

Infective Endocarditis

Diagnosis and Contemporary Management

Audience: APRN | Contact hrs: 1.5 | Pharmacology hrs: 0.5

Expected revision: October 1, 2028

Pharmacology hours are included in the total contact hours.

The next decision matters

Infective endocarditis (IE) can begin with a nonspecific illness and become a valve, bloodstream, or embolic emergency. A patient may have persistent bacteremia without a striking murmur; another may first present with heart failure or stroke. The useful clinical question is not simply whether a vegetation is visible, but whether infection is damaging the heart, spreading beyond it, or remaining uncontrolled. Contemporary management brings microbiology, imaging, antimicrobial therapy, and source control together through an Endocarditis Team (DeSimone et al., 2026).

Purpose and learning outcomes

This activity supports advanced practice registered nurses caring for adults with suspected or established IE. After completion, learners should be able to recognize high-risk presentations; integrate cultures, diagnostic criteria, and imaging; select organism-directed treatment principles; identify medication toxicity and interactions; prioritize surgical or device-extraction assessment; and plan a safe transition with recurrence prevention. Prescribing and diagnostic decisions depend on authorization, preparation, and local privileges. The four cases are fictional worked examples.

Recognize infection before the classic picture appears

Risk assessment includes prior IE, native valve disease, prosthetic or transcatheter valves, valve-repair material, cardiovascular implantable electronic devices (CIEDs), hemodialysis, repeated vascular access, and injection drug use. Staphylococci, streptococci, and enterococci remain central to the differential; health care exposure and implanted material change the likely organisms and treatment complexity. Absence of fever or peripheral stigmata does not exclude IE (DeSimone et al., 2026; Fowler et al., 2023).

Older adults may describe fatigue, anorexia, confusion, loss of mobility, or worsening breathlessness rather than a clear febrile illness. Compare current function with the patient's baseline. A new conduction abnormality, per-

sistent positive cultures, worsening regurgitation, focal neurologic change, vertebral pain, or splenic pain should not be attributed to aging without evaluation. Record the chronology, recent procedures, vascular devices, antimicrobial exposure, and change in organ function (Delgado et al., 2023).

A vegetation is an infected platelet-fibrin mass, not an inert clot. Microbial attachment and protected growth help explain why prolonged therapy is needed. Leaflet destruction can cause acute regurgitation and heart failure; local extension can produce an abscess, fistula, or prosthetic dehiscence. Fragments from left-sided infection can embolize systemically, while right-sided disease commonly produces pulmonary septic emboli. Figure 1 connects the lesion to these different consequences (American Heart Association, n.d.; Delgado et al., 2023).

CASE 1 • Persistent bacteremia and PR prolongation

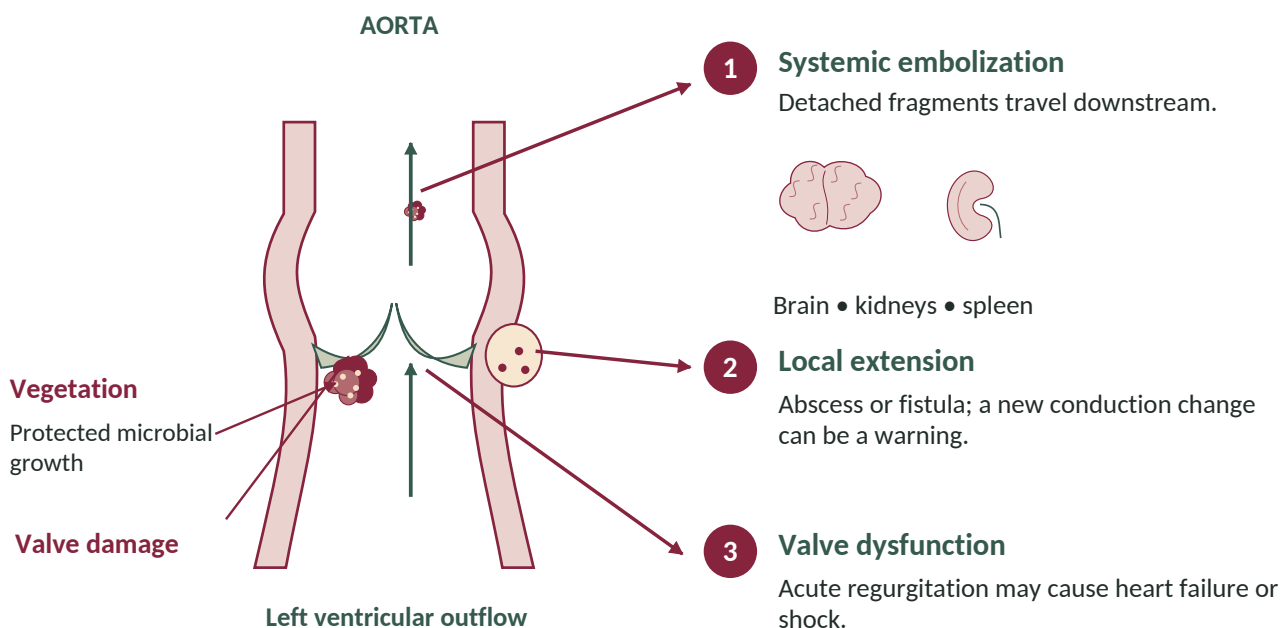
A 76-year-old with a prosthetic aortic valve remains culture-positive for methicillin-susceptible *Staphylococcus aureus* (MSSA) after several days of active therapy. The PR interval has lengthened from 170 to 240 ms. Blood pressure is stable, but the change is not reassuring merely because shock is absent. Persistent bacteremia and a new conduction abnormality raise concern for perivalvular extension. Obtain urgent Endocarditis Team assessment, repeat cardiac imaging, and surgical input rather than simply extending the same course. The APRN communicates the culture timeline, ECG change, valve type, and current hemodynamics together (Delgado et al., 2023).

