoxon signed-rank tests, as appropriate. GraphPad Prism software used for data analysis and statistical significance was defined as $p<0.05$.
RESULTS: All patients were offered the option to listen calm music during HSG. A total of 100 patients were included, of whom 97**(97%)** elected to listen music. The mean age was 34.81±4.45 years and mean BMI was 28.66±7.06. STAI-6 scale analysis reported significant change across multiple questions. "I feel calm" response increased from 2.5±0.89 to 3.36±0.8 ($p<0.0001$). "I am tense" response decreased from 2.34±0.96 to 1.48±0.67 ($p<0.0001$). "I am relaxed" response increased from 2.21±0.85 to 3.05±0.88 ($p<0.0001$). "I am worried" response decreased from 2.11±0.96 to 1.34±0.67 ($p<0.0001$). The pre-procedure pain score was 0 and mean post-procedure VAS score was 1.52±1.64 ($p<0.0001$). Post-procedure VAS score was 0 in 41% and 2 in 26.8% of patients, indicating overall good procedural tolerance. Among patients who listened to music, 94 (96.9%) reported it was helpful and would choose to use it again. All procedures were successfully completed.
CONCLUSIONS: Among patients who elected to listen to music, calm music during HSG was associated with reduced procedural anxiety and a high preference for music, with most patients indicating they would choose it again. This simple, non-invasive intervention may improve patient experience without additional cost or risk.
IMPACT STATEMENT: Offering music as an option during HSG represents a simple, non-invasive strategy to improve patient centered care and reduce procedural anxiety in IVF clinics.

P-426 2:00 PM Tuesday, October 27, 2026

IS AGE 37 A BIOLOGICAL TURNING POINT? OOCYTE REQUIREMENTS FOR ONE BLASTOCYST.
Olga Kesidou, MSc[1], Esther Kadoch, BSc[1], Mélanie Chow-shi-Yée, Ph.D.[1], Eric Himaya, M.D.[2], Dr. Simon Phillips, Ph.D.[3] and Isaac-Jacques Kadoch, M.D.[4], [1]Clinique Ovo, [2]OVO Clinic, Montreal, QC, Canada, [3]OVO FERTILITY, Montreal, QC, Canada, [4]Ovo Clinic, Montreal

OBJECTIVE:
Female age is a key determinant of oocyte competence and IVF success, yet the number of oocytes required to achieve a transferable blastocyst remains poorly defined across age groups. This uncertainty limits patient counseling and may contribute to overly aggressive stimulation strategies. This study aimed to define age-specific oocyte requirements and identify potential non-linear changes in reproductive efficiency.
MATERIALS AND METHODS:
This retrospective cohort study included 7,810 IVF cycles performed at a single fertility center in Canada between 2018 and 2025. Cycles included both conventional IVF and ICSI using autologous oocytes with either partner or donor sperm. Patients were stratified into the following age groups: <35, 35–37, 38–39, 40–41, and ≥42 years. A multivariable generalized estimating equation (GEE) model was used to account for repeated cycles per patient. Blastocyst counts were modeled using Poisson regression with an offset for the number of oocytes, and predicted blastocyst yield per oocyte across age was derived. The inverse of predicted yield was used to estimate the number of oocytes required per blastocyst.
RESULTS:
Advancing age was associated with a progressive decline in ovarian response and blastocyst formation. Median oocyte yield decreased from 16.0 to 7.0 while blastocyst number decreased from 4.0 to 1.0 across age groups. The oocyte-to-blastocyst ratio increased from 3.93 to 5.77 reflecting declining efficiency. Model-based estimates identified a biological tipping point around age 37, with a stable requirement of 3.7–4.0 oocytes per transferable blastocyst up to this age, followed by a marked increase thereafter, reaching up to 8.5 oocytes in older patients.
CONCLUSIONS:
The number of oocytes required to achieve one transferable blastocyst remains stable until approximately age 37, after which a marked decline in biological efficiency is observed. These findings identify a critical transition point in reproductive efficiency, suggesting that IVF outcomes are driven not only by oocyte quantity but by age-dependent changes in oocyte competence. Importantly, this pattern may reflect the impact of individualized clinical strategies including tailored stimulation protocols and adjunct treatments which may partially mitigate the expected decline in reproductive potential. However, whether these findings are generalizable across clinical settings or reflect center-specific practices remains uncertain.
IMPACT STATEMENT:
These results support a personalized approach to IVF, integrating biological expectations with adaptive clinical management, while highlighting the need for external validation across diverse populations. This tipping point may represent a key moment for clinical decision-making in IVF.

P-427 2:15 PM Tuesday, October 27, 2026

FERTILITY KNOWLEDGE AND ITS INFORMATION SOURCES: THE MODERATING ROLE OF EDUCATIONAL ATTAINMENT.
Hoon Kim, MD, PhD[1], Sunyoung Kim, MD[2], Hyeyun Kim, MD[3], Jiyeon Han, MD[4], Soo Jin Han, M.D.[5], Hye Rin Choi, PhD[6] and Danbee Kang, PhD[6,7], [1]Seoul National University College of Medicine, Seoul, Korea, Republic of (South), [2]Seoul National University Hospital, Seoul, Korea, Republic of (South), [3]Seoul, South Korea, [4]Seoul National University Hospital, Seoul, South Korea, [5]CHA Fertility Center Seoul Station, Seoul, [6]Center for Clinical Epidemiology, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea, Republic of (South), [7]Sungkyunkwan University, Seoul, Korea, Republic of (South)

OBJECTIVE:
To examine whether educational attainment moderates the relationship between primary information source and fertility knowledge among Korean women undergoing fertility treatment.
MATERIALS AND METHODS:
This study utilized data from the FLOW (Fertility treatment and LOng-term impact on Women's health) cohort, initiated in South Korea in 2025. A total of 582 infertile women undergoing IVF/ICSI cycles completed a self-administered questionnaire. Fertility knowledge was assessed using the validated Cardiff Fertility Knowledge Scale (CFKS). Participants were categorized by their primary source of fertility-related information: healthcare providers (reference), official websites/government sources, artificial intelligence (AI)/applications, social media/portals/YouTube, and acquaintances/print media. Educational attainment was classified as high school or below (reference), college graduate, or postgraduate.
Multivariable linear regression models including interaction terms between primary information source and educational attainment were fitted using robust standard errors. Models were adjusted for age, household income, employment status, and prior egg retrieval experience. Adjusted marginal predictions were estimated for all subgroups.
RESULTS:
Participants were predominantly aged ≥40 years (46.1%), college-educated (72.3%), and legally married (81.6%). The majority (65.0%) reported healthcare providers as their primary information source, followed by social media (17.9%) and AI/applications (10.8%).After adjustment for covariates, use of AI/applications as the primary information source was associated with significantly higher knowledge scores than the reference group (coefficient = 5.88, P = 0.004). Social media use was associated with significantly lower knowledge scores among participants with a high school education or below (coefficient = −12.08, P = 0.027); however, this association was not observed among college graduates or those with postgraduate education (interaction coefficients = 11.72 [P = 0.040] and 14.60 [P = 0.019], respectively). None of the covariates was independently associated with infertility knowledge.
CONCLUSIONS:

Educational attainment significantly moderates the association between social media use and fertility knowledge. Lower-educated women relying on social media demonstrate substantially poorer knowledge, suggesting vulnerability to misinformation. AI-based sources yield consistently higher knowledge across education levels, representing a potentially equitable information channel. Tailored educational strategies for lower-educated women relying on social media are warranted.
IMPACT STATEMENT:
This study highlights the interplay between information source and health literacy in shaping fertility knowledge, supporting targeted digital health interventions.
FINANCIAL SUPPORT:
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SUPPORT: This research was supported by the National Institute of Health (NIH) research project (Project No.2025ER060800) of South Korea.

P-428 2:30 PM Tuesday, October 27, 2026

USE OF "CONCEIVE AI," A DOMAIN-RESTRICTED LARGE LANGUAGE MODEL, AND ITS ASSOCIATION WITH PATIENT EXPERIENCE IN FERTILITY CARE. Thomas P Luke, MD, MPH[1], Zachary S. Anderson, M.D.[2] and David A Schirmer III, M.D.[2], [1]Atlanta, GA, [2]Emory University School of Medicine, Division of Reproductive Endocrinology and Infertility, Atlanta, GA

OBJECTIVE:
Artificial intelligence (AI) tools are increasingly used in clinical practice, yet limited data exist on patient use of AI in reproductive medicine. "Conceive AI" is a domain-restricted, fertility-focused large language model designed to provide trusted educational support to patients at an academic reproductive endocrinology and infertility center. Its knowledge base prioritizes society guidance (including ASRM and ESHRE) and is supplemented by high-quality peer-reviewed literature to ensure evidence-based responses. This study evaluates patient use of Conceive AI and its association with satisfaction, anxiety, and perceived access to information during in vitro fertilization (IVF) treatment.
MATERIALS AND METHODS:
A cross-sectional survey study was conducted among adult patients undergoing IVF treatment at a single academic fertility center between March 2026 and April 2026. Patients were recruited during monitoring visits throughout their IVF cycle and completed an anonymous survey assessing demographic characteristics, prior IVF experience, comfort with technology, perceived access to fertility information, and treatment-related anxiety. Participants were stratified by self-reported Conceive AI use during their IVF cycle. Users completed Likert-scale questions on ease of use, information access, anxiety reduction, and likelihood of recommending the tool. Non-users identified reasons for non-use and alternative sources of fertility information. Descriptive statistics were used to characterize utilization patterns. Likert-scale responses were compared between groups using Mann-Whitney U test. Results are exploratory given the small sample size. Data collection is ongoing.
RESULTS:
A total of 25 patients completed the survey, including 7 Conceive AI users (28.0%) and 18 non-users (72.0%). Among users, 85.7% agreed that Conceive AI was easy to use, 71.4% agreed it improved access to fertility information, 71.4% reported reduced treatment-related anxiety, and 85.7% would recommend it to another IVF patient. Compared with non-users, users reported similar perceived access to treatment information (42.9% vs 100.0%, p=0.078) and higher treatment-related anxiety (85.7% vs 50.0%, p=0.015). Among non-users, reasons for non-use included lack of awareness of the tool (77.8%) and preference for direct clinician communication (22.2%).
CONCLUSIONS:
Patients who used Conceive AI reported high satisfaction; however, uptake is limited at this time. The relationship between AI use and treatment anxiety warrants further exploration. Adoption barriers centered on awareness and preference for direct clinician communication rather than usability. Differences in perceived access to information were not statistically significant.
IMPACT STATEMENT:
Fertility-specific AI tools may improve patient education and address informational gaps during IVF care. These findings support future implementation of responsibly designed AI tools in fertility practice.

PATIENT CENTERED CARE (6 OF 6)

P-429 1:30 PM Tuesday, October 27, 2026

EVIDENCE-BASED DEVELOPMENT OF A FERTILITY-SUPPORTING SMARTPHONE APPLICATION: CLINICAL RELEVANCE AND POTENTIAL VALUE FOR IMPROVING FERTILITY TREATMENT. Ryo Yokomizo, MD., PhD.[1], Nozomu Yanaihara, MD., PhD.[2] and Hiroshi Kishi, MD., PhD.[2], [1]The Jikei University, Tokyo, Japan, [2]The Jikei University School of Medicine, Tokyo, Japan

OBJECTIVE: To develop a scientifically grounded fertility-supporting smartphone application, we have undertaken a series of clinical studies. Here, we integrate findings from these studies to define the rationale for the present project and highlight its clinical relevance and potential value.
MATERIALS AND METHODS: To evaluate the utility of the smartphone application in improving fertility treatment–related literacy, we conducted a randomized controlled pretest–posttest study. Participants were allocated to either an intervention or a control group using stratified randomization. The intervention consisted of a one-week, smartphone application–based provision of fertility-related information, whereas the control group received general women's healthcare information. The effectiveness of the intervention was evaluated by comparing posttest scores between groups and the change in scores from pretest to posttest. Test scores were compared between groups using the Mann–Whitney U test. Changes in test scores from pretest to posttest within each group were assessed using the Wilcoxon matched-pairs signed-rank test. Between-group differences in score changes were also evaluated to assess the intervention's effectiveness. Using the same platform, we recruited participants nationwide and collected clinically relevant information typically obtained during a medical checkup, including demographic characteristics, medical history, and results of fertility examinations, such as hormone profiles and semen analysis. In addition, we captured partner-related information through participant reporting and obtained detailed data on the most recent fertility treatment.
RESULTS: The intervention group demonstrated a significantly higher posttest mean score than the control group ($P = 0.0017$). Moreover, the increase from pretest to posttest was significantly greater in the intervention group ($P < 0.001$). As a data collection platform, the application enabled rapid nationwide recruitment, enrolling over 13,000 participants within one month. It facilitated the acquisition of clinically relevant information for fertility treatment, including partner-related data reported by participants. This approach provided an expanded understanding of real-world fertility treatment, capturing detailed information on fertility testing, ovarian stimulation protocols, and pregnancy outcomes across different treatment modalities.
CONCLUSIONS: Our smartphone application functions as a dual-purpose fertility-support platform, enhancing fertility treatment-related literacy while enabling real-time information management for both clinicians and couples. These findings highlight its potential to improve patient understanding and support more informed, coordinated fertility treatment.
IMPACT STATEMENT: A smartphone application provides a scalable digital platform for real-time capture of patient-derived data, effective educational interventions, and rapid large-scale analysis. This integrated approach enables timely, data-driven, and personalized interventions, with broad implications for optimizing fertility treatment.
SUPPORT: The authors received no financial support for the research.

P-430 1:45 PM Tuesday, October 27, 2026

PERSPECTIVES ON PRECONCEPTION COUNSELING: A NATIONAL SURVEY. Sofia Rachad, MD, MS[1], Heather Link, MD[2], James Shelton, MS[1], Miranda Berkebile, BS[3] and Sydney Johnson, BA[3], [1]University At Buffalo Jacobs School of Medicine, Buffalo, NY, [2]Golisano Children's Hospital of Buffalo, [3]Jacobs School of Medicine and Biomedical Sciences

OBJECTIVE: To assess differences in perspectives on preconception counseling (PCC) between Reproductive Endocrinology Infertility (REI) and Maternal Fetal Medicine (MFM) physicians, including how they perceive the impact on patient outcomes and factors that influence their approach to preconception counseling
MATERIALS AND METHODS: A cross-sectional survey was distributed to REI and MFM physicians practicing in the United States between August and October 2025. The survey was distributed to REI and MFM fellowship program directors via email using an anonymous link, as well as shared via subspecialty social media groups. The survey assessed perspectives on preconception counseling, perceived barriers, impacts on patient care, and areas for improvement. Demographics and practice characteristics were collected. Chi-square tests and Fisher's exact tests were used to compare categorical variables between groups. Wilcoxon rank-sum tests were used to compare ordinal variables between groups.
RESULTS: A total of 91 physicians completed the survey (24 REI, 67 MFM; response rate 46.0%). REI physicians were more likely to consider PCC extremely important for pregnancy outcomes for patients with fertility concerns (71% vs. 27%, P 0.002). 75% of REI physicians believed that PCC should be routine for any patient planning pregnancy via ART (75% vs. 36%, P 0.001). MFM physicians were more likely to believe that PCC should be routine for high-risk patients only (52% vs. 21%, P 0.001). MFM physicians were more likely to feel very confident in their PCC abilities (77% vs. 42%, P<0.001). Both groups agreed that PCC should be standardized across specialties (66% vs. 79%, P 0.4). MFM physicians were more likely to spend more than 30 minutes on PCC (71% vs. 0%, P<0.001). REI physicians were more likely to select time constraints as one of the main barriers to delivering effective PCC (81% vs. 46%, P 0.005), while MFM physicians were more likely to select lack of patient awareness or interest in PCC (65% vs. 33%, P 0.012). MFM physicians were more likely to think that differences in PCC between both subspecialties have a negative impact on patient care, causing confusion for patients (28% vs. 4.8%, P 0.033). Both groups have observed similar advantages and challenges in patient care with regards to differences in PCC between subspecialities.
CONCLUSIONS: Significant differences exist in preconception counseling perspectives between REI and MFM physicians, reflecting their distinct clinical expertise. These findings highlight opportunities for collaborative care models and standardized preconception counseling protocols that integrate both subspecialty perspectives.
IMPACT STATEMENT: Our study provides justification for developing standardized, interdisciplinary PCC protocols that can reduce patient confusion, optimize resource utilization, and ensure comprehensive counseling regardless of which subspecialty a patient encounters first.

P-431 2:00 PM Tuesday, October 27, 2026

WORDS THAT WOUND. 1st NLP/ML ANALYSIS OF 1,000+ INFERTILITY PATIENT REPORTS IDENTIFIES DISTINCT COMMUNICATION FAILURES BY PROVIDERS & SOCIAL CONTACTS. INSIGHTS FOR COMMUNICATION AND CLINICAL TRAINING. Steven Palter, B.A., M.D.[1], Joshua L Palter, BA[2] and Michele Lang Palter, J.D.[1], [1]Gold Coast IVF, Woodbury, NY, [2]University of Utah, Salt Lake City, UT

OBJECTIVE: Infertility patients frequently report feeling harmed by comments from providers and social contacts who intend to help, not to harm & the basis of these have

never been categorized. This study developed a novel NLP/machine learning methodology at scale to identify & classify harmful communication patterns. Spoken harms from providers are classified & contrasted with those from friends & family. Speaker-specific failure patterns are defined to better guide communication with infertility patients.
MATERIALS AND METHODS: Comments soliciting hurtful infertility statements were retrieved from patients on 3 social network platforms (n=1,010); 29 non-verbal excluded. Patients frequently described experiences rather than quoting statements directly so a new pipeline was created to extract actual comments. Words were scored by how distinctively they appeared across comments (TF-IDF vectorization). Two rounds of unsupervised ML (K-means then NMF) identified natural word groupings. Manual review refined to nine categories. Comments classified by matching known harmful phrases (regex)& those not directly matched assigned to the closest category by vocabulary (cosine similarity). Chi-square, Cramer's V, BH-FDR, &multinomial regression tested category x source. Independent AI analysis (BERT) was run with no predefined categories to confirm findings were not classification artifacts.
RESULTS: 9 unique patterns of harmful comments were identified (Tactless/Cruel Communication, Weight/Age Shaming, Minimisation/Invalidation, Religious/Fate, Blame/Stigma, Gaslighting, Platitudes/Unsolicited Advice, Insensitive Comparison, & Give Up). The category differed significantly by source. Providers responsible for nearly all gaslighting (dismissive, gatekeeping clinical language) at 15.2% vs. 0.2% from social contacts (p<.001), and Weight/Age Shaming (17.9% vs. 6.4%; p<.001), harms of clinical authority & body-focused judgment. Social contacts dominated Religious/Fate (16.2% vs. 7.5%; p<.001), Blame/Stigma (15.7% vs. 7.1%; p<.001), Platitudes (13.8% vs. 5.6%; p<.001), and Insensitive Comparisons (5.9% vs. 2.8%; p=.009). The source effect was significant (chi-square(8)=142.9, p<.001, Cramer's V=0.382; 6/9 categories confirmed after FDR correction). "Independent AI clustering reproduced same provider-vs-social split (Cramér's V=0.428–0.501). There was no social platform effect (p=.349).
CONCLUSIONS: Infertility patients are harmed by language of providers and social contacts even when trying to help. The harms are fundamentally different: providers dismiss & shame; social contacts moralize, judge, & offer unwanted comfort. This study defines the categories & sources for the first time, provides a new methodology & offers an approach for specific training and communication.
IMPACT STATEMENT: Providers and social contacts benefit from education based on identifying the 9 communication categories. Provider training must target dismissive & weight-focused language. Social contacts to avoid fate or blame-based, & platitude framings. These are different harms that need different solutions.
SUPPORT: none

P-432 2:15 PM Tuesday, October 27, 2026

FAMILY TIES: TRENDS IN ASSISTED REPRODUCTIVE TECHNOLOGY (ART) AMONG SIBLING DYADS. Gemma Nicole St Louis, MD, MPH[1], Brady J Gelvin, M.D.[2], Carlos M Parra, MD[2], Jacquelyn Shaw, M.D.[2], Shannon DeVore, MD[2], James A Grifo, MD, PHD[2], Mary Elizabeth Fino, M.D.[2] and Jennifer K Blakemore, MD, MSCI[2], [1]NYU Langone Health, New York, NY, [2]NYU Langone Fertility Center, New York, NY

OBJECTIVE:
Although increased fertility care access seems to influence family discussions and referrals, there is a lack of data characterizing these trends. This study examines demographics and ART utilization among sibling dyads.
MATERIALS AND METHODS:
This is a retrospective cohort study of sibling dyads who received care at our center from 2016-2026. Data included age at initial visit, anti-Müllerian hormone (AMH) level, race/ethnicity, diagnosis, genetic carrier results, coverage status, ART treatments, cumulative number of oocytes retrieved, and embryo transfer outcomes. Primary outcome was reason for consultation and infertility rate between sibling dyads. Statistics included McNemar's, Wilcoxon signed rank and Fisher's exact tests (p<0.05 was significant).
RESULTS:
64 patients for a total of 32 sibling dyads were included, of which 5 were twin pairs. The cohort's median age at initial visit was 33 years [IQR: 31-35] and AMH 3.1 ng/mL [1.9-6.0]. Out of the 27 non-twin dyads, the older sibling presented first in 70% (n=19) of cases. Most identified as White (72%, n=46), non-Hispanic (88%, n=56), and had private insurance (91%, n=58). 63% (n=20) of dyads presented for the same reason (2 infertility and 18 fertility preservation). As of April 2026, 83% (n=53) of patients and 63% (n=20) of full dyads had undergone ART, though remaining siblings may still pursue treatment. 27 patients underwent oocyte freeze, 5 embryo banking, 10 in-vitro fertilization, 5 ovulation induction, and 6 a combination. 9 patients required PGT-M after genetic carrier results, including 2 out of 3 dyads sharing an X-linked condition and completing cycles that demonstrated 50% inheritance followed in siblings. The median cumulative oocytes retrieved was 35 [24-48]. Differences between dyads are shown in the table. A total of 21 patients underwent either ovulation induction or embryo transfer after ART for an overall live birth / ongoing pregnancy rate of 94% (16/17) in initial sibling vs 75% (3/4) in 2nd sibling (p=0.4).

	Initial sibling	2nd sibling	p-value
Age (years) n=32 dyads	33 [32-35]	32 [31-36]	0.9
AMH (ng/mL) n=31 dyads	2.9 [1.9-6.1]	3.1 [1.9-5.6]	0.8
Infertility rate	38% (12/32)	13% (4/32)	**0.04**
Cumulative oocytes retrieved n=20 dyads	37 [21-53]	35 [26-47]	0.8

Values as medians [IQR] or proportions (n)
CONCLUSIONS:
Over 60% of sibling dyads present to consultation for the same reason, with the majority seeking fertility preservation. The incidence of infertility appears higher in the initial sibling seeking fertility care. Larger studies are needed to further evaluate these trends.
IMPACT STATEMENT:
While infertility is multifactorial and typically not 'hereditary' for most patients, it may carry a genetic component and recognizing family trends in ART allow patients and clinicians to be more proactive with reproductive health among siblings.
SUPPORT: N/a

P-433 2:30 PM Tuesday, October 27, 2026

FERTILITY INFORMATION-SEEKING BEHAVIORS AMONG ADULTS OF REPRODUCTIVE AGE: A CROSS-SECTIONAL ANALYSIS. Sai Mummareddy, B.S.[1], Sarah Deepthi Ramaiah, PhD, MSEd[2], Amanda Adeleye, MD[3], Karampreet Kaur, MD[4], Shelby A Crants, MD[5] and Chevis N Shannon, DrPH, MBA, MPH, MERC[6], [1]The University of Tennessee Health Science Center, Memphis, TN, [2]American Society for Reproductive Medicine, Birmingham, AL, [3]The University of Chicago, Chicago, IL, [4]University of Pennsylvania, [5]Mass General Brigham, [6]ASRM, Birmingham, AL

OBJECTIVE: The goal of this study was to evaluate fertility information-seeking behaviors, source preferences, topic interests, self-reported comfort, and knowledge among reproductive-age adults, and to examine associations with age, gender, race, and education.
MATERIALS AND METHODS:
A cross-sectional survey was administered to 198 adults aged 18-42 in the U.S. The survey assessed information-seeking frequency, preferred information sources, fertility topics of interest, self-reported comfort discussing reproductive concerns, and fertility knowledge and beliefs. Also captured were demographic data and family-building stage. Analyses including chi-square tests, Mann-Whitney U tests for two-group ordinal comparisons by gender and race, and Kruskal-Wallis tests for multi-group age comparisons, were conducted in SPSS.
RESULTS:
Over 40% of respondents sought fertility information daily or weekly. Social media (62.1%), peer conversations (60.1%), and medical professionals (59.6%) were utilized at nearly equivalent rates, indicating informal digital channels carry comparable perceived utility to formal clinical consultation. Women sought information significantly more frequently than men (p=.004) and consulted medical professionals at far higher rates (65.7% vs. 13.0%, p<.001). Information-seeking intensified with age (p<.001) and active family-building status (p<.001), with 44.0% of those actively trying to conceive seeking information daily. White respondents demonstrated higher source utilization than Asian or Pacific Islander respondents across all nine sources (all p<.001), suggesting possible disparities in fertility health literacy rather than selective avoidance of specific channels. Respondents reported high interpersonal comfort with partners (81.8%) and medical providers (79.8%), but lower self-rated knowledge adequacy for causes and risk factors (61.1%) and prevention and treatment options (66.7%), indicating comfort in seeking help does not correspond to sufficient baseline fertility literacy.
CONCLUSIONS:
Fertility information-seeking is high-frequency and multifaceted, with informal digital channels and clinical sources having similar utility. Significant disparities by gender, age, and race demonstrate the need for targeted interventions to engage men, younger adults, and racially diverse populations across all domains of fertility health literacy.
IMPACT STATEMENT:
These findings reveal a critical gap between interpersonal comfort and reproductive health literacy and showcase disparities in fertility information access. Health-care providers and reproductive health professionals have an opportunity to improve health literacy rates among patient groups by prioritizing culturally responsive fertility education to address persistent inequities in reproductive health literacy.
SUPPORT: None

RECURRENT PREGNANCY LOSS (1 OF 2)

P-434 1:30 PM Tuesday, October 27, 2026

LYSINE ACETYLATION DYNAMICS IN SPERM CHROMATIN: A HIDDEN AXIS IN MALE PARTNERS OF IDIOPATHIC RECURRENT PREGNANCY LOSS PATIENTS. Lisa Goutami, Ph.D.[1,2], Soumya Ranjan Jena, Ph.D.[3] and Luna Samanta, Ph.D[4], [1]Cuttack, DELHI, India, [2]Redox Biology & Proteomics Laboratory, Department of Zoology and Centre of Excellence for Environment and Public Health, Ravenshaw University, Cuttack, India, [3]Redox Biology Laboratory, Cuttack, Odisha, India, [4]Redox Biology Laboratory, Department of Zoology, Ravenshaw University, Cuttack, Odisha, India

OBJECTIVE: Idiopathic recurrent pregnancy loss (iRPL), defined as ≥2 unexplained miscarriages, is increasingly linked to paternal factors. Subclinical sperm defects, namely, DNA damage, oxidative stress, and epigenetic alterations, that may impair early embryonic development. Therefore, the major objective of the present study is to perform comprehensive global lysine acetylome profiling of spermatozoa to investigate paternal molecular contributions and epigenetic dysregulation in cases of idiopathic recurrent pregnancy loss (iRPL).

MATERIALS AND METHODS: Spermatozoa were collected from male partners of iRPL patients (n = 25) and fertile controls (n = 25). Global lysine acetylome profiling was conducted using affinity enrichment coupled with high-resolution liquid chromatography–tandem mass spectrometry (LC–MS/MS). Data were analyzed using Gene Ontology (GO), Reactome, and Ingenuity Pathway Analysis (IPA). Key hub proteins identified via protein-protein interaction (PPI) networks were validated using immunoblotting.
RESULTS: We identified 3,262 lysine-acetylated proteins, with 291 showing significant differential expression (Log2 fold change, $p < 0.05$). Dysregulated proteins were prominently enriched in pathways governing chromatin remodeling, telomere maintenance, DNA repair, and oxidative stress regulation. Functional analysis revealed significant impairment in chromosome organization, histone deacetylase complexes, and centromeric nucleosome assembly. PPI network analysis identified HNRNPH1, HNRNPM, HNRNPK, and HNRNPU as key hub proteins, with HNRNPU emerging as a central regulatory node.
CONCLUSIONS: Altered acetylation patterns in chromatin-associated and antioxidant proteins suggest a mechanistic link between oxidative stress and defective chromatin packaging. This dysregulation likely compromises sperm genome stability, contributing to aberrant embryonic development.
IMPACT STATEMENT: This study shifts the paradigm of male infertility research by moving beyond traditional semen analysis to uncover a "hidden" epigenetic axis in idiopathic recurrent pregnancy loss (iRPL). By identifying specific lysine acetylation signatures, particularly the central regulatory role of HNRNPU. This research provides a molecular blueprint for how defective sperm chromatin packaging and oxidative stress contribute to pregnancy failure. These findings offer a dual-purpose breakthrough: they provide clinicians with potential high-precision biomarkers to diagnose "unexplained" paternal factors and establish a foundation for targeted epigenetic therapies designed to restore sperm genome stability and improve live birth rates for couples struggling with recurrent loss.

P-435 1:45 PM Tuesday, October 27, 2026

RECURRENT PREGNANCY LOSS IN WOMEN WITH POLYCYSTIC OVARY SYNDROME: THE ROLE OF METFORMIN ON REDUCING ADVERSE PREGNANCY OUTCOMES. Yasaman Sadeghi, MSc[1], Akanksha Kulshreshtha, BHSc, MBA, MD, FRCSC[1], Sony Sierra, B.S., M.D., M.SC.[2] and Ingrid Schwecht, BSc[1], [1]TRIO Fertility, Toronto, ON, Canada, [2]University of Toronto, Toronto, ON, Canada

OBJECTIVE:
Polycystic ovary syndrome (PCOS) is a common endocrine disorder that has been associated with increased risk of pregnancy loss, potentially mediated by insulin resistance, hyperandrogenism, and impaired endometrial receptivity. However, the prevalence of PCOS and the impact of metformin therapy on reproductive outcomes among women with recurrent pregnancy loss (RPL) remain incompletely characterized. The objective of the study is to evaluate the prevalence and clinical characteristics of PCOS among women with RPL and to examine the impact of metformin therapy on reproductive outcomes within this population.
MATERIALS AND METHODS:
This retrospective cohort study included women aged 18–40 years with RPL evaluated at TRIO Fertility between 2010 and 2025. PCOS was diagnosed according to the Rotterdam. Baseline demographic, endocrine, metabolic, and ultrasound parameters were collected. Reproductive outcomes included time to successful pregnancy (viable pregnancy ≥12 weeks or live birth), time to unsuccessful reproductive outcome (pregnancy loss <12 weeks or failed euploid embryo transfer), and pregnancy loss among conceptions achieved after evaluation. Time-to-event outcomes were analyzed using Kaplan-Meier curves and Cox proportional hazards models. Logistic regression and propensity score-adjusted models were used to evaluate the association between metformin use and pregnancy loss.
RESULTS:
Among 1,332 women with RPL, 344 (25.8%) met diagnostic criteria for PCOS. Women with PCOS were younger and had higher body mass index, anti-Müllerian hormone levels, androgen concentrations, fasting insulin levels, and antral follicle counts compared with non-PCOS patients (all $p < 0.05$). Historical pregnancy loss rates were significantly higher among women with PCOS (82.0% vs 76.4%, $p < 0.001$). Within the PCOS cohort, metformin use was not associated with time to successful pregnancy in multivariable Cox analysis (adjusted hazard ratio [aHR] 1.35, 95% CI 0.85–2.15). However, metformin was associated with a significantly reduced risk of unsuccessful reproductive outcomes (aHR 0.12, 95% CI 0.04–0.35, $p < 0.001$). Among pregnancies achieved after evaluation, pregnancy loss occurred in 36.9% of non-metformin users compared with 17.7% of metformin users ($p = 0.008$). After adjustment for confounders and propensity score, metformin use remained independently associated with lower odds of pregnancy loss (adjusted OR 0.22, 95% CI 0.06–0.83, $p = 0.025$).
CONCLUSIONS:
PCOS is highly prevalent among women with RPL and is associated with an increased historical burden of pregnancy loss. Metformin therapy was associated with a significantly reduced risk of pregnancy loss among women with PCOS. These findings suggest that metabolic modulation with the help Metformin may play an important role in improving pregnancy maintenance in this high-risk population.
IMPACT STATEMENT:
Metformin may represent a targeted therapeutic strategy to reduce pregnancy loss in RPL patients with PCOS, supporting the role of metabolic optimization in improving pregnancy maintenance in this high-risk population.
SUPPORT: Not Applicable because the retrospective nature of the study.

P-436 2:00 PM Tuesday, October 27, 2026

TIMING OF POST-PREGNANCY LOSS ULTRASOUND INFLUENCES THE DIAGNOSIS OF RETAINED PRODUCTS OF CONCEPTION: INSIGHTS FROM A COHORT OF EARLY PREGNANCY LOSSES IN INFERTILITY PATIENTS. Yasaman Sadeghi, MSc, Livia Deda, M.Sc., Sony Sierra, B.S., M.D., M.SC. and Robert Casper, M.D., IVIRMA Global Research Alliance, TRIO Fertility, Toronto, ON, Canada

OBJECTIVE:
Medical management of early pregnancy loss is considered an effective approach to minimize complications in subsequent pregnancies. However, retained products of conception (RPOC) remain a common concern, as medical management does not always achieve complete expulsion, sometimes necessitating additional surgical interventions such as hysteroscopy or dilation and curettage (D&C). In this study, we aimed to determine the rate of RPOC, and associated factors in fertility patients treated with Mifegymiso and to identify the optimal timing for follow-up ultrasound to safely monitor these patients.
MATERIALS AND METHODS:
We conducted a retrospective cohort study of 121 pregnancy losses managed with mifepristone and misoprostol. Data collected included mode of conception (IVF, IUI, timed intercourse, spontaneous), gestational age at loss, time from treatment to first follow-up ultrasound, RPOC status, ploidy of products of conception when available, and management approach. Time to ultrasound (US) was defined as the interval from Mifegymiso administration to follow-up ultrasound and categorized as ≤14 days, 15–28 days, and >28 days. Associations were assessed using chi-square tests, t-tests, and logistic regression.
RESULTS:
Among 121 patients, the overall rate of RPOC was 62.0% (75/121), of whom, 38.7% (29/75) required invasive management. RPOC rates decreased significantly with increasing time to ultrasound: 82.9% at ≤14 days, 62.1% at 15–28 days, and 22.7% at >28 days ($p<0.001$). Patients with RPOC had a significantly shorter time to ultrasound compared to those without RPOC (with mean of 16.8 vs 31.3 days, $p<0.001$). The rationale for early ultrasound (≤14 days) is to minimize the risk of infection; however, no infectious or other complications were observed in either monitoring group. RPOC was observed in 67.2% of IVF pregnancies versus 57.1% of non-IVF pregnancies, although not statistically significant ($p=0.253$). Ploidy status was not associated with RPOC detection ($p=0.105$) or need for invasive management ($p=0.581$). In logistic regression, time to ultrasound was a significant independent predictor of RPOC. Each additional day from the index event was associated with an 8% decrease in the odds of RPOC (OR 0.918, 95% CI 0.880–0.958; $p < 0.001$).
CONCLUSIONS:
RPOC detection following medical management of pregnancy loss is strongly influenced by timing of ultrasound evaluation, with significantly higher rates observed on early imaging. Differences by mode conception type or ploidy were not observed, suggesting that elevated RPOC rates in certain populations may reflect surveillance bias rather than underlying biological differences.
IMPACT STATEMENT:
Delaying follow-up ultrasound beyond 14 days after medical management of early pregnancy loss may reduce overdiagnosis of retained products of conception and avoid unnecessary invasive interventions without increasing the risk of complications. These findings support reconsideration of current monitoring practices in fertility centers and may help optimize post-treatment care in fertility patients
SUPPORT: Not Applicable.

P-437 2:15 PM Tuesday, October 27, 2026

IMPACT OF OBESITY ON RISK OF RECURRENT PREGNANCY LOSS IN BLACK PATIENTS. Micaela Stevenson Wyszewianski, MD[1], Anthony H Bui, MD, MSCR[2], Amy Tamburrino, MD[3] and Ruth B Lathi, MD[4], [1]Medical College of Wisconsin, Milwaukee, WI, [2]Stanford University, Sunnyvale, CA, [3]Ascension Wisconsin, Milwaukee, WI, [4]Stanford University, Reproductive Endocrinology and Infertility, Stanford, CA

OBJECTIVE: Obesity has been associated with increased likelihood of experiencing sporadic miscarriages and recurrent pregnancy loss (RPL) in patients who conceive spontaneously. However, prior studies have not accounted for the role of race. The objective of this study was to establish the role of BMI in risk of RPL in Black patients.
MATERIALS AND METHODS: RPL was defined as two or more pregnancy losses at any gestational age. Patients were included if they self-identified as Black or African American, were between 18-50 years old at the time of the study, and presented for an appointment at a single obstetrics and gynecology clinic between June 1, 2016 and October 31, 2024. Patients were excluded if pregnancy outcomes were unknown. Retrospective chart review was performed to extract variables including RPL, smoking status, type 2 diabetes, BMI, and age. BMI classes were assigned based on preset CDC guidelines. Patients were assigned the following BMI categories: underweight (BMI <18.5), normal weight (BMI 18.5-24.9), overweight (BMI 25-29.9), class I obesity (BMI 30-34.9), class II obesity (BMI 35-39.9) and class III obesity (BMI≥ 40). Logistic regressions were then run using R to analyze differences in prevalence of RPL based on BMI class, controlling for type 2 diabetes, smoking and age. Patients in each BMI category were then compared to normal weight controls.
RESULTS: 4084 patients were examined. The prevalence of RPL was 11.3%. The median BMI in this study was 30. The median BMI of patients without RPL was 30.9 and the median BMI of patients with RPL was 31.8. The incidence of RPL was as follows for each BMI category: underweight: 6.06%; normal weight: 9.7%; overweight:11.8%; class I obesity: 10.5%; class II obesity: 13.5%; class III obesity: 11.7%. Patients who smoked were more likely to experience RPL ($p<0.01$) and older patients were more likely to experience RPL ($p<0.01$). Type 2 diabetes was not associated with risk of RPL ($p=0.671$). After adjusting for additional risk factors, BMI was not associated with the

risk of RPL (underweight OR 0.6 CI [0.21, 1.71], overweight OR 1.15 CI [0.85,1.57], class I obesity OR 0.96 CI[0.7,1.32], class II obesity OR 1.24 CI [0.89,1.72], class III obesity 1.01 CI [0.72, 1.41].
CONCLUSIONS: As expected, maternal age and smoking status were associated with the risk of RPL. However, after controlling for confounders, BMI was not associated with an increased risk of experiencing RPL.
IMPACT STATEMENT: In this study of exclusively Black patients, obesity does not appear to have an impact on risk of RPL. Further research is needed to explore factors leading to increased incidence of RPL in this patient population and optimal treatments to achieve increased chance of livebirth.

P-438 2:30 PM Tuesday, October 27, 2026

RECURRENT PREGNANCY LOSS PATIENTS WITH ENDOMETRIAL LOW TREG COUNT ARE WHO BENEFIT MOST FROM TREATMENT WITH G-CSF? A CASE-COHORT STUDY. Marco Sbracia, MD and Fabio Scarpellini, M.D., CERM-Hungaria, Rome, Italy

OBJECTIVE:
RPL may be defined as the loss two or more pregnancy before the 24th gestational week. Several causes may determine this reproductive disorder, but at least in 50% of them remain unexplained. In these cases, several possible causes have been proposed, including immunologic anomalies due to imbalance of lymphocyte populations both in the endometrium and in the blood leading to a failure of embryo immune acceptance by mother. In these patients G-CSF treatment has been proposed. In this study the role of endometrial Treg in determining the G-CSF treatment outcome in unexplained-RPL women was evaluated. In this study we evaluated which patients with unexplained RPL are the best candidates for G-CSF treatment.
MATERIALS AND METHODS:
A prospective single centre case-cohort study was conducted by our centre from the January 2022 through the December 2024 on unexplained RPL women treated with G-CSF. All patients were tested for endometrial Treg count before treatment. The livebirth rate was the primary outcome. 63 women with unexplained RPL were selected for the study and treated with G-CSF (1.0mg/kg/day) from the day of ovulation through the day of first b-hCG: when positive the treatment was continued through the 6th gestational week. These women underwent endometrial biopsy at the 20-25th day in a previous menstrual cycle The samples were tested by immunohistochemistry for FoxP3. Patients were divided in two groups, with low Treg count and with normal count.
RESULTS: 21 women out of 63 patients with unexplained RPL tested for endometrial FoxP3 positive cells showed low levels of endometrial Treg cell (33.33%). The cut off value was fixed arbitrarily at 2.4% of all stromal cells. All these patients, treated with G-CSF from the day of ovulation through the first b-hCG, became pregnant and delivered a healthy baby in 17 cases (80.95%). The four women who aborted again were tested again for endometrial FoxP3 cells. In these samples the count of cells FoxP3 positive was statistically significantly increased with respect to the previous biopsy (10.7±1.6 versus 1.8±0.5; P<0.001). In 42 women with endometrial Treg cells in the normal range, treated in the same way with G-CSF, livebirth rate was of 42.85% (18/42), the difference between the two groups for livebirth rate was statistically significant (P=0.0066). The 24 cases that aborted again were tested again for endometrial FoxP3 cells, and these samples showed a statistically significantly increase of Treg with respect to the previous biopsy (15.2±3.4 versus 10.1±2.9; P<0.001).
CONCLUSIONS: Our data suggested that Treg levels in endometrium may be involved in RPL pathogenesis. The G-CSF treatment seems to be effective in the RPL patients with low levels of endometrial Treg cell during the implantation window.
IMPACT STATEMENT: Low count of Treg cells in the endometrium may be detrimental for pregnancy and the treatment with G-CSF may reverse this condition
SUPPORT: none financial support

RECURRENT PREGNANCY LOSS (2 OF 2)

P-439 1:30 PM Tuesday, October 27, 2026

ELEVATED RISK OF ADVERSE PERINATAL OUTCOMES IN RECURRENT PREGNANCY LOSS PATIENTS UNDERGOING FERTILITY TREATMENT. Sanjana P Kulkarni, B.S., M.D., Bharti Garg, MBBS, MPH, Aaron B. Caughey, M.D., Ph.D., MPH and Sacha A. Krieg, M.D., PH.D., Oregon Health & Science University, Portland, OR

OBJECTIVE: To compare maternal and neonatal outcomes among individuals with recurrent pregnancy loss (RPL) who conceived with fertility treatment versus without treatment.
MATERIALS AND METHODS: This is a retrospective cohort study using California's linked vital statistics-hospital discharge data (2016-2020). We included singleton birth with 23-42 weeks gestational age among patients with RPL. Outcomes were compared by fertility treatment status using chi-square tests and multivariable Poisson regression to estimate adjusted risk ratios (aRR) with 99% confidence intervals (CI). Maternal outcomes included hypertensive disorders of pregnancy, gestational diabetes (GDM), severe maternal morbidity (SMM), placental abruption, and placenta previa. Neonatal outcomes included preterm birth, small for gestational age (SGA), NICU admission, respiratory distress syndrome, low Apgar score, neonatal jaundice, chromosomal abnormalities, and congenital anomalies.
RESULTS: Among 36,013 patients with RPL, 3.4% conceived with fertility treatment. These patients were older, more often nulliparous, and more likely privately insured (all p<0.001). Fertility treatment was associated with increased risk of hypertensive disorders, SMM, and placenta, with no increase in GDM (**Table)**. Neonatal outcomes showed higher rates of preterm birth <37 weeks, neonatal jaundice, and congenital anomalies, with no differences in SGA, NICU admission, or chromosomal abnormalities (**Table**).
CONCLUSIONS: Among patients with RPL, conception with fertility treatment is associated with higher rates of select maternal and neonatal complications. These findings may reflect both treatment-related factors and a higher-risk RPL phenotype characterized by impaired placentation and underlying reproductive pathology. Further research is needed to clarify causality.
IMPACT STATEMENT:
The need for fertility treatment in RPL may identify a higher-risk subgroup, supporting risk-stratified counseling and consideration of enhanced antenatal surveillance.
Table: Outcomes in patients with RPL compared between no fertility treatment and fertility treatment.

	No Fertility treatment	Fertility treatment	p*	aRR (99% CI)**
Maternal Outcomes				
Hypertensive disease of pregnancy	11.7%	16.4%	<0.001	1.30 (1.09-1.56)
SMM	1.8%	3.3%	<0.001	1.68 (1.09-2.57)
Placenta Previa	0.5%	2.4%	<0.001	2.37 (1.37-4.11)
Neonatal Outcomes				
Preterm birth <37 w	10.6%	12.5%	0.04	1.36 (1.11-1.68)
Neonatal jaundice	20.5%	27.4%	<0.001	1.17 (1.03-1.33)
Congenital anomalies	9.0%	13.0%	<0.001	1.24 (1.01-1.52)

*Chi-square test
** Adjusted for maternal age, race/ethnicity, education, pre-pregnancy BMI, insurance, parity, smoking, chronic hypertension, and pre-existing diabetes
SUPPORT: none
REFERENCES:
none

P-440 1:45 PM Tuesday, October 27, 2026

PREGNANCY OUTCOMES FOLLOWING TRANSFER OF EMBRYOS TO GESTATIONAL CARRIER VERSUS SELF IN PATIENTS WITH HISTORY OF RECURRENT PREGNANCY LOSS. Anthony H Bui, MD, MSCR[1], Kerry S.J. Flannagan, PhD[2], Phillip A Romanski, M.D., M.SC.[3] and Ruth B Lathi, MD[4], [1]Stanford University, Sunnyvale, CA, [2]US Fertility, Rockville, MD, [3]Reproductive Medicine Associates of New York, New York, NY, [4]Stanford University, Reproductive Endocrinology and Infertility, Stanford, CA

OBJECTIVE: Recurrent pregnancy loss (RPL) is a complex multifactorial disease with few proven treatments. While a significant portion of sporadic pregnancy loss is due to aneuploidy, RPL has a higher risk of euploid loss as well, indicating that there may be undiagnosed uterine or environmental factors versus potential abnormalities in embryo epigenetics or gene expression. The objective of this study is to characterize pregnancy outcomes following euploid embryo transfer (ET) to gestational carrier (GC) versus to self in patients with history of RPL.
MATERIALS AND METHODS: This was a descriptive retrospective cohort study at a large US network of fertility clinics. Euploid single ETs to self or GC with a SART diagnosis of RPL from 2013 to 2023 were included. Embryos made with donor gametes and carrying individuals younger than 18 or over 50 years were excluded. Demographic and clinical characteristics of IPs and of carrying individuals were collected, with live birth as the primary outcome.
RESULTS: A total of 942 ETs to self among 585 patients and 11 ETs to GC among 11 patients were identified. Mean patient age at time of embryo creation was 35.1 years among ETs to self and 31.5 years among ETs to GC. Mean age of the carrying individual at time of ET was 35.7 years in both groups. Median endometrial thickness prior to ET was 9.2mm among ETs to self and 10.8mm among ETs to GC. Among patients transferring to GC, mean (SD) number of ETs previously attempted to self was 1.8 (2.0). 471/942 (50.2%) live births resulted from ETs to self versus 9/11 (81.8%) resulting from ETs to GC. Among patients with RPL transferring to self, rates of implantation, biochemical, and clinical pregnancy loss were 686/942 (72.8%), 100/686 (14.6%), and 100/586 (17.1%), respectively, compared to 10/11 (90.9%), 1/10 (10%), and 0/9 (0%) among ETs to GC, respectively.
CONCLUSIONS: There remains a significant residual risk for early pregnancy loss among patients with RPL transferring to self despite euploid embryo use. While data is limited, pregnancy outcomes following euploid ET to GC among IPs with history of RPL appear favorable. Future studies are needed to confirm these findings and identify patients with RPL who are most likely to benefit from GC use.
IMPACT STATEMENT: This is the first study to date to examine pregnancy outcomes following GC use in patients with RPL.
SUPPORT: None.
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RESTORING IMMUNE FUNCTION: THYMOSIN ALPHA-1 BENEFITS RECURRENT IMPLANTATION FAILURE (RIF) AND RECURRENT PREGNANCY LOSS (RPL) WITH ABNORMAL T-HELPER (Th1/Th2) CELLS FAILING PERSONALIZED THERAPY. Mekhala Dwarakanath, M.S.MBBS, MS OBG, FRM[1], Sankara Guha Dwarakanath B, MBBS, MD, FPR[2], Dr Sayali Pradeep Kandari, M.S , PhD[3], Sealeesha Menon Menon P, MBBS, MS OBG, FRM[4], Roopa M Mulgund, DGO, FRM[2], Govinda Krishna Krishna A, M.SC[5] and Dileep KUMAR Kumar, M.Sc.[2], [1]Icchaa Fertility Solutions and Diagnostics, Bengaluru, India, [2]Icchaa fertility solutions and diagnostics, Bangalore, India, [3]Cellsure Biotech & Research Centre, Dombivli, India, [4]Icchaa Fertility Solutions and Diagnostics, Banglore, India, [5]Icchaa Fertility Solutions and Diagnostic, Bangalore, India

OBJECTIVE: To evaluate adjunctive Thymosin alpha-1 (Tα1) in restoring immune homeostasis for recurrent implantation failure (RIF) and recurrent pregnancy loss (RPL) patients failing personalized standard-of-care (SOC) immunomodulation for peripheral natural killer (PNK) cell defects, antinuclear antibodies (ANA), antiphospholipid antibodies (APLA), rheumatoid arthritis (RA), or ankylosing spondylitis (AS).
MATERIALS AND METHODS: In this retrospective historical-controlled cohort study, 106 women (36.8±4.0 yrs) with prior failed SOC served as their own comparators. Baseline T-helper (Th1/Th2) cytokines and PNK cells were tested via flow cytometry. Quantitative C-reactive protein (Q-CRP) utilized Quantrex 24. Autoimmune panels used immunofluorescence for ANA and ELISA for APLA, RA (RF+/Anti-CCP+), and AS (n=5; HLA-B27+). Baseline testing occurred on progesterone day 5 (P+5). For therapeutic cycles, Tα1 was initiated 21 days pre-transfer as an adjunct to tailored SOC. Protocols: 1) PNK defect: Hydroxychloroquine, aspirin 75mg, ±steroids (if Q-CRP elevated); 2) ANA+: Intravenous immunoglobulin, steroids, low-molecular-weight heparin (LMWH), hydroxychloroquine; 3) APLA+: Intralipids, LMWH, aspirin, hydroxychloroquine, steroids; 4) RA: Etanercept 50mg plus hydroxychloroquine 200mg twice daily or sulfasalazine 500mg; 5) AS: Hydroxychloroquine or sulfasalazine. Base steroids: 7.5-10mg, up to 30mg for AS. Cytokines were retested on embryo transfer (ET) day. Normal karyotypes were confirmed. Autologous >37 yrs used preimplantation genetic testing (PGT-A); donor and ≤37 yrs bypassed PGT-A.
RESULTS: Compared to baseline failed cycles, Tα1 significantly reduced pro-inflammatory markers ($p<0.001$): tumor necrosis factor-alpha decreased from 24.6±17.7 to 4.9±4.4 pg/mL; interferon-gamma from 4.2±2.1 to 1.6±1.0 pg/mL; and Q-CRP from 15.1±6.3 to 5.8±5.1 mg/dL. IL-6 decreased non-significantly; IL-2, IL-4, and IL-10 were unchanged. Overall outcomes reached 82.1% β-hCG+, 77.4% clinical, and 63.2% ongoing pregnancy (OP). Internal comparator subgroup OP rates—RPL (N=30): 83.3% non-PGT-A self (≤37 yrs, n=12), 66.7% PGT-A self (>37, n=9) and donor (n=9). RIF (N=76): 66.0% non-PGT-A self (≤37, n=47), 50.0% donor (n=12), and 47.1% PGT-A self (>37, n=17).
CONCLUSIONS: In RIF/RPL with complex immune pathologies (PNK, ANA, APLA, RA, AS), adjunctive Tα1 decisively suppresses Th1 cytokines and Q-CRP. Consistent OP rates across internal comparator subgroups, regardless of PGT-A or oocyte source, suggest Tα1 overcomes fundamental immunological barriers unchecked by conventional SOC protocols.
IMPACT STATEMENT: Tα1 paired with pathology-specific immunomodulation offers a vital therapeutic rescue strategy, restoring immune homeostasis and significantly improving ongoing pregnancy rates in highly refractory patients.
SUPPORT: None
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RETENTION IN RECURRENT PREGNANCY LOSS CARE: A SCOPING REVIEW OF ENGAGEMENT, MENTAL HEALTH SUPPORT, AND REPRODUCTIVE OUTCOMES. Vanessa Bacal, M.D., M.SC.[1], Brianne Yarranton, BSc, MD[2], Kimberly E. Liu, M.D.[1] and Cindy-Lee Dennis, PhD, FCAHS[3], [1]Mount Sinai Fertility, Toronto, ON, Canada, [2]Etobicoke, ON, Canada, [3]Sinai Health

OBJECTIVE: Recurrent pregnancy loss (RPL) is associated with significant psychological distress, but retention in specialized RPL care and the mental health supports delivered within these services are not well synthesized. This scoping review examined continuity of care, pregnancy outcomes by retention status, mental health services and interventions, and factors associated with ongoing engagement in RPL care.
MATERIALS AND METHODS: We conducted a scoping review in accordance with PRISMA-ScR guidance and an a priori protocol registered on Open Science Framework (osf.io/6fs7j). MEDLINE, PubMed, Embase, PsycINFO, CINAHL, Cochrane Central, ClinicalTrials.gov and the International Clinical Trials Registry Platform were searched from inception to 11 April 2025. Studies involving patients with RPL that reported retention, pregnancy outcomes by retention status, mental health support or factors associated with discontinuation were screened and charted in duplicate, with results synthesized descriptively and narratively.
RESULTS: Forty-three studies were included. Across longitudinal cohorts and intervention studies evaluating dedicated RPL care, 13,830 participants were described, of whom 1153 (8.3%) disengaged or were classified as lost to follow-up, although definitions of drop-out were inconsistent. Only one study reported pregnancy outcomes by retention status; participants who dropped out had a lower pregnancy rate than those who remained in care, while live birth among those who conceived was similar between groups. Twenty studies evaluated mental health outcomes within RPL programs, and multiple trials suggested that structured psychological supports, particularly multicomponent CBT/ACT-based care, mindfulness approaches and early-pregnancy surveillance paired with telemedicine can reduce distress. However, retention was rarely specified as a primary outcome, and data on partners, social determinants and routine-care implementation were limited.
CONCLUSIONS: The literature supports routine mental health screening and stepped psychological support within RPL services, but evidence linking these supports to improved retention and reproductive outcomes remains sparse. Available intervention studies suggest that structured psychological supports, mindfulness-based approaches and early-pregnancy surveillance with telemedicine can reduce distress in RPL populations.
IMPACT STATEMENT: Dedicated RPL programs should pair routine distress screening with a stepped mental health pathway and explicit re-engagement processes after missed visits or subsequent loss. Future RPL studies should standardize the definition of disengagement, report pregnancy and live-birth outcomes by retention status, and test pragmatic re-engagement pathways for patients at risk of dropping out.

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MATERNAL KIR–FETAL HLA-C INTERACTIONS AND REPRODUCTIVE OUTCOMES: SYSTEMATIC ANALYSIS OF IMMUNOGENETIC RISK IN IMPLANTATION FAILURE AND PLACENTAL DISORDERS. Vasanthi Palanivel, Msc[1], Srinivas Chari, CA[2] and Jayesh Amin, MBBS, MD[3], [1]Seragen Biotherapeutics Pvt Ltd, Bangalore South, Karnataka, India, [2]Seragen Biotherapeutics Pvt Ltd, [3]Wings Hospitals Private Limited, Ahmedabad, India

OBJECTIVE: At maternal-fetal interface, uterine natural killer (uNK) cells regulate trophoblast invasion via KIR-HLA-C interactions, determining adequacy of spiral artery remodeling. This molecular dialogue determines whether trophoblast invasion is facilitated or impeded, and therefore whether spiral artery remodelling is adequate for placental perfusion. Dysregulation contributes to preeclampsia, fetal growth restriction, recurrent pregnancy loss, and recurrent implantation failure, collectively affecting 10-20% of pregnancies. Absence of this analysis has prevented the translation of three decades of mechanistic understanding into a unified clinical risk stratification and treatment algorithm.
MATERIALS AND METHODS: MEDLINE, Embase, Web of Science, and Cochrane CENTRAL search done from inception to 31 March 2026 for studies reporting genetic association data, functional investigations, or clinical outcome assessments relating to KIR genotype and/or fetal HLA-C genotype in any pregnancy outcome. Studies in any language were eligible.
RESULTS: 62 eligible studies were identified. Maternal KIR AA haplotype combined with a fetal HLA-C2 genotype is the most consistently replicated genetic risk factor for preeclampsia (pooled OR 2.8, 95% CI 2.1-3.7; $I^2 = 48\%$; 12 studies), replicated across European, East Asian, African, and Middle Eastern populations. KIR B haplotypes - particularly those containing KIR2DS1, which recognises the HLA-C2 epitope - are protective against preeclampsia (pooled OR 0.52, 95% CI 0.38-0.71). KIR Bx (activating) haplotypes are paradoxically over-represented in RPL compared with controls in most but not all studies (pooled OR 1.8, 95% CI 1.2-2.7; $I^2 = 62\%$), suggesting that the optimal balance of KIR activation is condition-specific. In recurrent implantation failure, KIR AA haplotype with high-C2 donor gametes reduces live birth rate in IVF cycles, and targeted immunomodulation with G-CSF improves outcomes in KIR/HLA-C mismatch patients. Population-specific KIR-HLA-C co-evolution - most clearly demonstrated in African populations with higher KIR B frequency and lower preeclampsia rates - provides evolutionary dimension to the clinical risk stratification model.
CONCLUSIONS: Maternal KIR AA combined with fetal HLA-C2 confers significant risk for placentation failure and implantation dysfunction through inhibitory uNK signaling. KIR-HLA-C interactions represent central determinant of reproductive success.
IMPACT STATEMENT: KIR and HLA-C genotyping at population level, and paired maternal-paternal genotyping at the individual clinical level, provides a mechanistically grounded, clinically actionable risk stratification framework. KIR AA women should receive aspirin and G-CSF prophylaxis from ≤16 weeks; KIR/HLA-C mismatch should guide oocyte and sperm donor selection in ART & targeted immunomodulation of uNK cell activation represents tractable therapeutic target for the most treatment-resistant forms of implantation failure and pregnancy loss. The clinical implementation of these insights requires prospective multicentre validation - three such studies are currently under development.
SUPPORT: SELF FUNDED
REFERENCES:
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DOI: 10.1093/humrep/deu251

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DIGITAL DEWAR MAPPING FOR CRYOSTORAGE CAPACITY MANAGEMENT AND AUDIT READINESS IN AN IVF LABORATORY. Aldiyar

Malik, B.Sc[1], Kamila Smagambetova, M.Sc[2], Gaukhar Zhanysbayeva, M.Sc[3], Laura Bolat, M.Sc[2], Amina Nurkina, M.Sc[3] and Diyas Zharkynbekov, B.S.[2], [1]IRM Clinic Astana, Astana, Kazakhstan, [2]Institute of Reproductive Medicine, Astana, Kazakhstan, [3]Institute of Reproductive Medicine (IRM) Astana, Astana, Kazakhstan

OBJECTIVE: To evaluate the operational impact of a web-based digital Dewar mapping system on cryostorage capacity visualization, allocation workflow efficiency, and audit preparedness within a high-volume IVF laboratory.
MATERIALS AND METHODS: A single-center quality improvement study with a before-and-after design was conducted in accordance with SQUIRE 2.0 reporting guidelines. A web-based application was developed to digitally replicate the physical hierarchy of liquid nitrogen (LN_2) Dewars (10 canisters × 15 canes × 10 straw positions; total: 1,500 positions per unit). The system provided real-time occupancy visualization, patient-coded search, structured position-level data entry, and change-history tracking. Operational efficiency was assessed via time-motion analysis across 10 standardized allocation and localization scenarios, performed by a single operator under both conventional (manual/spreadsheet) and digital-assisted conditions. Task completion times were recorded and summarized as median values with interquartile ranges (IQR).
RESULTS: At baseline, 1,187 of 1,500 positions were occupied (79.1% utilization), with assessment dependent on manual cross-referencing without spatial visualization. Following implementation, occupancy status became immediately accessible. Median task completion time across all scenarios decreased significantly from 180 s (IQR 75–300 s) to 27.5 s (IQR 15–30 s). Key improvements: post-thaw space reassessment (3,000 s to 30 s), highest-capacity canister identification (300 s to 25 s), and optimal Dewar selection (240 s to 15 s). Estimated internal audit duration declined from 60 minutes to 15–30 minutes. No identification-related discrepancies were observed. Digital documentation reached 100% completeness at the straw level post-implementation.
CONCLUSIONS: Implementing a web-based Dewar mapping system substantially improved cryostorage visibility, reduced time for routine allocation decisions, and enhanced audit preparedness. By standardizing spatial documentation and reducing reliance on mental reconstruction of storage layouts, this approach addresses an operational gap not fully covered by traditional electronic witnessing systems.
IMPACT STATEMENT: As global cryopreservation volume expands, structured digital spatial management represents a scalable quality improvement tool that strengthens traceability, supports regulatory compliance, and enhances patient safety frameworks in ART laboratories.

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A BIOMIMETIC TEMPERATURE-GRADIENT SELECTION ENRICHES CAPACITATION-ASSOCIATED AND THERMOTAXIS-RESPONSIVE HUMAN SPERMATOZOA SUBPOPULATIONS. Yung-Hsuan Lin, M.S.[1], Ya-Yun Wang, PhD[2], Ching-Wen Chang, PhD[3], Ying-Hung Lin, PH.D.[2], Yu Yang Yeh, M.D.[3] and Chen-Yen Chung, PhD[4], [1]Taoyuan, Taiwan, [2]Graduate Institute of Biomedical and Pharmaceutical Sciences, Fu Jen Catholic University, New Taipei City, Taiwan., [3]Ipreg Inc., New Taipei City, Taiwan, [4]Ipreg Inc., Taipei, Taipei (city), Taiwan

OBJECTIVE: Motility-based sperm selection in assisted reproductive technology (ART) incompletely reflects fertilization competence. Thermotaxis, a physiological guidance mechanism in the female reproductive tract, may preferentially direct functionally competent spermatozoa toward the oocyte. We tested whether a biomimetic, centrifugation-free platform incorporating a vertical temperature gradient selectively enriches human sperm subpopulations associated with capacitation and fertilization competence.
MATERIALS AND METHODS: Residual human semen samples were analyzed in a repeated-measures design and allocated to three conditions: raw semen (RAW), temperature-constant selection (TC, 37°C, 30 min), and vertical temperature-gradient selection (TG, upper 37°C/lower 35°C, 30 min) using a centrifugation-free microfluidic chip. Post-selection assessments included motility and functional biomarkers: acrosomal integrity (PNA), capacitation-associated tyrosine phosphorylation (PY20), heat shock protein A2 (HSPA2), and rhodopsin. Statistical analysis was performed using repeated-measures ANOVA with post hoc comparisons.
RESULTS: Motility improved after selection but did not differ between TC and TG (PR: RAW vs TC and TG P=0.0005; TC vs TG P=0.0911), indicating comparable enrichment of motile spermatozoa. In contrast, TG preferentially enriched function-associated subpopulations. PY20-positive spermatozoa increased significantly in TG versus RAW (P=0.0007) and TC (P=0.0087), indicating enhanced capacitation-associated signaling. HSPA2-positive spermatozoa were enriched across all comparisons (RAW vs TC P=0.0034; RAW vs TG P=0.0002; TC vs TG P=0.0027), consistent with increased zona pellucida-binding potential. Rhodopsin-positive spermatozoa increased in TG versus RAW (P=0.0076), with no difference versus TC (P=0.0608), suggesting enrichment of a thermotaxis-associated subpopulation. PNA-positive, acrosome-intact spermatozoa also increased following selection (RAW vs TC P=0.0172; RAW vs TG P=0.0359). Morphology did not differ among groups (P>0.05).
CONCLUSIONS: A biomimetic vertical temperature-gradient strategy selectively enriches human spermatozoa expressing capacitation-associated, zona pellucida-binding, and thermotaxis-related biomarkers beyond motility-based selection. These findings support leveraging physiological guidance cues to isolate functionally competent sperm subpopulations relevant to fertilization.
IMPACT STATEMENT: This physiology-driven approach advances sperm selection beyond conventional motility-based methods. By enriching spermatozoa associated with fertilization competence, it may improve selection of functionally relevant sperm and has potential to enhance fertilization outcomes while supporting centrifugation-free ART laboratory workflows.

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SPERM SEPARATION DEVICE (SSD) DOES NOT IMPROVE FERTILIZATION OR BLASTULATION COMPARED TO CONVENTIONAL SPERM PREPARATION AMONG PATIENTS WITH A HISTORY OF POOR FERTILIZATION OR BLASTULATION. Brooke Neumann, D.O.[1], Kerry S.J. Flannagan, PhD[2], Adriana N Vest, M.D. PH.D.[1], Lauren Roth, MD[3] and Phillip A Romanski, M.D., M.SC.[4], [1]National Institutes of Health/ Walter Reed National Military Medical Center, Bethesda, MD, [2]US Fertility, Rockville, MD, [3]Shady Grove Fertility, Rockville, MD, [4]Reproductive Medicine Associates of New York, New York, NY

OBJECTIVE: To determine whether the addition of a sperm separation device prior to intra-cytoplasmic sperm injection (ICSI) improves fertilization or blastulation outcomes among patients with a history of low fertilization or low blastulation in a prior in-vitro fertilization (IVF) cycle.
MATERIALS AND METHODS: This retrospective cohort study conducted across a single network of US Fertility clinics from 2013-2026 analyzed patients undergoing IVF with a history of low fertilization (<50% 2pn/MII) or low blastulation (<25% usable blastocyst/2pn). Fertilization rate and blastulation rate were compared between patients who used a sperm separation device prior to ICSI in their subsequent cycle compared to those who did not. Exclusion criteria included conventional insemination and sperm retrieved using TESE or MESE. A modified Poisson regression analysis was used to estimate risk ratio (95% confidence intervals) controlling for female age and male factor.
RESULTS: Baseline characteristics were similar between groups including female age, male age, BMI, AFC and AMH. Fertilization rate per mature oocyte was comparable between the SSD group and controls in patients with a history of low fertilization (66.7% vs 70%, RR 1.04, 95% CI 0.97-1.11) and in the patients with a history of low blastulation (75.8% vs 75%, RR 1.01, 95% CI 0.99-1.03). In patients with a history of low fertilization, blastulation rates were similar between the SSD group and controls (47.6% vs 50%, RR 0.98, 95% CI 0.87-1.1). In patients with a history of low blastulation, the use of an SSD was associated with decreased blastulation (29.7% vs 33.3%, RR 0.89, 95% CI 0.84-0.95). In patients a history of both low fertilization and low blastulation, fertilization rate (66.7% vs 67.7%, RR 1.03, 95% CI 0.96-1.11) and blastulation rate (33.3% vs 33.3% RR 0.93, 95% CI 0.79-1.1) was similar.
CONCLUSIONS: In patients with a history of low fertilization, fertilization rates in a subsequent cycle were not improved with the use of an SSD compared to conventional sperm preparation. Additionally, in patients with a history of low blastulation, blastulation rates in a subsequent cycle were not improved with the use of an SSD compared to conventional sperm preparation. Further research is needed to identify a population for which an SSD may augment their embryo development and fertility treatment outcomes.
IMPACT STATEMENT: A sperm separation device is not associated with increased fertilization or blastulation among patients with a history of low fertilization or low blastulation.

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DISASTER PREPAREDNESS AND CRYOSTORAGE INTEGRITY IN IVF LABORATORIES: A MULTICENTRE BENCHMARKING STUDY. Selva Karthick M Mr, B.Tech, PGDSCT[1], Krishna Mantravadi, MBBS, PGDHOM, Masters in clinical embryology[1], Durga Gedela Rao Dr., MBBS, DGO, MRCOG[1] and Ruchi Narula, MSc, ISAR Certificate Course in Clinical Embryology[2], [1]Oasis Fertility, Hyderabad, India, [2]OASIS FERTILITY, Hyderabad, India

OBJECTIVE:
Does structured disaster preparedness improve cryostorage integrity and reduce cryostorage-related risk in IVF laboratories across centres?
MATERIALS AND METHODS:
This study is a multicentre quality-improvement study that analysed incident and crisis-response data from 30 IVF laboratories (2019–2025). All incidents of flooding, pandemic disruptions, conflict-related interruptions, or infrastructure failures were studied. Failure Mode and Effects Analysis (FMEA) was used to identify key vulnerabilities. Outcomes were compared between laboratories with and without Disaster Operating Procedures (DOPs). We reviewed audits, downtime records, and mock-drill outcomes across five key areas: liquid nitrogen autonomy, infrastructure protection, data redundancy, personnel safety, and sample evacuation. Based on these assessments, we calculated Risk Priority Numbers (RPNs) to better understand and prioritize the identified risks. Cryostorage risk estimates, along with 95% confidence intervals, were then analyzed at the laboratory level. A resilience scorecard was subsequently developed and validated against near-miss events and simulated failure scenarios.
RESULTS:
Cryostorage integrity emerged as the highest-risk domain.Laboratories with defined operational protocols (DOPs) showed a 45% reduction in cryostorage-related near-miss events (risk ratio ≈0.55). Most incidents (65%) were attributed to liquid nitrogen disruption or restricted access rather than equipment failure. The presence of predefined response protocols and strengthened infrastructure improved response consistency and reduced decision latency by 55% in simulation scenarios. Off-site digital backups ensured complete traceability in the event of record loss, while high-capacity passive storage systems extended autonomy from 10 to 21 days. Laboratories equipped with dedicated crisis teams and routine mock drills consistently demonstrated better outcomes. Overall, differences in risk appeared to be strongly associated with levels of preparedness rather than chance.
CONCLUSIONS:
Better structured preparedness strengthens cryostorage integrity and lowers risk, with noticeable performance differences between laboratories that have DOPs and those that do not.
IMPACT STATEMENT:

This study presents a practical framework for benchmarking IVF disaster preparedness, showing how standardized metrics can support accreditation, guide resource allocation, and strengthen the protection of cryopreserved material in the face of increasing disruptions. However, the findings are based on retrospective data and simulated models, which should be considered while interpreting the results

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OOCYTE COMPETENCE IS A STABLE, PATIENT-SPECIFIC TRAIT INDEPENDENT OF PROTOCOL MODIFICATION: A WITHIN-WOMAN ANALYSIS ACROSS REPEATED ICSI CYCLES. Assumpto Iaconelli Jr., MD[1], Amanda Souza Setti, MSc[2], Daniela Paes de Almeida Ferreira Braga, PhD[3], Maite Del Collado, PhD[3], Renata Cristina Ferreira Iborra, MD[1], Jullin Fjeldstad, BSc, MSc[4] and Edson Borges Jr., M.D., PH.D.[1], [1]Fertility Medical Group/FertGroup, Sao Paulo, Brazil, [2]Sapientiae Institute, Sao Paulo, Brazil, [3]Science For Everymind, Sao Paulo, Brazil, [4]Future Fertility, Toronto, ON, Canada

OBJECTIVE:
To study whether AI-derived oocyte competence represents a stable, patient-specific trait across repeated ICSI cycles and whether cycle-to-cycle variation is driven by protocol modification or stimulation efficiency.
MATERIALS AND METHODS:
This retrospective cohort included 413 women contributing 826 consecutive ICSI cycles (2019–2024) with oocyte imaging (n=5,176) and AI-derived competence scores (MAGENTA™). Analyses were restricted to the first two cycles per woman. Within-woman associations with embryological outcomes were evaluated using conditional logistic regression with patient fixed effects. Competence was summarized using mean and upper-tail (90th percentile, p90) metrics, with dose–response assessed using quintiles.
Cycle-to-cycle variation was examined using change metrics (Δ), and regression-to-the-mean was assessed through correlations between baseline competence and subsequent change. Rank consistency across cycles was evaluated using terciles. Protocol switching and stimulation efficiency (FSH per MII oocyte) were analyzed in relation to changes in competence.
RESULTS:
ithin women, higher competence scores were consistently associated with increased odds of fertilization (OR 1.24; 95% CI 1.19–1.29), blastocyst development (OR 1.24; 95% CI 1.21–1.28), and top-quality blastocyst formation (OR 1.06; 95% CI 1.01–1.11) (all $p<0.05$). Effect sizes were amplified when expressed per interquartile range (IQR = 5.3), reaching OR 2.98 (95% CI 2.49–3.58) for fertilization and OR 3.06 (95% CI 2.69–3.49) for blastocyst development.
Cycle-to-cycle variation demonstrated strong regression-to-the-mean behavior ($r = -0.64$ for mean competence; $r = -0.61$ for p90; both $p<0.001$), indicating that fluctuations were largely constrained by baseline values. Patients tended to maintain relative ranking across cycles, with approximately half of women in the lowest and highest competence terciles remaining in the same category.
Protocol switching between consecutive cycles was frequent but not associated with directional changes in competence or embryological outcomes. In contrast, worsening stimulation efficiency was associated with declines in upper-tail competence (ΔFSH/MII vs Δp90, $r = -0.38$; $p<0.001$), supporting a link between ovarian responsiveness and oocyte quality.
CONCLUSIONS:
AI-derived oocyte competence behaves as a stable, patient-specific trait with limited modifiability across cycles. Variation is primarily baseline-dependent rather than treatment-driven, and more closely linked to stimulation efficiency than to protocol modification. These findings challenge the assumption that protocol changes can meaningfully alter intrinsic oocyte competence and support a shift toward efficiency-based optimization in ovarian stimulation strategies.
IMPACT STATEMENT:
Oocyte competence is largely intrinsic and resistant to protocol modification, suggesting that repeated changes in stimulation strategy may have limited impact on underlying oocyte quality.
SUPPORT: None.
REFERENCES:
N/A

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FIIX STUDY: A MULTICENTER, NON-INFERIORITY, RANDOMIZED CONTROLLED TRIAL COMPARING IN VITRO FERTILIZATION (IVF) TO INTRAUTERINE INSEMINATION WITH OVARIAN STIMULATION (IUI-OS) PRE-TREATMENT IN COUPLES WITH UNEXPLAINED INFERTILITY. Lucy Prentice, MBChB FRANZCOG MrMED[1], Lynn C Sadler, MBChB MPH[2], Jack Wilkinson, PhD[3], Sarah Lensen, PhD[4], Melissa Anne Vercoe, BA[5], Karyn Anderson, MBChB MPH[6], Elizabeth Glanville, MBChB FRANZCOG CREI[7], Vedprakash Singh, MBBS FRANZCOG[8], Dr. Leigh Searle, MBChB. FRANZCOG CREI[8] and Cynthia Farquhar, FRANZCOG FRCOG MD MPH[6], [1]The University of Auckland, Auckland, New Zealand, [2]Te Whatu Ora | Health New Zealand, Auckland, New Zealand, [3]University of Manchester, [4]University of Melbourne, Victoria, Australia, [5]Auckland, New Zealand, [6]University of Auckland, Auckland, New Zealand, [7]Repromed New Zealand, Auckland, New Zealand, [8]Fertility Associates New Zealand

OBJECTIVE:
To determine whether pre-treatment with four cycles of intrauterine insemination with ovarian stimulation (IUI-OS) followed by two complete in vitro fertilization (IVF) cycles (including all fresh/frozen embryo transfers) is superior to two complete IVF cycles (standard care) for cumulative live birth rate (CLBR) in couples with unexplained infertility and a poor prognosis of natural conception.
MATERIALS AND METHODS:
This multicenter, open-label, pragmatic, randomized controlled trial recruited couples from six New Zealand fertility clinics. Between August 2019 - March 2024, couples were randomized 1:1 to IUI-OS pre-treatment (four IUI-OS cycles followed by two complete IVF cycles) or standard care (two complete IVF cycles).
Outcomes compared four IUI-OS cycles with one complete IVF cycle at seven months (primary endpoint/phase one), and IUI-OS pre-treatment versus standard care at 20 months (secondary endpoint/phase two). The results of phase one have previously been presented and are thus not included in this abstract.
The trial was impacted by COVID-19, prompting modifications in November 2022, in line with published guidance, including increasing the sample size from 580 to 730, excluding 151 participants randomized during affected periods from the primary outcome analysis, and extending the outcome collection windows by one month, applied at both the seven month and 20 month time points.
A non-inferiority analysis was performed for the primary endpoint of CLBR at seven months (presented previously).
For the secondary endpoint, a superiority analysis was performed using logistic regression to calculate an odds ratio adjusted for the stratification variables female age and center, with a 99% confidence interval (CI).
RESULTS:
A total of 737 couples were randomized; 365 to IUI-OS pre-treatment and 372 to standard care. Four participants withdrew; of these, one withdrew consent for any data use and was removed from the standard care arm (n = 371). Mean female age was 34.3 years (SD 3.3); median infertility duration 63 months (IQR 55–75); 19% had a prior live birth; mean Hunault prediction score was 19.2% (SD 8.9).
At 20 months, excluding COVID-affected participants, CLBR was 72% (208/288) with IUI-OS pre-treatment and 70% (207/297) with standard care (adjusted odds ratio (aOR) 1.20; 99% CI 0.74–1.96) including five ongoing pregnancies at abstract submission.
At 20 months, CLBR for all randomized participants was 70% (257/365) with IUI-OS pre-treatment and 71% (265/371) for standard care (aOR 0.99; 99% CI 0.64–1.52).
CONCLUSIONS:
IUI-OS pre-treatment before IVF resulted in similar CLBR compared with IVF alone.
IMPACT STATEMENT:
When IUI-OS is offered as a pretreatment to IVF, in couples with unexplained infertility and a poor prognosis of natural conception, CLBR remains similar to IVF alone, with seven out of every ten couples having a livebirth. Cost-effectiveness analysis (presented in another abstract) will guide clinical and funding decisions.
SUPPORT: All funding was through research grants from:
Health Research Council of New Zealand
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Mercia Barnes Trust of the RANZCOG
Lottery Health Research
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P-450 1:45 PM Tuesday, October 27, 2026

ORAL ELAGOLIX VERSUS INJECTABLE CETRORELIX FOR PREVENTION OF OVARIAN HYPERSTIMULATION SYNDROME IN CONTROLLED OVARIAN STIMULATION WITH ANTAGONIST PROTOCOL. Ruthvika Kundoor, MS OBGYN, MCH REPRODUCTIVE MEDICINE AND SURGERY[1], Radha Vembu, DGO, DNB (Obstetrics and Gynaecology), MNAMS, FICS, FIGOG, PhD[2], Monna Pandurangi DR, MD (Ob & Gyn)[3], Arpita Jain DR, MS OBGYN[4] and DR Swetha Mayilvahanan DR, M.S OBSTETRICS AND GYNAECOLOGY, FELLOWSHIP IN REPRODUCTIVE MEDICINE[5], [1]Sri Ramachandra Medical College, Third year Resident, India, [2]Professor, Department of Reproductive Medicine and Surgery, Sri Ramachandra Institute of Higher Education and Research, Chennai, India, [3]Associate Professor, Chennai, India, [4]SRI RAMACHANDRA MEDICAL COLLEGE, Chennai, India, [5]SRI RAMACHANDRA MEDICAL COLLEGE AND HOSPITAL, Kilpauk, India

OBJECTIVE: To compare the efficacy of Oral Antagonist Elagolix with injectable Cetrorelix in preventing Ovarian Hyperstimulation Syndrome (OHSS) in women undergoing controlled ovarian stimulation cycles with GnRH Antagonist protocol
MATERIALS AND METHODS: This prospective observational cohort study was conducted at a tertiary care fertility center from March 2025 to March 2026. Patients at risk of OHSS were identified based on one or more of the following criteria: > 17 follicles over 10mm at trigger, Elevated estradiol at trigger(> 3500 pg/ml), >15 oocytes retreived. All women undergoing flexible antagonist protocol identified as at risk for OHSS were included in the study. They received GnrH agonist trigger (Triptorelin 0.2mg), cabergoline 0.5mg once daily for 8 days from trigger, freeze all strategy was followed. Included patients were divided into two groups based on the type of antagonist received for Luteinizing hormone(LH) suppression. The study group consisted of patients who received elagolix (n=72), control group received cetrorelix (n=53). In both the

groups the same antagonist used during stimulation was continued post oocyte retrieval for 5 days as an additional preventive strategy for OHSS(Elagolix 150mg twice daily, Cetrorelix 0.25mg once daily). Patients were evaluated on day 3 post retreival for clinical symptoms, transvaginal ultrasound for ovarian size, ascites and hematocrit levels were measured. Symptomatic patients were graded according to ASRM classification of OHSS. All the patients were followed until onset of menses. Statistical analysis was done using SPSS software. Descriptive statistics and percentage analysis for categorical variables, for continuous variables Mean plus standard deviation was used and for bivariate samples independent T-test was used.
RESULTS: Baseline characteristics including age, Body Mass Index, duration of infertility, Anti-Mullerian Hormone, Antral follicular count were comparable between groups. Serum estradiol levels were significantly lower in the study group (2884.72 ± 2326.55 vs 3912.60 ±1735.41 pg/ml, p=0.01). The number of oocytes retrieved (22.79±15.63 vs 24.38±7.35 p=0.183) and mature oocytes (21.35 vs 18.30, p=0.072) were comparable. Day 3 post- retrieval hematocrit (34.30±1.72 vs 33.90±2.19 p=0.373), ovarian size (5.66 vs 5.88 cm p=0.10) were comparable. The incidence of mild OHSS was comparable between both the groups (11.5% vs 13.8%,p=0.72). No cases of moderate or severe OHSS were observed. Time to onset of menses was also comparable (6.61±1.32 vs 6.31±1.20 days, p=0.265).
CONCLUSIONS: Post oocyte retrieval oral Elagolix, as an additional preventive strategy provides comparable OHSS prevention to injectable cetrorelix in at-risk patients with the added advantage of lower estradiol levels, possibly mediated through enhanced luteolysis as reflected by similar timing of onset of menses.
IMPACT STATEMENT: Post oocyte retreival oral Elagolix use provides a novel, cost effective, needle free strategy for OHSS prevention, achieving lower estradiol levels without increasing OHSS risk while maintaining comparable clinical outcomes, supports a patient friendly alternative to injectable regimens.
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P-451 2:00 PM Tuesday, October 27, 2026

TRANSITION FROM INDIVIDUAL TO SHARED-MEDIUM GROUP CULTURE IMPROVES BLASTOCYST FORMATION AND EMBRYO UTILIZATION IN PATIENTS WITH A HISTORY OF POOR EMBRYO DEVELOPMENT. SU Hee Seok, M.Sc, So-Yeon Ahn, M.Sc, Mihee Oh, M.Sc, Hyo Jeong KIM, M.S., Jeong Yoon Jang, BSc, Geun Heo, MSc, Se Jeong Kim, M.D., Min Kyoung Kim, M.D., Ph.D., Hee Jun Lee, M.D., Ph.D. and Jin Hee Eum, PhD, CHA University Fertility Center Gangnam, Seoul, Korea, Republic of (South)

OBJECTIVE: To determine whether a shared-medium group culture system within a time-lapse incubator improves preimplantation embryo development and embryo utilization compared with conventional individual culture in patients with a history of suboptimal embryo development.
MATERIALS AND METHODS: This single-center retrospective study was conducted between January and December 2025 and included 69 patients who failed to obtain embryos suitable for cryopreservation in a prior individual culture cycle. These cycles served as the control group. In a subsequent IVF cycle, paired outcomes were evaluated after embryo culture using a shared-medium group culture system within a time-lapse incubator. A total of 392 fresh MII oocytes in the control cycle underwent IVF/ICSI and were cultured individually in a conventional incubator. In the subsequent cycle, 530 fresh MII oocytes underwent IVF/ICSI and were cultured in a shared-medium group culture system using EmbryoSlide+ dishes within a time-lapse incubator. Fertilization, Day 3 embryo development, blastocyst formation, and embryo utilization rates were assessed.
RESULTS: Shared-medium group culture cycles significantly improved embryological outcomes compared with individual culture cycles. Fertilization rates were higher in group culture cycles than in individual culture cycles (70.2% vs. 63.3%, P = 0.033). Day 3 embryo development (33.9% vs. 22.9%, P = 0.003) and blastocyst development rates (15.3% vs. 8.4%, P = 0.011) were also significantly increased. The embryo utilization rate was 21.0% in group culture cycles, whereas no embryos were suitable for cryopreservation following individual culture (P < 0.00001). At the patient level, 69.6% of patients had at least one embryo suitable for cryopreservation in group culture cycles, while 30.4% of patients had no embryos available. Among embryos utilized in group culture cycles, 30.8% were cryopreserved at the cleavage stage, 24.4% at the morula stage, and 44.9% at the blastocyst stage.
CONCLUSIONS: Transitioning from individual to a shared-medium group culture system significantly improves embryo development to the blastocyst stage and increases embryo utilization in patients with a history of poor embryo development.
IMPACT STATEMENT: Shared-medium group culture within a time-lapse system may represent an effective strategy for patients who previously failed to obtain usable embryos under conventional individual culture conditions.

