

Staphylococcus aureus Bacteremia in Adults

BOTTOM LINE: NEVER ignore a blood culture positive for *Staphylococcus aureus*. DO NOT treat *S. aureus* bacteremia with oral antibiotics.

Staphylococcus aureus bacteremia (SAB) is a life-threatening infection with a mortality of 20-30% and significant morbidity (paralysis, stroke).¹ Injection drug use, orthopedic hardware, implanted devices, and vascular catheters are risk factors.

A single positive blood culture for *S. aureus* should never be considered a contaminant, and it should prompt initiation of targeted therapy, follow-up blood cultures, and a thorough investigation to determine the source and extent of infection.

Optimizing Management

1. An infectious diseases consultation is strongly recommended; it is associated with improved outcomes, reduced relapse rates, and improved identification of metastatic infections.²
2. A thorough patient assessment and initial investigations to identify the source of the *S. aureus* bacteremia, **AND** any complications, such as secondary foci, are essential.
 - Consider any indwelling medical device, the skin & soft tissues, endocarditis, septic thrombosis, osteomyelitis, septic arthritis, epidural abscess, pneumonia, as examples.
 - Remove any temporary vascular catheters present and send the tip(s) for culture.
3. An echocardiogram is highly recommended as the incidence of endocarditis can be up to 25%.³⁻⁵ Given the high mortality of missed endocarditis, a transesophageal echocardiogram is specifically preferred if there are any of: secondary foci, prolonged bacteremia (> 4 days), intracardiac device or hemodialysis access, or community-acquired bacteremia.⁶
4. Consult for advice on removal of permanent devices (i.e. tunneled lines, pacemakers, cardiac valves, grafts, prosthetic joints or other prosthetic material), and drainage procedures.
5. EMPIRIC therapy in adults:
 - Vancomycin alone may be used for patients who appear otherwise well - loading dose of 25-30 mg/kg total body weight, then 15 mg/kg total body weight q8-12h based on renal function (target trough of 15-20 mg/L).
 - Addition of either cloxacillin 2 g IV q4h or cefazolin 2 g IV q8h is recommended by some experts, particularly in severely ill patients. The use of dual empiric therapy is currently being studied in randomized trials.
6. To document clearance of bacteremia and determine appropriate duration of therapy, collect 2 sets of blood cultures, 48 hours AFTER the INITIAL positive blood culture for *S.aureus*. Repeat blood cultures every 48 hours *until negative*.

Antimicrobial Stewardship

Once susceptibility is known, target antimicrobial therapy:

methicillin-susceptible <i>S. aureus</i> (MSSA)*	cloxacillin IV or cefazolin
methicillin-resistant <i>S. aureus</i> (MRSA)	vancomycin IV alone

* In the case of MSSA, patients who report, or have been labelled as, having a β -lactam allergy need a thorough allergy interview and a complete medication history because the use of anything other than a β -lactam for SAB is inferior.

Duration of Therapy³⁻⁵

Duration starts from the date of the first negative blood culture. Do NOT use oral antibiotics.

- Complicated SAB (endocarditis[†], osteomyelitis, implanted device) or no known source identified: **4 - 6 weeks** and as determined by therapy of the associated infection
 - Uncomplicated SAB: a source found, but no endocarditis[†], no implanted device, no metastatic sites of infection, defervescence within 72 hours of start of effective therapy & negative blood cultures at 48-72 hours: **14 days**
- [†] short course β -lactam therapy may be sufficient for uncomplicated tricuspid valve MSSA endocarditis but expert consultation should be sought

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References:

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