Cultures and criteria answer different questions

Obtain blood cultures before antibiotics whenever feasible: at least two sets, ideally three, with adequate blood volume and separate collection sites. In shock or rapidly progressive infection, obtain specimens promptly without a clinically important delay in treatment. A set in-

From a valve lesion to a clinical emergency

Aortic-valve infection • longitudinal schematic of left-sided disease



Persistent infection + new organ findings = reassess anatomy and source control.

Figure 1. An infected aortic-valve schematic connects vegetation, local extension, and systemic embolization. The drawing is conceptual, not a patient image or an anatomic scale model. Sources: American Heart Association (n.d.); Delgado et al. (2023).

cludes aerobic and anaerobic bottles. Record antibiotics already taken because they can suppress growth. Communicate with microbiology early when a fastidious organism is possible (DeSimone et al., 2025).

The 2023 Duke-ISCVID framework incorporates microbiology, cardiac imaging, and selected operative findings. Clinical definite IE is supported by two major criteria, one major plus three minor criteria, or five minor criteria. Possible IE includes one major plus one minor criterion or three minor criteria when definite criteria are not met. New pathways include cardiac CT, appropriately interpreted fluorodeoxyglucose positron-emission tomography/CT (FDG-PET/CT), and selected molecular or serologic evidence. These categories support diagnostic classification; they are not a reason to stop investigation when the patient's trajectory remains concerning (Fowler et al., 2023).

Choose the next image for the unanswered question

Transthoracic echocardiography (TTE) is the usual first study. Transesophageal echocardiography (TEE) is important after a negative or inconclusive TTE when suspicion persists, in prosthetic-valve or CIED infection, and to define local complications. A negative examina-

tion is not a permanent exclusion: ESC guidance supports repeat TTE/TEE within 5–7 days when suspicion remains high, sooner if deterioration demands it. Figure 2 shows this escalation without making advanced imaging a prerequisite for urgent care (Delgado et al., 2023).

Cardiac CT can clarify abscess, pseudoaneurysm, fistula, or other perivalvular disease when echocardiography is inconclusive. FDG-PET/CT can be particularly helpful with prosthetic valves or selected device infections. Transcatheter aortic valve infection may be missed by echocardiography, so a negative TTE or TEE should be interpreted with the overall clinical probability. Brain and extracardiac imaging should address suspected embolic or metastatic complications (del Val et al., 2023).

A negative culture is a diagnostic problem, not reassurance

For blood culture-negative IE, distinguish prior antibiotic exposure from infection due to organisms that are difficult to recover conventionally. Exposure history can direct testing for *Coxiella burnetii*, *Bartonella* species, and other pathogens. Serology, targeted molecular testing, and examination of valve tissue when surgery occurs may establish an etiology. Malignancy-associated

Build the diagnosis on two parallel tracks

Obtain microbiology and define cardiac anatomy; integrate both with the clinical course