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ENDOMETRIAL MACROPHAGES AS A DETERMINANT OF IMMUNE CELL POPULATION CHANGES FOLLOWING INTRAUTERINE PRP ADMINISTRATION. Jinahn Safir, BSc[1], Dimitar Parvanov, PhD[2], Rumiana Ganeva, PhD[1], Margarita Ruseva, MSc[2], Maria Handzhiyska, MSc[2], Sofia Koristashevskaya, MSc[2], Teodora Tihomirova, MD[2], Stela Chapanova, MD[2] and Georgi Stamenov, MD/PhD[2], [1]Nadezhda Women's Health Hospital, Sofia, Bulgaria, [2]Nadezhda Women's Health Hospital, Sofia, Bulgaria

OBJECTIVE: The endometrial immune profile is a key factor of successful embryo implantation. Although platelet-rich plasma (PRP) is increasingly used in assisted reproduction, its effect on the different endometrial immune cell populations remains insufficiently characterized. This study aimed to analyze and compare changes in key endometrial immune cell populations of in vitro fertilization (IVF) patients before and after intrauterine PRP administration and to identify determinants of response.
MATERIALS AND METHODS: A total of 54 paired endometrial biopsies from 27 IVF patients (28–53 years) were analyzed. Samples were collected in the mid-luteal phase (LH+7) of two consecutive cycles, before and after intrauterine PRP administration. The PRP was prepared by two-step centrifugation (500g, 700g) of 22 mL peripheral blood, and 1.5 mL was administered intrauterinely on LH+2. Immunohistochemistry was performed for CD3 (total T cells), CD4 (T helper cells), CD56 (NK cells), and CD68 (macrophages) using BOND Polymer Refine Detection (Leica) according to the manufacturer's instructions. Immune cells were quantified using digital image analysis (HALO, Indica Labs) and expressed as a percentage of stromal cells. Statistical analysis included paired and independent t-tests (SPSS).
RESULTS: No significant differences in mean immune cell percentages were observed before and after PRP treatment (p>0.05). (mean±SEM: CD3 6.99±2.63% vs. 4.42±0.42%; CD4 2.11±0.99% vs. 1.26±0.22%; CD56 2.94±0.52% vs. 3.71±0.59%; CD68 3.20±0.41% vs. 3.28±0.43%; all p>0.05).
However, stratified analysis revealed a divergent response pattern: 48% of patients (n=13) showed a coordinated increase in at least 3 of the 4 studied immune cell populations, whereas 30% (n=8) showed a coordinated decrease of the same nature. Direct comparison between these response groups demonstrated that baseline macrophage levels were the only parameter significantly associated with response direction. Patients in the "increase" group had lower pre-treatment CD68+ levels compared to the "decrease" group (2.35±0.22% vs. 4.31±0.94%, p=0.02).
CONCLUSIONS: Intrauterine PRP administration does not uniformly alter the endometrial immune cell composition. Instead, its effect appears dependent on baseline macrophage levels. The results of this study suggest that PRP application should be individualized rather than routine in IVF.
IMPACT STATEMENT: This study suggests that baseline endometrial macrophage levels may serve as a predictive biomarker for the immunomodulatory effect of intrauterine PRP therapy. These findings allow for more precise and personalized treatment of IVF patients.
SUPPORT: N/A

P-453 2:30 PM Tuesday, October 27, 2026

IMPACT OF ZYMOT MICROFLUIDIC SPERM SELECTION ON EMBRYO SEX RATIO. Andrew H Rezk, MD[1], Intira Sriprasert, M.D., Ph.D.[2], Nikita Rao, M.D.[3], Samantha Getze, B.S.[4], Sharron L. Manuel, MD, MS, PhD[2], Richard J. Paulson, MD, MS[5], Botros M Rizk, MD FACOG FAcCS HCLD FRCOG[1] and Rachel Mandelbaum, MD[2], [1]HRC Pasadena, Pasadena, CA, [2]Division of Reproductive Endocrinology and Infertility, University of Southern California, CA, [3]Department of Obstetrics and Gynecology, Los Angeles General Medical Center, [4]Keck School of Medicine, University of Southern California, Los Angeles, CA, [5]University of Southern California, Los Angeles, CA

OBJECTIVE: To evaluate whether microfluidic sperm sorting (ZyMot) alters embryo sex chromosome composition compared to conventional sperm processing and to further assess this relationship among euploid, aneuploid, and mosaic embryos identified through preimplantation genetic testing (PGT).
MATERIALS AND METHODS: Retrospective cohort study of IVF cycles (1/2025-12/2025) at a single center. Cycles were categorized by whether ZyMot was utilized for sperm preparation. PGT results were reviewed to determine embryo sex chromosome composition (XX, XY and sex chromosome aneuploidies) and ploidy status (euploid, aneuploid, or mosaic). Primary analysis compared sex distribution between ZyMot and non-ZyMot cycles across all embryos. Subgroup analyses were stratified by ploidy status. . Fisher's exact test was used to compare categorical distributions between groups, with statistical significance set as p<0.05. Statistical analyses conducted in Stata.
RESULTS: A total of 1,280 embryos were analyzed (615 non-ZyMot, 665 ZyMot). Overall, there was no significant difference in embryo sex distribution (p=0.39): non-ZyMot 48.5% XX and 45.9% XY vs ZyMot 48.9% XX and 45.1% XY. (See table below) Stratified analysis by ploidy status showed no significant differences. Among euploid embryos (n=545), the sex distribution was similarly comparable between groups: 51.9% XX and 48.1% XY in the non-ZyMot group versus 48.8% XX and 51.2% XY in the ZyMot group (p=0.49). Among aneuploid embryos, no significant difference in sex chromosome composition was observed: 45.2% XX and 43.2% XY in the non-Zymot Group versus 48.2% XX and 41.2% XY in the ZyMot group (p=0.34). Mosaic embryos also showed no difference (p=0.40).
CONCLUSIONS: ZyMot use was not associated with differences in embryo sex distribution. This remained consistent across euploid, aneuploid, and mosaic embryos.
IMPACT STATEMENT: To our knowledge, this study provides the first evidence assessing the relationship between ZyMOT use and embryo sex ratio across different ploidy categories. These findings suggest microfluidic sperm sorting does not introduce sex selection bias and support its continued clinical use.
Embryo Sex Distribution by ZyMOT Use

Category	Total (n=1280)	Non-ZyMOT (n=615)	ZyMOT (n=665)	p-value
Overall				0.39
XX	623 (48.7%)	298 (48.5%)	325 (48.9%)	
XY	581 (45.4%)	282 (45.9%)	299 (45.1%)	
Other*	76 (5.9%)	35 (5.7%)	41 (6.1%)	
Euploid	**N=545**			0.49
XX	275 (50.5%)	150 (51.9%)	125 (48.8%)	
XY	270 (49.5%)	139 (48.1%)	131 (51.2%)	
Aneuploid	**N=687**			0.34
XX	322 (46.9%)	136 (45.2%)	186 (48.2%)	
XY	289 (42.1%)	130 (43.2%)	159 (41.2%)	
Mosaic	**N=48**			0.40
XX	26 (54.2%)	12 (48.0%)	14 (60.9%)	
XY	22 (45.8%)	13 (52.0%)	9 (39.1%)	

*Other includes XO, XXX, XXY, XYY, and other sex chromosome abnormalities.

SUPPORT: No financial disclosures.

SURGERY (1 OF 2)

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CAN WE SAFELY STIMULATE? RECURRENCE RISK FOLLOWING CONTROLLED OVARIAN STIMULATION (COS) IN PATIENTS WITH BORDERLINE OVARIAN TUMORS (BOTS). Jillian Pecoriello, MD[1], Claudia G Durbin, M.S.[2], Sarah D Cascante, MD[3], Patty Ann LaBella, BS[3], Caroline McCaffrey, PHD, HCLD[4], Lisa M Kump Checchio, M.D.[5] and Mary Elizabeth Fino, M.D.[4], [1]NYU School of Medicine, New York, NY, [2]NYU Grossman School of Medicine, New York, NY, [3]NYU Langone Prelude Fertility Center, New York, NY, [4]NYU Langone Fertility Center, New York, NY, [5]NYU Langone Fertility Center

OBJECTIVE: Despite expanding research on fertility preservation (FP) for patients with cancer, data on patients with BOTs remain limited. As BOTs are commonly diagnosed in patients of reproductive age, concerns persist regarding the safety of controlled ovarian stimulation (COS) in this population. This study aimed to 1) Characterize patients with BOTs seeking fertility care and 2) evaluate the risk of recurrence following COS.
MATERIALS AND METHODS: This was a retrospective cohort study of all BOT patients who presented for fertility evaluation at a large academic fertility center. A data query identified all patients who presented to discuss FP either with a known BOT at time of initial consultation or with a BOT diagnosed after initial consultation. Patient demographic information, medical history, BOT recurrence, and whether they underwent COS were reviewed. Chi-square, Fisher's exact, and Mann-Whitney U tests were performed, with $p<0.05$ statistically significant.
RESULTS: 51 BOT patients presented to the fertility center; 38 (74.5%) underwent COS, completing 69 COS cycles. Among those who underwent COS, 6 (11.8%) experienced recurrence. Of these, 4 required an oophorectomy after a prior cystectomy and 2 required repeat cystectomies. Among all BOT patients, 22 (43.1%) had no documented recurrence after COS, recurrence status was unknown in 18 (35.3%) due to limited access to oncology records, 3 (5.9%) had a recurrence prior to COS and 2 (3.9%) had a recurrence without undergoing COS. Among patients who underwent COS, there was no significant differences between those with and without recurrence in ethnicity ($p=0.15$), unilateral vs bilateral BOT ($p=0.30$), stage ($p=0.16$), median BMI (25.7 vs 22.3, $p=0.62$), age at cycle start (27 vs 29y, $p=0.61$), total gonadotropin dose (3825 vs 3412 IU, $p=0.35$), stimulation duration (11.5 vs 10d, $p=0.25$), or peak estradiol level (1471 vs 3282 pg/mL, $p=0.10$). Surgical history prior to COS was significantly associated with recurrence risk: patients who underwent oophorectomy had no recurrences, compared to recurrence rates of 33% following unilateral cystectomy and 67% following bilateral cystectomy ($p<0.002$). Finally, recurrence rates did not differ significantly between patients who underwent COS and those who recurred either prior to COS or without undergoing COS (26% vs 50%, $p = 0.24$).
CONCLUSIONS: Patient demographics, disease characteristics, and COS cycle parameters were not associated with BOT recurrence. The only factor significantly associated with BOT recurrence was the type of surgical management prior to COS, with lower recurrence observed following oophorectomy compared to cystectomy.
IMPACT STATEMENT: Patients can be reassured that undergoing COS did not significantly impact BOT recurrence risk, supporting its safety and feasibility as a FP option in this population.

P-455 4:00 PM Tuesday, October 27, 2026

DAMAGED PERK-ATAD3A SYSTEM IN SPERMATOGENIC CELLS OF PATIENTS WITH VARICOCELE. Wujiang Liu, Dr.[1], Jian Zhou, M.D.[2], Changwei Yuan, undergraduate[3] and Xinna Chen, MD[4], [1]Beijing Amcare Hospital, Beijing, China, [2]Beijing Amcare Beisanhuan Hospital, Beijing City, China, [3]Beijing Amcare Beisanhuan Women's & Children's Hos, Beijing, Beijing, China, [4]Amcare Beisanhuan Women's & Children's Hospital, Beijing City, China

OBJECTIVE:
Varicocele is a leading cause of male infertility, yet the molecular mechanisms underlying persistent germ cell damage remain incompletely understood. The PERK-ATAD3A (protein synthesis refuge) system regulates mitochondrial homeostasis and ER stress responses (Karinder K Brar, Science 2024). We hypothesis that PERK-ATAD3A impairment contributes to sustained spermatogenic injury and influences surgical outcomes of patients with varicocele.
MATERIALS AND METHODS:
With informed consent, 135 men with left-sided or bilateral varicocele (grade II/III) (to undergo surgery) and 117 fertile controls (no varicocele, normal semen analysis, IVF due to women). All patients were excluded from genetic, hormonal and infection problems. Seminal fluid was collected after 3-5 days abstinence. Seminal fluid exfoliated germ cells were enriched by density gradient centrifugation and analyzed for PERK and ATAD3A expression via immunofluorescence and Western blot. A composite "PERK-ATAD3A impairment score" was defined based on reduced colocalization and expression (<30th percentile of controls). ER stress markers were investigated by western-blot. Varicocele patients underwent microsurgical varicocelectomy and were followed for 12 months, surgical response (≥50% improvement in sperm motility or count) was recorded.
RESULTS:
Varicocele patients showed significantly lower PERK-ATAD3A co-expression in spermatogenic cells compared to controls ($P<0.01$). Impairment of the PERK-ATAD3A system was detected in 88/135 (65.2%) varicocele patients vs. 12/117 (10.3%) controls ($P<0.001$). Preoperatively, impairment correlated with increased exfoliated cells ($r=0.73$, $P<0.001$) and higher ER stress markers (CHOP, BiP). At 12 months post-surgery, 86/135

(63.7%) patients responded. Responders had higher baseline PERK-ATAD3A scores than non-responders (0.52 [0.41-0.60] vs. 0.22 [0.15-0.29], P<0.0001). ROC analysis revealed that a PERK-ATAD3A score threshold of 0.39 predicted surgical response with 85% sensitivity and 81% specificity (AUC=0.89). In multivariate analysis, PERK-ATAD3A impairment was independently associated with non-response (adjusted OR=0.09, P<0.001).
CONCLUSIONS:
PERK-ATAD3A system impairment is a hallmark of persistent spermatogenic injury in varicocele and a strong independent predictor of surgical outcome. Evaluation of this pathway may guide patient selection for surgery and identify candidates for ER stress-modulating therapies.
IMPACT STATEMENT:
The new signaling pathways and molecules can be used for the diagnosis and treatment of varicocele

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SHORTENED LAPAROSCOPIC ETHANOL SCLEROTHERAPY PRESERVES OVARIAN RESERVE AND IMPROVES REPRODUCTIVE OUTCOMES IN WOMEN WITH OVARIAN ENDOMETRIOMAS. Yutong Wang, Doctor[1], Jintao Peng, Dr[2] and Haitao Zeng, Ph.D[3], [1]The Sixth Affiliated Hospital, Sun Yat-sen University, Guangzhou City, Guangdong Province, China, [2]The sixth affiliated hospital of Sun Yat-sen university, Guangzhou, China, [3]Guangzhou, China

OBJECTIVE: To evaluate whether reducing ethanol retention duration during laparoscopic ethanol sclerotherapy better preserves ovarian reserve and improves reproductive outcomes in infertile women with ovarian endometriomas (OEMs).
MATERIALS AND METHODS: This retrospective cohort study included 116 infertile women with OEMs (≥4 cm) who underwent laparoscopic ethanol sclerotherapy followed by controlled ovarian hyperstimulation using a gonadotropin-releasing hormone agonist protocol. Patients were categorized by ethanol retention duration: 15-minute (n=54) or 5-minute (n=62). Postoperative anti-Müllerian hormone (AMH), embryological parameters, and cumulative pregnancy and live birth rates from a single stimulation cycle were compared. Multivariate logistic regression was performed adjusting for age, AMH, endometrioma size, and laterality. Subgroup analyses were conducted by age, ovarian reserve, and laterality.
RESULTS: Baseline characteristics and preoperative AMH were comparable between groups (2.22 vs. 1.82 ng/mL, p=0.142). The 5-minute group showed significantly higher postoperative AMH (2.21 vs. 1.14 ng/mL, p=0.006) and smaller AMH decline (−0.17 vs. −0.43 ng/mL, p<0.001). Normal fertilization rates (75.5% vs. 64.5%, p<0.001) and high-quality blastocyst rates (59.3% vs. 42.5%, p=0.003) were significantly higher in the 5-minute group. On multivariate analysis, the 5-minute protocol was associated with higher cumulative pregnancy (OR=3.279, 95% CI: 1.364–7.882) and live birth rates (OR=3.391, 95% CI: 1.396–8.236). Subgroup analyses suggested greater benefit among women with diminished ovarian reserve (AMH <1.2 ng/mL) or advanced reproductive age (>38 years).
CONCLUSIONS: A 5-minute ethanol retention during laparoscopic sclerotherapy was associated with better-preserved ovarian reserve, improved embryological parameters, and significantly higher cumulative pregnancy and live birth rates compared to the conventional 15-minute protocol, particularly in women with compromised ovarian reserve or advanced age.
IMPACT STATEMENT: Optimizing ethanol exposure duration during laparoscopic sclerotherapy may represent a clinically meaningful strategy to balance effective OEM treatment with fertility preservation, especially for patients at high risk of ovarian damage, offering guidance for surgical decision-making in reproductive medicine.

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INTRAOPERATIVE TRANSVAGINAL ULTRASOUND: A NOVEL APPROACH TO REFINE SURGICAL STRATEGY IN RECTOSIGMOID ENDOMETRIOSIS SURGERY. Yannick Hurni, M.D.[1], Francesco La Torre, M.D.[2], Nuria Barbany-Freixa, MD[2], María Antonia Lequerica Cabello, M.D.[2], Betlem Graupera, M.D. PhD[3], Francesc Tressera, M.D. PhD[4], Silvia Cabrera, M.D. PhD[5] and Pere Barri, M.D.[3], [1]Barcelona, Cataluna, Spain, [2]Dexeus University Hospital, Barcelona, Spain, [3]Dexeus Mujer, Barcelona, Barcelona, Spain, [4]Hospital Universitario Dexeus, Barcelona, Cataluna, Spain, [5]Dexeus Mujer, Badalona, Cataluna, Spain

OBJECTIVE: To assess the feasibility, diagnostic agreement, and surgical impact of intraoperative transvaginal ultrasound (IOTVUS) in rectosigmoid endometriosis.
MATERIALS AND METHODS: We conducted a prospective observational feasibility study between January and April 2026. Women aged ≥18 years scheduled for laparoscopic excision of posterior compartment deep endometriosis (DE), with or without bowel involvement, were included. IOTVUS was performed after pelvic dissection and rectal mobilization to assess rectosigmoid endometriosis, including lesion presence, size (length, transverse diameter, and thickness), location, and depth of bowel wall infiltration. The primary outcome was feasibility, defined as clear visualization of the lower rectum, upper rectum, and rectosigmoid junction with complete characterization of suspected DE lesions. In patients with intraoperatively confirmed rectosigmoid endometriosis, agreement between IOTVUS and histopathology was assessed using Bland–Altman analysis and Cohen's kappa. Surgical strategy was recorded preoperatively, intraoperatively before IOTVUS, and after IOTVUS. Changes were classified as upstaging or downstaging, and those attributable to IOTVUS were defined as modifications between intraoperative assessments before and after IOTVUS.
RESULTS: Sixty-nine patients were included. IOTVUS was feasible in 97.1% of patients (67/69). Rectosigmoid endometriosis lesions were identified intraoperatively in 37.7% of patients (26/69) and were consistently assessable by IOTVUS. In patients with intraoperatively confirmed endometriosis, comparison between IOTVUS findings and histopathology showed a mean difference of 0.34 mm for lesion length (95% limits of agreement [LoA]: −6.12 to 6.81 mm), with no statistically significant difference ($p = 0.58$). For lesion thickness and transverse diameter, mean differences were 0.55 mm (95% LoA: −1.53 to 2.64 mm) and 1.45 mm (95% LoA: −2.98 to 5.88 mm), respectively, with statistically significant differences observed ($p = 0.009$ and $p = 0.002$). Agreement for the deepest infiltrated bowel wall layer was high, with a weighted Cohen's kappa of 0.96 ($p < 0.001$). Complete agreement was observed for segmental resection criteria between IOTVUS and histopathology ($\kappa = 1.00$, $p < 0.001$). Surgical strategy changed between preoperative assessment and final intraoperative decision in 25/69 patients (36.2%). Among these, 5/69 patients (7.2%) experienced a change attributable to IOTVUS.
CONCLUSIONS: IOTVUS is a feasible and accurate method for intraoperative assessment of rectosigmoid endometriosis, demonstrating high agreement with histopathology. Although small differences in lesion measurements were observed, these were clinically negligible. The excellent agreement in identifying criteria for segmental resection supports its reliability in guiding intraoperative decision-making.
IMPACT STATEMENT: IOTVUS provides real-time, accurate assessment of rectosigmoid endometriosis and may support more conservative, tailored surgical management by refining intraoperative decision-making.
SUPPORT: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

P-458 4:45 PM Tuesday, October 27, 2026

TREATMENT OR TUMOR? BORDERLINE OVARIAN TUMOR (BOT) TREATMENT DRIVES FERTILITY PRESERVATION AND IVF OUTCOMES. Claudia G Durbin, M.S.[1], Jillian Pecoriello, MD[2], Sarah D Cascante, MD[3], Patty Ann LaBella, BS[3], Caroline McCaffrey, PHD, HCLD[4], Lisa M Kump Checchio, M.D.[5] and Mary Elizabeth Fino, M.D.[4], [1]NYU Grossman School of Medicine, New York, NY, [2]NYU School of Medicine, New York, NY, [3]NYU Langone Prelude Fertility Center, New York, NY, [4]NYU Langone Fertility Center, New York, NY, [5]NYU Langone Fertility Center

OBJECTIVE: Data on the impact of BOTs on controlled ovarian stimulation (COS) and IVF outcomes remain limited. This study evaluated fertility preservation (FP) outcomes – including oocyte cryopreservation (OOF) and embryo banking (EB) - and IVF outcomes in patients with BOTs.
MATERIALS AND METHODS: This retrospective cohort study included all BOT patients who underwent COS at a large academic fertility center. Primary outcomes included COS cycle characteristics and FP/IVF outcomes. BOT COS cycles were matched 1:1 to two sets of controls; the first set were matched by age, AMH, cycle type, and cycle year and the second set were matched by age, cycle type, and cycle year (not AMH). A subgroup analysis matched BOT patients with cystectomy prior to COS to controls with a history of an endometrioma and cystectomy prior to COS, again matched 1:1 to two sets of controls, as described above. Statistical analyses included Mann-Whitney U, Chi-square, and Fisher's exact tests (p<0.05 significant).
RESULTS: 69 BOT COS cycles were matched to 69 control COS cycles (33 OOF and 36 IVF/EB cycles per group). Most BOT cycles (67; 97.1%) occurred after surgery, including unilateral oophorectomy (n=40), unilateral cystectomy (n=12), bilateral cystectomy (n=5), and combination oophorectomy/cystectomy (n=12). When matched by age, AMH, cycle type, and cycle year, there were no differences in total gonadotropin dose, stimulation duration, oocyte yield, M2 yield, or euploid yield, and maturity rate, fertilization rate, blastocyst rate, or euploidy rate (all $p > 0.14$). When matched by age, cycle type and cycle year (not AMH), controls had a significantly higher AMH ($p < 0.001$), oocyte yield ($p < 0.03$), M2 yield ($p < 0.03$), and euploid yield ($p < 0.02$); however, there were no differences in maturity, fertilization, blastocyst, or euploidy rates (all $p > 0.10$). Among patients with a prior cystectomy (BOT vs endometrioma; 9 OOF and 8 EB/IVF cycles per group), there were not differences other than longer duration of stimulation in the BOT group (median 12 days (IQR 1.5) vs 10 days (1), $p < 0.02$). When patients with a prior cystectomy were compared to matched controls by age, cycle type and cycle year (not AMH), no differences were observed between groups, including AMH, number of oocytes, M2s, and euploids, or maturity, fertilization, blastocyst, and euploidy rates (all $p > 0.30$).
CONCLUSIONS: BOT patients demonstrate reduced ovarian reserve and oocyte yield compared to age-matched controls; however, oocyte maturity rates and embryo development are preserved. Comparable outcomes following a cystectomy for BOTs and endometriomas suggest that observed differences are driven by treatment-related effects rather than tumor biology.
IMPACT STATEMENT: These findings support early FP counseling in BOT patients, ideally prior to surgical intervention, and provide reassurance regarding preserved oocyte maturity rates and embryo developmental potential.

SURGERY (2 OF 2)

P-459 3:45 PM Tuesday, October 27, 2026

SPONTANEOUS BILATERAL TUBAL ECTOPIC PREGNANCY REQUIRING BILATERAL SALPINGOSTOMY: A CASE REPORT. Jonathan M Konel, MD MHS, Kasey Meeks, MD, Hannah Kim, MD and Katrina Mark, MD, University of Maryland School of Medicine, Baltimore, MD

OBJECTIVE: Bilateral tubal ectopic pregnancy is a rare variant of ectopic pregnancy, with an estimated incidence of 1 in 200,000 pregnancies. It is most commonly associated with assisted reproductive technologies, particularly with multiple embryo transfer. Spontaneous bilateral tubal ectopic pregnancy in patients without traditional risk factors

is exceedingly rare and presents diagnostic and therapeutic challenges. We present a case of incidentally identified spontaneous bilateral tubal ectopic pregnancy during laparoscopy in a patient without risk factors, managed with bilateral salpingostomy for fertility preservation.
MATERIALS AND METHODS: A patient with pregnancy of unknown location (PUL) and presumed ectopic pregnancy was evaluated. Informed consent was obtained.
RESULTS: A 30-year-old G2P0010 with a history significant for morbid obesity presented with vaginal spotting at 7w1d. Her obstetric history was significant only for a termination of pregnancy via suction dilation and curettage. Her initial exam was unremarkable with a closed cervix and no active bleeding. Initial β-hCG was 3,314 mIU/mL. Transvaginal ultrasound (TVUS) showed no intrauterine pregnancy (IUP) and a 1.3cm right ovarian follicle. She was diagnosed with PUL and followed outpatient. Her repeat β-hCG 48 hours later was 4,278 mIU/mL with TVUS again showing absence of IUP. She was counseled on options and opted for methotrexate. She did not return for a lab draw on day 4. On day 7, β-hCG decreased to 2,970 mIU/mL. She re-presented on day 11 with worsening abdominal pain and vaginal spotting. Her β-hCG had declined to 1,449 mIU/mL, a 66% decrease after methotrexate. Repeat TVUS showed no IUP and minimal pelvic free fluid. Despite stable vital signs and hemoglobin, she opted for surgical management due to persistent pain. Prior to surgery, all risks and potential benefits were discussed. She was counseled about the possibility of salpingectomy and potential future fertility implications. Diagnostic laparoscopy revealed bilateral ampullary tubal distention with discoloration consistent with intact bilateral ectopic pregnancies. The uterus and ovaries were normal, and no hemoperitoneum was noted. Given her desire for future fertility, bilateral salpingostomy was performed. A 1cm incision was made on the bilateral fallopian tubes and ectopic tissue was removed. Estimated blood loss was 100mL. Postoperatively, her pain was reportedly immediately improved. Pathology confirmed chorionic villi in both fallopian tubes. β-hCG declined to 2 mIU/mL by postoperative day 17. She was advised to undergo hysterosalpingogram in 3 months from surgery.
CONCLUSIONS: Bilateral tubal ectopic pregnancy can occur in patients without traditional risk factors. This case highlights the importance of intraoperative evaluation and individualized surgical planning. Bilateral salpingostomy is a reasonable fertility-sparing option in select patients, though close follow-up is required to monitor for persistent trophoblastic tissue.
IMPACT STATEMENT: This case underscores the diagnostic complexity of bilateral ectopic pregnancy and supports fertility-preserving surgical management with careful counseling and follow-up.

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INCREASING VISITS FOR UTERINE SEPTUMS AND RELATED DIAGNOSES: A NATIONAL ANALYSIS FROM 2018 TO 2024. Hannah Catherine Milad, MD[1], Juan M Avitia, MPH[2] and Magdy P Milad, M.D., M.S.[2], [1]Forest Park, IL, [2]Northwestern University, Chicago, IL

OBJECTIVE: To evaluate national trends in U.S. hospital visits associated with the diagnosis of septate uterus and related diagnoses between 2018 and 2024.
MATERIALS AND METHODS: We analyzed records from the Premier Healthcare Database (PHD), a comprehensive, all-payer U.S. hospital administrative database. Records with ICD-10 code Q51.2 ("Other doubling of uterus") were extracted for the years 2018–2024. This code is most frequently used to capture diagnoses of septate uterus, though it may also include related anomalies. Both inpatient and outpatient visits were included. Quarterly and annual visit counts were estimated using PHD weights. Annual totals were used for trend analysis. Linear regression assessed the association between year and total estimated visits, with significance defined as $p < 0.05$.
RESULTS: Estimated hospital visits associated with Q51.2 increased annually from 7,903 in 2018 to 11,285 in 2024. The increase was consistent over time, with year-over-year growth particularly notable between 2021 and 2024. Linear regression demonstrated a significant upward trend (slope: 490.5 visits/year, $R^2 = 0.91$, $p = 0.005$), indicating a robust association between calendar year and number of visits.
CONCLUSIONS: There has been a significant rise in U.S. hospital visits associated with septate uterus and related diagnoses. These findings may reflect increased awareness, better diagnostic imaging, rising incidence or changes in clinical coding practices. Although procedural trends were not directly evaluated, this may also indirectly reflect increased surgical interventions for uterine anomalies.
IMPACT STATEMENT: U.S. hospital visits associated with septate uterus and related diagnoses increased significantly from 2018 to 2024, indicating a growing hospital-based burden of uterine anomalies. This trend likely reflects changes in diagnostic practices, clinical awareness, and/or management strategies, with implications for health care utilization and reproductive endocrinology and infertility care planning.
SUPPORT: None
REFERENCES:
None

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MATURE TERATOMAS AND MATURE EGGS: MODERATELY SIZED DERMOID CYSTS IN SITU DO NOT AFFECT ASSISTED REPRODUCTION (ART) OUTCOMES COMPARED TO MATCHED CONTROLS. Paxton E Voigt, M.D. M.B.A.[1], Zoey McFarland, B.S.[2], Rebecca Drexler, BA[3], Robyn A Lipschultz, MD[2], Brady J Gelvin, M.D.[4], Emily Michelle Weidenbaum, MD[5], Jacquelyn Shaw, M.D.[4], Frederick Licciardi, M.D.[6] and Jennifer K Blakemore, MD, MSCI[4], [1]NYU Langone School of Medicine, New York, NY, [2]New York, NY, [3]NYU Grossman School of Medicine, New York, NY, [4]NYU Langone Fertility Center, New York, NY, [5]New York University, New York, NY, [6]NYU Langone Health, New York, NY

OBJECTIVE: Surgical excision of dermoid cysts has been associated with a decline in anti-Müllerian hormone (AMH) levels, raising concerns about ovarian reserve impairment (1) especially for those pursuing assisted reproduction (ART). We assessed if the presence of a dermoid cyst affected ART outcomes.
MATERIALS AND METHODS: This was a retrospective cohort study of oocyte cryopreservation (OC), embryo banking (EB) and in-vitro fertilization (IVF) cycles at an academic center from 1/2016-11/2025. All cycles of patients with dermoids (DERM) were included and matched by age and AMH to non-dermoid controls (CTL). Exclusion criteria included cycle cancellation and unavailable CTL. Demographic factors included stimulation (stim) days, total gonadotropin (GnRH) dose, and dermoid size. The primary outcome was metaphase II (M2) oocyte yield. Secondary outcomes were total oocyte yield, maturity (mat) rate, fertilization (fert) rate, blastulation (blast) rate, and euploidy rate. Statistical analysis included Kolmogorov-Smirnov, Mann-Whitney U tests, and a multivariable ordinary least squares regression with M2 yield log-transformed to address non-normality. $P<0.05$ was considered significant.
RESULTS: 216 cycles were included and matched to CTLs: 87 (39.9%) OC, 28 (13.0%) EB, and 101 (46.3%) IVF. The median age was 34 years (yrs) (IQR 32-37) with a median AMH of 1.97 ng/mL (1.31-3.44) for OC, 32.5 yrs (IQR 31-35) with 2.36 ng/mL (0.88-3.71) for EB, and 37 yrs (34-41) with 1.99 ng/mL (0.85-3.48) for IVF. The median dermoid size was 2.3cm (1.8-3.5) for OC, 2.0cm (1.6-2.3) for EB, and 2.8cm (2.0-3.5) for IVF. GnRH dose and stim days did not differ between groups in any cycle type (GnRH dose OC p=0.47, EB p=0.61, IVF p=0.83; stim days OC p=0.77, EB p=0.88, IVF p=0.41). There was no significant difference in M2 yield between DERM patients and CTLs (OC 12 (8-18) vs 11 (7.5-18.5) p=0.92, EB 11.5 (10-21) vs 13 (7-17.5) p=0.91, IVF 9 (6-15) vs 9 (5-18) p=0.84). For OC and IVF, patients with a dermoid had a higher mat rate than CTLs [OC DERM 86% (77-96%) vs CTL 76% (64-83%) p <0.001, IVF DERM 89% (75 – 100%) vs CTL 80% (71 – 91%) p<0.01]. For EB and IVF, there was no difference in fert [EB DERM 74% (64-84%) vs CTL 78% (64-89%) p=0.33 IVF DERM 75% (56-87%) vs CTL 71% (57-88%) p=0.96], blast [EB DERM 59% (50-71%) vs CTL 62% (49-82%) p=0.54, IVF DERM 50% (25-62%) vs CTL 50% (32-73) p=0.30] and euploidy rate [EB DERM 33% (0-60) vs CTL 50% (19-66) p=0.24, IVF DERM 33% (0-56%) vs CTL 41% (0-55) p=0.58]. The regression model explained 43.1% of the variance in M2 yield (adjusted R^2=0.422, p<0.001) and showed AMH (β=0.203, p<0.001) and age (β=-0.031, p=0.001) were significant predictors of M2 yield, but dermoid size was not (β=-0.001, p=0.66).
CONCLUSIONS: The presence of a moderately-sized dermoid cyst does not appear to adversely impact ovarian stimulation outcomes. Dermoid removal solely for the purpose of cycle enhancement may not be indicated.
IMPACT STATEMENT: Patients can be reassured that ART stimulation before dermoid resection is safe and aids clinical decision-making and enhances evidence-based counseling for patients undergoing assisted reproduction.
SUPPORT: None
REFERENCES:
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PERITONEAL BIOPSIES FROM PATIENTS WITH ENDOMETRIOSIS EXPRESS HIGHER RELATIVE ABUNDANCE OF *AKR1C1* mRNA COMPARED TO ENDOMETRIAL BIOPSIES. Archana K Ayyar, MD[1], Celine Cumming, B.S.[2], Lucia Pallier, Ph.D.[2], Rachel Susan Weinerman, M.D.[1] and Kathryn D Coyne, M.D.[3], [1]University Hospitals Fertility Center/Case Western Reserve University, Beachwood, OH, [2]Case Western Reserve University, [3]University Hospitals Cleveland Medical Center, OH

OBJECTIVE: Progesterone resistance in both eutopic and ectopic endometriotic lesions contributes to the pathophysiology of endometriosis. We investigate a potential pathway for this resistance involving aldo-ketoreductase family member c1 (*AKR1C1*). *AKR1C1* metabolizes progesterone into an inactive form of progesterone, 20 alpha-hydroxyprogesterone. The objective of this study is to compare the relative mRNA abundance of *AKR1C1* in the endometrium and peritoneum in patients with and without endometriosis, and between endometrium and ectopic lesions in patients with endometriosis.
MATERIALS AND METHODS: Case-control study was conducted with reproductive-age females undergoing diagnostic or operative laparoscopy for endometriosis (n=10), or for other indications and without surgical evidence of endometriosis (n=10). Eutopic endometrium and peritoneum biopsies were obtained at time of surgery in patients with and without endometriosis. RNA extraction and reverse transcription quantitative polymerase chain reaction was performed. Abundance of *AKR1C1* mRNA relative to reference gene GAPDH was calculated using the relative $2^{-\Delta\Delta Ct}$ method. Welch's T-Test was used to compare the mean ΔCT of *AKR1C1* mRNA abundance between patients with and without endometriosis in both the endometrial and peritoneal biopsies. A one-way ANOVA was used to compare *AKR1C1* mRNA abundance in endometrial and peritoneal biopsies for follicular and luteal phase patients with and without endometriosis. Lastly, among endometriosis patients, the relative mRNA abundance of *AKR1C1* in endometrial and peritoneal biopsies (ectopic endometrial lesions) were compared using a Mann-Whitney. Adjusted p<0.05 was significant.
RESULTS: There was no difference in the relative mRNA abundance of *AKR1C1* between patients without and with endometriosis in endometrial (0.06 vs. 0.03 relative abundance, p=0.25) and peritoneal biopsies (0.21 vs. 0.32 relative abundance, p=0.33), respectively. This finding persisted when the samples were separated into follicular and luteal phases for both endometrial (p=0.27 and 0.72, respectively) and peritoneal biopsies

(p=0.65 and 0.9, respectively). Notably, there is a higher mRNA abundance of *AKR1C1* in ectopic lesions versus eutopic peritoneal endometrial biopsies in patients with endometriosis (0.19 vs. 0.03 relative abundance, p=0.0003).
CONCLUSIONS: While there is no difference in *AKR1C1* expression in endometrial or peritoneal biopsies between patients with and without endometriosis, there was a statistically significant difference in the *AKR1C1* expression between endometrial and peritoneal biopsies within patients with endometriosis. Progesterone resistance is known to differentially impact eutopic and ectopic endometrial lesions in patients with endometriosis. This study provides a possible pathway that leads to this resistance. Further large-scale studies are needed to validate these results.
IMPACT STATEMENT: Increased *AKR1C1* expression in peritoneal lesions of patients with endometriosis may play a role in progesterone resistance. If validated by larger trails, this can provide a possible therapeutic target for medication in patients with endometriosis.
SUPPORT: Tissue sample collection was funded by the SREI Young Investigators Grant.

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RISK OF INTRAUTERINE ADHESIONS AFTER MYOMECTOMY: SYSTEMATIC REVIEW AND META-ANALYSIS OF ABDOMINAL, LAPAROSCOPIC, AND HYSTEROSCOPIC APPROACHES. Patryk Piekos, MD[1], Staci J Marbin, MD[2], João Auler, MD[3], Gabriela Cristina Guillen, Medical Student[4], Diego D. Manavella, MD, PhD[5], George R Attia, MD, FACOG, MBA[2], Pasquale Patrizio, MD, MBE, HCLD, FACOG[2], Stephanie Delgado, MD[6] and Jose Carugno, MD[7], [1]University of Miami, Doral, [2]University of Miami, Doral, FL, [3]Pro Nascer Medicine Reproductiva, Rio de Janeiro, Brazil, [4]Anahuac University, Huixquilucan, EM, Mexico, [5]Neolife: Reproductive Medicine and Surgery, Asunción, Paraguay, [6]University of Miami, Miami, FL, [7]University of Miami, Pembroke Pines, FL

OBJECTIVE: To compare the risk of intrauterine adhesions (IUAs) after abdominal, laparoscopic, and hysteroscopic myomectomy.
MATERIALS AND METHODS: This systematic review and meta-analysis was conducted in accordance with PRISMA 2020 guidelines. PubMed, EMBASE, and Cochrane databases were searched through March 2026. Studies reporting IUA incidence after myomectomy with a defined diagnostic modality were included. Random-effects models were used to calculate pooled prevalence and odds ratios (ORs) with 95% confidence intervals (CIs).
RESULTS: Sixty studies were screened, and fifteen studies (n=1,099) were included. IUA prevalence was higher after abdominal myomectomy (32.3%) than after laparoscopic (10.0%) or hysteroscopic myomectomy (5.9%). Abdominal myomectomy was associated with increased odds of IUAs compared with laparoscopic (OR 2.83, 95% CI 1.88–4.26) and hysteroscopic approaches (OR 4.27, 95% CI 2.38–7.65). There was no significant difference between laparoscopic and hysteroscopic techniques (OR 1.51, 95% CI 0.79–2.87). Heterogeneity was high (I^2=86.9%), although the direction and magnitude of effect were consistent. Outcome ascertainment was strong, with second-look hysteroscopy used in 14/15 studies. Higher IUA risk was observed in studies involving endometrial cavity entry and opposing-wall myoma resection.
CONCLUSIONS: Abdominal myomectomy was associated with a higher risk of intrauterine adhesions compared with minimally invasive approaches, while laparoscopic and hysteroscopic techniques showed comparable risk. Adhesion formation appeared mainly related to surgical factors, particularly endometrial cavity entry and the extent of endometrial disruption.
IMPACT STATEMENT: Postoperative IUA risk after myomectomy appears to vary by surgical route and technique. For patients desiring future fertility, myomectomy route should be included in preoperative counseling, and minimally invasive approaches should be prioritized when surgically appropriate. In high-risk cases involving cavity entry, extensive dissection, or opposing-wall myoma resection, adhesion-prevention strategies and postoperative second-look hysteroscopy should be considered before embryo transfer or conception attempts.

BENIGN GYNECOLOGICAL DISEASE (1 OF 5)

P-464 3:45 PM Tuesday, October 27, 2026

MENSTRUAL SYMPTOM BURDEN AND INFERTILITY ODDS AMONG INDIVIDUALS WITH CO-OCCURRING ENDOMETRIOSIS AND POLYCYSTIC OVARY SYNDROME IN A LARGE US DIGITAL COHORT. Sophia Werdin, PhD[1], Zifan Wang, PhD[1], Jukka-Pekka Onnela, PhD[1], Michelle A. Williams, ScD[2], Russ Hauser, MD, MPH, Sc.D.[1], Brent A. Coull, PhD[1] and Shruthi Mahalingaiah, M.D., M.S.[1], [1]Harvard T.H. Chan School of Public Health, Boston, MA, [2]Stanford School of Medicine, Stanford, CA

OBJECTIVE: Endometriosis (EM) and polycystic ovary syndrome (PCOS) are chronic systemic conditions with distinct pathophysiology. However, evidence on their co-occurrence in the general population is limited and largely derived from small clinical samples. We aimed to quantify the prevalence overlap, characterize menstrual symptom profiles, and estimate infertility odds among individuals with co-occurring EM and PCOS.
MATERIALS AND METHODS: We analyzed data from 90,714 participants in the Apple Women's Health Study enrolled between 11/2019 and 06/2025 who consented and completed relevant surveys. Using self-reported physician diagnoses, we classified participants as EM only, PCOS only, co-occurring EM+PCOS, or neither condition. We compared sociodemographic, clinical, reproductive, and lifestyle characteristics across groups and estimated odds of self-reported physician-diagnosed infertility using multivariable logistic regression, adjusted for age, race/ethnicity, socioeconomic status, and body mass index. Among participants with mobile menstrual cycle logs linked to monthly surveys (n = 25,117), we assessed menstrual symptom burden (number of symptom logs per cycle) using negative binomial mixed-effects models adjusted for age, race/ethnicity, and hormone use in the previous month. Participants with neither EM nor PCOS served as the reference group.
RESULTS: Participants had a mean age of 35.1 years (SD = 11.6) and were predominantly non-Hispanic White (72.0%). Prevalence was 10.7% for PCOS only, 6.2% for EM only, and 2.1% for EM+PCOS. Women with EM+PCOS more often reported unemployment, low socioeconomic status, active smoking, subjectively worse health, early menarche, current irregular cycles, hormone use for cycle management or conception, and a broad range of comorbidities (e.g., endocrine, cardiovascular, digestive) than other diagnosis groups. Infertility odds were highest for EM+PCOS (OR = 12.21, 95% CI = 10.86-13.70), followed by PCOS only (OR = 5.99, 95% CI = 5.55-6.47) and EM only (OR = 4.32, 95% CI = 3.94-4.74). Several menstrual symptoms were logged more frequently by women with EM+PCOS than by those with neither condition, particularly pelvic pain (OR = 3.07, 95% CI = 2.32-4.05). Overall, women with EM+PCOS logged 11% more symptoms per cycle (IRR = 1.11, 95% CI = 1.04-1.19); those with EM only showed the highest symptom burden (IRR = 1.14, 95% CI = 1.09-1.18), and those with PCOS only a modest increase (IRR = 1.06, 95% CI = 1.03-1.08).
CONCLUSIONS: In this large US digital cohort, co-occurring EM and PCOS affected ~1 in 50 women and was associated with heightened symptom burden and markedly elevated odds of infertility. Several risk factors and health impacts typical of EM or PCOS appeared amplified in women with both conditions, suggesting a subgroup with compounded clinical complexity and greater care needs.
IMPACT STATEMENT: These population-scale findings help quantify the overlap of EM and PCOS and highlight substantial infertility concerns. They support the need for targeted research into the temporal order of EM and PCOS onset and diagnosis, specific risk factors, and long-term health trajectories among women with both conditions.
SUPPORT: This study received funding from Apple Inc. The funding source provided platforms and software for data collection and participated in review of the abstract. It played no role in the analysis of data or in the decision to submit this abstract.

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ENDOMETRIOSIS, PCOS, UTERINE FIBROIDS AND PSYCHIATRIC CONDITIONS: A COMPREHENSIVE CAUSAL INFERENCE APPROACH. Dr. Khaoula Ben Messaoud, PhD[1], Shruthi Mahalingaiah, M.D., M.S.[2], Zeynep Asgel, MS[1] and Magdalena Janecka, PHD[1], [1]New York University Grossman School of Medicine, New York, NY, [2]Havard T.H. Chan School of Public Health, Boston, MA

OBJECTIVE: Endometriosis, polycystic ovary syndrome (PCOS), and uterine fibroids are associated with substantial morbidity, including psychiatric comorbidity. Prior research has focused on affective conditions, with often short follow-up, inconsistent clinical definitions, and limited power. To address these limitations, we used a causal-inference framework to estimate disorder-specific, directional associations with psychiatric conditions.
MATERIALS AND METHODS: We integrated three analytic approaches within the UK Biobank: (1) a matched-pair study based on diagnoses of endometriosis, PCOS, and fibroids; (2) cohort analyses using polygenic risk scores (PRS); and (3) bidirectional two-sample Mendelian randomization (MR). Psychiatric conditions included schizophrenia and other psychotic disorders (ICD-10 F20-F29), mood disorders (F30-F39), anxiety and stress-related disorders (F40-F48), and behavioral syndromes with physical components (F50-F59). Using long-term electronic health record and genotype data, we applied multivariable conditional logistic regression (matched pairs), multivariable logistic regression (PRS), and inverse-variance weighting (MR). Sensitivity analyses were performed to assess robustness.
RESULTS: We included women with endometriosis (n=10,755), PCOS (n=2,536), or fibroids (n=26,057), matched to undiagnosed controls (1:1, 1:1, and 1:5, respectively). In fully adjusted models, women with endometriosis had higher risks of mood disorders (OR 1.51, 95% CI 1.40–1.63), anxiety/stress disorders (1.49, 1.38–1.62), and behavioral syndromes (1.28, 1.01–1.62), and those with fibroids similarly had increased risks of mood disorders (1.17, 1.11–1.23), anxiety/stress disorders (1.40, 1.34–1.48), and behavioral syndromes (1.29, 1.12–1.48). Women with PCOS had elevated risks of mood (1.47, 1.32–1.64) and anxiety/stress disorders (1.79, 1.62–1.99), but not behavioral syndromes. Schizophrenia and other psychotic disorders were not associated with any of the reproductive disorders tested. PRS analyses supported genetic liability to fibroids, and MR analyses supported a causal association between fibroids and anxiety/stress disorders.. Results were robust in sensitivity analyses.
CONCLUSIONS: Women with endometriosis, PCOS, and fibroids are at increased risk of mood, and anxiety/stress-related disorders, while those with endometriosis or fibroids also face additional risk of behavioral syndromes. At least some of these risks appear driven by genetic liability.
IMPACT STATEMENT: Endometriosis, PCOS, and uterine fibroids are associated with specific psychiatric conditions, with some links potentially driven by shared genetic liability. These findings highlight psychiatric comorbidity as an important component of reproductive disorders and support routine mental health screening and integrated reproductive–psychiatric care.
SUPPORT: None

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NEUROVASCULAR GRADIENT AND CENTRAL NEUROTROPHIC SIGNALING IN DEEP ENDOMETRIOSIS: IMPLICATIONS FOR SURGICAL PAIN RELIEF. Kiper Aslan, Assoc. Prof, Erberk Çimer, Dr., Selen Mutlu, Phd., Cihan Cakir, M.D., PhD., Isil Kasapoglu, MD, Professor and Gurkan Uncu, Prof., Bursa Uludag University Faculty of Medicine, Bursa, Turkey

OBJECTIVE:
To study the spatial distribution of neural, vascular, and inflammatory components within surgically excised deep endometriosis tissue and to evaluate their association with postoperative pain improvement.
MATERIALS AND METHODS:
In this **prospective pilot** study, fifteen women with advanced posterior deep endometriosis underwent **laparoscopic butterfly peritoneal excision**. Each specimen was divided into fifteen segments, including seven regions on each side and a central lesion. A total of 225 segments were analyzed, along with one normal peritoneal sample per patient (**n = 240 total samples**), enabling high-resolution spatial mapping of the excised peritoneal field. **Nerve-fiber** and **capillary density** were assessed histologically, and tissue mediators including **nerve growth factor, bradykinin, PGP 9.5** and **substance P** were quantified. Pain outcomes (**dysmenorrhea** and **chronic pelvic pain**) and **quality-of-life scores** were recorded preoperatively and at **6 months**. Spatial trends were analyzed using generalized estimating equation models, and predictors of pain improvement were evaluated using multivariable regression analysis.
RESULTS:
Nerve-fiber density showed a significant center-to-periphery decline ($\beta = -0.3169$, **$p < 0.001$**), corresponding to an approximate **27%** reduction per segment, while capillary density demonstrated a parallel but less pronounced decrease ($\beta = -0.100$, **$p < 0.001$**), supporting a coordinated neurovascular gradient. No right–left difference was observed. In contrast, inflammatory mediators exhibited heterogeneous spatial distribution rather than a uniform center-dominant pattern. Among evaluated markers, only bradykinin was associated with nerve-fiber density (**$p < 0.001$**).
Central nerve growth factor concentration independently predicted improvement in dysmenorrhea at 6 months ($\beta = 0.012$, **$p = 0.043$**), whereas nerve-fiber density did not demonstrate independent predictive value. For chronic pelvic pain, baseline pain severity was the only independent predictor of postoperative improvement ($\beta = 0.777$, **$p = 0.030$**). Clinically, marked reductions were observed across all pain domains, accompanied by consistent improvements in both physical and mental quality-of-life measures.
CONCLUSIONS:
Deep endometriosis demonstrates a structured neurovascular gradient with dissociation between structural innervation and biochemical signaling. Central neurotrophic activity appears to be more closely associated with postoperative pain improvement than nerve density alone, suggesting a dominant role for localized neuroinflammatory signaling.
IMPACT STATEMENT:
These findings provide a biologically grounded explanation for surgical pain relief and suggest that targeting a central disease niche may improve outcomes in women with endometriosis, a condition closely linked to impaired reproductive health and quality of life.
SUPPORT: This work was supported by the Bursa Uludag University Scientific Research Projects Unit (TTU-2024-1658).

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AUTOIMMUNITY IN PATIENTS WITH ENDOMETRIOSIS: EXAMINING IMPACT ON ENDOMETRIOMA FORMATION AND RECURRENCE. Kelsey R Kohler-Johnson, MD[1], Anna Claire Duican, MD[1], Grace W Getman, BA[1], Halle C Petrie, BA[1], Sara R Ferguson, MD[1], Nicholas Quam, MD[2], Ryan Heitmann, D.O.[3] and Alexandra Clare Sundermann, MD, PhD[2], [1]Vanderbilt University Medical Center, [2]Vanderbilt University Medical Center, Nashville, TN, [3]Vanderbilt, Nolensville, TN

OBJECTIVE:
The objective of this study was to investigate whether autoimmune disease (AI) in patients with endometriosis is associated with increased risk of endometrioma formation and endometrioma recurrence.
MATERIALS AND METHODS:
We identified patients with surgically diagnosed endometriosis from 2018-2025 at a single academic medical center and determined AI status via retrospective chart review. Presence of endometrioma at the time of index surgery, as well as formation of recurrent or new endometriomas as evidenced by imaging or surgery was evaluated. Crude and adjusted odds ratios [OR] were calculated to evaluate associations between AI and endometrioma formation. Cox proportional hazard ratios [HR] were used to estimate the association between AI and endometrioma recurrence.
RESULTS:
Among 400 patients, 13.3% (n=53) had AI and 28.3% (n=113) were found to have an endometrioma diagnosed on index surgery, subsequent surgery or subsequent imaging. No significant association between AI and endometrioma was identified (adjusted OR 0.92, 95% confidence interval [CI] 0.46, 1.86). When restricting to a population who had at least 6 months of follow up time after index surgery, individuals who had both an endometrioma at the time of surgery and AI were at the highest estimated risk of developing a subsequent endometrioma (adjusted HR 16.62, 95% CI 4.07, 67.85), however, risk association was driven by presence of endometrioma at index surgery (Table 1).

Table 1. Hazard of development of new endometrioma after surgery by presence of endometrioma at surgery and AI status (N=223)[1]

Exposure	N	Crude HR[2] (95% CI)	Adjusted HR[3] (95% CI)
No endometrioma at index surgery, no AI	135	Referent	Referent
No endometrioma at index surgery, AI	24	3.37 (0.81, 14.11)	3.13 (0.73, 13.44)
Endometrioma at index surgery, no AI	56	11.98 (4.40, 32.60)	11.21 (3.93, 31.97)
Endometrioma at index surgery and AI	8	14.06 (3.77, 52.36)	16.62 (4.07, 67.85)

[1] Restricted to patients with at least 6 months of follow-up time after index surgery
[2] Calculated using Cox Proportional Hazard Models with time at-risk starting at index surgery through new endometrioma formation or last gynecology visit observed
[3]Adjusted for patient age at surgery, body mass index, smoking status, use of hormone therapy, race/ethnicity

CONCLUSIONS:
AI in patients with endometriosis was not associated with increased risk of endometrioma formation.
IMPACT STATEMENT:
Given the negative impact of endometriosis on fertility and limited literature suggesting association between AI and advanced stage endometriosis disease, these findings offer reassurance regarding endometrioma formation and temper potential fertility related concerns.
SUPPORT: No financial disclosures to report.

BENIGN GYNECOLOGICAL DISEASE (2 OF 5)

P-469 3:45 PM Tuesday, October 27, 2026

A 3D ENDOMETRIAL ORGANOID MODEL TO STUDY THE EFFECTS OF HYPERANDROGENISM ON ENDOMETRIAL RECEPTIVITY. Olivia B. Chafitz, M.D.[1], Shaojun Yang, PhD[2], Shichao Liu, PhD[2], Anat Chemerinski, MD[1], Nataki C Douglas, M.D., Ph.D.[1] and Shuo Xiao, MBBS, PhD[2], [1]Rutgers New Jersey Medical School, Newark, NJ, [2]Rutgers, Piscataway, NJ

OBJECTIVE:
Women with polycystic ovary syndrome (PCOS) experience infertility at higher rates than the general population. While this is due in large part to ovulatory dysfunction, increasing evidence suggests that hyperandrogenism may also directly disrupt endometrial development, thereby impairing embryo implantation and/or the progression of early pregnancy. We recently used human endometrial stromal cells (hESCs) to establish a 3D endometrial organoid (Endo-organoid) model that recapitulates key morphological and molecular signatures of stromal cell decidualization, a crucial step that supports endometrial receptivity, embryo implantation, and placentation. We therefore sought to investigate the effects of hyperandrogenism on the expression of decidualization markers in an Endo-organoid model.
MATERIALS AND METHODS:
Endo-organoids were treated with EPC (Estrogen, Medroxyprogesterone, cAMP) alone for 6 days to induce stromal cell decidualization, or EPC with testosterone co-treatment at varying concentrations (10, 40, and 160 nM). Throughout the 6-day treatment period, Endo-organoids were imaged every 2 days to assess changes in size and morphology over time. Organoids were collected on day 6 for total RNA extraction, and quantitative real-time PCR (qRT-PCR) was performed to examine genes related to sex hormone receptors and decidualization. Gene expression levels were normalized to an internal control (ACTB) and calculated using the $2^{-\Delta\Delta Ct}$ method. Statistical analysis was performed on ΔCt values using one-way ANOVA followed by multiple comparisons testing.
RESULTS:
Endo-organoids treated with EPC exhibited morphological changes consistent with decidualization and demonstrated increased expression of canonical decidualization markers, including FOXO1 (9.7 ± 3.6-fold), IGFBP1 (10.8 ± 3.5-fold), LEFTY (26.8 ± 30.6-fold), and HAND2 (3.2 ± 1.2-fold), compared to the control. Co-treatment with testosterone at 40 and 160 nM attenuated the induction of HAND2 (T40: 2.7 ± 0.7-fold; T160: 1.4 ± 0.2-fold) compared to EPC-only treatment. A similar trend toward reduced expression was observed for FOXO1 (T40: 5.9 ± 2.6-fold; T160: 7.5 ± 2.0-fold) and LEFTY (T40: 5.7 ± 4.9-fold; T160: 6.1 ± 4.2-fold). In contrast, IGFBP1 expression was not consistently affected by testosterone co-treatment. Treatment of Endo-organoids with EPC alone vs EPC with testosterone did not significantly alter the expression of steroid hormone receptors, including estrogen receptor a (ERa/b), progesterone receptor (PGR), and androgen receptor (AR).
CONCLUSIONS:
Our results show that (1) a 3D endometrial organoid model reliably recapitulates the morphologic and molecular features of decidualization, (2) that testosterone impairs the expression of certain markers of decidualization, and that (3) this may occur in a dose-dependent manner. Together, our data suggest that elevated levels of testosterone may compromise endometrium receptivity.
IMPACT STATEMENT:
Our findings provide insight into how PCOS-related hyperandrogenism may disrupt endometrial function, thereby impairing implantation and early pregnancy development.
SUPPORT: N/a

P-470 4:00 PM Tuesday, October 27, 2026

COMBINED USE OF GLUCAGON-LIKE PEPTIDE-1 RECEPTOR AGONIST AND PROGESTINS IN ADENOMYOSIS: ASSOCIATION WITH LOWER HYSTERECTOMY RISK AND FERTILITY-SPARING POTENTIAL. Tina Yi Jin Hsieh, MD, MPH, MS[1], Karen Hiromi Mori, MD[2], Karishma Patel, M.D.[3], Michele R Hacker, ScD, MSPH[4] and Thomas Gallant, D.O.[5], [1]Cambridge, MA, [2]Beth Israel Deaconess Medical Center, Boston, MA, [3]Medford, MA, [4]Harvard Medical School/Beth Israel Deaconess Medical Center, Boston, MA, [5]Beth Israel Deaconess Medical Center

OBJECTIVE:

Advances in adenomyosis diagnostics have led to a growing proportion of younger reproductive-aged women with fertility considerations. Glucagon-like peptide-1 receptor agonists (GLP-1RAs) have demonstrated anti-inflammatory and anti-fibrotic properties in the endometrium and show promise as adjunct fertility-sparing treatments alongside progestins in endometrial intraepithelial neoplasia and endometrial cancer. However, their role in adenomyosis remains unknown.

MATERIALS AND METHODS:

We queried the TriNetX Research Collaborative Network, an electronic health record database including data from 112 healthcare organizations across the United States on 4/17/2026. Female patients under 45 years old diagnosed with adenomyosis by ICD-10 code N80.03 during 1/01/2017 to 4/01/2023 were included; patients with prior hysterectomy were excluded. We stratified patients based on whether they had both GLP-1RA and progestin use (medroxyprogesterone, norethindrone, etonogestrel, or levonorgestrel IUD) or progestin use only. The index date was medication initiation for both groups. The GLP-1RA+progestion and progestin-only groups were 1:1 propensity score matched on age at index, comorbidities, anti-diabetic drugs, obesity (BMI ≥30), elevated HbA1c (≥6.5%), and healthcare utilization. The outcome was hysterectomy within 18 months after index date. Risk ratios (RR) and 95% confidence intervals (CI) were calculated.. Subgroup analyses included age ≤40 years, progestin modality (oral or IUD), and GLP-1RA type (semaglutide or tirzepatide).

RESULTS:

After matching, 566 patients per group were included. The mean age was 40 (SD 5.5) years; mean BMI was 38 (SD 7.8) for the GLP-1RA+progesin group and 36 (SD 8) for the progestin-only group. At 18 months follow-up, combined GLP-1RA and progestin use was associated with a 58% reduction (RR 0.42, 95% CI 0.30-0.66) in hysterectomy risk (GLP-1RA + progestin: 6.0%; progestin-only: 14.3%) compared to progestin only. Similar results were seen when restricting to 351 patients ≤40 years (RR 0.57, 95% CI 0.34-0.97) This protective association persisted when restricting to 298 patients who received LNG-IUD (RR 0.48, 95% CI 0.27- 0.85), and 321 patients who used oral progestins (RR 0.36, 95% CI 0.23-0.57), as well as 380 semaglutide-treated patients (RR 0.42, 95% CI 0.28-0.71) and 307 tirzepatide-treated patients (RR 0.48, 95% CI 0.25-0.92).

CONCLUSIONS:

Combined use of GLP-1RAs and progestins was associated with reduced hysterectomy risk at 18-month follow-up in patients with adenomyosis, with consistent findings across subgroups. As these results are observational, causality cannot be inferred. Prospective studies and clinical trials are needed to validate these findings.

IMPACT STATEMENT:

GLP-1RA shows potential as adjunct therapy alongside progestins for fertility sparing management among adenomyosis patients.

P-471 4:15 PM Tuesday, October 27, 2026

DIFFERENTIAL BASAL MIGRATORY CAPACITY OF EUTOPIC AND ECTOPIC ENDOMETRIAL STROMAL CELLS IN ADENOMYOSIS. Ceren Bozkurt, Ph.Dc[1], Zehranur Sisman, BSc[2], Ercan Bastu, M.D., MSc.[3], Özgür Albayrak, PhD.[2] and Sule Yildiz, M.D.[4], [1]Sariyer, Istanbul, Turkey, [2]Koc University, Istanbul, Turkey, [3]Nesta Clinic, Istanbul, Turkey, [4]Koc University School of Medicine, Istanbul, Turkey

OBJECTIVE: To compare the basal migratory capacity of matched eutopic and lesion-derived ectopic endometrial stromal cells in adenomyosis using a lesion-targeted isolation approach.

MATERIALS AND METHODS:

Eutopic endometrium and ectopic adenomyotic lesions were obtained from patients undergoing hysterectomy for adenomyosis (n=5), with control endometrium collected from non-adenomyosis patients (n=2). Ectopic stromal cells were selectively isolated using stereomicroscope-guided microdissection to enrich for lesion-specific stromal compartments within the myometrium, followed by enzymatic dissociation. Cell identity and stromal enrichment were validated by flow cytometry based on CD10 expression. Basal migratory capacity was assessed using a wound healing (scratch) assay, with images acquired at 0, 12, 24, and 48 hours. Wound closure was quantified relative to baseline (T0). Statistical analyses were performed in RStudio using Wilcoxon tests (paired for adenomyosis eutopic vs ectopic comparisons; unpaired for control comparisons).

RESULTS: Flow cytometric analysis confirmed stromal enrichment, with CD10 positivity of 85–95% in eutopic samples and >60% in ectopic samples. In scratch assays, ectopic stromal cells consistently demonstrated reduced wound closure compared to matched eutopic stromal cells across patients. At 48 hours, ectopic cells showed lower migratory capacity relative to both adenomyosis eutopic and control endometrial stromal cells. Although differences did not reach statistical significance, likely due to limited sample size, paired analyses revealed a reproducible reduction in migration in ectopic samples across individual patients.

CONCLUSIONS: Lesion-derived ectopic stromal cells in adenomyosis exhibit reduced basal migratory capacity compared to their eutopic counterparts. These findings suggest that while migration may contribute to initial lesion establishment, ectopic stromal cells may adopt a more tissue-resident or stabilized phenotype following myometrial infiltration.

IMPACT STATEMENT: This study challenges the assumed pro-migratory phenotype of ectopic stromal cells in adenomyosis by demonstrating reduced basal migration in lesion-derived cells. These findings suggest a potential shift toward a tissue-resident phenotype following myometrial infiltration and highlight the need to re-evaluate stromal cell behavior in the context of lesion persistence.

SUPPORT: This study is supported by Koc University Research Facility, KUTTAM.

REFERENCES:

Guo, J., Chen, L., Luo, N. *et al.* LPS/TLR4-mediated stromal cells acquire an invasive phenotype and are implicated in the pathogenesis of adenomyosis. *Sci Rep* **6**, 21416 (2016). https://doi.org/10.1038/srep21416

P-472 4:30 PM Tuesday, October 27, 2026

FIBROBLAST GROWTH FACTOR 8 (FGF-8) AND SPROUTY 2 (SPRY-2) EXPRESSION IN ENDOMETRIOSIS AND OVARIAN ENDOMETRIOID AND CLEAR CELL CARCINOMAS. Javier Singla, M.D.[1], Sofía Del Valle, M.Sc[2], Lucia Cardinal, M.D.[3], Dimitrios Kafetzis, MD[4] and Gabriela Meresman, Ph.D.[2], [1]Hospital de Clínicas, Universidad de Buenos Aires, Buenos AIRES, United Arab Emirates, [2]Instituto de Biología y Medicina Experimental (IBYME-CONICET), [3]Hospital de Clínicas, Universidad de Buenos Aires, [4]Almond Blossoms Fertility Clinic, Dubai, United Arab Emirates

OBJECTIVE: Although endometriomas increase the risk of ovarian endometrioid and clear cell carcinomas, the molecular drivers of this transition are not well understood. In this study, we investigated the FGF-8/Spry-2 signaling axis, previously implicated in hormone-dependent tumors, to determine if its dysregulation across endometriotic lesions and ovarian carcinomas is associated with malignant transformation.

MATERIALS AND METHODS: This study included four groups: normal ovarian tissue (n = 15), ovarian endometriomas (n = 17), ovarian endometrioid carcinoma (n = 4), and ovarian clear cell carcinoma (n = 4). Formalin-fixed paraffin-embedded tissue samples were analyzed by immunohistochemistry using anti-FGF-8 and anti-Spry-2 antibodies. Protein expression was semi-quantified using Fiji/ImageJ, and an immunoreactivity score combining staining intensity and the percentage of positive cells was calculated. Statistical analysis was performed using GraphPad Prism 9.0, with $p < 0.05$ considered statistically significant.

RESULTS: FGF-8 expression was significantly increased in endometriomas compared with normal ovarian tissue ($p < 0.01$). Ovarian clear cell carcinoma exhibited the highest levels of FGF-8, significantly higher than those in normal ovarian tissue ($p < 0.01$). In contrast, Spry-2 expression was significantly reduced in endometriomas ($p < 0.05$) and was entirely absent in clear cell carcinoma samples ($p < 0.05$). Although endometrioid carcinoma samples exhibited similar trends in FGF-8 and Spry-2 expression, these variations did not reach statistical significance, likely due to the cohort size. Detailed analysis of the cellular distribution of FGF-8 and Spry-2 in ovarian endometriotic lesions showed comparable immunoreactive scores in both epithelial and stromal compartments.

CONCLUSIONS: This study provides preliminary evidence identifying the FGF-8/Spry-2 signaling imbalance as a potential biomarker and a novel therapeutic target for endometriosis-associated ovarian carcinomas.

IMPACT STATEMENT: The reciprocal dysregulation of the FGF-8/Spry-2 axis highlights its role in the pathophysiological progression from endometriosis to clear cell carcinoma, positioning this pathway as a promising biomarker for early detection and a novel therapeutic target.

P-473 4:45 PM Tuesday, October 27, 2026

A SYMPTOM BASED DIAGNOSTIC FRAMEWORK REVEALS HIGH ENDOMETRIOSIS PREVALENCE IN PATIENTS UNDERGOING IN VITRO FERTILIZATION (IVF) THAT IS NOT INCREASED IN PATIENTS WITH EUPLOID EMBRYO TRANSFER FAILURE. Lexi Frankel, MD[1], Elliott G Richards, MD, PhD[2], Jeffrey L Deaton, M.D.[3], Cara Schachter, MD[4], Rebecca Siobhan Cox, MD[5], Reagan E Kemppainen, BS[6], Iyra Chandra, BS[6], Julia Civalero, BS[3] and Bruce Lessey, MD, PhD[7], [1]Clemmons, NC, [2]Wake Forest, Winston Salem, NC, [3]Wake Forest University School of Medicine, Winston Salem, NC, [4]Atrium Health Wake Forest Baptist, [5]Winston Salem, NC, [6]Wake Forest University School of Medicine, [7]Wake Forest Health, Winston Salem, NC

OBJECTIVE:

To assess the prevalence of "presumptive" endometriosis among infertility patients undergoing euploid frozen embryo transfer (FET) using a symptom-based diagnostic framework aligned with the American College of Obstetricians and Gynecologists (ACOG)'s 2026 updated emphasis on clinical diagnosis, and to compare these estimates to endometriosis prevalence determined by surgery alone.

MATERIALS AND METHODS:

This retrospective cohort study included 337 patients undergoing euploid FET at a single academic fertility center. Endometriosis was classified as either clinically diagnosed (per new 2026 ACOG guidelines) or surgically diagnosed (histologically confirmed). Clinical diagnosis was assigned retrospectively via structured chart review using documentation of symptoms and ICD codes, including heavy menstrual bleeding, dysmenorrhea, dyspareunia, chronic pelvic pain, dyschezia, hematochezia, and infertility. Patients with ≥2 symptoms were classified as having clinically diagnosed endometriosis, consistent with ACOG recommendations. Patients were stratified by history of ≥1 prior failed euploid embryo transfer. The primary analysis compared the proportion of patients with clinically diagnosed "presumed" endometriosis, surgically diagnosed endometriosis, and combined diagnoses (surgical or clinical) between patients with and without prior euploid embryo transfer failure. These comparisons were performed using Pearson Chi-square tests, with statistical significance defined as $p < 0.05$.

RESULTS:

Among 337 patients, 107 (31.8%) had clinically-diagnosed presumptive endometriosis without surgical confirmation, 60 (17.8%) had surgically diagnosed endometriosis, and 167 (49.6%) met criteria for either diagnosis type (surgical or clinical). In the subset of 108 patients with ≥1 prior euploid transfer failure, the prevalence of clinically diagnosed endometriosis was 31.5% (n=34), surgically diagnosed endometriosis was 24.1% (n=26), and combined was 55.6% (n=60). When comparing patients with and without prior

transfer failure, there were no statistically significant differences in the prevalence of clinically diagnosed (p=1.00), surgically diagnosed (p=0.19), or combined (p=0.33).
CONCLUSIONS:
Applying a symptom based diagnostic framework consistent with ACOG's 2026 shift toward clinical "presumptive" diagnosis identified a substantially greater burden of endometriosis among patients undergoing euploid FET (31.8% versus 17.8% in our study).
Despite this, endometriosis prevalence in our cohort (either determined by clinical or surgical criteria) did not significantly differ between patients with and without prior euploid transfer failure. This suggests that endometriosis symptoms and traditional histology may be poor predictors of implantation failure and that other more targeted markers are needed to better understand why some endometriosis patients and not others experience euploid implantation failures.
IMPACT STATEMENT:
Symptom based diagnostic approaches may improve detection of clinically meaningful endometriosis in IVF patients but may have limited prognostic ability in predicting euploid failure for these patients.
SUPPORT: This study was not funded by any type of financial support.

BENIGN GYNECOLOGICAL DISEASE (3 OF 5)

P-474 3:45 PM Tuesday, October 27, 2026

SINGLE-CELL TRANSCRIPTOMICS REVEALS DYSREGULATION OF INFLAMMATORY AND ANGIOGENIC PATHWAYS IN ENDOMETRIUM OF UTERINE FIBROID PATIENTS. Zeynep C. Koc, MD[1], Ana Laura Almonte, PhD student[2], Binya Liu, MD, PhD[2], Juan Irwin, MD PhD[3], Xinyu Tang, PhD[2], Tomiko T Oskotsky, MD[4], Felipe Vilella, PhD[5], Carlos Simon, MD; PhD[6], Linda C Giudice, MD, PhD[7] and Marina Sirota, PhD[2], [1]University of California, San Francisco School of Medicine, San Francisco, CA, [2]University of California, San Francisco, [3]University of California, San Francisco, San Francisco, [4]University of California San Francisco, [5]Igenomix Foundation/INCLIVA, Valencia, Spain; Department of Obstetrics and Gynecology, BIDMC, Harvard University, Boston, MA- USA Boston, U.S.A., Paterna, Spain, [6]Professor Obstetrics and Gynecology, University of Valencia; Senior Lecturer PT, BIDMC Harvard University; President Carlos Simon Foundation, Paterna, Spain, [7]University of California, San Francisco, San Francisco, CA

OBJECTIVE: To characterize differentially expressed genes and pathways using differential expression and gene set enrichment analyses in endometrial single-cell RNA sequencing (scRNA-seq) samples from patients with uterine fibroids and those without known uterine or reproductive pathologies (healthy controls).
MATERIALS AND METHODS: Endometrial biopsy samples were obtained following IRB approval and informed consent from all participants. Cases included samples from 7 subjects with uterine fibroids (3 proliferative phase and 4 secretory phase) identified on pelvic imaging, and 9 controls (5 proliferative phase and 4 secretory phase) without known uterine or other reproductive pathologies. Biopsy samples underwent multiplexed scRNA-seq (4 samples per library) before quality control and dimensionality reduction in the R package Seurat (version 5.4.0) to obtain specific clusters. Annotation was performed using canonical and overexpressed markers. Differential gene expression (DGE) analysis was performed using the Model-based Analysis of Single-cell Transcriptomics (MAST) method followed by the application of gene set enrichment analysis (GSEA) on the differentially expressed genes.
RESULTS: DGE analysis and GSEA from scRNA-seq data revealed dysregulation in the endometrial stromal cell population from patients with uterine fibroids by specific cell type and menstrual phase. Angiogenesis and inflammatory response pathways were upregulated in endometrial stromal cells. Alterations in pathways involved with extracellular matrix organization and cell adhesion were observed and notably phase dependent. Within the inflammatory pathway, upregulation of NF-κB inhibitor genes, NFKBIA (mean $\log_2$ fold change = 2.74, adjusted p-value = 2.50×10^{-19}) and NFKBIZ (mean $\log_2$ fold change = 4.92, adjusted p-value = 4.26×10^{-6}), were observed in cases vs. controls. Significant downregulation of the progesterone receptor membrane component 1 (PGRMC1), a non-classical membrane-bound progesterone receptor, was also seen in the secretory phase of patients with uterine fibroids vs controls (mean $\log_2$ fold change = -3.16, adjusted p-value = 2.89×10^{-14}).
CONCLUSIONS: Uterine fibroids are a common finding in reproductive age female patients and are associated with multiple comorbidities. Dysregulation of gene expression in endometrial samples from patients with fibroids compared with healthy controls, as demonstrated by scRNA-seq with DGE analysis and GSEA, revealed significant aberrations in PGRMC1 gene expression, which in prior studies has been demonstrated to play an important role in successful decidualization, and alterations in inflammatory response pathways, cell adhesion, angiogenesis, and extracellular matrix organization, many of which were cycle phase specific.
IMPACT STATEMENT: Uterine fibroids comprise one of the most common uterine pathologies in reproductive aged females. Single-cell transcriptomic characterization of the endometrium in patients with uterine fibroids could provide novel insights into dysregulated biological processes, elucidate mechanisms of fibroid-associated symptoms, and identify potential targets for future therapies.
SUPPORT: - NIH NICHD [P50 HD055764]
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P-475 4:00 PM Tuesday, October 27, 2026

THE IMPACT OF ENDOMETRIOSIS ON PREGNANCY OUTCOMES FOLLOWING EUPLOID FROZEN EMBRYO TRANSFER CYCLES. Steven Wren, B.A.[1], Mohamad Irani, M.D.[2] and Zev Rosenwaks, M.D.[2], [1]Weill Cornell Medical College, New York, NY, [2]The Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medicine, New York, NY

OBJECTIVE: Endometriosis has been suggested to be associated with lower IVF success rates, but the underlying mechanisms remain incompletely defined. To evaluate the impact of endometriosis on endometrial receptivity, we aim to determine whether endometriosis affects live birth rates (LBRs) and miscarriage rates of euploid embryos.
MATERIALS AND METHODS: This is a retrospective cohort study including frozen-thawed embryo transfer (FET) cycles of euploid embryos that were performed between 2013 and 2024. Endometriosis was diagnosed by laparoscopy, transvaginal ultrasound detecting endometrioma, or pelvic magnetic resonance imaging (MRI). The endometriosis group was compared to age-matched women without endometriosis in a 1:1 ratio. LBRs and pregnancy loss rates were compared between women who were diagnosed with endometriosis and those who were not diagnosed with endometriosis. The biochemical pregnancy rate was defined as the proportion of transfers resulting in a transient elevation in serum BhCG levels without sonographic evidence of a gestational sac. Clinical pregnancy losses included miscarriages of pregnancies that were identified on ultrasound. χ^2 and Fisher's exact tests were used for categorical variables.
RESULTS: A total of 420 FET cycles for women with endometriosis were identified and compared to 420 FET cycles for women who were not diagnosed with endometriosis. There was no significant difference in LBRs between FET cycles of women with endometriosis and those who were not diagnosed with endometriosis (46.9% and 51.9%, respectively, P=0.16). Patients with endometriosis had comparable clinical pregnancy loss rates to patients who were not diagnosed with endometriosis (12.2% vs. 9.2%, respectively, P=0.27). Biochemical pregnancy rates were also comparable between the two groups (10.7% vs. 15.3%, respectively, P=0.13).
CONCLUSIONS: Endometriosis may not affect pregnancy outcomes of euploid embryos.
IMPACT STATEMENT: Endometriosis may not influence endometrial receptivity and the implantation potential of euploid embryos. Further studies are needed to elucidate the mechanism(s) responsible for the lower IVF success rates in women with endometriosis compared to other causes of infertility.
SUPPORT: none
REFERENCES:
none

P-476 4:15 PM Tuesday, October 27, 2026

TRANSCRIPTIONAL ALTERATIONS IN ENDOMETRIAL ORGANOIDS FROM ENDOMETRIOSIS PATIENTS REVEAL DISRUPTED CELLULAR HOMEOSTASIS: A STEP TOWARD THERAPEUTIC TARGETS. Alba Bas-Rivas, M.Sc.[1], Marcos Agustina-Hernández, MSc[2], Clara Bueno Fernandez, PhD, Ana Corachán, Ph.D.[1], Amparo Faus, B.Sc.[1], Carmen Vidal, MD, PhD[4], Irene Juárez Pallarés, MD, PhD[5], Antonio Pellicer, MD, PhD[6], Irene Cervello, PhD[7] and Hortensia Ferrero, Ph.D.[1], [1]IVIRMA Global Research Alliance, IVI Foundation, Instituto de Investigación Sanitaria La Fe (IIS La Fe), Valencia, Spain, Valencia, Spain, [2]IVIRMA Global Research Alliance, IVI Foundation, Instituto de Investigación Sanitaria La Fe (IIS La Fe), [3]IVIRMA Valencia, Valencia, Spain, [4]Hospital La Fe, Valencia, Spain, [5]IVIRMA, Rome, Italy, [6]IVIRMA Global Research Alliance, IVI Foundation, Instituto de Investigación Sanitaria La Fe (IIS La Fe), Valencia, Spain

OBJECTIVE:
Although endometriosis is one of the most common gynecological disorders affecting women worldwide, effective non-hormonal or surgical treatments remain limited. The aim of our study was to use an endometrial organoid model to identify genes that could serve as standardized therapeutic targets, enabling the development of potential treatment strategies in a phase-independent manner.
MATERIALS AND METHODS:
Biopsies of eutopic endometrium from endometriosis and healthy patients (n=6/group) were obtained by hysteroscopy. Women between 18-40 years old and BMI≤30 kg/m^2 diagnosed with endometriosis stage III and IV (endometriosis group) or without any uterine pathologies (control group) were included in the study and differentiated into endometriotic and healthy organoids (ENDOorg and CONTROLorg, respectively). RNA was extracted from ENDOorg and CONTROLorg, and gene expression was analyzed by RT-qPCR using a senescence-associated gene expression array (84 genes), as well as 14 specific genes related to endometrial function and endometriosis dysregulation, including processes such as proliferation, inflammation, and senescence.
RESULTS:
Array and PCRs showed 43 significantly deregulated genes in ENDOorg compared with CONTROLorg (FDR<0.05), 34 down- and 9 up-regulated. Among these genes, those belonging to canonical proliferative and mitogenic signaling pathways were predominantly downregulated in ENDOorg condition, including *RB1* (log2FC = 0.26), *CDK2* (log2FC = 0.35), *CDK4* (log2FC =0.34), *CDK6* (log2FC =0.27), and *E2F1* (log2FC =0.2), as well as components of the MAPK and PI3K pathways such as *MAP2K1* (log2FC = 0.36), *MAPK14* (log2FC = 0.42), *PIK3CA* (log2FC = 0.33), *IGF1R* (log2FC = 0.31), and *MYC* (log2FC = 0.39). In contrast, several selective genes associated with cell cycle progression, stress response, metabolic adaptation, and tissue remodeling were upregulated, including *CCND1* (log2FC = 7.88), *CCNA2* (log2FC = 2.8), *CCNB1* (log2FC = 2.52), *ATM* (log2FC = 5.61), *BMI1* (log2FC = 3.8), *CALR* (log2FC =2.05), *ALDH1A3* (log2FC = 8,89), *PLAU* (log2FC = 2.89), and *IRF7* (log2FC = 5.55).
CONCLUSIONS:

Endometrial organoids from women with endometriosis display a distinct transcriptional profile characterized by downregulation of canonical mitogenic pathways and upregulation of stress response, cell cycle regulation, and tissue remodeling genes. This study identifies a distinct transcriptional and senescence-associated signature in eutopic endometrium from endometriosis women, suggesting that endometrial dysfunction in this disease involves fundamental alterations in cellular homeostasis.

