

# Antimicrobial Stewardship Backgrounder

## Enterococcal Bloodstream Infections

**BOTTOM LINE:** Enterococcal bacteremia may be associated with endocarditis and a significant risk of morbidity and mortality. Infectious diseases consultation is strongly recommended.

*Enterococcus* spp. are Gram-positive bacteria normally present in the gut and female genitourinary tract. They are often of low virulence but can cause serious infections, including urinary tract infections, bacteremia, and infective endocarditis. Enterococcal bacteremia (EB) may be associated with mortality rates between 13-68%, depending on the setting and degree of antimicrobial resistance<sup>1-3</sup>. There are currently no guidelines on the treatment of EB in the absence of endocarditis.

### Optimizing Management:

1. Identify the source of infection and pursue source control as indicated.
2. Repeat blood cultures every 48 hours until clearance<sup>1,4,5</sup>.
3. High-dose parenteral ampicillin is the drug of choice for ampicillin-susceptible strains of *Enterococcus*<sup>6</sup> due to better activity against *Enterococcus* spp. than other penicillins or vancomycin<sup>7,8</sup>.
4. Based on currently available evidence, combination therapy should only be used in patients with strongly suspected or confirmed endocarditis<sup>9</sup>.
5. **An infectious diseases consult is strongly recommended as it is associated with a 15% absolute reduction in 30-day mortality<sup>1</sup>.**
6. Echocardiography:
  - a. In patients with monomicrobial *Enterococcus faecalis* bacteremia:
    - Echocardiography is recommended for<sup>10</sup>:
      - stroke in the context of bacteremia
      - relapse of bacteremia
      - 2 or more blood cultures positive for *Enterococcus faecalis*
      - prosthetic heart valve, known native valve disease, or prior infective endocarditis
      - new murmur on auscultation
    - Echocardiography should be considered for<sup>10</sup>:
      - community-acquired infection
      - unknown origin of infection
  - b. Echocardiography for *Enterococcus faecium* and other EB (other than *Enterococcus faecalis*) should be restricted to cases with high clinical suspicion of endocarditis, such as relapse of bacteremia, signs of heart failure due to valve destruction, and embolic events<sup>10</sup>.  
Alternatively, a validated bedside scoring tool (DENOVA) may be used to identify patients with monomicrobial *Enterococcus faecalis* bacteremia who should have echocardiography performed<sup>11,12</sup>.

### Antimicrobial Stewardship:

Once susceptibility for monomicrobial enterococcal bacteremia is known, target antimicrobial therapy:

#### Monotherapy (no infective endocarditis):

Ampicillin-susceptible	Ampicillin 2 g IV q4-6h*
Ampicillin-resistant or β-lactam allergy	Vancomycin 15 mg/kg IV q12h* Target vancomycin trough level 10-20 mg/L
Vancomycin-resistant	Daptomycin 10-12 mg/kg <sup>†</sup> IV q24h* OR Linezolid 600 mg IV/PO q12h**

#### Combination therapy (suspected or confirmed infective endocarditis):

Ampicillin-susceptible	Ampicillin 2 g IV q4h* PLUS ceftriaxone 2 g IV q12h OR Ampicillin 2 g IV q4h* PLUS gentamicin 1 mg/kg IV q8h* (if synergy with gentamicin is documented)
Ampicillin-resistant	Vancomycin 15 mg/kg IV q12h* PLUS gentamicin 1 mg/kg IV q8h* (if synergy with gentamicin is documented). Target vancomycin trough level 10-20 mg/L

\*Requires dose adjustment in renal insufficiency. †Round daptomycin dose to nearest 50mg, and in obese patients, base dose on dosing weight. \*\*Monitor complete blood count with differential regularly due to risk of hematological toxicity.

## Duration of Therapy:

The optimal duration for treatment of EB is not definitively known. In general, the duration of antibiotic therapy for uncomplicated EB is 7-14 days<sup>6</sup>.

Suggested duration of therapy based on main foci of infection<sup>10,13</sup>

Main foci of infection	Duration of therapy
Abdominal	1-2 weeks
Genitourinary	1-2 weeks
Skin and soft tissue	1-2 weeks
Endovascular devices	2-4 weeks*
Endocarditis†	4-6 weeks**

\*Depending on result of ultrasound. \*\*6 weeks if symptoms greater than 3 months or prosthetic valve endocarditis.

†Recommended based on guidelines<sup>13</sup>.

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Prepared by: Sarah Drost, Pharmacy Resident (Year 2): Infectious Diseases (ID) and Antimicrobial Stewardship

Reviewed by: Dr. Carlos Cervera, ID physician, Edmonton; Dr. John Conly, ID physician, Calgary