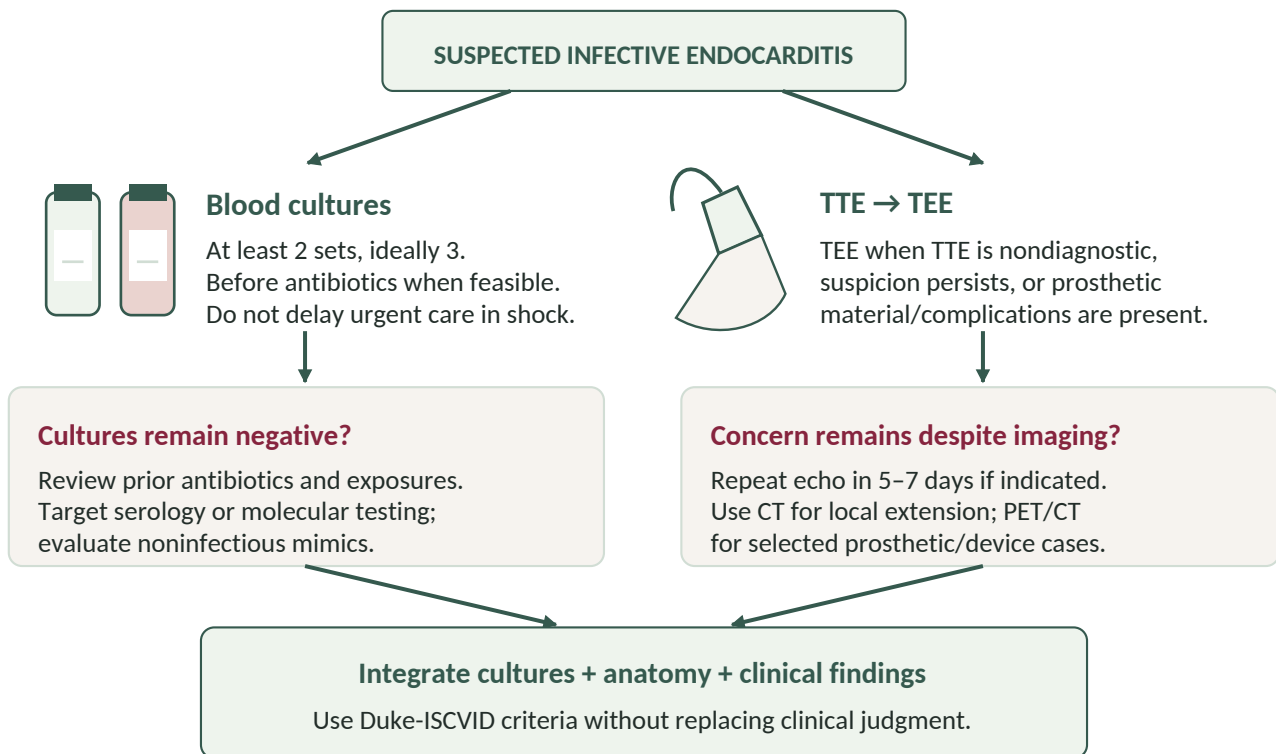


Figure 2. Microbiology and imaging proceed in parallel. Continued clinical suspicion drives repeat or advanced testing; a negative initial study does not close the evaluation. Sources: Fowler et al. (2023); DeSimone et al. (2025); Delgado et al. (2023).

nonbacterial thrombotic endocarditis and autoimmune valve lesions remain important mimics. The 2025 AHA statement favors an organized investigation rather than indiscriminate testing (DeSimone et al., 2025).

CASE 2 • Cultures obtained after antibiotics

A 64-year-old received antibiotics for presumed pneumonia before blood cultures. Fever persists, echocardiography suggests new mitral regurgitation, and abdominal imaging shows splenic embolic lesions. Negative cultures cannot resolve these discordant findings. Clarify the antimicrobial history, continue the cardiac evaluation, and coordinate exposure-directed microbiologic testing. The care team also considers noninfectious vegetations when the evidence points that way. The next action follows the clinical pattern, not the culture result in isolation (DeSimone et al., 2025).

Match treatment to organism, substrate, and patient

Empiric treatment is a bridge to a defined regimen, not a fixed drug combination for all IE. Valve type, timing af-

ter implantation, acquisition setting, prior antibiotics, local resistance, allergy history, and organ function influence initial coverage. Once cultures and susceptibilities are available, narrow therapy and confirm that the regimen addresses the involved valve or device. A reported allergy should be characterized rather than automatically excluding every beta-lactam (McDonald et al., 2023).

Native-valve courses commonly extend for several weeks, whereas prosthetic-valve infection usually requires at least six weeks; abbreviated regimens apply only to specifically selected infections. Document the treatment start, effective agents, culture clearance, interruptions, and planned completion date. Persistent bacteremia requires a renewed search for infected hardware, an abscess, inadequate drug exposure, or a metastatic focus. Duration and postoperative decisions should be documented by the treating infectious-diseases team rather than inferred from the calendar alone (Delgado et al., 2023; DeSimone et al., 2026).

Organism-directed priorities

For MSSA, an antistaphylococcal beta-lactam such as nafcillin, oxacillin, or cefazolin is generally preferred

Table 1. Organism-directed treatment: the decision that matters

Organism / setting	Therapeutic direction	Safety or selection check
MSSA	Antistaphylococcal beta-lactam when tolerated	Clarify allergy; do not retain vancomycin by default.
MRSA	Vancomycin or specialist-directed daptomycin	Match exposure to renal function; distinguish label from off-label use.
Susceptible streptococci	Susceptibility-directed beta-lactam	Valve type and complications determine duration.
Susceptible <i>E. faecalis</i>	Ampicillin + ceftriaxone is an important option	Aminoglycoside-sparing; not a blanket <i>E. faecium</i> regimen.
HACEK / unusual pathogens	Ceftriaxone for many HACEK infections; individualized plans for others	Do not assume ampicillin susceptibility; obtain specialist input.

Sources: Delgado et al. (2023); McDonald et al. (2023). Regimens require patient-specific prescribing.

when tolerated. For methicillin-resistant *S. aureus* (MRSA), vancomycin or a specialist-directed daptomycin regimen is used. Coagulase-negative staphylococci require the same attention to susceptibility and foreign material. Table 1 summarizes key selection questions; it is not a substitute for a patient-specific prescription (McDonald et al., 2023).