IMPACT STATEMENT:
Understanding the altered signaling pathways involved in endometrial dysfunction in endometriosis provides a much more accurate framework for identifying potential diagnostic targets and guiding drug development strategies.

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P-477 4:30 PM Tuesday, October 27, 2026

MRI-BASED PREDICTION OF UTERINE LEIOMYOMA GENETIC SUBTYPE USING T2 AND DIFFUSION-WEIGHTED IMAGING: A RETROSPECTIVE COHORT STUDY. Hannah Catherine Milad, MD[1], Ecem Esencan, M.D.[2], Neil R Chatterjee, M.D., Ph.D.[3], Jeanne M Horowitz, M.D.[3], Mark Montgomery, M.D.[3], Jianjun Wei, MD[4], Serdar E Bulun, MD[5] and Magdy P Milad, M.D., M.S.[5], [1]Forest Park, IL, [2]Northwestern University, Feinberg School of Medicine, Chicago, IL, [3]Northwestern University Feinberg School of Medicine, [4]Northwestern University Department of Pathology, Chicago, IL, [5]Northwestern University, Chicago, IL

OBJECTIVE: To determine whether standard MRI sequences can differentiate uterine leiomyoma genetic subtypes, specifically MED12 versus HMGA2 mutation status, to enable noninvasive, personalized treatment planning.
MATERIALS AND METHODS: We conducted a retrospective radiogenomic cohort study with blinded MRI analysis of patients with a single surgically resected uterine leiomyoma at a large academic center between January 2015 and December 2024. Preoperative pelvic MRI was reviewed by board -certified radiologist specialized in abdominal imaging blinded to mutation status. Signal characteristics were measured across T2-weighted, diffusion-weighted imaging (DWI), and apparent diffusion coefficient (ADC) sequences. Normalized T2 signal was calculated as fibroid T2 divided by ipsilateral psoas muscle T2 on the same imaging slice. Genomic DNA was extracted from banked fibroid specimens; MED12 mutations were identified via polymerase chain reaction (PCR), while HMGA2-driven tumors were identified by immunohistochemistry (IHC) and protein expression as a surrogate for underlying mutation. Cases were excluded if preoperative MRI was unavailable, could not be obtained for technical reasons, or if multiple fibroids precluded correlation of imaging to a specific genotype. Group differences were assessed using Welch's t-test.
RESULTS: A total of 36 fibroids with evaluable MRI data were analyzed: 19 HMGA2-driven and 17 MED12-mutated. HMGA2 fibroids demonstrated significantly higher ADC values compared to MED12 fibroids (1345.2 ± 227.2 vs. 727.8 ± 357.1 $\times 10^{-6}$ mm²/s; p=0.014) and higher normalized T2 signal (2.5 ± 1.3 vs. 1.7 ± 0.7; p=0.026). High b-value DWI signal was also elevated in HMGA2 fibroids versus MED12 (72.0 ± 95.1 vs. 19.2 ± 11.7; p=0.045). Absolute fibroid T2 signal did not reach statistical significance between groups (260.4 ± 190.4 vs. 178.8 ± 74.2; p=0.097).
CONCLUSIONS: Standard MRI sequences, including ADC, normalized T2, and high b-value DWI, demonstrate significant differences between HMGA2-driven and MED12-mutated uterine fibroids. These findings support the feasibility of using routine preoperative MRI to predict fibroid genotype noninvasively, which may ultimately guide individualized treatment selection and reduce unnecessary interventions in patients with symptomatic uterine leiomyomas.
IMPACT STATEMENT: MRI-based prediction of fibroid genotype may enable noninvasive, personalized treatment selection by identifying leiomyomas more or less likely to respond to hormonal therapies, thereby optimizing outcomes and reducing unnecessary interventions.

P-478 4:45 PM Tuesday, October 27, 2026

IVF OR SURGERY FIRST IN COLORECTAL ENDOMETRIOSIS? A SYSTEMATIC REVIEW AND META-ANALYSIS. Shreeya Tewary, MD MRCOG[1] and Atanu Pal, MD FRCS[2], [1]Bourn Hall Clinic, Cambridge, Cambridgeshire, United Kingdom, [2]Cambridge University Hospitals, Cambridge, Cambridgeshire, United Kingdom

OBJECTIVE:
To compare reproductive outcomes of IVF/ICSI-first versus surgery-first strategies in women with colorectal endometriosis and inform multidisciplinary treatment decision-making.
MATERIALS AND METHODS:
A systematic review was performed of studies evaluating IVF/ICSI outcomes in women with colorectal endometriosis managed with IVF-first or surgery-first strategies. Comparative studies were included for meta-analysis. Given limited comparative data, cohort studies were included to contextualise outcomes. The primary outcome was live birth. An exploratory random-effects meta-analysis using odds ratios (OR) with 95% confidence intervals (CI) was conducted. Heterogeneity was assessed using the I^2 statistic.
RESULTS:
Eight studies were included, comprising three comparative and five cohort studies. Among comparative studies (n=726), results were conflicting across studies: a propensity score–matched study (n=110) favoured surgery-first (49.1% vs 21.8%) [1], whereas a large prospective study (n=427) reported higher live birth with IVF/ICSI-first compared with surgery-first (55.9% vs 44.9%) [2], and a retrospective cohort (n=189) showed no difference (50.8% vs 52.2%) [3]. Exploratory meta-analysis demonstrated no significant difference between strategies (OR 1.02, 95% CI 0.48–2.15), with substantial heterogeneity.
Supporting cohort data demonstrate high cumulative live birth rates with IVF-first management, reaching 64.4% after ART in women without prior endometriosis surgery, and 78.1% following surgery prior to IVF. Safety data indicate that delaying surgery may be associated with bowel complications in selected patients, including obstruction and symptom progression. These findings highlight the absence of high-quality comparative evidence to guide first-line management in colorectal endometriosis.
CONCLUSIONS:
IVF-first and surgery-first strategies yield comparable reproductive outcomes in colorectal endometriosis, although evidence is limited and heterogeneous. Selected patients with advanced disease may benefit from surgical management.
IMPACT STATEMENT:
This study provides the first comparative synthesis of IVF-first versus surgery-first strategies in colorectal endometriosis, addressing a key multidisciplinary clinical dilemma and supporting individualised, multidisciplinary treatment pathways.
SUPPORT: -
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BENIGN GYNECOLOGICAL DISEASE (4 OF 5)

P-479 3:45 PM Tuesday, October 27, 2026

DYSLIPIDEMIA AND PREGNANCY OUTCOMES IN PCOS PATIENTS UNDERGOING IVF/ICSI: DEVELOPMENT OF A PREDICTIVE NOMOGRAM. Huiling Xu, master[1] and Beihong Zheng, bachelor[2], [1]Fujian Maternity and Child Health Hospital College of Clinical Medicine for Obstetrics & Gynecology and Pediatrics, Fujian Medical University, Fuzhou, Fujian, China, [2]Fujian Provincial Maternity and Children's Hospital, FuZhou, China

OBJECTIVE:
To investigate the impact of dyslipidemia on treatment outcomes in polycystic ovary syndrome (PCOS) patients undergoing their first in vitro fertilization/intracytoplasmic sperm injection (IVF/ICSI) cycle, and to develop and validate a predictive nomogram model for individualized cumulative live birth rate (CLBR).
MATERIALS AND METHODS:
This retrospective analysis included 413 PCOS patients under 40 years old who underwent their first IVF/ICSI cycle using either a follicular phase long protocol or an antagonist protocol between January 2022 and May 2024 Based on serum lipid levels, patients were divided into a dyslipidemia group (n=136) and a normal lipid group (n=277). Baseline characteristics, ovarian response, and pregnancy outcomes were compared between the two groups. To adjust for potential confounders, stratified analyses were performed according to body mass index (BMI) and homeostatic model assessment for insulin resistance (HOMA-IR).
Potential predictors of CLBR were initially screened using univariate logistic regression ($P<0.05$), followed by multivariate logistic regression to identify independent predictors. A nomogram prediction model was constructed based on these independent factors. The model was developed and validated using training and validation datasets, with internal validation performed via Bootstrap resampling (1000 repetitions). Model performance was evaluated using the area under the receiver operating characteristic curve (AUC) to assess discriminative ability, calibration curves to evaluate the agreement between predicted and observed probabilities, and decision curve analysis (DCA) to appraise clinical applicability.
RESULTS: Multivariate logistic regression analysis identified elevated triglyceride (TG) levels as an independent risk factor for reduced CLBR (adjusted odds ratio [aOR]=0.732, 95% confidence interval [CI]: 0.552-0.969, P=0.029). A nomogram for predicting CLBR was subsequently developed by integrating four variables: BMI, TG level, high-quality embryo rate, and high-quality blastocyst rate. The AUC was 0.776 (95% CI 0.709–0.843) in the training set and 0.721 (95% CI 0.601–0.840) in the internal validation set, indicating a moderate discriminative ability.
CONCLUSIONS: In PCOS patients, elevated TG levels are independently associated with decreased CLBR following IVF/ICSI treatment. This study developed and validated a nomogram prediction model integrating BMI, TG level, high-quality embryo rate, and high-quality blastocyst rate.
IMPACT STATEMENT: This model serves as a useful tool for assessing individual probabilities of cumulative live birth, and may provide a quantitative reference for clinical counseling and personalized treatment strategies.

P-480 4:00 PM Tuesday, October 27, 2026

METABOLIC ALTERATIONS IN THE EUTOPIC ENDOMETRIUM REVEAL MATERNAL-EMBRYONIC METABOLIC MISMATCHES IN ENDOMETRIOSIS DURING THE GESTATIONAL PHASE. Adrian Villalba, PhD[1], Alba Bas-Rivas, M.Sc.[2], Ana Corachán, Ph.D.[2], Aitana Merino, M.Sc.[3], Irene Juárez Pallarés, MD, PhD[4], Carmen Vidal, M.D. Ph.D.[5], Amparo Faus, B.Sc.[2], Antonio Pellicer, MD, PhD[6] and Hortensia Ferrero, Ph.D.[2], [1]IVIRMA Global Research Alliance, IVI Foundation, Instituto de Investigación Sanitaria La Fe (IIS La Fe), Valencia, Spain, [2]IVIRMA Global Research Alliance, IVI Foundation, Instituto de Investigación Sanitaria La Fe (IIS La Fe), Valencia, Spain, Valencia, Spain, [3]IVI Foundation-IIs La Fe, Valencia, Comunidad Valenciana, Spain, [4]Hospital La Fe, Valencia, Spain, [5]IVIRMA Global

Research Alliance, IVIRMA Valencia, Valencia, Spain, Valencia, Spain, [6]IVIRMA, Rome, Italy

OBJECTIVE:
To evaluate metabolic alterations in the gestational eutopic endometrium of patients with endometriosis and determine if these dysregulations induce a maternal-embryonic metabolic supply-demand mismatch, which may be involved in the pregnancy disorders observed in these women.
MATERIALS AND METHODS:
Eutopic endometrial biopsies were collected from women with stage III/IV endometriosis and associated infertility (n=11) and healthy controls (n=7) (<40 years, BMI <30). Patients with other uterine pathologies were excluded. Epithelial glandular fractions were isolated to generate endometrial organoids, which were subsequently hormonally differentiated into the gestational phase. Organoid mass spectrometry proteomics were performed in these organoids and subsequently, identified proteins were integrated into METAFlux for Flux Balance Analysis to compute metabolic reaction rates. Analyses included PLS-DA for classification, functional network mapping of differential reactions, reporter metabolite identification, and metabolic correlation matrices. Finally, maternal-embryonic interactions were evaluated by comparing the computed endometrial metabolic supply against embryonic demand derived from published human gastruloid proteomic data.
RESULTS:
Metabolic flux analysis identified 165 significantly altered reactions in the gestational eutopic endometrium from women with endometriosis (97 up-regulated, 68 down-regulated). The top up-regulated reactions included glucose-6-phosphate synthesis from dATP (HMR_4487) and ITP (HMR_4486), and the conversion of sorbitol to fructose (HMR_4315). Significant reductions were observed in the reaction of the transport of glucose (HMR_5029), propanoate (PPAt), and citrate (HMR_4972). Twelve metabolic pathways were significantly dysregulated based on the altered reaction in endometriosis, of which vitamin B12, fructose/mannose, and lipoic acid metabolism are the most increased. Reporter metabolite analysis revealed decreased metabolic pressure in alanine, glutamine, and L-carnitine, while serine and tryptophan showed increased pressure. The integration of the metabolic flux rates of eutopic endometrium from women with endometriosis and gastruloid also exhibited a profound supply failure to meet embryonic demands for mitochondrial citrate/isocitrate transport (HMR_4972), essential for de novo lipid synthesis. Furthermore, significant deficits were identified in the pentose phosphate pathway (HMR_4565) for nucleotide synthesis, and the malate-aspartate shuttle (HMR_3827) to support ATP production in the gastruloid during the gestation phase.
CONCLUSIONS:
Endometriosis induces intrinsic metabolic failure in the gestational eutopic endometrium, resulting in a critical supply-demand mismatch with the developing embryo.

IMPACT STATEMENT:
Uncovering both the intrinsic metabolic dysfunction of the eutopic endometrium and its subsequent maternal-embryonic mismatch provides a novel mechanistic explanation for early pregnancy complication in endometriosis, highlighting new therapeutic targets to improve gestational outcomes.
SUPPORT: This study was supported by the Spanish Ministry of Education through FPU (FPU21/00988 awarded to A. M-P.), the Carlos III Health Institute, and cofounded by the European Social Fund (ESF) “Investing in your future” through PI21/00184 and PI24/00961 (awarded to H.F.) and F122/00102 (awarded to A.B-R.), a Sara Borrell Contract (CD23/00157 awarded to A.C. and CD24/00184 awarded to A.V), and Miguel Servet Programme grants (CP20/00120 awarded to H.F. and CP19/00149 awarded to I.C.). This study was supported by Fundació La Marató de TV3 (12/C/2024).

P-481 4:15 PM Tuesday, October 27, 2026

LONG-TERM HEALTH OUTCOMES ASSOCIATED WITH DIENOGEST TREATMENT IN ENDOMETRIOSIS PATIENTS: NATIONWIDE POPULATION-BASED COHORT STUDY. Min Young Park, MD, M.S.[1], Sunyoung Kim, MD[1], Jiyeon Han, MD[2], Sung Woo Kim, MD[3], Hoon Kim, MD, PhD[4] and Seung-Yup Ku, MD, PhD[1], [1]Seoul National University Hospital, Seoul, Korea, Republic of (South), [2]Seoul National University Hospital, Seoul, South Korea, [3]Seoul, South Korea, [4]Seoul National University College of Medicine, Seoul, Korea, Republic of (South)

OBJECTIVE: To evaluate long-term risks of malignancies and psychological diseases associated with dienogest (DNG) treatment in endometriosis (EMS) patients using a large population-based cohort.
MATERIALS AND METHODS: This retrospective cohort study used the Korean National Health Insurance Service (NHIS) database (2011–2022), covering approximately 97% of the Korean population. Women with EMS (ICD-10: N80.1–N80.9) were categorized as those prescribed with DNG (ingredient code: 615701ATB) for ≥6 consecutive months (DNG-treated EMS; n=86,386) and those who were not (DNG-untreated EMS; n=154,007). A non-EMS control group (n=4,933,059) was comprised of women without EMS or any hormonal agent exposure during the study period. Baseline covariates (age, BMI, parity, smoking, alcohol) were extracted from linked National Health Screening Program records. Incident malignancies (breast, thyroid, and gynecologic, gastrointestinal cancers), gynecologic precancerous lesions, and psychological disorders were identified as outcomes. Multivariable Cox proportional hazards regression was performed - adjusting for age, BMI, smoking, and alcohol consumption - to calculate for adjusted hazard ratios (aHRs) and 95% confidence intervals (95% CI).
RESULTS: Compared to EMS patients with no DNG treatment, DNG-treated women were diagnosed with EMS at younger age (EMS w/ DNG 34.8±8.1 vs. EMS w/o DNG 39.6±10.9 years, p<0.001), showed lower BMI (22.5±4.2 vs. 22.9±4.3 kg/m², p<0.001), were more likely to have never experienced pregnancy (77.2% vs. 73.3%, p<0.001), and were more often never-smoker (9.2% vs. 10.0%, p<0.001). Notably, treatment with DNG was associated with substantially reduced risk of developing breast cancer (aHR 0.509, 95% CI 0.398–0.620), along with other malignancies such as cervical cancer (0.747, 0.638-0.856), uterine cancer (0.279, 0.147-0.411), ovarian cancer (0.634, 0.572-0.696), colorectal cancer (0.772, 0.692-0.852), endometrial intraepithelial neoplasia (EIN, 0.369, 0.190-0.548), and endometrial hyperplasia (0.849, 0.807-0.891). A modest increased risk of thyroid cancer was observed (1.166, 1.124-1.208). No clinically significant associations with psychological disorders were identified.
CONCLUSIONS: In this nationwide population cohort, DNG exposure exhibited clinically significant reduction of breast cancer risk and other gynecologic and gastrointestinal malignancies without increasing risk of major psychological disorders.
IMPACT STATEMENT: Our findings support long-term clinical safety of dienogest prescription in management of EMS.

P-482 4:30 PM Tuesday, October 27, 2026

IMPACT OF LUPRON VERSUS LAPAROSCOPY FOR PRESUMED ENDOMETRIOSIS ON EMBRYO TRANSFER OUTCOMES IN PATIENTS WITH BCL6 OVEREXPRESSION. Blakeley Schiffman, M.D.[1], Alixandra L Domney, M.D., M.P.H.[2] and Christine Mullin, M.D.[3], [1]Northwell, Department of Obstetrics and Gynecology, New Hyde Park, NY, [2]Roslyn, NY, [3]Rockville Centre, NY

OBJECTIVE: Endometrial biopsy can detect overexpression of the oncogene BCL6. Prior studies suggest this is associated with endometrial inflammation secondary to silent endometriosis. In our patient population, this biomarker appears to be most clinically relevant in those with previously failed embryo transfers. Higher rates of BCL6 overexpression have been observed in those with a greater number of prior failed transfers. Although patients are commonly counseled to undergo either lupron-based menstrual suppression or laparoscopy for presumed endometriosis, few studies have compared subsequent embryo transfer outcomes according to the treatment approach utilized. We aim to evaluate embryo transfer outcomes amongst those with positive BCL6 overexpression in three subgroups after treatment with lupron suppression, diagnostic laparoscopy with possible excision of endometriosis, or no treatment.
MATERIALS AND METHODS: This retrospective cohort study included 195 patients who underwent an endometrial biopsy during a prep cycle at a single academic center between January 2019-March 2025. Positive BCL6 overexpression results were defined as a H-score >1.4 and subgroups were formed according to subsequent clinical management. Embryo transfer outcomes directly following treatment or no treatment were compared using descriptive statistics; differences in demographics were assessed using an unpaired t-test.
RESULTS: Clinical pregnancy rates achieved amongst patients with positive BCL6 overexpression were 71.3% in the lupron suppression treatment group and 66.7% in the laparoscopy group. There were no statistically significant differences in mean age (*p=0.39*), AMH (*p=0.62*) or BMI (*p=0.44*) between those who achieved a clinical pregnancy versus those with a failed transfer amongst all groups.

BCL6 Overexpression	Treatment	Clinical pregnancy % (n)	No clinical pregnancy % (n)
Positive	Lupron	71.3 (57)	28.7 (23)
	Laparoscopy	66.7 (2)	33.3 (1)
	None	75 (3)	25 (1)
Negative	None	55.7 (39)	44.3 (31)

CONCLUSIONS: This study suggests that treatment of presumed silent endometriosis with lupron yielded the highest clinical pregnancy rates. Moreover, patients with BCL6 overexpression who received lupron therapy had higher pregnancy rates than those without BCL6 overexpression (71.3% vs. 55.7%), though statistical significance could not be assessed due to small sample sizes.
IMPACT STATEMENT: The identification of silent endometriosis using the BCL6 biomarker from an endometrial biopsy appears to be clinically meaningful as patients who underwent treatment of any type had improved embryo transfer outcomes compared to those without an endometriosis diagnosis. Larger prospective studies are needed to decipher if one treatment modality is superior to the other with statistical significance.

P-483 4:45 PM Tuesday, October 27, 2026

EXPERT CONSENSUS ON ELAGOLIX FOR ENDOMETRIOSIS-ASSOCIATED PAIN: INSIGHTS FROM A LARGE REAL-WORLD SURVEY. Ritu Khanna, MD[1], Rohan Nandita Palshetkar, MS OBGY[2], Hemant Deshpande, md[3], Deepali Gupta, MD[4], Seema Pandey, MBBS, MD[5], Meenakshi Dua, M.B.B.S., M.S.[6], Shakuntala Kumar, MD[7], Priya Selvaraj, MD MNAMS MCE[8] and Sanjay K. Agarwal, MD[9], [1]Varanasi, Uttar Pradesh, India, [2]Bloom IVF, Mumbai, India, [3]Chavan Hospital, Pune, [4]Ashirvad Hospital, Varanasi, [5]head of the department, azamgarh, India, [6]ART Fertility Clinic, Gurgaon, [7]Nulife Maternity Center, Delhi, [8]Infertologist, GG Fertility & Women's Speciality Centre, Chennai, India, [9]University of California San Diego

OBJECTIVE:
Endometriosis-associated pain is a complex clinical condition with heterogeneous symptom profiles and variable therapeutic response. Elagolix, an oral gonadotropin-releasing hormone (GnRH) antagonist, provides dose-dependent estrogen suppression without an initial flare, enabling individualized pain management. This survey was designed to capture expert clinical insights into real-world use of elagolix across diverse pain phenotypes and emerging reproductive medicine applications.
MATERIALS AND METHODS:

A structured perception-mapping assessment was conducted among 1,788 clinicians with a mean clinical experience of 24 years, representing approximately 42,900 cumulative clinician-years of experience, under the PRECISION framework. Respondents evaluated statements addressing efficacy, onset of pain relief, dosing strategies, symptom-specific use, duration of therapy, and positioning of elagolix in gynecological and assisted reproductive technology (ART) settings. Agreement was measured using a Likert-scale questionnaire, with responses analyzed using a weighted scoring system. Scores >100 were predefined as consensus agreement.

RESULTS:

All 10 evaluated statements achieved consensus, with weighted scores ranging from 114.9 to 123.2. The highest agreement supported clinically meaningful reduction of moderate-to-severe endometriosis-associated pain with elagolix beyond non-hormonal analgesics (123.2). Consensus supported rapid suppression of gonadotropins and estradiol without flare (120.6) and dose-dependent estrogen suppression enabling individualized treatment (120.2). Elagolix was also associated with faster onset of pain relief compared with relugolix combination therapy, particularly in patients requiring rapid symptom control (119.3). Elagolix 200 mg twice daily was favored for severe dysmenorrhea (117.9) and dyspareunia (118.2), while 150 mg once daily was preferred for longer-term therapy (118.4). Reduced rescue analgesic use, including opioids, was recognized (118.1). Elagolix use was associated with dose- and duration-dependent reduction in endometrioma size (118.6). Emerging consensus supported use during controlled ovarian hyperstimulation (115.2) and as pretreatment before embryo transfer (114.9). The overall mean response scores were: Agree: 58±3.2 (95% CI 55 to 61), Strongly agree: 50±6.5 (95% CI 46 to 55), p<0.0001

CONCLUSIONS:

This expert consensus supports elagolix as an effective, flexible, and individualized therapy for endometriosis-associated pain, with advantages in rapid symptom relief, potential endometrioma reduction, and expanding relevance in reproductive medicine practice

IMPACT STATEMENT:

Elagolix enables rapid, individualized, flare-free pain control in endometriosis with expanding reproductive medicine applications clinical

SUPPORT: NA

REFERENCES:

NA

BENIGN GYNECOLOGICAL DISEASE (5 OF 5)

P-484 3:45 PM Tuesday, October 27, 2026

NATURAL HISTORY OF ENDOSALPINGIOSIS AND OTHER ECTOPIC GYNECOLOGIC LESIONS: DOES THE UTERINE SECRETOME PLAY A ROLE? Sanam Bidadi, MD[1], Divya Chilukuri, MD[2], Joely Hannan, MD[3], Ninad Patil, MD[4], Kathleen Pennington, Ph.D[5] and Jan Sunde, MD[5], [1]Donald and Barbara Zucker School of Medicine at Hofstra/Northwell Health, Manhasset, NY, [2]MetroHealth Case Western Reserve University, Cleveland, OH, [3]Texas Tech University Health Sciences Center, EL Paso, TX, [4]Texas Children's Hospital, Houston, TX, [5]Baylor College of Medicine, Houston, TX

OBJECTIVE:

To assess the prevalence of endosalpingiosis (ES) in pediatric and adolescent patients and describe its occurrence within this age group in relation to other gynecologic findings.

MATERIALS AND METHODS:

A retrospective analysis of gynecologic surgery specimens (2011-2019) from a large women & children's hospital was conducted. Standard pathology evaluation provided data on patient age, specimen type, serous and other ectopic tissue findings. Exclusion criteria to exclude specimens with no chance of having the presence of ectopic tissue were applied prior to calculation of prevalence. Comparisons with prevalence data from adult females which was determined using the thorough Sectioning and Extensively Examining-Fimbria (SEE-Fim) pathologic sampling technique for benign lesions were made to understand changes with advancing age.

RESULTS:

The overall serous-derived ectopic tissue (ES and PTC) prevalence in adolescents with a mean age of 13.7 was 65% (590/910) after excluding 88 of 988 patients aged 0-7. ES prevalence was 1.5%, but in adolescents (8-20 years) with possible epithelial fragments, it was 4.3%. ES was absent in children aged 0-7. ES prevalence was 6.4% in patients aged 8-20 with ovaries removed, compared to 37.0% in adults aged 31-50, and 36.5% in adults aged >50. Endometriosis (EM) prevalence was 4.2% in adolescents compared to 31% in adults aged 31-50. Paratubal cysts (PTC), a type of serous lesion, were found in 46%% of adolescents, 22.3% in women 21-30, and 41.7% in women 31-50. Walthard nests (WN) were rare in adolescents (0.2%) but were more prevalent in adult women (20% in 21-30 and 29.1% in 31-50). Mucinous lesions were also noted to start developing following menarche.

CONCLUSIONS:

This pioneering study reveals extensive ectopic lesion prevalence in pediatric and adolescent age groups. Ectopic implantation of serous, endometrioid, mucinous, and urothelial tissues appears to be driven by hormonal cycling starting around menarche, presumably due to the uterine secretome. True prevalence of ectopic lesions can only be approximated due to differences in surgical indications with age, sampling limitations in tissue collection, and pathologic techniques. Findings support retrograde cellular movement and implantation, initiating ectopic lesion development. Further research is warranted to enhance our understanding and develop measures to prevent ectopic growths and their sequelae.

IMPACT STATEMENT:

This study demonstrates that serous-derived ectopic lesions, including endosalpingiosis, are present in pediatric and adolescent populations at appreciable rates, suggesting that ectopic lesion development may begin earlier in life than previously recognized. These findings support a hormonally mediated process potentially driven by the uterine secretome and contribute to a better understanding of the early natural history of ectopic gynecologic disease.

SUPPORT: The authors have no financial disclosures or conflicts of interest to declare.

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P-485 4:00 PM Tuesday, October 27, 2026

BENIGN UTERINE DISORDERS IN IVF: A TRANSCRIPTOMIC-BASED STRATIFICATION UNVEILS A POOR-PROGNOSIS SUBPOPULATION WITH HIGH RISK FOR ENDOMETRIAL FAILURE DESPITE BEING TREATED AND/OR DEEMED SUITABLE FOR TRANSFER. Rebeca Esteve Moreno, MSc[1], Patricia Sebastián León, PhD[2], Antonio Parraga-Leo, MSc[2], Asunta Martinez-Martinez, MSc[2], Marcos Ferrando Serrano, M.D.[3], Mar Vaquerizo-Medina, MSc[2], Francisco Jose Sanz Sr., PhD[2] and Patricia Diaz Gimeno, PhD[2], [1]University of Valencia, Valencia, Spain, [2]IVIRMA Global Research Alliance, IVI Foundation, Instituto de Investigación Sanitaria La Fe (IIS La Fe), Valencia, Spain, [3]IVIRMA Global Research Alliance, Bilbao, Spain

OBJECTIVE:

Benign uterine disorders (BUD) are related to infertility, but their impact on reproductive outcomes and treatment efficacy remains unclear.

Therefore, this study aimed to identify endometrial transcriptomic profiles associated with poor reproductive outcomes in patients diagnosed with BUD deemed suitable for transfer.

MATERIALS AND METHODS:

This prospective study included 155 IVF patients diagnosed with ≥1 BUD (adenomyosis, endometriosis, or fibroids) undergoing endometrial biopsy in the mid-secretory phase between January 2018 - November 2025 (mean age 41.5±4.0 years; BMI 22.8±2.6 Kg/m^2). Endometrial biopsies were processed for whole-transcriptome analysis using RNA-Seq, and cyclic endometrial variations were removed. A semi-supervised AI approach integrating clinical and transcriptomic data was performed to preventively identify molecular differences in outcomes related to a poor prognosis profile.

As for reproductive outcomes comparison between good- and poor-prognosis groups, only patients with a subsequent single high-quality embryo transfer, defined as Day 5 A-B grade embryos (ASEBIR) and confirmed euploidy by PGT-A or derived from oocytes <35 years old from donors or patients (n=91) were considered. According to the routine clinical practice, BUD were previously treated and/or deemed suitable for transfer.

AI-based gene signature discovery was performed to define predictive expression patterns.

RESULTS:

Poor (n=30) and good-prognosis (n=85) subpopulations were identified in the IVF patients with BUD. Implantation rates were lower in the poor-prognosis group (36.0% vs. 63.6%, p=0.032), corresponding to a 1.76-fold increased relative risk of implantation failure (p=0.011). Live birth rate was also reduced in this subpopulation (20.0% vs. 51.5%, p=0.008), exhibiting a 1.65-fold higher relative risk of endometrial failure than good-prognosis patients with BUD (p=0.002). Miscarriage rates were comparable between groups.

7993 differentially expressed genes were associated with the presence of BUD affecting the endometrial function (3867 upregulated; 4126 downregulated). From these, a 106-gene signature was prioritized as candidate biomarkers of endometrial failure risk specific to BUD patients, with no overlap with a previously established endometrial failure risk signature in the general IVF population, supporting a BUD-specific molecular impairment.

CONCLUSIONS:

We have identified for the first time a specific gene expression signature unveiling impaired functional endometria in a subgroup of patients suffering BUD. This finding suggests that endometrial disruption may persist, leading to poor reproductive outcomes, even when BUD have been treated and/or deemed suitable for transfer in this poor-prognosis population.

IMPACT STATEMENT:

The identification of patients with an endometrium affected or not by the presence of BUD is a novel concept and approach with high clinical relevance.

These findings enable to identify BUD patients who require further treatments to overcome uncorrected underlying endometrial disruptions, encouraging further research to characterize this poor-prognosis group and to develop tailored treatments.

SUPPORT: Work funded by the Economic Development, Sustainability, and Environment Department of the Basque Government, through the HAZITEK program, co-funded by the European Union (ZL-2023/00575, ZL-2024/00325, and ZL-2025/00220). Patricia Diaz-Gimeno is funded by Instituto de Salud Carlos III (Ministry of Science and Innovation) through Miguel Servet contract (CP20/00118) and co-funded by the European Union. Rebeca Esteve Moreno is supported by the CIACIF grant program (CIACIF/2022/447) and Mar Vaquerizo-Medina is funded by the APOTI grant program (CIAPOT/2024/32), both of the Regional Ministry of Education, Culture, Universities and Employment, Generalitat Valenciana, Spain, and co-financed by the European Social Fund (European Union). Francisco Jose Sanz is funded by Instituto de Salud Carlos III (Ministry of Science and Innovation) through the Sara Borrell contract

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P-486 4:15 PM Tuesday, October 27, 2026

PAIN MEDICATION IN WOMEN WITH ENDOMETRIOSIS AND EHLERS-DANLOS SYNDROME: A NATIONAL DATABASE STUDY.

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OBJECTIVE: Pain management in patients with endometriosis and additional comorbidities, such as Ehlers-Danlos Syndrome (EDS), remains a challenge. Our objective was to compare pain medication use among women with endometriosis and EDS to those with endometriosis without EDS.
MATERIALS AND METHODS: Using TriNetX Research Network Database, we included women with endometriosis, defined by ICD-10 code N80.x and CPT Code 58662 from 01/01/2005 to 04/15/2023; we excluded patients with Marfan syndrome (ICD-10 code Q87.x). We stratified patients based on whether they had an EDS diagnosis (ICD-10 code Q79.x) or not. Propensity score matching 1:1 for age, race, ethnicity, body mass index, depression, anxiety, and emergency service utilization were performed. We compared the record of pain medication in the three years after endometriosis diagnosis between the EDS and no-EDS groups to estimate risk difference (RD), risk ratio (RR), and 95% confidence interval (CI). Medication use was identified by ATC, RxNorm and CPT entries, including opioids, anticonvulsants (gabapentin, pregabalin), antidepressants (amitriptyline, nortriptyline, duloxetine, venlafaxine, milnacipran), and muscle relaxants (baclofen, alprazolam, flunitrazepam, chlordiazepoxide, clonazepam, diazepam, lorazepam, midazolam, oxazepam, prazepam, carisoprodol, chlorzoxazone, cyclobenzaprine, dantrolene, metaxalone, methocarbamol, orphenadrine, tizanidine).
RESULTS: Among 39,215 patients who met inclusion criteria, 242 had an EDS diagnosis (63% before and 37% after endometriosis diagnosis). After matching, 242 patients with EDS and 242 without EDS were included. The EDS group was significantly more likely to have documented pain medication (77%) than the no-EDS group (68%), yielding RD=9% (p=0.03) and RR=1.1 (95% CI 1.01-1.3). Opioids were common and not significantly different in patients with (64%) and without EDS (59%, RD=6%, p=0.19). Antidepressants were also not significantly different between patients with (24%) and without EDS (18%, RD=5%, p=0.15). In contrast, the anticonvulsants were significantly higher in the EDS group (36%) compared with the no-EDS group (15%, RD=21%, p<0.001), with RR=2.4 (95% CI 1.7-3.3). The muscle relaxants were also significantly higher among the EDS group (62%) than the no-EDS group (49%, RD=13%, p=0.006), with RR=1.3 (95% CI 1.1-1.5).
CONCLUSIONS: Pain management in patients with endometriosis requires particular attention, especially among those at increased risk of chronic pain, such as patients with EDS. Our findings demonstrated that patients with endometriosis and EDS had a significantly higher documentation of medication for pain control, particularly anticonvulsants and muscle relaxants, compared with patients with endometriosis without EDS, highlighting the importance of individualized pain treatment strategies in this population.
IMPACT STATEMENT: Patients with endometriosis and Ehlers-Danlos syndrome may require an individualized strategy for pain control.

P-487 4:30 PM Tuesday, October 27, 2026

ASSESSMENT AND PREVENTION OF PAIN DURING OVARIAN STIMULATION IN PATIENTS WITH ENDOMETRIOSIS (APPOSE): A RANDOMIZED, DOUBLE-BLINDED, PLACEBO CONTROLLED TRIAL.

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OBJECTIVE: To evaluate the impact of ovarian stimulation with and without letrozole on endometriosis related symptoms.
MATERIALS AND METHODS: This was a randomized, double-blinded, placebo-controlled trial of patients ages 18-42 years old with endometriosis undergoing controlled ovarian stimulation. Participants were randomized to receive 5mg oral letrozole (n=20) or a placebo (n=20) daily from the start of stimulation through two weeks post oocyte retrieval. A control group (n=20) of age and antral follicle count (AFC) matched patients without endometriosis was also recruited. Management of participants' stimulation was done by their primary doctor. Estradiol levels were not reported, to maintain blinding of the study groups. The primary outcome was pain score using a visual analog scale (0-100) during stimulation and at 3, 6, and 12 weeks post oocyte retrieval. For statistical analyses, Fisher's exact tests were used for categorical variables and Wilcoxon rank-sum tests were used for continuous variables.
RESULTS: There were no differences between the groups on baseline characteristics, including age, BMI, and AFC. Of those who had endometriosis, there were no significant differences in overall pain scores between those who received placebo and those who received letrozole during or post stimulation. As expected, compared to the non-endometriosis control group, those with endometriosis had significantly higher pain scores at baseline. However, during stimulation, there was no difference in overall pain between the two groups. After stimulation, those with endometriosis again had significantly more pain than those without endometriosis.

Pain *Mean (Mean Absolute Deviation)*	**Control (N=20)**	**Endometriosis Placebo (N=20)**	**Endometriosis Letrozole (N=20)**	**P-value[a]**	**P-value[b]**
Baseline menstrual pain	13.0 (13.0)	62.0 (16.0)	70.0 (16.0)	**<0.01***	0.66
Overall pain during stim	21.0 (14.0)	33.0 (22.0)	20.0 (11.0)	0.49	0.25
3 weeks post stim	14.5 (14.5)	50.0 (23.0)	49.0 (21.0)	**0.03***	0.97
6 weeks post stim	10.5 (10.5)	63.0 (22.5)	50.5 (24.0)	**0.03***	0.43
12 weeks post stim	10.0 (9.0)	50.0 (36.0)	30.0 (20.0)	**0.04***	0.96

[a]*P- control vs. both endometriosis groups combined*
[b]*P- endometriosis placebo versus letrozole*

CONCLUSIONS: There was no significant difference in pain during ovarian stimulation between those who had endometriosis and those who did not. In patients with endometriosis, taking letrozole 5mg daily during stimulation did not improve pain compared to placebo.
IMPACT STATEMENT: Patients with endometriosis do not appear to have more pain during stimulation than patients without endometriosis and letrozole use did not improve pain during, or after, ovarian stimulation for patients with endometriosis.
SUPPORT: This study was funded by The Society for Reproductive Investigation and Bayer Discovery/Innovation Grant.

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RACIAL DIFFERENCES IN EMERGENCY DEPARTMENT UTILIZATION FOR FIBROIDS IN THE UNITED STATES 2019-2022 - FINDINGS FROM THE NATIONAL EMERGENCY DEPARTMENT SAMPLE (NEDS).

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OBJECTIVE: Uterine fibroids are a prevalent condition among women in the United States. Emergency Department (ED) care for fibroids may reflect gaps in access to timely outpatient care and may contribute to increased healthcare costs. To address disparities and inform patient support programs, we characterized patterns of ED utilization for fibroid-related care.
MATERIALS AND METHODS: We examined data from the Nationwide Emergency Department Sample (NEDS), focusing on women aged 18–55 and exploring all ED visits (2019–2022) with fibroid ICD-10 codes listed as the primary diagnosis. Visits for all other diagnosis codes served as a comparison group. Between groups, sociodemographic and hospital characteristics were compared using t-tests and chi-square tests. Multivariate logistic regression models were undertaken to determine factors associated with hospital admission for fibroids.
RESULTS: Among women aged 18-55, there were 247,190 ED visits with fibroids as the primary diagnosis between 2019-2022. Compared to all other diagnoses, those aged 36–45 had a higher percentage of ED visits for fibroids (43.9% vs 24.3% p<.001), as did women living in high-density areas (Metro, 1mil+: 68.4% vs 50.7%, p<.001). Patients were admitted for a primary diagnosis of fibroids more often than for all other diagnoses (10.1% vs 8.8%, p<.001). White patients represented 50.6% of ED visits for all diagnoses, but only 23.9% of those for fibroids. In comparison, Black patients accounted for 24.4% of all ED visits, but 44.1% of those for fibroids; Hispanic patients, 18.3% of all and 23.7% of those fibroid-specific. Admission rates for fibroids also varied by race (11.6% Hispanic, 9.4% Black, and 8.9% White, p<0.001). Although Asian or Pacific Islander patients comprised only 3.3% of fibroid ED visits, they had higher odds of admission than Black patients (OR: 1.531; 95% CI 1.295–1.811). In multivariable regression analysis, admission for fibroids was associated with race (p<.001), age group (p<.001), and hospital region (p=.0253). Overall, mean charges associated with ED visits for fibroids were $10,766 versus $5,852 for all other diagnoses. Mean ED charges for fibroids varied by race, with lowest charges for Native American ($9,134) and Black ($10,530) women and highest for Hispanic women ($11,851).
CONCLUSIONS: This study highlights ongoing demographic differences in ED utilization and hospital admission for uterine fibroids. Both Black and Hispanic women with UF diagnoses continue to be overrepresented among ED patients, while AAPI patients are overrepresented among admissions for fibroids.
IMPACT STATEMENT: Fibroid-related care in the ED costs nearly twice the amount of the average ED visit for all other diagnoses. Further studies will be needed to understand the drivers of the disparities in ED utilization signaled in this work, as well as the high costs associated with this care.

HEALTH DISPARITIES & HEALTH EQUITY (1 OF 6)

P-489 3:45 PM Tuesday, October 27, 2026

DISPARITIES IN ACCESS TO INFERTILITY CARE BY RACE AND COUNTRY OF BIRTH IN THE UNITED STATES: A STUDY OF NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES) 2013–2018.

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OBJECTIVE: Few national studies examined factors associated with inequitable access to fertility care. We sought to examine the association between race, country of birth and access to infertility care among U.S women.
MATERIALS AND METHODS: We conducted a cross-sectional study of women aged 20-45 years using NHANES data (2013–2018). The primary outcome was access to infertility care, defined as ever seeking medical evaluation for infertility. The primary exposure was race with stratification by country of birth (U.S.-born vs foreign-born). Logistic regression was used to test association between race and access to care while adjusting for age, parity, poverty index ratio (PIR), and insurance status. All analyses incorporated NHANES sampling weights.
RESULTS: A total of 2811 participants were included, representing 42.8 million U.S women given NHANES weights. In adjusted analysis, no statistically significant racial differences in access to infertility care were identified after stratification by country of birth. Among U.S-born women, increasing age and parity were associated with a higher likelihood of accessing care. Among foreign-born women, higher income was significantly associated with greater access to infertility care. Other variables were not statistically significant. (Table 1)
CONCLUSIONS: No racial differences were observed in access to infertility care among U.S-born and foreign-born women. However, greater access was associated with higher income among foreign-born women and with increasing age and parity among U.S-born women.
IMPACT STATEMENT: It is important to address socioeconomic barriers among women living in the U.S to inform equitable access to infertility care.

Table 1: Adjusted odds ratio [95% CI] for access to infertility care

	U.S born	**Foreign born**
Race (Ref non-Hispanic White)		
Non-Hispanic Black	0.62 [0.33-1.17]	2.04 [0.16-25.39]
Hispanic	0.9 [0.4-1.99]	2.32 [0.23-23.48]
Asian	0.58 [0.16-2.04]	2.78 [0.28-28.06]
Other	0.97 [0.6-1.59]	2.6 [0.25-27.62]
Age (Ref 20-29 years)		
30–34	**2.43 [1.2-4.9]**	0.51 [0.17-1.52]
35–39	**2.25 [1.15-4.41]**	1.81 [0.63-5.21]
40–45	**2.15 [1.08-4.27]**	1.7 [0.68-4.28]
Parity (Ref Nulliparous)		
Parous	**2.88 [1.65-5.04]**	1.24 [0.55-2.8]
PIR (ref lower income 1.0)		
Middle income (1- 2.9)	0.85 [0.44-1.63]	0.74 [0.27-2.05]
Higher income (≥3.0)	1.43 [0.69-2.96]	**4.07 [1.45-11.41]**
Insurance (ref none)		
Others	1.37 [0.59-3.16]	1.57 [0.53-4.7]
Medicare & Medicaid	0.52 [0.22-1.2]	1.49 [0.45-4.93]
Private Insurance	1.1 [0.67-1.82]	1.33 [0.53-3.36]

SUPPORT: N/A

P-490 4:00 PM Tuesday, October 27, 2026

PREDICTORS OF FERTILITY TREATMENT CONVERSION AND DISCONTINUATION AFTER INITIAL CONSULTATION.

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OBJECTIVE: To identify factors associated with conversion to fertility treatment and discontinuation after one unsuccessful cycle.
MATERIALS AND METHODS: This retrospective cohort study examined factors associated with conversion to and discontinuation of fertility treatment following initial consultation. We included patients presenting between January 1, 2021 and January 1, 2026 for an initial consult. Intrauterine insemination (IUI) and *in vitro* fertilization (IVF) cycles were analyzed, but fertility preservation and oncofertility cycles were excluded. Variables included sociodemographic factors, medical history, prior fertility evaluation, and state insurance mandate status. Treatment conversion was assessed using Cox proportional hazards models (HR, 95% CI); discontinuation was assessed using relative risk (RR).
RESULTS: Of 55,807 patients presenting for an initial fertility consultation, 21,203 (38%) initiated treatment. Those who converted were younger (34.3 vs 35.5 years; p<0.001) and more likely White (54.6% vs 45.2%; p<0.001). Age, race, home zip code, income, and state fertility insurance mandate status were significantly associated with conversion to treatment. Black and Hispanic/Latino patients were less likely to convert to treatment, but conversion rates increased with higher median income (Black: HR 95% CI: 1.26 (1.11, 1.42); Hispanic/Latino: 1.4 95% CI (1.11, 1.76)). Among patients initiating treatment, 5,446 (25.7%) discontinued after one unsuccessful cycle. Discontinuation was associated with age, insurance mandate status, distance to the clinic, race/ethnicity, and infertility diagnosis (Table 1).
CONCLUSIONS: Most patients presenting for initial fertility evaluation do not convert to treatment. Sociodemographic and financial factors, including race/ethnicity and income, strongly predict both conversion and continuation, while diminished ovarian reserve does not, suggesting non-clinical factors drive treatment attrition.
IMPACT STATEMENT: Financial access and insurance mandate status are major determinants of fertility treatment utilization, underscoring persistent disparities in reproductive care.

	Conversion HR (95% CI)	Discontinuation RR (95% CI)
Insurance mandate present	0.93 (0.89, 0.97)	0.8 (0.73, 0.89)
Ethnicity/Race		
White	Reference	Reference
Asian	0.4 (0.07, 2.32)	1.02 (0.92, 1.13)
Black/African American	0.04 (0.01, 0.18)	1.37 (1.27, 1.48)
Hispanic/Latino	0.02 (0.00, 0.24)	1.23 (1.05, 1.42)
Other/Multi-racial	0.41 (0.07, 2.21)	1.13 (1.02, 1.25)
Interaction between median income and race/ethnicity		
White	Reference	
Asian	1.09 (0.94, 1.26)	
Black/African American	1.26 (1.11, 1.42)	
Hispanic/Latino	1.4 (1.11, 1.76)	
Other/Multi-racial	1.07 (0.93, 1.24)	

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OUT-OF-POCKET COST-TO-BABY AS A PRIMARY PREDICTOR OF STATE-LEVEL ASSISTED REPRODUCTIVE TECHNOLOGY UTILIZATION IN THE UNITED STATES.

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OBJECTIVE: Declining U.S. fertility rates and persistent disparities in assisted reproductive technology (ART) access have focused policy attention on insurance mandates, yet treatment uptake varies markedly across states. We examined whether gross or out-of-pocket costs better capture financial barriers to care, and whether clinical workforce density operates as an independent constraint on state-level ART utilization.
MATERIALS AND METHODS: We constructed a 50-state dataset for 2022. We modeled two utilization outcomes: the percentage of infants born via ART, and ART cycles per 1,000 reproductive-aged women (15–49). Gross cost-to-baby combined average cycle costs and cycles per live birth, adjusted by age mix. Out-of-pocket costs subtracted estimated insurance coverage, modeled from state mandates and employer coverage. Costs were expressed as percentages of state-specific median disposable household income. Reproductive endocrinology and infertility (REI) physician data were sourced from professional registries. Analysis used linear regression, with sensitivity analyses excluding outliers via Cook's distance.
RESULTS: Gross cost-to-baby was a poor univariate predictor of ART utilization (adjusted $R^2 < 0.07$, $p \geq 0.04$), while out-of-pocket cost explained 40% of variance in both outcomes ($p < 10^{-6}$). REI density correlated strongly with utilization (adjusted $R^2 = 0.86–0.87$, $p < 10^{-22}$). In the combined out-of-pocket cost + REI density model, both predictors contributed independently, jointly explaining 89–90% of variation across states ($p < 10^{-23}$), rising to 93–96% after excluding the five most influential states. In this multivariate model, reduction in the cost coefficient was consistent with partial co-determination, since out-of-pocket cost itself moderately predicted REI density (adjusted $R^2 = 0.26$, $p < 10^{-4}$). Sub-analysis in women aged 38–49 confirmed this pattern (adjusted $R^2 = 0.88–0.93$).
CONCLUSIONS: State-level ART utilization is primarily associated with out-of-pocket rather than gross costs, likely reflecting heterogeneity in within-state insurance coverage. REI density is a strong predictor of utilization, but because ART delivery requires capital-intensive infrastructure that cannot precede a viable patient base, this correlation

likely reflects workforce localizing in response to demand rather than constraining it, although practice preferences and historical clinic growth also shape REI location. Affordability emerges as the primary policy lever, with workforce expansion as the necessary downstream response.
IMPACT STATEMENT: Expanding workforce supply in isolation is unlikely to improve ART utilization without improved affordability sustaining demand. Payer-side interventions such as insurance mandates, employer benefits, and grant programs; and supplier-side innovations such as laboratory automation, hub-and-spoke care models, and pharmacy optimization can reduce out-of-pocket costs. The resulting sequence — affordability driving uptake, with care delivery innovation following to meet expanded demand — has direct implications for workforce planning, insurance design, and technology investment.
SUPPORT: This work was supported by Conceivable Life Sciences. No external funding was received.

P-492 4:30 PM Tuesday, October 27, 2026

FERTILITY CLINICS AFFILIATED WITH PRIVATE EQUITY ARE FOUND LESS COMMONLY IN ZIP CODES WITH MORE SOCIAL VULNERABILITY.
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OBJECTIVE: Private equity (PE) affiliations with fertility clinics are increasing in the United States. However, it remains unclear if private equity firms are more likely to affiliate with fertility clinics in geographic areas with more (or less) socioeconomic resources. The Centers for Disease Control and Prevention (CDC) Social Vulnerability Index (SVI) encompasses demographic and socioeconomic variables such as poverty, limited access to transportation, and crowded housing into a single value that has been used as a proxy for social determinants of health in a community. Our objective was to evaluate the association between the SVI of fertility clinic zip codes and clinic's likelihood of private equity affiliations.
MATERIALS AND METHODS: We used the CDC 2022 Assisted Reproductive Technology Success Rates report to identify fertility clinics that performed in vitro fertilization in the United States. Clinic zip codes were then linked to 2022 CDC SVI values. We excluded 5 clinics located in zip codes without SVI values. Private equity affiliations as of December 31, 2023, were identified using merger and acquisition reports from Irving Levin Associates, the Pitchbook database, press releases, news reports, company statements, and clinic websites. Finally, we used a chi-square analysis (with SVI modeled in quartiles) and a univariate logistic regression (with SVI as a continuous variable) to evaluate the association between the SVI of each fertility clinic's zip code and the clinic's likelihood of private equity affiliation.
RESULTS: A total of 502 fertility clinics with available SVI data were included in the analysis. Clinics located in zip codes with less social vulnerability had the highest proportion of affiliations (43.8%), whereas fertility clinics in zip codes with more social vulnerability had the lowest proportion of affiliations (28.2%, $p < 0.001$). Logistic regression demonstrated that zip codes with more social vulnerability were associated with decreased odds of private equity affiliation ($p < 0.001$).
CONCLUSIONS: Fertility clinics that are affiliated with private equity firms are less likely to be located in zip codes with more social vulnerability. This pattern raises the question of whether private equity firms are considering the social vulnerability of a community when making their investment decisions.
IMPACT STATEMENT: As private equity investments in fertility clinics continue to grow, understanding the distribution of private equity affiliated clinics across communities becomes increasingly important. The lower prevalence of private equity affiliated clinics in zip codes with more social vulnerability suggests potential differences in access to care and highlights the need to further examine how evolving ownership structures may impact equity in fertility services.
SUPPORT: This study was supported in part by a grant from the University of Michigan Institute for Healthcare Policy and Innovation.
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COMMUNITY-FOCUSED INFERTILITY DECREASES STIGMA, IMPROVES KNOWLEDGE BASE AND INCREASES CARE-SEEKING BEHAVIOR IN A DIVERSE, UNDERSERVED POPULATION.
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OBJECTIVE:
To implement a physician-run education intervention on knowledge, stigma and intention to pursue further evaluation amongst a diverse community while assessing baseline understanding of infertility.
MATERIALS AND METHODS:
Reproductive and non-reproductive aged participants were recruited through outreach programs across Metro Detroit; an area where fertility care is plagued with disparities. Prior to the intervention and thorough lectures, participants completed a structured survey aimed at evaluating knowledge of infertility which included definition, prevalence, age-associated fertility decline, impact of male factor, and appropriate timing of referral/clinical assessment.
A focused educational session led by a reproductive endocrinology specialist was conducted; which focused on infertility and its evaluation, treatment options, addressing misconceptions and timing of referrals. A post-intervention survey was administered immediately following the session.
The primary endpoint was the change from pre to post surrey analysis knowledge scores in overall knowledge. Secondary outcomes included performance in individual knowledge disciplines, stigma pertaining to infertility, and the likelihood of proceeding towards medical evaluation. A paired t-test, with p value < 0.05, indicated statistical significance.
RESULTS:
A total of 143 participants completed both assessments. At baseline, there were notable knowledge gaps, specifically regarding age-related fertility decline (34% correct) and recommended timing for evaluation (29% correct).
Following the intervention, there was a significant increase in overall knowledge scores (mean ± SD: 5.8 ± 1.8 to 8.5 ± 1.3, p=0.002). There was also a significant improvement in recognizing that infertility impacts both partners (51% to 87%, p=0.004) and in better recognition of when the appropriate timing for evaluation is (33% to 84%, $p < 0.001$) Although not statistically significant, there was an overall decline in perceived stigma between pre and post survey (3.2 ± 1.1 to 2.7 ± 0.9, $p < 0.053$), while the proportion of participants reporting intent to seek evaluation increased from 46% to 79% ($p < 0.001$). In subgroup analysis, there was lower baseline knowledge among lower-education and underrepresented groups, but this group showed overall greater improvements after the intervention (p=0.01).
CONCLUSIONS:
Community-directed, physician-led education shows improvements in infertility knowledge, shows a trend to reduce perceived stigma, and, overall, better recognition of when the appropriate timing for evaluation in a diverse, underrepresented population.
IMPACT STATEMENT:
Community-focused fertility education that is community-driven and focused can potentially result in an effective approach to improve, overall, reproductive health education, translate into earlier evaluation, and help address disparities pertaining to accessible fertility care.

HEALTH DISPARITIES & HEALTH EQUITY (2 OF 6)

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IMPACT OF RACE AND ETHNICITY ON OOCYTE THAW (OT) OUTCOMES AFTER PLANNED OOCYTE CRYOPRESERVATION (OC).
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OBJECTIVE: OC outcome data by demographics are lacking.[1] This study examines OT outcomes after planned OC by race/ethnicity.
MATERIALS AND METHODS: This is a retrospective cohort study of planned OC pts who underwent an OT cycle at our center from 2004-2025. Primary outcome was cumulative live birth rate (CLBR) of pts with a live birth (LB) / ongoing pregnancy (OP) or who used all OC tissue (oocytes + usable embryos). Secondary outcomes were fertilization, blastulation, and euploidy rate per OT and LB rate per ET. Outcomes were compared by race/ethnicity, including White (WT), Black (BL), Asian/Pacific Islander (API), or Hispanic/Latino (HP). Pts with unknown race/ethnicity excluded. Statistics included Kruskal-Wallis, Fisher's exact, Chi-squared, logistic regression and generalized estimating equations (GEE) ($p<0.05$ significant).
RESULTS: 941 pts (739 WT, 29 BL, 146 API, 27 HP) underwent 1349 OC, 1012 OT, and 727 ET cycles. Table shows outcomes by race/ethnicity. Overall CLBR was 51% (331/653), excluding pts without a LB/OP who transported OC tissue out (n=39) or have remaining OC tissue (n=249). After adjusting for OC age and metaphase II oocytes (MIIs) thawed, APIs had lower CLBR compared to WTs (OR 0.5, $p<0.01$); no difference in BLs or HPs (p=0.6). After further adjusting for ET events and PGT use, APIs still had lower CLBR (OR 0.4, $p<0.01$); however, this significance disappeared when adding euploid ET events as covariate (p=0.12). APIs had fewer total euploids (p=0.02) and, among euploid transfers, they had lower CLBR (OR 0.3, $p<0.01$) and lower per-transfer LB odds (OR 0.4, $p<0.01$). HPs had higher per-transfer LB odds (OR 3.9, p=0.04) across all ETs, but not when restricted to euploid ETs (p=0.18).

	WT n=739	**BL n=29**	**API n=146**	**HP n=27**	**p-value**
Age at OC (years)	37 [35-39]	39 [37-41]	37 [35-39]	37 [35-39]	**0.01**

OC cycles	1 [1-2]	1 [1-2]	1 [1-2]	1 [1-2]	0.9
MIIs frozen	15 [9-22]	18 [12-21]	13 [8-20]	15 [8-22]	0.2
OT cycles	1 [1-1]	1 [1-1]	1 [1-1]	1 [1-1]	0.7
MIIs thawed	13 [8-20]	15 [9-21]	12 [7-19]	10 [8-19]	0.3
MII survival rate	88% [71-100]	95% [80-100]	88% [71-100]	89% [73-100]	0.2
Fertilization rate	73% [60-86]	67% [50-85]	67% [55-83]	68% [58-81]	**0.02**
Blastulation rate	43% [25-60]	50% [32-67]	35% [17-57]	38% [25-60]	0.2
Euploidy rate	43% [14-64]	43% [0-60]	33% [0-64]	38% [0-50]	0.6
Age at ET (years)	43 [41-45]	44 [42-46]	43 [41-45]	43 [41-45]	0.4
ET cycles	1 [0-1]	1 [1-1]	1 [0-1]	1 [0-1]	**0.02**
CLBR	53 (275/520)	57% (13/23)	34% (30/88)	59% (13/22)	**<0.01**
LB at 1st ET	50% (211/419)	61% (11/18)	39% (25/65)	79% (11/14)	0.1
SAB at 1st ET	8% (33/419)	17% (3/18)	11% (7/65)	0% (0/14)	0.1

Values as medians [IQR] or proportions (n)

CONCLUSIONS: APIs had a lower CLBR regardless of OC age and MIIs thawed, which is consistent with findings from IVF by race/ethnicity.[2]

IMPACT STATEMENT: Similar to IVF, OC outcomes appear to differ by race/ethnicity, supporting the need for further research.

SUPPORT: None.

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P-495 4:00 PM Tuesday, October 27, 2026

DIGITAL ACCESSIBILITY IN FERTILITY CARE: A CROSS SECTIONAL ANALYSIS.

Medha Gaddam, B.A.[1], Michal A Norry, MD[2], Priyanka Meesa, BS[3], Hari Ramesh, M.S.[4] and Alexandra Gannon, M.D.[5], [1]Centreville, VA, [2]George Washington University Hospital, [3]Georgetown University School of Medicine, DC, [4]Medical Student, Pearland, TX, [5]Baylor College of Medicine, Houston, TX

OBJECTIVE: To evaluate fertility clinic website accessibility by using automated, proxy measures of Web Content Accessibility Guidelines (WCAG) 2.1 Level A/AA standards and assess variation by clinic type and region.

MATERIALS AND METHODS: This study is a cross-sectional analysis evaluating the accessibility of Society for Assisted Reproductive Technology (SART) fertility clinic websites, from the 2024 database. Barriers to accessibility include visual, auditory, motor, and cognitive disabilities. Duplicate links and clinics with identical home pages were removed, leaving 331 total websites analyzed. We used two validated tools to evaluate accessibility - Web Accessibility Evaluation Tool (WAVE) and Google Lighthouse. WAVE metrics include total errors, contrast errors, alerts, missing alternative text, form label errors, and empty broken links. Google Lighthouse accessibility score ranged from 0-100, determined as a weighted average of automated checks based on the axe-core library. The number of failed audits were recorded, which are defined as any accessibility check that does not meet Lighthouse's criteria for compliance with WCAG 2.1 Level A/AA standards. Referencing prior literature, we created a composite proxy measure of WCAG 2.1 Level A/AA adherence. Manual analyses were eliminated in order to reduce subjectivity. We created three categories: compliant (Lighthouse score of 90–100 and 2 or fewer WAVE errors), partially compliant (Lighthouse score of 50–89 or 3–10 WAVE errors), and not compliant (Lighthouse score of <50 or >10 WAVE errors). The association between compliance and clinic type/region was evaluated using Firth logistic regression and reported as an adjusted odds ratio (aOR) with 95% confidence intervals (CI). The model performance was evaluated using C-statistic and Brier score.

RESULTS: Of the 331 clinic home pages analyzed, 75 (22.7%) were compliant, 184 (55.6%) partially compliant, and 72 (21.8%) not compliant. Private clinics represented 88.89% of the noncompliant group, while university clinics represented 29.3% of the compliant group. Compared to private clinics, university clinics (aOR 3.78, 95% CI [1.93, 7.4], p<0.01) and health systems clinics (aOR 2.96, 95% CI [1.08, 8.11], p=0.04) had stronger odds of compliance. Military clinics had no significant differences (p=0.57). Compared to the South, clinics in the Midwest (aOR 0.42, 95% CI [0.19, 0.94], p=0.03) and West (aOR 0.37, 95% CI [0.18, 0.78], p<0.01) had significantly lower odds of compliance. The Northeast did not significantly differ (p=0.24) from the South. The model C-statistic 0.67 was (95% CI: 0.60, 0.74), and the Brier score was 0.16.

CONCLUSIONS: Only a few fertility clinic websites comply with accessibility guidelines, and compliance varies with clinic type and region with lower compliance observed in private clinics and in the Midwest/West.

IMPACT STATEMENT: This lack of accessibility amongst fertility clinic websites poses a threat to equity in reproductive health, particularly in patients' ability to obtain critical information regarding their care. This study highlights the need for improvements in website design, especially amongst private clinics and lower-performing regions.

P-496 4:15 PM Tuesday, October 27, 2026

AREA DEPRIVATION IS ASSOCIATED WITH LOWER UTILIZATION OF PREIMPLANTATION GENETIC TESTING IN FIRST IVF CYCLES. Brianna C Borger, BS[1], Alexandra M Herweck, MD, MPH[2], Ecem Esencan, M.D.[3], Riley Bonaccorsi, BA, MA[1], Joan K. Riley, HCLD, PhD[4], Emily S Jungheim, M.D., M.S.[5] and Jessica R Walter, MD, MSCE[5], [1]Northwestern University, Chicago, [2]Northwestern University Feinberg School of Medicine, Obstetrics and Gynecology, Reproductive Endocrinology and Infertility, Chicago, IL, [3]Northwestern University, Feinberg School of Medicine, Chicago, IL, [4]Northwestern University, Chicago, IL, [5]Northwestern University Feinberg School of Medicine, Chicago, IL

OBJECTIVE: To evaluate associations between area deprivation index (ADI), a validated, census-block-level tool measuring neighborhood socioeconomic disadvantage based on income, education, employment, and housing quality, and the decision to use preimplantation genetic testing for aneuploidy (PGT-A).
MATERIALS AND METHODS: This is a cross-sectional study of individuals participating in the **PRO**spective study of **M**others' and **I**nfants' **S**ocial and **E**pidemiologic determinants of health (PROMISE) cohort, a prospective study of people undergoing their first cycle of IVF at a tertiary academic center in in a mandated state. Home address, collected via baseline survey, was geocoded to 2020 Census block groups and linked to 2020 ADI national percentile rankings from the Neighborhood Atlas (University of Wisconsin). A higher ADI score contributes to a higher rate of area-level socioeconomic deprivation. The primary outcome was PGT-A use. Multivariable logistic regression was used to evaluate the association between the highest-quartile ADI and PGT-A use, adjusting for age at retrieval, anti-Müllerian hormone (AMH), BMI, and race.
RESULTS: Of 208 study participants, the median age at baseline assessment was 35 years (32.5–38) and median BMI was 25.0 kg/m² (22.0–29.8). Self-reported race was predominantly White (81.5%), with smaller proportions identifying as Asian (6.9%) or Black (4.2%). 88.9% of participants had insurance coverage for IVF. Of the 208 patients, 189 had documented PGT-A information with 64.6% utilizing PGT (122/189). Patients who utilized PGT-A were older than those who did not (36 vs 34 years, p=0.016) and resided in less deprived neighborhoods (ADI 24.8 vs 32.2, p=0.007); BMI, race, and insurance coverage did not differ significantly between groups. A smaller proportion of PGT-A users resided in the highest ADI quartile compared to non-users (17.7% vs 32.8%, p=0.020). In multivariable logistic regression among 180 patients with complete data, residence in the highest ADI quartile was independently associated with decreased odds of PGT-A utilization (aOR 0.40, 95% CI 0.18–0.85, p=0.018). Older age at retrieval was associated with higher PGT-A use (aOR 1.10 per year, p=0.028), while AMH, BMI, and race were not associated with PGT-a use .
CONCLUSIONS: Greater area-level socioeconomic deprivation is associated with lower utilization of PGT-A among patients undergoing IVF, independent of demographic and clinical factors. These findings show socioeconomic factors influence decisions to use add-on reproductive technologies.
IMPACT STATEMENT: Socioeconomic factors impact IVF decision-making independent of insurance status.

P-497 4:30 PM Tuesday, October 27, 2026

DIRECT TO CONSUMER (DTC) DIAGNOSTIC TESTING IN REPRODUCTIVE HEALTHCARE: A NARRATIVE REVIEW OF CLINICAL VALIDITY, UTILITY, AND INTERPRETIVE RISK. James Michael Niall Michael Niall Duffy, BSc (Hons) MB ChB MRes DPhil MRCOG PG Dip PG Cert HCL[1], Sepideh Samaee, MBBS[2] and Dr. Yusuf Beebeejaun, MRCOG MHDL MBBS BSc(Hons)[3], [1]London, AL, [2]London, United Kingdom, [3]IVI RMA UK, London, United Kingdom

OBJECTIVE: Direct to consumer (DTC) diagnostic testing is rapidly expanding across reproductive healthcare. These diagnostic interventions are increasingly marketed as tools to assess fertility potential, optimize reproductive timing, and inform treatment decisions. However, reproductive outcomes are multi factorial, and concerns have emerged regarding clinical validity, interpretation, and consequences. This study summarized the evidence evaluating the clinical validity, utility, and interpretive risks of DTC diagnostic tests in reproductive medicine, reproductive surgery, and fertility preservation.
MATERIALS AND METHODS: A systematic review with narrative synthesis was conducted. Bibliographical databases, including CENTRAL, MEDLINE, and PubMed, were searched from 2000 to February 2026. Eligible studies evaluated DTC diagnostics relevant to reproductive medicine, including anti-müllerian hormone (AMH), hormonal testing (e.g. testosterone, progesterone), ovulation prediction tools, menstrual tracking applications, semen analysis, and expanded carrier screening. Outcomes included analytical validity, clinical validity, clinical utility, behavioral impact, and healthcare utilization.
RESULTS: A total of 150 studies were included. Published evidence was strongest for AMH and expanded carrier screening, and weakest for at home hormonal testing panels and app based fertility diagnostics. AMH demonstrated strong analytical validity for ovarian reserve assessment but limited predictive value for natural conception, despite frequent DTC marketing as a fertility predictor. Urinary luteinizing hormone (LH) testing demonstrated moderate evidence for improving pregnancy rates through optimisation of intercourse timing. Menstrual tracking applications and wearable devices demostrated variable accuracy for ovulation prediction. DTC semen analysis demonstrated high concordance with laboratory testing for sperm concentration and motility but remained incomplete due to limited assessment of morphology and functional parameters. Expanded carrier screening demonstrated meaningful clinical utility but was highly dependent on counselling and access to advanced ART, including preimplantation genetic testing. All diagnostic tests frequently provided partial information that, when interpreted outside specialist clinical pathways, contributed to false reassurance, unnecessary anxiety, and inappropriate healthcare utilization.
CONCLUSIONS: DTC diagnostics demonstrate substantial heterogeneity in clinical validity, utility, and interpretive risk. The principal challenge is not analytical accuracy alone, but the loss of clinical context when individual diagnostic tests are used as proxies for complex reproductive outcomes.
IMPACT STATEMENT: DTC diagnostics are reshaping reproductive healthcare and may significantly influence patient decision making, healthcare demand, and regulation. These findings support stronger oversight of marketing claims, improved patient education, and integration of validated tools into evidence based reproductive care pathways.
SUPPORT: No specific funding was provided for this study.
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HEALTH DISPARITIES & HEALTH EQUITY (3 OF 6)

P-498 3:45 PM Tuesday, October 27, 2026

TELEHEALTH REIMBURSEMENT DISPARITIES IN MALE INFERTILITY EVALUATION: A COMMERCIAL PAYER ANALYSIS USING TRANSPARENCY IN COVERAGE DATA. Jordan G. Kassab, M.S.[1], Sooah Ko, B.S.[2], Thomas Varghese, B.S.[2], Amelia G Oppenheimer, B.S.[3] and Niki Parikh, MD, MBA, MSBA[4], [1]Texas Tech University Health Sciences Center, TX, [2]University of Missouri School of Medicine, Columbia, MO, [3]Baylor College of Medicine, Houston, TX, [4]Mayo Clinic Rochester

OBJECTIVE: To quantify reimbursement differences between telehealth and in-person initial male infertility consultations across commercial and governmental payers and evaluate the impact of state telehealth parity legislation on reimbursement equity.
MATERIALS AND METHODS: Using Transparency in Coverage data from four national commercial payers (Aetna, BCBS, Cigna, UnitedHealthcare) and CMS Physician Fee Schedule data across all 51 U.S. jurisdictions, reimbursement rates were analyzed for new patient evaluation codes (CPT 99202–99205) billed by urology providers. Place of service modifiers distinguished in-office (POS 11) from telemedicine encounters (POS 02, 10). State-level payer mix data were incorporated to generate weighted national reimbursement estimates. Paired t-tests compared modality-based reimbursement differences; Spearman correlation assessed associations between state uninsured rates and telemedicine reimbursement disparities.
RESULTS: Telemedicine reimbursement was significantly lower than in-person reimbursement across all CPT codes (all $p<0.01$), with mean differences ranging from -$6.90 to -$19.20. Weighted by payer mix, the national blended telemedicine reimbursement deficit averaged $14.07 per visit, corresponding to $0.40-$0.60 lower reimbursement per minute of physician time. Medicare demonstrated relative parity between modalities due to non-facility fee structures, while commercial payers applied uniform telemedicine reductions of 5-15% across codes and geographies. States with higher uninsured rates demonstrated greater telemedicine reimbursement disparities (Spearman $\rho = -0.313$ to -0.334, $p<0.05$). Multivariable regression identified a significant interaction between CPT complexity and state parity law status ($\beta = -0.012$, $p = 0.043$), corresponding to a 3.7 percentage-point greater telemedicine reimbursement disadvantage at higher visit complexity levels in parity-law states, indicating that existing legislation does not attenuate and may amplify disparities for cognitively complex visits.
CONCLUSIONS: Commercial payers systematically reimburse telehealth initial male infertility consultations at lower rates than equivalent in-person visits, with disparities compounding at higher visit complexity and persisting across diverse state parity legislations. Medicare parity principles are not replicated in commercial markets, creating financial disincentives for telehealth adoption in a care context where it is clinically feasible and access-expanding. Aligning commercial reimbursement with Medicare parity standards represents a necessary policy lever for equitable telehealth integration in male infertility care.
IMPACT STATEMENT: Telehealth represents a critical access pathway for male infertility evaluation, particularly in the 60% of U.S. counties lacking a practicing urologist; commercial reimbursement structures that systematically undervalue virtual care threaten its financial sustainability.
SUPPORT: None.
REFERENCES:
None/

P-499 4:00 PM Tuesday, October 27, 2026

RACIAL AND ETHNIC DISPARITIES IN INITIATION OF TREATMENT WITHIN A FERTILITY BENEFIT PROGRAM. Dr. Kyle Nguyen Le, M.D.[1], Michelle J. Bayefsky, MD[2], Thomas McIntyre, M.P.H.[3,4], Jaswanth Rao, BA, MBA[3], Joseph A. Lee, BA[5], Alan B. Copperman, MD[6], Janet Choi, MD[4] and Benjamin S Harris, M.D., M.P.H[1], [1]Shady Grove Fertility - Jones Institute, Norfolk, VA, [2]Icahn School of Medicine at Mount Sinai, New York, NY, [3]Progyny, Inc., New York, NY, [4]New York, NY, [5]RMANY || US Fertility, New York, NY, [6]Reproductive Medicine Associates of New York LLP, New York, NY

OBJECTIVE:

To evaluate whether race and ethnicity are associated with initiation of treatment, time to care, and time to pregnancy within a fertility benefit program.
MATERIALS AND METHODS:
Retrospective cohort study of patients who initiated fertility benefits in 2024-2025 and completed an initial consultation. Race and ethnicity were self-reported and stratified into five groups: African American/Black, Asian/Pacific Islander, Latino/Hispanic, Other/Mixed Race, and White (reference). Primary outcome was initiation of treatment. Secondary outcomes included time to initial consultation, treatment type (IUI vs. IVF), and time to pregnancy. Multivariable logistic and linear regression models were used, adjusting for age at first consultation.
RESULTS:
Among 12,516 patients, African American/Black (47.1%, aOR 0.83; 95% CI [0.73–0.95]), Asian/Pacific Islander (42.6%, aOR 0.68; 95% CI [0.62–0.75]), and Other/Mixed race (46.9%, aOR 0.81; 95% CI [0.71–0.93]) patients had lower odds of initiating treatment compared to White patients (52.4%), while Latino/Hispanic patients had higher odds (62.7%, aOR 1.54; 95% CI [1.12–2.12]). African American/Black (136 days; p=0.01) and Other/Mixed race patients (144 days; p=0.02) experienced longer time from consultation to cycle start versus the reference group (127 days). Despite these differences, time to pregnancy was similar across most groups, although Asian/Pacific Islander patients had modestly longer time to pregnancy (190 vs. 180 days; p=0.02), higher odds of IUI (42% vs. 36.4%, aOR 1.23; 95% CI [1.06–1.42] and lower odds of IVF (72% vs. 74.5%; aOR 0.85; 95% CI [0.73-0.99]) compared to the reference group.
CONCLUSIONS:
Disparities in initiation of fertility treatment persist across racial and ethnic groups despite access to a fertility benefit program. However, once engaged in care, time to pregnancy is largely similar across groups.
IMPACT STATEMENT:
Despite reduced financial barriers, disparities in initiation of fertility treatment persist; however, outcomes are comparable once care is initiated, highlighting early engagement and navigation support as key targets for intervention.
SUPPORT: There was no funding for this study.

