

Vancomycin Serum Concentration Monitoring in Pediatric Patients

Unless it is known at the initiation of therapy that the patient will receive the drug for a prolonged period of time (>7 days), vancomycin levels generally should not initially be ordered. Thus, if awaiting culture results (r/o sepsis or awaiting susceptibilities, etc), except for patients with renal insufficiency, vancomycin levels are not yet needed.

Routine monitoring of trough concentrations is NOT recommended in patients receiving empiric, short courses (≤ 7 days) of therapy who are ≥ 3 months of age with normal body weight and CrCl >60 mL/min

Trough concentrations should be monitored in the following clinical situations

1. Patients likely to receive vancomycin beyond 7 days
2. Patients < 3 months of age
3. Patients with a CrCl <60 mL/min or changing renal function
4. Patients receiving concomitant nephrotoxic medications (i.e. aminoglycosides, amphotericin B, IV contrast dye, vasopressors, ACE inhibitors, loop diuretics, NSAIDs, methotrexate, ketorolac, piperacillin-tazobactam, etc)
5. Cancer patients
6. Patients requiring higher than usual doses of vancomycin (≥ 20 mg/kg/dose q6h)
7. Altered volume of distribution (i.e. morbidly obese)

Repeat troughs

1. Should be obtained at a minimum every 7 days in otherwise clinically stable patients:
 - a. Stable urine output, stable serum creatinine, stable volume and nutritional status
 - b. No new potentially nephrotoxic medications
2. Consider obtaining a repeat trough in 2-3 days in patients who are receiving doses higher than 20 mg/kg/dose q6h because of the risk of accumulation

Recommended target trough concentrations for types of infections

- **10-15 mg/L:** uncomplicated SSTI/cellulitis, intra-abdominal infections, urinary tract infections
- **15-20 mg/L:** severe infection, bacteremia, endocarditis, necrotizing pneumonia/empyema, osteomyelitis, meningitis, necrotizing fasciitis

Patient-specific kinetics using area under the curve (AUC) monitoring may be appropriate for some patients to ensure appropriate therapy and minimize the risk of acute kidney injury. Calculation of an AUC/MIC ratio requires obtaining both a peak and a trough concentration. Goal AUC/MIC ratio is 400-650. Pharmacy will assist with ordering, calculating, and assessment of AUC.