For susceptible oral streptococci or *Streptococcus gallolyticus*, beta-lactam treatment remains central; minimum inhibitory concentration (MIC), complications, renal function, and valve type determine the exact course. *S. gallolyticus* also warrants evaluation for an associated gastrointestinal source. Ampicillin plus ceftriaxone is an important aminoglycoside-sparing option for susceptible *Enterococcus faecalis*, including many patients with renal vulnerability. Do not extrapolate this combination to *E. faecium* without organism-specific expertise (Delgado et al., 2023).

HACEK organisms generally require an active agent such as ceftriaxone because ampicillin susceptibility cannot be assumed. Fungal and non-HACEK Gram-negative IE require specialist-led antimicrobial and procedural planning. The rarity of these infections makes blanket regimens particularly unsafe; susceptibility, immune status, prosthetic material, and feasibility of source control all matter (McDonald et al., 2023).

Do not carry old adjunctive regimens forward automatically

Routine gentamicin is not recommended for staphylococcal native-valve IE. The AHA's 2026 statement also advises avoiding gentamicin in staphylococcal prosthet-

ic-valve IE because harm outweighs benefit; this differs from older prosthetic-valve regimens. Rifampin is not a routine native-valve adjunct. ESC guidance restricts its role to foreign-material infection and delays initiation until bacteremia has cleared after several days of effective treatment. Reconcile the applicable guideline with the treating team rather than combining incompatible recommendations (DeSimone et al., 2026; Delgado et al., 2023).

Monitor the drug and the person receiving it

Monitoring is a longitudinal task: compare renal function, urine output, electrolytes, blood counts, hepatic tests, symptoms, and vascular access with baseline. A falling fever does not exclude toxicity, and a rising creatinine does not identify its cause by itself. Review hemodynamics, concomitant nephrotoxins, dose timing, and microbiologic response before attributing deterioration to a single mechanism. Figure 3 organizes the principal medication checks (Rybak et al., 2020; Norris et al., 2019).

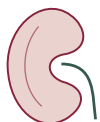
Vancomycin and daptomycin

For serious MRSA infection, vancomycin dosing should target exposure rather than pursue a high trough in isolation. The consensus AUC over 24 hours target is 400–600 mg·h/L when the MIC is assumed to be 1 mg/L. Pharmacy-directed assessment should incorporate changing renal function, actual administration times, and appropriately timed concentrations. An apparently acceptable level from the wrong sampling time may mislead treatment (Rybak et al., 2020).

Antimicrobial safety: match the drug to the surveillance

Assess effectiveness and toxicity together; increase monitoring when organ function changes

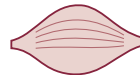
VANCOMYCIN



Kidney function + exposure

For serious MRSA: AUC 400–600 mg·h/L when MIC is 1 mg/L. Reassess exposure as renal function changes.

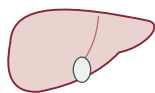
DAPTOMYCIN



Muscle symptoms + CK

Check CK at least weekly; more often when indicated. New dyspnea or infiltrates require evaluation.

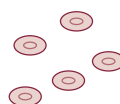
RIFAMPIN



Liver tests + interactions

Review the entire medication list. Enzyme induction can undermine anticoagulants and other treatments.

LINEZOLID



CBC + interaction review

Monitor CBC weekly. Review serotonergic drugs and symptoms of neuropathy with prolonged use.

AUC: area under the concentration–time curve; CK: creatine kinase; CBC: complete blood count.

Figure 3. Link antimicrobial exposure to organ-specific surveillance and interaction review. Monitoring frequency increases with instability or organ dysfunction. Sources: Rybak et al. (2020); National Library of Medicine (n.d.-a, n.d.-b, n.d.-c).

Daptomycin requires baseline and serial creatine kinase assessment, generally at least weekly, with more frequent monitoring in renal impairment or other risk settings. Ask about weakness and muscle pain; new fever, dyspnea, or hypoxemia may indicate eosinophilic pneumonia rather than infection progression. Review concurrent statin therapy. The U.S. label covers *S. aureus* bacteremia including right-sided IE, not left-sided IE or pneumonia (National Library of Medicine, n.d.-a).

The ESC high-dose daptomycin approach, commonly 10 mg/kg IV daily when selected for IE, is specialist-directed and may involve a second active drug. Left-sided use and higher-than-labeled dosing are distinct from the U.S. approved regimen. Renal impairment can require interval adjustment; a once-daily summary must not override an individualized prescription (Delgado et al., 2023; National Library of Medicine, n.d.-a).

CASE 3 • Creatinine rises during combination therapy

A 79-year-old receiving vancomycin and gentamicin for staphylococcal prosthetic-valve IE has a creatinine increase from 1.0 to 1.8 mg/dL. The APRN reviews the regimen urgently rather than waiting for another scheduled weekly panel. Confirm organism and susceptibility, assess perfusion and other nephrotoxins, and coordinate removal of avoidable gentamicin exposure. Recalculate vancomycin exposure as renal function changes. The lesson is simultaneous protection of antimicrobial efficacy and kidney function, not reflex underdosing of every agent (DeSimone et al., 2026; Rybak et al., 2020).