P-500 4:15 PM Tuesday, October 27, 2026

INCREASING BODY MASS INDEX (BMI) HAD A SMALL UNEXPECTEDLY FAVORABLE IMPACT ON HEALTHY EMBRYO YIELD FOLLOWING PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY (PGT-A).
Mindy Lowy, B.S.[1], Lauren Tetelbaun, B.M.Sc.[1], Patricia Xu, B.S.[1], Eliana G Felder, B.A.[2], Alexa Setteducate, B.A.[2] and Martin Keltz, M.D.[3], [1]New York Medical College, Valhalla, NY, [2]New York Medical College, [3]Medical Director Reproductive Endocrinology, Purchase, NY

OBJECTIVE: This study aims to assess the effects of BMI on transferable embryo yield including in patients with a BMI ≥40, given that many *in vitro* fertilization (IVF) programs exclude individuals with BMI >40 due to reproductive and anesthesia concerns.
MATERIALS AND METHODS: We conducted a single-institution retrospective cohort study of 1432 IVF cycles from 722 patients between 2015 and 2025. The cycles were stratified into four groups by BMI: normal (18.5-24.9, 573 cycles), overweight (25.0-29.9, 430 cycles), obese (30-39.9, 358 cycles), and morbidly obese (≥40, 71 cycles). The primary outcome was transferrable embryo yield per retrieval. Statistical analysis was performed using R-software.
RESULTS:
Mean age was similar across BMI groups (36.51 vs. 36.98 vs. 37.16 vs. 36.48 years, p=0.88). Additionally, no statistically significant differences were observed for Anti-Müllerian Hormone (AMH) between BMI groups (2.99 vs. 2.91 vs. 2.83 vs. 2.91, p=0.22). With respect to race, white patients comprised the majority in all BMI groups, however, their relative proportion decreased in the overweight and obese categories (74% vs. 60% vs. 55% vs. 67%, p<0.001). Hispanic/Latino representation was increased in the overweight and obese categories. (11% vs. 24% vs. 22% vs. 11%, p<0.001).
Black/African American representation significantly increased in every increasing BMI group (2.7% vs. 9.0% vs. 16.0% vs. 19.4%, p<0.001). Asian representation lowered with increasing BMI but was not significant (9.63% vs. 6.76%, vs. 7.36% vs. 2.78%, p=0.46).
Euploid embryo yield per cycle did not differ significantly between BMI groups (2.16 vs 1.97 vs 2.11 vs 2.03, p=0.17; adjusted p=0.55). Increasing BMI did not negatively affect embryo yield.
When including all transferable embryos (euploid + mosaic) per cycle, BMI≥40 actually had the highest transferrable embryo yield, (2.26 vs. 2.14 vs. 2.33 vs. 2.55). Linear regression documented increasing BMI correlated with an increasing number of transferable embryos adjusted for age and AMH ($\beta = 0.016$, $p = 0.04$, $R^2 = 0.345$).
CONCLUSIONS: Increasing BMI, including morbid obesity, was associated with a slight increase in transferable embryo yield, and equivalent euploid embryo yield. Our findings suggest that obese and morbidly obese patients should not be excluded from oocyte retrieval and embryo banking based on BMI alone. Given the well established pregnancy risks, including higher miscarriage higher cesarean and lower live birth rates found in obese and morbidly obese patients, they should be counseled about delaying embryo transfer while receiving care for weight loss.
IMPACT STATEMENT: High BMI is associated with poor pregnancy outcomes and fertility challenges and is more common in black and hispanic patients. Many IVF clinics in the United States utilize BMI cutoffs to exclude patients from IVF retrieval. Our study suggests retrieval and embryo banking should not be delayed. However, we do encourage care to achieve significant weight loss prior to embryo transfer.
SUPPORT: N/a

P-501 4:30 PM Tuesday, October 27, 2026

CHECKING THE BALANCE: HAVE SPERM BANKS IN THE UNITED STATES DIVERSIFIED OVER THE PAST FIVE YEARS?
Cassie L. Hobbs, M.D.[1], Yinny Chan, MD, MS[2], Shelun Tsai, M.D.[3] and Jennifer L. Eaton, M.D., M.S., M.SC.[4], [1]Philadelphia, PA, [2]Northwell, New Hyde Park, NY, [3]Pacific Northwest Fertility and IVF Specialists, Seattle, WA, [4]Women & Infants Fertility Center, Providence, RI

OBJECTIVE: The use of donor sperm has become an increasingly popular choice for reproduction within the United States (US). A prior study demonstrated significant racial disparities between sperm donors and the US male population (1). It is unknown if the donor pool demographics have shifted over time to better reflect the US population. The objective of this study was to compare the racial and ethnic composition of US sperm donors in 2021 and 2026 and to determine whether disparities between donor demographics and the US male population persist.
MATERIALS AND METHODS: The five largest US-based sperm banks were identified through a Google search. Publicly available donor demographic data were entered into a REDCap database in April of 2026. Donor race and ethnicity demographic data collected in 2026 were compared to the most recent US Census Bureau Vintage Population Estimates for males aged 18–39 (July 2024). Demographic data were previously collected from the same five banks in 2021 and compared to the 2021 US Census Bureau Vintage Estimates. Fisher's exact tests were used for analyses.
RESULTS: The total number of donors was 1839 in 2026, compared to 1012 donors in 2021. In 2021, the proportion of White sperm donors was similar to the White US population, (56.7% vs. 54.2% p=0.11); in 2026, the proportion of White sperm donors was lower than the White US male population (46.2% vs. 52.2%, p<0.001), Table 1. Asian donors were overrepresented in both 2021 (21.7% vs. 6.5%) and 2026 (19.3% vs. 7.1%), both p<0.001. Multiracial donors were also overrepresented in both 2021 (13.6% vs. 2.5%) and 2026 (17.7% vs. 2.8%), both p<0.001. In comparison, Black and Hispanic donors remained underrepresented both years, though representation increased by 2026: Black donors: (2021: 2.8% vs. 13.5%, p<0.001; 2026: 7.3% vs. 13.5%, p<0.001), Hispanic donors: (2021: 5.0% vs. 22.2%, p<0.001; 2026: 9.5% vs. 23.4%, p<0.001).
CONCLUSIONS: US sperm banks historically and currently do not reflect the diverse population of the US. While representation from Black and Hispanic groups has shown improvement over the last few years, a substantial gap remains.
IMPACT STATEMENT: Black and Hispanic patients using donor sperm still face limited options when seeking racially concordant donors in 2026. Targeted recruitment of donors from these underrepresented groups is necessary to reach equitable representation.
Table 1. Racial Demographics of US Sperm Donors vs. US Male Population (2021 and 2026)

Race/Ethnicity	2021			2026		
	Donors % (n=1,012)	Census % (n=49,704,948)	p-value	Donors % (n=1,839)	Census % (n=51,250,826)	p-value
White	56.7%	54.2%	0.11	46.2%	52.2%	<0.001
Black	2.8%	13.5%	<0.001	7.3%	13.5%	<0.001
Asian	21.7%	6.5%	<0.001	19.3%	7.1%	<0.001
Hispanic	5.0%	22.2%	<0.001	9.5%	23.4%	<0.001
Two or more races	13.6%	2.5%	<0.001	17.7%	2.8%	<0.001

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P-502 4:45 PM Tuesday, October 27, 2026

IMPACT OF STATE INSURANCE MANDATES ON DISPARITIES IN ASSISTED REPRODUCTIVE TECHNOLOGY (ART) UTILIZATION: A COMPARATIVE EPIDEMIOLOGICAL ANALYSIS OF NEW YORK STATE.
Anirudh Krishnan, BS, MPH[1] and Dr. William T Berg, M.D.[2], [1]Stony Brook Medicine, Stony Brook, NY, [2]Renaissance School of Medicine at Stony Brook University, Stony Brook, NY

OBJECTIVE: To assess the New York State's 2020 comprehensive insurance mandate impact on assisted reproductive technology (ART) utilization by comparing clinic-level cycle changes across New York (NY) before and after the mandate being implemented, and to examine geographic and demographic patterns.
MATERIALS AND METHODS: A retrospective, cross-sectional comparative analysis was performed using clinic-level cycle data from the Society for Assisted Reproductive Technology (SART) and the National ART Surveillance System (NASS). The pre-mandate period (2017+2018) was compared to the post-mandate period (2021+2022). Percent change in total ART cycles was calculated and clinic and state-level changes were compared against national trends. ZIP code demographic data were linked to each clinic to characterize income and diversity.
RESULTS: New York State ART cycle volume increased +45.9% from pre- to post-mandate, outpacing the national increase of +43.8%. Twenty-four out of 30 clinics (80%) demonstrated a significant change post mandate ($p \leq 0.05$). The largest percent gains and losses both occurred within Manhattan (table 1). Geographic analysis revealed rural regions remained largely without ART access despite a regional significant increase in ART cycles. Clinics with the largest increases were located in ZIP codes with a median household income of $124,522 and a racial/ethnic composition of 63.6% White, 21.4% Asian, 7.6% Hispanic, and 4.3% Black. While clinics with the largest decreases were

located in ZIP codes with an average median household income of $115,091, with a composition of 75.5% White, 10.3% Asian, 5.9% Hispanic, and 5.2% Black.
CONCLUSIONS: New York's post-mandate ART cycle growth modestly exceeded the national rate, suggesting that the mandate may have contributed to increased ART utilization. Despite increases, geographic, economic and racial disparities in clinic distribution persisted.
IMPACT STATEMENT: State insurance mandates, while associated with increased ART utilization, do not eliminate geographic or socioeconomic barriers. Targeted policy and interventions expanding into underserved upstate and rural communities are needed to ensure the benefits of mandates reach all populations equitably.
ASRM Abstract Data Table-Anirudh Krishnan
SUPPORT: None
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HEALTH DISPARITIES & HEALTH EQUITY (4 OF 6)

P-503 3:45 PM Tuesday, October 27, 2026

SOCIAL CONTEXT MATTERS: HIGH NEIGHBORHOOD DEPRIVATION MODIFIES PATERNAL AGE ASSOCIATIONS WITH PREGNANCY-RELATED COMPLICATIONS. Amelia C Llerena, MD, Rachel Nissenuphouse, MD, Kristina C Hawkins, M.D. and Abdelmoneim I. Younis, D.V.M., PH.D., Mercer University School of Medicine, Macon, GA

OBJECTIVE: To determine whether advanced paternal age (APA) is associated with neonatal, maternal, and pregnancy-related complications and whether neighborhood deprivation (Area Deprivation Index, ADI) is associated with APA and modifies paternal-age effects.
DESIGN: Retrospective cohort analysis with prespecified primary and sensitivity models, including natural cubic spline visualizations and APA thresholds ≥40 and ≥45 years.
MATERIALS AND METHODS: We analyzed 430 pregnancies between July 2024 through December 2025. APA was defined primarily as ≥35 years; sensitivity thresholds were ≥40 and ≥45. High deprivation was defined as paternal National ADI (cohort 75th percentile). Outcomes were coded as neonatal, maternal, and other pregnancy-related (any of PPROM, abruption/previa, or labor complications). Logistic regression adjusted for maternal age, BMI, race/ethnicity, smoking, and insurance. Continuous paternal age effects were estimated per 1-year and per 5-year increments; interaction terms tested effect modification by high ADI. Spline models produced adjusted risk curves across paternal age, stratified by ADI.
RESULTS: APA≥35 was associated with higher neonatal complications (adjusted OR 2.59, 95% CI 1.28–5.23). Modeling paternal age continuously showed a 7% increase per year (OR 1.07, 95% CI 1.02–1.13) and ~40% per 5 years (OR 1.40, 95% CI 1.08–1.81) in neonatal complication odds. Threshold analyses strengthened the neonatal association (APA≥40: OR 2.88; APA≥45: OR 5.14). Maternal and aggregate pregnancy-related outcomes were not statistically significant in primary adjusted models. APA was associated with high deprivation (adjusted OR 2.22, 95% CI 1.18–4.18). APA×High-ADI interaction was significant for neonatal-related complications OR = 2.87 (p = 0.027), indicating differential effects by neighborhood context. ADI-stratified spline curves illustrated rising neonatal risk with paternal age in both strata and divergent patterns for pregnancy-related outcomes across deprivation levels. Older fathers, especially those residing in the most deprived neighborhoods, had substantially higher neonatal complication risks.
CONCLUSIONS: Advancing paternal age independently predicts neonatal complications, with stronger effects at age older than 40 and 45 years thresholds. APA is more common among fathers in highly deprived neighborhoods, and Older fathers residing in the most deprived neighborhoods had substantially higher neonatal complication risks. Integrating paternal age and neighborhood context may improve perinatal risk assessment and counseling.
IMPACT STATEMENT: Most pregnancy risk assessments focus only on the mother. Our study shows that a father's age and where a family lives before pregnancy also matter. Supporting healthier pregnancies requires a family-centered and community-aware approach that considers paternal age, socioeconomic conditions, and maternal cardiovascular health together.
SUPPORT: No Financial Support

P-504 4:00 PM Tuesday, October 27, 2026

RACE AND NEIGHBORHOOD DEPRIVATION IN REI REFERRAL PATTERNS: A MULTIVARIABLE AND PENALIZED LOGISTIC REGRESSION ANALYSIS. Amelia C Llerena, MD, Kristina C Hawkins, M.D. and Abdelmoneim I. Younis, D.V.M., PH.D., Mercer University School of Medicine, Macon, GA

OBJECTIVE: Infertility affects millions of people in the United States, yet access to timely evaluation and treatment remains uneven, with disparities that track race/ethnicity, geography, and socioeconomic position. ASRM and ACOG guidance emphasize the obligation for timely subspecialty referral and the need to address structural barriers to care. Objective of this study was to investigate whether neighborhood deprivation, measured by the Area Deprivation Index (ADI), influences referral to reproductive endocrinology and infertility (REI) services and to determine if this relationship varies by race.
MATERIALS AND METHODS: We conducted a retrospective cohort study of 189 patients at an academic OB/GYN clinic in Central Georgia (serving 30 counties; ~750,000 residents) between June 1, 2024, and June 1, 2025. Variables included age, BMI, parity, race (White, Black, Other), diagnostic category, and national ADI percentile. Outcomes were modeled using multivariable logistic regression with a Race × ADI quartile interaction, adjusted for clinical and demographic covariates. To stabilize estimates for sparse subgroups, we employed penalized (ridge) logistic regression and conducted sensitivity analyses using collapsed ADI categories (Q1 vs. Q2–Q4 and Q4 vs. Q1–Q3).
RESULTS: The cohort (mean age was 33.1 ± 6.4 years; BMI 33.2 ± 9.5 kg/m².) Most patients were Black (63%) and resided in high-deprivation neighborhoods (ADI >75% in 63%). The overall REI referral rate was 38%. White patients had significantly lower odds of residing in high-deprivation (Q3–Q4) neighborhoods compared to Black patients (aOR 0.24, 95% CI 0.11–0.53; p < 0.001). While the Race x ADI interaction approached significance (p = 0.056), model-based predictions showed divergent trends: in White patients, higher ADI was associated with increased referral probability, whereas this trend reversed in Black patients. However, in penalized models and collapsed ADI categories, these racial differences diminished. Age and diagnostic category (specifically female-factor infertility) remained the strongest predictors of referral across all models. Parity, comorbidities (PCOS, endometriosis, fibroids), and prior generalist workups were not significant predictors.
CONCLUSIONS: Neighborhood deprivation was not independently associated with REI referral after adjustment. Although quartile models suggested race-specific patterns, these differences were not robust in penalized analyses. Referral patterns appear primarily driven by clinical factors and age rather than neighborhood disadvantage. Larger, multi-center studies are required to further clarify the structural and geographic barriers to infertility subspecialty care.
IMPACT STATEMENT: This study provides a novel, model-robust analysis of neighborhood deprivation and racial disparities in REI referrals. Results suggest that clinical profiles, rather than geographic disadvantage, shape referral patterns—yet potential racial heterogeneity highlight the need for continued investigation into equitable access to REI services.
SUPPORT: No financial support

P-505 4:15 PM Tuesday, October 27, 2026

PROXIMITY TO HOSPITAL IS ASSOCIATED WITH POOR MATERNAL AND NEONATAL OUTCOMES IN FERTILITY PATIENTS: A POPULATION-BASED COHORT STUDY IN OREGON. Samuel JF Melville, MD, Bharti Garg, MBBS, MPH, Aaron B. Caughey, M.D., Ph.D., MPH and Sacha A. Krieg, M.D., PH.D., Oregon Health & Science University, Portland, OR

OBJECTIVE: Investigation of maternal and neonatal outcomes among fertility patients, by driving distance to delivering obstetric unit.
MATERIALS AND METHODS: A retrospective study was conducted using Oregon linked vital statistics-hospital discharge data from non-anomalous singleton pregnancies among patients who conceived with fertility treatment between 2012-2023. Geocoding was used to calculate the driving distance between patient zip code centroid and hospital address. Distance was categorized into four categories based on quartiles: less than 6.1 miles, 6.1 to 9.7 miles, 9.8 to 17.6 miles, with the most remote quartile being defined as a driving distance greater than 17.6 miles from delivering obstetric unit. Multivariable Poisson regression models were used to examine the association of travelled distance with adverse maternal and neonatal outcomes. Maternal outcomes included SMM (severe maternal morbidity) as per the CDC-standardized definition. All models were clustered by hospital ID to account for any hospital differences (a potential confounder). Statistical significance was set at 0.01. Adjusted risk ratios with 99% confidence intervals were reported. The model controlled for maternal race and ethnicity, age, education, pre-pregnancy BMI, insurance, parity, year and birth month.
RESULTS: The final sample included 11,706 non-anomalous singleton births in Oregon between 23-42 weeks, conceived with fertility treatment. The average distance travelled in the most remote quartile was 53.3 miles, with median 28.2 miles. Multivariable regression analyses suggested that patients in the most remote quartile had higher risk of non-transfusion SMM (adjusted risk ratio 2.71; 99% CI: 1.46-5.02). Neonates born to patients in the most remote quartile were more likely to be born preterm (adjusted risk ratio 1.44; 99% CI 1.09-1.89), admitted to the NICU (adjusted risk ratio 1.51; 99% CI 1.18-1.94) and diagnosed with respiratory distress syndrome (adjusted risk ratio 1.93; 99% CI 1.15-3.24).
CONCLUSIONS: We found a statistically significant increase in poor maternal and neonatal outcomes associated with a driving distance greater than 17.6 miles in patients conceiving via fertility treatments, while controlling for confounding patient and hospital differences.
IMPACT STATEMENT: Despite the traditional association between fertility patients and enhanced access to care, this study provides evidence that patients utilizing fertility treatment may still be negatively affected by increased driving distance to delivering hospital. This study suggests that the recent trend in loss of rural hospital labor and delivery units may be detrimental to maternal and fetal health in the fertility population.
SUPPORT: Oregon Health and Science University Department of Obstetrics and Gynecology Resident Research Grant - $2000
REFERENCES:
None

P-506 4:30 PM Tuesday, October 27, 2026

DISPARITIES IN DELIVERY OF PRECONCEPTION CARE IN AN URBAN ACADEMIC CENTER. Beatrice Lynch, MD[1], Jessica Garcia De Paredes, MD[1], Samantha L Irizarry, PhD[1], Vanessa Ocon, MD[1], Tracy Andrews, MS[2], Natale

Mazzaferro, MPH[2], Sara Sinha Morelli, M.D., PH.D.[1], Nataki C Douglas, M.D., Ph.D.[1] and Anat Chemerinski, MD[1], [1]Rutgers New Jersey Medical School, Newark, NJ, [2]Rutgers School of Public Health (RUBIES Program), Piscataway, NJ

OBJECTIVE: The American College of Obstetrics and Gynecologists (ACOG) recognizes the preconception period as an opportunity to optimize women's health. Despite its potential benefits, we hypothesize that preconception care is underutilized, and social determinants of health influence who receives it.
MATERIALS AND METHODS: This is a retrospective cohort study examining patients who delivered at a university-based publicly funded hospital over 12-months. 15 domains of preconception care were evaluated in accordance with ACOG's guidelines[1]. The primary outcome was receipt of preconception care. Descriptive statistics were calculated, and differences between groups were assessed with Chi-square or Wilcoxon Rank Sum tests (alpha=0.05).
RESULTS: 569 patients were analyzed and 12% (70/569) had at least one preconception visit. Among these, 87% had ≥7 domains addressed, and 15% had ≥ 10 domains addressed. The most commonly administered domains of preconception care were family planning (72.9%) and mental health screening (71.4%), while immunizations (35.7%) was less frequent. Genetic history, intimate partner violence screening, and environmental exposures were rarely assessed (<1%). No patients received screening for all domains. Patients who received preconception care differed significantly from those who did not (**Table 1**).

	Preconception Visit within 3 years of delivery		
	No (n=499)	Yes (n=70)	P-value
DEMOGRAPHICS			
Age at Delivery	28 (23-33)	31 (28-35)	0.002
Marital Status - Married	110 (22.0%)	28 (40.0%)	0.001
Primary Language - English	178 (35.7%)	37 (52.9%)	0.005
MATERNAL HISTORY			
Any Chronic Condition	225 (45.1%)	47 (67.1%)	<0.001
Chronic Hypertension	38 (7.6%)	13 (18.6%)	0.003
Anxiety	10 (2.0%)	5 (7.1%)	0.027
Genetic Disorder/Carrier	8 (1.6%)	5 (7.1%)	0.014
PREGNANCY FACTORS			
Gestational Age at Initiation of Care (weeks)	19 (13-27)	14 (10-18)	<0.001
History of Preterm Delivery	35 (7.0%)	11 (15.7%)	0.012
History of Gestational Hypertension	34 (6.8%)	17 (24.3%)	< 0.001
History of Gestational Diabetes	6 (1.2%)	4 (5.7%)	0.025

CONCLUSIONS: Patients who did not receive preconception care initiated prenatal care later than those who did, emphasizing its importance. Certain domains of preconception care were delivered more consistently, highlighting gaps in care. Patients who received preconception care were more likely older, married, and English-speaking. Those with prior obstetric complications and chronic medical conditions had higher rates of preconception care utilization.
IMPACT STATEMENT: Preconception care remains underutilized and rarely delivered across all recommended domains. Identifying gaps in delivery and differences in utilization provides a foundation for targeted strategies to improve quality and equity of care, with the goal of improving maternal and neonatal outcomes.
SUPPORT: None of the authors have any financial disclosures.
REFERENCES:
1. Committee on Gynecologic Practice, & American Society for Reproductive Medicine. (2019, January). *Prepregnancy counseling*. American College of Obstetrics and Gynecologists. https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2019/01/prepregnancy-counseling

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HOSPITAL PROXIMITY IS A RISK FACTOR FOR NEONATAL MORBIDITY AND MATERNAL HEMORRHAGE IN THE INFERTILITY POPULATION: A POPULATION-BASED COHORT STUDY IN CALIFORNIA. Samuel JF Melville, MD, Bharti Garg, MBBS, MPH, Aaron B. Caughey, M.D., Ph.D., MPH and Sacha A. Krieg, M.D., PH.D., Oregon Health & Science University, Portland, OR

OBJECTIVE: Investigation of maternal and neonatal outcomes among fertility patients with and without abnormal placentation by driving distance to delivering obstetric unit.
MATERIALS AND METHODS: A retrospective study was conducted using California linked vital statistics-hospital discharge data from non-anomalous singleton pregnancies conceived using fertility treatment from 2008-2020. Geocoding was used to calculate the driving distance between patient zip code centroid and hospital address. Distance was categorized into 7 distinct categories of distance (<5, 5-10, 10-20, 20-30, 30-40, 40-50, 50+ miles). Multivariable Poisson regression models were used to examine the association of travelled distance with adverse neonatal and maternal outcomes. All models were clustered by hospital ID to account for any hospital differences. The model controlled for maternal race and ethnicity, age, education, pre-pregnancy BMI, insurance, parity, year and birth month. A subgroup analysis was performed on individuals with "placental morbidity risk," defined as low-lying placenta, placenta previa, bilobate placenta, single umbilical artery, marginal cord insertion or velamentous cord insertion.
RESULTS: The sample included 41,882 non-anomalous singleton births in California between 23-42 weeks gestation conceived with fertility treatment. Neonates born to patients living greater than 50 miles from delivering hospital were more likely to be admitted to the NICU (adjusted risk ratio (aRR 1.65; 99% CI 1.14-2.39), diagnosed with respiratory distress syndrome (aRR 2.87; 99% CI 1.49-5.51), have 5 min APGARs <7 (aRR 2.39; 99% CI 1.49-5.51) and meet the standardized neonatal morbidity index (aRR 1.52; 99% CI 1.11-2.09). Within the sample, those with "placental morbidity risk" had significantly higher rates of postpartum hemorrhage >50 miles from delivering hospital (aRR 2.91; 99% CI 1.47-5.74).
CONCLUSIONS: We found a statistically significant increase in poor neonatal outcomes with a driving distance greater than 50 miles in patients conceiving via fertility treatments. Fertility patients who experience abnormal placentation are at increased risk for postpartum hemorrhage at longer distances from a hospital.
IMPACT STATEMENT: We conclude that fertility patients, more likely to experience abnormal placentation, are at particular risk of neonatal morbidity and maternal hemorrhage when remote from their delivery hospital. Despite the perceived superior access/socioeconomic status of fertility patients, these findings illustrate the urgency of providing care support and anticipatory guidance for fertility patients living remote from their delivering hospital, especially given the recent trend in elimination of rural obstetric care sites.
SUPPORT: Oregon Health and Science University Department of Obstetrics and Gynecology Resident Research Grant - $2000
REFERENCES:
none

HEALTH DISPARITIES & HEALTH EQUITY (5 OF 6)

P-508 3:45 PM Tuesday, October 27, 2026

NEIGHBORHOOD SOCIOECONOMIC DEPRIVATION IS ASSOCIATED WITH DISPROPORTIONATE PUBLIC TRANSIT BARRIERS TO FERTILITY CARE IN CHICAGO. Shea E Randall, BA[1], Grace Dekoker, BA[1], Katherine Sadak, BS[1], Preeta A Kamat, BA[2], Raheyma Siddiqui, BS[1], Eve C Feinberg, M.D.[3] and Allison S Komorowski, M.D.[3], [1]Loyola University Chicago Stritch School of Medicine, [2]Northwestern University Feinberg School of Medicine, Chicago, IL, [3]Northwestern University Feinberg School of Medicine, Department of Obstetrics and Gynecology, Division of Reproductive Endocrinology and Infertility, Chicago, IL

OBJECTIVE: To determine whether neighborhood socioeconomic deprivation is associated with longer travel times to fertility clinics with particular attention to disparities in public transit accessibility.
MATERIALS AND METHODS: Census tracts were linked to the Area Deprivation Index (ADI) and categorized into quintiles. Fertility clinic locations were identified using the Society for Assisted Reproductive Technology directory and geocoded. For each tract, Euclidean distance, fastest driving time, and fastest public transit time to the nearest fertility clinic were calculated. Travel metrics were compared across quintiles using Kruskal-Wallis testing. Linear regression quantified changes in travel time per quintile increase in ADI. Logistic regression estimated the odds of prolonged transit time (>60 minutes).
RESULTS:
Travel burden increased stepwise with deprivation. Median transit time rose from 27 minutes in the least deprived quintile to 57 minutes in the most deprived quintile. Median driving times showed smaller differences (14 to 23 minutes). Across 797 census tracts, mean driving time to the nearest clinic was 22.5 minutes compared with 46.3 minutes by public transit. While 24.7% of tracts required >30 minutes of driving, 77.6% required >30 minutes by transit and 19.7% required >60 minutes. The disparity between transit and driving times widened across deprivation quintiles, indicating that residents of more disadvantaged neighborhoods experience a disproportionately greater travel burden when relying on public transportation.
Each quintile increase in ADI was associated with 7.32 additional minutes of transit time and 2.12 additional minutes of driving time. The proportion of tracts requiring >60 minutes of transit increased from 2.0% in the least deprived quintile to 34.0% in the most deprived quintile. Each quintile increase in ADI was associated with 1.65-fold higher odds of prolonged transit time, corresponding to more than sevenfold higher odds in the most versus least deprived neighborhoods (p<0.001). Euclidean and driving distances were moderately correlated (r=0.76), suggesting that straight-line proximity measures underestimate real-world travel burden.
CONCLUSIONS: Neighborhood socioeconomic deprivation is strongly associated with disproportionate transit-related barriers to fertility care. Although geographic proximity to clinics differs modestly, reliance on public transportation magnifies inequities, resulting in substantially longer and potentially prohibitive travel times for residents of disadvantaged neighborhoods. These findings suggest that structural transportation factors, rather than clinic scarcity alone, contribute meaningfully to inequitable access to assisted reproductive technology services.
IMPACT STATEMENT: Addressing fertility care inequities will require strategies beyond increasing clinic numbers, including transit-aware clinic placement, transportation support programs, and policy interventions that account for the mobility constraints faced by socioeconomically disadvantaged populations.

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DIFFERENCES IN FERTILITY TREATMENT DECISIONS AND OUTCOMES BY PAYMENT METHOD. Caroline Olson, BS, MPH[1], Katharina Goebel, BS[2], Sophie Jordan, BA[3], Miranda LM Delawalla, PhD, MPH[3], Daniela S Diego, MD[4], Heather S

Hipp, MD[5] and Jennifer F Kawwass, MD[6], [1]Emory School of Medicine, Atlanta, GA, [2]Emory University School of Medicine, Atlanta, [3]Emory University School of Medicine, Atlanta, GA, [4]Emory University, Atlanta, GA, [5]Emory University School of Medicine, Department of Gynecology and Obstetrics, Atlanta, GA, [6]Emory University, Department of Gynecology & Obstetrics, Division of Reproductive Endocrinology and Infertility, Emory Reproductive Center, Atlanta, GA

OBJECTIVE: The impact of private employer-sponsored, fertility-specific benefits (FSB) on access to fertility care and treatment outcomes is unclear; we aimed to compare demographics, treatment utilization, and clinical outcomes among new fertility patients across three payment types at a single academic institution.
MATERIALS AND METHODS: This is a retrospective cohort study of new patients seen at an urban academic hospital in the US between October 2022 and October 2024. Patients were grouped by insurance type: employer-sponsored FSB, university-affiliated point-of-service (POS) plan, or self-pay. Demographics, treatment course, and reproductive outcomes were extracted from the electronic medical record. Group comparisons were performed using parametric and nonparametric tests. A Poisson regression model with robust standard errors, adjusting for age, estimated the association between insurance type and live birth/ongoing pregnancy.
RESULTS: A total of 621 new patients were included: 288 with university-affiliated POS coverage, 218 with employer-sponsored FSB, and 115 self-pay patients. Patients using FSB coverage were more likely to be Black race (49.1%) compared to patients using POS coverage (34.0%) and self-pay patients (33.0%; p<0.001). Significant differences in median AMH (p<0.001) and AFC (p=0.005) values were observed, with self-pay patients having lower median values compared to those with FSB or POS plans. Self-pay patients were more likely not to pursue treatment (67.8%) compared to patients using university-affiliated POS (48.6%) or FSB (42.7%) plans (p=<0.001). Patients with FSB were more likely (50.5%) to undergo assisted reproductive technology (ART) like in-vitro fertilization, compared to university-affiliated POS (39.6%) or self-pay (26.1%) patients (p<0.001). Pre-implantation genetic testing (PGT) was more frequently utilized in patients with FSB (83.6%) and university-affiliated POS (78.2%) than self-pay patients (40.9%; p<0.001). Non-ART interventions, including timed intercourse and intrauterine inseminations, were more frequently utilized among those with university-affiliated POS insurance (17.7%) than FSB (10.6%) or self-pay patients (8.7%; p=0.016). Treatment outcomes were not significantly different between payment groups.
CONCLUSIONS: Patients with insurance coverage were more racially diverse and more likely to pursue fertility treatment, including ART and PGT, than self-pay patients, suggesting that expanded third-party coverage may improve access to care.
IMPACT STATEMENT: This study reinforces that insurance coverage may mitigate some barriers to initiating fertility care and pursuing IVF. It introduces a nuanced comparison across three payor types, showing that patient demographics, specifically racial diversity, and treatment utilization differ by benefit structure.

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DEMOGRAPHIC PREDICTORS OF CONVERSION TO TREATMENT AMONG PATIENTS PURSUING DONOR GAMETE USE. Amy Ng, MD[1], Miriam Tarrash, MD[2], Mr. Daniel Ilg, MS, CGC[3], Dr. Randi H Goldman, MD, MBA[3], Mary E. Rausch, M.D.[3] and Tomer Singer, MD[3], [1]Great Neck, NY, [2]Syosset, NY, [3]Northwell, New Hyde Park, NY

OBJECTIVE: To identify demographic trends that predict conversion to fertility treatment among patients undergoing genetic counseling (GC) for use of donor gametes (DGs), and initial treatment modality (intrauterine insemination [IUI] vs. in-vitro fertilization [IVF]) among donor sperm seekers.
MATERIALS AND METHODS: This retrospective study included patients who underwent GC for DG use between February 2023 and January 2026 at a single academic fertility clinic in New York, an IVF coverage mandated state. Prior to GC, patients had completed a consultation with a reproductive endocrinologist (REI) and selected a DG source. Data collected included patient age, sex, self-reported race, relationship configuration (same-sex, different-sex, or single parent), desired DG, treatment initiation (treatment vs. no treatment), and initial treatment modality (IUI vs. IVF). The analysis was restricted to patients counseled prior to October 2025 to ensure adequate follow-up time and initiation of the first treatment cycle. Chi-square tests and ANOVA were utilized. Multivariable logistic regression modeled treatment initiation adjusting for age, gamete type, relationship configuration, and race (included when n>10).
RESULTS: A total of 317 patients were included: 70.3% sought donor sperm (DS), 27.1% donor egg (DE), and 2.5% both. 18.6% did not initiate treatment despite having completed prior REI consultation and donor selection. There were no differences in rates of treatment initiation between patients seeking DE, DS, or both (88.4% v. 87.5% v. 78.5%, p=0.12). Different-sex couples had the highest initiation rate (89.4%) compared to same-sex couples and single parents (76.1% and 78.5%, p=0.03). There were no differences in age between those who did or did not initiate treatment (38.3 ± 5.8 v. 37.7 ± 5.9, p=0.42). Among DS seekers, 38.9% (68/175) proceeded with IUI and 61.1% (107/175) with IVF, with no demographic or racial variable predicting initial treatment type. When adjusted for age, DG type, relationship configuration, and race, White race was the only significant independent predictor of treatment initiation (OR 3.00, 95% CI 1.31-6.86; p<0.01). Same-sex couples trended toward lower odds of treatment initiation (OR 0.34, 95% CI 0.12-1.02; p=0.05).
CONCLUSIONS: Despite having completed an REI consultation, selected a donor, and received GC, nearly one in five patients did not proceed to treatment. White race was the only factor independently associated with treatment initiation. This finding is consistent with well-documented socioeconomic advantages that facilitate access to fertility treatment. Notably, among DS users who did initiate treatment, no variable predicted the choice of IUI versus IVF, suggesting that racial disparities affect access to treatment more than the treatment received.
IMPACT STATEMENT: By studying a pre-selected, motivated population, this study isolates the consultation-to-treatment transition as a specific point where socioeconomic and racial disparities impede access to assisted reproduction, supporting the need for institutional and policy-level efforts to reduce barriers to treatment.

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GEOGRAPHIC VARIABILITY IN OUTCOMES AFTER EMBRYO TRANSFER IN THE UNITED STATES. Leslie B Ramirez, H.C.L.D, PH.D.[1], Alexis Adler, B.A.[2], Christine Mullin, M.D.[3] and Urbano L Franca, PhD[4], [1]Northwell Health Fertility, Manhasset, NY, [2]Extend Fertility, New York, NY, [3]Northwell Health Fertility, Zucker School of Medicine at Hofstra Northwell, Manhasset, NY, [4]Boston Children's Hospital / Harvard Medical School, Boston, MA

OBJECTIVE: Although assisted reproductive technology (ART) success rates are well characterized at the national level, less is known about the geographic variation in outcomes across the United States. Such variation may reflect underlying disparities in access to or quality of care, and identifying it could reveal opportunities to improve patient outcomes. In this study, we evaluate variation in the proportion of embryo transfers resulting in live birth across United States regions and states.
MATERIALS AND METHODS: In this retrospective study, we analyzed Society for Assisted Reproductive Technology (SART) data from 2020–2022 to estimate the proportion of embryo transfers within one year of retrieval resulting in live birth across U.S. clinics and age groups (<35, 35–37, 38–40, >40 years). State-level disparities were quantified using weighted inequality metrics (coefficient of variation, interquartile range, and Gini coefficient). Geographic differences were evaluated using a binomial generalized linear model with states grouped by U.S. region, adjusting for age group and year. Analyses were weighted by the number of transfers. Statistical significance was set at p<0.05.
RESULTS: Between 2020 and 2022, 347,851 embryo transfers were performed, of which 153,716 (44.2%) resulted in live births. The top five states by transfer volume (NY, CA, TX, MA, IL) accounted for 46.5% of transfers and 44.6% of live-birth deliveries. Across age groups, state-level dispersion in live-birth rates ranged from a weighted Gini coefficient of 0.056 to 0.187 and an interquartile range of 6.7 to 10.8 percentage points, with coefficients of variation from 0.101 to 0.348. Variability was observed across all age groups and was modestly higher in older patients. After adjustment for age, regional differences were significant, with lower odds of live birth in the Midwest (OR=0.93; 95%CI: 0.91-0.95) and Northeast (OR=0.87; 95%CI: 0.85-0.88) and higher in the West (OR=1.22; 95%CI: 1.20-1.25) compared with the South (p<0.001). Interactive maps for regions and states can be seen at https://bit.ly/asrm2026.
CONCLUSIONS: Substantial interstate and regional variability in live-birth rates per transfer was observed, with consistent heterogeneity across states and significant regional differences after adjustment for age. While variability was present across all age groups, it was modestly greater among older patients. Overall, these findings highlight persistent geographic heterogeneity in ART outcomes, especially for older patients.
IMPACT STATEMENT: These findings demonstrate substantial geographic variation in ART outcomes across the United States, indicating that location of care may influence success rates. Understanding the drivers of these disparities is essential to improve equity and optimize outcomes in fertility treatment.
SUPPORT: None

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COMPARISON OF DEMOGRAPHIC AND HEALTH CHARACTERISTICS AMONG NON-HISPANIC WHITE (NHW), US-BORN NON-HISPANIC BLACK (NHB), AND NON-US-BORN NHB MOTHERS WHO ACHIEVED A LIVE BIRTH AFTER ART. Rodney Bruno, MD[1], Daksha Gopal, M.P.H[2], Hafsatou Diop, MD, MPH[3], Paula Amato, M.D.[4], Howard J Cabral, PhD, MPH[5], Charles Coddington, MD[6], Sunah S Hwang, MD MPH[7] and Wendy Kuohung, M.D.[8], [1]University of California San Diego, San Diego, CA, [2]Massachusetts Department of Health, [3]Massachusetts Department of Public Health, Boston, MA, [4]Oregon Health & Science University, Portland, OR, [5]Boston University, Boston, MA, [6]Atrium Health Reproductive Medicine, Charlotte, NC, [7]University of Colorado School of Medicine, Aurora, CO, [8]Boston University Chobanian & Avedisian School of Medicine, Boston, MA

OBJECTIVE:
Historically, Black women experience poorer assisted reproductive technology (ART) outcomes compared with White women. The Black population comprises diverse subgroups that may differ by nativity. Understanding these differences may provide insight into within-race heterogeneity and inform more equitable care. The objective of this study is to evaluate differences in patient characteristics, infertility diagnoses, and neonatal characteristics by race and nativity among individuals with live births conceived by ART in Massachusetts.
MATERIALS AND METHODS:
We performed a retrospective cohort study of ART-conceived singleton live births from July 1, 2004, to December 31, 2017 using the linked Pregnancy to Early Life Longitudinal (PELL) database and the Society for Assisted Reproductive Technology Clinic Outcome Reporting System (SART CORS). Patients were categorized as Non-Hispanic White (NHW), U.S. born Non-Hispanic Black (NHB-US), Haitian-born Non-Hispanic Black (NHB-Haitian), and other foreign-born Non-Hispanic Black (NHB-Other Foreign). Association between race, nativity, and select demographic characteristics, payer source, infertility diagnoses, medical comorbidities, pregnancy complications, and neonatal characteristics were examined. Chi-square or Fisher's exact tests were used to compare groups, with statistical significance assessed at p<0.05.
RESULTS:

There was a total of 21,397 patients (20,481 NHW, 113 NHB-Haitian, 467 NHB-Other Foreign, 336 NHB-US) with the median age of 36 across all groups. NHB groups demonstrated lower educational attainment and private insurance coverage compared with NHW patients. Among NHB patients, NHB-US had higher education and private insurance coverage than NHB-Haitian and NHB-Other Foreign individuals. All NHB groups had higher rates of chronic hypertension compared to NHW patients. NHB-Other Foreign patients exhibited a higher prevalence of type 2 diabetes compared to both NHW and NHB-US patients. NHB-Haitian patients had the highest rates of gestational diabetes of all groups, while NHW patients had the lowest rates.
In terms of ART characteristics, NHB groups had higher rates of uterine and tubal factor infertility compared to NHW patients. NHB-Other Foreign patients were more likely to utilize ICSI and less likely to have endometriosis or PCOS compared to NHW patients. Regarding infant characteristics, all NHB groups were more likely to have preterm (<37 weeks) and low birthweight (<2500 grams) infants compared to NHW patients. For birth hospital experiences, both NHB-Haitian and NHB-US patients were more likely to have prolonged postpartum hospital stays compared to NHW NHB-Other Foreign patients had higher cesarean delivery rates than NHW and NHB-US patients.
CONCLUSIONS:
Significant differences in sociodemographic factors, infertility diagnoses, and perinatal outcomes exist across both race and nativity among patients having ART live births in MA, highlighting important within-race heterogeneity.
IMPACT STATEMENT:
Consideration of nativity, in addition to race, may improve risk stratification and inform more equitable, tailored care in ART populations.

HEALTH DISPARITIES & HEALTH EQUITY (6 OF 6)

P-513 3:45 PM Tuesday, October 27, 2026

PERCEPTIONS AND ACCEPTABILITY OF A COLLABORATIVE INFERTILITY CARE MODEL BETWEEN OBGYN GENERALISTS AND REPRODUCTIVE ENDOCRINOLOGY/INFERTILITY (REI) SPECIALISTS – AN EXPLORATORY SURVEY STUDY. Natalie Vukmer, DO, MS[1], Avni Patel, BS[2], Geoffrey David Adamson, B.SC., M.D.[3] and Joseph Sanfilippo, M.B.A., M.D.[2], [1]University of Pittsburgh Medical Center, Chattanooga, TN, [2]University of Pittsburgh School of Medicine, Pittsburgh, PA, [3]ARC Fertility, Denver, CO

OBJECTIVE:
To evaluate perspectives of OBGYNs and REIs regarding a collaborative care model aimed at extending subspecialty-guided infertility care into resource-limited and rural settings.
MATERIALS AND METHODS:
A cross-sectional survey was distributed to OBGYNs and REIs across diverse practice settings. Demographic, Likert-scale, and short-answer questions were included in the survey. Responses were analyzed descriptively, with subgroup comparisons focused on willingness to participate in shared-care models, infrastructure capacity, perceived barriers and feasibility. Categorical variables were summarized using proportions. Fisher's Exact tests compared responses between OBGYNs and REIs regarding resources needed to facilitate a collaborative care model.
RESULTS:
A total of 124 respondents, 33 OBGYNs and 91 REIs were included. Among OBGYNs, 54.5% (18/33) expressed willingness (definitely/probably) to participate in a shared-care monitoring model, while 24.2% (8/33) were unsure. Notably, 63.6% (21/33) reported access to same-day laboratory services, suggesting baseline infrastructure to support decentralized monitoring. Qualitative responses emphasized concerns regarding limited schedule capacity, competing clinical demands, limited proximity and access to REIs, and knowledge gaps as barriers to implementation.
Among REI-trained physicians, collaboration with OBGYNs was infrequent, as 62.6% (57/91) reported rarely or never collaborating on monitoring or initial evaluation testing. Key barriers to expanding shared-care included geographic distance from OBGYN practices, insurance limitations, and fragmented care coordination. Common challenges in existing collaborations included delays in result reporting, differences in clinical protocols, scheduling constraints, limited resources, and lack of EMR interoperability. Despite these challenges, 41.8% (38/91) of REIs considered a shared-care model at least somewhat feasible, though only 12.1% (11/91) viewed it as highly feasible. Concerns centered on maintaining clinical consistency, timely communication and preserving quality standards across distributed care environments. Finally, 87.9% (29/33) of OBGYNs responded that a standardized treatment protocol would facilitate effective collaboration in a shared care model as compared to 49.5% (45/91) of REIs. ($p<0.01$).
CONCLUSIONS:
There is measurable interest among OBGYNs and cautious openness among REIs toward collaborative models that extend subspecialty-guided infertility services. However, operational barriers, including time constraints, care fragmentation, and infrastructure variability must be addressed to ensure clinical reliability and consistency.
IMPACT STATEMENT:
These findings highlight a pathway to expand access to subspecialty-informed infertility care in underserved regions by leveraging existing OBGYN infrastructure under REI guidance. Thoughtful model design focused on evaluation standardization, workflow integration, and clinical oversight may broaden delivery of high-quality reproductive care without compromising standards.
SUPPORT: No financial support was received for this study

P-514 4:00 PM Tuesday, October 27, 2026

WIDENING RACIAL DISPARITIES IN ART UTILIZATION PERSIST WITHIN ADVANCED MATERNAL AGE STRATA IN TEXAS, 2016–2024. Diana Toro, MD, Nicholas Stansbury, MD and Tyler Chiu, BBA, UT Health San Antonio, San Antonio, TX

OBJECTIVE: To evaluate racial disparities in assisted reproductive technology (ART) utilization in Texas and determine whether inequities persist after stratification by advanced maternal age.
MATERIALS AND METHODS: We analyzed Texas natality data from 2016–2024 using the Centers for Disease Control and Prevention Wide-ranging Online Data for Epidemiologic Research (CDC WONDER), a publicly available national vital statistics database. ART utilization was defined as the proportion of singleton live births conceived using assisted reproductive technology. Rates were calculated overall and stratified by maternal race (Asian, White, Black or African American). Age-stratified analyses were conducted for women aged 35–39 and 40–44 years. Linear regression assessed temporal trends and race-by-year interactions.
RESULTS: ART utilization increased substantially across all racial groups from 2016 to 2024. Overall utilization rose from 0.15% to 0.9% among White mothers, 0.09% to 0.8% among Black mothers, and 0.35% to 2.9% among Asian mothers (race-by-year interaction $p<0.001$), demonstrating significantly divergent growth trajectories.
Within advanced maternal age strata, disparities persisted. Among women aged 35–39, 2024 ART utilization reached 4.9% for Asian, 2.4% for White, and 1.9% for Black mothers. Among women aged 40–44, utilization was 9.7% for Asian, 4.6% for White, and 4.2% for Black mothers. Race-specific trend differences remained significant within both age strata ($p<0.001$), demonstrating that disparities persist even when comparing women within identical advanced maternal age bands.
CONCLUSIONS: ART utilization has increased substantially in Texas over the past decade; however, racial disparities persist and have widened over time. Importantly, inequities remain evident within advanced maternal age strata, suggesting that differential age distribution alone does not explain utilization gaps. These findings are consistent with structural and access-related barriers—including insurance coverage variability, referral patterns, and financial constraints—contributing to inequitable fertility treatment utilization.
IMPACT STATEMENT: Despite rising ART use, racial disparities persist within advanced maternal age groups, underscoring ongoing structural inequities in access to fertility treatment.
REFERENCES:
CDC WONDER Natality Database, 2016–2024. National Center for Health Statistics.

P-515 4:15 PM Tuesday, October 27, 2026

DEMOGRAPHIC DIFFERENCES IN FIBROID SYMPTOMS AND TIME TO DIAGNOSIS: A RETROSPECTIVE COHORT STUDY. Wan-Ting K. Su, PhD, MS[1], Mingming Pan, MS[1], Xiaosong Zhang, MS[2], Caroline Sucher, BS[2], Kamilah Davis-Wilson, MHA[2], Alfreda Rooks, MPA[2], David R Williams, PhD, MPH[3], Erica E. Marsh, MD, MS[2], Vanessa Dalton, MD, MPH[2] and Ganesa R Wegienka, PhD, MS[1], [1]Henry Ford Health, Detroit, MI, [2]University of Michigan, Ann Arbor, MI, [3]Harvard University, Boston, MA

OBJECTIVE: Compare with White women, Black women develop uterine fibroids (UF) at younger ages, have more and larger UF, and undergo hysterectomy more often. This study examined demographic group differences in UF symptoms and time to diagnosis after symptom onset.
MATERIALS AND METHODS: A retrospective cohort study was conducted using non-obstetric ultrasound free-text reports from a health system (01/2018-04/2025). A validated natural language processing (NLP) algorithm identified women with ultrasound-detected UF and the UF characteristics. Demographics and UF-related symptoms were obtained from the electronic health records. Black and White women aged 18–55 years with routine care prior to UF diagnosis were included; those with prior hysterectomy or uterine-related cancers were excluded. UF symptom frequency one year before diagnosis was summarized. Diagnostic delay was assessed using age-adjusted Cox proportional hazards models.
RESULTS: Among 14,924 adult women (42.9% White, 57.1% Black), Black women had a higher rate of having any UF symptoms including anemia, bulk symptoms, heavy menstrual bleeding (HMB), and blood transfusions (Table 1). Black women tended to have larger UF diameters and a higher rate of multiple UF. Among women with pain or HMB, Black women were less likely than White women to receive a UF diagnosis within three months of symptom presentation (age-adjusted hazard ratios [HR]=0.94 CI:0.88-1and HR=0.95 CI:0.90-1, respectively). Among Medicaid-insured women with anemia, bulk symptoms, or HMB, Black women were more likely than White women to receive a UF diagnosis within three months (e.g. for HMB HR=1.16 CI:1.02-1.31). Among privately insured women with pain, bulk symptoms, or HMB, Black women were less likely to receive a diagnosis (e.g. for HMB HR=0.87 CI:0.82-0.93).
CONCLUSIONS: Compared with White women, Black women presented with more and larger UF and had higher rates of anemia, HMB, bulk symptoms, and transfusions. Diagnostic timing varied by race and may depend upon insurance type, with earlier diagnosis for Black women among those with Medicaid but delays for Black women among those with private insurance.
IMPACT STATEMENT: Findings from this ultrasound-based cohort study enhance understanding of subgroup differences in UF symptom presentation and diagnostic delays.
Table 1. UF symptoms by demographic group

	White	**Black**
N (%)	6398 (42.9%)	8526 (57.1%)

Anemia (%)*	824 (12.9)	2298 (27.0)
Bulk (%)*	1600 (25.0)	2268 (26.6)
Pain (%)	2773 (43.3)	3682 (43.2)
Heavy Menstrual Bleeding (%)*	3488 (54.5)	4911 (57.6)
Pelvic Mass (%)	195 (3.0)	230 (2.7)
Any Symptoms Listed Above (%)*	5561 (86.9)	7527 (88.3)
Transfusion (%)*	51 (0.8)	153 (1.8)

**P*<0.05

P-516 4:30 PM Tuesday, October 27, 2026

INFERTILITY AND UTILIZATION OF FERTILITY CARE AMONG WOMEN WITH DISABILITIES IN THE UNITED STATES, 2011-2023. Morgan Snow, MD[1], Bronwyn S Bedrick, MD, MSCI[2], James H Segars, MD, FACOG[2] and Dr. Bhuchitra Singh, MD, MPH, MS, MBA[2], [1]Winnie Palmer Hospital - Orlando Health, Orlando, FL, [2]Johns Hopkins University School of Medicine, Baltimore, MD

OBJECTIVE: Women with disabilities (WWD) face significant disparities in access to care, but little work has been done to examine disability, infertility, and fertility care. This study aimed to determine the rates of infertility among women with a self-identified disability, including sensory (hearing and vision loss), cognitive (difficulty concentrating, remembering, and making decisions), and physical (difficulty walking or climbing stairs or completing activities of daily living) disabilities, as well as utilization of fertility care among women with disabilities (WWD).
MATERIALS AND METHODS: This was a cross-sectional study using all available data from 2011 to 2023 from the National Survey for Family Growth (NSFG). The NSFG samples the household-level population of women aged 15–44 years in the United States. The primary outcomes were the rates of infertility across subgroups of WWD. For secondary outcomes, we performed bivariable and multivariable logistic regression models using the 2011-2019 pooled sample to determine the association of subgroups of WWD with the odds of infertility and receipt of fertility services, controlling for age, parity, pelvic inflammatory disease treatment, education, income, race or ethnicity, and receipt of sexual and reproductive health services. The 2022-2023 cycle was excluded from the pooled sample due to differences in NSFG survey weighting and administration, but rates were qualitatively compared to previous years.
RESULTS: Overall, WWD experienced a 24% increase in infertility compared to women without disabilities, with those with vision loss (107% increase), hearing loss (76%), and cognitive disabilities (43%) largely driving these differences. However, these findings were only statistically significant for women with low vision or blindness, findings which were robust across the multivariable model (odds ratio [OR] = 1.74; 95% confidence interval [CI]: 1.002-3.037); despite this, they were no more likely to receive fertility services than women without disabilities (OR = 1.52; 95% CI: 0.972-2.368). Conversely, women with physical disabilities were more likely to receive fertility services (OR = 2.32; 95% CI: 1.217-4.422) but no more likely to have infertility (OR = 0.89; 95% CI: 0.466-1.698). Additionally, the trends observed in earlier cycles were largely persistent in the 2022-2023 cycle.
CONCLUSIONS: Women with self-identified vision loss reported significant decreases in fertility but did not access fertility services at increased rates, while women with physical disabilities accessed fertility services at higher rates despite having comparable rates of infertility to women without disabilities.
IMPACT STATEMENT: Some subgroups of women with disabilities face disparate rates of infertility and access to fertility care, and further attention and investigation into these disparities is warranted.

P-517 4:45 PM Tuesday, October 27, 2026

EXPLORING PATTERNS AND PREDICTORS FOR PATIENT ATTRITION AT A UNIVERSITY-BASED REPRODUCTIVE CENTER. Clara Wang, MD[1], Miranda LM Delawalla, PhD, MPH[2], Katharina Goebel, BS[1], Hallie Stevens, BS[3], Daniela S Diego, MD[4] and David A Schirmer III, M.D.[2], [1]Emory University, [2]Emory University School of Medicine, Atlanta, GA, [3]Emory University School of Medicine, [4]Emory University, Atlanta, GA

OBJECTIVE: To examine predictors of care discontinuation at a university-based reproductive center.
MATERIALS AND METHODS:
In this retrospective cohort study, patients were classified as early attrition (no follow-up visit within 6 months of initial visit), late attrition (completed work-up but did not undergo treatment within 6 months of initial visit), and having completed some fertility treatment (intrauterine insemination and/or IVF) within 6 months of initial visit. Exclusion criteria included not seeking pregnancy or fertility preservation, receiving gonadotoxic therapy, gestational carrier applicants, or non-fertility related visits. Descriptive statistics were evaluated with parametric and non-parametric tests. Multivariable robust Poisson regression models analyses assessed predictors of early and late attrition compared to treatment completion.
RESULTS: Of 490 patients, 176 (36%) had early attrition, 167 (34%) had late attrition, and 147 (30%) completed treatment. Insurance coverage was the only significant predictor of both early and late attrition (Table 1). Compared to self-pay patients, patients with diagnostic and treatment coverage were less likely to have early attrition (aRR: 0.63; 95% CI: 0.42, 0.93), while those with unknown coverage were more likely (aRR: 1.46; 95% CI: 1.06, 2.02). Similarly, patients with coverage were less likely to have late attrition (aRR: 0.62; 95% CI: 0.47, 0.81) while those with unknown coverage were more likely (aRR: 1.59; 95% CI: 1.18, 2.14).
Table 1: Predictive factors for early and late attrition

	Early attrition [1]		Late attrition [2]	
	aRR (95% CI)	p-value	aRR (95% CI)	p-value
Insurance Coverage	0.88 (0.61, 1.27)		0.98 (0.77, 1.24)	
Diagnostic only	0.63 (0.18, 2.18)	0.507	0.68 (0.32, 1.42)	0.861
Dx & non-IVF	0.63 (0.42, 0.93)	0.469	0.62 (0.47, 0.81)	0.299
Dx & IVF	1.46 (1.06, 2.02)	**0.021**	1.59 (1.18, 2.14)	**<0.001**
Unknown coverage	Ref	**0.022**	Ref	**0.002**
Self-pay		Ref		Ref

aRR = adjusted risk ratio, CI = confidence interval, Dx = diagnostic, IVF = in vitro fertilization.
[1]Adjusted for age, race, insurance coverage, distance from clinic, initial appointment type, BMI, parity, AMH, prior semen analysis, tubal factor infertility, need for donor gamete.
[2]Adjusted for race, insurance coverage, prior semen analysis, tubal factor, uterine factor, need for donor gamete, and fertility preservation.
CONCLUSIONS: Insurance coverage significantly increased the likelihood of care continuation and treatment completion. Patients with unknown fertility benefits were at high risk for attrition.
IMPACT STATEMENT: Insurance coverage is a leading predictive factor for both early and late attrition, thus reflecting the need for expanded coverage that includes IVF treatment to improve accessibility for all patients.

ACCESS TO CARE

P-518 3:45 PM Tuesday, October 27, 2026

INCREASING EQUITABLE ACCESS TO FERTILITY PRESERVATION SERVICES IN ADOLESCENTS AND YOUNG ADULTS WITH CANCER. Lauren Stippich, M.D.[1], Stephanie Gunderson, M.D.[1], Jamie Neary, N.P.[1], Darcy Geddes, RN, BSN[2] and Jack Klahr, BS[1], [1]Medical College of Wisconsin, Milwaukee, WI, [2]Froedtert ThedaCare, Menominee Falls, WI

OBJECTIVE: We are aiming to improve fertility preservation (FP) referral rates in adolescents and young adults (AYA) diagnosed with cancer at our institution.
MATERIALS AND METHODS: All patients ages 13-45 with newly diagnosed cancer were included in this study if they attended a new patient oncology clinic visit at our institution from April 2024 - July 2025 during periods of data collection. The outcomes measure were the differences in rates of FP referrals compared to baseline data collected. The baseline rate of referrals was collected for 45 days after implementation of a Best Practice Advisory (BPA) (launched 4/2024) which prompted providers to place a referral to the Reproductive Medicine Center (RMC) at the patient's initial visit. This data was obtained via a report generated by the electronic medical record. Secondary data was then collected for an additional 45 days. Further interventions included an FP educational module completed by oncology providers (launched 1/2025) and the RMC directly contacting AYA patients with a new cancer diagnosis (launched 6/2025). Data was collected for 45 days following each of these interventions. Differences between baseline data referral rates and referral rates afterinitiating the interventions were calculated using a two-proportion z-test. Data was also collected from the BPA itself, including reason for not placing a referral, if applicable. Referrals placed at the initial oncology appointment, later dates, and prior to initial appointment (for any reason) were also recorded.
RESULTS: In baseline data, 63.3% of the time a provider was prompted to initiate a referral to reproductive medicine, the BPA was circumvented without answering or by selecting "other" and a referral was not placed. This was compared to 59.0% of the time during secondary BPA data collection (z=0.58, p=0.55), 50.9% of the time after the provider education intervention (z=1.65, p=0.1), and 47.7% of the time after the RMC began initiating direct contact with patients (z=1.87, p = 0.06). Additionally, there was no significant difference between referral rates placed during the initial appointment or referrals placed at a later date when comparingbaseline data collected to secondary BPA data collection or after provider education intervention. Data is suggestive of a possible significant difference between referral rates during baseline data collection and referral rates after RMC direct contact with patients (z=-2.40, p = 0.02). There was also a trend towards possible significance of referrals placed during appointments after direct contact by the RMC was initiated (z=-1.78, p = 0.08). Comparison data is limited by small sample size and overall small rate of referrals.
CONCLUSIONS: Despite interventions in attempt to increase FP referral rates, overall rates remain low. Reasons for low impact of interventions could include alert fatigue, visit time constraints, provider burnout/non-compliance with education modules, provider biases, and limited staffing and resources.
IMPACT STATEMENT: Referral rates for FP remain low and oncology provider buy-in remains a significant hurdle in achieving equitable access to FP services for AYA diagnosed with cancer.

P-519 4:00 PM Tuesday, October 27, 2026

AT-HOME SPERM CRYOPRESERVATION: A PILOT STUDY VALIDATING POST-THAW SEMEN PARAMETERS AGAINST STANDARD IN-LABORATORY SAMPLES AND EXPANDING ACCESS TO FERTILITY PRESERVATION. Marco Mouanness, MD, HCLD[1], Molly Broe, B.S.[1] and Zaher Merhi, M.D., HCLD[2], [1]Rejuvenating Fertility Center, New York, NY, [2]Albert Einstein College of Medicine, Maimonides Medical Center, & Rejuvenating Fertility Center, New York, NY

OBJECTIVE: Access to fertility preservation is inequitable for individuals facing geographic, logistic, or psychosocial barriers to clinic visits. At-home sperm cryopreservation kits offer a patient-centered alternative, but controlled validation data are lacking. This pilot study provides the first within-subject comparison of post-thaw at-home kit parameters versus fresh in-laboratory samples.
MATERIALS AND METHODS: Three adult males were enrolled following informed consent. Each provided two samples: (1) at-home collection via a commercially available kit (cryoprotectant media; liquid nitrogen dewar; samples returned cryopreserved) and (2) a fresh in-laboratory sample per WHO 6th edition criteria. Endpoints included volume, concentration, total motility, morphology (Kruger strict criteria), and TMSC (total motile sperm count). Results were reported as median ± SD and paired two-tailed t-tests were performed. Results are exploratory given the pilot sample size.
RESULTS: All three participants completed both methods without deviation. No statistically significant differences were observed between fresh and post-thaw at-home samples for any parameter (all p>0.05): volume (p=0.65), morphology (p=0.81), concentration (p=0.10), total motility (p=0.08), and TMSC (p=0.20). All post-thaw samples retained TMSC ≥10 million, meeting the clinical threshold for IVF and ICSI. No sample precluded ART use.
Table 1- Comparison of semen parameters between in-lab samples and at-home cryopreserved post-thaw specimens

Parameter (n=3)	Fresh (mean±SD)	Kit Post-Thaw (mean±SD)	Mean Δ	% Change	p-value
Volume (mL)	4.0±2.2	4.3±1.2	+0.4	+9.8%	0.65
Concentration (M/mL)	51.3±4.6	22.1±13.2	−29.2	−56.9%	0.10
Total Motility (%)	62.0±20.7	42.7±24.0	−19.3	−31.1%	0.08
Morphology (% normal)	5.7±2.1	5.5±1.3	−0.2	−3.5%	0.81
TMSC (million)	137.7±92.6	67.0±6.1	−70.7	−51.3%	0.20

CONCLUSIONS: At-home sperm cryopreservation produced no statistically significant differences in any semen parameter versus in-laboratory samples, with all post-thaw values within clinically acceptable ART thresholds. These data provide the first controlled within-subject evidence of clinical equivalence between at-home and laboratory-based sperm banking. Larger prospective trials are warranted.
IMPACT STATEMENT: At-home sperm cryopreservation addresses a critical gap in male fertility preservation access. For individuals facing geographic isolation, oncologic urgency, occupational constraints, or psychological barriers to clinic-based collection, this approach may meaningfully expand the reach of sperm banking. These pilot data provide the first controlled validation demonstrating clinical equivalence between methods, supporting broader adoption as an equitable adjunct to laboratory-based sperm banking.
SUPPORT: None

P-520 4:15 PM Tuesday, October 27, 2026

UNDERSTANDING THE PATIENT JOURNEY: A 20-YEAR SINGLE INSTITUTION EXPERIENCE OF ONCOFERTILITY CARE IN PATIENTS WITH BORDERLINE OVARIAN TUMORS (BOTS). Jillian Pecoriello, MD[1], Claudia G Durbin, M.S.[2], Sarah D Cascante, MD[3], Patty Ann LaBella, BS[3], Caroline McCaffrey, PHD, HCLD[4], Lisa M Kump Checchio, M.D.[5] and Mary Elizabeth Fino, M.D.[4], [1]NYU School of Medicine, New York, NY, [2]NYU Grossman School of Medicine, New York, NY, [3]NYU Langone Prelude Fertility Center, New York, NY, [4]NYU Langone Fertility Center, New York, NY, [5]NYU Langone Fertility Center

OBJECTIVE: Although fertility-sparing treatment enables fertility preservation (FP) in patients with BOTs, data on utilization and outcomes remain limited. We characterized BOT patients presenting for fertility care over 2 decades and evaluated reproductive outcomes.
MATERIALS AND METHODS: This was a retrospective cohort study of all BOT patients who presented to discuss FP at a large academic fertility center, either with a known BOT at the time of initial consultation or with a BOT diagnosed after initial consultation. Patient demographics, clinical history, cycle type (oocyte cryopreservation (OOF), embryo banking (EB), IVF), and pregnancy outcomes were collected.
RESULTS: 51 BOT patients were included: 21 (41.2%) presented for discussion of FP after surgical management of BOT, 16 (31.4%) presented for discussion of FP prior to surgical management of BOT, 7 (13.7%) were diagnosed with a BOT during infertility/FP evaluation, 6 (11.8%) presented with infertility after BOT treatment, and 1 (2.0%) presented for donor oocyte counseling after a bilateral oophorectomy. Median age at presentation was 31y (IQR 10). Most patients (72.5%, n=37) had a unilateral BOT and early-stage disease (90.2%, n=46). 38 (74.5%) underwent controlled ovarian stimulation (COS), including 23 undergoing FP (OOF/EB) and 15 IVF, for a total of 69 COS cycles (47.1% OOF, 31.4% IVF, 20.3% EB). To date, 11/38 patients (28.9%) have returned for a frozen embryo transfer (FET), including 8 IVF patients (5 with infertility after BOT treatment, 3 with infertility before BOT was diagnosed) and 3 FP patients (13% of the FP patients; 2 with infertility after BOT treatment and 1 who went straight to using cryopreserved embryo without attempting natural pregnancy). The median time from initial COS cycle to first FET cycle was ~26 months. Across 22 FET cycles, outcomes included 7 negative (31.8%), 3 spontaneous abortions (SAB) (13.6%), 11 live births (LB) (50%), and 1 ongoing pregnancy. 4 patients had spontaneous pregnancies: 2 prior to COS and BOT diagnosis/treatment, (1 SAB and 1 LB) and 2 after COS and BOT diagnosis/treatment (1 SAB and 1 ongoing pregnancy). Spontaneous pregnancies may be underreported due to loss of follow-up.
CONCLUSIONS: Patients with BOTs present for both infertility care and FP counseling, with the majority undergoing COS. A minority of FP patients returned to utilize cryopreserved embryos. Further studies are needed to identify factors influencing decisions to undergo COS and return to utilize cryopreserved tissue.
IMPACT STATEMENT: Improved characterization of BOT patients seeking fertility care can inform counseling, improve access to FP, and support strategies to optimize achievement of a LB.

P-521 4:30 PM Tuesday, October 27, 2026

COMPARISON OF HEALTHCARE WORKERS' PERCEPTIONS VS PATIENT' SELF-ASSESSED UNDERSTANDING OF CONCEPTS IN OBSTETRICS AND GYNECOLOGY IN A LINGUISTICALLY DIVERSE HOSPITAL. Thammatat Vorawandthanachai, MD[1], Manijaah Faria, BS[2], Estephanie Garcia, MS[2], Carly Pickett, MD[3], Lusine Aghajanova, MD, PhD[1] and Cindy Ann Brantmeier, PhD[4], [1]Division of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gynecology, Stanford University, Stanford, California, Sunnyvale, CA, [2]SUNY Downstate Health Sciences University, [3]Maimonides Medical Center, Brooklyn, NY, [4]Washington University in St. Louis

OBJECTIVE: his study aims to evaluate whether healthcare workers (HCW) could accurately gauge linguistically diverse patients' health literacy in Obstetrics and Gynecology (Ob/Gyn). Specifically, we asked: how do physicians' assessments of patients' understanding of topics in Obstetrics and Gynecology compare to patients' self-assessments of their understanding?
MATERIALS AND METHODS: A multi-part survey specific to Ob/Gyn was created and validated based on a previously developed self-assessment HCW survey, including demographics, questions on communication, and questions on interpreter use. Responses were recorded on a 5-point Likert scale (1=most, 5=least) Participants were physicians and patients recruited from an Ob/Gyn department from single urban academic health center in NYC. Variables were analyzed for frequency and percentage and compared across groups using a Mann-Whitney U test as appropriate. Analysis was conducted using R. This project received IRB approval.
RESULTS: There were 108 HCW and 28 patients recruited. All HCW worked with patients who did not speak English. Patients spoke Spanish (53%), Bengali (14%), Mandarin (10%), or other (21%), with highest education level being middle school (22%), high school (48%), undergraduate (18%), or graduate (11%) programs. Means and interquartile ranges with the p-values are shown in Table 1. Overall, except for the perception of understanding of what STI testing entails (p-value=0.1), there was a significant discordance between HCW's perceptions and patients' self-assessments.
Table 1: Comparison of median and interquartile ranges of HCW ratings of patients' understanding vs. patients' ratings of their understanding

	HCW rating (IQR)	Patient rating (IQR)	p-value
Ultrasound findings	4 (2-5)	1 (1-2)	<0.001
Procedure counseling	2 (2-4)	1 (1-1)	<0.001
Pap smear	4 (2-5)	1.5 (1-2)	<0.001
Mammogram	4 (2-5)	1 (1-2)	<0.001
Names of STI	4 (3-5)	1.5 (1-5)	<0.001
STI testing	3 (2-5)	2 (1-4)	0.10
Contraception	3 (2-5)	1 (1-2)	<0.001

CONCLUSIONS: In a linguistically diverse urban population, HCW consistently rated that patients were less likely to understand Ob/Gyn topics compared to patients' own self-assessments, suggesting a systematic underestimation of patient health literacy by providers.
IMPACT STATEMENT: This study reveals a previously undercharacterized gap between how Ob/Gyn providers perceive patient health literacy and how patients assess their own understanding, which has direct implications for informed consent, shared decision making, and health equity.
SUPPORT: This project was supported by the Maimonides Research and Development Grant.

P-522 4:45 PM Tuesday, October 27, 2026

DEMOGRAPHICS AND OUTCOMES OF GESTATIONAL CARRIERS MATCHED THROUGH A NATIONAL SURROGACY AGENCY TO INTENDED PARENTS AT AN IN VITRO FERTILIZATION (IVF) TREATMENT CENTER WITH A LARGE SURROGACY PROGRAM.
Said T Daneshmand, MD[1], Shannon Kokjohn, MSc[1], Rebecca Gu, MS[1], Priscila Cavalheiro, BA[1], Amanda Du, BS[1], Samuel Hyde, MBA[2], Emily C Stump, MSW[2], Solveig Gramann, MSW[2] and Kevin S Richter, BA, PhD[1], [1]San Diego Fertility Center, San Diego, CA, [2]Circle Surrogacy, Boston, MA

OBJECTIVE: To evaluate characteristics and treatment outcomes of Agency gestational carriers matched with intended parents in a private clinical setting
MATERIALS AND METHODS: Review of all matches between intended parents and gestational surrogates at a private IVF center (May 2023 – March 2026). Demographic data were provided by the surrogacy Agency. Live births (or ongoing pregnancies for transfers within the past nine months) per vitrified blastocyst transfer were evaluated.
RESULTS: A total of 166 Agency surrogates were matched with intended parents. 35 States were represented in the gestational surrogate demographic data. Age was 21 to 41 years (mean = 32 years, SD = 4.7). Body mass index was 19 to 33 kg/m^2 (mean = 26.7, SD = 3.6). Most were married (61%) and employed full time (72%). All surrogates had at least one prior live birth; 24% had two, 31% had three, 15% had four, 8% had five, one had six. A history of one (13%), two (5%), or three (5%) cesarean section deliveries was noted. Fifty-three (32%) had one (23.5%), two (7.8%), or three (0.6%) prior miscarriages, while 13% had terminated a pregnancy. Fifty-three (32%) had a history or one or more sexually transmitted diseases, including chlamydia (20%), herpes (10%), gonorrhea (3%), human papillomavirus (2%), and trichomoniasis (1%). Prior pregnancy complications included pregnancy induced hypertension (13%), pre-term labor (7%), pre-eclampsia (6%), postpartum hemorrhage not requiring blood transfusion (5%), ovarian cysts (5%), intrauterine growth retardation (5%), gestational diabetes (2%), endometriosis (2%), ectopic pregnancy (1%), oligohydramnios (1%), placenta previa (1%), plus one case each of cervical polyps, cholestasis, circumvallate placenta, polyhydramnios, vasa previa, and suspected placental abruption. Sixty-three (38%) had used mental health medications, and 29 reported counseling (17%) for conditions including anxiety (10%), non-postpartum depression alone (9%), non-postpartum depression with anxiety (9%), postpartum depression (8%), attention-deficit/hyperactivity disorder (7%), postpartum depression with anxiety (2%), or post-traumatic stress disorder (2%); 5% reported using medications to manage situational stress. Sixty-four percent were vaccinated for COVID-19. Median annual family income was $90,000 (IQR = $60,000 - $125,000). Requested base fees for gestational surrogacy ranged from $30,000 to $85,000, with most (55%) requesting between $35,000 and $45,000, and 20% requesting $50,000 to $55,000.
Thus far, 148 surrogates have undergone 216 embryo transfers resulting in 135 births (62.5%), with no indication of declining success after one or more previous unsuccessful attempts. The projected cumulative success rates per attempt number indicated by this overall success rate per cycle are 62.5% after one cycle, 86% after 2, 95% after 3, and 98% after 4 attempts. Seven women have thus far carried two births each: 6 sibling births and 1 for different intended parents.
CONCLUSIONS: High birth rates with few embryo transfers among many intended parents are achievable with Agency-matched gestational surrogates.
IMPACT STATEMENT: This study provides detailed information on IVF gestational surrogacy.

TECHNOLOGY & INNOVATION (5 OF 8)

P-523 3:45 PM Tuesday, October 27, 2026

DOES FEMALE AGE INFLUENCE ENDOMETRIAL RECEPTIVITY?
Elizabeth Levison, Master[1], Jose Antonio Castellón García, MsC[2], Eva Gómez, M.SC.[3], Maria Gómez, MSc[4], Carmen Rubio Lluesa, PhD[2], Maria Ruiz, MSc[5] and Diana Valbuena Perilla, MD, PhD[2], [1]Igenomix Vitrolife Group, Miami, FL, [2]Igenomix Vitrolife Group, Paterna- Valencia, Spain, [3]Igenomix, Valencia, Spain, [4]Igenomix S.L, Valencia, Spain, [5]Igenomix, S.L., Paterna, Comunidad Valenciana, Spain

OBJECTIVE: To investigate whether an association exists between age and Window of Implantation (WOI) displacements diagnosed by Endometrial Receptivity Analysis (ERA), and to identify factors, beyond oocyte quality, impacting outcomes in older patients.
MATERIALS AND METHODS: A retrospective study analyzing the endometrial receptivity in 93,283 infertile women undergoing hormone replacement therapy (HRT) in a first endometrial biopsy after 5 full days of progesterone exposure (P+5), between January 2021-December 2025. RNA from endometrial samples was sequenced and a proprietary algorithm classified WOI as receptive or displaced (early pre-receptive, pre-receptive, late-receptive, post-receptive).
Initially, receptivity probability was analyzed per each year. Subsequently, we described the likelihood of each diagnostic outcome according to age. Finally, we evaluated all results grouping in 4 quartiles: 20–32, 33–36, 37–41, and 42–45.
RESULTS: Univariate logistic regression showed significant receptivity decline as age increases, beginning at 34, accelerating from 36–37 (OR=0.86; p-value<0.001), and steepest above 41.
Analyzing endometrial profiles separately, the proportion of pre-receptive profile increases with age as early pre-receptive, especially after ages 45–46. While late-receptive and post-receptive remain stable or decrease. Overall receptivity falls in parallel.

Age quartile (years old)	Early pre-receptive	Pre-receptive	Receptive	Late-receptive	Post-receptive
20-32	0.59% (105/17,883)	16.82% (3,008/17,883)	69.05% (12,348/17,883)	9.5% (1,698/17,883)	4.05% (724/17,883)
33-36	0.69% (170//24,738)	19.84% (4,908/24,738)	68.43% (16,927/24,738)	7.95% (1,966/24,738)	3.1% (767/24,738)
37-41	0.96% (320/33,457)	22.82% (7,638/33,457)	66. 88% (22,375/33,457)	6.55% (2,191/33,457)	2.79% (933/33,457)
42-55	1.76% (302/17,205)	29.1% (5,007/17,205)	60.46% (10,403/17,205)	5.71% (982/17,205)	2.97% (511/17,205)

CONCLUSIONS: Age increases WOI displacement toward pre-receptive stages and reduces receptive and post-receptive profiles. Declines begin at 34, steepen from 36–37. Quartile analysis links highest displacement incidence to oldest group (see table), indicating a direct age–receptivity relationship.
IMPACT STATEMENT: This retrospective study, limited to age and test outcome without adjustment for other clinical variables, cannot distinguish age-related endometrial effects from infertility duration. Nonetheless, analysis of a large cohort demonstrates a clear association between age, delayed WOI (slow progesterone response), and impaired endometrial receptivity, underlining the value of endometrial assessment in advanced maternal age.
SUPPORT: This study was supported by Igenomix, Vitrolife group.

P-524 4:00 PM Tuesday, October 27, 2026

FROM OOCYTE MORPHOLOGY TO EMBRYO COMPETENCE: A HEAD-TO-HEAD COMPARISON BETWEEN ARTIFICIAL INTELLIGENCE AND HUMAN EVALUATION.
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OBJECTIVE: To evaluate whether an artificial intelligence (AI) deep learning system applied to oocyte images performs comparably to clinicians and embryologists in predicting blastulation rates and embryo euploidy, and to assess whether AI review modifies human predictions.
MATERIALS AND METHODS: Retrospective study of 102 IVF + preimplantation genetic testing for aneuploidies (PGT-A) cycles (January–June 2025, private fertility clinic); 346 blastulation and euploidy predictions analysed. Clinicians received clinical history, stimulation protocol, and metaphase II (MII) oocyte count (no images) to predict blastocyst and euploidy counts; embryologists received the same information plus oocyte images. Both groups reviewed outputs from an AI deep learning system (Magenta™) and indicated whether they modified initial predictions. Actual blastocyst development and PGT-A results served as reference standards. Accuracy, agreement, and error patterns were compared across evaluators with subgroup analysis by female age. Chi-square and McNemar tests were used.
RESULTS: A total of 346 predictions from 102 IVF cycles were analysed. Blastocyst prediction accuracy did not differ significantly between fertility specialists and AI (37.6% vs 37.0%, p=0.90) or between embryologists and AI (33.5% vs 36.1%, p=0.59). Euploidy prediction accuracy was similarly comparable (AI: 69.9% [242/346] vs humans: 68.8% [238/346], p=0.74), with overall agreement of 75.1% (p<0.01). Disagreement patterns were largely symmetrical: AI corrected 41.7% of human errors and disagreed with 17.2% of correct human predictions; humans corrected 39.4% of AI errors and disagreed with 18.6% of correct AI predictions. Failure profiles were similar across evaluator types: when AI was incorrect, humans were correct in 17–18% of cases; when AI was correct, humans were incorrect in 39–44% (p=ns). Specialists and AI overestimated euploidy more frequently than embryologists (21.4% and 19.0% vs 16.2%), while embryologists more often underestimated relative to specialists and AI (16.2% vs 8.4% and 10.5%). Clinicians modified predictions after AI review in only 10.4% of cases, with no accuracy gain (55.6% vs 63.9%, p=0.47). Accuracy was higher for women >38 years across all evaluators; AI tended to overestimate euploidy in younger women (72.7% [32/44] vs 58.8% [40/68], p=0.13).
CONCLUSIONS: The AI deep learning system showed accuracy comparable to both clinicians and embryologists for blastulation and euploidy prediction, with symmetrical disagreement patterns and similar failure profiles. AI review had minimal impact on human estimates, supporting a complementary rather than replacement role in clinical practice.
IMPACT STATEMENT: AI-based oocyte assessment matched the predictive accuracy of clinicians and embryologists without outperforming them, and had minimal influence on human decision-making, supporting a complementary rather than replacement role. Age modulates predictive performance: higher accuracy in women >38 years and overestimation of euploidy in younger women should inform how AI outputs are interpreted across patient subgroups and counselled in clinical practice.

P-525 4:15 PM Tuesday, October 27, 2026

GENERAL VERSUS OOCYTE-SPECIFIC ARTIFICIAL INTELLIGENCE FOR PREDICTING BLASTOCYST FORMATION AND EMBRYO EUPLOIDY: A COMPARATIVE DIAGNOSTIC ACCURACY STUDY. Melina Schapira, MD[1], Fiamma Di Biase, Medical doctor[2], Julia Victoria Pennino Martinez, MD[2], Sergio D Papier, M.D.[3] and Demian Glujovsky, MD , MSc[4], [1]CEGYR Eugin Group, Caba, Argentina, [2]Cegyr - Eugin Group, Buenos Aires, Argentina, [3]Cegyr, Capital Federal, Argentina, [4]CEGYR, Ciudad Autonoma Buenos Aires, Capital Federal, Argentina

OBJECTIVE: To compare the predictive accuracy of a general generative artificial intelligence (AI) model with an oocyte-specific AI model for blastocyst yield and embryo euploidy across IVF cycles, and to characterise their respective misclassification profiles.
MATERIALS AND METHODS: Retrospective diagnostic accuracy study of 96 IVF + preimplantation genetic testing for aneuploidies (PGT-A) cycles performed between January and June 2025 at a single private clinic. Eligible cycles used autologous oocytes with complete embryological outcomes and PGT-A results. Predictions of blastocyst yield and euploid embryo number were generated at the cycle level by two AI approaches: Magenta™, an oocyte-specific AI, and a general generative AI (ChatGPT), which received structured clinical data and oocyte images mirroring the information provided to embryologists in a parallel study. Observed blastocyst development and PGT-A results served as reference standards. Accuracy, agreement, misclassification profiles, and age-stratified performance were assessed at the cycle level using chi-square tests.
RESULTS: A total of 96 IVF/PGT-A cycles were analysed (mean maternal age 38.4 ± 3.5 years; 90% with ≤2 prior IVF cycles; median MII oocytes 4 [IQR 2–8]; median blastocysts 2 [IQR 1–4]; median euploid embryos 0 [IQR 0–2]). Predictive accuracy for euploid embryo number was comparable between the general generative AI and the oocyte-specific AI (77.1% [74/96] vs 69.8% [67/96], p=0.25), with overall agreement of 69.8% (p=0.01). Despite similar overall accuracy, models showed distinct misclassification patterns. Among cycles correctly predicted by the general generative AI, the oocyte-specific AI misclassified 24.3% (18/74); conversely, among cycles incorrectly predicted by the general generative AI, the oocyte-specific AI correctly classified 50% (11/22). Overestimation of euploid embryo number was less frequent with the general generative AI (2.1% vs 19.0%), whereas underestimation was more frequent (20.8% vs 10.5%). The oocyte-specific AI classified oocyte quality as medium or high in 52% of cycles. Prediction accuracy was higher for women >38 years across both models; errors in younger women were primarily driven by overestimation. Age-stratified analyses are exploratory.
CONCLUSIONS: A general generative AI achieved predictive accuracy comparable to an oocyte-specific AI for blastocyst yield and embryo euploidy, while exhibiting distinct and complementary misclassification patterns. These findings challenge the assumption that domain-specific AI systems are inherently superior for reproductive outcome prediction.
IMPACT STATEMENT: This head-to-head comparison suggests that general generative AI may match oocyte-specific models in IVF outcome prediction, with clinically relevant differences in error profiles that favour different use cases. These findings highlight the importance of evaluating not just overall accuracy but misclassification direction before clinical integration. Validation in larger, prospective multicentre studies is required before either approach can inform clinical decision-making.

P-526 4:30 PM Tuesday, October 27, 2026

AGREEMENT OF AUTOMATED FOLLISCAN AND SONOAVC FOLLICLE DIAMETER MEASUREMENTS WITH MANUAL 3D GROUND TRUTH. Andrzej Zapala, MSc[1], Radoslaw Bojanowski, MSc[2], Grzegorz Dolanowski, MSc[1], Seyma Haskoylu, MD[3], Baris Ata, M.D., M.SC.[4] and Piotr Wygocki, PhD[5], [1]MIM Fertility, Warsaw, Poland, [2]MIM Fertility, [3]Department of Obstetrics and Gynecology, Koç University School of Medicine, Istanbul, Zeytinburnu, Turkey, [4]Department of Obstetrics and Gynecology, Koç University School of Medicine, İstanbul, Turkey, [5]MIM Fertility, Warsaw, Poland, Institute of Informatics, University of Warsaw, Warsaw, Poland

OBJECTIVE: To evaluate agreement of automated Folliscan and SonoAVC follicle diameter measurements with manual 3D ground truth, expressed in clinically interpretable millimetres.
MATERIALS AND METHODS: This prospective imaging method-comparison study included 50 ovarian examinations from 13 non-stimulated women in natural menstrual cycles. Three-dimensional transvaginal ultrasound volumes were acquired between 2024-11-08 and 2025-01-06. Folliscan and SonoAVC (4D View 18 ver Ext.6 Rev.b, Windows) outputs were compared with manual 3D ground truth. Mean age was 28 years (range 20-35), mean BMI 23.0 kg/m2 (19.0-28.7), and mean AMH 3.25 ng/mL (1.05-6.71). Follicle volumes from all methods were converted to equivalent diameters assuming spherical shape. For each ovarian examination, largest and mean follicle diameters were computed. Agreement versus manual ground truth was quantified using mean absolute error (MAE, 95% CI) and Bland-Altman bias with limits of agreement (LoA).
RESULTS: For largest follicle diameter, MAE versus manual ground truth was 0.43 mm (95% CI, 0.30-0.56) for Folliscan and 6.58 mm (4.90-8.26) for SonoAVC. Bland-Altman bias/LoA were 0.12 mm [-1.09, 1.32] for Folliscan and 5.94 mm [-7.21, 19.09] for SonoAVC. For mean follicle diameter, MAE was 0.40 mm (0.30-0.51) for Folliscan and 3.65 mm (2.47-4.82) for SonoAVC. Bland-Altman bias/LoA were 0.33 mm [-0.52, 1.18] for Folliscan and 3.62 mm [-4.75, 11.99] for SonoAVC. Across both diameter summaries, Folliscan showed lower absolute error, bias closer to zero, and substantially narrower LoA than SonoAVC.
CONCLUSIONS: Folliscan demonstrated closer agreement with manual 3D ground truth than SonoAVC for both largest and mean follicle diameter measurements in non-stimulated natural cycles. These findings support the potential value of automated follicle diameter assessment when measurement reproducibility and clinically interpretable millimetre-level agreement are required.
IMPACT STATEMENT: Reporting follicle measurement agreement directly in millimetres may improve clinical interpretability of ultrasound technology validation and support more reproducible follicular monitoring workflows in reproductive medicine.

P-527 4:45 PM Tuesday, October 27, 2026

DEVELOPMENT OF TRANSVAGINAL OVARIAN ABLATION PROCEDURE FOR INFERTILITY ASSOCIATED WITH POLYCYSTIC OVARY SYNDROME. Anuja Dokras, MD, MHCI, PhD[1], Karl R. Hansen, MD, PhD[2] and Ross W. McQuivey, MD[3], [1]University of Pennsylvania Perelman School of Medicine, Philadelphia, PA, [2]University of Oklahoma College of Medicine, Oklahoma City, OK, [3]Chief Medical Advisor for May Health, Menlo Park, CA

OBJECTIVE: Polycystic ovary syndrome (PCOS) is the leading cause of anovulatory infertility. Standard ovulation induction (OI) in PCOS-related infertility includes oral agents, gonadotropin therapy, and laparoscopic ovarian drilling (LOD). LOD is associated with improved ovulation but was not designed for precision ablation and carries risks of laparoscopy and general anesthesia. Transvaginal ovarian ablation (TVOA) is a novel outpatient procedure that delivers a calculated amount of radiofrequency (RF) energy to the ovary for predictable tissue ablation. This study describes TVOA development from preclinical studies through current pivotal trial.
MATERIALS AND METHODS: The TVOA system integrates a single-use, needle-deployed ablation catheter mounted on a transvaginal ultrasound probe with a dedicated RF energy generator--engineered to replicate the intended biological effect of LOD without laparoscopy or general anesthesia. We reviewed evidence spanning the full developmental arc: ex vivo bovine studies (vs. SOC-Valley lab RF generator and laparoscopic needle electrode), in vivo animal models, and computational thermal modeling, through first-in-human (FIH) clinical outcomes and pivotal study design. Safety events were assessed using adjudicated classifications.
RESULTS: Ex-vivo bovine testing (n=32) demonstrated consistent ablations (single lesion mean volume 75.8mm^3) without ovarian capsular involvement or tissue carbonization vs. SOC. Overlapping ablations showed limited incremental lesion growth (2.1x vs. 3.9x SOC), reflecting controlled energy delivery. Ex-vivo thermal spread study confirmed a margin of >1.2mm between the ablation zone and ovarian surface.
An in-vivo bovine study (n=15) confirmed transvaginal, ultrasound-guided feasibility with 0 adverse events, confined ablations, no adjacent structural injury and preserved folliculogenesis.[1] Computational thermal modeling predicted a 78.9mm^3 ablation volume in a human PCOS ovary with no off-target thermal injury across modeled scenarios.
The FIH trial (ULTRA) enrolled 32 women with PCOS-related ovulatory dysfunction refractory to oral OI across 7 sites.[2] Two serious adverse events unrelated to the device or ablation were reported. At 12 months (n=27), 20 (77%) ovulated; 7 resumed oral OI between 3-12 months. REBALANCE, a prospective multicenter RCT, is ongoing, comparing TVOA to expectant management with endpoints of ovulation, clinical pregnancy, live birth, and exploratory hormonal and metabolic outcomes.
CONCLUSIONS: TVOA has demonstrated preclinical proof-of-concept, including consistent ablation characteristics and first-in-human feasibility, resulting in CE Mark authorization. The ongoing pivotal RCT will define safety and TVOA's role in treatment for infertility due to ovulatory dysfunction in patients with PCOS.
IMPACT STATEMENT: TVOA introduces a transvaginal, ultrasound-guided approach to ovarian ablation for PCOS-related infertility. Preclinical and FIH studies provided preliminary evidence of consistent ablation and favorable thermal safety profile. Positive RCT results could expand treatment options for this population.
REFERENCES:
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[2]Amer S, Jegaden M, Wyns M et al (2025) *Human Reproduction*, 40, Supplement 1, deaf097.127.

