

Wake Forest Baptist Medical Center
Center for Antimicrobial Utilization, Stewardship, and Epidemiology

Adult guidelines for monitoring vancomycin concentrations

- I. Why obtain a vancomycin concentration?
 - A. To determine if vancomycin is therapeutic based on the indication
 - B. To monitor for accumulation of vancomycin if renal function declines
 - C. To ensure vancomycin is still therapeutic if renal function improves

- II. What is the most appropriate timing to obtain a vancomycin concentration?
 - A. Among patient with stable renal function, a vancomycin trough should be used in making decisions
 - B. Vancomycin peaks do not have a role in directing therapy
 - C. Optimal troughs are obtained within 30 minutes before the next scheduled dose
 - D. Acceptable troughs are obtained within 1 hour before the next scheduled dose if the dosing interval is Q12h or more frequent
 - E. Acceptable troughs are obtained within 2 hours before the next scheduled dose if the dosing interval is Q24h or less frequent
 - F. If measuring concentrations with an initial or new dosing regimen, the trough should be obtained prior to the 4th dose as this will ensure a steady-state concentration
 - G. Among patients with changing, unpredictable, or generally poor renal function, particularly those with critical illness, dosing vancomycin with a regular frequency may not be practical. In these cases, it is appropriate to give a loading dose and then obtain random vancomycin concentrations to determine the timing of subsequent doses.

- III. What is the target trough?
 - A. Pneumonia due to *S. aureus*: 15-20mg/L
 - B. Bloodstream infection with or without endocarditis: 15-20mg/L
 - C. Meningitis or other central nervous system infection, including endophthalmitis: 15-20mg/L (close to 20mg/L is optimal)
 - D. Osteomyelitis: 15-20mg/L
 - E. All other infections, including skin/soft tissue infection, intra-abdominal infection, or pyelonephritis: 10-15mg/L

- IV. How often should a vancomycin trough be obtained?

- A. If vancomycin will be an ongoing therapy, an appropriate trough should be documented to support definitive dosing
- B. A trough should be obtained if renal function changes (better or worse) or if there is suspicion of vancomycin toxicity
- C. A trough should be obtained after a dose change to document appropriateness of the new dose
- D. If extended therapy with vancomycin is necessary (e.g. 6 weeks duration) and all clinical parameters are stable, a vancomycin trough should be obtained weekly
- E. If ALL of the following are true, deferring a vancomycin level should be considered: 1) vancomycin is prescribed empirically for an infection that uncommonly requires vancomycin, 2) the infection is not severe, 3) vancomycin is likely to be discontinued when culture results return in 48-72 hours. Examples: early onset HAP among previously healthy trauma patients or empiric treatment of intra-abdominal infection.

IV. Caveats about using the concentration to adjust the vancomycin dose

- A. In general, patient weight dictates dose while renal function dictates dosing interval. Examples: In a 65kg patient, if the trough on 1gm Q12h is high, it is best to extend the interval instead of reduce the dose. In a 110kg patient, if the trough on 1gm Q12h is low, it is best to increase the dose instead of shortening the interval.
- B. Time the first new dose appropriately. If the trough on the old dose was too high, determine how long to wait before giving the first new dose so the trough is able to fall to the appropriate target range. The time to wait should not be shorter than the new dosing interval, and it could be longer depending on how high the trough was.
- C. If ALL of the following are true, the new dosing interval should be Q8h: 1) the steady-state trough on Q12h dosing was <10mg/L, 2) the patient has apparently normal renal function, 3) the target trough is 15-20mg/L, and 4) the steady-state trough was drawn at the correct time.