Interactions and delayed adverse effects

Rifampin can markedly alter exposure to other medicines. Reassess anticoagulants, antiseizure medicines, antiretrovirals, and other interacting treatments when rifampin starts and when it stops. Monitor

hepatic tolerance and explain expected body-fluid discoloration without dismissing jaundice or systemic symptoms (National Library of Medicine, n.d.-c).

Beta-lactam accumulation may contribute to neurotoxicity in renal impairment; hypersensitivity, cytopenias,

and hepatic or renal injury also warrant review. Selected linezolid use requires blood-count surveillance and assessment for serotonergic interactions, neuropathy, and lactic acidosis during prolonged exposure. Do not mistake a new adverse effect for inevitable deterioration from IE (National Library of Medicine, n.d.-b; Norris et al., 2019).

Treat the source, not only the bloodstream

Heart failure, uncontrolled infection, and prevention of embolization are the principal surgical decision domains (Figure 4). Severe valve dysfunction with refractory pulmonary edema or cardiogenic shock requires emergency evaluation. Abscess, fistula, prosthetic dehiscence, persistent infection, and selected high-risk vegetations warrant urgent team review. Not every prosthetic-valve infection mandates the same operation, but a potentially correctable source should not be ignored because the patient is already receiving antibiotics (Delgado et al., 2023).

Definite CIED infection generally requires removal of the complete system, including leads, in addition to antimicrobial therapy. Replacing the generator alone

leaves potentially infected components behind. Extraction, temporary pacing when needed, and any reimplantation require coordinated specialist planning. Antibiotic suppression when removal cannot be performed is a distinct individualized strategy, not equivalent evidence of cure (Baddour et al., 2024).

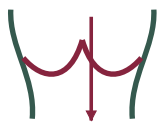
Look beyond the valve for persistent sources: back pain can indicate vertebral infection, abdominal pain may reflect splenic disease, and a vascular catheter may sustain bacteremia. Imaging and drainage are driven by the suspected focus. Source control may need to be coordinated before or alongside valve surgery to avoid leaving a reservoir that can reseed infection (Delgado et al., 2023).

Stroke changes the discussion, not automatically the indication

A nonhemorrhagic stroke does not automatically require prolonged surgical delay when heart failure or uncontrolled infection makes intervention urgent. Infarct burden, neurologic prognosis, intracranial bleeding, and cardiac stability all matter. Significant hemorrhage increases procedural risk and may favor delay when feasible. New neurologic symptoms require urgent reassess-

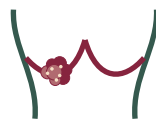
Source control: recognize the problem that antibiotics cannot fix

Three decision domains prompt early cardiac-surgery assessment



HEART FAILURE

Severe valve dysfunction with pulmonary edema or shock demands emergency evaluation.



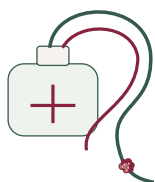
UNCONTROLLED INFECTION

Abscess, fistula, device infection, or persistent bacteremia despite effective treatment.



EMBOLIC RISK

Vegetation features, embolization, organism, and clinical course guide urgent team decisions.



DEFINITE CIED INFECTION

Plan complete system extraction, including leads—not generator removal alone. Coordinate pacing and reimplantation needs with the specialist team.

Neurologic complications alter timing and risk assessment; they do not automatically cancel an indication.

Figure 4. Three clinical problems drive valve-surgery assessment. Definite device infection requires a parallel extraction plan; antibiotics alone do not remove infected hardware. Sources: Delgado et al. (2023); Baddour et al. (2024).

ment and brain imaging; a fixed waiting period cannot replace multidisciplinary judgment (Delgado et al., 2023).

Do not initiate antiplatelet or anticoagulant therapy solely to prevent vegetation embolization. A patient with atrial fibrillation or a mechanical valve has a separate indication that must be balanced against intracranial bleeding, planned surgery, and other complications. Avoid blanket continuation or discontinuation rules (Delgado et al., 2023).

A route change is a selection decision

The POET trial showed that selected, clinically stable adults with left-sided IE could complete treatment with oral combinations after an initial IV phase. Participants had received at least ten days of IV treatment; this evidence does not authorize oral therapy on the first day of an undifferentiated infection. Organism susceptibility, an effective combination, reliable absorption, and structured follow-up were central to the strategy (Iversen et al., 2019).

Before outpatient parenteral antimicrobial therapy (OPAT) or partial oral treatment, confirm clinical stabil-

ity, microbiologic response, control of complications, and no unresolved surgical indication. Under the ESC pathway, TEE should exclude local progression before transition. Assess access to medicines, transportation, support, ability to administer treatment, and the patient's understanding of the plan. Figure 5 makes these eligibility checks visible before the discharge decision (Delgado et al., 2023; Norris et al., 2019).

