

DIAGNOSE 2023 Duke-ISCVID criteria

BLOOD CULTURES — THE FOUNDATION
3 sets from separate sites before antibiotics. In the stable subacute patient, it is reasonable to **withhold empiric antibiotics** so cultures are not confounded. In sepsis, prosthetic valve, or instability, **treat immediately after drawing**.

IMAGING
TTE first in everyone. **TEE** if TTE is negative or non-diagnostic and suspicion persists, and in all **prosthetic valves** or intracardiac devices. The 2023 criteria add **cardiac CT and PET-CT** as major imaging criteria.

WHAT CHANGED IN 2023
More sensitive than modified Duke without losing specificity. Expanded typical organisms, and **coagulase-negative staphylococci count as typical** when **intracardiac prosthetic material** is present.

EMPIRIC ANTIBIOTICS after cultures — narrow as soon as you can

Setting	Regimen	Notes
Native valve acute presentation	Vancomycin 15–20 mg/kg IV q8–12 h (load 20–35 mg/kg, max 3 g) + ceftriaxone 2 g IV daily	Covers MRSA, streptococci, and HACEK. Trough 10–15 mcg/mL, or AUC-guided per local protocol.
Native valve healthcare-associated / IVDU	Vancomycin + an antipseudomonal beta-lactam (cefepime, piperacillin-tazobactam, or meropenem)	Broader gram-negative cover where nosocomial or injection-related exposure is likely.
Prosthetic valve < 12 months from surgery	Vancomycin + gentamicin + rifampin	Rifampin penetrates biofilm on prosthetic material. Add rifampin only once bacteremia is clearing . Watch drug interactions.
Duration	Native valve 4–6 weeks IV ; prosthetic valve ≥ 6 weeks	

WHEN TO OPERATE three reasons — and heart failure is the commonest

- 1 **Heart failure** — the most frequent complication, in roughly **42–60%** of native-valve cases. **Emergent surgery** for refractory pulmonary edema or cardiogenic shock; **urgent** for persistent HF with poor hemodynamic tolerance.
- 2 **Uncontrolled infection** — **abscess**, false aneurysm, fistula, enlarging vegetation, persistent bacteremia despite appropriate therapy, or infection with **fungi or multiresistant organisms**.
- 3 **Prevention of embolism** — **vegetation ≥ 10 mm** marks elevated embolic risk. Persistent large vegetation **after an embolic event** despite appropriate antibiotics justifies urgent surgery, typically **within 3–5 days**.
- 4 **Involve cardiac surgery early**, before the patient decompensates. An endocarditis team improves outcomes; the decision is rarely one specialty's alone.

MONITOR & COMPLICATIONS look actively, they are often silent

DAILY
Repeat blood cultures every 48 h until negative — this defines the treatment clock. Daily exam for new murmur and signs of HF. **ECG for a new conduction delay**, which suggests a **root abscess**. Monitor renal function on vancomycin and gentamicin.

WATCH FOR
Septic emboli (stroke, splenic or renal infarct, septic pulmonary emboli in right-sided disease) · **mycotic aneurysm** · glomerulonephritis · new AV block. **Image the brain** if any neurologic change — it may alter surgical timing.

ORGANISM-DIRECTED THERAPY narrow as soon as the culture speaks

Organism	Native valve regimen	Notes
MSSA	Nafcillin or cefazolin IV × 6 weeks	Beta-lactams beat vancomycin for MSSA — de-escalate off vancomycin promptly once sensitivities return.
MRSA	Vancomycin or daptomycin × 6 weeks	Daptomycin is an option for right-sided disease and vancomycin intolerance.
Viridans streptococci	Penicillin G or ceftriaxone × 4 weeks	Highly penicillin-susceptible strains may be treated for 2 weeks with an aminoglycoside.
Enterococcus	Ampicillin + ceftriaxone , or ampicillin + gentamicin	Dual therapy is required for synergy. Ampicillin-ceftriaxone spares the kidneys and is preferred with renal impairment.
HACEK	Ceftriaxone × 4 weeks	Fastidious, slow-growing gram-negatives. Modern culture systems usually recover them within 5 days.

SPECIAL SITUATIONS the ones that change the plan

RIGHT-SIDED & INJECTION DRUG USE
Usually **tricuspid, S. aureus**. Presents with **septic pulmonary emboli** — fever, pleuritic pain, cavitating nodules on chest imaging — rather than a murmur. Generally better prognosis and **more often medically curable**. Address addiction treatment as part of the plan.

PROSTHETIC VALVE
Higher mortality, lower threshold for surgery. **Early (< 12 months)** is usually nosocomial, often staphylococcal. **TEE is mandatory**. Suspect **valve dehiscence or abscess** with a new regurgitant murmur or conduction delay.

PROPHYLAXIS
Only for the **highest-risk cardiac conditions** (prosthetic valve or material, prior IE, certain congenital disease, transplant valvulopathy) undergoing **dental procedures involving gingival or periapical tissue**. Amoxicillin 2 g PO one hour before.

PEARLS & PITFALLS

- Do not start antibiotics before cultures in the stable subacute patient. Culture-negative endocarditis is largely iatrogenic and makes the whole course harder.
 - A negative TTE does not exclude endocarditis. If suspicion is real, get the TEE.
 - S. aureus bacteremia demands an echo, every time, even without a murmur.
- A new conduction abnormality is a perivalvular abscess until proven otherwise. Get the TEE and call surgery.
 - Duration counts from the **first negative culture**. Restart the clock if cultures stay positive.
 - Anticoagulation is not started to treat vegetations; it raises hemorrhagic transformation risk after septic stroke.