



Gram-Negative Bacteremia: What is “Uncomplicated?”

Several randomized controlled trials have found that 7 days of therapy is non-inferior to 14 days of therapy for uncomplicated gram-negative bacteremia ([see KASIC Pearl: Gram-Negative Bacteremia: Shorter is Better](#)). Inclusion and exclusion criteria were very similar among the studies. So, what makes a bacteremia uncomplicated?

Below are proposed criteria for defining uncomplicated gram-negative bacteremia. **All four** conditions must be met.¹

1. Bacteremia secondary to one of the following sources:
 - Urinary tract infection
 - Intra-abdominal or biliary infection
 - Catheter-related bloodstream infection
 - Pneumonia (without structural lung disease empyema/abscess, cystic fibrosis)
 - Skin and soft tissue infection
2. Patient has adequate source control
3. Patient not immunocompromised
 - Immunocompromised defined by any of the following: recent solid organ transplant recipient, expected prolonged ANC < 500 cells/mL during treatment for gram-negative bacteremia, recent CD4 count < 200 cells/mL, chronic corticosteroid and/or immunomodulatory use
4. Clinical improvement (at least defervescence and hemodynamic stability) within 72 hours after active antibiotics started

Additional considerations

- Non-Enterobacterales gram-negative pathogens such as *P. aeruginosa* were underrepresented in the studies supporting shorter courses. However, available observational data suggest short courses may also be appropriate.²
- The exclusion of complicated bacteremia from RCTs does not confirm that longer courses are needed for complicated bacteremia. For example, shorter (≤ 10 days) courses may also be appropriate in neutropenic patients.³

Key Takeaway: Immunocompetent patients with gram-negative bacteremia from a common source who have adequate source control are uncomplicated and can be effectively treated with 7 days of antibiotics.

References:

1. Heil EL, Bork JT, Abbo LM, et al. Optimizing the management of uncomplicated gram-negative bloodstream infections: consensus guidance using a modified delphi process. *Open Forum Infect Dis*. 2021;8(10):ofab434. Published 2021 Oct 11. doi:10.1093/ofid/ofab434
2. Babich T, Naucler P, Valik JK, et al. Duration of treatment for *Pseudomonas aeruginosa* bacteremia: a retrospective study. *Infect Dis Ther*. 2022;11(4):1505-1519
3. Ranganath N, Yetmar ZA, McCandless AR, et al. Evaluating antimicrobial duration for Gram-negative bacteremia in patients with neutropenia due to hematologic malignancy or hematopoietic stem cell transplantation. *Transpl Infect Dis*. 2023;e14085.