OPAT does not remove the need for blood tests, line assessment, dose adjustment, or urgent escalation. Assign responsibility for results and specify whom the patient should contact after hours. Oral treatment avoids some line-related risks but can fail through missed doses, impaired absorption, or interactions. Long-acting lipoglycopeptides are recognized in the 2026 AHA summary as options for carefully selected patients; they should not be treated as interchangeable routine IE regimens (Norris et al., 2019; DeSimone et al., 2026).

Use teach-back: ask the patient to explain the schedule, monitoring plan, warning signs, and whom they will call. A discharge note that lists appointments is not evidence that the patient can attend them. Confirm who will review abnormal results and whether the outpatient

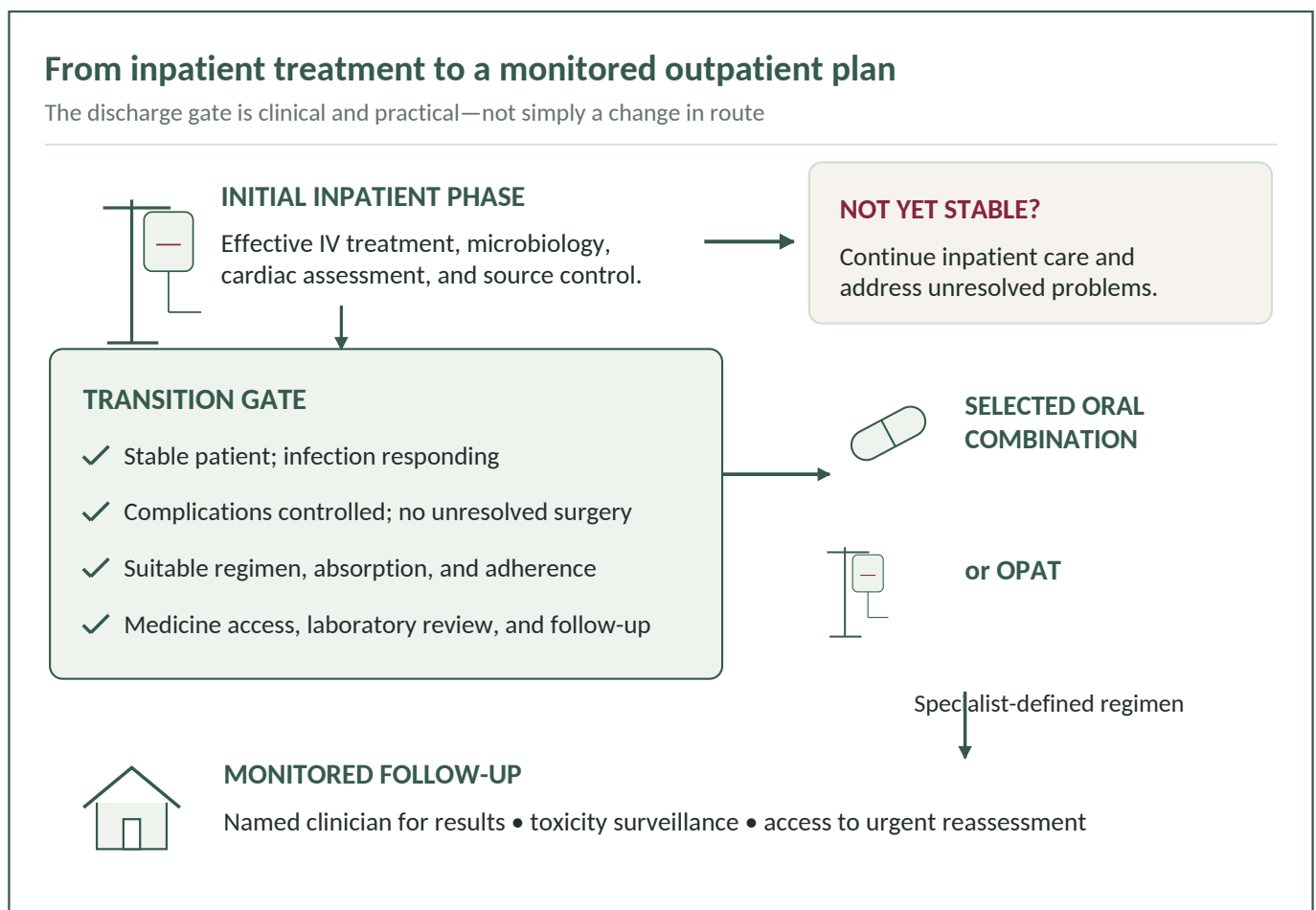


Figure 5. A structured transition preserves antimicrobial efficacy, monitoring, and access to reassessment. Oral treatment and OPAT are options for selected patients, not automatic discharge pathways. Sources: Iversen et al. (2019); Delgado et al. (2023); Norris et al. (2019).

team has received the culture, imaging, surgical, and medication records (Norris et al., 2019).

CASE 4 • Planning a safe oral transition

A 58-year-old with susceptible streptococcal left-sided IE has completed an initial IV phase. Cultures have cleared, TEE shows no local progression, surgery is not indicated, and oral absorption is reliable. A specialist-defined oral combination may be appropriate, but the team still confirms medicine access, adherence support, laboratory surveillance, and follow-up. If reliable follow-up cannot be arranged, a cleared culture alone is not a safe discharge plan (Iversen et al., 2019; Delgado et al., 2023).

