Vancomycin Dosing and Therapeutic Monitoring (Adults)

KEY RECOMMENDATIONS

- Vancomycin therapeutic drug monitoring (TDM) that targets steady-state trough concentrations of 10 to 15 mg/L
- Vancomycin trough concentrations 15 and 20 mg/L are no longer recommended due to increased risk of acute kidney injury and lack of clinical benefit
- Trough-based vancomycin TDM should only be performed when clinically necessary

INSTRUCTIONS

1. Establish patient's age, weight, and renal function.
2. Consider loading doses only for critically ill patients.
3. Using **Table 1**, identify initial loading dose (if needed) and maintenance dose per interval according to patient's weight.
4. Using **Table 2**, identify initial dosing interval according to age and renal function.
5. If dialysis patient, see **Table 3**.

TABLE 1. EMPIRIC DOSING FOR IV VANCOMYIN (Target trough 10 to 15 mg/L)

Total Body Weight (kg)	Loading Dose (Based on 20mg/kg)	Maintenance Dose (mg)* (Based on 15 mg/kg)
40 to 50	1000 mg	750 mg
51 to 70	1250 mg	1000 mg
71 to 80	1500 mg	1250 mg
81 to 90	1750 mg	1250 mg
91 to 100	2000 mg	1500 mg
101 to 110	2250 mg	1500 mg
111 to 124	2500 mg	1750 mg
≥125	Consult a pharmacist	

*Suggest maximum maintenance dose is 4.5 grams per day

If loading dose is used, give maintenance dose at the next dosing interval (See **Table 2**).

TABLE 2. SUGGESTED EMPIRIC DOSING INTERVAL

	Vancomycin Dosing Interval		
Age	**eGFR greater than 50 mL/min**	**eGFR 31 to 50 mL/min**	**eGFR 10 to 30 mL/min**
Less than 65 years*	Q12H	Q12H	Q24H
65 to 75 years	Q12H	Q24H	Q48H
Greater than 75 years**	Q24H	Q24H	Q48H

*If patient is less than 40 years old with normal renal function and want to target trough of 15 mg/L, consider Q8H dosing

** In patients with low muscle mass (e.g. elderly, spinal cord injury), use clinical judgement as eGFR may not reflect renal function accurately.

TABLE 3. DIALYSIS DOSING

	Hemodialysis (HD)	**Continuous Ambulatory Peritoneal Dialysis (CAPD)**
Loading Dose	25 mg/kg	Intraperitoneal (IP): 30 mg/kg **OR** Intravenous (IV): 20 mg/kg
Maintenance Dose	**Weight < 70 kg:** 500 mg QHD **Weight ≥ 70 kg:** 750 mg QHD	IP: 30 mg/kg every 5-7 days **OR** IV: 20 mg/kg every 4-7 days
When To Draw Level	Pre-second maintenance dose	3-4 days after first dose
Target Vancomycin Level	Pre-HD level: 10-20 mg/L	Trough level: 10-20 mg/L

THERAPEUTIC DRUG MONITORING

Vancomycin serum levels should be ordered prior to the 3rd or 4th dose (within 48 hours) in the following situations:

1. Vancomycin treatment is anticipated for greater than 7 days and ongoing TDM is indicated (e.g., MRSA bacteremia, infective endocarditis, osteomyelitis, septic arthritis). In stable patients, trough levels are suggested at a minimum of once per week.

2. Vancomycin treatment is greater than 72 hours **WITH** one or more of the following:
   - Receiving aggressive dosing (where target trough level is 15 mg/L)
   - Unstable renal function, serum creatinine increased by 30 µmol/L or 1.5 times from baseline
   - On dialysis (hemodialysis or peritoneal dialysis)
   - Receiving concurrent nephrotoxic or ototoxic drug
   - Altered volume of distribution or clearance, including:
     - Age 65 years or greater
     - Hypermetabolic (e.g., burn patient, cystic fibrosis)
     - Low body weight/muscle mass or frail
     - Obese (125% of ideal body weight or greater)
     - Septic shock
     - Patient not responding to therapy

Note: Avoid ordering unnecessary vancomycin troughs, particularly when vancomycin is not likely to be continued (i.e. when vancomycin is started empirically, but discontinued once returning cultures do not support ongoing use).

REFERENCES

1. BC Provincial Antimicrobial Clinical Expert (PACE) Committee. Vancomycin Therapeutic Drug Monitoring in Non-Pregnant Adults. October 21, 2022. http://www.bccdc.ca/health-professionals/clinical-resources/antimicrobial-stewardship