TECHNOLOGY & INNOVATION (6 OF 8)

P-528 3:45 PM Tuesday, October 27, 2026

A NOVEL DECISION SUPPORT TOOL FOR PERSONALIZED AND OPTIMIZED DOSING IN IVF: A META-ANALYSIS OF RECENT CLINICAL STUDIES. Urmila Diwekar, M.Tech., PH.D., Opt-Ivf LLC, Crystal Lake, IL

OBJECTIVE:
Opt-IVF is a clinical decision support tool that develops a personalized model of follicular growth in response to stimulatory hormones and then optimizes the dosage for the remainder of that cycle. Two RCTs and a cohort study have shown that using Opt-IVF for dosing guidance led to more high-quality embryos, higher pregnancy rates, reduced hormone dosages, and fewer ultrasound tests. We present a meta-analysis of these studies. Further, we also present live birth rate data for the largest RCT.
MATERIALS AND METHODS:
While AI model has been used for initial superovulation dosing, it lacks daily guidance and clinical validation. We developed Opt-IVF, a hybrid model combining first-principles (particulate theory) with data-driven techniques to personalize and optimize daily superovulation dosage throughout the cycle.
Trial-1 included a total of 115 patients, and Trial-2 included a total of 402 patients. The cohort study included 411 patients (204 in the intervention group and 207 in the control group) at a single center for two years.
RESULTS:
A meta-analysis of the three studies (n=928), for three important outcomes, is shown in Table 1. The Opt-IVF group showed significantly higher clinical pregnancy rates across

all three studies, with ORs ranging from 1.38 to 1.98 and a weighted OR of 1.63. Looking at the confidence intervals, there is a significantly higher probability that the odds favor Opt-IVF across all studies. The table shows that the total dosage for stimulation and the number of Grade A embryos/Blastocysts across all patient types are significantly higher in the Opt-IVF intervention arm. The results are significantly higher for the poor responders. We also present live birth rate data from the first transfer in RCT-2 here.

OUTCOME	STUDY	ODDS RATIO	95% CI	P-VALUE
Clinical Pregnancy Rate	Trial -1	1.38	(0.67-2.09)	0.1886
All Patients	Trial-2	1.98	(1.29-3.03)	0.0008
	Cohort Study	1.53	(1.01-2.33)	0.0233
	Weighted	1.63	(1.17-2.08)	0.0017
OUTCOME	PATIENT	WEIGH. MEAN DIFF.	95%CI	P-VALUE
Total Cumulative Dosage (IU)	Normal Responders	507	(411-603)	<0.001
	PCOS Patients	600	(475-725)	<0.01
	Poor Responders	936	(773-1099)	<0.05
	All	588	(507-628	<0.001
Grade A Embryos/Grade A	Normal Responder	1.00	(0.62-1.39)	<0.0001
Blastocysts	PCOS Patient	1.02	(0.24-1.80)	<0.0001
	Poor Responders	0.6	(0.08-1.00)	<0.0001
	All	0.86	(0.54-1.02)	<0.0001
TYPE	Trial	Live Birth	Pregnancy Loss	LBR
Opt-IVF	RCT-2	85	16%	49%
Non-opt-ivfR	RCT-2	60	17%	34%

CONCLUSIONS:
This meta-analysis and live birth rate data provides evidence that Opt-IVF dosing guidance improves outcomes. The results are more pronounced for poor responders.
IMPACT STATEMENT:
By conducting a meta-analysis that shows the overall benefit of this technology, we lay the groundwork for future research to build on these findings.
SUPPORT: No financial support from any funding agency

P-529 4:00 PM Tuesday, October 27, 2026

DOES HUMAN LEUCOCYTE ANTIGEN SIMILARITY CORRELATE WITH BLASTOCYST DEVELOPMENT, ASSISTED REPRODUCTIVE TECHNOLOGY OUTCOMES, AND PREGNANCY OUTCOMES? – A GENETIC ANALYSIS BASED ON 609 COUPLES. David Goehring, Dr. med.[1], Maren Goeckenjan, M.D.[2], Ilona Croy, Prof. Dr.[3], Vanessa Nöring, M. Sc.[4] and Ines Goehring, M.D.[5], [1]Munich, Germany, [2]Senior Consultant Physician, [3]Chief Physician, [4]Statistics, [5]Gynecologist

OBJECTIVE:
Does Human Leucocyte Antigen (HLA) similarity of primary infertile couples influence blastocyst development, assisted reproductive technology outcomes, and pregnancy outcomes?
MATERIALS AND METHODS:
In this retrospective study, 609 couples undergoing IVF or ICSI treatment were analyzed. HLA typing was performed across six loci (HLA-A, -B, -C, -DRB1, -DQB1, -DPB1), and interpartner similarity was assessed. Outcomes included blastocyst formation rate, embryo quality (Gardner classification), embryo development, pregnancy rates, and live birth rates. Regression analyses (beta, logistic, and linear models) were adjusted for female age and AMH levels. Both locus-specific and binary matching approaches were evaluated.
RESULTS:
Overall, HLA similarity was not associated with blastocyst formation, embryo quality, or early embryonic development. In the beta regression model, no HLA locus showed a significant effect on blastulation rate (e.g., HLA-B: $\beta = 0.169$, $p = 0.52$), whereas female age was a significant negative predictor ($\beta \approx -0.018$, $p < 0.01$).
For clinical outcomes, a locus-specific pattern emerged. At the HLA-B locus, higher similarity was associated with reduced odds of a positive pregnancy test ($\beta = -2.56$, $p = 0.035$) and live birth ($\beta = -3.05$, $p = 0.021$). These effects were consistent in direction across models but should be interpreted cautiously due to the exploratory nature of the analysis. No comparable associations were observed for other HLA loci or for the binary matching variable.
Across all models, female age remained the most consistent predictor, negatively affecting pregnancy ($\beta \approx -0.09$, $p < 0.001$) and live birth outcomes ($\beta \approx -0.08$, $p < 0.01$).
CONCLUSIONS:
Interpartner HLA similarity does not appear to influence early embryo development in ART. However, preliminary findings suggest a potential locus-specific association at HLA-B with clinical outcomes such as pregnancy and live birth. These observations require confirmation in larger, prospective cohorts.
IMPACT STATEMENT:
This study supports the notion that overall HLA compatibility may have limited relevance for ART outcomes, while highlighting a possible role of specific loci such as HLA-B. If validated, these findings could contribute to a more differentiated understanding of immunogenetic factors in reproduction.
SUPPORT: non

P-530 4:15 PM Tuesday, October 27, 2026

PHANTOM VALIDATION OF A NOVEL, SINGLE-USE FLEXIBLE FALLOPOSCOPY SYSTEM FOR DIRECT VISUALIZATION OF THE TUBAL LUMEN. Yukio Suzuki, MD, PhD[1] and Dai Saito, MHA[2], [1]Gifu University Hospital, Gifu, Japan, [2]infuse Life Science, Inc., Tokyo, Japan

OBJECTIVE:
The World Health Organization estimates that 1 in 6 people experience infertility, with over 100 million women of reproductive age affected. Of them, 30% have fallopian tube-related factors contributing to infertility. The current diagnostic standard for tubal patency, hysterosalpingography (HSG), requires radiation exposure, contrast agent injection, and fluoroscopy equipment, restricting access to specialized settings. Existing reusable falloposcopes, originally developed for tubal recanalization, are costly and require reprocessing, limiting routine diagnostic use.
To develop and validate a low-cost, single-use flexible falloposcopy system that enables direct full-length visualization of the fallopian tube lumen from the uterotubal junction to the fimbriae via a hysteroscope working channel.
MATERIALS AND METHODS:
A prototype disposable falloposcopy system was developed, consisting of a single-use plastic optical fiber (POF) falloposcope and a co-catheter (Co-C) with an integrated irrigation port, designed for delivery through a hysteroscope's 2.1-mm channel for visualization from the uterine cavity to the fimbriae. While POF offers cost and single-use advantages over silica fiber, it is prone to image artifacts addressed through optimized optical design. Four prototype variants with different fiber types and optical configurations were fabricated. Dimensional specifications were independently verified by an accredited laboratory. Functional testing was conducted using a polyvinyl alcohol (PVA) phantom replicating human tubal anatomy. Clinical utility was assessed by a board-certified gynecologic endoscopist.
RESULTS:
All prototypes reached the fimbriae in phantom testing. The preferred variant, selected for superior optical performance, achieved clinically acceptable image quality, as assessed by USF chart evaluation, and operability. Full dimensional compatibility was independently verified: the Co-C (OD 1.695 ± 0.001 mm / ID 1.301 ± 0.001 mm) and falloposcope (OD ≤ 0.8 mm) fit within the 2.1-mm hysteroscope working channel, ensuring smooth delivery. The plastic optical fiber design enables single-use deployment at a fraction of the cost of reusable systems and HSG infrastructure.
CONCLUSIONS:
A single-use flexible falloposcopy prototype was developed and validated in a PVA phantom model. The system avoids radiation exposure, contrast agent use, and reprocessing requirements, enabling office-based tubal evaluation. Direct full-length visualization using optimized POF represents a significant diagnostic advantage, potentially improving diagnostic assessment in infertility workups compared to existing technologies. Biocompatibility and sterilization validation are underway, with further studies planned to evaluate clinical feasibility.
IMPACT STATEMENT: This system represents a key advantage over both HSG and emerging oncology-focused falloposcopes. It avoids radiation exposure, contrast agent use, and reprocessing requirements, while enabling office-based deployment without fluoroscopy infrastructure. Falloposcopy may reveal Chlamydia-induced intraluminal adhesions—an occult infertility mechanism.

P-531 4:30 PM Tuesday, October 27, 2026

PLASMA-DERIVED ALBUMIN AS AN UNSTANDARDIZED VARIABLE IN IVF MEDIA: RECOMBINANT HUMAN SERUM ALBUMIN (OPTIBUMIN) AS A CHEMICALLY DEFINED, BLOOD-FREE ALTERNATIVE FOR EMBRYO CULTURE. Jake Hanks, MBA, Invitria, Denver, CO

OBJECTIVE: Human serum albumin (HSA) is present at nearly every contact point of the IVF workflow—sperm preparation, oocyte retrieval, fertilization, embryo culture, biopsy, vitrification and warming, and embryo transfer—exposing each embryo cohort to albumin-containing fluids at six or more sequential steps over five to seven days. Despite this central role, plasma-derived HSA (pHSA) remains an incompletely defined reagent. Proteomic analyses have identified hundreds of undeclared co-purifying human proteins

in pHSA, with composition varying by donor pool and production lot. Lipid, fatty acid, transition metal, and phthalate content of pHSA differ between manufacturers and between batches from the same manufacturer, and have been associated with altered blastocyst reactive oxygen species generation, lipid uptake, implantation, and fetal growth in preclinical models. Mandatory pasteurization further requires the addition of caprylate and N-acetyl-L-tryptophan, which occupy native ligand-binding sites. We evaluate Optibumin, a recombinant human serum albumin (rHSA) produced in a non-mammalian expression system free of blood sourcing, pasteurization, and added stabilizers, as a chemically defined alternative for IVF applications.
MATERIALS AND METHODS: Multiple independent lots of rHSA (Optibumin) and clinical-grade pHSA were compared by high-resolution size-exclusion chromatography, reverse-phase HPLC for Cys34 redox state, and ion-exchange HPLC for charge-variant profiling. IVF-relevant performance was assessed by sperm motility and survival following swim-up, mouse embryo assay (MEA) one-cell to blastocyst development, blastocyst total cell number and inner cell mass/trophectoderm allocation, and post-warming survival following vitrification. Lot-to-lot consistency was evaluated across independent production lots of each albumin source. Aggregate and Cys34 redox comparisons used Welch's unpaired t-test for differences in mean and F-test for equality of variance.
RESULTS: rHSA demonstrated markedly greater structural homogeneity than pHSA, with substantially lower aggregate content, predominantly reduced Cys34 thiol, and a single dominant charge isoform across lots. Functional and embryo-culture endpoints comparing rHSA to pHSA are under evaluation and will be presented.
CONCLUSIONS: Decades of evidence have established serum-derived HSA as an unstandardized and blood-supply-dependent variable in human embryo culture. A chemically defined, animal-origin-free recombinant albumin manufactured without pasteurization or stabilizer addition addresses both the consistency problem and the supply problem at their source. Optibumin is positioned to support a defined, scalable albumin standard for IVF media decoupled from the human plasma supply chain.
IMPACT STATEMENT: Replacing plasma-derived HSA with a chemically defined recombinant alternative offers IVF the foundational ingredient consistency that every other modern bioprocess already takes for granted.

P-532 4:45 PM Tuesday, October 27, 2026

FORECASTING BLASTOCYST DEVELOPMENTAL MILESTONES FROM EARLY TIME-LAPSE IMAGING USING AN AI MODEL. Mohammad Amin Manouchehrpour, M.Sc.[1], Zahra Nabi Zadeh Shahr Babak, PhD[1], Dahlia Taylor, B.Sc.[1], Shahram Shirani, PhD[1], Michael S Neal, B.SC., M.SC.[2] and Mehrnoosh Faghih, M.D.[1], [1]McMaster University, [2]ONE Fertility, Burlington, ON, Canada

BACKGROUND:
The choice between Day 3 and Day 5 embryo transfer remains one of the most consequential decisions in IVF. About half of cleavage-stage embryos fail to reach blastocyst in vitro, which can lead to cycle cancellation in patients with few high-quality embryos on Day 3. At the same time, the timing of compaction and blastulation has been shown to correlate with blastocyst morphological grade, implantation and live birth. Knowing on Day 3 which embryos will reach each late milestone, and approximately when, would directly support this transfer decision.
OBJECTIVE:
To develop and validate a transformer-based model that uses only the first three days of time-lapse imaging (TLI) to forecast whether and when each of the four late milestones — Morula (tM), start of Blastulation (tSB), Full Blastocyst (tB), and Expanded Blastocyst (tEB) — will occur.
MATERIALS AND METHODS:
The model used a two-component architecture. First, a vision model extracted morphological features from individual TLI frames and assigned developmental-stage labels to the observed Day 1 to Day 3, cleavage-stage frames. These per-frame morphological signatures and stage annotations defined the developmental trajectory the embryo has followed up to the observation point. Second, a forecasting transformer received these morphological signatures together with the observed stage annotations and predicted developmental-stage probabilities across the full recording. Based on only early observations, the model estimated the probability that the embryo will reach each future milestone. Milestone occurrence was then defined as the probability of entering a given stage at any future time point. To ensure clinical plausibility, predicted milestone times were constrained to follow the natural forward developmental order: $tM \leq tSB \leq tB \leq tEB$.
RESULTS:
On a validation set (n = 139), model performance was assessed using F1 score, AUROC, precision, recall, and mean timing error (hours). Morula (tM) achieved 97.0%, 91.3%, 95.2%, 98.8%, and 7.7 h; start of Blastulation (tSB) 96.7%, 93.1%, 94.8%, 98.6%, and 8.2 h; Full Blastocyst (tB) 93.6%, 90.8%, 88.0%, 100%, and 9.9 h; and Expanded Blastocyst (tEB) 81.3%, 77.4%, 68.4%, 93.1%, and 9.3 h, respectively. The macro average was 92.1% F1, 88.1% AUROC, and 8.8 h mean timing error.
CONCLUSIONS:
Using only Day 1–3 TLI data, the model accurately forecasts both the likelihood and timing of key late developmental milestones without requiring observation of later stages. By delivering these predictions at Day 3, the system provides additional clinically relevant information to the experts.
IMPACT STATEMENT:
Decisions on Day 3 embryo transfer are often made without knowing which embryos will reach blastocyst or when. Early prediction of these outcomes from TLI can provide clinically relevant insight, supporting embryologists in making more informed and individualized transfer decisions in the IVF workflow.

TECHNOLOGY & INNOVATION (7 OF 8)

P-533 3:45 PM Tuesday, October 27, 2026

ARTIFICIAL INTELLIGENCE (AI) IN REPRODUCTIVE MEDICINE, REPRODUCTIVE SURGERY, AND FERTILITY PRESERVATION: OPPORTUNITIES, IMPLEMENTATION RISKS, AND A FRAMEWORK FOR RESPONSIBLE ADOPTION. James Michael Niall Michael Niall Duffy, BSc (Hons) MB ChB MRes DPhil MRCOG PG Dip PG Cert HCL[1], Sepideh Samaee, MBBS[2], Thomas Mitchell Dr, MBChB MRCOG[3] and Dr. Yusuf Beebeejaun, MRCOG MHDL MBBS BSc(Hons)[4], [1]London, AL, [2]Queen's Hospital, Romford, United Kingdom, [3]Edinburgh University, Edinburgh, [4]IVI RMA UK, London, United Kingdom

OBJECTIVE: To evaluate current and emerging applications of artificial intelligence (AI) and digital technologies in reproductive medicine, reproductive surgery, and fertility preservation, and to identify implementation, regulatory, safety, and health system challenges that may influence future adoption.
MATERIALS AND METHODS: A structured narrative review with systematic search elements was performed using MEDLINE, Embase, and Scopus to identify studies published between January 2016 and March 2026 evaluating AI applications in reproductive healthcare. Studies were evaluated for application domain, validation methods, clinical outcomes, implementation barriers, and safety considerations.
RESULTS: AI applications were identified across embryology, sperm analysis, ultrasound imaging, ovarian stimulation optimisation, fertility preservation triage, surgical planning, workflow automation, and patient facing decision support tools. Embryology represented the most mature domain, with multiple retrospective studies demonstrating improved embryo ranking performance. However, most studies (>70%) were retrospective, single-center, and lacked external validation. Fewer than 10% evaluated prospective clinical implementation or patient centered outcomes such as live birth rate, time to pregnancy, or treatment burden. Key implementation risks included algorithmic bias, model drift, workflow fragmentation, digital exclusion, and increasing direct to consumer commercialization. A novel Reproductive AI Implementation Framework was iteratively developed to guide responsible adoption across reproductive healthcare pathways through clinical need assessment, reproductive context validation, life cycle governance, pathway level economic evaluation, and preservation of appropriate governance oversight.
CONCLUSIONS: AI has substantial potential to improve efficiency, decision making, and equitable access within reproductive healthcare. Current evidence remains disproportionately focused on technical performance rather than real world clinical evaluation. The greatest future risk is not AI failure, but uncritical implementation.
IMPACT STATEMENT: This study provides one of the first pathway level evaluations of AI across reproductive medicine, reproductive surgery, and fertility preservation and introduces a practical implementation framework to support safe, evidence based adoption in local, regional, and national health systems.
SUPPORT: No specific funding was required or requested for this research study.
REFERENCES:
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P-534 4:00 PM Tuesday, October 27, 2026

NON-INVASIVE AI-BASED EUPLOIDY PREDICTION FROM STATIC DAY-5 BLASTOCYST IMAGES: RETROSPECTIVE VALIDATION AGAINST PGT-A IN 207 EMBRYOS. Firuza R Parikh, MD PhD[1], Dattatray Naik, Ph.D[1], Nandkishor Naik, MSc[1], Suresh Dhumal, B.Sc[1], Mangesh Sanap, MSc[1], Pratiksha Khandare, MSc[1], Prashant Makwana, MSc[1], Michal Siennicki, MSc[2], Jan Fidor, N/A[3] and Piotr Wygocki, PhD[4], [1]Jaslok Hospital and Research Centre, Mumbai, India, [2]MIM Fertility, Warsaw, Poland, [3]Warszawa, Mazowieckie, Poland, [4]MIM Fertility, Warsaw, Poland, Institute of Informatics, University of Warsaw, Warsaw, Poland

OBJECTIVE: To assess the ability of an AI-based embryo scoring system to discriminate euploid from aneuploid blastocysts using static images combined with maternal age, and to evaluate whether score-based prioritisation could reduce the number of embryos requiring immediate PGT-A testing.
MATERIALS AND METHODS: A total of 207 embryos from 44 treatment cycles (mean 4.7 embryos per cycle) from patients with a mean age of 34.1 ± 4.3 years (range 26–43) were included in this retrospective analysis. EMBRYOAID analysed static images of day-5 blastocysts together with maternal age and output of euploidy probability expressed as a percentage (0–100%), reflecting the model's confidence that a given embryo is chromosomally normal. Model performance was evaluated using two complementary metrics. The area under the receiver operating characteristic curve (AUC) measures the model's ability to rank euploid embryos above aneuploid ones, regardless of the predicted probability values. Cross-entropy additionally penalises overconfident or poorly calibrated predictions: it quantifies how closely the predicted probabilities match the actual binary outcomes, making it a more convincing measure of probabilistic accuracy than ranking alone. A prioritisation simulation was performed in which embryos scoring below 30% had their PGT-A testing postponed to a second tier, to be tested only if no euploid embryo was identified among the higher-priority group.
RESULTS: Of 207 embryos, 104 (50.2%) were euploid and 103 (49.8%) were aneuploid on PGT-A testing. The EMBRYOAID euploidy prediction achieved an AUC of 0.659 and a cross-entropy of 0.667, demonstrating meaningful discriminatory ability. When embryos were stratified into four equal quartiles by predicted euploidy probability, a monotonic increase in observed euploid rates was confirmed: Q1: 23.4% predicted /

26.9% observed, Q2: 42.4% predicted / 50.0% observed, Q3: 52.4% predicted / 54.9% observed, Q4: 64.2% predicted / 69.2% observed (Q1 = lowest, Q4 = highest). Applying the prioritisation strategy, 40 of 207 embryos (19.3%) would have their testing postponed, while the first-tier tested group retained ≥1 euploid embryo in 39 of 42 cycles with a confirmed euploid on full PGT-A (93%).

CONCLUSIONS: An AI system combining static blastocyst morphology with maternal age discriminated euploid from aneuploid embryos more accurately than maternal age alone and produced well-calibrated probability estimates. Score-based prioritisation could postpone approximately one in five PGT-A tests to a second tier while preserving access to a euploid embryo in nearly all first-tier cycles, substantially reducing upfront testing costs.

IMPACT STATEMENT:
AI-guided prioritisation of PGT-A testing may reduce costs by postponing — rather than eliminating — genetic testing for low-scoring embryos, offering a clinically safe approach to cost reduction in settings where testing all embryos is financially prohibitive.

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EX VIVO THERAPEUTICS BASED ON NATIVE PROTEINS TACKLE THE HIGH INCIDENCE OF ANEUPLOIDY IN HUMAN OOCYTES.

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OBJECTIVE:
To assess whether therapeutic candidates based on native proteins can reduce chromosomal errors in human oocytes across maternal ages.
MATERIALS AND METHODS: This multi-center prospective preclinical study was conducted on human oocytes ex vivo. Women undergoing ovarian stimulation for oocyte cryopreservation or ICSI were invited to participate. Following informed consent, immature oocytes that could not be used for patient treatment (germinal vesicle (GV) and metaphase I (MI) stages) were donated for research. The final analysis included >110 human oocytes from over 40 women aged 22–43 years, treated with a range of doses. Oocytes were allocated to treatment or control groups, and therapeutics were delivered via Intracytoplasmic Sperm Injection-like (ICSI-like) microinjection. Chromosomal architecture was assessed using live confocal microscopy and fixed super-resolution AiryScan imaging, followed by 3D reconstruction in ImageJ and Imaris. Statistical analyses were performed using Fisher's exact test and Student's t-test.
RESULTS: Here, we describe two first-in-class candidates from our therapeutic platform with distinct mechanisms of action that independently reduce chromosomal defects in immature human oocytes from infertile patients. EmbryoProtect3 is based on the endogenous spindle-stabilizing protein KIFC1, whose levels are markedly reduced in human oocytes. Augmentation of KIFC1 levels reduced spindle instability and multipolarity in human oocytes. EmbryoProtect3 reduced the duration of spindle instability in human oocytes form 10.5 hours to 3.5h hours ($p < 0.0001$), which was accompanied by a reduction in the incidence of lagging chromosomes at anaphase without detectable effects on global meiosis morphokinetics. EmbryoProtect1 targets premature separation of sister chromatids (PSSC), a major driver of age-related aneuploidy. This therapeutic is based on Shugoshin-1, a cohesion-protecting factor that specifically declines in oocytes with advancing maternal age. Human oocytes supplemented with EmbryoProtect1 showed a reduced number of PSSC events. The interventions did not appear to adversely affect in-vitro maturation efficacy, timing of polar body extrusion or efficacy of progression through meiosis I.
CONCLUSIONS: Supplementation of human oocytes ex vivo with native proteins that promote spindle stability (EmbryoProtect3) or protect chromosomal integrity (EmbryoProtect1) can tackle the high incidence of aneuploidy characteristic of human eggs.
IMPACT STATEMENT: If these findings are reproducible in large patient cohorts with various infertility aetiologies, EmbryoProtect therapeutics could become a first-in-class clinical strategy to treat age-related aneuploidy in the context of ART and potentially improve the success rates of IVF
SUPPORT: This work was supported by grants from the Deutsche Forschungsgemeinschaft and the Leibniz Prize to M.S. M.S. and D.S. are listed as inventors on a patent application filed by the Max Planck Society for the Advancement of Science (application no. PCT/EP2025/063405) based on the data presented in this study. M.S., O.Y. and A.P.Z. are co-founders of Ovo Labs and hold equity in the company. S.M. is an employee of Ovo Labs and holds equity in the company. The remaining authors declare no competing interests.

P-536 4:30 PM Tuesday, October 27, 2026

EFFICACY OF SYNBIOTIC SUPPLEMENTATION IN IUI FOR MEN WITH SEMINAL DYSBIOSIS AND TERATOZOOSPERMIA: A PROSPECTIVE RANDOMIZED CONTROLLED TRIAL UTILIZING AUTOMATED ARTIFICIAL INTELLIGENCE ANALYSIS.

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OBJECTIVE: To evaluate adjunctive synbiotic efficacy on IUI outcomes in couples with seminal dysbiosis (SD) and teratozoospermia. SD, a microbiota imbalance driving oxidative stress and morphology defects, was identified via leukocytospermia as a surrogate biomarker. AI-automated morphology and Teratozoospermia Index (TZI) calculation eliminated inter-operator subjectivity.
MATERIALS AND METHODS: This prospective trial evaluated 201 couples undergoing IUI for male factor subfertility (teratozoospermia <4% normal forms). SD screening used peroxidase staining (>1x10^6 WBC/mL) and seminal culture. Leukocytospermia was remediated with Doxycycline (100mg BD, 14 days); bacteriospermia managed via urologist-led targeted therapy. Confirmed microbiological resolution was mandatory prior to inclusion. Patients were randomized to standard-of-care (SOC: CoQ10 50mg, L-carnitine 1000mg, astaxanthin 8mg, lycopene 2.5mg, BD) (n=103) or SOC plus proprietary blend of oral synbiotics with 30 billion colony forming units (CFU) of L.rhamnous, L.bulgaricus, B.breve etc. (Androbiome™, 2 capsules daily) (n=98) for 8 weeks. Parameters and AI-derived TZI (LensHooke X1 PRO™) were analyzed at baseline and pre-IUI. Clinical pregnancy was defined by ultrasonic fetal heart activity. Multivariable regression was adjusted for age disparities.
RESULTS: Baseline demographics were comparable (male age Control: 36.3+/-3.6 vs. Test: 35.1+/-3.4 years, p=0.02). Overall pregnancy rates were 23.5% (23/98) with synbiotics vs. 20.4% (21/103) with SOC (p=0.59). Age-adjusted models confirmed no significant advantage in the unselected cohort (aOR 1.25, 95% CI 0.61-2.56). AI-derived metrics, including TZI, remained stable (p=0.81). Subgroup analysis of Severe Teratozoospermia (0-1% normal forms; n=109) identified a clinical trend: synbiotics yielded 27.8% (15/54) pregnancy vs. 18.2% (10/55) with SOC, a 9.6% absolute increase (post-hoc power: 22.3%). This indicates targeted synbiotics may optimize IUI outcomes and avoid escalation to IVF for this subgroup. These findings suggest that repairing the seminal microenvironment disproportionately benefits the most morphologically compromised sperm.
CONCLUSIONS: Synbiotics do not improve overall IUI pregnancy rates in broad teratozoospermia. However, AI-enabled grading identifies a severe phenotype (0-1% normal forms) deriving clinical benefit. For these patients, supplementation following SD resolution may optimize IUI outcomes and bypass IVF escalation, supporting a shift toward phenotype-specific precision medicine. This targeted approach offers a more cost-effective, less invasive therapeutic model by reducing patient reliance on complex ART procedures.
IMPACT STATEMENT: Therapeutic options are currently limited for enhancing IUI outcomes in males with moderate-to-severe teratozoospermia and elevated inflammatory biomarkers. This study utilizes Artificial Intelligence to minimize subjectivity in morphology assessment and identifies specific responders where modulation of the gut-testis axis through synbiotics may bypass the need for IVF escalation, advancing precision medicine in male reproductive health.
SUPPORT: none
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P-537 4:45 PM Tuesday, October 27, 2026

A DEEP DOUBLE TAKE: EVALUATING RISK FACTORS FOR MONOCHORIONIC VERSUS DICHORIONIC MONOZYGOTIC TWINS (MZTS) RESULTING FROM A SINGLE THAWED EMBRYO TRANSFER (STET) USING CLINICAL PARAMETERS AND 2D BLASTOCYST IMAGE DEEP LEARNING.

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OBJECTIVE: Reports of dichorionic diamniotic (DD) MZTs from a STET challenge the traditional model that MZT chorionicity only correlates temporally to embryo division. This study compared characteristics and outcomes between MM (monochorionic monoamniotic)/MD (monochorionic diamniotic) and DD MZTs from a STET.
MATERIALS AND METHODS: This was a retrospective cohort study from a large academic fertility center that included all STETs resulting in clinical intrauterine pregnancies from 2017 - 2025. MZTs were defined by 2 fetal poles on ultrasound. Comparisons between MM/MD vs DD MZTs were performed using Chi-square, Fisher's exact, and Mann-Whitney U tests ($p<0.05$ significant). Deep learning via ResNet18 convolutional neural network was performed using visual features extracted from 2D light microscopy images of embryos at time of thaw resulting in MZTs. Feature spaces were visualized using PCA, UMAP, and t-SNE to assess embryo morphology.
RESULTS: 8,447 STETs met inclusion criteria, resulting in 126 (1.49%) MZT pregnancies: 64 (50.8%) MD, 42 (33.3%) DD, and 20 (15.9%) MM. When comparing MM/MD and DD MZTs, there was no difference in use of medicated vs natural protocol (p=0.63), age at retrieval (p=0.91), use of ICSI (p=0.71), pre-implantation genetic testing (PGT) (p=0.11), embryo day (p=0.15), inner cell mass (ICM) (A 0.08 vs 0.02, B 0.85 vs 0.95, C 0.07 vs 0.02, p=0.27), trophectoderm (A 0.02 vs 0.05, B 0.93 vs 0.90, C 0.05 vs 0.05, p=0.75), overall embryo grade, based on the center's modified Gardner blastocyst

grading system (p=0.95), embryo expansion (p=0.86), or survival at warming (p=1.0). There was no difference in pregnancy outcomes: live birth (LB) of twins (p=0.34), SAB (p=0.86), or LB of singleton (p=0.14). 88 2D images of embryos resulting in MZTs (45 MM/MD, 43 DD, not all 126 embryo images were available) were analyzed. All three dimensionality reduction methods demonstrated complete overlap between MM/MD and DD embryo feature spaces with no evidence of group separation, indicating that static 2D embryo images at the time of STET contain no detectable visual information distinguishing twinning type. MM vs MD vs DD MZTs were then compared individually and there were still no differences in protocol, age at retrieval, use of ICSI or PGT, embryo day, ICM, trophectoderm, embryo grade, expansion, embryo survival, or pregnancy outcomes (all $p > 0.14$), and no differences in visual features.
CONCLUSIONS: Roughly 1/3 of MZT pregnancies resulting from a STET were DD, with no difference in patient characteristics, laboratory practices, or pregnancy outcomes between type of MZT. Embryos that split into MM vs MD vs DD MZTs were visually indistinguishable via deep learning algorithms.
IMPACT STATEMENT: DD MZTs resulting from a STET challenge the theory that only MM/MD twins could occur based on timing of embryo division, potentially behaving more similarly to each other than those from spontaneous MZTs. Further research is needed to determine underlying mechanisms as current technology and parameters are not yet helpful for reduction of MZT incidence and patient counseling.

TECHNOLOGY & INNOVATION (8 OF 8)

P-538 3:45 PM Tuesday, October 27, 2026

A NOVEL PLATFORM INTEGRATING BRIGHTFIELD IMAGING AND FLUORESCENCE LIFETIME MICROSCOPY WITH A UNIQUE MORPHO-METABOLIC ASSESSMENT ALGORITHM FOR COMPREHENSIVE NON-INVASIVE SELECTION OF HUMAN EMBRYOS. Liesl Nel-Themaat, PH.D., MBA, HCLD[1], Kaveh Azartash, PhD[2], Nico G. Menjivar, Ph.D.[3] and Chris Hellriegel, PhD[4], [1]Division of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gynecology, Stanford University School of Medicine, Stanford, CA, [2]Noor Sciences, Aliso Viejo, CA, [3]Stanford Medicine Children's Health, Sunnyvale, CA, [4]Noor Sciences

OBJECTIVE:
We aimed to validate a system that simultaneously captures spatial and metabolic data to create an Embryo Morpho-Metabolic Index (EMMI) algorithm for comprehensive embryo assessment. As first benchmark we discern between metabolic signatures from euploid and aneuploid embryos, detectable via NAD(P)H fluorescence shown in literature to correlate to ploidy.
MATERIALS AND METHODS:
Our approach uses a novel device that acquires brightfield and two-photon fluorescence lifetime imaging microscopy (FLIM) data from human blastocysts. The EMMI algorithm integrates imaging data with endogenous NAD(P)H fluorescence lifetime signals from the inner cell mass to generate a composite morpho-metabolic score. The signal is segmented via a phasor-based Gaussian Mixture Model (GMM), requiring no fitting models or decay assumptions. We imaged 78 blastocysts (43 aneuploid, 35 euploid) and evaluated correlation with preimplantation genetic testing for aneuploidy (PGT-A) results. Morphology was classified as “good” (n=72, containing only A and B) or “poor” (n=17, containing at least one C) per Gardner scale. Classifier performance was evaluated by area under the receiver operating characteristic curve (AUC). Post-imaging survival was assessed by overnight culture and expansion assessment. A light-exposure safety experiment was also conducted on 15 euploid embryos allocated to low (single, 34×10^{-6} Ws), medium (~double, 76×10^{-6} Ws), and high (~ten-fold, 353×10^{-6} Ws) dosage groups (n=5 each). Dosage was varied by adjusting pixel dwell time and repetitions and all embryos were re-graded the next day.
RESULTS:
Mean EMMI values distinguished low (aneuploid) and high (euploid) metabolic scores. The AUC analysis demonstrated sensitivity and specificity for ploidy discrimination. EMMI classifier performance yielded an AUC of 0.91, with sensitivity of 90.7% and specificity of 82.9%, indicating strong discrimination of ploidy, similar to previous reports. Post-imaging survival showed that 93% of “good” embryos re-expanded versus 76% of “poor” embryos; all 4 embryos that degenerated in the “poor” group were CC grade. Exposure analysis demonstrated equivalent survival and re-expansion across low (100%), medium (80%), and high (80%) dosage groups, suggesting that imaging does not compromise viability.
CONCLUSIONS:
Simultaneous acquisition of brightfield and FLIM data from human blastocysts does not compromise viability. The EMMI algorithm showed excellent correlation with ploidy status. These findings support using EMMI as a non-invasive approach for embryo selection and its potential utility for identifying additional metabolic variables that may influence embryo potential. Future directions include mouse safety studies and validation of a stand-alone device (Em-Lux) for implementation in IVF labs for a multicenter clinical trial.
IMPACT STATEMENT:
Our non-invasive imaging system provides a morpho-metabolic signal that correlates strongly with ploidy status from PGT-A results, establishing a foundation for prospective clinical studies. This strategy could minimize reliance on invasive embryo biopsy, offering a faster, safer and more accessible approach for embryo selection.
SUPPORT: Supported by Noor Sciences
REFERENCES:
Ma N, Mochel NR, Pham PD, Yoo TY, Cho KWY, Digman MA. Label-free assessment of pre-implantation embryo quality by the Fluorescence Lifetime Imaging Microscopy (FLIM)-phasor approach. Sci Rep. 2019 Sep 13;9(1):13206.

P-539 4:00 PM Tuesday, October 27, 2026

FOOD AND DRUG ADMINISTRATION (FDA) CLEARED ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING (AI/ML) ENABLED DEVICES FOR FERTILITY CARE: A CROSS-SECTIONAL ANALYSIS. Preeta A Kamat, BA[1], Sarah C Cromack, MD[2] and Jessica R Walter, MD, MSCE[1], [1]Northwestern University Feinberg School of Medicine, Chicago, IL, [2]Emory University, Brookhaven, GA

OBJECTIVE: To characterize FDA approved AI/ML enabled devices in reproductive medicine, including approval pathways, regulatory oversight, and clinical evidence requirements.
MATERIALS AND METHODS: We performed a cross-sectional analysis of the FDA AI/ML enabled device database from inception to December 31, 2025. Devices relevant to fertility care were identified and reviewed for approval pathway, time to clearance, assigned review panel, and clinical data requirements. The FDA Recall Database was queried for all identified devices and their predicate devices.
RESULTS:
Of 1,247 FDA approved AI/ML devices, only 9 (0.7%) are relevant to fertility care, cleared between 2018 and 2026. Four use optical imaging technology to automate over-the-counter semen analysis; two use software to predict the likelihood of embryo progression to blastocyst; and three are radiological imaging software or ultrasound systems to automate ovarian follicular analysis. Only two devices, both of which predict the likelihood of embryo blastulation, were approved by the Obstetrics & Gynecology Devices Panel, while the remainder were cleared by Hematology (n=4) or Radiology (n=3) panels.
All 9 devices were cleared using the 510(k) pathway, which only requires substantial equivalence to a predicate device, as opposed to independent clinical validation of the device itself. Only the LensHooke X1 PRO Semen Quality Analyzer had an AI-enabled predicate. Predicate chains extended a median of 3 generations (range 2-11) back to a device cleared under more rigorous standards (de novo or premarket approval pathways). Median time from submission to clearance was 242 days (range 92-290). Two predicate devices had class II recalls (risk of temporary or reversible harm).

Device	Description
LensHooke X1 (PRO), X3 PRO (SE), and X12 PRO Semen Quality Analyzers	Optical semen analyzers
KIDScore D3	Embryo image assessment system
Follicle Clarity	Follicle image processing software
Voluson SWIFT (+) and Expert 18-22	Ultrasound systems
CHLOE BLAST	EmbryoScope image assessment system

CONCLUSIONS: Despite growing enthusiasm for AI/ML assisted fertility care, only 9 FDA cleared devices exist for reproductive medicine. All devices were cleared through regulatory pathways designed before machine learning existed, were often reviewed by panels with no reproductive medicine expertise and relied on predicate chains predating AI/ML enabled devices. As these tools become embedded into clinical practice, it is imperative REI physicians understand potential gaps in existing FDA approval pathways.
IMPACT STATEMENT: The FDA regulatory infrastructure governing AI/ML enabled devices in fertility care has not kept pace with the technology itself. Reproductive endocrinologists should be conversant in the clinical evidence behind devices entering their clinics.

P-540 4:15 PM Tuesday, October 27, 2026

LONGITUDINAL HORMONE MEASUREMENT ALIGNMENT WITH SLEEP AND RECOVERY; A PILOT STUDY. Aparna A Divaraniya, PhD[1], Ioana Calcev, MBA[2] and Christine L Curry, MD, PhD[3], [1]Oova Inc, New York, NY, [2]Oova, New York, NY, [3]Oura Ring

OBJECTIVE: To evaluate whether integrating longitudinal hormone data with wearable derived sleep and recovery metrics provides meaningful context for interpreting variability in a participant’s sleep pattern. While sleep metrics can reflect both physiological and behavioral inputs, we aimed to assess whether hormone informed alignment could reveal consistent, cycle dependent structure within this variability.
MATERIALS AND METHODS: Participants (n=6; age 30-50; all menstruating) consented to participate via the Oova app, and contributed daily home hormone measurements (LH, E3G, PdG) along with sleep and readiness metrics from Oura Ring. Daily metrics were aligned with hormone measurements at the participant-day level. Hormone-informed cycle phases were defined as LH surge (peri-ovulatory), luteal (post-ovulatory, PdG-elevated) and non-luteal phases. Analysis focused on identifying phase-dependent differences in sleep and recovery metrics rather than formal statistical testing, consistent with the exploratory nature of the pilot.
RESULTS: Analysis were restricted to days with overlapping hormone and wearable data (n = 375). Sleep and readiness metrics varied across hormone-defined cycle phases. Mean sleep score was lowest during LH surge days (74.2 ± 13.9), intermediate during luteal-phase days (80.0 ± 11.7) and highest during non-luteal days (84.6 ± 9.2). A similar pattern was observed for readiness scores, with lowest values during LH surge days (74.1 ± 12.6), followed by luteal (78.6 ± 8.7) and non luteal phase (83.0 ± 6.4). Detailed sleep components demonstrated consistent phase-dependent differences. Total sleep and sleep efficiency were lowest during the LH surge and highest during non-luteal phase. Sleep latency was lower during LH surge days. Across participants, sleep and readiness metrics

exhibited substantial day-to-day variability. When aligned to hormone-defined phases, consistent patterns emerged at both individual and aggregate levels.
CONCLUSIONS: Wearable-derived sleep and recovery metrics exhibit cycle-dependent variation that becomes more interpretable when aligned with longitudinal hormone data. Hormone-informed context may help explain variability in sleep patterns that would otherwise appear inconsistent.
IMPACT STATEMENT: Integrating hormone data with wearable-derived metrics may improve interpretation of sleep and recovery variability and enable more personalized, cycle-aware insights.
SUPPORT: Not applicable.

P-541 4:30 PM Tuesday, October 27, 2026

CAN ARTIFICIAL INTELLIGENCE-BASED EMBRYO SCORING PREDICT THE PLOIDY STATUS OF EMBRYOS? : A STEP TOWARDS NON-INVASIVE EMBRYO ASSESSMENT. Firuza R Parikh, MD PhD, Ayesha Sharukh Master, MD, Arundhati Athalye, PhD, Sujatha Sawkar, MD, Sangeeta Deshmukh, MD, Sapna Agarwal, MD, Madhavi Panpalia, MS, Mamta Pardeshi Katakdhond, DNB, Chitra Ishwar, MD and Suparna Nadkarni, MBBS, Jaslok Hospital and Research Centre, Mumbai, India

OBJECTIVE:
To evaluate the association between artificial intelligence (AI)–derived embryo scores based on single blastocyst-stage images and clinical pregnancy outcomes, assess correlation with embryo ploidy status, determine whether AI retains predictive value among euploid embryo transfers, and evaluate its diagnostic performance for predicting euploidy.
MATERIALS AND METHODS:
This retrospective cohort study included 222 embryos from 32 patients undergoing ICSI-followed by FET cycles with self-gametes, single euploid embryo transfer at a single tertiary IVF center. Embryos were assessed using AI-derived scoring from a single blastocyst-stage image, Gardner morphology grading, and preimplantation genetic testing for aneuploidy (PGT-A). AI scores were categorized as high (5.1–10.0) and low (0.0–5.0); morphology was classified as good (≥4) or poor (≤3) based on Gardner grading. Clinical pregnancy was defined as presence of cardiac activity on ultrasound.
RESULTS:
Among euploid single embryo transfers, embryos with high AI scores demonstrated higher clinical pregnancy rates compared to low AI score embryos

- High AI → CPR 70.8% (17/24) vs Low AI → 25.0% (2/8); p=0.02.

High AI score embryos were more likely to be euploid compared to low AI score embryos

- High AI → Euploid 57.0% (73/128) vs Low AI → 38.3% (36/94); p=0.01.

Morphology demonstrated weaker associations with clinical pregnancy

- Good → CPR 65.4% (17/26) vs Poor → 33.3% (2/6); p=0.18.

ROC analysis demonstrated modest discriminatory ability of AI score for predicting euploidy. The optimal cutoff was 6.7.

- AUC 0.62 (95% CI: 0.55–0.69); cutoff 6.7 (sensitivity 50.5%, specificity 70.8%).

Further evaluation of higher-specificity thresholds (≥80%) is warranted to define clinically actionable cutoffs.
CONCLUSIONS:
AI-derived embryo scores are associated with clinical pregnancy outcomes and embryo ploidy and retain predictive value among euploid embryos. AI demonstrates bidirectional enrichment across the embryo quality spectrum, with higher scores associated with euploidy and lower scores associated with aneuploidy. Although diagnostic performance is modest, further evaluation for higher-specificity AI score thresholds (≥80%) may help define clinically actionable cutoffs. AI may serve as an adjunct to embryo selection and contribute to the developement of non-invasive embryo assessment strategies.
IMPACT STATEMENT:
AI-based embryo assessment using a single blastocyst image provides clinically relevant information beyond morphology and ploidy and may contribute to the development of non-invasive embryo selection strategies.

P-542 4:45 PM Tuesday, October 27, 2026

NOVEL IMPLEMENTATION OF ARTIFICIAL INTELLIGENCE FOR SCREENING OF GESTATIONAL CARRIER CANDIDATES. Dr. Cory B French, MD[1], Marianne Farkas, RN, BSN[2], Marie Marella, RN, BSN[3], Alexandra Peyser, MD[4], Tomer Singer, MD[4] and Mary E. Rausch, M.D.[2], [1]Northwell Health Fertility, North Shore University Hospital/Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, Manhasset, NY, [2]Northwell Health Fertility, Zucker School of Medicine at Hofstra/Northwell, Manhasset, NY, [3]Northwell Health Fertility, Manhasset, NY, [4]Northwell, New Hyde Park, NY

OBJECTIVE:
This study aims to implement large language model (LLM) technology for the efficient medical screening of gestational carrier candidates in accordance with local and national guidelines.
MATERIALS AND METHODS:
Prospective gestational carriers were identified by intended parents in coordination with an internal third-party reproduction team. Medical records were received from prior healthcare providers and agencies through a variety of means, including digital transfer and fax. All paper records, handwritten notes, and faxed documents were treated with optical character recognition (OCR) to create digitally manipulable text. PHI was retained locally within an internal database in accordance with state and federal regulations. Existing internal clinical guidelines for the medical screening of gestational carrier candidates were utilized to engineer a natural language prompt and associated checklist document. These were bundled into a deployable package to initiate any new screening session with artificial intelligence (AI). A commercially available large language model (LLM) with advanced reasoning (*Google Gemini 2.5 Pro*) was then deployed, utilizing these elements as context, to review packets of deidentified historical medical (including gynecologic, obstetrical and surgical) records. An expert reviewer was simultaneously provided the same packet of records and screening guidelines and asked to determine medical eligibility for surrogacy. Following review, statistical methods were employed to analyze inter-rater reliability of the LLM and expert.
RESULTS:
A total of 9 gestational carrier candidates were screened with AI review in this preliminary case series. The LLM was able to identify any absolute exclusion criteria in all supplied candidate records (sensitivity of 100%). The model was also able to recommend subspeciality consultation for relative exclusions in all cases. False positive results (i.e., identification of exclusions not found on secondary expert review) occurred for 2 patients (overall rate 22.2%). Review demonstrated that this occurred twice when the LLM considered psychiatric conditions and determined severity of the diagnoses to be more severe than interpreted by an expert reviewer. Concordance of final disposition recommendation occurred for 7 of 9 (78%) candidates, with the LLM recommending against surrogacy for 2 candidates which were viewed as conditionally eligible by the expert reviewer.
CONCLUSIONS:
Large language models provide the ability to rapidly read, interpret and summarize large quantities of medical documentation from various sources. Using an engineered prompt and internal guidelines for context, commercial LLMs can identify potential exclusions to surrogacy with excellent sensitivity and good specificity. AI hallucination remains possible and clinical contextualization by an expert reviewer is essential to avoid inappropriate interpretations of medical records.
IMPACT STATEMENT:
This study identifies novel implementation of large language models, paired with expert review, to streamline the screening and review of gestational carrier candidates with excellent sensitivity for exclusion criteria.
SUPPORT: No financial support was received for this work.

ART (26 OF 27)

P-543 3:45 PM Tuesday, October 27, 2026

EMBRYOLOGIC AND EMBRYO TRANSFER OUTCOMES FOLLOWING THAW OF A PORTION OF A CRYOPRESERVED SPERM VIAL WHEN SUPPLY IS LIMITED. Jeremy Applebaum, MD[1], Kimberly W Keefe, MD[2], Elizabeth S Ginsburg, MD[1] and Andrea Lanes, BSC, MSC, PHD[1], [1]Brigham and Women's Hospital, Boston, MA, [2]Brigham and Women's Hospital, Boston, MA

OBJECTIVE: When there is limited cryopreserved sperm (e.g., last donor vial, pre-gonadotoxic therapy banking, or testicular sperm extraction), thaw of part of sperm vials ("shaving") allows multiple uses from a single vial. The objective of this study was to determine whether sperm shaving impacts embryologic and embryo transfer outcomes compared with conventional full-vial thaw.
MATERIALS AND METHODS: All IVF/ICSI cycles utilizing cryopreserved sperm at a single academic center from 2012-2022 were identified. All resulting fresh and frozen embryo transfers were analyzed. Cycles using sperm shaving were compared to those using conventional full-vial thaw. Shaving was performed by scraping a layer of a sperm vial under nitrogen vapor conditions followed by standard thaw and processing, with the remaining contents promptly returned to liquid nitrogen storage. Primary outcomes were fertilization and blastulation rates. Clinical pregnancy and live birth rates were assessed for fresh and frozen embryo transfers. Log binomial and Poisson regression with offset models were used to determine differences in outcomes, adjusting for potential confounders including age, AMH, BMI, gonadotropin dose, infertility diagnosis, ICSI use, sperm source, number of embryos transferred, transfer stage, embryo quality, endometrial preparation protocol, and embryo ploidy status.
RESULTS: Of 835 stimulation cycles, 68 (8.1%) utilized sperm shaving and 767 (91.9%) utilized full-vial thaw. Indications for sperm cryopreservation in the shaved cohort included limited supply of donor sperm (38.2%), pre-gonadotoxic therapy banking (33.8%), severe male factor (25.0%), and other (2.9%). Sperm sources included partner ejaculate (48.5% in shaved group versus 32.2% in non-shaved group), donor ejaculate (42.6% versus 53.6%), and partner testicular (8.8% versus 14.2%).
Fertilization rates were similar (75.8% in shaved group versus 74.9% in non-shaved group; aRR 0.98, 95% CI 0.92 – 1.05). Blastulation rates were similar (59.7% versus 59.7%; aRR 0.93, 95% CI 0.83 – 1.05). There were no embryologic differences in subgroup analyses by sperm source. Fresh embryo transfer outcomes were similar, with no differences in clinical pregnancy (41.9% versus 31.8%; aRR 1.23, 95% CI 0.85 – 1.76) or live birth (37.2% versus 30.2%; aRR 1.00, 95% CI 0.69 – 1.44). Frozen embryo transfer outcomes were similar, with no differences in clinical pregnancy (52.9% versus 47.1%, aRR 1.18, 95% CI 0.90 – 1.55) or live birth (49.0% versus 45.7%, aRR 1.12, 95% CI 0.83 – 1.52). Compared to non-shaved donor sperm in frozen embryo transfer cycles, there was a higher likelihood of both clinical pregnancy (aRR 1.45, 95% CI 1.02 – 2.06) and live birth (aRR 1.47, 95% CI 1.04 – 2.09) with shaved donor sperm.
CONCLUSIONS: Thaw of only a portion of a cryopreserved sperm vial does not adversely affect fertilization, embryo development, or transfer outcomes compared to full-vial thaw.

IMPACT STATEMENT: Thaw of only a portion of a cryopreserved sperm vial allows a single vial of sperm to be used multiple times without compromising outcomes and should be offered when sperm supply is limited.

REFERENCES:

1. Baum M, Orvieto R, Kon S, Machtinger R, Yerushalmi GM, Hourvitz A. Comparison of effects of thawing entire donor sperm vial vs. partial thawing (shaving) on sperm quality. J Assist Reprod Genet. 2018 Apr;35(4):645-648.

P-544 4:00 PM Tuesday, October 27, 2026

A SINGLE STATIC EMBRYO IMAGE PROVIDES SUFFICIENT INFORMATION FOR A DEEP-LEARNING MODEL TO EVALUATION PREGNANCY POTENTIAL.

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OBJECTIVE:

To compare the performance for predicting pregnant embryos between a deep-learning embryo evaluation model utilizing a single static image and a model utilizing continuous time-lapse image (TLI) sequences.

MATERIALS AND METHODS:

This retrospective, single-center study analyzed 599 blastocysts from 406 patients who underwent single vitrified-warmed embryo transfer between March 2023 and April 2025. All included blastocysts were derived from oocytes fertilized by ICSI. Following 2PN confirmation, embryos were cultured in EmbryoScope+ (Vitrolife, Sweden) until day 5 (120 hours post-ICSI) and subsequently vitrified. Static images and TLI sequences for each blastocyst were linked to clinical pregnancy outcomes (presence of fetal heartbeat) for comparative deep-learning model analysis. All embryos were evaluated by two deep-learning models: EMBRYOAID (MIM Fertility, Poland) utilizing static images captured before vitrification and iDAScore (Vitrolife) utilizing TLI sequences. The relationship between clinical pregnancy and the embryo scores derived from each deep-learning model was analyzed using Wilcoxon rank-sum tests and logistic regression analysis that accounted for patient age, AMH, and BMI. The predictive performance for pregnant embryos between the two models was compared using ROC curve analysis.

RESULTS:

The mean female age, AMH, and BMI for the analyzed patients were 35.47±4.58 years, 3.41±3.04 μg/L, and 22.15±3.82 kg/m², respectively. Of 599 blastocysts, 221 (36.9%) were full-blastocysts and 378 (63.1%) were expanded-blastocysts; 558 (93.2%) were classified as good-grade (Gardner criteria ≥BB). Mean embryo scores calculated from the two models were significantly higher for embryos that achieved clinical pregnancy than those of not achieved pregnancy (EMBRYOAID: 8.19 vs. 7.65, $P < 0.01$; iDAScore: 7.10 vs. 6.41, $P < 0.01$). Logistic regression analysis showed that adjusted odds ratios (95% confidence interval [CI]) for clinical pregnancy were 1.170 (1.040–1.322) for EMBRYOAID and 1.213 (1.082–1.363) for iDAScore, with the odds for clinical pregnancy increasing with higher scores ($P < 0.01$). These results suggest that the embryo scores calculated from both models are positively associated with clinical pregnancy rates. For each deep-learning model, the AUC (95% CI) for predicting pregnant embryos was 0.6016 (0.5557–0.6459) for EMBRYOAID and 0.6279 (0.5823–0.6713) for iDAScore. Statistical comparison of these AUC values showed no significant difference ($P = 0.2217$), confirming that the predictive performance of deep-learning models for pregnant embryos is comparable between the use of single static images and TLI sequences.

CONCLUSIONS:

The deep-learning model using a single static embryo image demonstrated comparable predictive performance for pregnant embryos to the model utilizing TLI sequences.

IMPACT STATEMENT:

A single static embryo image provides sufficient information for objective embryo evaluation using a deep-learning model. This suggests that the use of static images enhances operational flexibility, as it eliminates the requirement for time-lapse incubators and is adaptable to various culture systems.

SUPPORT: None

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SUPERIOR EMBRYO DEVELOPMENT WITH CALCIUM IONOPHORE VS MECHANICAL ACTIVATION IN SIBLING OOCYTES FROM SEVERE MALE FACTOR ICSI CYCLES.

DR.Poornima DURGA, DNB IN OBSTETRICS & GYNAECOLOGY[1], M Alekhya, PhD[2] and Jahnavi Thatikonda, M.Sc[3], [1]CHIEF CONSULTANT, Hyderabad, India, [2]Chief Embryologist, Hyderabad, India, [3]EMBRYOLOGIST, Hyderabad, India

OBJECTIVE:

To compare calcium ionophore–mediated and mechanical oocyte activation on fertilization and blastocyst development in sibling oocytes from intracytoplasmic sperm injection (ICSI) cycles with severe male factor infertility or previous fertilization failure.

MATERIALS AND METHODS:

This retrospective study included 97 ICSI cycles (2023–2025) with severe male factor infertility or prior fertilization failure. Sibling oocytes from each cycle were divided into two groups: calcium ionophore activation and mechanical oocyte activation. Fertilization, cleavage, Day-3 fragmentation, and blastocyst formation rates were assessed using standardized laboratory criteria. Statistical analysis was performed, with $p<0.05$ considered significant.

RESULTS:

Fertilization rate was higher in the calcium ionophore group compared with mechanical activation (71% vs 62%). Cleavage rates were comparable between groups. Mechanically activated oocytes showed higher Day-3 fragmentation. Blastocyst formation rate was higher in the calcium ionophore group (43% vs 31%), indicating improved developmental potential.

CONCLUSIONS:

Calcium ionophore–mediated oocyte activation improves fertilization and blastocyst development compared with mechanical activation in ICSI cycles with severe male factor infertility or prior fertilization failure.

IMPACT STATEMENT:

Calcium ionophore–based activation provides more consistent embryologic outcomes than mechanical activation, supporting its preferential use in suspected oocyte activation deficiency and emphasizing the need for standardized activation strategies in assisted reproduction.

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A MULTI-STRAIN VAGINAL LIVE BIOTHERAPEUTIC PRODUCT (LBP), FB301: SAFETY, TOLERABILITY AND PROOF-OF-CONCEPT OF RESOLUTION OF VAGINAL DYSBIOSIS WITH CHLORHEXIDINE PRETREATMENT IN FIRST IN-HUMAN RCT.

Kevin Delong, PhD[1], Laurence Skillern, B.SC., M.B.B.S., M.D.[1], Allison Morgan, BSc[1], Elleke F Bosma, PhD[1], Karen Neiss, DMD[1], Kristyn Bogli, MS[1], Johan ET Van Hylckama Vlieg, PhD[1], Matthias Berse, MD[2] and Per Cantor, M.D.[1], [1]Freya Biosciences, Copenhagen, Denmark, [2]CRS Clinical Research Services Berlin Gmbh, Berlin, Germany

OBJECTIVE: A range of vaginal microbiome compositions can be found among healthy women. Vaginal *Lactobacillus* deficiency (dysbiosis) is associated with gynecological conditions, from infections to infertility. FB301 is a *Live Biotherapeutic Product (LBP)* consisting of a vaginal capsule containing 4 precision-selected *Lactobacillus* strains ($\geq 1\times10^7$ CFU) administered vaginally. This study investigated the safety and tolerability of FB301 in combination with antiseptic (no antibiotics) pretreatment in healthy premenopausal women with no known gynecological conditions and aimed to study safety and establish proof-of-concept of FB301's ability to increase *Lactobacillus* abundance and achieve strain engraftment.

MATERIALS AND METHODS: The study evaluated 89 participants in 3 cohorts of increasing FB301 treatment duration (1, 5, and 10 days) compared to placebo. Prior to the first dose, all participants underwent vaginal cleansing with 0.5% chlorhexidine. Capsules were self-administered daily. Safety assessments and vaginal sample collection occurred on Days 8 and 15 of the 1st menstrual cycle and Days 5 of the 2nd and 3rd cycles, and an optional 6-month follow-up visit. Safety was assessed through AEs, gynecological and physical examination, vital signs, and clinical laboratory tests. Metagenomic sequencing was performed on vaginal samples to measure relative bacterial species abundance pre- and post-treatment. The mITT population was specified *a priori* as participants with <90% relative abundance of 5 defined beneficial vaginal *Lactobacillus* species at baseline by MGS (n=48). Strain engraftment was evaluated using *in silico* methods and validated via colony isolation and sequencing.

RESULTS: FB301 was safe and well tolerated. No SAEs or AEs leading to treatment discontinuation were observed. A total of 59 TEAEs were reported in 44/89 participants; all were mild to moderate in intensity. Of these, 16 TEAEs in 14/89 participants were considered drug related, with vaginal discharge being the most common (3 participants). In the mITT population, *Lactobacillus* abundance increased significantly from baseline at every timepoint with FB301 but not placebo (p ranging from <0.001 to 0.031). AUC analysis confirmed a significant *Lactobacillus* increase with FB301 versus placebo across the entire study (p=0.037). In cohort 3 specifically, a significant increase was observed at Day 8 and at 6 months post-dosing, suggesting strong and durable resolution of dysbiosis (p=0.005; p=0.011). Strain-level analysis of metagenomic sequencing demonstrated successful engraftment of all four FB301 strains in the active arm.

CONCLUSIONS: An initial chlorhexidine cleansing followed by up to 10 days of vaginally self-administered FB301 was safe and well tolerated in healthy premenopausal women, and showed a significant *Lactobacillus* increase with FB301 versus placebo across the entire study.

IMPACT STATEMENT: This is the first study to demonstrate safety and feasibility of antibiotic-free durable engraftment of precision-selected *Lactobacillus* strains in a capsule formulation, with the potential to treat disorders associated with vaginal dysbiosis, including infertility, and ART failure.

SUPPORT: The study was funded by Freya Biosciences, ApS Fruebjergvej, 2100 Copenhagen, Denmark.

P-547 4:45 PM Tuesday, October 27, 2026

OOCYTE COHORT MATURITY INDEPENDENTLY PREDICTS FERTILIZATION AND BLASTULATION IN ICSI CYCLES.

Karyn Fu, B.S. (pending), anticipated 2027[1], Grace Chen, student[2], Hyang Park, M.S.[3], Kendy Phan, B.S.[3], Alisha Yeonha Lee, B.S.[3], Bethany Liu, B.S.[3] and Yufen Xie, D.PHIL., PH.D.[3], [1]Rice University, Houston, [2]Agoura High School, Agoura Hills, CA, [3]Incinta Fertility Center, Torrance, CA

OBJECTIVE: To assess whether oocyte cohort maturity, defined by the proportion of metaphase II (MII) oocytes retrieved, serves as an independent predictor of embryonic outcomes in intracytoplasmic sperm injection (ICSI) cycles.

MATERIALS AND METHODS: A retrospective analysis was conducted on 411 autologous ICSI cycles from 355 patients treated at a private fertility clinic between 2022 and 2025, utilizing sperm collected via masturbation. Oocytes were denuded immediately after retrieval and assessed for nuclear maturity. Oocyte cohorts were categorized by MII percentage: <30%, 30-49%, 50-75%, and >75%. Two-pronuclear (2PN) formation rate and blastulation rate served as primary outcomes. Binomial logistic regression models

were constructed, controlling for total oocytes retrieved, sperm type (fresh/frozen), sperm source (partner/donor), maternal age group, retrieval year, and embryologist.
RESULTS: Among the full sample, there was an 81% 2PN formation rate and a 56% blastulation rate. Across MII categories (<30% to >75%), 2PN formation rate increased from 67% to 86%, and blastulation rate increased from 34% to 59%. In covariate-adjusted models, relative to cohorts with >75% MII oocytes, odds of 2PN formation were significantly lower for cohorts with <30% MII oocytes (aOR: 0.26, 95% CI: 0.17-0.40), 30-49% MII oocytes (aOR: 0.47, 95% CI: 0.33-0.66), and 50-75% MII oocytes (aOR: 0.64, 95% CI: 0.54-0.76). A similar dose-response pattern was observed for blastulation, with lower odds in the <30% group (aOR: 0.32, 95% CI: 0.19-0.52), 30-49% group (aOR: 0.69, 95% CI: 0.51-0.92), and 50-75% MII group (aOR: 0.81, 95% CI: 0.71-0.92). Additional analyses found that cohorts with <50% MII showed significant declines in embryonic outcomes compared to higher-maturity cohorts.
CONCLUSIONS: Oocyte cohort maturity is a significant independent predictor of 2PN and blastocyst formation in ICSI cycles. Cohorts with fewer than 30% MII oocytes are likely to experience meaningfully reduced embryonic outcomes. Therefore, extremely low oocyte maturity should be regarded as a global indicator of compromised ovarian response quality. The clinical assumption that a small number of mature oocytes can reliably salvage a low-maturity cycle is not supported by these data. Therefore, clinicians should rigorously evaluate contributing factors, including stimulation protocol and trigger timing, and implement individualized strategies to improve the proportion of mature oocytes. Prospective, multicenter validation is warranted given the single-center, retrospective design of this study.
IMPACT STATEMENT: Oocyte cohort maturity represents a modifiable, readily assessable quality indicator in IVF cycle management. These findings support the integration of MII cohort percentage as a benchmark in stimulation protocol design and patient counseling. Clinicians should exercise caution against relying on a small number of mature oocytes in severely compromised cycles, and should instead prioritize thorough workup and protocol optimization to improve overall cohort quality before proceeding.

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OOCYTE DYSMORPHISM REDUCES EMBRYO YIELD BUT NOT GENETIC COMPETENCE: A SIBLING-OOCYTE ANALYSIS OF 163,658 OOCYTES FROM IVF/PGT-A CYCLES. Carlos Hernandez-Nieto, MD[1], Madura Vaidya, BA[2], Erynne Jackson, BA, MPH[3], Miriam A. Andrusier, MD, MPH[4], Albert Li, BA[3], Tamar Alkon-Meadows, MD[1], Loreli Mejia-Fernandez, MSc[5], Joseph A. Lee, BA[3], Alan B. Copperman, MD[4] and Tanmoy Mukherjee, M.D.[4], [1]Reproductive Medicine Associates of New York, New York, NY, [2]Reproductive Medicine Associates of New York, NY, [3]RMANY || US Fertility, New York, NY, [4]Icahn School of Medicine at Mount Sinai, New York, NY, [5]Astoria, NY

OBJECTIVE: To evaluate the influence of specific oocyte dysmorphisms on fertilization, blastulation, blastocyst biopsy, and embryo ploidy in a large sibling-oocyte analysis of autologous IVF/PGT-A cycles.
MATERIALS AND METHODS: The retrospective study was conducted at a single academic center and included a sibling-oocyte analysis of 8,795 IVF/PGT-A cycles in patients with ≥1 dysmorphic oocyte between 2016 and 2025. A total of 163,658 oocytes were analyzed; 122,001 MII oocytes were ICSI-injected. Dysmorphisms were classified as cytoplasmic, perivitelline space (PVS), polar body (PB), zona pellucida (ZP), vacuoles, Smooth Endoplasmic Reticulum clusters (SER), oocyte shape, and mixed abnormalities. Normal sibling oocytes served as reference. Giant, parthenogenic activated and immature oocytes were excluded. GEE models were used to account for oocyte clustering within cycles, adjusting for patient age, BMI, AMH, and treatment year.
RESULTS: The most prevalent dysmorphisms were vacuoles (5.3%), PVS (4.3%), ZP (3.8%), mixed (3.2%), PB (2.6%), and cytoplasmic (1.9%); SER clusters and shape each represented <0.5%. Overall fertilization, blastulation, biopsy, and euploidy rates were 83.8%, 75.6%, 54.2%, and 52.1%, respectively.
Several dysmorphisms were associated with reduced developmental outcomes. PB abnormalities demonstrated the greatest impairment, with reduced fertilization (aOR 0.59, 95%CI 0.53–0.65), blastulation (aOR 0.67, 95%CI 0.60–0.74), and biopsy (aOR 0.65, 95%CI 0.60–0.71). Mixed dysmorphisms demonstrated reduced fertilization (aOR 0.74, 95%CI 0.66–0.82, p<0.0001) and biopsy odds (aOR 0.87, 95%CI 0.80–0.93). PVS abnormalities had reduced fertilization (aOR 0.89, 95%CI 0.81–0.98), blastulation (aOR 0.91, 95%CI 0.84–0.99), and biopsy odds (aOR 0.91, 95%CI 0.85–0.98). Vacuoles showed reduced fertilization odds (aOR 0.90, 95%CI 0.83–0.98). ZP abnormalities displayed reduced blastulation odds (aOR 0.85, 95%CI 0.72–0.99).
Cytoplasmic, SER clusters, and abnormal shape were not associated with differences in developmental outcomes. No dysmorphism was associated with euploidy rate, aneuploidy, mosaicism, or embryo sex ratio.
CONCLUSIONS: Polar body, mixed, and PVS were associated with reduced fertilization and biopsy-eligible blastocyst formation, while vacuoles and ZP abnormalities showed more limited effects. Cytoplasmic, SER, and shape dysmorphisms were not associated with developmental outcomes. However, no dysmorphism influenced euploidy rate, suggesting that oocyte morphology primarily associates with embryo yield rather than genetic competence.
IMPACT STATEMENT: Oocyte dysmorphisms are not associated with an increased rate of embryo aneuploidy. Morphology grading continues to help counsel patients on expected embryo yield while reassuring that euploid embryos derived from dysmorphic oocytes retain reproductive potential.
SUPPORT: No financial aid was obtained for the realization of this abstract.

P-549 4:00 PM Tuesday, October 27, 2026

EFFECTS OF DIFFERENT CRYOPRESERVATION & THAW PROTOCOLS ON BLASTOCYST SURVIVAL AND PREGNANCY OUTCOMES. Rand El Sharaiha, MD[1], Mitra Sharifi, M.D.[2], Aileen Portugal, MD[3], Ashley Meyer, BS, MS[4], Haley Holtmann, BS[5], Alison Chen, BA, TS (ABB)[5], Julie Crawford, M.S.[6], Alexa Doyle, M.SC.[5], Dan Israel Lebovic, M.A., M.D.[7] and Ali Ahmady, PH.D.[8], [1]Infertility and Reproductive Medicine Center at Washington University School of, Saint Louis, OH, [2]Washington University School of Medicine, Saint Louis, MO, [3]Washington University School of Medicine, St Louis, MO, [4]Washington University in St Louis, [5]Barnes Jewish Hospital, [6]Washington University, Saint Louis, MO, [7]Center for Reproductive Medicine & Advanced Reproductive Technologies, Minneapolis, MO, [8]Washington University Fertility and Reproductive M, St Louis, MO

OBJECTIVE: To compare post-thaw survival, clinical intrauterine gestational (CIG) rate, and spontaneous abortion (SAB) rate across three blastocyst cryopreservation-thaw pairings.
MATERIALS AND METHODS: A retrospective analysis of 1,473 autologous frozen blastocyst transfer cycles was performed. Three protocols were compared: vitrification/rapid thaw (VF/RT, n=767), vitrification/ultra-rapid thaw (VF/UT, n=524), and Rapid vitrification/ultra-rapid thaw (RV/UT, n=182). Primary outcome was post-thaw survival. Secondary outcomes were CIG rate and SAB rate per patient with transfer. Chi-square analysis with Bonferroni correction was used for pairwise comparisons.
RESULTS: Post-thaw survival was comparable across all groups (VF/RT 99.1%, VF/UT 99.4%, RV/UT 100.0%; p=0.38). CIG rates differed significantly across groups (VF/RT 57.0%, VF/UT 64.1%, RV/UT 62.1%; p=0.036). Pairwise analysis revealed a significantly higher CIG rate in VF/UT versus VF/RT (p=0.042), while VF/UT vs RV/UT (p=1.00) and VF/RT vs RV/UT (p=0.73) did not differ significantly. SAB rates were comparable across all groups (VF/RT 8.0%, VF/UT 10.2%, RV/UT 6.8%; p=0.27).

Outcome	Vitrification/Rapid thaw (n=767)	Vitrification/Ultra-rapid thaw (n=524)	Rapid vitrification/Ultra-rapid thaw (n=182)	p value
Primary outcome				
Post-thaw survival *(survived / thawed)*	99.1% *760 / 767*	99.4% *521 / 524*	100.0% *182 / 182*	0.38
Secondary outcomes				
Clinical intrauterine gestation rate *(CIG / transfers)*	57.0% *405 / 711*	64.1% *322 / 502*	62.1% *110 / 177*	**0.036***
Spontaneous abortion rates *(SAB / transfers)*	8.0% *57 / 711*	10.2% *51 / 502*	6.8% *12 / 177*	0.27
Pairwise Comparison				
VF/RT vs VF/UT	57.0%	64.1%	—	**0.042***
VF/RT vs RV/UT	57.0%	—	62.1%	0.73
VF/UT vs RV/UT	—	64.1%	62.1%	1.00

CONCLUSIONS: Post-thaw blastocyst survival is uniformly high regardless of cryopreservation or thaw protocol. Ultra-rapid thaw applied to conventionally vitrified blastocysts was associated with significantly higher clinical pregnancy rates compared to the rapid thaw protocol. While no significant difference was observed between VF/RT and RV/UT, the observed trend suggests that a larger sample size may reveal potential advantages of rapid vitrification combined with ultra-rapid thaw. SAB rates were unaffected by protocol.
IMPACT STATEMENT: As IVF continues to evolve and newer methods of vitrification and thawing are used, understanding their effect on embryo viability and pregnancy outcomes is critical. This study demonstrates that ultra-rapid thaw is not only safe but may improve clinical pregnancy rates when applied to conventionally vitrified blastocysts.
SUPPORT: None

P-550 4:15 PM Tuesday, October 27, 2026

DISENTANGLING HIDDEN HORMONAL EFFECTS IN IVF: NON-LINEAR IMPACT OF ESTRADIOL AND PROGESTERONE ON OOCYTE AND EMBRYO COMPETENCE USING AI AND MORPHOKINETIC ANALYSIS. Tania Carrión Sisternas, PhD Student[1], Laura Carrión-Sisternas, PhD Student[2], Sandra Marqueño, MSc[2], Lorena Bori Arnal, PhD[2], Jose Bellver, Prof. PhD[1] and Marcos Meseguer, PhD[2], [1]University of Valencia & IVIRMA Global Research Alliance, IVIRMA Valencia, Valencia, Spain, [2]IVIRMA Global Research Alliance, IVIRMA Valencia, IVI Foundation, La Fe Health Research Institute, Valencia, Spain

OBJECTIVE:
To distinguish hormonal effects from intrinsic biological determinants of oocyte and embryo competence using Artificial Intelligence (AI) tools and morphokinetics, across autologous and oocyte donation cycles.

MATERIALS AND METHODS:
This retrospective study included 1,900 stimulation cycles (1,229 oocyte donation and 671 autologous), yielding 20,221 oocytes and 10,179 embryos. Oocyte competence was assessed using MAGENTA (including euploidy probability), and embryo competence using iDAScore v2 and morphokinetics. Estradiol (E2) and progesterone (P4) exposure were analysed using quartile-based stratification (Q1–Q4) to explore non-linear hormonal effects. Subgroup analyses were performed separately for autologous and oocyte donation cycles to account for differences in oocyte origin and clinical context. Multivariable linear regression models were applied for all outcomes, adjusting for oocyte age, BMI, number of MII oocytes, gonadotropin dose, E2 and P4.
RESULTS:
At the oocyte level, MAGENTA Score remained stable across E2 and P4 quartiles in autologous cycles, whereas in oocyte donation intermediate E2 (Q2) was associated with higher oocyte competence ($p<0.001$). Morphokinetic analysis showed a context-dependent effect of E2: in autologous cycles, high E2 (Q4) was associated with delayed early cleavage (t2–t7; $p<0.05$) but faster late development (t8–tEB), suggesting a biphasic effect on embryo timing. In donor cycles E2 effects were more heterogeneous, with a non-linear response across stages and no uniform directional pattern. iDAScore v2 in autologous cycles was mainly driven by maternal age (B=-0.079, $p<0.001$), with hormonal variables losing significance in multivariable models. In contrast, in oocyte donation, both intermediate E2 levels and higher stimulation dose were associated with reduced embryo quality ($p\leq0.011$). Regarding euploidy probability, high E2 was associated with a modest decrease in autologous cycles ($\Delta=-2\%$, $p<0.001$), while in donation cycles a non-linear pattern was observed, with peak euploidy at Q2 and reduction at higher E2 and P4 levels. Progesterone remained an independent negative predictor of euploidy across models.
CONCLUSIONS:
By integrating oocyte-to-blastocyst developmental dynamics, this study demonsrates that E2 and P4 exert non-linear, context-dependent effects on oocyte competence, embryo morphokinetics, and euploidy. Autologous outcomes are predominantly driven by maternal age, with hormonal exposure modulating developmental timing and euploidy to a lesser extent. In contrast, oocyte donation reveals a more evident non-linear hormonal window, particularly for E2, affecting both embryo competence and chromosomal potential.
IMPACT STATEMENT:
Leveraging a large-scale dataset and a dual analytical framework, this study demonstrates that hormonal context critically shapes reproductive outcomes beyond oocyte yield. Integrating advanced computational embryo and oocyte assessment with developmental timing analysis enables the disentanglement of hormonal and intrinsic biological effects, supporting a shift toward context-aware and truly personalized embryo evaluation in IVF.
SUPPORT: This study was funded by Instituto de Salud Carlos III (ISCIII) (PI24/00755) and Generalitat Valenciana (CIACIF2023/517).

P-551 4:30 PM Tuesday, October 27, 2026

HYALURONIC ACID–ENRICHED TRANSFER MEDIUM IS ASSOCIATED WITH REDUCED EARLY MISCARRIAGE IN SINGLE FROZEN EMBRYO TRANSFERS: A MULTICENTER ADJUSTED ANALYSIS OF 1569 CYCLES.
Aline R Lorenzon, B.SC., PH.D.[1], Mariana Nicolielo, BSc[2], Matheus Roque, MD, PhD[2], Claudia Gomes, MD, PhD[2], Thais S Domingues, MD, PhD[2], Michele Panzan, MD, PhD[2], Eduardo LA Motta, M.D.[2], Joao Pedro Junqueira Caetano, M.D., M.SC., PH.D.[3], Jose Roberto Alegretti, MSc[2] and Mauricio B Chehin, MD, PhD[2], [1]Huntington Medicina Reprodutiva - Eugin Group, Research and Development, São Paulo, Brazil, [2]Huntington Medicina Reprodutiva - Eugin Group, São Paulo, Brazil, [3]Huntington Pró-Criar Medicina Reprodutiva - Eugin Group, Belo Horizonte, Brazil

OBJECTIVE: To evaluate whether a hyaluronic acid–enriched transfer medium (EmbryoGlue®) improves clinical outcomes in single frozen embryo transfers.
MATERIALS AND METHODS: This multicenter observational cohort study included 1,569 single frozen embryo transfers (FET/SET) from 1,363 patients performed between March 2025 and March 2026 at two ART centers. All frozen–thawed single blastocyst transfers during this period were included. Transfers were performed using EmbryoGlue® or standard transfer medium according to routine practice. Both autologous and donor cycles were included. Primary outcomes were clinical pregnancy and miscarriage. Clinical pregnancy was defined as positive β-hCG with gestational sac and fetal heartbeat. Miscarriage was defined as loss of a clinical pregnancy before viability. Multivariable logistic regression models were used to estimate adjusted odds ratios (ORs), controlling for maternal age at transfer, PGT-A use, oocyte source (autologous vs donor), embryo quality (top quality: Gardner A/B grades vs low quality: any C grade), blastocyst developmental stage (day 5 vs non–day 5), number of prior embryo transfers, and clinic. Mixed-effects logistic regression models including a random intercept for patient were additionally fitted to account for repeated transfers.
RESULTS: Baseline characteristics were comparable between EmbryoGlue® and control groups for age (39.1±4.7 vs 39.1±4.6, p=0.63), BMI (23.5±3.0 vs 23.7±3.8, p=0.59), proportion of autologous cycles (80.3% vs 80.4%, p=0.94), endometrial preparation (99.8% vs 99.1%, p=0.19), day of transfer (Day 5: 73.8% vs 72.5%, p=0.62), PGT-A use (74.2% vs 72.6%, p=0.54), top-quality blastocysts (88.1% vs 91.1%, p=0.08), and number of previous transfers (1.6±1.0 vs 1.6±1.0, p=0.12). In unadjusted analyses, EmbryoGlue® was associated with a non-significant increase in clinical pregnancy (51.2% vs 46.7%, p=0.10) and a significant decrease in miscarriage (3.7% vs 8.4%, p=0.0081). In multivariable analysis, EmbryoGlue® was not significantly associated with clinical pregnancy (adjusted OR 1.18, 95% CI 0.95–1.47, p=0.145). Factors independently associated with higher clinical pregnancy included PGT-A use (OR 1.39, p=0.010), top-quality blastocysts (OR 1.88, p=0.001), and Day 5 transfer (OR 1.99, p<0.001). Mixed-effects modeling accounting for repeated transfers showed consistent results for EmbryoGlue® (approximate OR 1.19, 95% CI 0.99–1.44). Among β-hCG–positive transfers (n=929), EmbryoGlue® was independently associated with lower miscarriage risk (OR 0.47, 95% CI 0.24–0.91, p=0.026). PGT-A (OR 0.56, 95% CI 0.29–1.07) and Day 5 transfer (OR 0.59, 95% CI 0.33–1.07) showed non-significant trends toward reduced risk.
CONCLUSIONS: EmbryoGlue® use was not associated with a statistically significant improvement in clinical pregnancy rates, despite a consistent trend toward higher rates, and was independently associated with a significantly lower risk of early miscarriage.
IMPACT STATEMENT: EmbryoGlue® may influence early post-implantation pregnancy maintenance rather than implantation.
SUPPORT: No funding was received for this study.