Preserve function while treating infection

Chronologic age is not a stand-alone reason to withhold surgical assessment. In older adults, frailty, cognition, nutrition, mobility, baseline independence, and goals of care should inform decisions alongside cardiac anatomy and infection severity. Renal reserve and polypharmacy affect drug tolerance; hospitalization can also worsen function. Mobilization, nutrition, delirium prevention, and a realistic support plan belong in the treatment discussion (Delgado et al., 2023).

For injection drug use-associated IE, integrate addiction treatment, harm reduction, symptom control, and a non-stigmatizing discharge plan. Access to addiction expertise should proceed alongside antimicrobial and surgical evaluation, not as a condition for receiving necessary care. A feasible plan that the patient can follow is part of infection treatment (Baddour et al., 2022).

Prevention and surveillance continue after antibiotics

Emphasize oral health, regular dental care, skin hygiene, and careful device management. Dental prophylaxis is reserved for patients at highest risk of adverse IE outcomes under applicable guidance, including patients with prior IE or prosthetic valves, when the procedure meets the guideline indication. A murmur or hypertension alone does not establish eligibility. Routine prophylaxis for every invasive procedure is not supported; recommendations for nondental procedures vary by jurisdiction and clinical context (Wilson et al., 2021).

At completion, document clinical status and the follow-up imaging plan, reconcile medicines, and explain recurrence symptoms. Fever, new breathlessness, focal neurologic symptoms, worsening back pain, or ac-

cess-site inflammation should prompt reassessment. Suspected recurrent infection warrants cultures before new antibiotics when feasible. Relapse with the same organism raises concern for an unresolved focus or inadequate eradication, while a new episode may have a different source (Delgado et al., 2023).

Keep the diagnostic and treatment plans connected

Safe IE care depends on a sequence of linked decisions: recognize the concerning change, establish microbiology, define anatomy, target treatment, monitor harm, and control the source. A normal-looking first test, a cleared culture, or a convenient antibiotic schedule must not replace the complete assessment. The APRN's contribution is to connect these findings, make the next action explicit, and confirm that inpatient and outpatient teams share the same plan.

References

- American Heart Association. (n.d.). Infective endocarditis. Retrieved October 1, 2026. <https://www.heart.org/en/health-topics/infective-endocarditis>
- Baddour, L. M., Esquer Garrigos, Z., Sohail, M. R., Havers-Borgersen, E., Krahn, A. D., Chu, V. H., Radke, C. S., Avari-Silva, J., El-Chami, M. F., Miro, J. M., & DeSimone, D. C. (2024). Update on cardiovascular implantable electronic device infections and their prevention, diagnosis, and management: A scientific statement from the American Heart Association. *Circulation*, 149(2), e201–e216. <https://doi.org/10.1161/CIR.0000000000001187>
- Baddour, L. M., Weimer, M. B., Wurcel, A. G., McElhinney, D. B., Marks, L. R., Fanucchi, L. C., Esquer Garrigos, Z., Pettersson, G. B., & DeSimone, D. C. (2022). Management of infective endocarditis in people who inject drugs: A scientific statement from the American Heart Association. *Circulation*, 146(14), e187–e201. <https://doi.org/10.1161/CIR.0000000000001090>
- Delgado, V., Ajmone Marsan, N., de Waha, S., Bonaros, N., Brida, M., Burri, H., Caselli, S., Doenst, T., Ederhy, S., Erba, P. A., Foldager, D., Fosbøl, E. L., Kovac, J., Mestres, C. A., Miller, O. I., Miro, J. M., Pazdernik, M., Pizzi, M. N., Quintana, E., ... Borger, M. A. (2023). 2023 ESC Guidelines for the management of endocarditis. *European Heart Journal*, 44(39), 3948–4042. <https://doi.org/10.1093/eurheartj/ehad193>
- del Val, D., Panagides, V., Mestres, C. A., Miró, J. M., & Rodés-Cabau, J. (2023). Infective endocarditis after

