

## Vancomycin Dosing and Therapeutic Monitoring

### KEY

1. Establish patient age, weight, and serum creatinine.
2. Using Table 1, identify initial loading dose and maintenance dose per interval according to patient weight and target pre-vancomycin level.
3. Using Table 2, determine target pre-vancomycin level based on clinical indication.
4. Using Table 2, identify initial dosing interval according to target pre-vancomycin level, age, and serum creatinine.
5. Using Table 3, determine dialysis dosing.

**TABLE 1. INITIAL DOSE PER INTERVAL**

TOTAL BODY WEIGHT	LOADING DOSE (Suggested maximum 2500 mg/dose)		MAINTENANCE DOSE
	Target pre-level 10-15 mg/L (20 mg/kg)	Target pre-level 15-20 mg/L (25 mg/kg)	
kg			(15 mg/kg)
40-50	1000 mg	1250 mg	750 mg
51-60	1250 mg	1500 mg	1000 mg
61-70	1250 mg	1750 mg	1000 mg
71-80	1500 mg	2000 mg	1250 mg
81-90	1750 mg	2250 mg	1250 mg
91-100	2000 mg	2500 mg	1500 mg

**TABLE 2. SUGGESTED TARGET PRE-VANCOMYCIN LEVELS BASED ON INDICATION**

<b>Pre-vancomycin Level 10-15 mg/L</b> • Skin and soft tissue infection • Urinary tract infection (UTI) (if catheter-associated; rule out bacteremia)	<b>LOW-TARGET 10-15 mg/L</b> <b>Initial Dosing Interval (hours)</b>							
	<b>SCr (mcmol/L)</b>	<b>Age Group (years)</b>						
		20-29	30-39	40-49	50-59	60-69 <sup>^</sup>	70-79 <sup>^</sup>	
	40-60	8	8	12	12	12	18	
	61-80	8	12	12	12	18	18	
	81-100	12	12	12	18	18	18	
	101-120	12	12	18	18	18	24	
	121-140	12	18	18	18	24		
	141-160	18	24	24	24			
	161-180	24	24					
	181-200	24						
	Above 200							
	Dialysis	See TABLE 3						
<b>Pre-vancomycin Level 15-20 mg/L</b> • Catheter-associated bacteremia • Central nervous system infection • Deep-seated or sequestered infection (e.g. abscess) • Endocarditis • Osteomyelitis • MRSA bacteremia or pneumonia • MSSA bacteremia (penicillin allergic patient)	<b>HIGH-TARGET 15-20 mg/L</b> <b>Initial Dosing Interval (hours)</b>							
	<b>SCr (mcmol/L)</b>	<b>Age Group (years)</b>						
		20-29	30-39	40-49	50-59	60-69	70-79	80-89
	40-60	6	6-8	8	8	8-12*	12	12
	61-80	8	8	8-12*	12	12	12	12-18*
	81-100	12	12	12	12	12-18*	18	18
	101-120	12	12	12-18*	18	18	18	18
	121-140	12	18	18	18	18	18-24*	
	141-160	18	18	18	18-24*	24		
	161-180	18-24*	24	24	24			
	Above 180							
	Dialysis	See TABLE 3						

<sup>^</sup> In elderly patients with low muscle mass, use clinical judgment as SCr may not reflect renal function accurately.

\* If more aggressive therapy is desired, select more frequent dosing interval.

**Shaded boxes:** These patients have unstable and/or reduced renal function, and the nomogram may not be as predictive.

- For those with an interval stated, patients should receive a loading dose followed by 3 hour and pre -2nd dose serum levels to determine appropriate dosing.
- For those with no dosing interval stated, patients should receive a loading dose followed by 3 hour and 24 hour post-dose serum levels to determine subsequent dosing.
- A clinical pharmacist should be contacted for assistance with dosing and interpretation of levels.

**TABLE 3. DIALYSIS DOSING**

	<b>Hemodialysis (HD)</b>	<b>Continuous Ambulatory Peritoneal Dialysis (CAPD)</b>
<b>Loading Dose</b>	25 mg/kg	Intraperitoneal (IP): 30 mg/kg <b>OR</b> Intravenous (IV): 20 mg/kg
<b>Maintenance Dose</b>	<b>weight &lt; 70 kg:</b> 500 mg QHD <b>weight ≥ 70 kg:</b> 750 mg QHD	IP: 30 mg/kg every 5-7 days <b>OR</b> IV: 20 mg/kg every 4-7 days
<b>When To Draw Level</b>	Pre-second maintenance dose	3-4 days after first dose
<b>Target Vancomycin Level</b>	Pre-HD level: 15-20 mg/L	Trough level: 15-20 mg/L

**THERAPEUTIC DRUG MONITORING**

Vancomycin serum levels should be ordered in the following situations:

- Pre-vancomycin level on 3<sup>rd</sup> or 4<sup>th</sup> dose (within 48 hours) if:
  - a higher level of 15-20 mg/L is desired **OR**
  - patient is at risk for accumulation (e.g. Q6-8H interval) **OR**
  - patient is receiving other nephrotoxic agents **OR**
  - serum creatinine is above normal, renal function is changing or uncertain **OR**
  - patient is obese (>125% IBW), pregnant, pediatric or hypermetabolic (e.g. burn patient, cystic fibrosis)
 Repeat at least weekly to ensure pre-vancomycin level is within desired therapeutic range
- Pre-vancomycin level after 7 days of therapy (for prolonged course) if aiming for levels < 15 mg/L **AND** no other risk factors as per above
- Pre-vancomycin level if patient is not responding to therapy
- Pre- and 3 hour post-vancomycin level (target 20-40 mg/L) if calculation of precise kinetic parameters are necessary (e.g. in a case when a target pre-vancomycin level of 15-20 mg/L cannot be achieved while on prolonged therapy, or in an obese, pregnant or pediatric patient, especially when aggressive dosing is required)

**Modified From**

Vancomycin Empiric Dosing Guidelines, 3<sup>rd</sup> edition (April 2016)  
 Pharmaceutical Sciences, Vancouver General Hospital, Vancouver Coastal Health  
 Pharmacy Department, St. Paul's Hospital, Providence Health Care