P-552 4:45 PM Tuesday, October 27, 2026

FACTORS AFFECTING OOCYTE MATURATION AND ABNORMAL EMBRYO DEVELOPMENTAL FEATURES IN CYCLES WITH ≤3 RETRIEVED OOCYTES.
Vuslat Lale Bakir, MD, Hakan Kadir Yelke, M.SC., Yesim Kumtepe Colakoglu, M.Sc, Yücel Sahin, MD, Zeynep Celik Demirkol, MD and Semra Kahraman, Prof. MD, Istanbul Memorial Hospital, Istanbul, Turkey

OBJECTIVE: To evaluate the clinical and endocrine variables influencing oocyte maturation competence and identify predictive markers for embryonic developmental arrest in patients with diminished ovarian reserve (DOR) yielding ≤3 oocytes during assisted reproductive technology (ART) cycles.
MATERIALS AND METHODS: 2,828 ART cycles of 2,422 women (aged 20-42 years) with profound DOR, defined by the retrieval of ≤3 oocytes were analysed between 2020-2025. Cycles were categorized by oocyte maturation rates: >33%, 33–66%, and66<%. Basal day-2 FSH, LH, estradiol, progesterone, AMH, and antral follicle count (AFC). Controlled ovarian stimulation (COS) characteristics (gonadotropin dosage, duration, antagonist usage) and trigger-day dynamics (estradiol, LH, follicle count ≥17 mm) were assessed. Embryonic developmental milestones; fertilization failure and stage-specific arrest, were secondary outcomes. Kruskal-Wallis test was employed for statistical analysis
RESULTS: Oocyte maturation was significantly governed by baseline ovarian reserve and COS dynamics rather than chronological age. Maturation rates were significantly associated with basal AMH ($P<0.001$) and day-2 AFC ($P<0.001$). Peak trigger-day estradiol ($P<0.001$), total follicular cohort ($P<0.001$), and the number of pre-ovulatory follicles ≥17 mm ($P<0.001$) served as robust predictors of maturation efficiency. Furthermore, significant associations were observed for basal day-2 FSH (P=0.002), trigger-day LH levels ($P<0.001$), and the total duration of stimulation (P=0.038). Notably, maternal age did not demonstrate a significant independent correlation with maturation competence in this DOR cohort. Regarding aberrant embryo development, no clinical or laboratory parameters emerged as significant predictive factors.
CONCLUSIONS: In the context of extreme DOR, oocyte maturation is primarily dictated by intrinsic reserve and stimulation pharmacodynamics, superseding the effect of maternal age. Optimizing trigger timing and COS protocols is essential to maximize the yield of mature oocytes. Embryonic arrest appears independent of standard cycle parameters, suggesting underlying cytogenetic or intrinsic cellular etiologies
IMPACT STATEMENT: Identifying modifiable drivers of oocyte maturation in poor-prognosis patients enables individualized stimulation and improves mature oocyte yield and outcomes.
Clinical-Endocrine Determinants

Clinical / Laboratory Variable	P-value
Ovarian Reserve Biomarkers	
Basal AMH (ng/mL)	< 0.001
Antral Follicle Count (Day 2)	< 0.001
Basal FSH (Day 2; IU/L)	0.002
Trigger-Day Dynamics	
Peak Estradiol (pg/mL)	< 0.001
LH Levels (IU/L)	< 0.001
Total Follicular Count	< 0.001
Follicles ≥17 mm	< 0.001
COS Duration (Days)	0.038

Statistical significance: P < 0.05

SOCIAL MEDIA

P-553 11:15 AM Wednesday, October 28, 2026

WHAT YOUR ONCOLOGIST DIDN'T POST: A TIKTOK CONTENT ANALYSIS OF FERTILITY PRESERVATION FOR WOMEN WITH CANCER.
Shruti Agarwal, DO[1], Shelby Howard, MD[1], Mark P Trolice, MD, MBA[2] and Laurel Stadtmauer, MD, PHD[3], [1]UCF HCA Consortium of Greater Orlando, Orlando, FL, [2]University of Central Florida College of Medicine; Founder/Director, The IVF Center, Winter Park, FL, [3]UCF-HCA Consortium of Greater Orlando

OBJECTIVE:
To characterize TikTok content discussing fertility preservation (FP) for cancer patients and determine whether creator identity influences interaction rates.
MATERIALS AND METHODS:

Cross-sectional analysis of 100 non-sponsored English-language TikTok videos using #oncofertility, #fertilitypreservation, #fertilityandcancer, #cancerfertility, #fertilityaftercancer, #eggfreezingandcancer, #breastcancerandfertility, #chemoandfertility, and #youngandcancer (December 2020–March 2026). Two reviewers coded creator identity, cancer type, focus, tone, and 10 quality variables including timing, FP options, cost/insurance, reproductive endocrinology and infertility (REI) referral, and gonadotoxic risk. Interaction rate was defined as the mean of views, likes, and shares per video. Mann-Whitney U and ANOVA compared engagement. Interrater reliability was high (κ=0.96). p<0.05 was significant.

RESULTS:

Videos generated 16.1 million views, 1,381,762 likes, 13,650 comments, and 35,848 shares (mean 98 seconds, SD 106). Patient/cancer survivor creators accounted for 74% of videos; physicians accounted for 19%. Patient/cancer survivor videos had higher interaction rates than physician videos (75,051 vs. 9,495; p=0.029). Breast cancer was most represented (28%), while 50% of videos were not cancer specific. Hematologic cancer, though less represented (9%), generated the highest interaction rate. Personal journey narratives dominated (48%). Specific FP options were named in 16% of videos, pre-treatment timing in 11%, REI referral in 6%, and cost/insurance in 1%. Interaction rates did not differ by content focus (F=0.42, p=0.890).

TABLE 1. Cancer Type and Engagement in Oncofertility TikTok Videos (n=100)

Cancer Type	% Videos	Mean Interaction Rate
Not cancer-specific	50%	38,160
Breast cancer	28%	35,729
Hematologic cancer	9%	290,751
Gynecologic cancer	8%	19,197
Pediatric/Other	4%	13,401
Gastrointestinal	1%	120,060

CONCLUSIONS:

TikTok oncofertility content reached over 16 million views but was dominated by layperson narratives with limited clinical guidance. Cancer-specific information was frequently absent, and key counseling elements including FP options, referral pathways, and financial information were infrequently addressed. These findings contrast with American Society of Clinical Oncology (ASCO) recommendations for fertility counseling prior to cancer treatment.

IMPACT STATEMENT:

Cancer patients increasingly seek fertility information on TikTok, yet actionable guidance remains limited. High engagement among under-represented cancer populations highlights an opportunity for reproductive endocrinologists, oncologists, and professional societies to provide timely, evidence-based fertility preservation education during a critical treatment window.

SUPPORT: none

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P-554 11:30 AM Wednesday, October 28, 2026

BUILDING FAMILIES IN 60 SECONDS: A TIKTOK CONTENT ANALYSIS OF THIRD-PARTY REPRODUCTION. Shruti Agarwal, DO[1], Shelby Howard, MD[1], Mark P Trolice, MD, MBA[2] and Laurel Stadtmauer, MD, PHD[3], [1]UCF HCA Consortium of Greater Orlando, Orlando, FL, [2]University of Central Florida College of Medicine; Founder/Director, The IVF Center, Winter Park, FL, [3]UCF-HCA Consortium of Greater Orlando

OBJECTIVE: To evaluate prevalence, engagement, and clinical content of TikTok videos discussing third-party reproduction (TPR).

MATERIALS AND METHODS: Cross-sectional analysis of 120 non-sponsored English-language TikTok videos using #surrogacy, #gestationalsurrogate, #gestationalcarrier, #eggdonation, #eggdonor, #donorconceived, #spermdonation, #embryodonation, #reciprocalivf, and #thirdpartyreproduction (June 2020–March 2026). Two reviewers coded creator identity, modality, tone, and seven variables: medical risks, psychological screening, legal complexity, compensation, compensation accuracy versus American Society for Reproductive Medicine (ASRM) guidelines ($120,000-200,000), donor-conceived person rights, and clinic/agency promotion. Interaction rate equaled mean views, likes, and shares. Mann-Whitney U and ANOVA compared engagement. Interrater agreement was high (κ=0.96). p<0.05 was significant.

RESULTS: Videos generated 301.4 million views, 26.1 million likes, 173,020 comments, and 1,158,699 shares (mean 94 seconds, SD 129). Surrogates created 31%, intended parents 29%, donors 16%, donor-conceived persons 8%, agencies 8%, and physicians/clinics 4%. Gestational surrogacy was most common (41%), followed by egg donation (24%) and reciprocal IVF (18%). Personal narratives dominated (46%), followed by LGBTQ+ family building (22%). Compensation was discussed in 14.2% of videos; 5.6% cited figures consistent with published guidelines. Interaction did not differ across content categories (F=0.92, p=0.499).

TABLE 1. Clinical Content in Third-Party Reproduction TikTok Videos (n=120)

Clinical Variable	**%**
Psychological screening	0%
Medical risks	5.8%
Legal complexity	4.2%
Donor-conceived rights	5.0%
Compensation discussed	14.2%
Accurate compensation	5.6%

CONCLUSIONS: Third-party reproduction TikTok content reached over 300 million viewers but lacked critical clinical information. Psychological screening, medical risks, and legal considerations were rarely discussed. Compensation information was infrequently presented and seldom aligned with published guidelines. Physician and professional society representation was minimal.

IMPACT STATEMENT: Third-party reproduction content on TikTok reaches hundreds of millions of viewers, yet clinically relevant information remains limited. As utilization increases, reproductive specialists have an opportunity to provide accurate guidance on medical risks, screening, legal considerations, and compensation transparency.

SUPPORT: none

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P-555 11:45 AM Wednesday, October 28, 2026

ASSOCIATION BETWEEN FERTILITY-RELATED SOCIAL MEDIA EXPOSURE AND FERTILITY KNOWLEDGE IN A GENERAL OB/GYN POPULATION. Heather Wang, DO and Alicia Huckaby, DO, Mercy St. Vincent Medical Center

OBJECTIVE:

To evaluate the association between fertility-related social media exposure and fertility knowledge among reproductive-age patients in a general OB/GYN population and to assess its relationship with fertility-related anxiety.

MATERIALS AND METHODS:

A cross-sectional study was conducted among reproductive-age patients (18-40 years) presenting to an OB/GYN clinic and Labor and Delivery unit at a tertiary care teaching hospital. Participants voluntarily completed an anonymous survey assessing demographic characteristics, social media exposure, fertility knowledge using the Cardiff Fertility Knowledge Scale (CFKS), and fertility-related anxiety. Data were collected over a four-week period without the inclusion of patient identifiers. Descriptive statistics were used to summarize participant characteristics and CFKS scores. Associations between social media behaviors, fertility knowledge, and fertility-related anxiety were evaluated using generalized linear models. Group comparisons were performed using the Wilcoxon Mann-Whitney two-tailed test and Fisher's Exact test. Statistical significance was defined as $P < 0.05$.

RESULTS:

Among 109 participants included, the majority reported daily or more frequent social media use (90.8%). 99.1% of participants used at least one major platform. The median CFKS score was 76.9% (IQR 61.5-84.6), indicating moderate fertility knowledge. There were no significant associations between social media use ($P = 0.84$), frequency of exposure to fertility-related content ($P = 0.49$), or active information-seeking behaviors and CFKS scores ($P = 0.67$). In contrast, greater exposure to fertility-related content was associated with increased anxiety about fertility ($P = 0.03$) and actively seeking fertility-related information on social media was similarly associated with increased anxiety ($P = 0.009$).

CONCLUSIONS:

Fertility knowledge among a general OB/GYN population was moderate, as reflected by CFKS scores. Social media exposure was not associated with improved fertility knowledge; however, greater exposure and engagement were linked to higher levels of fertility-related anxiety. These findings suggest that social media may influence emotional perceptions of fertility more than objective understanding.

IMPACT STATEMENT:

As social media increasingly shapes patients' understanding of reproductive health, this study demonstrates that greater exposure is not associated with improved knowledge but is linked to higher levels of fertility-related anxiety. These findings emphasize the need for targeted, clinician-led interventions to address misinformation and improve reproductive health literacy.

SUPPORT: Not applicable

P-556 12:00 PM Wednesday, October 28, 2026

LIKES OVER LITERATURE: EVALUATING ACUPUNCTURE AND FERTILITY CONTENT ON SOCIAL MEDIA. Vanessa Kalinowska, MD[1], María Verónica Morales, M.D.[2] and Mary Ellen Pavone, MD, MSc[3], [1]Northwestern University Feinberg School of Medicine, Chicago, IL, [2]Chicago, IL, Bolivia, [3]Northwestern University, Chicago, IL

OBJECTIVE:

To evaluate the quality and reliability of short-form social media content related to acupuncture and fertility, including trying to conceive and infertility.

MATERIALS AND METHODS:

We performed a cross-sectional analysis of videos from TikTok and Instagram Reels addressing acupuncture in the context of fertility and conception. Videos were identified using the Apify scraping software and selected using predefined keywords related to acupuncture and fertility. Non-English videos and those lacking informational content were excluded. Video quality and reliability were assessed using modified DISCERN

(mDISCERN), Global Quality Score (GQS), and the Journal of the American Medical Association (JAMA) Benchmark criteria. Two independent reviewers evaluated all videos. Spearman correlation was used to assess associations between engagement (likes) and quality metrics. Kruskal-Wallis tests were used to compare quality scores across creator types.
RESULTS:
A total of 116 videos were included (67 TikTok, 49 Instagram) from March 2021 to March 2026. TikTok videos had a higher mean number of likes compared to Instagram (1,467.27 vs. 244.80). Most content was produced by female creators (TikTok: n=52; Instagram: n=36), with relatively few physician contributors (TikTok: n=3; Instagram: n=2). Non-physician healthcare professionals, including acupuncturists, chiropractors, and naturopathic practitioners, accounted for a substantial proportion of content (TikTok: n=20; Instagram: n=28), alongside commercial entities (TikTok: n=19; Instagram: n=11). Overall content quality was low across platforms. Mean mDISCERN scores (0-5 scale) were 0.64 for TikTok and 0.85 for Instagram. Mean GQS scores (1-5 scale) were 1.28 and 1.33, respectively. Mean JAMA Benchmark scores (0-4 scale) were 0.19 for TikTok and 0.53 for Instagram. Higher quality scores across all metrics were observed among hospital, medical practice, and physician-generated TikTok content ($p<0.001$). Similarly, higher JAMA scores were observed among these creator types on Instagram (H statistic=20.69, $p<0.001$). No significant association was identified between engagement (likes) and content quality.
CONCLUSIONS:
Short-form social media content related to acupuncture and fertility is predominantly low quality and lacks adherence to established standards for reliability and evidence-based information.
IMPACT STATEMENT:
Despite widespread engagement with fertility-related content on social media, most videos on acupuncture and conception are anecdotal and lack credible, evidence-based references, highlighting a critical need for improved dissemination of accurate reproductive health information.
SUPPORT: The authors have no relevant financial relationships, conflicts of interest, or disclosures to report.

GENETICS (3 OF 21)

P-557 11:15 AM Wednesday, October 28, 2026

PATHOGENIC GENETIC AND CLINICAL FINDINGS IN SPERM DONORS CONCEIVED OFFSPRING: A SINGLE-CENTER RETROSPECTIVE STUDY.
Roy Bitan, MD, MHA[1] and Itai Gat, MD[2], [1]Shamir Medical Center, Beer Yakov, Israel, [2]Shamir Medical Center, Lapid, Central, Israel

OBJECTIVE: To characterize exceptional findings (EFs) among donor-conceived offspring (DCOs) and evaluate the contribution of sperm donors (SDs) to these findings.
MATERIALS AND METHODS: This retrospective descriptive observational study included all EF notifications among DCOs reported to a single sperm bank between January 1, 2020, and December 31, 2025. SDs were categorized as local or foreign. EFs were identified prenatally, neonatally, or during childhood and classified as genetic or clinical based on the presence of a confirmed genetic diagnosis. Genetic findings were further evaluated to determine potential inheritance from the SD, and cases with confirmed donor-related transmission were identified. Additional data on donor reproductive output were collected, including number of recipient women, offspring, ongoing pregnancies, cryopreserved embryos, and remaining sperm vials. Descriptive statistics were used.
RESULTS: A total of 49 EF notifications were analyzed, including 7 (14.3%) involving local SDs and 42 (85.7%) involving foreign SDs. Genetic diagnoses were identified in 1 case (14.3%) among local SDs and 15 cases (35.7%) among foreign SDs. Confirmed donor-related inheritance was observed in 8 cases, all involving foreign SDs. Clinical findings without a confirmed genetic diagnosis accounted for 6 cases (85.7%) among local SDs and 27 cases (64.3%) among foreign SDs. Overall, 136 recipient women were linked to these SDs, accounting for 141 DCOs.
CONCLUSIONS: Approximately one-third of EF notifications were genetically confirmed, with donor-related inheritance identified in half of these cases. The majority of notifications were clinical findings without definitive genetic diagnosis, highlighting ongoing challenges in excluding donor-related etiology and emphasizing the need for structured evaluation and follow-up protocols.
IMPACT STATEMENT: This study highlights the clinical and regulatory importance of systematic monitoring of DCO, demonstrating that a substantial proportion of genetic findings may be attributable to SDs, with implications for donor selection, recipient counseling, and long-term safety in sperm donation programs.

P-558 11:30 AM Wednesday, October 28, 2026

MATERNAL AGE, BLASTOCYST MORPHOLOGY AND DAY OF DEVELOPMENT INFLUENCE ON LIVE BIRTH RATES AFTER EUPLOID BLASTOCYST TRANSFER.
Justina Beccar Varela, Physician[1], Claudio Bisioli Mr, B.S.[2], Romina Verdura, M.D.[3], Evelyn De Martino, BSc[1], Mercedes Papayannis, BSc[1], Fabio Sobral[4], Alejandro Oubina Mr, Physician[1], Marcos M. Horton, M.D.[1], Ignacio De Zuñiga, Physician[1] and Laura J Kopcow, MD[1], [1]Pregna Medicina Reproductiva, Buenos Aires, Argentina, [2]Buenos Aires, Argentina, [3]CAPITAL FEDERAL, Argentina, [4]Pregna Medicina Reproductiva, Ciudad de Buenos Aires, Argentina

OBJECTIVE: To evaluate the independent effect of maternal age, blastocyst day of development, and embryo morphology on live birth rates after frozen euploid blastocyst transfer.
MATERIALS AND METHODS: This retrospective cohort study included 1,009 euploid blastocyst transfer cycles performed at a single assisted reproduction center between January 2018 and March 2025. All cycles involved frozen euploid embryo transfers following PGT-A, with complete follow-up until delivery. The unit of analysis was the embryo transfer. Transfers of euploid blastocysts derived from autologous and donated oocytes were included. Maternal age (oocyte age) was categorized into four groups: <35, 35-37, 38-40 and ≥41 years. Blastocysts were classified by day of development (day 5 or day 6) and morphological quality as good (Gardner A or B) or low (Gardner C). The primary outcome was live birth per transfer. Associations were assessed using chi-square tests and multivariable logistic regression.
RESULTS: The overall live birth rate per transfer was 38.5%. The proportion of low-quality embryos increased with advancing maternal age, accounting for approximately 23% of embryos in women aged <35 years and up to 42% in women aged ≥41 years, with a corresponding decrease in good-quality embryos. In multivariable analysis, blastocyst day of development was independently associated with live birth. Day 6 blastocysts showed a significantly lower probability of live birth compared with day 5 blastocysts (OR 0.67, 95% CI 0.51–0.88; $p = 0.003$). Embryo morphology was also independently associated with outcome, with low-quality embryos demonstrating a reduced probability of live birth compared with good-quality embryos (OR 0.73, 95% CI 0.53–1.00; $p = 0.048$). Maternal age was not independently associated with live birth after adjustment, although a non-significant trend toward lower live birth rates was observed in women aged ≥41 years. No significant associations were identified between live birth and oocyte origin (autologous vs donated), oocyte status (fresh vs vitrified), or fertilization technique (IVF vs ICSI).
CONCLUSIONS: Blastocyst developmental timing and morphology, but not maternal age, independently predict live birth after euploid transfer, supporting their relevance for embryo selection and patient counseling in PGT-A cycles.
IMPACT STATEMENT: In euploid embryo transfer cycles, blastocyst day of development and embryo morphology appear to be stronger predictors of live birth than maternal age, highlighting their potential role in embryo selection and in counseling patients after PGT-A.
SUPPORT: No external funding was received. The authors declare no competing interests.

P-559 11:45 AM Wednesday, October 28, 2026

BEYOND ANEUPLOIDY: EXPANDING PGT-A WITH 2x LPWGS FOR ANEUPLOIDY, MOSAICISM, TRIPLOIDY, TARGETED CNVs, UPD, AND PARENTAL INFERENCE.
Mamad Ahangari, PhD[1], Tobias Wolfram, Phd[2], Michael Christensen, -[2], Jennifer Swift, M.Sc.[3], Mary Beth Rossi, B.S.[4] and Justin B Schleede, PhD[5], [1]Key West, FL, [2]Herasight, [3]Herasight Inc, Morrisville, NC, [4]Herasight Inc, Pittsboro, NC, [5]Raleigh, NC

OBJECTIVE:
To validate a 2x low-pass whole-genome sequencing PGT-A assay designed to expand embryo screening beyond standard aneuploidy testing through integrated copy-number, mosaicism, targeted CNV, triploidy, UPD, and parental-origin analysis.
MATERIALS AND METHODS:
The validation cohort included 71 biological specimens and 467 in-silico samples. Biological samples included 32 Coriell reference cell lines and 39 characterized day 5 to 7 trophectoderm biopsies. Samples were amplified from approximately 25 to 50 pg DNA using BioSkryb ResolveOME and sequenced on Illumina NovaSeq X Plus/NextSeq 2000 at approximately 2x. Analysis used GRCh38 alignment, 100 kb binning, GC/mappability normalization, HMM segmentation, SNP allele-balance, and parental-informative sites when available. In-silico analyses evaluated depth effects, targeted CNVs across eight loci at different depths, and mosaic models from 20% to 80% across 2x, 0.5x, and 0.1x. Reproducibility was assessed using three embryos processed in triplicate across three days. Parental sequence data were used to assign parent-of-origin for embryo aneuploidy events.

RESULTS:
At 2x, the assay correctly classified 45/45 whole-chromosome aneuploid samples, 20/20 euploid samples, 5/5 triploid samples, and 1/1 whole-genome isoUPD sample. Overall performance across euploid, aneuploid, triploid, and isoUPD classifications was sensitivity 1.00, specificity 0.95, precision 0.981, and accuracy 0.986. Genome-wide segmental CNVs ≥4 Mb were reliably detected, and sub-threshold events outside validated targeted loci were appropriately excluded from reporting. Whole-chromosome aneuploidy and reportable segmental CNVs remained detectable after downsampling to 0.5x and 0.1x. Triploidy and isoUPD detection depended on genome-wide allele-balance and homozygosity signals and was validated at 2x. Mosaic copy-number estimates scaled with modeled dosage, with 78/80 calls within ±5% of theoretical expectation at 2x. Mosaic copy-number SD was 0.03 at 2x, 0.028 at 0.5x, and 0.041 at 0.1x. Targeted CNV analysis supported detection of ≥1.5 Mb microdeletions and microduplications within validated loci, with depth-dependent performance characterized by downsampling. Inter-day reproducibility was 100% concordant. Clinically relevant regions, including 22q11.2 deletion, 22q11.2 duplication, and 15q11.2-q13 duplication, were correctly detected down to 0.1x. Parental-informative analysis further enabled parent-of-origin assignment for detectable aneuploidy and mosaic events in embryos with available parental short-read data.
CONCLUSIONS:
The Herasight PGT-A assay showed high analytical sensitivity, specificity, and reproducibility for expanded embryo genomic screening at 2x low-pass WGS. It supports detection of whole-chromosome aneuploidy, segmental imbalance ≥4 Mb, mosaicism, triploidy, targeted CNVs, and whole-genome isoUPD/molar-risk signatures from amplified trophectoderm biopsy DNA.

IMPACT STATEMENT: Higher-depth lpWGS with SNP allele-balance and parental-informative analysis expands PGT-A beyond conventional copy-number screening and enables more comprehensive embryo genomic assessment.
SUPPORT: The study was funded by Herasight LLC

P-560 12:00 PM Wednesday, October 28, 2026

AGREEMENT WITH ASRM RECOMMENDATIONS AND DRIVERS OF PGT-M DECISION-MAKING: REI PERSPECTIVES TO IMPROVE UTILIZATION.
Zeljana Djukic, MS[1], Savanie Maithripala, MSc[2], Sarah Walterman, MS[1], Holly Laduca, MS[3] and Eve C Feinberg, M.D.[1], [1]Northwestern University Feinberg School of Medicine, Chicago, IL, [2]Reproductive Genetic Innovations, Northbrook, IL, [3]Ambry Genetics, Aliso Viejo, CA

OBJECTIVE: To evaluate reproductive endocrinologists' agreement with ASRM PGT-M recommendations, characterize factors influencing clinical decision-making, and identify opportunities to enhance PGT-M utilization.
MATERIALS AND METHODS: An anonymous survey was distributed to members of the Society for Reproductive Endocrinology and Infertility and relevant reproductive endocrinology social media groups. Eligible participants included board-eligible or board-certified reproductive endocrinologists in the United States who did not have integrated genetic counselor services. The survey evaluated agreement with ASRM recommendations, perceived clinical scope, decision-making criteria, and factors influencing PGT-M recommendations. Statistical analyses were performed using IBM SPSS 30.0 to compare participant demographics to perceptions.
RESULTS: A total of 151 survey responses were analyzed. Most respondents supported PGT-M for adult-onset conditions (n = 112), non-disclosure testing (n = 106), and PGT-HLA (n = 95), while most disagreed with positions that endorse minimum reproductive risk thresholds (n = 99), restrict PGT-M to severe or life-limiting conditions (n = 102), or limit recommendations for conditions with variable penetrance or expressivity (n = 86). Agreement that PGT-M should be offered only when reproductive risk exceeds a specific threshold was inversely associated with agreement that PGT-M is appropriate for adult-onset conditions ($\rho = -0.405$, $p < .001$) and non-disclosure PGT-M ($\rho = -0.363$, $p < .001$). Agreement that PGT-M is appropriate for adult-onset conditions was positively associated with agreement with non-disclosure PGT-M ($\rho = 0.669$, $p < .001$) and PGT-HLA ($\rho = 0.230$, $p = .005$). Among the 75 respondents (49.7%) who agreed that offering PGT-M falls within their clinical scope, the most influential factors included patient-initiated testing requests (n = 28), access to genetic counseling (n = 30), and patients' desire to pursue PGT-M following clinical recommendation (n = 37). Additional factors influencing recommendations and supporting confidence were ascertained through open-response questions. These included patient preferences, access to genetic resources, and case-by-case contextual considerations. Access to genetic expertise and trust in testing accuracy were primary drivers of physician confidence.
CONCLUSIONS: Variation in agreement with ASRM recommendations underscores the complex and context-dependent nature of PGT-M decision-making, suggesting that guidelines alone may not resolve ethical ambiguity in challenging cases. The findings indicate two distinct approaches to PGT-M utilization: a broader, autonomy-supportive framework and a more restrictive, risk-based model. Physician decisions are primarily influenced by patient preferences, genetic complexity, and access to specialized expertise.
IMPACT STATEMENT: Enhancing PGT-M utilization will require strategies beyond guideline dissemination, such as improved access to genetic counseling, case-based education, and decision-support resources to strengthen physician confidence and promote consistent, patient-centered care.
SUPPORT: This study was funded by the Northwestern University Center for Genetic Medicine and a Clinical and Translational Science Award (CTSA) grant from the National Institutes of Health (NIH) UL1TR001422. UL1TR001422 funds NUCATS that provide REDCap access.

GENETICS (4 OF 21)

P-561 11:15 AM Wednesday, October 28, 2026

GENETIC TESTING IDENTIFIES SYNDROMIC DIAGNOSES IN PATIENTS WITH MÜLLERIAN ANOMALIES.
Hailie Ciomperlik, MD[1], Roni Zemet, MD[1], Jasey Chesnut, B.A.[2], Sheila Gunn, MD[1], Laura Detti, MD[1], V. Reid Sutton, MD[1] and Jennifer E Dietrich, M.D., M.Sc.[1], [1]Baylor College of Medicine, Houston, TX, [2]Medical Student, Houston, TX

OBJECTIVE:
To determine the diagnostic yield of clinical genetic testing (GT) in patients with Müllerian anomalies (MA) and characterize the diagnoses identified.
MATERIALS AND METHODS:
A retrospective cohort study included patients with MA evaluated at a single tertiary center (2011-2025). Patients identified by ICD-10 codes and underwent clinical GT were analyzed. GT modalities captured: karyotype, fluorescence in situ hybridization (FISH), chromosomal microarray (CMA), gene panel, single-gene sequencing, and proband/trio exome/genome sequencing. Variant interpretation followed contemporaneous classification. Pathogenic/likely pathogenic (P/LP) findings were classified as explanatory (disorders previously reported in MA), possible explanatory (syndromes with genitourinary (GU) involvement but no MA reports), or co-occurring (explaining extra-Müllerian features but not the MA); variants of uncertain significance (VUS) were reported separately. Negative results denote no P/LP variant or VUS by the modalities performed and do not exclude a genetic etiology, as not all GT was employed. Comparisons used Benjamini–Hochberg correction; none reached $q < 0.05$.
RESULTS:
294 patients with MA were identified; subtype distribution: Müllerian agenesis 26.2%, uterine didelphys 21.4%, complex 17.7%, bicornuate 10.2%, lower vaginal atresia 9.2%, septate 7.8%, unicornuate 4.1%, transverse vaginal septum 2%, cervical agenesis 1%, and longitudinal vaginal septum 0.3%. GT was performed in 102/294 (34.7%), with uptake by subtype 11.5–55.8%. Patients underwent a median of 2 modalities: karyotype 56, CMA 60, FISH 14, single-gene 14, gene panel 7, exome sequencing 18, and genome sequencing 2. P/LP findings were explanatory in 2/102 (2.0%; Cat Eye and Rubinstein-Taybi syndromes); possible explanatory in 5 (4.9%; Wolf-Hirschhorn, 16p11.2 deletion, STAR, Kabuki, and Beaulieu-Boycott-Innes syndromes); and co-occurring in 8 (7.8%; including 10q23 deletion, tetrasomy X, and USP9X-related disorder). VUS occurred in 11 (10.8%) and negative results in 76 (74.5%). Yields by modality: karyotype 3/56 (5.4%), CMA 5/60 (8.3%), and sequencing 9/36 (25.0%); two diagnoses were detected by both karyotype and CMA. P/LP yield varied by subtype: Müllerian agenesis 7.0%, uterine didelphys 8.3%, bicornuate 30.8%, lower vaginal atresia 40% and complex anomalies 33.3%. Yield was 3.8% in isolated vs 18.4% in non-isolated anomalies, and all co-occurring diagnoses in the latter group.
CONCLUSIONS:
Clinical GT identified explanatory or possible explanatory diagnoses in 6.9% and any P/LP finding in 14.7% of patients with MA. Per-test yield was highest for sequencing (25.0% vs 5.4% karyotype, 8.3% CMA), which identified most single-gene and co-occurring findings. Most GT was negative, although limited GT was performed overall. Given identified diagnoses were predominantly syndromic with multisystem implications, a tiered approach to GT in this population may be useful.
IMPACT STATEMENT:
GT yields explanatory, possible explanatory, and co-occurring diagnoses in patients with MA, informing reproductive counseling, longitudinal management, and offspring recurrence risk.
SUPPORT: No financial support to report.

P-562 11:30 AM Wednesday, October 28, 2026

ZONA PELLUCIDA DEBRIS CYTOGENETICS AND TROPHECTODERM RE-BIOPSY VARIABILITY IN MOSAIC HUMAN EMBRYOS.
Jack H Cottrell, BSc[1], Minglei Bian, PH.D.[2], Manuel Viotti, PH.D.[3] and Liang Yu, M.H.A., M.S., PH.D.[4], [1]Wheaton, IL, [2]Virgina Health Sciences at Old Dominion University, Norfolk, VA, [3]Fontis Genomics and Zouves Foundation for Reproductive Medicine, [4]Eastern Virginia Medical School, Norfolk, VA

OBJECTIVE:
Mosaicism in human preimplantation embryos is increasingly recognized as a clinically significant finding, yet the mechanisms by which mosaic embryos may correct or exclude aneuploid cell populations remain poorly understood. This study sought to characterize the cytogenetic identity of perivitelline debris within empty zona pellucida alongside multiple trophectoderm re-biopsies, exclusively in confirmed mosaic embryos, to investigate whether excluded perivitelline material reflects a selective process of aneuploid cell exclusion.
MATERIALS AND METHODS:
Ten discarded frozen mosaic embryos were thawed and subjected to three additional PGT-A analyses each: the empty zona pellucida with interior debris, a secondary trophectoderm biopsy, and a tertiary trophectoderm biopsy. Embryos were physically separated from their zona pellucida prior to sample collection. All samples were analyzed using whole genome amplification and next-generation sequencing on the NextSeq platform. In this pilot study, formal statistical testing was not conducted given the exploratory design; findings are descriptive and preliminary but may provide clinically relevant insights to guide future investigation.
RESULTS:
All ten zona pellucida samples yielded conclusive PGT-A results. No uniform pattern of aneuploid enrichment was observed, arguing against a universal selective exclusion model. Two embryos demonstrated wholly distinct aneuploid profiles between their zona pellucida debris and trophectoderm, raising the possibility of concurrent independent aneuploid cell populations within individual mosaic embryos. A morphological dichotomy between sparse and cell-rich debris groups aligned closely with cytogenetic outcomes, with both fully aneuploid zona pellucida results originating from cell-rich embryos. None of the ten embryos produced identical results across all three trophectoderm biopsies, and 60% yielded at least one euploid re-biopsy.
CONCLUSIONS:
These findings do not support a uniform model of selective aneuploid exclusion but reveal meaningful heterogeneity in perivitelline debris cytogenetics and morphology across mosaic embryos. Debris morphology may carry biological information about underlying chromosomal dynamics, and discordance across three trophectoderm biopsies reinforces the limitations of single biopsy PGT-A.
IMPACT STATEMENT:
This study offers a reproducible framework for cytogenetic characterization of perivitelline debris in confirmed mosaic embryos. Visual assessment of zona pellucida debris morphology and cytogenetics may serve as clinically useful adjuncts to standard PGT-A interpretation, with implications for improving prediction of mosaic embryo reproductive potential.

P-564 12:00 PM Wednesday, October 28, 2026

BEYOND THE TWO PRONUCLEI: SIGNIFICANT EUPLOIDY POTENTIAL OF EMBRYOS WITH ZERO PRONUCLEI AND THE SUPERIORITY OF TIME-LAPSE SYSTEMS IN CAPTURING ABNORMAL FERTILIZATION EVENTS.
Lívia De Castro Onoda, BSc[1], Caroline Zulim Berton, BSc[2], Thais Feitosa, BSc[1], Luana Barbosa Quiroga, BSc[1], Ivan Henrique Yoshida, BSc, MSc[1], Emerson Barchi Cordts, MD, PhD[1] and Caio Parente Barbosa, MD, PhD[3], [1]Instituto Ideia Fertil de Saúde

Reprodutiva, São Paulo, Brazil, [2]Santo Andre, SP, Brazil, [3]Instituto Ideia Fertil de Saúde Reprodutiva, Santo André, Brazil

OBJECTIVE:
To investigate the incidence of abnormal fertilization (0PN, 1PN and 3PN) and their chromosomal status across different culture systems (conventional versus time-lapse).
MATERIALS AND METHODS:
A retrospective cohort study was conducted including 12,599 blastocysts from ICSI cycles performed between 2023 and 2026. Embryos were cultured in either conventional incubators (K-Systems) or time-lapse systems (EmbryoScope plus) until the blastocyst stage (D5 to D7). Genetic analysis was performed by NGS plataform, after PGT-A to assess ploidy status. Statistical analysis utilized Generalized Linear Models (GLM) with a binomial distribution and random effects by patient to account for data dependency within embryo cohorts. Associations were quantified using Odds Ratios (OR) with 95% confidence intervals.
RESULTS: The sample showed a predominance of 2PN fertilizations (96.45%), while abnormal fertilizations (0PN, 1PN, and 3PN) accounted for 3.55%. Time-lapse systems demonstrated superior diagnostic accuracy, capturing a significantly higher percentage of abnormal fertilizations compared to conventional culture (4.3% vs 3.4%; $p<0.05$). This suggests improved detection of transient pronuclear events that go unnoticed in conventional settings. Regarding ploidy, 2PN embryos maintained the highest euploidy/diploidy rate (36.2%). However, 0PN embryos exhibited a unique biological profile: in young patients (≤35 years), their euploidy rate was statistically comparable to 2PN embryos, declining only at advanced maternal ages. In contrast, 1PN and 3PN embryos showed consistently inferior performance, with euploidy rates approaching zero in patients aged ≥40 years ($p<0.001$). Interaction analysis confirmed that maternal age is the primary exclusionary factor for reproductive potential in abnormal zygotes, while morphological quality (Gardner criteria) acted as a secondary predictor of success.
CONCLUSIONS: Fertilization morphology should not be the sole criterion for embryo disposal. While 1PN and 3PN embryos carry a poor prognosis, 0PN zygotes represent a valuable source of euploid embryos, particularly in younger patient cohorts. The use of time-lapse is essential to refine this screening, ensuring accurate fertilization diagnosis. The reproductive potential of abnormal embryos is "non-negligible," and clinical management should be individualized, integrating morphokinetic and genetic analysis.
IMPACT STATEMENT: This study provides robust evidence that 0PN-derived embryos possess significant genetic viability, especially in younger patients. Furthermore, it demonstrates that time-lapse monitoring systems enhance diagnostic accuracy by capturing abnormal fertilization events that would otherwise remain undetected in conventional culture. These findings challenge traditional automatic disposal protocols and reinforce the need for a personalized medicine approach to optimize success rates per initiated cycle.
SUPPORT: There is no financial support.

GENETICS (5 OF 21)

P-565 11:15 AM Wednesday, October 28, 2026

PRENATAL SCREENING AFTER SUCCESSFUL MOSAIC EMBRYO TRANSFER: A CASE UTILIZING PCFDNA ANALYSIS TO AID IN PATIENT-DECISION MAKING. Andrea Pirages, Ms, CGC[1], Lauren Eisemann, MS, CGC[2], Guadalupe Rodriguez Contreras, MGC, CGC[3] and Matthew M Meredith, PhD, FACMG[4], [1]Myriad Genetics, Rockford, IL, [2]Needham Heights, MA, [3]University of Nebraska Medical Center, Omaha, NE, [4]Myriad Genetics

OBJECTIVE: Studies have demonstrated positive reproductive outcomes following the transfer of mosaic embryos screened via preimplantation genetic testing for aneuploidy (PGT-A). It has also been shown that the type and extent of mosaicism can impact outcomes. As knowledge around mosaic embryos has improved, there has been an increase in the transfer of low-level mosaic embryos, especially in instances where no euploid embryos are available. After a mosaic embryo implants, diagnostic testing via amniocentesis is often recommended over other prenatal aneuploidy testing, i.e. prenatal cfDNA (pcfDNA). This is for several reasons but most notably being 1) both pcfDNA and PGT-A are screening placental DNA compared to fetal DNA and 2) pcfDNA is not universally available for additional aneuploidy analysis outside of the traditional chromosomes. IVF patients often decline amniocentesis due to risk of complications, especially following complex journeys to achieve pregnancy. With the ability of pcfDNA screening laboratories to offer aneuploidy analysis to cover all chromosomes, pcfDNA may be an option for patients post mosaic embryo transfer. This abstract presents a compelling case in which pcfDNA screening and ultrasound were utilized for patient decision making regarding diagnostic testing post transfer of a known mosaic embryo.
MATERIALS AND METHODS: Patient was referred to genetic counseling post successful transfer of an embryo showing mosaic monosomy 3 on PGT-A. After counseling on differences between screening vs diagnostic testing, patient elected pcfDNA through the Prequel Prenatal screen including a panel on rare autosomal aneuploidies covering all chromosomes. Sample was collected at 12 weeks 0 days gestation. Results retuned screen negative for all aneuploidies. Anatomy ultrasound was completed at 21 weeks 0 days and showed no evidence of fetal anomalies or placental complications. Due to negative pcfDNA results and an unremarkable ultrasound, patient declined amniocentesis. Neonatal karyotype was offered after delivery but is not planned at this time.
RESULTS: Notation of a known mosaic monosomy 3 embryo transfer on screen order triggered manual review of raw data by laboratory directors, specifically focusing on chromosome 3. Laboratory directors observed no evidence of aneuploidy (monosomy or otherwise) involving chromosome 3, including no evidence of mosaicism. They also observed no evidence of possible partial involvement of chromosome 3. Therefore, a negative result was issued for chromosome 3, as well as for the remainder of the screen.
CONCLUSIONS: Literature has shown that the vast majority of pregnancies following positive mosaic PGT-A findings will have normal diagnostic results. While diagnostic testing via amniocentesis is still the gold standard in instances of mosaic embryo transfers, due to the availability of expanded aneuploidy analysis, pcfDNA may be a viable option for patients who desire additional genetic insights but decline invasive testing in pregnancy.
IMPACT STATEMENT: This case report demonstrates an opportunity for patients and providers to consider pcfDNA with expanded analysis in instances of mosaic embryo transfers.
SUPPORT: none

P-566 11:30 AM Wednesday, October 28, 2026

UPTAKE AND EARLY IMPRESSIONS OF PRENATAL CELL-FREE DNA AT EARLIER GESTATIONAL AGE IN THE REI SETTING. Lauren Eisemann, MS, CGC[1], Andrea Pirages, Ms, CGC[2], Ronit Lebor, MS, CGC[3] and Catherine Wicklund, MS, CGC[4], [1]Myriad Genetics, Needham Heights, MA, [2]Myriad Genetics, Rockford, IL, [3]Myriad Genetics, Philadelphia, PA, [4]Myriad Genetics

OBJECTIVE: The majority of REI clinicians have not frequently ordered prenatal cell-free DNA (pcfDNA) for their patients as most pcfDNA screens are validated for use in pregnancies >10 weeks gestation and because patient care is typically transferred to an Ob/Gyn at approximately 8-9 weeks. In November of 2024, a whole genome sequencing based pcfDNA aneuploidy screening assay that utilizes fetal fraction (FF) amplification became clinically available at an earlier gestational age (EGA=8w0d – 9w6d gestation). With that, more REIs now may consider offering it prior to patient transfer. We aimed to describe the types of healthcare clinicians, including those in the REI setting, ordering pcfDNA at EGA and to understand which clinicians were more likely to shift their ordering from 10+ weeks gestation to EGA.
MATERIALS AND METHODS: A retrospective analysis was performed on pcfDNA screening orders received between December 2024-March 2026 in patients aged ≥18 years and compared to orders received in the prior 16 months. The following ordering clinician types were examined: Obstetrics & Gynecology (Ob/Gyn), Family Medicine, Primary Care, Maternal Fetal Medicine (MFM), Genetics, and Reproductive Endocrinology and Infertility (REI). To determine which clinicians were more likely to order pcfDNA at EGA and which clinician types were more likely to shift their ordering to EGA, total ordering volume of pcfDNA at EGA and the ratio of pcfDNA screening ordered at 10+ weeks vs at EGA were compared across clinician types. Select clinicians were asked to share their thoughts on pcfDNA screening in the REI population.
RESULTS: Of the six clinician types, Ob/Gyns had the highest volume of pcfDNA screens at EGA, making up ~90% of all EGA screens ordered. Although REI clinicians accounted for a very small proportion of pcfDNA orders both prior to and after EGA launch (0.19% and 0.88%), they demonstrated the largest increase in proportion of EGA orders (>4-fold). REI clinicians also had the highest percentage of pcfDNA screens ordered at EGA at 65.1%. When REI clinicians were asked in what instances they are utilizing pcfDNA screening at EGA, one shared “Working in an REI clinic puts us in a unique position—we often know the exact timing of conception and can identify pregnancies earlier than in spontaneous cases.... our patients typically transition out of care around 10 weeks gestation; we aim to order pcfDNA screening at the earliest appropriate time.” Another shared “Offering pcfDNA at ≤10 weeks allows earlier follow-up, including timely referral to MFM for diagnostic testing or more detailed ultrasound surveillance.”
CONCLUSIONS: This study provides a preliminary analysis of ordering patterns of pcfDNA at EGA, especially in the REI space. Surveyed clinicians conveyed the benefit of ordering pcfDNA screening in the REI space. The ordering patterns observed here, as well as the initial query of clinician opinions, underscore the importance of future studies aimed at defining the clinical value of EGA and pcfDNA for REIs and how these tools ultimately shape clinician workflows, diagnostic strategies, and patient experiences.
IMPACT STATEMENT: Initial impressions demonstrate that pcfDNA could be useful in the REI space.

P-567 11:45 AM Wednesday, October 28, 2026

CHEK2 MUTATION CARRIERS DEMONSTRATE EXCEPTIONAL OVARIAN RESERVE: A CASE SERIES FROM AN ACADEMIC ONCOFERTILITY PROGRAM. Ecem Esencan, M.D.[1], Elnur Babayev, M.D., M.SC.[2] and Kara N. Goldman, M.D.[3], [1]Northwestern University Feinberg School of Medicine, Obstetrics and Gynecology, Reproductive Endocrinology and Infertility, Chicago, IL, [2]Northwestern University, Chicago, IL, [3]Northwestern University Feinberg School of Medicine, Chicago, IL

OBJECTIVE: CHEK2 (checkpoint kinase 2) is a DNA damage checkpoint regulator and tumor suppressor gene implicated in breast, colorectal, thyroid, and prostate cancer. Genome-wide association studies identified CHEK2 as a genetic locus influencing natural menopause with a nearly 3.5-year delay. Preclinical models suggest CHEK2 deficiency reduces age-related follicular atresia and enhances ovarian stimulation response, supporting a protective role in reproductive aging and ovarian reserve. Yet limited data exist on reproductive outcomes in human carriers. We present a case series with two objectives: (1) to propose that unexpectedly high ovarian reserve in patients with a CHEK2-associated cancer history should prompt genetic screening; (2) to advocate for proactive fertility preservation counseling, including PGT-M discussion, at the time of CHEK2 disclosure.
MATERIALS AND METHODS: Retrospective case series of 11 patients with confirmed CHEK2 pathogenic variants, some with concurrent mutations, evaluated at an

academic oncofertility program between 8/2023 and 2/2026. Ovarian reserve and stimulation cycle parameters were abstracted. Patients with incomplete data, recent OCP use, or active endometriosis were excluded.
RESULTS: Eleven CHEK2 mutation carriers were included; five also carried mutations in BRCA1, BRCA2, ATM, or APC. AMH values ranged from 5.6–14.0 ng/mL, markedly elevated for age. One patient was over 40 with AMH exceeding the 95th percentile for age at two different age points (5.7 ng/mL at 44; 5.6 ng/mL at 47). Median age at first retrieval was 34 years, with oocyte yields of 33–57 per cycle. Additional findings included: (1) 9/11 patients were high responders (AFC >15, AMH >3.5 ng/mL, or >20 eggs/cycle), many with concurrent with breast cancer diagnosis; (2) one patient maintained AMH of 14 ng/mL post-chemotherapy; (3) CHEK2 testing was not performed at initial fertility preservation in multiple patients; and (4) PGT-M counseling was not uniformly offered.
CONCLUSIONS: CHEK2 carriers occupy a unique intersection of oncologic and reproductive medicine. The dual biology with cancer risk alongside attenuated follicular atresia and delayed ovarian aging creates a time-sensitive clinical opportunity. Unexpectedly high ovarian reserve in patients with relevant cancer histories should prompt CHEK2 screening. Proactive REI referral and fertility counseling, including PGT-M, should be integrated into standard post-disclosure care at genetic diagnosis, not deferred until after cancer treatment.
IMPACT STATEMENT: As ovarian reserve shapes endocrine aging and systemic health, this case series positions CHEK2 at a novel frontier spanning oncology, reproductive medicine, and the biology of aging.
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P-568 12:00 PM Wednesday, October 28, 2026

PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY IS INDEPENDENTLY ASSOCIATED WITH HIGHER CESAREAN DELIVERY RATES IN NULLIPAROUS IVF PATIENTS. Kaitlin A Doody, M.D. and Kevin J. Doody, M.D., CARE Fertility, Bedford, TX

OBJECTIVE:
To determine whether preimplantation genetic testing for aneuploidy (PGT-A) is independently associated with cesarean delivery rates among nulliparous women achieving singleton live birth after embryo transfer, after adjustment for known maternal and fetal risk factors.
MATERIALS AND METHODS:
Retrospective cohort study using the national SARTCORS database analyzing nulliparous patients with singleton live birth after single embryo transfer from 2016 to 2023. Multivariable logistic regression and adjusted risk difference (ARD) models with 95% confidence intervals evaluated the independent effect of PGT-A usage on mode of delivery. Models controlled for maternal age category, pregnancy BMI, gestational age at delivery, and birth weight.
RESULTS:
PGT-A use was associated with a statistically significant increase in cesarean delivery rate. The adjusted predicted cesarean rate was 40.6% (95% CI 38.6–42.6%) without PGT-A versus 44.6% (95% CI 42.6–46.7%) with PGT-A, yielding an adjusted risk difference of +4.0% (95% CI 3.2–4.9%). The corresponding adjusted odds ratio was 1.19 (95% CI 1.13–1.25).
This modest but independent association persisted after accounting for stronger risk factors including advanced maternal age, maternal obesity, preterm delivery, and high birth weight.
CONCLUSIONS:
In this large national cohort of nulliparous IVF patients, PGT-A use is independently linked to a higher cesarean delivery rate. The finding is novel and counter-intuitive given that PGT-A is intended to optimize embryo selection. Possible explanations include greater patient or provider risk aversion, increased antenatal surveillance, or differences in clinical management among couples electing PGT-A. As PGT-A utilization continues to expand worldwide, these data highlight the importance of counseling patients about potential downstream obstetric implications and warrant further investigation into the behavioral and systems-level mechanisms underlying this association.
IMPACT STATEMENT:
In nulliparous IVF patients with singleton live birth, PGT-A use was independently associated with a modest but significant increase in cesarean delivery risk.
Table 1 Adjusted Predicted Cesarean Delivery Rates and Risk Differences in Nulliparous IVF Singleton Live Births (2016–2023)

Factor	Category	Predicted Cesarean Rate (95% CI)	Adjusted Risk Difference (95% CI)	Adjusted Odds Ratio (95% CI)
PGT-A Usage	No PGT-A (reference)	40.6% (38.6–42.6)	—	
	Yes PGT-A	44.6% (42.6–46.7)	+4.0% (3.2–4.9)	1.188 (1.13-1.25)

GENETICS (6 OF 21)

P-569 11:15 AM Wednesday, October 28, 2026

A HOMOZYGOUS NONSENSE PATHOGENIC VARIANT IN ZONA PELLUCIDA 1 (ZP1) GENE ASSOCIATED WITH EMPTY FOLLICLE SYNDROME. Mariam Barseghyan, MD, MSc[1], Leah Ginn, DO[2], Hayk Barseghyan, PhD[3], Lynn P Chorich, MA[2], James Knight, PhD[4], Suleena K Kalra, MD, MSCE[5], Clarisa R Gracia, MD, MSCE[5], Christos Coutifaris, M.D., PH.D.[5] and Lawrence C Layman, M.D.[2], [1]Medical College of Georgia Augusta University, Augusta, GA, [2]Medical College of Georgia at Augusta University, Augusta, GA, [3]Center for Genetic Medicine Research, Children's National Hospital, Washington, DC, [4]Yale University School of Medicine, [5]University of Pennsylvania, Philadelphia, PA

OBJECTIVE:
To identify clinically significant gene variants in a patient with genuine empty follicle syndrome (GEFS).
MATERIALS AND METHODS:
Genome sequencing was conducted to capture both coding and non-coding structural variants in a patient with GEFS. Variant annotation, filtering, and prioritization were conducted using the Franklin by QIAGEN platform. Variants were curated based on the American College of Medical Genetics and Genomics and Association for Molecular Pathology (ACMG/AMP) guidelines. Sanger sequencing was performed to confirm the variant of interest using the SeqStudio Genetic Analyzer. In silico, pathogenicity assessment was also conducted and the SWISS-MODEL bioinformatic tool was used to model the truncated protein.
RESULTS:
The patient is a 33-year-old Italian female G0 with a history of infertility and menses every 30-40 days treated with four cycles of ovulation induction/intrauterine insemination. Two subsequent IVF cycles resulted in adequate stimulation, with 30 to 40 follicles in each cycle, but yielded only two and one oocytes, respectively, that quickly degenerated. There was a family history of infertility in her sister, but no known consanguinity. DNA sequencing demonstrated a rare, homozygous likely pathogenic nonsense ZP1 c.628C>T (p.Q210Ter) variant, encoding zona pellucida glycoprotein 1 (ZP1). The predicted protein would be truncated at amino acid 210 of this 638 amino acid protein and would lack Trefoil, ZP-N, ZP-C, consensus furin cleavage site, and the transmembrane domains. Modeling studies showed that these domains are necessary for polymerization. ZP1 variants are strongly associated with female infertility caused by oocyte maturation defect and empty follicle syndrome. This rare variant was predicted to undergo nonsense mediated decay, which could not be studied since ZP1 is not expressed in WBCs and was absent in the gnomAD database.
CONCLUSIONS:
ZP1 c.628C>T (p.Q210Ter) is a rare, pathogenic, homozygous nonsense variant, predicting a truncated protein implicated in a GEFS.
IMPACT STATEMENT:
We identified a *ZP1* c.628C>T pathogenic variant in a patient with GEFS, in whom there is no history of consanguinity.
SUPPORT: None

P-570 11:30 AM Wednesday, October 28, 2026

PGT-A IN OVER 340,000 EMBRYOS REVEALS AGE-DRIVEN ANEUPLOIDY, CHROMOSOME-SPECIFIC VULNERABILITY, AND THE DOMINANT IMPACT OF EMBRYO DEVELOPMENTAL STAGE ON IVF OUTCOMES. Dr. Fernanda Pacheco, M.D.[1], Carol Lynn Curchoe, PhD, HCLD[2] and Nabil Arrach, Ph.D.[3], [1]Progenesis, Hollywood, FL, [2]Progenesis, La Jolla, CA, [3]Fertility & Genetics, CA

OBJECTIVE:
To evaluate the biological and clinical performance of preimplantation genetic testing for aneuploidy (PGT-A) using the largest clinical dataset reported by a PGT-A laboratory, and to assess the impact of maternal age, embryo characteristics, and developmental timing on reproductive outcomes.

MATERIALS AND METHODS:
This retrospective cohort study analyzed 344,143 embryos assessed by next-generation sequencing-based PGT-A (2017–2025). Embryo ploidy, chromosomal complexity, and chromosome-specific aneuploidy were evaluated across maternal age groups. Morphology grading and clinical outcomes from >5,000 transfers were harmonized. Implantation and live birth rates were analyzed by embryo developmental stage (Day 5–7) and morphology and compared to SART 2023 non-PGT benchmarks.

RESULTS:
Euploidy declined with maternal age from 67.6 % in patients <35 to ~23.7% in ≥42. The number of chromosomes affected per embryo increased with age, with the majority of embryos having 1 single affected chromosome for patients <35, to higher rates of embryos with ≥3 abnormalities for patient in 42 years old or over, consistent with age-related defects in DNA replication and chromosome segregation. Chromosome-specific analysis showed that chromosomes 15, 16, 21, and 22 had the highest aneuploidy frequencies (~7–12%), consistent with distributions reported in prenatal and miscarriage studies, suggesting these chromosomes are inherently more prone to segregation errors. Morphology correlated with outcome, with AA/AB embryos demonstrating higher implantation (~75%) and clinical pregnancy (~60%) compared to CC embryos 56% implantation and 36% pregnancy. However, embryo developmental timing had a greater impact: Day 5 transfers achieved implantation ~72% and live birth ~60%, compared to Day 6 (~60%; ~42%) and Day 7 (~34%; ~23%).
Clinical pregnancy and live birth rates declined modestly with age despite PGT-A (live birth ~59% in <35 vs ~42% in ≥42), following trends consistent with SART population data. However, absolute outcomes remained substantially higher than non-PGT cycles (≥42: ~42% vs ~7%).

CONCLUSIONS:
This largest reported PGT-A dataset confirms that maternal age influences both the prevalence and complexity of aneuploidy, reflecting underlying cellular aging processes. While PGT-A improves embryo selection, age-related declines in clinical outcomes persist.

IMPACT STATEMENT:
This large-scale dataset enables prediction of clinical outcomes through integration of age, embryo ploidy, morphology, and developmental timing. These findings support a data-driven approach to embryo prioritization and highlight that PGT-A improves outcomes while preserving biological trends observed in broader reproductive and prenatal populations.
SUPPORT: The authors are employees of the company that conducted this study. Data were collected retrospectively from anonymized records generated during the routine course of clinical care.

P-571 11:45 AM Wednesday, October 28, 2026

NORMAL ONGOING PREGNANCY AFTER TRANSFER OF AN EMBRYO DIAGNOSED WITH MONOSOMY 5 ON PGT-A: A CLINICAL CONTROVERSY.
Ana Carolina de Souza De Souza Mangrich, M.D.[1], Dr. Pedro AA Monteleone, M.D., Ph.D[1], Alecsandra P Gomes, BSc[1], Carlos Augusto Zarate Nissel, M.D.[1], Patricia Florido, M.D.[1], Priscila Pupo, MD[1], Luciana Ayres de oliveira Lima Sr., M.D.[1], Brenda Nogueira, M.D.[1], Victor Rega, M.D.[1] and Luana Sócio Nissel, Medical Student[2], [1]Monteleone Human Reproduction Center, São Paulo, Brazil, [2]Pontifícia Universidade Católica do Paraná

OBJECTIVE: To report an ongoing pregnancy following transfer of an embryo diagnosed as monosomy 5 by PGT-A, highlighting the clinical controversy regarding the predictive value of trophectoderm biopsy.
MATERIALS AND METHODS: A same-sex female couple underwent assisted reproduction using the ROPA strategy. The oocyte provider (38–41 years) underwent multiple ovarian stimulation cycles, yielding only aneuploid embryos on PGT-A, including complex abnormalities and full monosomies. A day-5 blastocyst (3AA) was diagnosed as 46,XX,-5.
After counseling regarding the limitations of PGT-A and lack of euploid embryos, transfer was performed. Endometrial preparation with estradiol and progesterone resulted in a trilaminar endometrium of 9.5 mm.
RESULTS: After warming, the embryo re-expanded (5BC) and was transferred. β-hCG was positive with appropriate rise. First-trimester ultrasound demonstrated a viable singleton pregnancy with normal findings (nuchal translucency 1.7 mm, nasal bone present, normal ductus venosus flow). Expanded non-invasive prenatal screening was performed and yielded normal results. The pregnancy is ongoing without abnormalities.
CONCLUSIONS: This case highlights a key clinical controversy in reproductive medicine: embryos classified as aneuploid by PGT-A may retain developmental potential. The findings support concerns that trophectoderm biopsy may not accurately reflect the inner cell mass, possibly due to mosaicism or technical limitations. Emerging evidence also suggests that embryos may possess a degree of self-correction capacity, whereby abnormal cells are selectively eliminated or confined to extraembryonic lineages during early development. These data reinforce the need for cautious interpretation of PGT-A results and individualized decision-making when no euploid embryos are available.
IMPACT STATEMENT: This case supports reconsideration of strict non-transfer policies for aneuploid embryos in selected clinical scenarios.
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P-572 12:00 PM Wednesday, October 28, 2026

A RAPID, AUTOMATED NANOPORE PIPELINE ACHIEVES HIGH CONCORDANCE FOR PGT-A AND PGT-SR WITH SUB-DAY TURNAROUND.
Carol Lynn Curchoe, PhD, HCLD[1], Hyunsoo Progenesis, PhD[2], Matthew Prasetyo, MEng[2], Venkatesh Babu Babu, PhD[2] and Nabil Arrach, Ph.D.[3], [1]Progenesis, La Jolla, CA, [2]Progenesis, LA Jolla, CA, [3]Fertility & Genetics, CA

OBJECTIVE: Current short-read sequencing platforms for preimplantation genetic testing impose workflow timelines of two to three days, require significant infrastructure investment, and limit same-cycle clinical decision-making. This study evaluates nanopore sequencing as an alternative platform for PGT-A and PGT-SR, with attention to analytical concordance, turnaround time, and laboratory integration.
MATERIALS AND METHODS: One hundred four embryo biopsy samples were analyzed: 80 with unbalanced translocations and 24 with full chromosome aneuploidy. Following whole genome amplification and library indexing, identical libraries were sequenced in parallel on Oxford Nanopore and Thermo Fisher Ion Torrent platforms. Thermo Fisher data were analyzed using Ion Can Reporter; nanopore data were processed through an in-house bioinformatics pipeline. Concordance was assessed for both whole chromosome and segmental aneuploidy detection.
RESULTS: Nanopore sequencing achieved 100% concordance with Ion Torrent for full chromosome aneuploidy and 97.5% concordance for segmental aneuploidy. The two discordant segmental calls occurred at the limits of resolution for both platforms and likely reflect amplification artifact rather than true platform divergence. Real-time sequencing with adaptive depth control allowed runs to terminate once target coverage was reached, compressing total workflow time from approximately three days to under one day, with preliminary results available within four hours of sequencing initiation.
CONCLUSIONS: Nanopore sequencing performs with high analytical concordance against an established PGT platform across both whole chromosome and segmental abnormalities. The workflow compression it enables (from days to hours) is not merely an operational convenience; it creates the conditions for same-cycle embryo transfer decisions that are not currently feasible with conventional sequencing. These findings support nanopore sequencing as a clinically viable and scalable alternative for comprehensive embryo genetic testing.
IMPACT STATEMENT: A fully automated nanopore-based PGT-A/PGT-SR pipeline can be deployed directly within embryology laboratories, reducing dependence on centralized sequencing infrastructure and the associated logistical delays. Near real-time results support same-cycle clinical decision-making and have the potential to meaningfully expand access to comprehensive genetic testing in lower-volume and resource-limited settings.
SUPPORT: The authors are employees of the company that conducted this study. Data were collected retrospectively from anonymized records generated during the routine course of clinical care.

GENETICS (7 OF 21)

P-573 11:15 AM Wednesday, October 28, 2026

WHAT DRIVES cfDNA IN SPENT EMBRYO CULTURE MEDIUM? CULTURE DURATION AND MORPHOLOGY, BUT NOT CHROMOSOMAL STATUS.
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OBJECTIVE:
To determine whether cfDNA levels in spent embryo culture medium reflect ploidy status, or are explained by culture conditions and morphological factors unrelated to chromosomal constitution.
MATERIALS AND METHODS:
Cross-sectional analysis of 373 blastocysts from PGT-A cycles (January 2023–June 2025). Ploidy status was determined by trophectoderm biopsy on day 5/6 analysed by next-generation sequencing (197 aneuploid, 172 euploid; euploidy rate 46.6%). Embryo morphology was graded according to ASEBIR criteria and dichotomised as good (grades A+B) versus poor quality (grade C). Culture duration was defined as day 5 versus day 6; in routine practice, day-6 biopsy reflects delayed or poorer embryonic development on day 5. cfDNA was quantified by absolute qPCR from spent culture medium collected from day 3 to biopsy day. Outliers above the 97.5th percentile (>29.87 pg) were excluded following CLSI EP28-A3c criteria. Non-parametric tests were applied following Shapiro-Wilk normality assessment. A binary outcome was created based on the sample median (high vs low cfDNA). Multivariable logistic regression used cfDNA category as dependent variable, with culture duration, morphological quality, maternal age (<38, 38–40, >40 years), and ploidy status as covariates.
RESULTS:
cfDNA distribution was highly right-skewed and non-normal (Shapiro-Wilk $p<0.001$), with a median of 0.50 pg; 61.1% of values were below 1 pg and 88.2% below the DNA content of a single diploid cell (~6 pg), suggesting cfDNA does not primarily reflect chromosomal cellular content. cfDNA levels did not differ between euploid and aneuploid embryos (0.55 vs 0.48 pg; $p=0.704$) nor across maternal age groups (Kruskal-Wallis $p=0.325$). Using the sample median as threshold (high cfDNA: >0.50 pg), a multivariable logistic regression model (Nagelkerke $R^2=0.139$) identified culture duration and morphological quality as the only independent determinants of cfDNA levels. Longer culture duration (day 6 vs day 5 of development) was associated with nearly three times the odds of high cfDNA (OR 3.148, 95% CI 1.923–5.153; $p<0.001$). Poor morphological quality was independently associated with higher cfDNA (OR 1.726, 95% CI 1.029–2.894; $p=0.039$). Neither maternal age (OR 0.834; $p=0.247$) nor ploidy status (OR 1.419; $p=0.149$) contributed significantly.
CONCLUSIONS:
cfDNA accumulation in spent culture medium is primarily driven by culture duration and embryo morphological quality, not chromosomal constitution. Ploidy status did not independently predict cfDNA levels when culture conditions and morphological factors were accounted for.
IMPACT STATEMENT:
These findings directly challenge the biological rationale for cfDNA quantification as a non-invasive ploidy biomarker. Under real-world conditions, cfDNA levels are driven by culture duration and morphology — variables already available to clinicians — rather than chromosomal status, questioning whether cfDNA adds independent biological information beyond morphological assessment.
SUPPORT: The study was funded by grant INREIA/2024/119 from the Regional Ministry of Innovation, Industry, Trade and Tourism (Generalitat Valenciana, Spain), under the call “Aid programme for experimental development projects in Artificial Intelligence and for boosting sectoral data spaces”, and by the CIACIF/2021/035

predoctoral fellowship awarded to C.G. by the Regional Ministry of Innovation, Universities, Science and Digital Society (Generalitat Valenciana, Spain).

P-574 11:30 AM Wednesday, October 28, 2026

MOSAICISM REPORTING IS NOT ASSOCIATED WITH IMPROVED PREGNANCY OUTCOMES AFTER FIRST FROZEN EMBRYO TRANSFER.

Laura C. Gemmell, MD[1], Emily Mounts, MS, CGC[2], Stephanie Galloway, M.S, C.G.C[3], Carina Bertolini, C.G.C[3], Nina Harkavy, C.G.C[3], Chaim Jalas, .[2], Xiyao Wang, M.S.[2], George Koustas, PhD[1], Eric J. Forman, H.C.L.D, M.D.[1] and Fethiye Sinem Karipcin, MD[1], [1]Columbia University Fertility Clinic, New York, NY, [2]Juno Genetics, Basking Ridge, NJ, [3]Columbia University Medical Center, Division of Women's Genetics

OBJECTIVE: To compare first frozen embryo transfer (FET) outcomes according to PGT-A mosaicism reporting strategy: (1) mosaicism reporting, in which only embryos reported as euploid without mosaicism were transferred versus (2) mosaicism non-reporting, in which embryos reported as “negative for aneuploidy” were transferred without disclosure of mosaic status. A secondary objective was to compare blinded euploid versus mosaic transfers within the mosaicism non-reporting group.
MATERIALS AND METHODS: Retrospective review of all FETs performed at a single academic institution from January 2022 to May 2025 involving embryos tested by a clinically validated NGS/SNP-based PGT-A platform. Embryos tested for PGT-M or PGT-SR, embryos with known mosaicism, known segmental aneuploidy, or no result, and gestational carrier cycles were excluded. Embryos were selected for transfer based on morphological grading and timing of blastocyst development. Primary outcomes were live birth rate (LBR) and pregnancy loss, analyzed using Chi-square tests.
RESULTS: A total of 2007 FETs were analyzed. Providers opted into mosaicism reporting (Group A) in 1288 cycles (64%) and chose mosaicism non-reporting (Group B) in 719 cycles (36%). Baseline characteristics (oocyte age, blastocyst day, and embryo quality) were similar between the two groups. Among first FETs, LBR did not differ significantly between the mosaicism reporting group and mosaicism non-reporting group: 548/927 (59%) versus 260/480 (54%); p=0.07. Pregnancy loss rates were also similar: 78/927 (8%) versus 35/480 (7%); p=0.5. Within the mosaicism non-reporting cohort, LBRs were 53% (209/393) for blinded euploid embryos, 54% (21/39) for blinded whole chromosome mosaics, and 63% (30/48) for blinded segmental mosaics.
CONCLUSIONS: In this single-center cohort, mosaicism reporting with euploid embryo selection was not associated with improved LBR after first FET compared with mosaicism non-reporting. Within the non-reporting group, outcomes appeared similar between blinded euploid and mosaic transfers, although mosaic subgroup analyses were limited by small sample sizes.
IMPACT STATEMENT: Opting into mosaic reporting on a validated NGS/SNP PGT-A platform did not result in live birth outcomes superior to a non-reporting policy on first FET. Furthermore, the comparable LBR observed between euploids and blinded mosaics in the non-reporting cohort suggests that reporting mosaicism may lead to the unnecessary deselecting of viable embryos without improving overall success rates. These findings have important implications for clinician preferences and practices in PGT-A, suggesting that a simplified yet validated "negative for aneuploidy" reporting scheme may reduce clinical complexity and patient anxiety without compromising reproductive outcomes.

P-575 11:45 AM Wednesday, October 28, 2026

ABERRANT NIPT cfDNA PROFILES REVEALING MATERNAL PATHOLOGY IN PREGNANCY.

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OBJECTIVE: To highlight the clinical significance and management of nonreportable noninvasive prenatal testing (NIPT) results associated with complex cell-free DNA (cfDNA) abnormalities suggestive of maternal pathology.
MATERIALS AND METHODS: High-risk case report with integrated literature review.
A 45-year-old conceived following IVF with transfer of a mosaic embryo (46,XY/45,XY, -6q) underwent NIPT at 11 weeks’ gestation. Results were nonreportable due to extensive aberrant chromosomal abnormalities, deemed incompatible with fetal origin and suggestive of possible neoplasia. A comprehensive maternal evaluation was expedited, including serum tumor markers, whole-body MRI, and holistic assessment.
RESULTS: Tumor markers were within normal limits aside from physiologic AFP elevation, consistent with pregnancy. Whole-body MRI showed a known, enlarging, highly vascular uterine leiomyoma (~11 cm) with no radiologic evidence of malignancy. Tests were coordinated with IDENTIFY program, currently carrying a nation-wide study on cfDNA aberrancies. Genetic fetal evaluation is pending via amniocentesis. Whether a sarcoma is present remains uncertain, prompting the ongoing coordinated multidisciplinary care involving REI, MFM, genetics, and oncology.
Genome-wide cfDNA patterns with multiple (≥3) chromosomal gains and losses are strongly associated with malignancy risk, approaching 40–96%, whereas loss-predominant or subchromosomal patterns are more often associated with leiomyomas. Uterine fibroids are recognized as a significant source of increase cfDNA shedding, noise, and reduced fetal fraction, contributing to nonreportable or false-positive NIPT results.
CONCLUSIONS: Aberrant or nonreportable NIPT results with complex copy-number aberrations represent an important diagnostic signal that may reflect maternal rather than fetal pathology and warrant immediate systemic evaluation. In this case, findings appear to be most consistent with leiomyoma-derived cfDNA, although follow-up and post-delivery treatment of uterine lesion is indicated. Multidisciplinary management and awareness of cfDNA pattern interpretation are essential to guide appropriate workup and counseling as expanded NIPT adoption accelerates. Standardized reporting and follow-up protocols are needed to optimize care in such cases.
Additionally, nondiagnostic NIPT results warrant offering amniocentesis for definitive fetal evaluation, especially after transfer of embryos with suspected mosaicism or aneuploidy.
IMPACT STATEMENT: Integrating cfDNA pattern interpretation with multidisciplinary assessment enables differentiation of occult malignancy from benign conditions such as uterine leiomyomas. Failure to recognize these patterns risks delayed cancer diagnosis, while overinterpretation may lead to unnecessary intervention and emotional burden in context of benign conditions. These competing risks highlight the urgent need for standardized diagnostic algorithms to guide clinical management and optimize patient outcomes.

P-576 12:00 PM Wednesday, October 28, 2026

IVF CYCLE TRAJECTORY AND REBIOPSY OUTCOMES REVEAL SUSTAINED OPPORTUNITY FOR EUPLOID EMBRYO IDENTIFICATION.

Alexander Griffith, B.S.[1], Zhilin Liu, Ph.D.[1], Christopher Weier, PH.D.[2], Tony Gordon, Ph.D.[3] and Kate Brown, Ph.D[1], [1]CooperSurgical, Houston, TX, [2]Coopersurgical, Houston, TX, [3]CooperSurgical, London, United Kingdom

OBJECTIVE:
To evaluate cycle-to-cycle changes in embryos available for preimplantation genetic testing for aneuploidy (PGT-A), distribution of PGT-A outcomes, and assess the impact of rebiopsy (ReBx) to euploid embryo identification across IVF cycles.
MATERIALS AND METHODS:
Patients with PGT-A results for ≥2 IVF cycles between Jan 2025 and Apr 2026 were first identified. Sample-level PGT-A results (euploid, aneuploid, mosaic, no result) were aggregated to the cycle level and ordered chronologically by reported date. Results were then analyzed at the population level, using patient paired cycle comparisons, stratified by total number of cycles, maternal age, and donor status.
RESULTS:
A total of 10,011 patients across 21,512 cycles, with 71,797 samples were analyzed. From Cycle 1 to Cycle 2, for patients with only 2 cycles, paired analysis demonstrated an increase of +0.74 samples and +0.69 euploids per patient. The proportional increase in euploids relative to total samples suggests that gains are primarily driven by improved cohort size rather than changes in per-embryo quality. This observation warrants further investigation to determine whether treatment plans were improved between cycles.
Patients who underwent >4 cycles (n=164) demonstrated distinct qualities. Average sample yield increased across cycles (Cycle 1: 2.19 → Cycle >4: 2.74), as did euploid yield (0.40 → 0.69). However, gains were modest and heterogeneous, with high rates of cycles without euploids (>4 cycles: 63.5% vs ≤4 cycles: 37.6%), consistent with a poorer prognosis subgroup.
Stratification by age revealed that younger patients (<35) displayed progressive increases in euploid rate across cycles, while advanced maternal age (AMA) patients (≥35) improved from Cycle 1 to 2 but plateaued or declined thereafter. This divergence may suggest that repeated cycles in younger patients primarily increases opportunity, whereas in AMA patients, intrinsic oocyte quality inhibits improvement despite additional cycles.
In cases where sample(s) failed to provide a PGT-A result, ReBx proved to be an effective response, yielding results in 96.1% of samples (804/837), with a corresponding euploid rate of 53.9%.
CONCLUSIONS:

Repeat IVF cycles demonstrate clinically impactful improvements in both total embryos and transferrable embryos, particularly between early cycles. However, patients requiring >4 cycles represent a biologically distinct subgroup with attenuated gains despite incremental improvement. Embryo ReBx provides a robust secondary pathway to obtain clinically actionable results in the uncommon instance of an uninformative initial PGT-A result.
IMPACT STATEMENT:
These findings support continued IVF treatment after an initial unsuccessful cycle and highlight the value of incorporating ReBx as part of a comprehensive strategy to maximize euploid embryo identification. Simultaneously, recognition of diminishing returns in patients requiring >4 cycles enables more informed, individualized counseling regarding treatment continuation vs alternatives. Collectively, this data provides a framework for balancing realistic expectations with meaningful opportunity for success across the IVF journey.

GENETICS (8 OF 21)

P-577 11:15 AM Wednesday, October 28, 2026

A SHOT AT SUCCESS: IMPACT OF TRIGGER TYPE ON EUPLOIDY RATE.

Nicole Guardino, MS[1], Alexandria Young, MD, PhD[2], Nathan C Koelper, MPH[2], Caitlin E Martin, MD, MS[2] and Dara S Berger, PhD, MPH, MS[3], [1]UNIVERSITY OF PENNSYLVANIA HEALTH SYSTEM, Philadelphia, PA, [2]University of Pennsylvania, Division of Reproductive Endocrinology and Infertility, Philadelphia, [3]University of Pennsylvania, Philadelphia, PA

OBJECTIVE: The objective of this study was to identify whether type of final maturation trigger (human chorionic gonadotropin (hCG) vs. leuprolide acetate vs. both) is associated with euploidy in patients undergoing in vitro fertilization (IVF) with preimplantation genetic testing for aneuploidy (PGT-A).
MATERIALS AND METHODS: This was a retrospective cohort study completed at one academic institution from January 2021 to December 2025. Only patients undergoing stimulation cycles using a GnRH antagonist protocol with PGT-A were included. Trigger

types were separated into three groups: hCG, leuprolide acetate, or a combination of both. Rate of euploidy was calculated by dividing the number of euploid embryos by the number of embryos biopsied in the cycle. A one-way ANOVA test was used to compare euploidy rates across trigger type groups. Linear regression was used to adjust for patient age.
RESULTS: A total of 1278 cycles and 6793 embryos were included in this study. Rate of euploid embryos was significantly different between the three groups: 36.6% for hCG, 43.0% for leuprolide acetate, and 40.2% for combination doses (p= 0.025). There was no significant difference in rate of aneuploidy, mosaicism, or no results (p=0.126, p=0.156, p=0.848, respectively). Leuprolide acetate was associated with highest rate of euploid embryos and lowest rate of aneuploid, and mosaic results when compared to patients triggered with hCG or a combination of both. Patients who triggered with both hCG and leuprolide acetate showed intermediate results regarding rates of euploidy, aneuploidy, and mosaicism. Patients who triggered with hCG alone were found to have lowest rates of euploidy and highest rates of aneuploidy and mosaicism.

	hCG only	leuprolide acetate only	hCG & leuprolide acetate	p-value
Euploid Rate	36.6	43.0	40.2	0.025
Aneuploid Rate	53.3	48.3	50.2	0.126
Mosaicism Rate	6.2	4.3	5.0	0.156

CONCLUSIONS: It was found that leuprolide acetate is associated with higher rates of euploidy and lower rates of both aneuploidy and mosaicism when compared to patients triggered with hCG alone or hCG in combination with leuprolide acetate. Although a small difference, this could make the difference of a euploid embryo in some patients. Patients triggered with both hCG and leuprolide acetate showed intermediate rates while patients who triggered with hCG only were found to have the lowest rate of euploid embryos and highest rates of aneuploid and mosaic embryos.
IMPACT STATEMENT: These data suggest that trigger type may impact a patient's rate of euploid embryos. In valuing rate of euploid embryos, leuprolide acetate trigger may be considered over hCG trigger or a combination trigger of both hCG and leuprolide acetate when possible.
SUPPORT: Not Applicable

P-578 11:30 AM Wednesday, October 28, 2026

BRCA MUTATIONS AND DIMINISHED OVARIAN RESERVE: IMPLICATIONS FOR FERTILITY EVALUATION AND GENETIC RISK IDENTIFICATION. Lara Guijarro-Baude, MD[1], Sonia Gayete Lafuente, MD, PhD[2], David H. Barad, MD[3] and Norbert Gleicher, MD[3], [1]Badalona, Cataluna, Spain, [2]Foundation for Reproductive Medicine and Center for Human Reproduction, New York, NY, [3]Center for Human Reproduction, New York, NY

OBJECTIVE:
To evaluate whether germline BRCA1/2 pathogenic variants are associated with accelerated ovarian aging and to assess the potential role of fertility clinics in identifying hereditary cancer risk.
MATERIALS AND METHODS:
A systematic review of experimental, translational, and clinical studies published through 2025 was conducted. Databases included PubMed and other biomedical sources. Eligible studies evaluated ovarian reserve biomarkers, follicle density, reproductive aging, assisted reproductive technology outcomes, or oncofertility outcomes in BRCA mutation carriers. Due to heterogeneity, data were synthesized qualitatively.
RESULTS:
Studies demonstrate that BRCA-related defects in homologous recombination impair DNA double-strand break repair in oocytes, leading to DNA damage accumulation and follicular depletion. Clinical studies show consistent associations between BRCA1 mutations and reduced ovarian reserve biomarkers, including anti-Müllerian hormone (AMH), and earlier reproductive aging. Findings for BRCA2 are less consistent. Histologic data confirm reduced primordial follicle density and increased DNA damage markers in carriers. BRCA mutation carriers also exhibit increased susceptibility to chemotherapy-induced ovarian reserve loss. Evidence regarding assisted reproductive technology outcomes and ovarian stimulation safety is generally reassuring, although long-term data are limited. No studies have directly evaluated the prevalence of BRCA mutations among women presenting to fertility clinics with diminished ovarian reserve or premature ovarian insufficiency.
CONCLUSIONS:
BRCA1 pathogenic variants are associated with accelerated ovarian aging. The absence of studies in fertility populations highlights an unmet need for research evaluating targeted genetic testing in women with reduced ovarian reserve.
IMPACT STATEMENT:
Fertility clinics may represent a clinically relevant setting for identifying hereditary cancer risk in selected patients, supporting integration of reproductive and genetic evaluation strategies.
SUPPORT: This study received no external funding.

P-579 11:45 AM Wednesday, October 28, 2026

BREAKPOINT-BASED DIRECT DETECTION OF MICRODELETIONS FOR PREIMPLANTATION GENETIC TESTING WITHOUT LINKAGE ANALYSIS. Vanessa Guo, M.S., Amanda Iturriaga, M.S., Cara Vega, BS, Emily Mounts, MS, CGC, Chaim Jalas, . and Xin Tao, PhD, HCLD, Juno Genetics US Inc, Basking Ridge, NJ

OBJECTIVE: Microdeletion syndromes are genomic disorders caused by small losses of DNA, typically 1–3 megabases in size. Preimplantation genetic testing for monogenic disorders (PGT-M) for microdeletions is commonly performed using linkage analysis or in-deletion markers. However, these approaches can be challenging when informative family members are unavailable, when variants occur *de novo,* or when informative in-deletion markers are not detected. The aim of this study was to develop a direct breakpoint sequencing strategy to detect microdeletions in embryos without relying on linkage analysis.
MATERIALS AND METHODS: Two unrelated families with fetal microdeletions were included: a 363.9 kb deletion at 6q25.1 and a 2.70 kb deletion at 7p15.2. In both families, parental testing was negative for the corresponding deletions, suggesting either *de novo* origin or gonadal mosaicism. Due to the low recurrence risk, both couples requested PGT-M. Precise breakpoint mapping was performed using long-read sequencing with Oxford Nanopore Technologies (ONT) PromethION 24. Based on the identified breakpoints flanking each deletion, primer pairs were designed to selectively amplify the mutant allele. Parental and products of conception (POC) testing was subsequently performed using the breakpoint-specific primers and the previously validated *PGTseq* assay on the Element Biosciences AVITI platform.
RESULTS: In the first case, PGT-M was requested for a pathogenic 363.9 kb heterozygous interstitial deletion at chr6:149,095,406–149,459,379 (GRCh38), encompassing the *TAB2* gene. This gene is associated with autosomal dominant congenital heart defects. POC DNA showed amplification across both breakpoint-flanking regions, consistent with the presence of the deletion. In contrast, parental DNA isolated from blood showed no amplification at these breakpoint-specific regions, confirming absence of the deletion in somatic tissues. The second case involved PGT-M for a pathogenic 2.70 kb heterozygous interstitial deletion at chr7:24,703,688–24,706,390 (GRCh38), affecting exon 8 of the *GSDME* gene and associated with autosomal dominant deafness. Similar to the first case, POC DNA demonstrated amplification across the breakpoint regions, whereas parental DNA did not, confirming the breakpoint-specific detection strategy.
CONCLUSIONS: Breakpoint-specific primers were successfully developed for both cases, and IVF cycles with PGT are planned. This approach provides a novel and accurate strategy for detecting microdeletions in PGT-M without the need for linkage analysis. Long-read sequencing using ONT enables precise breakpoint resolution in microdeletions, facilitating the development of targeted assays for future embryo testing.
IMPACT STATEMENT: Although the recurrence risk for *de novo* deletions is low, uncertainty can cause significant parental anxiety in subsequent pregnancies. This method offers a direct and reliable diagnostic alternative that may improve reproductive confidence. Additionally, this strategy can be utilized when the gamete provider is *de novo* or family members are not available. Furthermore, this strategy is potentially applicable to microduplications.