- transcatheter aortic valve replacement. *Journal of the American College of Cardiology*, 81(4), 394–412. <https://doi.org/10.1016/j.jacc.2022.11.028>
- DeSimone, D. C., Esquer Garrigos, Z., Marx, G. E., Tattevin, P., Hasse, B., McCormick, D. W., Hannan, M. M., Zuhlke, L. J., Radke, C. S., & Baddour, L. M. (2025). Blood culture-negative endocarditis: A scientific statement from the American Heart Association. *Journal of the American Heart Association*, 14(8), e040218. <https://doi.org/10.1161/JAHA.124.040218>
- DeSimone, D. C., Marks, L., Dayer, M. J., Esquer Garrigos, Z., Messika-Zeitoun, D., O’Gara, P. T., Pettersson, G. B., Bucholz, E. M., Andrews, L. S., Fowler, V. G., Jr., Miro, J. M., & Baddour, L. M. (2026). Infective endocarditis: Diagnosis, antibiotic therapy, and management: A scientific statement from the American Heart Association. *Circulation*. Advance online publication. <https://doi.org/10.1161/CIR.0000000000001466> Official AHA summary accompanies the statement. <https://professional.heart.org/en/science-news/infective-endocarditis-diagnosis-antibiotic-therapy-and-management/top-things-to-know>
- Fowler, V. G., Jr., Durack, D. T., Selton-Suty, C., Athan, E., Bayer, A. S., Chamis, A. L., Dahl, A., DiBernardo, L., Durante-Mangoni, E., Duval, X., Fortes, C. Q., Fosbøl, E., Hannan, M. M., Hasse, B., Hoen, B., Karchmer, A. W., Mestres, C. A., Petti, C. A., Pizzi, M. N., ... Miro, J. M. (2023). The 2023 Duke–International Society for Cardiovascular Infectious Diseases criteria for infective endocarditis: Updating the modified Duke criteria. *Clinical Infectious Diseases*, 77(4), 518–526. <https://doi.org/10.1093/cid/ciad271>
- Iversen, K., Ihlemann, N., Gill, S. U., Madsen, T., Elming, H., Jensen, K. T., Bruun, N. E., Høfsten, D. E., Fursted, K., Christensen, J. J., Schultz, M., Klein, C. F., Fosbøll, E. L., Rosenvinge, F., Schønheyder, H. C., Køber, L., Torp-Pedersen, C., Helweg-Larsen, J., Tønder, N., ... Bundgaard, H. (2019). Partial oral versus intravenous antibiotic treatment of endocarditis. *New England Journal of Medicine*, 380(5), 415–424. <https://doi.org/10.1056/NEJMoa1808312>
- McDonald, E. G., Aggrey, G., Aslan, A. T., Casias, M., Cortes-Penfield, N., Dong, M. Q., Egbert, S., Footer, B., Isler, B., King, M., Maximos, M., Wuerz, T. C., Azim, A. A., Alza-Arcila, J., Bai, A. D., Blyth, M., Boyles, T., Caceres, J., Clark, D., ... Lee, T. C. (2023). Guidelines for diagnosis and management of infective endocarditis in adults: A WikiGuidelines group consensus statement. *JAMA Network Open*, 6(7), e2326366. <https://doi.org/10.1001/jamanetworkopen.2023.26366>
- National Library of Medicine. (n.d.-a). Daptomycin [Prescribing information]. *DailyMed*. Retrieved October 1, 2026. <https://dailymed.nlm.nih.gov/dailymed/lookup.cfm?setid=1957b6ce-7382-4a7b-bf02-3595948d09c6>
- National Library of Medicine. (n.d.-b). Linezolid [Prescribing information]. *DailyMed*. Retrieved October 1, 2026. <https://dailymed.nlm.nih.gov/dailymed/fda/fdaDrugXsl.cfm?setid=2220c753-e0e8-4797-bce2-34b3c63bd631&type=display>
- National Library of Medicine. (n.d.-c). Rifampin [Prescribing information]. *DailyMed*. Retrieved October 1, 2026. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=78c4d20c-9d9b-4f26-bc11-ff193c6c53ca>
- Norris, A. H., Shrestha, N. K., Allison, G. M., Keller, S. C., Bhavan, K. P., Zurlo, J. J., Hersh, A. L., Gorski, L. A., Bosso, J. A., Rathore, M. H., Arrieta, A., Petrak, R. M., Shah, A., Brown, R. B., Knight, S. L., & Umscheid, C. A. (2019). 2018 Infectious Diseases Society of America clinical practice guideline for the management of outpatient parenteral antimicrobial therapy. *Clinical Infectious Diseases*, 68(1), e1–e35. <https://doi.org/10.1093/cid/ciy745>
- Rybak, M. J., Le, J., Lodise, T. P., Levine, D. P., Bradley, J. S., Liu, C., Mueller, B. A., Pai, M. P., Wong-Beringer, A., Rotschafer, J. C., Rodvold, K. A., Maples, H. D., & Lomaestro, B. M. (2020). Therapeutic monitoring of vancomycin for serious methicillin-resistant *Staphylococcus aureus* infections: A revised consensus guideline and review by the American Society of Health-System Pharmacists, the Infectious Diseases Society of America, the Pediatric Infectious Diseases Society, and the Society of Infectious Diseases Pharmacists. *American Journal of Health-System Pharmacy*, 77(11), 835–864. <https://doi.org/10.1093/ajhp/zxaa036>
- Wilson, W. R., Gewitz, M., Lockhart, P. B., Bolger, A. F., DeSimone, D. C., Kazi, D. S., Couper, D. J., Beaton, A., Kilmartin, C., Miro, J. M., Sable, C., Jackson, M. A., & Baddour, L. M. (2021). Prevention of viridans group streptococcal infective endocarditis: A scientific statement from the American Heart Association. *Circulation*, 143(20), e963–e978. <https://doi.org/10.1161/CIR.0000000000000969>