Staphylococcus aureus Bacteremia Management

Disclaimer: *This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. Local microbiology and susceptibility/resistance patterns should be taken into consideration when selecting antibiotics. This algorithm should not be used to treat pregnant women.*

INITIAL EVALUATION

Blood culture positive for *S. aureus*

- Perform clinical assessment to identify source and extent of infection
- Obtain Infectious Diseases (ID) consult regardless of presumed source
- Eliminate and/or debride other sites of infection
- Order daily blood cultures on at least days 2-4 after initial positive blood culture
- Obtain transthoracic echocardiogram (TTE). A transesophageal echocardiogram (TEE) should be pursued when a patient meets criteria for complicated bacteremia[2] and/or when recommended by ID.
- Remove all indwelling central lines unless absolutely contraindicated or discussed with ID

Methicillin resistant *S. aureus*?

ANTIBIOTIC SELECTION[1]

(Adjust dose for patients with organ dysfunction)

Yes — **MRSA bacteremia**

First Line:
- Daptomycin[3] 8 mg/kg IV daily **or**
- Vancomycin 15 mg/kg IV every 12 hours (adjust dose based on levels[4])

Second Line[5]:
- Ceftaroline 600 mg IV every 8 hours

No — **MSSA bacteremia**

First Line[6]:
- Cefazolin[7] 2 g IV every 8 hours **or**
- Oxacillin[8] 2 g IV every 4 hours

Second Line:
- Daptomycin[3] 8 mg/kg IV daily

Complicated bacteremia[2]?

DURATION OF THERAPY

Yes — Therapy duration: 4-6 weeks IV therapy from first negative blood culture

No — Therapy duration: 2 weeks IV therapy from first negative blood culture

MRSA = methicillin-resistant *Staphylococcus aureus*
MSSA = methicillin-sensitive *Staphylococcus aureus*
AUC = area under the curve
MIC = minimum inhibitory concentration

[1] Refer to institutional renal dosing guide (internal only) or tertiary dosing references (*e.g.,* Lexicomp) for dosing recommendations

[2] Any of the following findings constitute a complicated bacteremia:
- Endocarditis verified upon echocardiography
- Evidence of metastatic sites of infection
- Febrile beyond 3 days after appropriate therapy started
- Patient has an implanted device
- Persistent bacteremia after 2-4 days on appropriate therapy
- Source unidentified despite workup

[3] Daptomycin should not be used as monotherapy if evidence of pulmonary involvement

[4] Obtain ID consult to assist with individualized AUC/MIC dosing

[5] Combination therapy with two or more active anti-MRSA agents may be considered on a case-by-case basis

[6] Beta-lactam choice: Other beta lactam agents should **not** be considered to be interchangeable with cefazolin, nafcillin or oxacillin. In cases where an alternative beta-lactam is needed (*e.g.*, concomitant infection), addition of cefazolin, nafcillin or oxacillin should be considered on a case-by-case basis.

[7] All MSSA are sensitive to cefazolin; susceptibility testing is not independently performed

[8] Oxacillin is better tolerated than nafcillin based on the available data

Department of Clinical Effectiveness V4
Approved by Executive Committee of the Medical Staff on 10/17/2023

SUGGESTED READINGS

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DEVELOPMENT CREDITS

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