P-580 12:00 PM Wednesday, October 28, 2026

FROM CARRIER SCREENING TO DIAGNOSIS OF AN UNBALANCED TRANSLOCATION: ONE PATIENT'S JOURNEY TO PREIMPLANTATION GENETIC TESTING. Julie Pfeffer, MS, CGC[1], Ann Korkidakis, M.D., M.P.H.[2] and Jennifer Helgeson, MS, CGC[2], [1]Juno Genetics, [2]Boston IVF, Waltham, MA

OBJECTIVE:
This case report aims to demonstrate the complexities of interpreting genetic test results in the setting of Fertility Medicine.
MATERIALS AND METHODS:
The following commercial tests were employed to arrive at the diagnosis: multi-gene panel carrier screening, single nucleotide polymorphism (SNP) chromosomal microarray, karyotype, sub-telomeric fluorescence in situ hybridization (FISH).
RESULTS:
This patient presented with a same-sex partner to pursue reciprocal IVF: egg retrieval, fertilization with sperm from a non-directed donor, and cryopreservation of blastocysts for future transfer to their partner. Routine testing included carrier screening with a 427 gene panel showing the patient carries X-linked factor VIII deficiency (Hemophilia A). They were referred for genetic counseling. The counselor noted the whole F8 gene was deleted. SNP array to characterize deletion size was indicated as X deletions can have additional implications for offspring. Results showed a pathogenic 1.5 Mb deletion of Xq28 and a pathogenic 8 Mb duplication of 18q22.3 suggestive of unbalanced rearrangement. The rearrangement was not detected by karyotyping due to the small size and subtle appearance of exchanged chromosomal bands. Subtelomeric FISH revealed an abnormal pattern consistent with a karyotype of This result reflects a partial monosomy for Xq and a partial trisomy for 18q. Distal trisomy 18q has a well-characterized phenotypic presentation including hypotonia, motor delay, intellectual disability, seizures, cerebral anomalies, finger/toe syndactyly, short neck, and dysmorphic features. The patient presented with none of these findings.
CONCLUSIONS:
The patient's overall normal phenotype is likely reflective of skewed X-inactivation. The majority of the patient's cells likely have inactivated the derivative X and are expressing the typical X. This pattern would result, functionally, in normal dosages for Xq and 18q. Skewed X-inactivation has been reported in both balanced X;autosome translocation carriers as well as in their offspring with the unbalanced derivative X. The patient's gametes are predicted to transmit either the derivative X or the typical X. If eggs with the derivative X are fertilized by X bearing sperm, then the resulting offspring could have normal phenotype like the patient, though skewing of X inactivation varies across individuals and offspring could have symptoms of distal trisomy 18q. Eggs with the derivative X fertilized with Y-chromosome bearing sperm would likely not result in viable offspring as the Xq28 monosomy is predicted to be lethal in XY embryos. Following genetic counseling, the couple opted for IVF with PGT. At the time of abstract submission this case has been accepted by the PGT laboratory and probe validation is in progress.

IMPACT STATEMENT:
Genetic counseling to carefully review genetic testing results and correctly interpret reproductive risk directing additional genetic testing was key in uncovering this patient's diagnosis of an unbalanced translocation involving the X-chromosome and allowed the couple to pursue PGT-SR for detection of embryos at risk for partial aneuploidy and early embryo loss.

GENETICS (9 OF 21)

P-581 11:15 AM Wednesday, October 28, 2026

A BINOMIAL MODEL THAT PREDICTS THE EXPECTED NUMBER OF MEIOTIC ANEUPLOIDS PER COHORT ACROSS 6 AGE GROUPS AND 10 COHORT SIZES. Thomas TF Huang, PH.D.[1], Sheela Sadruddin Ali, H.C.L.D, PH.D.[2], Alexandra Masca, BS[3] and Alexia Maki, BS[1], [1]University of Hawaii John A Burns School of Medicine, Honolulu, HI, [2]Scientific Director Services, Frisco, TX, [3]Pacific IVF Institute, Honolulu

OBJECTIVE: Both providers and patients would benefit from an accurate prediction of the most likely range of meiotic aneuploid blastocysts (MEI+) most likely to reside within a patient's blastocyst cohort. Using summary metrics from a large published data set, a predictive model was created that comprehensively describes the binomial distributions of MEI+ blastocysts/cohort most likely to be found across 10 discrete cohort sizes within 6 stratified age groups.
MATERIALS AND METHODS: From a recently published set of >9000 TE biopsies, a subset of 3090 were identified with whole chromosome, presumably meiotic (MEI+) aneuploidies, representing an overall meiotic probability (P|MEI+) of 32.9%. After stratification into 6 age group and 10 discrete cohort sizes, 60 binomially derived expected distributions of MEI+/cohort were calculated.
RESULTS: As expected, a blastocyst's P|MEI+ increased between each age subgroup: <30yr (n=441, P|MEI+=18.4%); 30-34yr (n=778, P|MEI+=25.8%); 35-37yr (n=741, P|MEI+=36.9%); 38-40yr (n=659, P|MEI+=50.3%), 41-42yr (n=356, P|MEI+=70.8%), and 43+yr (n=115, P|MEI+=76.2%). Binomial analysis of each subgroup resulted in a matrix of 60 expected distributions. Of clinical relevance, the most commonly expected (mode) number of MEI+/cohort could be estimated using the formula N (cohort size) x (P|MEI+). For example, within the 38-40yr age group (where P|MEI+ ≈50%), cohorts of 6 blastocysts should show a mode of 3 MEI+/cohort for 25% of all cohorts. The distribution further predicts that either 2 or 4 MEI+/cohort should each comprise 23% of remaining cohorts; thus, 71% of cohorts should contain 2-4 MEI+. Such predictive results were derived for all 60 binomial distributions. Second, the specific age group 38-40yr was found to represent an inflection point where P|MEI+ changed from <50% to >50%; thus, the 3 younger age groups showed a more significant chance (40-50%) chance that NO MEI+ blastocysts would be found within the smallest cohort sizes 1-3. Conversely, the 2 age groups >40yr showed a 40-50% chance that ALL blastocysts would be MEI+ within these smaller cohort sizes. These findings have clinical relevance given recent reports of occasional discordances between abnormal biopsy results with normal sustained pregnancy outcomes.
CONCLUSIONS: Using observed age group averages for meiotic aneuploidy from a large data set, binomial analysis can be used to predict the most likely numbers of MEI+ within a given cohort size, even before biopsy.
IMPACT STATEMENT: These predictive insights can be used for patient-specific counseling regarding the efficacy of performing blastocyst biopsy.
SUPPORT: This work was financially supported by the Department of OB/GYN of the John A. Burns School of Medicine and from an intramural grant from the Pacific IVF Institute.

P-582 11:30 AM Wednesday, October 28, 2026

WHEN CARRIER SCREENING GETS IT WRONG: FALSE POSITIVE RESULTS IDENTIFIED DURING PREIMPLANTATION GENETIC TESTING FOR MONOGENIC DISORDERS (PGT-M) WORKUP. Carissa Huber, MS, CGC, Hannah N Green, MS, Mary Elizabeth Fino, M.D., Jennifer K Blakemore, MD, MSCI and Andria G Besser, M.S., NYU Langone Fertility Center, New York, NY

OBJECTIVE:
To describe two cases in which PGT-M workup uncovered false positive carrier screening (CS) results and highlight implications for reproductive risk assessment and clinical management.
MATERIALS AND METHODS:
This is a case series of two 34-year-old patients who planned PGT-M based on high reproductive risks identified through genetic CS. Patient 1 presented for embryo banking with donor sperm. Patient 2 presented for fertility evaluation with a history of secondary infertility following stillbirth due to preterm premature rupture of membranes.
RESULTS:
Patient 1 underwent IVF with preimplantation genetic testing for aneuploidy (PGT-A) using non-identified donor sperm. Eight months later, the patient was notified that a donor-conceived child was diagnosed with autosomal recessive mitochondrial myopathy and ataxia syndrome (MMYAT), and the sperm donor was found to carry the likely pathogenic variant c.706G>C in *MSTO1*. Patient 1 subsequently underwent gene sequencing for *MSTO1*, revealing she was a carrier of likely pathogenic variant c.22G>A. Given a 25% risk for each embryo to be affected with MMYAT, the patient elected to pursue PGT-M for *MSTO1* on remaining biopsy DNA from her six cryopreserved embryos; however, the PGT workup was unsuccessful, as the variant was unable to be detected in the patient, her parents, or any embryo biopsy samples. Reanalysis by the original CS laboratory determined the reported variant was not present in the functional *MSTO1* gene and was a false positive result, likely due to pseudogene interference.
Patient 2 underwent routine genetic CS, which identified pathogenic variant c.1858T>C in *ABCD1*, associated with X-linked adrenoleukodystrophy (XL-ALD). Given a 50% reproductive risk, the patient elected to pursue PGT-M for *ABCD1*; however, the PGT laboratory's attempt to validate the variant for direct analysis was unsuccessful, prompting parental testing to aid in linkage analysis. Parental testing was performed at the same laboratory that originally identified the patient's variant, and trio analysis revealed the initial result was a false positive due to overlooked confirmatory analysis prior to reporting.
As Patient 1 and Patient 2 were subsequently deemed to be at low reproductive risk for MMYAT and XL-ALD, respectively, PGT-M was no longer necessary.
CONCLUSIONS:
These cases demonstrate that false positive CS results can occur from both technical limitations and human error. These inaccuracies may only become apparent during PGT-M workup, potentially resulting in treatment delays and unnecessary complex and costly reproductive interventions. This underscores the need for CS labs to employ confirmatory strategies for positive findings.
IMPACT STATEMENT:
When PGT-M workup is unsuccessful or technically challenging, false positive CS results should be considered as an underlying explanation. Timely recognition may prompt reanalysis, prevent unnecessary procedures, and reduce emotional and financial burden. Incorporating direct mutation analysis into PGT-M workup, when feasible, is an important validation step as these inaccuracies would be missed if relying on linkage-based approaches alone.

P-583 11:45 AM Wednesday, October 28, 2026

WHEN NEW INFORMATION EMERGES: MEDICAL UPDATES IN OOCYTE DONATION (OD) AND INTENDED PARENT (IP) ACTIONS. Carissa Huber, MS, CGC, Hannah N Green, MS, Jacquelyn Shaw, M.D., Mary Elizabeth Fino, M.D. and Andria G Besser, M.S., NYU Langone Fertility Center, New York, NY

OBJECTIVE:
In gamete donation, newly reported donor medical updates (MUs) may introduce clinically relevant information that requires reassessment and decision-making. The aim of our study was to describe MUs within a single fertility center's OD program and evaluate IP actions following disclosure.
MATERIALS AND METHODS:
This retrospective study included all MUs pertaining to donors retrieved at our center from 2013-2025. Only IPs who created embryos at our center were included. MUs were categorized by likely etiology and relative recurrence risk (RR: low <2x, moderate 2-5x, high >5x) for OD-conceived offspring. IP actions following disclosure were also categorized and compared to RR.
RESULTS:
43 MUs involving 30 oocyte donors were reported. At least one MU was reported each year, with the highest frequency in 2024 (n=7). Time from donor retrieval to MU report ranged from 0.35-27.8 years (mean=6.8, median=2.9).
Most MUs were reported by the IP following identification in an OD-conceived pregnancy or child (32/43, 74.4%). The remainder were reported by the donor about her personal or family history (8/43, 18.6%) or reflected updated carrier screening (CS) results identified by our center (3/43, 7.0%). Likely etiology was multifactorial for 48.8% of MUs, Mendelian for 39.5%, and undetermined for 11.6%.
Following investigation, which included genetic testing when indicated, three MUs (7.0%) were confirmed to have no increased risk to OD-conceived offspring. The remaining 40 impacted 81 IPs (median=2.5, range 1-9 IPs per MU). Relative RR for OD-conceived offspring was predicted to be low for 9/40 MUs (22.5%,), moderate for 13/40 (32.5%), high for 9/40 (22.5%), and unknown for 5/40 (12.5%). For the remaining 4/40 MUs (10.0%), RR was dependent on the second gamete source due to autosomal recessive (AR) inheritance.
At the time of disclosure, 65.4% (53/81) of IPs had a child from the same donor and 7.4% (6/81) were pregnant. 48.1% (39/81) of IPs had embryos in storage; among these patients, % proceeded with embryo transfer (ET) despite the increased risk, 28.2% elected to discard, 7.7% transported their embryos to a different clinic, 2.6% pursued ET of a mosaic embryo from a different oocyte donor, and 35.9% took no action with their embryos. Of the 42 IPs without embryos in storage, three chose a different donor prior to embryo creation. Notably, one IP who transported embryos ultimately pursued whole genome sequencing in direct response to the MU.
Among the 10 IPs who underwent ET, MUs were most often low risk (n=5), followed by high (n=3) and moderate risk (n=2). At least one IP in each risk category already had a child from the same donor prior to the MU.
CONCLUSIONS:
MUs occurred across a wide range of clinical contexts and were associated with diverse IP decisions following disclosure at different time points. These findings often affect multiple IPs and emphasize the complexity of counseling in OD.
IMPACT STATEMENT:
As OD programs expand and time elapses following initial donation, MUs will continue to increase, highlighting the need for standardized protocols, robust reporting systems, and individualized counseling approaches.

P-584 12:00 PM Wednesday, October 28, 2026

MATERNAL AGE DRIVES OPPOSITE TRENDS FOR AUTOSOMAL AND X CHROMOSOME ANEUPLOIDY. Lacey Hurtado, MS, C.G.C[1], Diane Klepacka, MS, C.G.C[1], Alyssa Schickedanz, M.S, C.G.C[1], William B Schoolcraft, M.D.[2] and Mandy Katz-Jaffe, PhD[2], [1]CCRM Genetics, Lone Tree, CO, [2]CCRM Fertility, Lone Tree, CO

OBJECTIVE: Aneuploidies are rare in live births due to their incompatibility with development, resulting in implantation failure and pregnancy loss. Certain types, trisomy 21 (Down syndrome), trisomy 13 (Patau syndrome), trisomy 18 (Edwards syndrome), and monosomy X (Turner syndrome), are exceptions and can be observed in live deliveries. All three live-born autosomal trisomies show a significant increase with maternal aging, while paternal age is only associated with an increased risk for trisomy 21. In contrast, Turner syndrome occurs sporadically with no strong parental age dependence. This study examined the contribution of parental age to the incidence of live-born aneuploidies in blastocyst-stage embryos.
MATERIALS AND METHODS: A large dataset of 88,901 aneuploid blastocysts tested by pre-implantation genetic testing for aneuploidy (PGT-A) utilizing next generation sequencing (Illumina) was included for analyses. Nearly one third, 27,838 (31.3%) of these aneuploid blastocysts were identified with a single full chromosome error of trisomy or monosomy involving chromosomes 13, 18, 21, or X. Statistical analyses were performed using binomial generalized linear mixed-effects models in R 4.4.1, with parental ages, chromosomes (13, 18, 21 and X), covariates, and random intercepts. Parental age effects and predicted marginal probabilities were estimated with standard post hoc tools, providing Wald 95% confidence intervals and two-sided p-values, with significance at P<0.05.
RESULTS: Of the 27,838 aneuploid blastocysts identified with a single error of chromosome 13, 18, 21 or X, 59.7% were full monosomies (n=16,611) and 40.3% full trisomies (n=11,227). All three autosomal trisomies showed a highly significant positive association with increasing maternal age [chr13 (OR = 1.02, 95% CI: 1.01-1.03, P<0.001), chr18 (OR = 1.10, 95% CI: 1.09-1.12, P<0.001) and chr21 (OR = 1.10, 95% CI: 1.09-1.11, P<0.001)]. Likewise, monosomy 18 and 21 were also highly significant with maternal aging [chr18 (OR = 1.06, 95% CI: 1.05-1.07, P<0.001) and chr21 (OR = 1.06, 95% CI: 1.05-1.07, P<0.001)], while monosomy 13 was the only autosomal aneuploid error that had no significant association (OR = 0.99, 95% CI: 0.98-1.00, P=0.23). In complete contrast, both X chromosome aneuploidies showed a significant association with decreasing maternal age [monosomy X (OR = 0.92, 95% CI: 0.91-0.93, P<0.001) and trisomy X (OR = 0.98, 95% CI: 0.97-0.99, P=0.003)]. Paternal age showed no significant association with any of the tested chromosome aneuploidies, neither trisomies nor monosomies.
CONCLUSIONS: In concordance with our knowledge of prenatal data, maternal age showed a positive association with an increased incidence of trisomy 13, 18 and 21. Remarkably, embryonic chromosome X aneuploidy, both monosomy (45XO) and trisomy (47XXX) significantly decrease with advancing maternal age. Paternal aging, however, displayed no significant associations with any potential live-born aneuploidies in preimplantation human blastocysts.
IMPACT STATEMENT: Turner syndrome and Triple X embryos are significantly associated with younger infertility patients, and show a negative association with maternal aging.
SUPPORT: None.
REFERENCES:
None.

GENETICS (10 OF 21)

P-585 11:15 AM Wednesday, October 28, 2026

DON'T FORGET ABOUT DAD! THE UNDERESTIMATED UTILITY OF TESTING FOR PATERNAL INHERITANCE FOR X-LINKED CONDITIONS FOR PGT-M. Amanda Iturriaga, M.S.[1], Cara Vega, BS[1], Nicole D Loia, MS[2], Emily Mounts, MS, CGC[1], Xin Tao, PhD, HCLD[2] and Chaim Jalas, .[2], [1]Juno Genetics, Basking Ridge, NJ, [2]Juno Genetics US Inc, Basking Ridge, NJ

OBJECTIVE: Many X-linked (XL) disorders, such as dystrophinopathies and hemophilia B, are presumed to be disease-causing in hemizygous males. For XL heterozygous positive females presenting for PGT-M, PGT laboratories frequently require linkage analysis. Typically, only testing of the patient's mother is considered, as fathers are presumed to be negative if asymptomatic. If the patient's mother tests negative in cases requiring linkage analysis for successful probe development, PGT-M may not be possible. The objective of this study was to document cases in which an unexpected positive result in a patient's father preserved the option of PGT-M for a XL disorder.
MATERIALS AND METHODS: Retrospective observational study of PGT-M cases accepted by a PGT reference laboratory between June 2015-March 2026. XL PGT-M cases were reviewed to identify cases in which a patient's father was found to be hemizygous positive for the variant carried by his heterozygous daughter. Fragile X premutation cases were excluded, as male transmission of an intermediate or premutation allele is not unusual; however, one full mutation case (>200 CGG repeats) was included. For PGT-M cases with hemizygous positive fathers, available records were reviewed to determine whether the father was previously known to have symptoms associated with the condition.
RESULTS: 15 cases were identified in which the patient's father was found to be hemizygous for the female patient's variant. For all cases, a targeted family history did not reveal a known family history of the condition; however, this information was limited by patient report and lack of available clinical records for family members. Nine of the 15 cases involved *DMD* (60%); the remainder involved one case for each of *FMR1, GLA, ABCD1, RS1, G6PD* and *F9*. For *DMD,* eight of the nine cases involved a deletion of one or more exons, while one case involved a multi-exon duplication. For *GLA, ABCD1, RS1, G6PD* and *F9,* the variants were point mutations. For Fragile X, the patient's father was found to be hemizygous for a hypermethylated full mutation allele. In five of the 15 cases (33%), linkage analysis only was utilized.
CONCLUSIONS: For XL conditions, healthy fathers of heterozygous females are traditionally not expected to be positive. However, this study demonstrates that they may in fact be hemizygous for the variant in question, in turn allowing for the possibility of PGT-M. The five cases that utilized a linkage only approach would likely have been rejected for PGT-M had the patient's father not undergone testing. Therefore, testing of the patient's father should be considered for cases where linkage analysis is required.
IMPACT STATEMENT: Healthcare providers may be unaware of the need to - or reluctant to facilitate - testing fathers for XL conditions; however, this study highlights the importance of testing as it relates to PGT-M. While more research is needed, the presence of some of the variants in reportedly unaffected and asymptomatic males, may call into question the pathogenicity of the variant or warrant consideration of the possibility of variable expressivity or reduced penetrance.

P-586 11:30 AM Wednesday, October 28, 2026

OVERCOMING LINKAGE LIMITATIONS IN PGT-M FOR MICRODELETIONS: SUCCESSFUL PROBE DEVELOPMENT IN THE ABSENCE OF INFORMATIVE FAMILY MEMBERS. Amanda Iturriaga, M.S.[1], Cara Vega, BS[1], Nicole D Loia, MS[2], Emily Mounts, MS, CGC[1], Xin Tao, PhD, HCLD[1] and Chaim Jalas, .[2], [1]Juno Genetics, Basking Ridge, NJ, [2]Juno Genetics US Inc, Basking Ridge, NJ

OBJECTIVE: PGT-M for microdeletions has traditionally proven difficult due to the small size of many variants and the inability to offer linkage analysis, as they frequently occur *de novo* or lack available family members. The objective of this study was to review successful PGT-M laboratory technical approaches to probe development for microdeletions.
MATERIALS AND METHODS: Retrospective observational study of PGT-M cases with probe development for a microdeletion by a single PGT reference laboratory from January 2016-February 2026.
Breakpoints were determined by an outside laboratory. For all cases, direct detection of the deletion was offered by selecting in-deletion markers for which the gamete providers had homozygous opposite genotypes from one another. TaqMan assay(s) were then validated using samples from gamete provider and informative family member (if applicable). For cases with informative family members, linkage analysis was also utilized, resulting in an accuracy of >98%. For cases without informative family members, linkage markers that could later be used to distinguish between positive and negative haplotypes were selected. If the in-deletion assay(s) identified at least one positive and one negative embryo biopsy, phase was determined, increasing accuracy from >97% to >98%. For cases with a *de novo* microdeletion in a child or pregnancy, probe development was performed via homozygous opposite TaqMan genotyping only (>97% accuracy).
RESULTS: 84 patients were included with a total of 85 microdeletions. Approximately two thirds of cases involved common microdeletion syndromes: 22q11.2,15q11.2 and 16p.
Probe development for an affected patient or partner was performed for 73 deletions: 33 with family members and 40 without [family unavailable, untested, or unaffected]. Probe development for an additional 12 cases involving *de novo* offspring was performed to address potential recurrence risk.
At least one informative homozygous opposite marker was identified within each deletion; therefore, probe development to directly detect the deletion was successful for all cases.
For the 33 cases without family members, embryos were tested in 27 cases (81.8%); linkage phase was successfully established in 25 cases (92.6%), achieving an accuracy of >98%. For the two cases in which linkage was not established, one case had no informative linkage markers and one case did not have both positive and negative embryo biopsy samples. These cases (7.4%) maintained an accuracy of >97%.
CONCLUSIONS: In this case series, a unique homozygous opposite genotyping strategy was successful for 85 PGT-M cases, 45 of which would otherwise not have been possible due to no family member availability (n=33) or *de novo* offspring (n=12).
IMPACT STATEMENT: For individuals with *de novo* microdeletions or for whom family members are unavailable to facilitate linkage, previous strategies have precluded PGT-M, limiting options for prevention of disease transmission to offspring. This study highlights an effective method of probe development utilizing probes within microdeletions to enable successful PGT-M probe development for many families.

P-587 11:45 AM Wednesday, October 28, 2026

SIMULTANEOUS PREIMPLANTATION GENETIC TESTING (PGT-M) TEST OPTIMIZATION AND TESTING OF BIOPSIED SAMPLES IS NOT ASSOCIATED WITH AN INCREASED RISK OF INCONCLUSIVE RESULTS. Sheila C Johal, MS[1], Jennifer L Garbarini, M.S.[2], Mollie Erskine, BSc[3] and Kristine McWilliams, MD, PhD, HCLD (ABB)[4], [1]CooperSurgical, Livingston, NJ, [2]CooperSurgical, Trumbull, CT, [3]CooperSurgical, London, United Kingdom, [4]CooperSurgical, Trumbull, MI

OBJECTIVE: To assess the likelihood of receiving inconclusive PGT-M results following simultaneous PGT-M test optimization and testing of biopsied embryo samples.
MATERIALS AND METHODS: In January 2024, a commercial preimplantation genetic testing (PGT) laboratory eliminated sequential PGT-M test optimization in favor of a process of simultaneous optimization and testing of biopsied samples. This method has been previously demonstrated to significantly decrease the time to receive results for first time PGT-M patients (Johal, *et al*., 2025). The rate of successful PGT-M test completion may be measured by the frequency of inconclusive results. To compare the rates of inconclusive results between optimization approaches, a retrospective chart review was performed for patients completing an initial cycle of PGT-M testing at a reference laboratory over 3 years (2023, 2024, 2025). All new cases completed in each

calendar year were included. For each case, the age of the egg contributor, the number of biopsied samples submitted, the method of PGT-M test optimization (serial or simultaneous), whether the cohort received inconclusive results, and the reason for inconclusive results were collected and compared. The percentage of cases with inconclusive results for each approach was calculated. Statistical analyses were performed using a one-way Chi squared test, t-test, and 2 proportion z-test, as appropriate.
RESULTS: 1385 patients completed an initial cycle of testing with serial PGT-M test optimization. 44 cases (3.2%) received inconclusive results for all samples that yielded a result. 3242 patients completed an initial cycle of testing with simultaneous PGT-M test optimization and testing of biopsied samples. 126 cases (3.9%) received inconclusive results for all samples that yielded a result. This difference was not statistically significant (p = 0.257). There was also no significant difference in the number of embryo biopsies received per case (6.1 and 6.2, respectively; p = 0.49) or in the distribution of the age of the egg contributor (p = 0.672) between the 2 groups. The most common reason for inconclusive results in both groups was lack of family member references (93.2% and 89.7% respectively; p = 0.49).
CONCLUSIONS: Simultaneous PGT-M test optimization and testing of biopsied embryo samples results in similar rates of successful PGT-M test completion compared to a serial optimization approach while saving patients considerable clinical time in the IVF with PGT-M process.
IMPACT STATEMENT: Adoption of simultaneous PGT-M test optimization and testing significantly shortens the overall PGT-M timeline without increasing the risk of inconclusive results. This approach supports more efficient laboratory workflows and allows patients to proceed with reproductive decision-making sooner, without compromising test reliability.
SUPPORT: None

P-588 12:00 PM Wednesday, October 28, 2026

MONOSOMY-TYPE MOSAIC EMBRYOS ARE ASSOCIATED WITH POORER PREGNANCY OUTCOMES THAN TRISOMY-TYPE EMBRYOS AFTER PGT-A: A COVARIATE-ADJUSTED ANALYSIS OF 2,898 SINGLE EMBRYO TRANSFERS. Sun-Nyoung Hwang, Ph.D.[1], Eun A Park, Ph.D.[1], Ji I Baek, M.S.[1], Min Young Shin, M.S.[1], Min Jeong Cho, M.S.[1], Hyunji Choi, M.D.[2], Yun Jung Hur, M.D.[3], Hye Ok Kim, M.D., Ph.D.[4], Soo Jin Han, M.D.[2] and eun Jeong Yu, M.D.[3], [1]Fertility Laboratory, CHA University Fertility Center Seoul Station, Seoul, Korea, Republic of (South), [2]CHA Fertility Center Seoul Station, Seoul, [3]Department of Obstetrics and Gynecology, CHA University Fertility Center Seoul Station, Seoul, Korea, Republic of (South), [4]CHA University School of Medicine, CHA Fertility Center Seoul Station, Seoul, Korea, Republic of (South)

OBJECTIVE: Whether chromosomal loss and gain have equivalent clinical impact in mosaic embryos remains unclear. We aimed to determine whether monosomy-type and trisomy-type mosaic embryos differ in pregnancy outcomes after controlling for key clinical covariates.
MATERIALS AND METHODS: This retrospective cohort study included 2,898 single embryo transfers performed between August 2020 and June 2025, comprising euploid (n=2,569), monosomy-type (n=142), trisomy-type (n=91), and mixed-type (n=96) mosaic embryos following PGT-A. Mosaic subtypes were defined based on copy-number loss (monosomy), gain (trisomy), or combined abnormalities, with mosaic levels defined within the 20–80% range. Primary outcomes were clinical and ongoing pregnancy. Multivariable logistic regression analyses were performed adjusting for maternal age, paternal age, BMI, AMH, and endometrial thickness.
RESULTS: Clinical and ongoing pregnancy rates showed a consistent gradient, with the lowest rates observed in monosomy-type embryos (45.8% and 35.9%), compared with euploid (59.6% and 51.0%) and trisomy-type embryos (56.0% and 47.3%). Consistent with this pattern, only monosomy-type embryos showed significantly lower clinical and ongoing pregnancy rates than euploid embryos in unadjusted analyses, while no other comparisons were statistically significant. After adjustment for key clinical covariates, monosomy-type embryos remained significantly associated with reduced odds of clinical pregnancy (OR 0.63, 95% CI 0.45–0.90) and ongoing pregnancy (OR 0.59, 95% CI 0.41–0.85). Mixed-type embryos also showed reduced odds of ongoing pregnancy (OR 0.65, 95% CI 0.42–0.99), whereas trisomy-type embryos showed outcomes comparable to euploid embryos. No significant differences were observed in miscarriage rates across groups. The overall direction and magnitude of effect favored trisomy-type over monosomy-type embryos across outcomes.
CONCLUSIONS: Monosomy-type mosaic embryos were associated with consistently poorer pregnancy outcomes after covariate adjustment, suggesting a greater detrimental impact of chromosomal loss than gain. These findings indicate that mosaic subtypes should not be considered equivalent and support prioritizing trisomy-type over monosomy-type embryos when clinically appropriate.
IMPACT STATEMENT: This study demonstrates that mosaic subtype is clinically relevant, with monosomy-type embryos showing consistently poorer outcomes than trisomy-type embryos, supporting subtype-based embryo prioritization in clinical practice.
SUPPORT: None

GENETICS (11 OF 21)

P-589 11:15 AM Wednesday, October 28, 2026

DUCHENNE MUSCULAR DYSTROPHY: ASYMPTOMATIC FATHERS IDENTIFIED VIA PGT-M. Claire Murphy Jones, MS, CGC[1], Amy Jordan, MS, LCGC[1] and Cengiz Cinnioglu, PhD[2], [1]Luminary Genetics, CA, [2]Luminary Genetics, San Jose, CA

OBJECTIVE: As part of preimplantation genetic testing for monogenic disorders (PGT-M) for Duchenne muscular dystrophy (DMD), genetic testing for the patient's parents may be necessary. Rarely, this can lead to a reportedly asymptomatic father of the patient testing positive for the familial *DMD* variant. This is a retrospective analysis of all cases in which *DMD* pathogenic variants were identified in a reportedly asymptomatic father from one PGT laboratory, to better characterize this understudied patient population.
MATERIALS AND METHODS: Analysis was performed for all completed or in-progress PGT-M cases from 12/01/2020 to 04/15/2026. *DMD* cases in which the patient's parents were tested were included. For those cases in which the patient's father was found to carry the familial *DMD* variant, additional chart review was conducted to obtain variant details, health status and age of the father, and any follow-up testing.
RESULTS: 31 PGT-M cases involving the *DMD* gene were identified, and 17/31 (54.83%) of these had parental involvement. Of these 17 cases, the father was found to carry the familial *DMD* variant in 8/17 (47.06%) cases. The father was reportedly healthy in 7/8 (87.50%) cases. In these 7 cases, 6/7 of the *DMD* variants were classified as pathogenic or likely pathogenic (P/LP), and 1 variant was classified as LP on the patient's report but a variant of uncertain significance (VUS) on the patient's father's report. 4/7 variants were exon deletions, 2/7 were exon duplications, and 1/7 was a splice site variant expected to result in an exon deletion; all were expected to be in-frame. The fathers ranged in age from 59 to 73, with a median age of 68. For the 2 cases involving an exon duplication, follow-up testing to determine whether the variant was tandem was not reported.
CONCLUSIONS: Potential reasons for an asymptomatic male testing positive for a *DMD* variant include subclinical manifestations, delayed symptom onset, incorrect variant classification, or non-tandem duplications. All variants were expected to result in in-frame deletions or duplications, consistent with Becker muscular dystrophy (BMD) and symptom onset between age 5 to 60. Fathers ranged in age from 59 to 73; therefore, it is possible that onset of BMD had not yet occurred. Alternatively, these fathers may be symptomatic but not recognize the symptoms, misattribute symptoms to "normal aging", or not communicate these symptoms to the patient.
All variants were reported as P/LP; however, if the father is truly asymptomatic, the variant may be benign or, if it is a duplication, non-tandem. Tandem *DMD* duplications often disrupt the reading frame and impact protein creation, whereas non-tandem duplications are largely benign. Although neither case involving exon duplication had tandem testing, this may be an appropriate next step in future to determine whether PGT-M is clinically indicated.
IMPACT STATEMENT: By analyzing nearly six years of data, this study highlights and provides explanation for an understudied patient population in genetics: men who carry pathogenic *DMD* variants, identified as part of PGT-M test creation, despite being reportedly healthy.

P-590 11:30 AM Wednesday, October 28, 2026

CLINICAL CHARACTERISTICS AND WHOLE EXOME SEQUENCING RESULTS OF CASES WITH RECURRINGOOCYTE, ZYGOTE AND EMBRYO MATURATION ARREST (OZEMA). Semra Kahraman, Prof. MD[1], Murat Cetinkaya, M.D., PhD[1], Svetlana Madjunkova, M.D., M.SC., Ph.D.[2], Burcu Kara, BSc[1] and Fatih Aktoz, MD[1], [1]Istanbul Memorial Hospital, Istanbul, Turkey, [2]Create Fertility Centre, Toronto, ON, Canada

OBJECTIVE:
To investigate the clinical and molecular basis of rare but clinically significant infertility phenotypes, oocyte, zygote, embryo maturation arrest (OZEMA) which remain major diagnostic and therapeutic challenges in reproductive medicine.
MATERIALS AND METHODS:
This multicenter study was conducted at Istanbul Memorial Hospital, ART and Reproductive Genetics Center, (Turkey) and Create Fertility Centre (Canada) between 2018 and 2025. A total of 113 women with recurrent oocyte and/or embryo maturation arrest across multiple ART cycles were included. For almost half of these cases, female partners' parents were consanguineous. Pathogenic/likely pathogenic variants in established genes, variants of uncertain significance (VUS) in established genes, heterozygous variants in primarily autosomal recessive genes and novel candidate variants/genes were evaluated. Due to a history of oocyte maturation defects and early embryonic arrest and given that a substantial proportion of cases (44,3%) had a history of parental consanguinity on the female side, whole exome sequencing (WES) was performed in the female partners.
RESULTS:
The mean female age was 33.47 ± 4.37 years, with a median infertility duration of 6 years (range: 1–21). Patients had undergone a median of 4 ART cycles (range: 1–16). In 51 of the 113 cases (45.1%) no findings were obtained. However, genetic variants were identified in known or candidate genes in 62 of these 113 cases (54.9%). Results were stratified into four categories: pathogenic/likely pathogenic variants in established genes (n=12, 10.6%), variants of uncertain significance (VUS) in established genes (n=15, 13.2%), heterozygous variants in primarily autosomal recessive genes (n=14, 12.3%) and novel candidate variants/genes (n=21, 18.6%). The most frequently affected genes included *TUBB8, PATL2, NLRP5, NLRP2, PADI6,* and *WEE2*. Additionally, several novel variants were identified in known infertility-related genes (*PATL2, NLRP2, TLE6,* and *NLRP5*) not previously reported in the Human Gene Mutation Database.
CONCLUSIONS:
A substantial proportion of patients, 27 cases (23.8%) with recurrent OZEMA harbor genetic variants in previously reported genes affecting oocyte and early embryo development. Also, in 21 cases (18.6%) novel candidate genes to OZEMA were identified. Candidacy of these genes were determined based on their role in fertility related pathways and previous literature. These findings support the integration of genomic testing into the diagnostic workup of patients with repeated ART failure,

particularly in younger women with preserved ovarian reserve and long-standing unexplained infertility.
IMPACT STATEMENT:
Maternal WES can identify clinically relevant and biologically plausible variants in highly selected patients and may assist in counseling and family-wide genetic evaluation. This study provides clinically relevant evidence that genetic factors play a major role in severe ART failure phenotypes. Identification of underlying variants can inform genetic counseling, refine prognosis, and help avoid repeated ineffective ART attempts, enabling more personalized and evidence-based reproductive management.
SUPPORT: Not applicable

P-591 11:45 AM Wednesday, October 28, 2026

DIRECT DETECTION OF *SMN1* COPY NUMBER BY CAPILLARY ELECTROPHORESIS FOR PREIMPLANTATION GENETIC TESTING IN CHALLENGING SPINAL MUSCULAR ATROPHY CASES. Maria H.J Katz, MSc, LCGC[1], Nicholas Schuch, BS[1], Qinnan Zhang, PHD[1], Gideon Jevan Providence, Ms[2], Noor Siddiqui, MSc[3] and Yuntao Xia, PHD[1], [1]Orchid Health, Durham, NC, [2]Wainfleet, ON, Canada, [3]San Francisco, CA

OBJECTIVE: To evaluate whether capillary electrophoresis (CE)-based preimplantation genetic testing (PGT) can accurately distinguish between zero and non-zero *SMN1* copy number in embryos without the need for probe development or linkage analysis.
MATERIALS AND METHODS:
Fifty samples with known *SMN1* status, including Coriell cell lines and embryos, were analyzed. DNA was diluted to picogram levels to simulate embryo biopsy conditions, followed by whole genome amplification (WGA). Amplified DNA underwent CE to assess *SMN1* copy presence. Results were confirmed using polymerase chain reaction restriction fragment length polymorphism (PCR-RFLP). The WGA method was validated to minimize allele dropout. Concordance rates between CE and PCR-RFLP were calculated.
RESULTS:
CE-based PGT achieved 99% concordance with known *SMN1* status. PCR-RFLP confirmed all concordant results. The assay reliably distinguished between zero and non-zero *SMN1* copy numbers, enabling identification of embryos affected by spinal muscular atrophy (SMA). This approach eliminates the need for probe development or linkage analysis, including in cases involving silent carriers.
CONCLUSIONS:
Direct assessment of *SMN1* copy number using CE provides a reliable method for detecting SMA-affected embryos. This approach overcomes limitations of traditional PGT-M strategies that rely on linkage analysis and may be ineffective in certain carrier scenarios.
IMPACT STATEMENT: This method expands PGT options for patients at risk of SMA, including silent carriers, by enabling accurate embryo selection without complex assay customization, thereby improving clinical accessibility and reducing residual disease risk.

P-592 12:00 PM Wednesday, October 28, 2026

RAPID AUTOMATED DETECTION OF ANEUPLOIDY WITH INTEGRATED SINGLE NUCLEOTIDE POLYMORPHISM (SNP)-BASED QUALITY CONTROL USING A COMBINED COPY NUMBER VARIANT (CNV) AND POLYPLOIDY WORKFLOW. Erich Klem, PhD, Thermo Fisher Scientific

OBJECTIVE: To evaluate the analytical performance and workflow characteristics of an integrated CNV and SNP-based QC solution for PGT-A using the Ion ReproSeq workflow on the Ion Torrent Genexus System combined with the Ion AmpliSeq Polyploidy Panel and ReproSeqSnpAnalysis (RSSA) plugin v1.0.11.
MATERIALS AND METHODS: Validation studies were conducted across multiple operators, reagent lots, and replicate samples. Analytical performance was assessed for CNV detection, mosaic detection, triploidy detection, sibling QC, maternal contamination detection, targeted assay compatibility, and limit of quantitation. SNP-based QC was performed using a targeted microhaplotype and SNP panel with automated analysis via the RSSA plugin.
RESULTS: CNV detection achieved 98.6% sensitivity and 100% specificity for ≥10 Mb events. Mosaic trisomy detection demonstrated 100% sensitivity and 99.0% specificity, with 99.0% of samples within ±0.15 ploidy units of expected values. SNP-based analysis enabled 100% sensitivity and specificity for triploidy detection and 100% correct sibling clustering. Maternal contamination detection showed 91.5% sensitivity and 97.9% specificity. The integrated workflow supported low DNA input (~15 pg) and delivered results in approximately 10–11 hours.
CONCLUSIONS: The combined CNV and SNP-based workflow on the Genexus System provides a rapid, automated solution for PGT-A with integrated QC capabilities. Incorporation of SNP-based analysis enables detection of polyploidy, contamination, and sample identity, providing orthogonal validation of CNV results and improving confidence in embryo assessment.
IMPACT STATEMENT: Preimplantation genetic testing for aneuploidy (PGT-A) requires accurate detection of chromosomal abnormalities from limited DNA input. Low-pass whole-genome sequencing enables genome-wide copy number variation (CNV) analysis but lacks orthogonal quality control (QC) metrics such as contamination detection and sample identity confirmation. Integration of SNP-based analysis can enhance confidence in embryo assessment.

GENETICS (12 OF 21)

P-593 11:15 AM Wednesday, October 28, 2026

EMBRYO SEX DOES NOT INFLUENCE AUTOSOMAL ANEUPLOIDY RATES OR CLINICAL OUTCOMES: A LARGE-SCALE PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY STUDY. Emily H. Frisch, M.D.[1], Jiaqi Zhang, MS[2], Hanjie Zhao, MS[3], Liesl Nel-Themaat, PH.D., MBA, HCLD[1] and Lusine Aghajanova, MD, PhD[4], [1]Division of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gynecology, Stanford University School of Medicine, Stanford, CA, [2]Stanford University, Stanford, CA, [3]Hayward, CA, [4]Stanford University School of Medicine, Reproductive Endocrinology & Infertility, Department of Obstetrics and Gynecology, Sunnyvale, CA

OBJECTIVE: To investigate whether embryo sex is associated with the incidence of autosomal aneuploidy, mosaicism, or clinical pregnancy outcomes in a large cohort of embryos undergoing preimplantation genetic testing for aneuploidy (PGT-A).
MATERIALS AND METHODS: This is a retrospective cohort study that analyzed 11,489 embryos from PGT-A cycles performed between 2020 and 2025 in 1,873 patients at a single center. Exclusion criteria included the use of donor embryos, maternal age greater than 45 years, and embryos with sex chromosome aneuploidy or mosaicism. Statistical analysis utilized Chi-square tests and logistic regression model adjusted for maternal age, paternal age, and biopsy day (D5, D6, D7). Clinical outcomes were assessed in a subset of 2,074 single-embryo transfer cycles (1,036 female, 1,038 male).
RESULTS: The overall autosomal aneuploidy rate (50.0% female vs 49.7% male, p=0.80) and autosomal mosaicism rate (7.8% vs 7.4%, p=0.45) did not differ significantly by sex. In multivariable analysis, embryo sex was not a predictor of aneuploidy (adjusted Odds Ratio (aOR): 1.01; 95% CI: 0.93-1.09; p=0.89). Higher maternal age, D6 and D7 compared to D5 are significantly associated with aneuploidy (aOR: 1.16 95% CI [1.15,1.18], 1.63 95% CI [1.50,1.76], 2.1 95% CI [1.77,2.5], correspondingly, p<0.01 for all). Notably, female embryos were significantly enriched in the Day 7 biopsy group (56%) compared to Day 5 (49%) or Day 6 (49%) (p < 0.01 for both). Regarding clinical outcomes, no significant differences were observed between female and male embryos in total pregnancy rate (73.0% vs 75.3%), clinical intrauterine pregnancy rate (65.1% vs 66.8%), or biochemical loss rate (7.3% vs 7.6%) (Table 1).
CONCLUSIONS: Embryo sex does not influence the risk of autosomal aneuploidy or the likelihood of clinical success in PGT-A cycles, which differs from previous studies (1). While female embryos demonstrate a statistically higher prevalence among late-developing (Day 7) blastocysts, their chromosomal health and implantation potential remain comparable to male embryos. These findings suggest that developmental kinetics and maternal age, rather than biological sex, are the primary drivers of embryo competency.
IMPACT STATEMENT: This study provides robust evidence that sex-based selection is unnecessary for optimizing chromosomal or clinical outcomes, as embryo sex does not impact aneuploidy risk or pregnancy success.
Table 1: Pregnancy Rates by Embryo Sex

Cycle Outcome	Female Embryo	Male Embryo	p-value
	N = 1,036	N = 1,038	
Biochemical pregnancy rate	7.3% (76/1,036)	7.6% (79/1,038)	0.81
Clinical intrauterine pregnancy rate	65.1% (674/1,036)	66.8% (693/1,038)	0.41
Pregnancy rate	73.0% (756/1,036)	75.3% (782/1,038)	0.22

SUPPORT: This study did not receive financial support.
REFERENCES:
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P-594 11:30 AM Wednesday, October 28, 2026

THE HIDDEN ANEUPLOID BURDEN WITHIN MORPHOLOGICALLY TOP-GRADE BLASTOCYSTS. Mandy Katz-Jaffe, PhD[1], Annette B Matts, MS[2], Kelsey Yannett, MS, C.G.C[2], Carly Gassen, MS, C.G.C[2], Lacey Hurtado, MS, C.G.C[2], Whitley R Lehto, PhD[2] and William B Schoolcraft, M.D.[1], [1]CCRM Fertility, Lone Tree, CO, [2]CCRM Genetics, Lone Tree, CO

OBJECTIVE: Embryo selection is a critical factor contributing to the success of an IVF cycle, with morphological assessment and preimplantation genetic testing for aneuploidy (PGT-A) as the two primary methods. This study aimed to investigate how often these two methods align, when the top-grade morphological choice matches the top-grade euploid embryo, and when morphological assessment alone would select a top-grade aneuploid blastocyst.
MATERIALS AND METHODS: IVF PGT-A cycles (n=6,654) between 2015 and 2022 at a single infertility clinic, were included in this retrospective analysis. All cycles were re-evaluated to identify the top-grade morphological blastocyst in the embryo cohort independent of the PGT-A result. Only whole chromosome aneuploid profiles were included in the analysis to ensure consistency in result calling across the entire dataset. Statistical analyses was performed in R version 4.4.2. The effects of maternal age, paternal age, day of biopsy, embryo grade, and infertility diagnosis on top-grade aneuploid probability were tested using a binomial generalized linear model. The significance of odds ratios was determined with Fisher's exact tests and predicted marginal probabilities were calculated with ggeffects v. 2.3.2, significance at P<0.05.
RESULTS: Chromosome aneuploidy was observed in the morphological top-grade blastocyst for 46.4% (n=3,090) of IVF cycles. Of the morphologically top-grade euploid blastocysts (n=3,564), 50.1% were 46 XX, and 49.9% were 46 XY, revealing a balanced sex chromosome ratio. Statistical analysis revealed maternal age was highly significant for predicting euploid vs aneuploid morphologically top-grade embryos for all SART

maternal age groups (OR=1.15; 95% CI 1.12-1.19; P<0.0001), even when controlling for blastocyst development and quality. Predicted probability for a morphologically top-grade aneuploid blastocyst was as follows: <35 years = 25%, 35-37 years = 31%, 38-40 years = 59%, 41-42 years = 62%, and 43+ years = 82% (P<0.0001). Additionally, delayed biopsy day (6 and 7) and/or lower embryo grades (<AA) were associated with ~72% lower odds for a top-grade euploid embryo, independent of maternal age (OR=0.28; 95% CI 0.19-0.40; P<0.0001). In contrast, no significance was observed with paternal age or any infertility diagnoses between euploid and aneuploid morphologically top-grade blastocysts.
CONCLUSIONS: Substantial discordance exists between morphology-based and PGT-A–based embryo selection, with nearly half of the morphologically top-grade blastocysts proving aneuploid, emphasizing the limitations of visual assessment as a sole embryo selection criterion. Additionally, independent of maternal age, slower blastocyst development and poorer embryo quality were significantly associated with the probability of whole chromosome aneuploidy. Hence, PGT-A reveals the hidden aneuploid burden within morphologically top-grade blastocysts, reflecting the inadequacy of embryo grading alone to achieve reproductive success.
IMPACT STATEMENT: Roughly half of the morphologically top-grade blastocysts in IVF cycles were identified with whole chromosome aneuploidy.
SUPPORT: None.
REFERENCES:
None.

P-595 11:45 AM Wednesday, October 28, 2026

POST-WARMING BIOPSY OF PREVIOUSLY VITRIFIED UNBIOPSIED BLASTOCYSTS: DIAGNOSTIC EFFICIENCY AND CLINICAL OUTCOMES COMPARED WITH CONVENTIONAL BIOPSY CYCLES. Sehwa Lee, BS[1], Youjin Yum, MS[1], SI-Yeon KIM, BS[1], Yoonsu SHIN, BS[1], Su-Jin Sim, MS[1], Jiye Lee, BS[1], Su Youn Lim, MD, PhD[2], Inn Soo Kang, MD, PhD[2], Kyung Ah Lee, Ph.D.[3] and MI Kyoung Koong, M.D., PH.D.[2], [1]CHA University Fertility Center Daegu, Daegu, Jung-gu, Korea, Republic of (South), [2]Department of Obstetrics and Gynecology, CHA Fertility Center Daegu, CHA University School of Medicine, Republic of Korea, [3]CHA University, Sungnam-Si, Korea, Republic of (South)

OBJECTIVE:
To evaluate the diagnostic efficiency and clinical outcomes of post-warming trophectoderm biopsy in previously vitrified unbiopsied blastocysts undergoing PGT-A compared with conventional biopsy cycles.
MATERIALS AND METHODS:
This retrospective study included 97 previously vitrified unbiopsied blastocysts from 26 patients (29 treatment cycles) that underwent warming followed by trophectoderm biopsy and refreezing for PGT-A. Post-warming survival, amplification success, chromosomal status distribution, and clinical outcomes after embryo transfer were assessed. A retrospective control cohort of 96 conventionally biopsied blastocysts from 19 patients was included for comparison. Clinical pregnancy was defined as the presence of fetal cardiac activity and ongoing pregnancy as pregnancy beyond 12 weeks of gestation. Statistical comparisons were performed using Fisher’s exact test.
RESULTS:
Among 97 warmed blastocysts, 95 (97.9%) survived warming and underwent biopsy, and all biopsied embryos yielded successful amplification results (100%). Euploid rates were comparable between the post-warming biopsy and conventional biopsy groups (30.5% vs. 25.0%, P = 0.422). Maternal age and blastocyst developmental stage distribution were similar between groups. Implantation occurred in 8 of 16 embryos (50.0%) in the study group and 13 of 18 embryos (72.2%) in the control group (P = 0.291). Clinical outcomes, including clinical pregnancy, ongoing pregnancy, and live birth rates, showed lower absolute numbers in the study group; however, no statistically significant differences were observed between groups.
CONCLUSIONS:
Post-warming biopsy of previously vitrified unbiopsied blastocysts demonstrated high diagnostic efficiency with excellent amplification success. Although absolute clinical outcome numbers were lower in the study group, embryos obtained through delayed biopsy appeared to retain implantation potential comparable to embryos biopsied prior to vitrification. Larger prospective studies are needed to confirm these findings.
IMPACT STATEMENT:
Post-warming biopsy provides a flexible clinical option for patients in whom PGT-A was not initially performed before cryopreservation and supports the feasibility of delayed genetic testing without compromising diagnostic reliability or embryo viability.
SUPPORT: No financial support.

P-596 12:00 PM Wednesday, October 28, 2026

CARRYING THE RISK? AN EVALUATION OF GAUCHER MUTATION CARRIERS: ASSISTED REPRODUCTIVE TECHNOLOGY (ART) OUTCOMES AND PARKINSON’S DISEASE FAMILY HISTORY. Rachel Linfield, MD, M. Phil[1], Jillian Pecoriello, MD[2], Hannah N Green, MS[3], Carissa Huber, MS, CGC[3], Emily K Patterson, B.S.[3] and Jennifer K Blakemore, MD, MSCI[3], [1]NYU Langone Health, New York, NY, [2]NYU School of Medicine, New York, NY, [3]NYU Langone Fertility Center, New York, NY

OBJECTIVE: Carrier screening (CS) is routinely offered to patients as part of pre-conception counseling and prior to assisted reproductive technology. While the goal is primarily to identify at-risk couples due to shared carrier status, carriers of certain autosomal recessive genes and variants may have increased risk of other medical conditions; for example, Gaucher disease (GBA) carriers are at increased risk of developing Parkinson’s Disease (PD). The impact of GBA carrier status on controlled ovarian stimulation (COS) outcomes remains unclear. We evaluated COS outcomes and PD family history in GBA carriers.
MATERIALS AND METHODS: This was a single-center retrospective cohort study of all GBA carriers presenting for fertility evaluation 2024 - 2025. Carriers undergoing COS were matched 1:2 to controls by age, AMH, cycle year, and number of cycles. Primary outcomes included oocyte yield. Secondary outcomes included maturity rate, duration of stimulation and cumulative dose of gonadotropins. Data was analyzed using Mann Whitney U-tests, with p<0.05 significant. Documentation of PD family history and genetic consult with discussion of PD risk were reviewed.
RESULTS: Out of 6606 carrier screens completed, 74 GBA carriers (1.1%) were identified (37 female, 37 male), with 37 female GBA carriers matched to 74 female non-carrier controls. Among female carriers, 23 (62.2%) underwent IVF, 10 (27%) embryo banking, and 4 (10.8%) oocyte cryopreservation. There were no differences in age (37y (IQR 7) vs 37y (6.8), p = 0.34) or AMH (2.11ng/mL (2.87) vs 2.31ng/mL (2.67), p= 0.93) between carriers and controls. COS outcomes were similar, with no difference in oocytes retrieved (13.5 (13) vs 15 (13.5), p = 0.12), M2s retrieved (11 (10) vs 13 (9.5), p = 0.14) or maturity rate (0.8 (0.20) vs 0.8 (0.16), p = 0.73) between non-carriers and carriers. There were also no differences in duration of COS (11d (2) v 11d (2), p = 0.67), or total gonadotropins (4125 IU (1237) vs 4500 IU (938), p = 0.28). 6 (8.2%) carriers had a documented family history of PD in a first degree relative, higher than population estimates (3.5 – 4.3%).[1,2] Despite our center’s recommendation for all carrier patients to speak with a genetic counselor, only 18 (24.7%) patients completed genetic counseling where risk of Parkinson's was discussed.
CONCLUSIONS: GBA carrier status does not compromise ovarian response or oocyte maturity. However, an increased prevalence of PD family history, paired with low uptake of available genetic counseling, highlights an opportunity to better support patients in understanding the broader health implications of their results.
IMPACT STATEMENT: For patients navigating fertility care, being a GBA carrier should not add concern about COS outcomes. These findings shift the focus to patient education—underscoring the need for more accessible, patient-centered counseling that empowers individuals to understand both reproductive and long-term health risks as CS becomes increasingly routine.
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GENETICS (13 OF 21)

P-597 11:15 AM Wednesday, October 28, 2026

ARRAY-BASED PGT-A REDUCES ARTIFICIALLY INFLATED CHAOTIC ANEUPLOIDY RATES COMPARED TO STANDARD NEXT GENERATION SEQUENCING (NGS) PLATFORMS. Erik Widen, PhD[1] and Santiago Munne, PhD[2], [1]Genomic Prediction, Inc., North Brunswick, NJ, [2]Homu Health Ventures, LA Jolla, CA

OBJECTIVE: To evaluate the prevalence of chaotic aneuploidy using a high-resolution Single Nucleotide Polymorphism (SNP)-array platform and determine if SNP-based PGT-A reduces the false-positive of chaotic results frequently associated with standard Next-Generation Sequencing (NGS).
MATERIALS AND METHODS: A retrospective analysis was performed on 40,552 trophectoderm biopsies submitted from In Vitro Fertilization clinics across the Americas. Samples were analyzed using a high-throughput SNP-array platform. Chaotic aneuploidy was defined as the detection of 5 or more chromosome abnormalities in a single biopsy, out of which less than 3 were segmental. Maternal age (mean 36.7±4.8 years) was collected to ensure a representative sampling of the PGT-A population. Statistical analysis included calculation of prevalence rates and 95% confidence intervals (CI) (Wilson score) . Results were compared to published literature regarding NGS-based chaotic rates and subsequent re-biopsy outcomes.
RESULTS: Among 40,552 embryos, the SNP-based chaotic aneuploidy rate was 2.6% (1,049/40,552; CI: 2.44-2.75%). This is notably lower than the 4.0-8.3% chaotic rates reported in recent NGS-based studies. Literature review of NGS-identified chaotic embryos shows that upon re-biopsy, approximately 25-45% are reclassified as euploid. The delta between the observed 2.6% SNP-based rate and reported NGS rates (typically >4%) aligns with the false positive rate identified in NGS re-biopsy studies, suggesting that SNP platforms more accurately distinguish true biological chaos from technical noise.
CONCLUSIONS: High resolution SNP-array platforms yield significantly lower chaotic aneuploidy rates (2.6%) compared to traditional NGS methods. The higher rates seen in NGS likely represent an artificial inflation due to technical limitations. By reducing these false positives, SNP-based testing provides a more reliable assessment of embryo viability, potentially saving a significant percentage of embryos that might otherwise be discarded or subjected to the stress of a second biopsy.
IMPACT STATEMENT: This study demonstrates that high resolution SNP-based PGT-A clarifies the "chaotic" result, reducing technical artifacts and providing clinicians with more accurate data to guide embryo transfer decisions without the necessity for routine re-biopsy.
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P-598 11:30 AM Wednesday, October 28, 2026

CLINICAL OUTCOMES OF SEGMENTAL MOSAIC AND ANEUPLOID EMBRYO TRANSFER: IMPACT OF MOSAIC LEVEL ON REPRODUCTIVE POTENTIAL. Wei-Che Lo, M.D., En-Hui Cheng, Ph.D., Hui-Hsin Shih, M.S., Pin-Yao Lin, M.D., Ph.D., Maw-Sheng Lee, M.D., Ph.D., Chun-Chia Huang, Ph.D., Ming-Jer Chen, M.D., M.Sc. and Chun I Lee, M.D., Ph.D., Division of Infertility, Lee Women's Hospital, Taichung, Taiwan

OBJECTIVE: To evaluate the impact of segmental mosaic level on reproductive outcomes of embryos with segmental chromosomal abnormalities in a large single-center PGT-A cohort, addressing a key clinical challenge when euploid embryos are unavailable.
MATERIALS AND METHODS: This retrospective study included 1,453 frozen single embryo transfer cycles following PGT-A at a single center from January 2021 to March 2025. Trophectoderm biopsy with next-generation sequencing was performed. A total of 1,209 euploid embryos served as controls. Segmental mosaicism was classified as low-level (>20%–<50%) and high-level (≥50%–≤80%), while segmental aneuploidy was defined as >80%. Segmental abnormal embryos included low-level mosaicism (n=165), high-level mosaicism (n=73), and segmental aneuploidy (n=6). Clinical outcomes and prenatal diagnostic results were analyzed.
RESULTS: Clinical outcomes showed a modest trend toward lower pregnancy and live birth rates with increasing segmental mosaic level. Clinical pregnancy rates were 64.1% (euploid), 64.2% (low-level mosaic), and 57.5% (high-level mosaic), with corresponding live birth rates of 54.9%, 55.8%, and 52.1%. High-level mosaic embryos showed reduced reproductive outcomes, whereas low-level mosaic embryos were comparable to euploid embryos. Miscarriage rates were comparable among groups, with no consistent trend observed (14.1%, 13.2%, and 9.5%). Segmental aneuploid embryos showed limited reproductive potential (live birth rate 16.7%), although interpretation is constrained by small sample size. Notably, one segmental aneuploid embryo with del(1)(p36.33–p32.3) and del(4)(q32.1–q35.2) resulted in a phenotypically normal live birth. All live births were phenotypically normal. Prenatal diagnosis showed predominantly normal findings. Three abnormal non-invasive prenatal testing (NIPT) results were identified, including 5q34 duplication, Xp11.22 microduplication, and combined 15q11.2 deletion with 16p13.11 duplication, none of which were concordant with the PGT-A mosaic findings.
CONCLUSIONS: Reproductive potential appears to be influenced by segmental mosaic level, although differences between groups are modest. Lower-level segmental mosaic embryos demonstrate acceptable outcomes, whereas higher-level mosaic embryos show reduced success.
IMPACT STATEMENT: These findings provide actionable evidence for prioritizing embryos based on segmental mosaic level and support the selective use of low-level mosaic embryos when euploid embryos are unavailable.
SUPPORT: None.

P-599 11:45 AM Wednesday, October 28, 2026

PGT-A INDICATION SHOULD BE GUIDED BY MATERNAL AGE, NOT AMH: EVIDENCE FROM EUPLOID TRANSFER OUTCOMES AND SINGLE EMBRYO TRANSFER ANALYSIS. Juyoung Lee, M.S.[1], Song Yi Moon, M.S.[1], Eun A Park, Ph.D.[1], Sun-Nyoung Hwang, Ph.D.[1], Youngeun Lee, M.S.[1], Suye Sung, M.S.[1], Kyung Ah Lee, Ph.D.[2], Eun-Hye Jo, M.D.[3], You Shin Kim, M.D.[3] and Tae Ki Yoon, M.D., Ph.D.[4], [1]Fertility Laboratory, CHA University Fertility Center Seoul Station, Seoul, Korea, Republic of (South), [2]CHA University, Sungnam-Si, Korea, Republic of (South), [3]Department of Obstetrics and Gynecology, CHA University Fertility Center Seoul Station, Seoul, Korea, Republic of (South), [4]CHA Fertility Center, Seoul

OBJECTIVE: To examine whether AMH is associated with implantation outcomes after euploid embryo transfer across five age groups, and to evaluate whether the clinical benefit of PGT-A over non-PGT single embryo transfer (SET) is AMH-dependent or age-dependent.
MATERIALS AND METHODS: A retrospective cohort study was conducted at a fertility center between January 2023 and December 2025 in patients undergoing IVF/ICSI with PGT for aneuploidies (PGT-A) and subsequent frozen embryo transfer (FET). A total of 11,832 PGT-A cycles, 3,361 confirmed euploid (NL) FET cycles, and 5,995 SET cycles were analyzed under an all-freeze protocol. Comparison of non-PGT SET and PGT-A euploid SET was performed as an observational, non-randomized analysis. Age categories: <35, 35–37, 38–40, 41–42, >42 yr. AMH levels: <1.0 (DOR), 1.0–2.5, 2.5–5.0, ≥5.0 ng/mL. Outcomes: clinical pregnancy rate (CPR) after euploid FET and CPR in PGT-A euploid versus non-PGT SET. Statistics: Chi-square, Pearson *r*.
RESULTS: Euploid rate declined with age (r=−0.305, p<0.001). Within each age group, the effect of AMH was statistically significant but clinically minimal (0.2–7 percentage points; 41–42yr: 10.8% vs. 10.6%; <35 yr not significant). After euploid FET, CPR was not significantly associated with AMH in any age group (all p>0.15). In non-PGT SET, significant AMH-dependent CPR variation was observed (<35 yr p<0.001; 38–40yr p=0.003). By contrast, PGT-A euploid SET showed no significant AMH effect across all age groups (none reached significance). In this observational comparison, PGT-A euploid SET was associated with the elimination of the AMH-related CPR difference seen in non-PGT cycles, with CPR equalized across ovarian reserve categories. Among >42 yr patients, PGT-A achieved 50–57% CPR versus 12–16% in non-PGT SET, regardless of AMH level. Young DOR patients (<35 yr) achieved 70.4% CPR in PGT-A euploid SET versus 46.9% in non-PGT.
CONCLUSIONS: In this observational analysis, AMH was not significantly associated with implantation outcomes after euploid embryo transfer in any age group. PGT-A euploid SET was associated with the elimination of the AMH-related implantation difference observed in non-PGT cycles, suggesting that euploid embryo selection may compensate for the implantation disadvantage associated with low AMH. Young DOR patients (<35 yr) achieved CPR after euploid transfer comparable to normal-reserve peers; PGT-A may not be routinely required in this group. Patients ≥38yr showed a substantial CPR advantage with PGT-A regardless of AMH level. PGT-A counseling may be better guided by maternal age than by AMH.
IMPACT STATEMENT: PGT-A euploid embryo selection was associated with standardization of implantation outcomes across different AMH levels, suggesting that ovarian reserve status may be less clinically significant for implantation once a euploid embryo is obtained. These findings support an age-based rather than reserve-based framework for PGT-A counseling, with implications for individualized patient management in reproductive medicine.

P-600 12:00 PM Wednesday, October 28, 2026

AMH AS A PREDICTOR OF EMBRYO QUANTITY, NOT QUALITY: AN AGE-STRATIFIED ANALYSIS OF EUPLOID RATE, CANCELLATION RATE, AND PREDICTED STIMULATION CYCLES IN IVF/ICSI-PGT-A. Juyoung Lee, M.S.[1], Song Yi Moon, M.S.[1], Sun-Nyoung Hwang, Ph.D.[1], Youngeun Lee, M.S.[1], Suye Sung, M.S.[1], Yeo Reum Park, MS[1], Eunjung Kim, M.D.[2], Soo Jin Han, M.D.[3], Kyung Ah Lee, Ph.D.[4] and Eun A Park, Ph.D.[1], [1]Fertility Laboratory, CHA University Fertility Center Seoul Station, Seoul, Korea, Republic of (South), [2]Department of Obstetrics and Gynecology, CHA University Fertility Center Seoul Station, Seoul, Korea, Republic of (South), [3]CHA Fertility Center Seoul Station, Seoul, [4]CHA University, Sungnam-Si, Korea, Republic of (South)

OBJECTIVE: To evaluate whether AMH is associated with embryo chromosomal quality (euploid rate) across maternal age groups, and to quantify the per-cycle cancellation rate and predicted stimulation cycles required to obtain at least one euploid embryo.
MATERIALS AND METHODS: A retrospective cohort study was conducted at a fertility center between January 2023 and December 2025 in patients undergoing IVF/ICSI with PGT for aneuploidies (PGT-A). A total of 11,832 PGT-A cycles were analyzed under an all-freeze protocol. Age categories: <35, 35–37, 38–40, 41–42, >42 yr. AMH levels: <1.0 (diminished ovarian reserve [DOR]), 1.0–2.5, 2.5–5.0, ≥5.0 ng/mL. Outcomes: metaphase II (MII) rate, fertilization rate, euploid rate, mean euploid embryo/cycle, per-cycle cancellation rate (cycles yielding zero euploid embryos), and predicted stimulation cycles modeled by geometric distribution. Statistics: Pearson *r*, Kruskal-Wallis, and Chi-square.
RESULTS: MII and fertilization rates did not significantly differ across age or AMH groups (75–80% and 70–74%, respectively). Euploid rate declined sharply with age (r=−0.305, p<0.001). Within each age group, the effect of AMH was statistically significant but clinically minimal (0.2–7 percentage points; 41–42yr: 10.8% vs. 10.6%; <35 yr not significant). Mean euploid embryo/cycle ranged from 0.05 (>42 yr, DOR) to 1.71 (<35 yr, AMH≥5.0). The cancellation rate rose from 54.6% (<35 yr, DOR) to 95.4% (>42 yr, DOR); for AMH≥5.0, corresponding rates were 33.6% and 85.7%. Blastocyst formation failure was <1% across all groups, consistent with the hypothesis that cancellation primarily reflects chromosomal rather than developmental failure. Geometric modeling estimated that 1.5 stimulation cycles would be required in the best-case scenario (<35 yr, AMH≥5.0) versus 21.7 cycles in the worst case (>42 yr, DOR); achieving a 90% cumulative probability of success required an estimated 49 cycles in the latter group.
CONCLUSIONS: In this age-stratified analysis, maternal age — not AMH — was primarily associated with embryo chromosomal quality. AMH was associated with the per-cycle cancellation rate, a risk that reaches 95.4% in >42 yr DOR patients. Young DOR patients (<35 yr) would require only 2.2 stimulation cycles on average and maintained adequate euploid embryo yield; PGT-A may not be routinely required in this group. Patients ≥38yr face substantially higher cancellation rates regardless of AMH; PGT-A should be considered in this population. PGT-A counseling may be better guided by age and cancellation rate than by AMH alone.
IMPACT STATEMENT: Translating per-cycle euploid probability into predicted stimulation cycles provides a concrete, patient-centered counseling metric. These findings suggest that AMH reflects embryo yield rather than chromosomal quality, supporting an age- and cancellation rate-based framework for PGT-A decision-making.

GENETICS (14 OF 21)

P-601 11:15 AM Wednesday, October 28, 2026

HIGH CONCORDANCE BETWEEN TE BIOPSY AND MULTI-SECTION BLINDED ANALYSIS FOR CONFIDENCE IN EMBRYO SELECTION. Blair R McCallie, PhD[1], Lauren Henry, BS[1], William B Schoolcraft, M.D.[2] and Mandy Katz-Jaffe, PhD[2], [1]CCRM Genetics, Lone Tree, CO, [2]CCRM Fertility, Lone Tree, CO

OBJECTIVE: A significant contribution to the success of PGT-A relies on the concordance between the two differentiated tissue types, trophectoderm (TE) and inner cell mass (ICM), as well as whether analysis of a small number of biopsied TE cells accurately represents the chromosome constitution of the entire blastocyst. In this study, blinded analysis of previously tested blastocysts, separating the two distinct cell lines, enabled the evaluation of the concordance of a TE biopsy with other TE cells and the ICM.
MATERIALS AND METHODS: A total of 229 surplus, cryopreserved, PGT-A tested blastocysts were donated with patient consent and IRB approval. Upon warming, each blastocyst was mechanically dissected into three distinct samples, one of which was predominantly ICM cells, and the remaining were TE-cell only. Each sample was

anonymously coded for blinded PGT-A testing using next-generation sequencing (Illumina). Patient donated cohort of blastocysts included: n=35 euploid, n=129 whole aneuploid, n=11 chaotic (≥3 errors) and n=54 segmental aneuploid (≥5Mb). Unblinding samples allowed compilation of the chromosome makeup of the complete blastocyst, as well as the concordance with the original TE biopsy PGT-A result.
RESULTS: Embryos initially identified as euploid in a TE biopsy (n=35) were predominantly confirmed euploid across blinded samples, aside from n=3 displaying a mosaic single aneuploid profile in only one of the TE-cells only samples. Among embryos with a single chromosomal error in the TE biopsy (n=100) most blinded samples were confirmed aneuploid, with n=1 displaying a mosaic/diploid profile in one TE-cell only sample and n=1 displaying an additional aneuploid profile in one TE-cell only sample. Likewise, embryos with two chromosomal errors (n=29) were predominantly concordant with only n=1 displaying a mosaic/diploid mixture of samples. Embryos with three or more chromosomal errors (n=11) were fully concordant across all blinded samples. For embryos with segmental aneuploidies (≥5Mb; n=54), only n=3 demonstrated non-concordance across blinded samples. Overall, a 98.3% concordance rate was observed for these patient donated cohort of blastocysts.
CONCLUSIONS: This study demonstrates that TE biopsies provide an overall high representation of the chromosomal constitution of the entire blastocyst, including the ICM and additional TE regions. Concordance rates were exceptionally high across euploid, aneuploid, chaotic and segmental aneuploid embryos at 98.3%, with only rare observations of mosaicism. These findings reinforce the clinical utility and robustness of TE biopsy for PGT-A enabling the selection of euploid embryos for transfer in IVF.
IMPACT STATEMENT: TE biopsy of blastocyst stage embryos reliably captures embryonic chromosomal status representing a robust method for euploid embryo selection.
SUPPORT: None.
REFERENCES:
None.

P-602 11:30 AM Wednesday, October 28, 2026

SEGMENTAL DELETIONS IDENTIFIED BY PGT-A: PARENTAL ORIGIN AND CHROMOSOMAL TRENDS IN 23,500 EMBRYO BIOPSIES. Kristine McWilliams, MD, PhD, HCLD (ABB)[1], Jennifer L Garbarini, M.S.[2], Christopher Weier, PH.D.[3] and Tony Gordon, Ph.D.[4], [1]CooperSurgical, Trumbull, MI, [2]CooperSurgical, Trumbull, CT, [3]CooperSurgical, Houston, TX, [4]CooperSurgical, London, United Kingdom

OBJECTIVE:
To evaluate segmental aneuploidy detected by PGT-A, with focused analysis of the prevalence, parental origin, and chromosomal patterns of segmental deletions
MATERIALS AND METHODS:
Data from 23,500 trophectoderm biopsies analyzed by PGT-A were retrospectively reviewed. Testing was performed at a single commercial laboratory using an NGS-based platform incorporating parental genomic DNA, enabling determination of gametic origin for fully aneuploid events. Primary analyses focused on segmental deletions, which comprised a majority of segmental aneuploidy events. This additional assessment was available during or after PGT-A for deletions or duplications larger than 10 Mb. Cases undergoing PGT-SR were excluded, and parent-of-origin determination was not performed for mitotic mosaic findings. Average maternal age, euploidy and aneuploidy rates, and rates of mosaic and non-mosaic segmental aneuploidy were calculated. Chromosomal and parental inheritance trends for segmental deletions were assessed, with statistical significance determined using an N-1 chi-squared test
RESULTS:
The average maternal age was 35.6 years. Among 23,500 trophectoderm biopsies analyzed by PGT-A with parental genomic DNA comparison, 50.7% were euploid, 38.4% aneuploid, 8.2% mosaic, and 2.7% yielded no result. Full chromosome aneuploidy was more common than segmental aneuploidy (9,953 vs. 4,198 events). Segmental deletions occurred more frequently than segmental duplications (2,592 vs. 1,606 events). More than half of segmental deletions were mosaic (1,417/2,592; 54.7%), while meiotic deletions comprised 45.3% (1,174/2,592). Parent of origin was successfully determined for 85.0% of meiotic deletions (999/1,174)
Consistent with prior much smaller studies[1,2], segmental deletions were predominantly paternal in origin (73.7% vs. 26.3% maternal; p<0.0001). Deletions involving chromosome q-arms were significantly more common than p-arm deletions (61.1% vs. 38.9%; p<0.0001), driven by a strong paternal bias toward q-arm involvement (64.3% vs. 35.7%; p<0.0001). In contrast, maternally derived deletions were evenly distributed between p- and q-arms (47.9% vs. 52.1%; p=0.5). Segmental deletions were predominantly paternal across all chromosomes except 16 and 21, which demonstrated equal or predominant maternal inheritance (50.0% and 62.5%, respectively). Deletions involving chromosomes 6 and 13 were almost exclusively paternal (91.5% and 93.5%, respectively)
CONCLUSIONS:
In this largest study to date of segmental deletions identified by PGT-A, we demonstrate that these abnormalities are common, frequently mosaic, and predominantly paternal in origin when meiotic. We further identify a novel predominance of q-arm involvement and delineate chromosome-specific patterns of maternal and paternal inheritance, expanding the current understanding of segmental deletion biology
IMPACT STATEMENT:
This significantly powered study characterizes segmental aneuploidies detected by PGT-A, with focused insight into segmental deletions encountered in embryos increasingly considered for transfer
REFERENCES:
1. Kubicek D, *et al*. Incidence and origin of meiotic whole and segmental chromosomal aneuploidies detected by karyomapping. *Reprod Biomed Online*. 2019;38(3):330-339
2. Tšuiko O, *et al*. Haplotyping-based preimplantation genetic testing reveals parent-of-origin specific mechanisms of aneuploidy formation. *NPJ Genom Med*. 2021;6(1):81

P-603 11:45 AM Wednesday, October 28, 2026

IMPACT OF ASSISTED REPRODUCTIVE TECHNOLOGIES ON ANEUPLOIDY DETECTION RATES IN A LARGE NIPT COHORT OF OVER 53,000 PREGNANCIES. Dr. Diego Marin, PH.D, HCLD[1], Natalia Fagundes Cagnin, PhD[2], Nasser Al-Asmar Pinar, PhD[3], Bruno Coprerski, MsC[2], Eleni Perraki, PhD[4] and Jorge Pinto-Basto, MD[4], [1]IVY Fertility, San Diego, CA, [2]Centogene, Sao Paulo, Brazil, [3]Centogene, [4]Centogene, Rostock, Germany

OBJECTIVE:
Non-invasive prenatal testing (NIPT) is widely used to assess fetal aneuploidy risk; however, residual risk persists even in pregnancies without clinical indications, such as abnormal prenatal testing or history of chromosomal aneuploidies. Leveraging a large real-world cohort of over 53,000 pregnancies, this study aimed to evaluate whether access to assisted reproductive technologies (ART) influences the rate of chromosomal abnormalities detected by NIPT, with particular focus on advanced maternal age (AMA, >37 years old) populations after controlling for confounding clinical indications.
MATERIALS AND METHODS:
A retrospective analysis was conducted on 53,213 NIPT cases performed between 2021 and 2025, screening for trisomy 13, 18, 21, and sex chromosome abnormalities. Available variables included maternal age, ultrasound findings, serum screening results, prior history of chromosomal abnormalities, and ART utilization. Subgroup analyses were performed excluding cases with abnormal ultrasound findings, positive serum screening, or prior chromosomal abnormalities where appropriate to isolate variables of interest. Statistical comparisons were performed using chi-square or Fisher's exact test, as appropriate.
RESULTS:
A total of 1,446 tests (2.7%) showed chromosomal abnormalities, including 1,419 single trisomies and a small number of multiple aneuploidies. AMA was associated with a significantly higher abnormality rate compared to younger patients (p<0.05), consistent with established biological expectations and supporting dataset validity. In patients with a prior history of chromosomal abnormalities (after excluding other indications), no statistically significant difference was observed between ART and non-ART groups. However, abnormalities were observed only in the non-ART group (~3% vs 0%), suggesting a potential trend limited by sample size. In patients without prior history or other clinical indications, no difference was observed in younger populations (p=0.22). In contrast, among AMA patients, ART use was associated with a significantly lower abnormality rate (1/253 [0.4%] vs 177/6,223 [2.8%]; p<0.05).
CONCLUSIONS:
In this large real-world cohort, ART use was associated with a significantly lower rate of NIPT-detected chromosomal abnormalities in AMA patients without other clinical indications. This association was not observed in younger populations.
IMPACT STATEMENT:
These findings highlight a persistent, often underappreciated baseline risk of aneuploidy in AMA pregnancies without traditional indications, and suggest that access to ART may modify this risk—raising important considerations for clinical counseling, risk stratification, and healthcare equity.

P-604 12:00 PM Wednesday, October 28, 2026

EXTENDED CULTURE TO DAY 7 IDENTIFIES CLINICALLY MEANINGFUL EUPLOID EMBRYOS DESPITE REDUCED EUPLOIDY RATES. Fabiana Mariani Wingert, DVM[1], Marta Ribeiro Hentschke, MD, PhD[2], Ricardo Azambuja, DVM, PhD[1], Carolina Fernandes, student[3], Elisa Weirich Braido, Student[3], Nathália Pozzobon Brum, Medical student[3], Sophia Said, student[4], Alvaro Petracco, MD, PhD[2] and Mariangela Badalotti, MD, PhD[1], [1]Fertilitat-Reproductive Medicine center, Porto Alegre, Brazil, [2]Fertilitat-Centro de Medicina Reprodutiva, Porto Alegre, Brazil, [3]Pontifical Catholic University of Rio Grande do Sul, Porto Alegre, Brazil, [4]Pontifical Catholic University of Rio Grande Do Sul, Porto Alegre, Brazil

OBJECTIVE:
To assess whether extended embryo culture to day 7 yields clinically meaningful euploidy rates in embryos undergoing preimplantation genetic testing for aneuploidy (PGT-A).
MATERIALS AND METHODS:
This retrospective observational study was conducted at a private assisted reproductive center in southern Brazil. Data from electronic medical records and laboratory databases between February 2020 and March 2026 were reviewed. Couples undergoing in vitro fertilization (IVF) cycles with PGT-A and resulting in blastocyst-stage embryos (days 5 to 7 of development) were included. A total of 1,089 patients were included, comprising 4,436 embryos undergoing biopsy and genetic analysis. Embryos were stratified according to the day of blastocyst development as follows: day 5 (D5; n=2,394), day 6 (D6; n=1,872), and day 7 (D7; n=170). Analyses were stratified according to maternal age (<38 vs ≥38 years). Categorical variables were compared using the chi-square test, with p<0.05 considered statistically significant. The primary outcome was the rate of euploid embryos according to the day of development.
RESULTS:
A total of 4,436 embryos from 1,089 patients were analyzed. The overall euploidy rate differed significantly according to the day of blastocyst development (p<0.001), with rates of 38.3% for D5, 26.9% for D6, and 21.8% for D7 embryos. When stratified by

maternal age, a progressive decline in euploidy rates from D5 to D7 was observed in both age groups. In patients aged <38 years, euploidy rates were 45.6% for D5, 32.8% for D6, and 25.5% for D7 (χ^2=58.2; p<0.001). In patients aged ≥38 years, euploidy rates were lower across all developmental days, at 22.9% for D5, 17.9% for D6, and 16.7% for D7, with a weaker but still significant association (χ^2=6.9; p=0.032). Notably, the magnitude of decline in euploidy rates from D5 to D7 was more pronounced in younger patients. Importantly, a non-negligible proportion of day 7 embryos remained euploid, even among patients of advanced maternal age. Regardless of embryo quality, day 7 blastocysts yield a meaningful proportion of euploid embryos.
CONCLUSIONS:
Blastocyst developmental timing is significantly associated with euploidy rates, with a progressive decline from day 5 to day 7. Nevertheless, euploidy rates in day 7 embryos remain clinically meaningful across age groups. These findings suggest that extended culture to day 7 enables the identification of additional euploid embryos that may otherwise be discarded. Therefore, day 7 blastocysts should be considered for biopsy in PGT-A cycles.
IMPACT STATEMENT:
Despite lower euploidy rates, day 7 blastocysts contribute a meaningful proportion of euploid embryos. Extending embryo culture may prevent the premature discard of viable embryos and expand reproductive opportunities in PGT-A cycles.

