Alberta Health Services
Laboratory Services

Vancomycin Monitoring and Dosing Guideline

This document is applicable at site(s):
All Sites

Bottom line: Use guideline based Vancomycin dosing and monitoring to maximize treatment success and reduce unnecessary plasma Vancomycin levels and needless dosage changes.

Adult Dosing Recommendations:

Loading dose:

- Use a loading dose in:
  - Serious infections where rapid attainment of target trough level of 15-20 mg/L is desired, e.g. vertebral osteomyelitis, MRSA pneumonia, epidural abscess, septic shock.
  - Patients with significant renal dysfunction in order to decrease the time required to attain target trough level.

- 25-30 mg/kg (based on actual body weight; no maximum dose) single dose, followed by maintenance dose separated by recommended dosing interval.

Maintenance dose:

- 15 mg/kg (based on actual body weight) dose (maximum of 2 g/dose)
  - Doses >500 mg – round to nearest 250 mg.
  - Doses <500 mg – round to nearest 50 mg.

Dosing interval:

Calculated Creatinine Clearance (CRCL) (mL/min)	Dosing Interval for trough 10-20 mg/L	Dosing Interval for trough 15-20 mg/L
≥80	q12h	q8h
40 - 80	q24h	q12h
20 - 40	q36h	q24h
10 - 20	q48h	q48h
<10	Consider loading dose. Obtain pharmacist consult.	

For more details and pediatric dosing, see http://bugsanddrugs.albertahealthservices.ca

Monitoring:

- Peak (post) levels are NOT recommended.
- Trough (pre) levels (taken 30 minutes or less prior to next dose) are recommended in:
  - Patients with deteriorating/unstable renal function (increase in baseline serum creatinine of 40 µmol/L or greater, or increase of 50% or more from baseline).
  - Morbidly obese patients (190% or greater of ideal body weight, or BMI 40 kg/m² or greater).
  - Patients with anticipated therapy ≥ 7 days.
  - Patients who are severely ill (e.g. sepsis) and/or require target trough of 15-20 mg/L (see table on next page).
  - Patients with altered volume of distribution or clearance of vancomycin (e.g. cystic fibrosis, pediatrics, elderly 60 years or older, cancer, burns more than 20% body surface area).
  - Selected dialysis patients (e.g. high flux and continuous hemodialysis/filtration).

Infection	Desired Trough Level (mg/L)
Osteomyelitis	15-20
Pneumonia	
CNS infections	
Endocarditis	
Bacteremia	
Serious MRSA infections	
Other infections	10-20

- First trough level should be taken at steady state* and after at least 2 maintenance doses (~30 hours if normal renal function, prior to 4th dose if q12h, or prior to 5th dose if q8h.)
  - Vancomycin clearance is enhanced in obesity. For morbidly obese patients, consider drawing first level sooner (e.g. before 2nd or 3rd dose).

- Subsequent trough levels:
  - With dosage change: trough should be taken at new steady state* as described above.
  - Once target trough achieved: trough should be taken every 7-10 days in hemodynamically stable patients; may need more frequently if hemo-dynamically unstable, renal function changing, or patient is on concurrent nephrotoxic drugs.

- **NB: Do NOT hold next vancomycin dose** while waiting for results of plasma levels unless there is a specific order to do so, e.g. because of concerns of toxicity/adverse events and/or significant decline in kidney function.

*__Steady state__ (SS) occurs in 4 to 5 half-lives and can be estimated for vancomycin by using the following equations:

$$k_e = CRCL*0.00083 + 0.0044$$
$$t_{1/2} = 0.693 / k_e$$
$$SS = 4 \text{ to } 5 * t_{1/2}$$

References

http://bugsanddrugs.albertahealthservices.ca, accessed 9 November 2018.
Optimizing Vancomycin Dosing & Monitoring: https://insite.albertahealthservices.ca/Main/assets/tms/phm/tms-phm-pub-ASB-Vancomycin-slides-2015.pdf, accessed 9 November 2018.