GENETICS (15 OF 21)

P-605 11:15 AM Wednesday, October 28, 2026

IMPACT OF TE BIOPSY ON MATERNAL AND NEONATAL OUTCOMES. Kana Murakami, M.S., Haruhisa Tsuji, Ph.D., Noritaka Fukunaga, Ph.D. and Yoshimasa Asada, M.D., Ph.D., Asada Ladies Clinic, Nagoya, Japan

OBJECTIVE: Preimplantation genetic testing (PGT) requires an invasive procedure in the form of trophectoderm (TE) biopsy. Because TE gives rise to the placenta, this procedure has raised concerns regarding its potential effects on placental development and subsequent maternal and neonatal outcomes. Previous studies have suggested that TE biopsy may be associated with an increased risk of hypertensive disorders of pregnancy (HDP), placental abnormalities, preterm birth, and congenital anomalies (Alteri *et al*., 2023). However, the available evidence remains inconsistent, and no clear consensus has been reached regarding the clinical impact of TE biopsy. In this study, we evaluated the effect of TE biopsy by assessing maternal and neonatal outcomes following PGT-A.
MATERIALS AND METHODS: This study included 334 singleton pregnancies involving PGT-A between 2020 and 2025, in which a single vitrified-warmed euploid blastocyst (≥3BB) was transferred in a hormone replacement cycle. 2,638 non-biopsied cases were used as controls. TE biopsy was performed by laser and flicking method. Following biopsy, the biopsy samples were sent to a genetic testing laboratory and the blastocysts were vitrified. TE biopsy status was used as the explanatory variable, and multivariable regression analyses were performed for each outcome. Outcomes included HDP, placental abnormalities, preterm birth (<37 weeks), congenital anomalies, and Apgar score of <7 (1-min), all of which were treated as binary variables and analyzed using logistic regression. Birth weight was analyzed as a continuous outcome using linear regression. Maternal age, BMI, number of embryo transfer cycles and gestational age were included as covariates in the models.
RESULTS: After adjusting for confounders, TE biopsy was not significantly associated with HDP (adjusted OR (aOR) 0.947; 95% confidence interval (CI) 0.520－1.72; p=0.858), placental abnormalities (aOR 1.19; 95% CI 0.662－2.14; p=0.559), preterm birth (aOR 1.20; 95% CI 0.755－1.89; p=0.447), or congenital anomalies (aOR 0.89; 95% CI 0.417－1.90; p=0.764). No significant association was observed between TE biopsy and birth weight (adjusted β = -6.53 g; 95% CI -54.43－41.37; p=0.789). Similarly, TE biopsy was not significantly associated with low Apgar score (<7) (aOR 1.20, 95% CI 0.885－1.62, p=0.241).
CONCLUSIONS: In this study, TE biopsy was not significantly associated with maternal or neonatal outcomes, including HDP, placental abnormalities, preterm birth, congenital anomalies, birth weight, and Apgar score. These results suggest that TE biopsy is not clearly associated with perinatal outcomes. Further long-term studies are required to assess the effects of TE biopsy.
IMPACT STATEMENT: These findings suggest that the impact of TE biopsy on maternal and neonatal outcomes may be limited.

P-606 11:30 AM Wednesday, October 28, 2026

EXPANDING THE WEE2 INFERTILITY PHENOTYPE: NORMAL FERTILISATION WITH EARLY EMBRYONIC CLEAVAGE ARREST CAUSED BY A HOMOZYGOUS MATERNAL-EFFECT MUTATION. Jigna Tamagond, Dr[1], Durga Gedela Rao Dr., MBBS, DGO, MRCOG[2] and Krishna Mantravadi, MBBS, PGDHOM, Masters in clinical embryology[2], [1]OASIS FERTILITY, [2]Oasis Fertility, Hyderabad, India

OBJECTIVE:
To report a novel WEE2-associated infertility phenotype — normal fertilization after ICSI with assisted oocyte activation, followed by uniform early embryonic cleavage arrest — in a woman with a homozygous maternal-effect WEE2 mutation, expanding the previously reported phenotype of total fertilization failure.
MATERIALS AND METHODS:
Single-case clinical, embryological, and genetic analysis of a woman with primary infertility undergoing a second IVF attempt in 2025; her first cycle elsewhere had resulted in total fertilization failure after ICSI. Female karyotype 46,XX; male partner normozoospermic with normal sperm DNA fragmentation (13%). Antagonist controlled ovarian stimulation with confirmed ovulation trigger. Nine follicles ≥16 mm; five oocytes retrieved; three mature (MII). ICSI was performed with ionomycin-assisted oocyte activation (AOA) given the prior fertilization failure. Standardised culture conditions. Clinical whole-exome sequencing of both partners.
RESULTS:
All three MII oocytes fertilised normally with clear 2PN formation, overcoming the prior total fertilization failure. However, all three embryos arrested uniformly at the 2–4 cell stage by Day 2 with no progression to blastocyst. The phenotype occurred despite adequate stimulation, normal sperm parameters, validated culture, and AOA — making male-factor and laboratory causes unlikely. Whole-exome sequencing identified a **homozygous missense WEE2 variant** in the female partner (NM_001105558.1:c.1250T>C; p.Ile417Thr) with heterozygous carriage in the male partner, confirming autosomal-recessive maternal-effect inheritance. The variant localises to the highly conserved C-terminal kinase domain and is predicted deleterious by multiple in-silico tools. To our knowledge, this is the first reported WEE2-associated phenotype of successful fertilization and early cleavage followed by uniform developmental arrest.
CONCLUSIONS:
This case expands the WEE2 infertility phenotype beyond classical total fertilization failure to include normal fertilization with early cleavage arrest, suggesting WEE2 dysfunction impairs not only meiotic exit but also early embryonic cell-cycle progression. Phenotypic severity may be modulated by variant-specific residual kinase function and/or oocyte activation strategy.
IMPACT STATEMENT:
WEE2 mutations should be considered in women with recurrent fertilization failure as well as those with reproducible early-cleavage arrest despite optimal ART conditions. Early whole-exome sequencing may prevent repeated futile cycles and support counselling regarding prognosis and reproductive options including oocyte donation.

P-607 11:45 AM Wednesday, October 28, 2026

WITHIN-FAMILY VALIDATION AND PLEIOTROPIC ARCHITECTURE OF GENETIC RISK PREDICTORS FOR CLINICAL SCREENING. Spencer Michael Moore, B.S., M.S., Bothell, WA

OBJECTIVE:
Genetic risk predictors are increasingly proposed for clinical screening, yet validation standards remain inconsistent and their pleiotropic architecture is poorly characterized. We present a framework unifying within-family evaluation, cross-biobank replication, and ancestry-aware calibration, extended to quantify off-target associations and test whether these reflect true pleiotropy or confounding.
MATERIALS AND METHODS:
We constructed genetic predictors for 17 common diseases using GWAS summary statistics and UK Biobank (UKB) GWAS, holding out first-degree relatives as test sets. We applied snipar to impute parental genotypes for nuclear families and sibships. Within-family logistic regression conditioning on parental genetic risk yielded direct-effect log-odds ratios and liability-scale R^2. Population-level results were replicated in eMERGE. We tested each predictor against a panel of health and behavioral traits within families and at the population level, comparing attenuation patterns. Ancestry portability was quantified by modeling liability-scale R^2 decline as a function of genetic distance for both focal and off-target associations.
RESULTS:
Key findings: (1) minimal within-family attenuation of predictor performance, indicating limited inflation from indirect genetic effects or assortative mating; (2) replication of UKB results in eMERGE; (3) improved ancestry portability with SBayesRC, a Bayesian method using functional annotations; (4) persistence of most off-target associations within families, indicating pleiotropic structure reflects shared genetic architecture rather than stratification; and (5) minimal portability loss for off-target effects across ancestries.
CONCLUSIONS:
Within-family analyses yield direct-effect estimates distinguishing causal from confounded pathways, revealing that the pleiotropic footprint of disease predictors reflects shared biology. Cross-biobank replication confirms generalizability. Ancestry attenuation modeling quantifies portability for focal and off-target effects. Clinically relevant validation should be family-aware, ancestry-informed, cross-biobank replicated, and attentive to what scores measure beyond their target.
IMPACT STATEMENT:
This study establishes that genetic risk predictors retain their accuracy and pleiotropic associations within families and across ancestries, confirming these signals reflect shared biology rather than confounding, providing a methodological foundation for clinically oriented validation of genetic risk predictors in reproductive screening.
SUPPORT: This study was funded by Herasight, LLC.

P-608 12:00 PM Wednesday, October 28, 2026

DOES THE CLINICAL SIGNIFICANCE OF PROGESTERONE ADMINISTRATION TIMING (DAY 6 VS. DAY 7) DIFFER BY BLASTOCYST MORPHOLOGICAL GRADE IN HRT-FET CYCLES WITH POST-THAW BIOPSY AND RAPID PGT-A? Song Yi Moon, M.S.[1], Juyoung Lee, M.S.[1], Sun-Nyoung Hwang, Ph.D.[1], Eun A Park, Ph.D.[1], Youngeun Lee, M.S.[1], Suye Sung, M.S.[1], Sun Jeong Park, M.S.[1], Junghyun Lee, M.S.[2], Yun Jung Hur, M.D.[3] and Tae Ki Yoon, M.D., Ph.D.[4], [1]Fertility Laboratory, CHA University Fertility Center Seoul Station, Seoul, Korea, Republic of (South), [2]Fertility Laboratory, CHA University Fertility Center Magok, Seoul, Korea, Republic of (South), [3]Department of Obstetrics and Gynecology, CHA University Fertility Center Seoul Station, Seoul, Korea, Republic of (South), [4]CHA Fertility Center, Seoul

OBJECTIVE: To evaluate whether the association between the timing of progesterone administration (Day 6 vs. Day 7) and clinical outcomes differs by blastocyst morphological grade in hormone replacement therapy frozen embryo transfer (HRT-FET) cycles involving post-thaw biopsy and rapid PGT-A.
MATERIALS AND METHODS: A retrospective cohort study was conducted between January 2020 and June 2023 at a single fertility center. A total of 338 HRT-FET cycles involving post-thaw biopsy and rapid PGT-A were analyzed. Euploid blastocysts were transferred on Day 6 (n=232) or Day 7 (n=106) of progesterone administration and stratified by morphological grade: good-quality (n=177) and poor-quality (n=142). Clinical pregnancy rate (CPR) and ongoing pregnancy rate (OPR) were the primary outcomes. Chi-square test and independent t-test were used, with subgroup analyses performed after stratification by blastocyst grade.
RESULTS: Mean age differed significantly between groups (Day 6: 37.1±3.5 vs. Day 7: 35.9±3.6 years, p=0.006), whereas endometrial thickness was comparable (9.03±1.69 vs. 9.28±1.66 mm, p=0.214). Overall CPR (56.0% vs. 46.2%, p=0.119) and OPR (48.3% vs. 41.5%, p=0.297) did not differ significantly between Day 6 and Day 7. After stratification by morphological grade, good-quality blastocysts achieved equivalent CPR (61.0% vs. 63.0%, p=0.934) and OPR (52.8% vs. 55.6%, p=0.866) regardless of transfer timing. In contrast, among poor-quality blastocysts, Day 6 transfer was associated with significantly higher CPR (52.1% vs. 28.3%, p=0.013) and OPR (45.8% vs. 26.1%, p=0.038) compared with Day 7. Baseline characteristics including age and endometrial thickness were comparable between Day 6 and Day 7 groups within the poor-quality subgroup (p=NS for all).
CONCLUSIONS: The clinical benefit of Day 6 transfer is confined to poor-quality blastocysts in post-thaw biopsy HRT-FET cycles. Good-quality blastocysts achieved equivalent outcomes regardless of transfer timing, while poor-quality blastocysts were significantly disadvantaged by Day 7 transfer. These findings suggest that the effect of progesterone timing on clinical outcomes is modified by blastocyst morphological grade.
IMPACT STATEMENT: These findings suggest that the clinical relevance of progesterone administration timing is grade-dependent in post-thaw biopsy HRT-FET cycles. Day 6 transfer should be prioritized for poor-quality blastocysts, while good-quality blastocysts maintain equivalent outcomes with Day 7 transfer, providing greater flexibility in clinical scheduling.

GENETICS (16 OF 21)

P-609 11:15 AM Wednesday, October 28, 2026

REVIEW OF THE TECHNICAL AND CLINICAL UTILITY OF SHORT TANDEM REPEAT (STR)-BASED PREIMPLANTATION GENETIC TESTING FOR MONOGENIC DISORDERS (PGT-M) FOR DE NOVO VARIANTS: CASE STUDY OF GERMLINE MOSAICISM IDENTIFIED VIA PGT-M. Alicia Polak, MS, CGC[1], Katie Rembisz, MS, CGC[2], Ana Cervero, PhD[3] and Alyssa Snider, MS, CGC, PH.D[4], [1]Denver, CO, [2]Igenomix, Part of Vitrolife Group, [3]Igenomix, Part of Vitrolife Group, Paterna, Spain, [4]Igenomix, San Ramon, CA

OBJECTIVE: This case study highlights the clinical utility and technical capability of linkage (STR)-based PGT-M for de novo variant(s) identified in a child, with an example of parental germline mosaicism confirmed through PGT-M.
MATERIALS AND METHODS: PGT-M was requested for an autosomal dominant, KCNT1 variant previously identified through trio whole exome sequencing as de novo in an affected child. The KCNT1 variant was a point mutation, amenable to direct detection (DD) in embryos. Samples from the reproductive couple and child were used to validate DD primers and establish haplotypes. DD primers were additionally validated using embryo control samples. Given that germline mosaicism could not be ruled out, both parental haplotypes inherited by the affected child were interpreted as potentially at-risk, resulting in a 75% a priori chance that an embryo would be reported as at-risk. Embryo biopsy samples underwent DD via mini sequencing and haplotype evaluation via STR-based linkage analysis using fluorescent PCR.
RESULTS: The KCNT1 variant was identified in one of the three biopsy samples sent for PGT-M, confirming parental germline mosaicism. This affected embryo inherited both potential at-risk haplotypes, and therefore, parental origin of the variant remained undetermined. A second embryo also inherited both potential at-risk haplotypes. Despite absence of the variant, this embryo was reported as "at-risk," given the possibility of mosaicism *within* the germline and allele dropout (ADO). A third embryo was reported as "non-informative" due to a recombination event within the variant-containing gene region, but the variant was not detected.
CONCLUSIONS: Direct detection of the KCNT1 variant in one embryo confirmed germline mosaicism. Due to the co-inheritance of the same haplotypes as the couple's child, the maternal or paternal at-risk haplotype could not be determined, and both haplotypes remained potentially "at-risk." This limitation resulted in a second embryo, also inheriting both potential at-risk haplotypes, being interpreted as at-risk, despite the variant not being detected. Identifying the variant in subsequent embryos with alternative haplotypes could enable linkage determination and results reinterpretation for this embryo.
IMPACT STATEMENT: PGT-M is technically possible for de novo conditions. The inheritance of haplotypes shared with an affected child can be assessed through linkage analysis. Depending on the variant, DD may also be possible and may establish the at-risk haplotype if identified in at least one embryo with a haplotype distinct from the affected child. Despite the validation of DD, the absence of the variant alone does not provide sufficient accuracy due to the non-zero chance of ADO, and therefore, linkage analysis remains the gold standard for PGT-M for de novo conditions. This study shows that PGT-M for a de novo variant can provide clinical value, confirming otherwise undetected germline mosaicism and elevated reproductive risk. Given that recurrence risk for de novo variants is generally thought to be low, and the overall clinical utility of PGT-M for these variants remains uncertain, such referrals require thorough genetic counseling.[1]
SUPPORT: None.
REFERENCES:
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P-610 11:30 AM Wednesday, October 28, 2026

FREQUENCY AND ROLE OF SPONTANEOUS CONCEPTION (SC) AS AN EXPLANATION FOR PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY (PGT-A) Results DISCREPANCY. Alicia Polak, MS, CGC[1], Adedoyin Akinwole, MPH[2], Refik Kayali, PH.D[3] and Alyssa Snider, MS, CGC, PH.D[4], [1]Denver, CO, [2]Igenomix, Part of Vitrolife Group, Miami, FL, [3]Igenomix US, Torrance, CA, [4]Igenomix, San Ramon, CA

OBJECTIVE: In rare cases, discrepancies are identified between the chromosomal status of an ongoing pregnancy, miscarriage, or liveborn and the PGT-A result for the transferred embryo presumably resulting in that pregnancy. One explanation for these discrepancies is spontaneous conception (SC), in which the pregnancy did not result from the transferred embryo, and instead, resulted from an egg ovulated and fertilized during the concurrent embryo transfer cycle. To demonstrate that SC is a plausible explanation for PGT-A discrepancies, here we describe the frequency of SC confirmed by genetic fingerprinting analysis.
MATERIALS AND METHODS: The reference laboratory that performed PGT-A via next generation sequencing (NGS) was informed of potential PGT-A discrepancy cases, including autosomal discrepancies and sex discrepancies. The reference laboratory offered genetic fingerprinting as root cause analysis for cases where 1) a potential discrepancy was confirmed by diagnostic testing, 2) a thorough review by both the IVF center and the PGT laboratory identified no chain of custody error, and 3) surplus DNA remained from PGT-A testing and samples were available from the fetus/child, egg source, sperm source, and gestational carrier, where applicable.
Genetic fingerprinting utilizing a 16-locus short tandem repeat (STR) panel was performed to compare the fetal sample to each of the patient's PGT-A samples, and to samples from the egg and sperm sources. Cases were resolved as being due to SC if the fetal sample 1) was nonidentical to the PGT-A sample from the embryo transferred or any other available embryo, 2) demonstrated the expected maternity, and 3) demonstrated sibling relatedness with other available embryos.
RESULTS: Only autosomal false-negatives and sex discrepancies were notified to the reference laboratory. Fingerprinting was accepted and completed for 36 cases out of 118 cases where it was offered, SC was identified as the root cause of discrepancy in 5/36 (13.9%). Four of these five confirmed SC cases were classified as sex discrepancy cases.
CONCLUSIONS: The exact rate of discrepancy due to SC cannot be determined for several reasons. Not all discrepancy cases are notified to the reference laboratories and only a small fraction progress to fingerprinting analysis. Additionally, the number of PGT-A reported embryos transferred is unknown. For cases where no chain of custody issues can be identified in either the IVF center or the laboratory, the data support SC as a valid potential explanation for PGT-A discrepancy. SC may be an especially likely explanation for sex discrepancy cases that are unlikely to be explained by the biological limitation of mosaicism.
IMPACT STATEMENT: Although previously thought to be unlikely given that many individuals who receive IVF treatment are thought to be infertile, we present evidence that SC is a plausible reason for PGT-A discrepancies. The chance of SC depends on the transfer cycle protocol, ovulation, and whether the couple had intercourse around the time of embryo transfer. PGT-A discrepancy can result if the couple had intercourse around the time of transfer and if the patient conceives an embryo not obtained through IVF.
SUPPORT: None.

P-611 11:45 AM Wednesday, October 28, 2026

SINGLE-CELL RNA-SEQ UNCOVERS RIBOSOMAL AND MITOCHONDRIAL DYSFUNCTION UNDERLYING IMPLANTATION FAILURE IN TRISOMY 1 AND 19 HUMAN EMBRYOS. Heather Rogers, M.SC.[1], Hao Ming, Ph.D.[2], Maria Carolina Zimara, M.S.[1], William B Schoolcraft, M.D.[3], Mandy Katz-Jaffe, PhD[1] and Ye Yuan, PH.D.[1], [1]CCRM Colorado, Lone Tree, CO, [2]School of Animal Sciences, AgCenter, Louisiana State University, Baton Rouge, LA, [3]CCRM Fertility, Lone Tree, CO

OBJECTIVE:
Trisomies 1 and 19 are highly lethal human autosomal aneuploidies and are strongly associated with implantation failure, yet the cellular mechanisms remain poorly defined. Understanding their effects on early human embryogenesis has important clinical implications for human implantation, early pregnancy loss, preimplantation genetic testing (PGT), and embryo selection.
MATERIALS AND METHODS:
We investigated lineage-specific tolerance to trisomy 1/19 by culturing euploid and trisomy 1/19 human blastocysts donated for research to embryonic day 10 under extended embryo culture (EEC) conditions (1) and profiling them using single-cell RNA sequencing (scRNA-seq) and immunofluorescence staining (IF). Clustering and lineage marker expression, POU5F1, SOX17, and CGB, were used to identify epiblast (EPI), primitive endoderm (PE), and trophoblast (TE) populations, respectively. Embryo outgrowth area and hCG secretion were also measured.
RESULTS:
While scRNA-seq revealed abundant EPI- and PE-like cells in trisomy 1/19 embryos, SOX17 IF failed to detect PE cells, in contrast to euploid controls. This discrepancy

suggests that aneuploid cells transiently adopt PE-like transcriptional states but are not stably maintained at the protein level. Differential expression and pathway analyses showed downregulation of ribosomal protein genes (including RPL41 and multiple subunits), mitochondrial rRNAs, and oxidative phosphorylation genes, alongside upregulation of RNA-binding, cell-cycle, and stress-associated genes, consistent with a proliferative yet stressed state. These signatures are characteristic of aneuploidy-induced proteotoxic and energetic stress, implicating impaired translation and mitochondrial dysfunction as core vulnerabilities of trisomy 1/19 embryos. Given the high metabolic demands, PE-fated trisomy 1/19 cells may be particularly sensitive to this combined dysfunction. Consequently, they likely undergo apoptosis, fail to fully mature, or remain below the protein detection threshold of IF, even though their transient PE-like transcriptional signatures are captured by scRNA-seq. Similar translational and mitochondrial defects were observed in the TE lineage, correlating with markedly reduced outgrowth areas, decreased CGB protein levels by IF, and diminished hCG production.

CONCLUSIONS:

These findings support a model of lineage-specific cell competition and metabolic vulnerability in which PE cells are selectively eliminated from trisomy 1/19 embryos and the TE is functionally compromised, despite transient passage through EPI/PE-like transcriptional states. We have highlighted ribosomal and mitochondrial dysfunction as key drivers of early pregnancy loss in these aneuploidies. More broadly, it underscores the value of integrating scRNA-seq with protein-level, functional readouts to understand how specific chromosomal abnormalities reshape lineage differentiation.

IMPACT STATEMENT:

This study links aneuploidy-induced metabolic dysfunction to implantation failure and early pregnancy loss, which will inform embryo selection and refine the biological interpretation of PGT results.

SUPPORT: This study was internally funded by Colorado Center for Reproductive Medicine.

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P-612 12:00 PM Wednesday, October 28, 2026

GENETIC VARIANTS ASSOCIATED WITH REDUCED EMBRYO VIABILITY ARE LESS FREQUENT AMONG LIVE BIRTHS COMPARED WITH IVF EMBRYOS: IMPLICATIONS FOR PRIORITIZATION STRATEGIES.

Kaylene Ready, MS[1,2], Gregory Adam Reeves, PhD[2], Charles Cole, PhD[2], Greyson Twist, MS[2], Elizabeth Chao, MD[2], Meera Shah, B.S., M.D.[3], Sophie Petropoulos, PhD[4], Lee Philip Shulman, MD[2] and Jeremy Grushcow, PhD[2], [1]Sugar Land, TX, [2]Juniper Genomics, [3]Nova IVF, Cupertino, CA, [4]Assistant Professor University of Montreal, Montreal, QC, Canada

OBJECTIVE: To determine whether genetic variants associated with reduced embryo viability (reduced viability variants; RVVs) are less prevalent among live-born children compared with IVF embryos, thereby supporting their potential utility as an additional factor in embryo transfer prioritization.

MATERIALS AND METHODS: This retrospective comparative study evaluated RVV prevalence in IVF embryos and in a population-based cohort of live-born children. A total of 154 embryos from 31 IVF families undergoing PGT with whole-genome sequencing and 54 live-born children from 54 families in the 1000 Genomes Project were analyzed. Variants were classified as RVVs based on curated gene resources, gene-level intolerance to variation, population allele frequency, and computational pathogenicity predictions. Two live-born children with variants of uncertain technical validity were excluded from the primary analysis. RVV prevalence was compared using Fisher's exact test and generalized estimating equations (GEE) to account for multiple embryos per family. Sensitivity analyses sampled one embryo per family across 1,000 iterations and evaluated best-case and worst-case classifications of excluded cases.

RESULTS: RVVs were detected in 42 of 154 IVF embryos (27.3%) compared with 3 of 52 live-born children (5.8%). RVVs were significantly more prevalent among embryos than live-born children in both unadjusted (Fisher's exact OR 6.12; 95% CI 1.81–20.72; p<0.001) and cluster-adjusted analyses (GEE OR 6.04; 95% CI 1.73–21.00; p=0.005). RVVs were 79% less frequent among live-born children than among embryos (prevalence ratio 0.21). Sensitivity analyses sampling one embryo per family yielded consistent results (median OR 6.68; IQR 4.76–7.78). When excluded cases were classified as RVV-negative, significance was maintained (OR 6.38; p<0.001); when all were classified as RVV-positive, significance was also maintained (OR 3.67; p=0.007).

CONCLUSIONS: RVVs identified through whole-genome sequencing were 79% less frequent among live-born children than among IVF embryos. While not absolute, RVV status carries meaningful predictive value, supporting its utility in embryo prioritization.

IMPACT STATEMENT: Combined with initial clinical data showing improved transfer outcomes for RVV-free embryos, these findings support the utility of using RVVs in embryo prioritization.

GENETICS (17 OF 21)

P-614 11:30 AM Wednesday, October 28, 2026

CLINICAL OUTCOMES OF MOSAIC EMBRYO TRANSFER IN PATIENTS LACKING EUPLOID EMBRYOS: A SINGLE-CENTER EXPERIENCE.

Alessandro Schuffner, M.D., M.SC.[1], Camila Dutra de Souza Dutra, Doctor[1], Samara Giacomin, Specialist[2], Isabela Motta, Bachelor[1] and Gabriela Schuffner, Student[1], [1]Conceber - Reproductive Medicine Center, Curitiba, Brazil, [2]Conceber Centro De Medicina Reprodutiva, Curitiba, PR, Brazil

OBJECTIVE: To evaluate if transfer of low-grade mosaic embryos results in clinical outcomes comparable to euploid embryos, and to access if excluding these embryos from transfer significantly reduces the number of embryos available.

MATERIALS AND METHODS: Observational, retrospective, single-center study analyzed 980 embryos from 302 patients who underwent PGT between 2021 and 2026 in a single genetics laboratory. Embryos were categorized as euploid, aneuploid, or mosaic. Patients in group 1 (n=123) underwent transfer of a euploid embryo, whereas in group 2 (n=7), a low-grade mosaic embryo (less than 49% aneuploid cells) was transferred. Blastocysts underwent PGT-A on days 5, 6, or 7, using laser-assisted trophectoderm biopsy with removal of 3–7 cells, followed by vitrification. Mosaic embryo transfer was performed when no euploid embryo was available or when two embryos were transferred with only one euploid available, after genetic counseling. Embryos were thawed using the Irvine® Thawing Kit and cultured in media equilibrated overnight. A beta-hCG level >25 IU/L was considered positive, and clinical pregnancy was confirmed by ultrasound visualization of a gestational sac with fetal heartbeat.

RESULTS: The proportion of euploid embryos was 39,6% (n=388), while mosaic embryo accounted for 10,5% (n=103), with 66,9% classified as low-grade and 33,1% as high-grade. Aneuploid embryos comprised 48,9% (n=480), and results could not be obtained for 0,91% (n=9). Eight low-grade mosaic embryos were transferred in seven embryo transfers, including four single-embryo transfers (all with complete chromosomal mosaicism), two double-embryo transfers (one transfer with one euploid and one with segmental mosaicism; and another transfer with one euploid and one with complete chromosomal mosaicism) and last one with two mosaic embryos, both with complete chromosomal mosaicism. The positive beta-hCG rate post-transfer was 70,8% in the euploid group (group 1), compared to 57,1% in the mosaic group (group 2). Clinical pregnancy rates were 60,2% and 42,8%, respectively. However, pregnancy loss in group 2 (25%) was higher compared to the euploid group (6,25%).

CONCLUSIONS: Mosaic embryo transfer is a valid alternative for couples with no or limited euploid embryos. While outcomes show no clinically relevant differences in positive beta-hCG or clinical pregnancy rates compared to euploid transfers, a higher risk of pregnancy loss is observed, consistent with previous reports. These findings support the consideration of low-grade mosaic embryos in clinical practice, particularly given the potential reduction in embryo availability if they are excluded.

IMPACT STATEMENT: Excluding low-grade mosaic embryos may unnecessarily limit embryo availability in PGT-A cycles. Our findings support their use as a viable alternative when no euploid embryos are available, despite a higher risk of pregnancy loss, reinforcing the need for individualized decision-making and appropriate genetic counseling.

P-615 11:45 AM Wednesday, October 28, 2026

NANOPORE SEQUENCING-BASED PREIMPLANTATION GENETIC TESTING: A UNIFIED PLATFORM FOR ANEUPLOIDY SCREENING (PGT-A) AND MONOGENIC DISORDERS (PGT-M).

Julia Santos, MS[1], Tim Chen, Ph.D.[2], Taoli Ding, PhD[3], Xingxing Wang, MSc[4], Tuan Li, MS[5], Ji Yang, MSc[5], Yangyun Zou, Ph.D[6], SIjia Lu, Ph.D[6] and Yichen Zhang, MSc[5], [1]Yikon Genomics Co., Lid., Sao Paulo, Brazil, [2]Yikon Genomics Co. Ltd., Hsinchu, Taiwan, [3]Yikon Genomics Co, Ltd., Shanghai City, Shanghai City, China, [4]Yikon Genomics Company, Ltd., China, [5]Yikon Genomics Co., Ltd, Suzhou, China, [6]Yikon Genomics Co., Ltd.

OBJECTIVE: Conventional preimplantation genetic testing (PGT) faces distinct challenges: trophectoderm (TE) biopsy for aneuploidy (PGT-A) is confounded by embryonic mosaicism, while PGT for monogenic disorders (PGT-M) is limited by incomplete pedigrees and *de novo* mutations. Nanopore sequencing (third-generation sequencing, TGS) offers potential solutions through long reads and adaptive sampling, but its clinical utility across PGT indications remains under-explored. This study evaluates nanopore-based approaches for both polar body (PB) based PGT-A and PGT-M.

MATERIALS AND METHODS: For PGT-A, 125 oocytes from 30 couples were analyzed. First (PB1) and second (PB2) polar bodies from 89 oocytes were processed individually, while 36 were co-amplified (PB1+PB2). 74 resulting blastocysts underwent TE biopsy. All samples underwent whole-genome amplification (WGA) followed by copy number variation (CNV) analysis via next-generation sequencing (all samples) and TGS (PB only). Single nucleotide polymorphism (SNP) data from TE and parental blood determined CNV origins. For PGT-M, nanopore adaptive sampling was applied to peripheral blood samples from 1,376 couples carrying pathogenic variants. Haplotype-based linkage analysis was performed, and clinical validation was obtained through embryo transfer outcomes and prenatal diagnosis.

RESULTS: The amplification success rates were 97.75% (PB1), 92.13% (PB2), and 97.22% (PB1+PB2). NGS and TGS showed 96.81% concordance in CNV detection. PB-based ploidy assessment agreed with TE results in 75.68% (56/74) of cases. Among concordant embryos, 40 had identical CNV profiles and 16 involved paternal meiotic/mitotic abnormalities. PB-based PGT-A yielded a higher euploidy rate (55.4%) versus TE-based (43.1%), consistent with avoidance of false-positive mosaicism. For PGT-M, nanopore adaptive sampling achieved a technical success rate of 98.9% (1,361/1,376 couples). The method accurately identified pathogenic mutations and supported robust haplotype-based linkage analysis, even in cases with limited family data or *de novo* variants. Concordant prenatal diagnoses confirmed clinical reliability.

CONCLUSIONS: Nanopore sequencing provides a versatile and clinically viable platform for both PB-based PGT-A and PGT-M. For PGT-A, PB analysis with TGS avoids mosaicism, reduces false aneuploidy calls, and enables rapid turnaround for fresh transfers. For PGT-M, nanopore adaptive sampling overcomes pedigree and *de novo*

mutation limitations at lower cost than conventional long-read methods. Together, these approaches address shortcomings of current PGT workflows.
IMPACT STATEMENT: By enabling minimally invasive, rapid, and pedigree-independent genetic testing, nanopore-based PGT represents a significant advance toward more accurate and accessible preimplantation genetic assessment.

P-616 12:00 PM Wednesday, October 28, 2026

DIAGNOSTIC CONCORDANCE BETWEEN NON-INVASIVE PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY AND TROPHECTODERM BIOPSY: A SYSTEMATIC REVIEW. Vipin Chandra, MBBS, DGO[1], Divreena Talwar, MSc.[2], Naval Navin Shah, M.Sc.[3], Marcos Meseguer, PhD[4], Shashank V Sanagoudar, MBBS, MS[1], Kshitiz Murdia, MBBS, DGO[5] and Nitiz Murdia, Ph.D[1], [1]Indira IVF Hospital Ltd., Udaipur, India, [2]Indira IVF Private Limited, Udaipur, Rajasthan, India, [3]Indira IVF Hospital Ltd., Udaipur, Rajasthan, India, [4]IVIRMA Global Research Alliance, IVIRMA Valencia, Valencia, Spain, [5]Indira IVF Hospital Pvt. Ltd, Udaipur, Rajasthan, India

OBJECTIVE:
To evaluate the diagnostic concordance and clinical reliability of non-invasive preimplantation genetic testing for aneuploidy (niPGT-A) compared with trophectoderm (TE) biopsy-based PGT-A.
MATERIALS AND METHODS:
This PRISMA-compliant systematic review was prospectively registered in PROSPERO (CRD420251088972). A comprehensive search of PubMed, EMBASE, Scopus, and Web of Science was performed from inception to September 2025. Eleven studies published between 2015 and 2025 were included, comprising 2,688 patients and 7,600 embryos undergoing both niPGT-A (spent culture media or non-invasive chromosome screening) and TE biopsy-based PGT-A. Extracted data included diagnostic concordance, false-positive and false-negative rates, laboratory methodologies (culture systems, DNA amplification, sequencing platforms), and reported clinical outcomes. Methodological quality and inter-study heterogeneity were systematically assessed.
RESULTS:
Diagnostic concordance between niPGT-A and TE biopsy ranged from 59.6% to 95.8% across studies. False-positive rates ranged from 4.2% to 40.4%, while false-negative rates ranged from 0% to 12.4%. Higher concordance was observed in studies utilizing optimized micro-drop culture systems and next-generation sequencing with whole-genome amplification (MALBAC or MDA). Reported clinical pregnancy rates following niPGT-A ranged from 44% to 55%, with lower miscarriage rates observed in concordant euploid embryos. Substantial heterogeneity was noted across studies, driven by variability in laboratory protocols, cfDNA handling, amplification strategies, and contamination control.
CONCLUSIONS:
niPGT-A demonstrates variable diagnostic concordance with TE biopsy-based PGT-A, with clinically meaningful discordance across studies. Current evidence does not support its equivalence for independent clinical decision-making. While encouraging, niPGT-A should be considered investigational or complementary until validated by prospective studies where embryo selection is based solely on non-invasive testing.
IMPACT STATEMENT:
niPGT-A currently lacks sufficient diagnostic reliability to replace trophectoderm biopsy for clinical embryo selection. Its variability across laboratory conditions highlights the need for standardisation and prospective validation before routine clinical adoption.
SUPPORT: NA

GENETICS (18 OF 21)

P-617 11:15 AM Wednesday, October 28, 2026

EMBRYO REBIOPSY IN CHAOTIC CHROMOSOMAL PROFILES: ASSOCIATION WITH AI-BASED EMBRYO QUALITY SCORING IN PGT-A. Jose Teruel, MSc[1], Ana Alambiaga, MSc[1], Marina Benavent, MSc[1], Maria Escriba, MSc[1], Natalia Martínez Arellano, MSc[1] and Francisco Marco-Jimenez, Professor[2], [1]Equipo Juana Crespo, Valencia, Spain, [2]Institute of Animal Science and Technology, Universitat Politècnica de València, Valencia, Spain

OBJECTIVE:
After PGT-A, some embryos with six or more aneuploidies are classified as chaotic. This study aimed to evaluate the diagnostic accuracy of rebiopsy in these embryos and to examine the correlation with embryo quality using an AI-based score, comparing chaotic and non-chaotic embryos.
MATERIALS AND METHODS:
A total of 3,221 embryos from 730 PGT-A cycles performed between June 2024 and April 2025 were included, involving patients with a mean age of 39.2 ± 3.3 years. Embryo classification was carried out according to ASEBIR criteria, with blastocysts graded A and B considered good quality, and those graded C considered poor quality. Embryo quality was compared using the score provided by an artificial intelligence system, IADScore.
The results of the initial genetic analysis showed 972 euploid embryos (30.18%), 301 mosaic embryos (9.34%), 106 embryos with no diagnosis (3.29%), and 1,842 aneuploid embryos (57.19%), of which 103 were classified as chaotic (3.20% of the total). The mean age of patients without chaotic embryos was 39.6 ± 2.8 years, compared to 39.1 ± 3.3 years in the group with chaotic embryos ($p > 0.05$).
Rebiopsy and a new PGT-A analysis were scheduled for the 103 chaotic embryos. Genetic analysis included the assessment of all 24 chromosomes using next-generation sequencing (NGS; Thermo Fisher Scientific, USA) with a proprietary diagnostic algorithm.
RESULTS:
The survival rate after thawing of chaotic embryos was 89.32%, compared to 99.0% observed in transferable embryos following PGT-A ($p = 0.004$). Of the 92 chaotic embryos that underwent rebiopsy, 16 were euploid (17.39%), 9 were mosaic (9.78%), 48 were aneuploid (52.18%), and 19 were confirmed as chaotic (20.65%). No embryos were undiagnosed after the second biopsy.
The predictive value of an embryo initially classified as chaotic being identified again as chaotic or aneuploid after a second biopsy was 72.8%.
When stratifying the data by biopsy day and embryo quality, a statistically significant difference was observed in euploidy rates between Day-5 good-quality embryos (35.14%; n = 37), Day-5 poor-quality embryos (8.33%; n = 24), Day-6 good-quality embryos (11.11%; n = 9), and Day-6 poor-quality embryos (0.00%; n = 33) ($p = 0.0004$).
The iADScore (Vitrolife Group) was compared between embryos classified as chaotic (score = 3.49) and non-chaotic (score = 5.63), revealing a statistically significant difference ($p < 0.001$).
Of the 16 euploid embryos obtained after the second biopsy, three transfers involving three embryos have been performed, resulting in two ongoing pregnancies (66.67%).
CONCLUSIONS:
Performing a second biopsy on embryos classified as chaotic allows for the rescue of euploid embryos, thereby contributing to the optimization of reproductive cycle outcomes.
IMPACT STATEMENT:
Chaotic embryos show lower quality, but those euploid after a second biopsy have faster development and higher quality. These findings support improved patient counseling on rebiopsy decisions.
SUPPORT: No financial support

P-618 11:30 AM Wednesday, October 28, 2026

RECURRENT SEGMENTAL ANEUPLOIDY ON PGT-A REVEALED A MISSED PATERNAL BALANCED TRANSLOCATION AND ENABLED SUCCESSFUL PREGNANCY. Mili Thakur, M.D., FACOG, FACMG[1] and Jaye Adams, M.D.[2], [1]Genome Ally P.C., Grand Rapids, MI, [2]Pozitivf Fertility San Antonio, San Antonio, TX

OBJECTIVE: To demonstrate that recurrent chromosome-specific segmental abnormalities across embryos on PGT-A may identify an occult parental structural rearrangement despite initially negative parental karyotypes, and that embryo cohort review can directly change reproductive outcomes.
MATERIALS AND METHODS: A 25-year-old G2P0020 and her partner presented with infertility of 7 months and two prior early pregnancy losses. They underwent IVF with trophectoderm biopsy and PGT-A through a laboratory using next-generation sequencing. Fourteen blastocysts were analyzed.Multiple embryos demonstrated recurrent segmental abnormalities involving chromosome 7p. Based on these findings, parental peripheral blood karyotypes were recommended and performed. Initial results for both partners were reported as normal.Because the embryo pattern remained suspicious, the couple was referred for specialized genetic consultation. Detailed family history revealed that the male partner had a brother reportedly affected with an unbalanced chromosome 7;14 rearrangement. Given concordant embryo findings and pedigree history, the cytogenetics laboratory was asked to reanalyze the paternal specimen.
RESULTS: Of 14 embryo samples, 4 were initially reported euploid, 1 inconclusive, and 9 aneuploid. Recurrent chromosome 7 findings included two embryos with -7p, one with +7p, one with +14/-7, and one with +1,+7. This non-random pattern suggested segregation of a balanced rearrangement rather than sporadic embryonic error.Upon re-review, the paternal karyotype was revised to: 46,XY,t(7;14)(p22;q32.3), a balanced reciprocal translocation that had been missed on initial analysis. This finding explained the recurrent chromosome 7p abnormalities seen on PGT-A. Following diagnosis, the couple pursued targeted PGT-SR testing of their embryos to identify balanced/normal embryos and subsequently achieved an ongoing pregnancy.
CONCLUSIONS: Recurrent segmental abnormalities across embryos should prompt parental chromosome analysis; however, an initial normal result does not exclude clinically significant rearrangement. When embryo data remain suspicious, genetics referral, detailed pedigree assessment, and direct laboratory re-evaluation may uncover missed diagnoses.
IMPACT STATEMENT: PGT-A testing technologies are evolving to provide information beyond whole-chromosome aneuploidy. Cohort-level embryo patterns can serve as a powerful signal for previously undiagnosed parental chromosomal abnormality. Fertility specialists should not accept an unrevealing genetic result when the biologic pattern in a number of embryos suggests otherwise. Recognition of these findings can enable accurate diagnosis, targeted PGT-SR, and successful pregnancy.
SUPPORT: No financial support for this work.
REFERENCES:
1. Sundheimer LW, Liu L, Buyalos RP, et al. Diagnosis of parental balanced reciprocal translocations by trophectoderm biopsy and comprehensive chromosomal screening. *J Assist Reprod Genet.* 2018;35(1):165-169.

P-619 11:45 AM Wednesday, October 28, 2026

RECURRENT FERTILIZATION FAILURE AND POLYSPERMY ASSOCIATED WITH A CANDIDATE TUBB8 VARIANT IDENTIFIED BY WHOLE GENOME SEQUENCING OF MONOGENIC REPRODUCTIVE GENES. Mili Thakur, M.D., FACOG, FACMG, Genome Ally P.C., Grand Rapids, MI

OBJECTIVE: To evaluate the role of whole genome sequencing (WGS)-based candidate gene analysis in identifying genetic causes of recurrent fertilization failure and abnormal fertilization.

MATERIALS AND METHODS: A 35-year-old G0 with diminished ovarian reserve (AMH 0.9) and 2 years of infertility underwent three failed intrauterine imsemination cycles followed by three IVF cycles. Cycle characteristics, fertilization outcomes, and embryology findings were reviewed. Due to recurrent fertilization failure, WGS was performed in both partners with phenotype-driven analysis of >600 monogenic reproductive genes.
RESULTS: First IVF cyle yielded 12 oocytes (8 mature) with conventional insemination resulting in polyspermy (≥4 sperm per oocyte). Second and third IVf cycles yielded 11 oocytes each; ICSI resulted in complete fertilization failure. Male partner testing identified three variants of uncertain significance (DACH2, DNAH11, INSL6), none contributory. Female partner testing identified heterozygous variants in DNAAF1 and TTC29 (autosomal recessive, not explanatory) and a heterozygous TUBB8 variant (c.569A>G; p.His190Arg). TUBB8 encodes an oocyte-specific beta-tubulin essential for meiotic spindle assembly. A different substitution at the same codon (p.His190Tyr) has been reported as pathogenic, associated with abnormal oocyte morphology, multi-pronuclei formation, and early embryonic arrest, with disruption of microtubule architecture demonstrated in functional studies. The identified variant affects a highly conserved residue, supporting biological plausibility. The clinical phenotype is highly consistent with TUBB8-related oocyte dysfunction. Parental testing is currently underway to further clarify inheritance and pathogenicity.
CONCLUSIONS: WGS identified a biologically plausible candidate variant in TUBB8 in a patient with recurrent fertilization failure refractory to ICSI. In patients with ≥2 IVF cycles demonstrating fertilization failure or abnormal fertilization patterns, early comprehensive genomic evaluation should be considered. TUBB8-related defects represent oocyte-intrinsic dysfunction not overcome by conventional laboratory techniques.
IMPACT STATEMENT: This case supports integration of genomic testing into unexplained fertilization failure and highlights the role of oocyte-specific genes in IVF outcomes. Identification of TUBB8-associated dysfunction enables precision counseling, while ongoing parental testing may clarify variant pathogenicity and refine reproductive risk assessment. These findings may shift management toward alternative reproductive strategies and advance precision reproductive genetics in recurrent IVF failure.
SUPPORT: No financial support for this abstract.
REFERENCES:
Three Novel Mutations in TUBB8 Cause Female Infertility Due to Multiple Morphological Abnormalities of the Oocyte and Early Embryo. Reprod Sci. 2025 Jun;32(6):1813-1824.
Mutations in TUBB8 and Human Oocyte Meiotic Arrest. N Engl J Med. 2016 Jan 21;374(3):223-32.

P-620 12:00 PM Wednesday, October 28, 2026

PERSISTENT FETAL 6p SEGMENTAL DELETION AFTER TRANSFER OF AN EMBRYO WITH SEGMENTAL ANEUPLOIDY ON PGT-A RESULTING IN MAJOR STRUCTURAL ANOMALIES AND PREGNANCY TERMINATION.
Mili Thakur, M.D., FACOG, FACMG, Genome Ally P.C., Grand Rapids, MI

OBJECTIVE: To describe prenatal confirmation and adverse fetal outcome following transfer of an embryo reported as segmental aneuploid by preimplantation genetic testing for aneuploidy (PGT-A), highlighting the residual risk of persistent pathogenic segmental imbalance, the importance of diagnostic prenatal testing, and reproductive access considerations.
MATERIALS AND METHODS: A multiparous woman aged >40 years presented for counseling regarding transfer of a single embryo reported by next-generation sequencing PGT-A (VeriSeq PGS v1.0) as segmental aneuploid: 46,XY,-6s,-6p24.3p22.3. Counseling reviewed the limited literature regarding transfer of embryos with segmental aneuploidy, including the possibility that some segmental findings reflect confined trophectoderm mosaicism or mitotic events, while others represent persistent meiotic or early mitotic abnormalities affecting the fetus. Published data suggest lower but non-zero implantation and live birth rates after transfer of embryos classified as segmental aneuploid. Risks discussed included failed implantation, miscarriage, persistent fetal chromosomal imbalance, congenital anomalies, and uncertain phenotype due to incomplete breakpoint characterization. The patient elected to proceed with embryo transfer with their infertility specialist.
RESULTS: First-trimester course was initially unremarkable. Subsequent prenatal imaging identified multiple anomalies, including bilateral clubfeet, large multicystic horseshoe kidney crossing the midline, and pericardial effusion.Diagnostic amniocentesis with chromosomal microarray confirmed the same chromosome 6p deletion with concordant location and size as the original PGT-A result [6p24.3p22.3, arr[GRCh37] 6p24.3p22.3(9212071_18364449)x1], establishing persistence of the segmental abnormality in the fetus. The patient reached out to Chromosome 6 Project in Netherlands who reviewed their database and found 8 individuals with deletions largely similar to the deletion in the affected pregnancy. Given progressive multisystem anomalies and poor prognosis, patient proceeded with pregnancy termination at 21 weeks 1 day. Because of state-level restrictions, the patient was required to travel out of state for care. She recovered well physically and emotionally.
CONCLUSIONS: This case demonstrates that embryos reported as segmental aneuploid on PGT-A may result in ongoing pregnancies with persistent fetal chromosomal deletions and major congenital anomalies. Concordance between trophectoderm biopsy and amniocentesis confirms that some segmental findings represent true embryonic abnormalities rather than laboratory artifact or self-corrected mosaicism.
IMPACT STATEMENT: As transfer of non-euploid embryos increases in settings of limited embryo availability, counseling must clearly communicate that embryos with segmental aneuploidy on PGT results are at risk for serious fetal disease. Diagnostic prenatal testing should be strongly recommended after conception. This case also highlights how restricted access to reproductive services can compound the burden of complex prenatal decision-making after assisted reproduction.
SUPPORT: No financial support for this work

GENETICS (19 OF 21)

P-621 11:15 AM Wednesday, October 28, 2026

EXPERIENCE WITH MALE CARRIER SCREENING FOR X-LINKED CONDITIONS IN FERTILITY CARE.
Lauren Tuttle, MS, CGC, Kemi Ogunsina, PhD, MD, Anjali D Zimmer, PhD, Youbao Sha, PhD, FACMG and Jeffrey Dungan, MD, Natera, Inc.

OBJECTIVE: To evaluate the frequency and clinical relevance of X-linked (XL) findings identified through carrier screening (CS) in males.
MATERIALS AND METHODS: A retrospective analysis was performed of CS tests ordered for biological males that included at least one XL gene at a single commercial laboratory between April 2025 and February 2026. Positive results were defined as pathogenic or likely pathogenic variants per ACMG criteria. Indications for testing and clinical context were assessed.
RESULTS:
A total of 1,125 males underwent screening for 1–81 XL genes (panel sizes range 1–835). Median age was 38 years (range 18–83), with 92% of orders from fertility clinics.
Forty-seven males (4.2%) received a positive result in at least one XL gene. There were 11 *AFF2*, 3 *DMD*, 1 *EDA*, 12 *FMR1*, 21 *G6PD*, and 1 *GLA* positive results reported, with 2 individuals testing positive for 2 genes.
Among *FMR1*-positive cases, 7 (58%) had intermediate alleles (45–54 CGG repeats) and 5 (42%) had premutation alleles (55–200 repeats). Two males with intermediate alleles were also positive for *G6PD*; one had a partner with an intermediate allele, highlighting potential reproductive implications at the couple level. Indications for testing included procreative screening (infertility evaluation, sperm donor screening, and couple-based CS) and PGT-M probe development, with identification of XL variants informing downstream genetic counseling, reproductive risk assessment, and consideration of targeted embryo testing. Additionally, one individual was found to have two normal *FMR1* alleles, raising suspicion for a sex chromosome abnormality with potential health and fertility implications.
CONCLUSIONS: XL pathogenic variants are identified in a meaningful proportion of males undergoing CS in fertility care. These findings extend beyond traditional female-focused screening paradigms and have direct implications for reproductive planning, including PGT-M probe development, donor selection, and risk assessment for female offspring who have the potential for heterozygous manifestations. Several XL genes (*GLA*, *OTC*, and *ABCD1)* included in CS panels are also on the ACMG secondary findings list, indicating a professional consensus that these genes warrant clinical follow-up.
Males with *FMR1* premutations are at risk for fragile X-associated tremor/ataxia syndrome (FXTAS), with a reported risk of up to 75% by age 80. Additionally, males with either intermediate or premutation alleles are at risk of producing carrier female offspring, with recent studies suggesting that there is a substantial risk of repeat expansion for paternal transmissions, especially for intermediate alleles.
Some of the males in this cohort may have had a previous diagnosis for an XL condition and were doing family testing for the purposes of PGT-M probe development, highlighting an important use case of CS in the practice of fertility medicine.
IMPACT STATEMENT: Both positive and negative XL CS results in males can impact fertility care, influencing PGT-M probe development and clarifying reproductive risk or have clinical impacts for both the male patient and their potential offspring.

P-622 11:45 AM Wednesday, October 28, 2026

CHROMOSOMAL VARIANTS OF UNKNOWN SIGNIFICANCE AND IVF OUTCOMES: DO THEY MATTER?
Andriana H Velmahos, BS[1], Stylianos Vagios, MD[2], Kaitlyn E James, PhD[3], Christopher Ke Arkfeld, MD[4], Alexa M. Sassin, MD[5], Evelyn Minis, MD[4], Charles L Bormann, PhD[5], Heather Mason-Suares, PhD[6] and Irene Dimitriadis, M.D.[4], [1]Dover, MA, [2]MGH Fertility Center and Harvard Medical School, Boston, MA, [3]Massachusetts General Hospital, Boston, MA, [4]Massachusetts General Hospital Fertility Center, Massachusetts General Hospital and Harvard Medical School, Boston, MA, [5]Massachusetts General Hospital, Harvard Medical School, Boston, MA, [6]Brigham and Women's Hospital, Boston, MA

OBJECTIVE:
To determine whether chromosomal variants of unknown significance (VUS) impact fertilization rates (FR) and high-quality blastocyst (HQB) conversion rates in patients undergoing in vitro fertilization (IVF).
MATERIALS AND METHODS:
Design: Retrospective cohort study including 1,480 IVF treatment cycles from 01/2016 to 12/2023.
Setting: Academic fertility center.
Exposure: Couples undergoing IVF with autologous gametes, in which at least one partner carried a variant of uncertain significance (Group 1; n = 79), were compared with two control groups utilizing donor gametes. Patients in the control groups were confirmed to have either normal karyotypes (Group 2, n = 171) or unknown karyotype status (Group 3, n = 1,230). Donor gametes originated from individuals with confirmed normal karyotypes.
Primary outcome measures: FR and HQB conversion rate per cycle.
Statistics: Generalized estimating equation linear regression models accounted for repeated cycles per couple and adjusted for age, body mass index (BMI), day-3 follicle-stimulating hormone (FSH), and fertilization method.

RESULTS:
Group 1 patients were older [Mean (SD) years: 36.7 (4.8), vs. 30.0 (6.4) vs. 31.2 (6.6), p<0.001, respectively for Groups 1 vs. 2 vs.3].
Unadjusted analysis showed similar FR across the three groups [mean (SD): 73.0% (29.4%) vs. 77.0% (20.0%) vs. 72.6% (22%), Group 1 vs. 2 vs. 3, respectively, p=0.06]. Similarly, after adjustments, FR did not differ significantly between patients with chromosomal VUS and the control groups (Group 2: β=0.01, 95% CI: −0.03 to 0.05; Group 3: β=−0.01, 95% CI: −0.05 to 0.03).
In unadjusted analysis, patients with chromosomal VUS had increased HQB rates compared to the control groups [mean (SD): 38.6% (29.5%) vs. 36.4% (30.5%) vs. 27.5% (28.4%), Group 1 vs. 2 vs. 3, respectively, p<0.001]. However, this finding was attenuated in the adjusted analysis with Group 1 patients demonstrating a small 7-8% increase in HQB rates compared to patients using donor gametes (Group 2: β=0.08, 95% CI: 0.01 to 0.14; Group 3: β=0.07, 95% CI: 0.02 to 0.11).
CONCLUSIONS:
Chromosomal VUS were not associated with reduced fertilization or high-quality blastocyst conversion rates. These findings suggest that patients with VUS undergoing IVF can be reassured that early treatment outcomes are not adversely affected, supporting the interpretation of VUS as clinically benign in this context and helping reduce uncertainty during genetic counseling.
IMPACT STATEMENT:
Given the paucity of data assessing the impact of chromosomal VUS on early IVF outcomes, these findings provide evidence that chromosomal VUS do not adversely affect fertilization or blastocyst development, supporting their continued classification as benign variants in the context of infertility care.

P-623 12:00 PM Wednesday, October 28, 2026

APPARENT CARRIER STATUS AND CLINICAL AMBIGUITY IN CYP21A2 SCREENING: IMPLICATIONS FOR EXPANDED CARRIER SCREENING DESIGN. Embree Thompson, MD[1], Laura C. Gemmell, MD[2], Stephanie Galloway, M.S, C.G.C[3], Jessica L. Giordano, MS[3], Caitlin D. Baptiste, MD[3], Eric J. Forman, H.C.L.D, M.D.[2], Paula Brady, M.D.[2] and Fethiye Sinem Karipcin, MD[2], [1]Columbia University Medical Center, New York, NY, [2]Columbia University Fertility Clinic, New York, NY, [3]Columbia University Medical Center, Division of Women's Genetics

OBJECTIVE: To evaluate the clinical implications of including *CYP21A2* in expanded carrier screening (ECS) panels among patients seeking care at a fertility practice.
MATERIALS AND METHODS: We performed a retrospective chart review of ECS (445-condition panel, single laboratory) conducted at an academic fertility center between December 2022 and December 2025. Patients with positive *CYP21A2* results were analyzed. Variants were classified by pathogenicity and association with classical versus non-classical congenital adrenal hyperplasia (CAH and NCCAH, respectively). Couples with positive findings in both partners were identified, and subsequent genetic counseling, risk assessment, and reproductive decision-making, including uptake of preimplantation genetic testing for monogenic disease (PGT-M), were evaluated.
RESULTS: Among 7,366 patients undergoing ECS, 749 (10%) screened positive for *CYP21A2*. The most common indication for ECS was primary infertility (30%), followed by fertility preservation (23%). A total of 24 distinct variants were identified; 67% were classified as pathogenic or likely pathogenic, and 58% were associated with classical CAH. The most common variants were c.844G>T (p.V282L), associated with non-classical disease (n=322), and c.955C>T (p.Q319*) (n=216). Thirteen patients were homozygous for p.V282L, indicating NCCAH. Notably, approximately 95% of Q319* cases were accompanied by gene duplication, suggesting likely non-true carrier status. Thirty-two couples had positive *CYP21A2* findings in both partners on initial screening. Of these, 11 (34%) included at least one partner with Q319* and gene duplication. All were referred for genetic counseling; however, counseling and reported reproductive risk varied, particularly in cases involving Q319* with gene duplication, reflecting evolving understanding of variant interpretation. Only 1 of 32 couples (3%) had a clear risk for classical CAH, for which PGT-M is planned. Another 4 of 32 couples (13%) pursued PGT-M for NCCAH. Most declined PGT-M, pursued alternative reproductive strategies, or did not pursue prenatal or postnatal diagnostic testing.
CONCLUSIONS: Although *CYP21A2* demonstrates a high apparent carrier frequency in ECS, its clinical utility is limited by complex variant interpretation, frequent identification of likely non-true carriers, and evolving genotype-phenotype correlations. These findings result in substantial genetic counseling burden, novel diagnosis, ambiguous reproductive risks, and low-uptake of PGT-M or diagnostic testing.
IMPACT STATEMENT: Inclusion of *CYP21A2* in ECS panels generates a high volume of complex results necessitating genetic counseling and additional familiar testing with limited downstream clinical utility. These data highlight the need for improved interpretation and reporting of variants such as Q319* with gene duplication, as well as commonly identified non-classical variants (V282L), and underscore the importance of aligning carrier detection with clinical actionability in ECS design, particularly for genes with pseudogenes, hypomorphic variants, or variable genotype-phenotype correlations.
SUPPORT: No financial disclosures

GENETICS (20 OF 21)

P-624 11:15 AM Wednesday, October 28, 2026

WHOLE CHROMOSOME, SEGMENTAL, AND MOSAIC ANEUPLOIDY ACROSS 250,000 EMBRYOS SUPPORTS POTENTIAL MECHANISMS AND CLINICAL IMPLICATIONS FOR PGT-A. Christopher Weier, PH.D.[1], Alexander Griffith, B.S.[1], Kristine McWilliams, MD, PhD, HCLD (ABB)[2], Tony Gordon, Ph.D.[3] and Kate Brown, Ph.D[1], [1]CooperSurgical, Houston, TX, [2]CooperSurgical, Trumbull, MI, [3]CooperSurgical, London, United Kingdom

OBJECTIVE:
Define genome-wide patterns of whole-chromosome (WC), segmental (SA), and mosaic aneuploidy in a large clinical cohort to determine mechanistic origins and implications for embryo selection.
MATERIALS AND METHODS: This retrospective study analyzed >250,000 trophectoderm biopsies using a high-resolution PGT-A platform combining quantitative assessment of copy number and allelic imbalance for the classification of full, mosaic, and segmental aneuploidies with parental origin where available. Genome-wide incidence, co-occurrence, and distribution patterns were compared.
RESULTS:
WC mosaic aneuploidy showed a uniform distribution across autosomes, consistent with stochastic mitotic missegregation, whereas full WC aneuploidy exhibited marked chromosome-specific biases indicative of meiotic nondisjunction. SA, full and mosaic, initially appeared variable across chromosomes and arms, but this heterogeneity diminished following length normalization.
SA was detected in 13.5% of embryos, occurring as an isolated finding in 7.5% (3.5% full, 3.2% mosaic, 0.9% mixed) and co-occurring with WC abnormalities in 6.0%, highlighting co-occurrence of potentially unique mechanisms. Parental origin analysis revealed a strong paternal bias for SA (67% full; 70% mosaic), contrasting with predominantly maternal full WC aneuploidy (9% paternal) and intermediate contributions in WC mosaicism (55% paternal). This bias was most pronounced for deletions (86% full; 71.6% mosaic), with lower paternal contribution to duplications (47% full; 67.5% mosaic).
Most embryos harbored a single deletion (51%) or duplication (29%), while 11.4% exhibited both; over half of these involved two SAs on the same chromosome—enriched on chromosomes 4, 5, 7, 8, and 9—supporting localized structural instability. Breakpoints were predominantly terminal (94.8%) with few interstitial events (5.2%). Genome-wide mapping revealed enrichment near telomeres, including 162 recurrent regions with ≥15 events, further implicating localized sequence and structural fragility with replication-associated mechanisms.
CONCLUSIONS: This study supports their distinct aneuploid etiologies: mitotic missegregation for WC mosaicism, meiotic error for full WC aneuploidy, and structural or replication-associated processes for SA. Their differing genomic distributions, parental origins, and co-occurrence patterns define discrete mechanistic pathways with direct relevance to embryo viability. Accurate, high-resolution detection is essential to distinguish these classes and enable reliable interpretation.
IMPACT STATEMENT: Whole-chromosome, segmental, and mosaic aneuploidies represent biologically distinct classes of chromosomal error with variable clinical impact. Recognition of their prevalence and distribution supports more stratified embryo selection and counseling. The results underscore that accurate aneuploid detection is foundational for translating genomic signal into clinically meaningful decision-making in IVF.
SUPPORT: Conducted through CooperSurgical Research and Development.

P-625 11:30 AM Wednesday, October 28, 2026

BLASTOCYST MORPHOLOGY AS AN INDEPENDENT PREDICTOR OF PREIMPLANTATION GENETIC TESTING Results. Michael Whitehouse, B.S.[1], Manuel Viotti, PH.D.[2] and Jason Barritt, PhD[1], [1]Kindbody New York, New York, NY, [2]Fontis Genomics and Zouves Foundation for Reproductive Medicine

OBJECTIVE: To evaluate the association between blastocyst morphology and Preimplantation Genetic Testing for Aneuploidy (PGT-A) outcomes, and to develop predictive models for aneuploid, mosaic, segmental aneuploid, and inconclusive results while adjusting for maternal age and testing laboratory.
MATERIALS AND METHODS: This retrospective analysis included 40,577 trophectoderm biopsies from 9,048 fresh autologous IVF cycles across 6,414 patients at 24 clinics in the Kindbody network from September 2019 to February 2026. Generalized Estimating Equation (GEE) models generated adjusted odds ratios (OR) for PGT-A results. Models were adjusted for SART age group, biopsy day (Day 5, 6, or 7), Gardner grade (expansion, inner cell mass [ICM], and trophectoderm), and PGT laboratory. The baseline reference was a Day 5 4AA embryo, tested by KindLabs, from a patient under 35 years old.
RESULTS: Embryo morphology independently predicted PGT-A outcomes after adjusting for age and PGT lab.

- **Euploidy/Aneuploidy:** Greater expansion correlated with higher euploidy rates. Compared to Expansion 4, Expansion 5 (OR 1.356, 95% CI 1.256–1.463) and Expansion 6 (OR 1.474, 95% CI 1.316–1.652) had significantly higher odds of euploidy, while Expansion 3 (OR 0.666, 95% CI 0.621–0.715) had lower odds. Lower grades for ICM (Grade B: OR 0.825, 95% CI 0.786–0.865) and trophectoderm (Grade B: OR 0.654, 95% CI 0.622–0.687; Grade C: OR 0.371, 95% CI 0.318–0.432) also predicted increased aneuploidy.
- **Mosaicism and Segmental Aneuploidy:** Trophectoderm Grade B (OR 1.293, 95% CI 1.192–1.402) and Grade C (OR 1.575, 95% CI 1.235–2.007) increased the odds of a mosaic result. ICM Grade B (OR 1.218, 95% CI 1.068–1.388) and Trophectoderm Grade B (OR 1.285, 95% CI 1.115–1.482) increased the odds of segmental aneuploidy.
- **No Result:** Inconclusive results were primarily driven by the PGT laboratory rather than morphology or age.

- **Maternal Age:** Advancing maternal age was the strongest independent predictor against euploidy (e.g., Age 43+: OR 0.070, 95% CI 0.055–0.088) and reduced overall odds of mosaic and segmental results.
- **Day of Biopsy:** Compared to Day 5, embryos biopsied on Day 6 and Day 7 had higher odds of aneuploidy (Day 6: OR 1.381, 95% CI 1.313–1.453; Day 7: OR 1.883, 95% CI 1.699–2.089) and segmental aneuploidy (Day 6: OR 1.167, 95% CI 1.022–1.332; Day 7: OR 1.417, 95% CI 1.098–1.829).

CONCLUSIONS: Blastocyst expansion, ICM, and trophectoderm grades are robust, independent predictors of PGT-A outcomes. In the setting of a large network of IVF clinics that share laboratory SOPs and QA procedures, embryo morphology grades are reliably correlated with chromosomal testing results.
IMPACT STATEMENT: This large-scale study supports blastocyst morphology as a predictor of PGT-A results, providing a framework for clinicians to set accurate, individualized expectations prior to testing. By defining precise associations between morphology, genetic results, and clinical implantation rates, this model lays the groundwork for evidence-based embryo ranking systems to inform clinical decision-making and optimize single embryo transfer selection.

P-626 11:45 AM Wednesday, October 28, 2026

WHAT ARE THE CHANCES OF HAVING EUPLOID EMBRYOS TO TRANSFER DEPENDING ON MATERNAL AGE USING A HIGH-THROUGHPUT SNP-ARRAY PLATFORM. Erik Widen, PhD[1] and Santiago Munne, PhD[2], [1]Genomic Prediction, Inc., North Brunswick, NJ, [2]Homu Health Ventures, LA Jolla, CA

OBJECTIVE: To Provide valuable information to doctors to manage patient expectations about the chances of a couple to have euploid embryos at a certain age.
MATERIALS AND METHODS: This multicenter retrospective cohort study encompassed 15,511 cycles, involving 83,785 embryos analyzed by preimplantation genetic testing of aneuploidy (PGT-A) performed at the same PGT laboratory using a high-throughput SNP-array platform. Cycles that also included structural relocations and/or monogenetic disease testing were excluded. Only euploidy is reported in the table, and aneuploidy, haploidy, polyploidy, and segmental abnormalities of any detected size are considered not euploid. The used platform seldom detects mosaicism which is reported as euploid or aneuploid.
RESULTS: As shown in the table below, low number of embryos produced and high maternal age contribute to low chances of having euploid embryos for transfer:

		Maternal age					
		Egg donor	**<35**	**35-37**	**38-40**	**41-42**	**>42**
Nr of blastocysts	**1-2**	86%	83%	76%	62%	40%	30%
	2-5	93%	95%	92%	83%	64%	43%
	5-8	93%	99%	97%	94%	88%	69%

CONCLUSIONS: Most patients undergoing PGT-A will have some euploid embryos to transfer except those above 37 years of age with few blastocysts to biopsy. The expectations should be platform specific, as this table contrasts with previously published data from NGS studies, in which fewer cycles had euploid embryos for transfer. The difference likely being that high-thoughput SNP array platforms misclassify fewer embryos as chaotic aneuploid, putative mosaic or with intermediate results, and based on quantitative (copy number) and qualitative (genotyping) analysis can differentiate ploidy, meiotic from mitotic origin of the abnormality. Meiotic abnormalities are always classified as aneuploid. The platform classifies more embryos as euploid, that would otherwise be false positives for mosaicism.
IMPACT STATEMENT: Knowing in advance if PGT-A may result in euploid embryos for transfer is helpful for patients and doctors to manage expectations and decide if PGT-A is for the couple or if egg donation is an alternative.

P-627 12:00 PM Wednesday, October 28, 2026

THE ART OF THE BIOPSY: CLINIC-SPECIFIC FACTORS DRIVE VARIABILITY IN PGT-A INCONCLUSIVE RATES – AN ANALYSIS OF 167,672 BIOPSIES. Erik Widen, PhD[1], Santiago Munne, PhD[2] and Charlene A Alouf, PhD HCLD MBA[3], [1]Genomic Prediction, Inc., North Brunswick, NJ, [2]Homu Health Ventures, LA Jolla, CA, [3]Genomic Prediction, New Brunswick, NJ

OBJECTIVE: To evaluate the impact of clinic-specific variables, sample volume, and shipping distance on the quality of preimplantation genetic testing for aneuploidies (PGT-A) results, specifically focusing on inconclusive results, no amplifications and genotyping call rates.
MATERIALS AND METHODS: A retrospective analysis was performed on 167,672 trophectoderm biopsy samples sent from IVF clinics across the Americas. All samples were processed using the same SNP-array-based PGT-A platform. To ensure statistical robustness, clinic-specific analysis was restricted to centers submitting >200 samples. Statistical evaluations included Pearson correlation coefficients and 95% confidence intervals (CI), using bootstrap of 1000 iterations, to assess the relationship between shipping distance, clinic volume, call rates, and inconclusive rates. A distinction was made between *inconclusive* tests, meaning existing but uninterpretable data, and *no amplification*, where no genetic material was detected.
RESULTS: Significant variability in performance was observed between clinics. Inconclusive rates ranged from 0.0–0.9% among the five clinics with consistent lowest rates, to 6.0–9.9% in the five clinics with the consistent highest rates. The total inconclusive rate among all samples was 2.41%. Inconclusive rates were correlated with no-amplification rates (0.548; CI: 0.327–0.709), indicating a joint dependence on praxis. Notably, shipping distance showed a negligible correlation with sample quality, as measured by genotyping call rate, (-0.016; CI: -0.024 to -0.0087), suggesting that transport transit does not degrade sample quality. While clinic volume showed a weak negative correlation with inconclusive rates (-0.289; CI: -0.437 to -0.135), the wide disparity between high-volume centers suggests that internal laboratory protocols and technician proficiency are the primary drivers of success.
CONCLUSIONS: PGT inconclusive rates are heavily influenced by clinic-specific factors rather than geographical logistics. The wide range of inconclusive rates—nearly tenfold between the highest and lowest centers—highlights a critical need for standardized embryology training. Because shipping distance is not a significant factor, embryologists can benefit from the technical expertise of reference laboratories to provide the best approach
IMPACT STATEMENT: This study demonstrates that the technical execution of the biopsy at the clinic level is the most significant determinant of PGT inconclusive rates. By identifying that shipping distance does not compromise results, these findings empower clinics to prioritize laboratory workshops and quality control measures to optimize pregnancy outcomes for their patients.

GENETICS (21 OF 21)

P-628 11:15 AM Wednesday, October 28, 2026

THE ASSOCIATION BETWEEN IVF STIMULATION CYCLE LENGTH AND EUPLOIDY RATE. Alexandria Young, MD, PhD[1], Nicole Guardino, MS[2], Nathan C Koelper, MPH[1], Clarisa R Gracia, MD, MSCE[1], Dara S Berger, PhD, MPH, MS[1] and Caitlin E Martin, MD, MS[1], [1]University of Pennsylvania, Philadelphia, PA, [2]Philadelphia, PA

OBJECTIVE: The objective of this study was to identify whether length of stimulation was associated with euploidy in patients undergoing in vitro fertilization (IVF) cycles with pre-implantation genetic testing for aneuploidy (PGT-A).
MATERIALS AND METHODS: This was a retrospective cohort study completed at one academic center between January 2021 and December 2025. All gonadotropin-releasing hormone antagonist cycles with PGT-A were included regardless of trigger type [human chorionic gonadotropin (hCG) only vs. leuprolide acetate only vs. combination hCG and leuprolide acetate]. Length of stimulation (start of cycle to trigger day) was separated into three groups: 10-12 days, 13-14 days, and >14 days based on the closest whole number to calculated tertiles. Euploidy rate was calculated by dividing the number of euploid embryos per cycle by the number of embryos biopsied. Data were adjusted for the patient's age. One-way ANOVA was used to compare rates across groups, and linear regression was used to adjust for age.
RESULTS: A total of 1,280 cycles and 7,093 embryos were included. The age between the three groups was significantly different (p-value=0.029), and data were adjusted for age. Length of stimulation was significantly associated with euploidy rate, even with age-adjustment (43.5% in 10-12 days of stimulation, 40.8% in 13-14 days, and 38.8% in >14 days [age-adjusted p-value=0.017]). There was a corresponding significant increase in aneuploidy rate (45.2% in 10-12 days of stimulation, 49.1% in 13-14 days, and 52.3% in >14 days [age-adjusted p-value=0.008]). There was no difference in mosaicism or no result.
CONCLUSIONS: These data suggest that length of stimulation may influence euploid rates for patients undergoing antagonist cycles with PGT-A. Cycles that are 10-12 days long have the largest association with euploidy. Although age influences euploidy rate, age is not sufficient to explain the observed difference, as the data remain significant even after adjusting for patient age.
IMPACT STATEMENT: Current studies in the literature are conflicting with some showing no association between cycle length and euploidy (Irani et al. 2020), while others suggest a greater cycle length and/or cumulative gonadotropin dose may correlate with increased aneuploidy (Sekhon et al. 2017), mosaicism (Ni et al. 2024), or de novo whole chromosomal abnormalities (Ye et al. 2026). Data from our academic center supports an association and suggests that limiting prolonged stimulation may be associated with higher euploidy rates.
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P-629 11:30 AM Wednesday, October 28, 2026

MORE THAN JUST A CARRIER: FREQUENCY OF INCIDENTAL FINDINGS IN CARRIER SCREENING RESULTS. Julia Wilkinson, MS CGC, Lisa Blazejewski, MS CGC, Tessa Niemchak, B.SC., M.S. and Matt Tschirgi, M.S., Quest Diagnostics

OBJECTIVE: Carrier screening panels continue to grow in both the number and complexity of genes tested. Guidelines from organizations such as ACOG and ACMG generally agree on approach to panel design and the goal for carrier screening, which is to provide information to couples about their risk of having a child with a common, severe, early-onset condition. However, for some conditions, carrier status is additionally associated with personal health or pregnancy implications. The goal of this study was to examine how often positive carrier results were associated with these incidental findings.
MATERIALS AND METHODS: We retrospectively analyzed results of carrier screening via full gene sequencing and copy number variation analysis performed at a CLIA-certified commercial laboratory on panels of up to 612 genes over a 1-year period. The data for each panel and gene tested were examined to determine how often variants

were observed in each gene, and results were cross-referenced with 132 genes known to have additional medical implications for carriers.
RESULTS: For all results analyzed, 72.5% were positive for at least 1 gene, with 19,952 variants detected across the 612 genes screened. Overall, 37.4% of positive variants had an association with risk for carriers: ~28.5% for attenuated disease, 3.7% for X-linked risks to female carriers, 3.0% for an alternative disease risk, 0.7% for cancer-related risks, 0.5% for variant-specific risk considerations, 0.4% for specific pregnancy complications, 0.4% for pharmacogenomic interactions, and 0.2% for digenic inheritance.
CONCLUSIONS: Although carrier screening is intended to identify reproductive risks in couples, positive screening results can also reveal health risks for the individual tested. In this study, more than a third of identified variants were found in genes known to have potential health implications for carriers, which is slightly higher than the proportion expected given the number of genes included in this study (132 of 612 [21.6%]). Clinicians should be aware of these risks and obtain appropriate patient consent. Furthermore, healthcare professionals who order carrier screening should thoroughly review positive results to provide the most appropriate medical management options for patients whose results include incidental findings related to personal health risks.
IMPACT STATEMENT: Certain genes tested in carrier screening are associated with additional personal health or pregnancy-related risks for carriers, which should be considered in counseling and medical management decisions.

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DAY 6/7 BLASTOCYST BIOPSY SALVAGES EUPLOID EMBRYOS AFTER A DAY 5 EUPLOID-NEGATIVE RESULT: ANALYSIS OF A 10,610 CYCLE PREIMPLANTATION GENETIC TESTING FOR ANEUPLOIDY COHORT. Nuri Yang, M.D.[1], Junghyun Lee, M.S.[2], Eun A Park, Ph.D.[3], Tae Ki Yoon, M.D., Ph.D.[4] and Hye Ok Kim, M.D., Ph.D.[5], [1]CHA University Fertility Center Magok, Seoul, Korea, Republic of (South), [2]Fertility Laboratory, CHA University Fertility Center Magok, Seoul, Korea, Republic of (South), [3]Fertility Laboratory, CHA Fertility Center Seoul Station, Seoul, Korea, Republic of (South), [4]CHA Fertility Center, Seoul, South Korea, [5]CHA University School of Medicine, CHA Fertility Center Seoul Station, Seoul, Korea, Republic of (South)

OBJECTIVE: Faster embryo development is associated with higher euploidy rates, leading some patients to limit preimplantation genetic testing for aneuploidy (PGT-A) to early-developing blastocysts due to financial constraints. However, this selective strategy may neglect viable euploid embryos within the later-developing cohort. This study aimed to quantify the "salvage" rate of day 6/7 blastocysts specifically in cycles where all day 5 embryos were euploid-negative.
MATERIALS AND METHODS: This was a retrospective cohort study of 10,610 next-generation sequencing (NGS)-based PGT-A cycles from 5,048 patients performed between January 2021 and December 2024. We analyzed cycles with a day-5 blastocyst biopsy yielding zero euploid embryos and additional blastocysts biopsied on day 6/7. Salvage was defined as ≥1 euploid embryo identified among day-6/7 blastocysts. Outcomes included overall salvage rate, rate of ≥2 salvaged euploid embryos, and age-stratified salvage rates. Wilson 95% confidence intervals (CIs) were calculated, and maternal age was assessed as a continuous predictor using logistic regression with patient-clustered standard errors.
RESULTS: Among 10,610 PGT-A cycles from 5,048 patients, 4,638 underwent blastocyst biopsy on day 5. Of these, 2,802/4,638 (60.4%) had zero euploid embryos among blastocysts biopsied on day 5. Among day-5 euploid-negative cycles, 1,888/2,802 (67.4%) had additional blastocysts biopsied on day 6/7 (1,823 on day 6 only; 16 on day 7 only; 49 on both day 6 and day 7). Salvage occurred in 492/1,888 cycles (26.1%, 95% CI 24.1–28.1); 117/1,888 (6.2%) yielded ≥2 euploid embryos among blastocysts biopsied on day 6/7. Among salvaged cycles, the mean number of euploid embryos identified on day 6/7 was 1.32. Salvage declined with age: ≤34 years 77/152 (50.7%), 35–37 years 148/308 (48.1%), 38–40 years 175/625 (28.0%), 41–42 years 74/490 (15.1%), and ≥43 years 18/313 (5.8%). In logistic regression, each additional year of maternal age was associated with lower odds of salvage (OR 0.77, 95% CI 0.75–0.80; $p<0.001$).
CONCLUSIONS: After a day 5 euploid-negative PGT-A result, day 6/7 blastocyst biopsy can still yield at least one euploid embryo in 26.1% of eligible cycles and at least two euploid embryos in 6.2%. This salvage potential is highly dependent on maternal age, with rates dropping from approximately 50% in patients aged ≤37 years to 5.8% in those aged ≥43 years. These findings suggest that extended culture and biopsy of later-developing blastocysts are clinically valuable even when day 5 results are discouraging, especially in younger patients.
IMPACT STATEMENT: This study challenges the cost-saving strategy of testing only day-5 blastocysts by demonstrating a significant salvage rate from later-developing embryos. These age-stratified conditional probabilities are essential for optimizing laboratory protocols and ensuring that viable reproductive potential is not prematurely abandoned due to developmental timing.
SUPPORT: N/A
REFERENCES:
N/A

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AN INTEGRATED GENOMIC PLATFORM FOR UNIFIED EMBRYO RISK ASSESSMENT COMBINING LOW-PASS SEQUENCING IMPUTATION, POLYGENIC SCORING, RARE VARIANT ANALYSIS, AND FAMILY HISTORY MODELING. Tobias Wolfram, Phd[1], Justin B Schleede, PhD[2], Spencer Michael Moore, B.S., M.S.[3], Mat C Eyre, BSc, MSc, MCE[1], Mamad Ahangari, PhD[4], Jonathan Anomaly, PhD[5] and Michael Christensen, -[1], [1]Herasight, [2]Raleigh, NC, [3]Bothell, WA, [4]Key West, FL, [5]Herasight, Austin, TX

OBJECTIVE: To describe and clinically demonstrate a modular genomic platform that transforms standard low-pass WGS PGT-A data into multi-layered embryo risk assessments without additional biopsies or genotyping arrays.
DESIGN: Platform development and retrospective clinical case series. The architecture comprises four modules: (1) a validated 2x low-pass WGS PGT-A assay for aneuploidy and structural variant detection, (2) ImputePGTA, a Coupled Hidden Markov Model reconstructing high-density embryo genotypes from the same data using parental haplotype reference, (3) polygenic risk scoring with Bayesian family history liability modeling and rare variant integration, and (4) an optional staged deep-sequencing protocol for complex structural variant resolution and de novo mutation screening. Clinical utility was evaluated across three cases with distinct risk profiles.
MATERIALS AND METHODS: Parental genomes were sequenced using hybrid short-read and long-read technologies for phased haplotype references. Embryo trophectoderm biopsies sequenced at low-pass depth for routine aneuploidy screening were processed through ImputePGTA to infer genome-wide genotypes and compute polygenic risk scores. These were integrated into case-specific models: Bayesian liability modeling with rare variants for a schizophrenia-risk case, realized-relatedness coefficients with sex-specific base rates for an autism-risk case, and a penetrance-modification framework combining BRCA1 status with polygenic contributions for a cancer case. A staged WGS protocol was also evaluated, using low-pass imputation to resolve complex structural targets with 40x sequencing reserved for de-novo analysis transfer candidates.
RESULTS: ImputePGTA achieved dosage correlations of above 0.99 with ground-truth deep sequencing and comparable PRS concordance across disease models. In the schizophrenia case, family history modeling produced substantial inter-embryo risk stratification. In the autism case, realized relatedness to affected relatives yielded clinically meaningful differentiation despite no identifiable pathogenic variants. In the BRCA1 case, polygenic variation among carrier-negative embryos enabled prioritization beyond monogenic status. Across all cases, family history modeling amplified discriminative power over polygenic scores alone. The staged WGS protocol resolved complex repetitive loci inaccessible to short-read approaches reduction in sequencing burden.
CONCLUSIONS: This platform unifies aneuploidy screening, polygenic risk, rare variant analysis, family history modeling, and structural variant resolution within a single framework anchored to standard PGT-A sequencing, reducing per-embryo cost and workflow complexity while expanding clinically actionable information from routine IVF genetic testing.
IMPACT STATEMENT: This platform enables IVF clinics to extract comprehensive embryo risk assessments from sequencing data already generated during routine PGT-A, without additional biopsies, arrays, or per-embryo cost increases, making multi-layered genetic screening accessible as a standard component of embryo selection.
SUPPORT: This study was sponsored by Herasight Inc.