

## THERAPEUTIC DRUG MONITORING

Vancomycin serum levels should be ordered in the following situations:

1. 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. Q8H 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

2. 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
3. Pre-vancomycin level if patient is not responding to therapy
4. 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)



## Pharmaceutical Sciences CSU VANCOMYCIN EMPIRIC DOSING GUIDELINES December 2010, 1<sup>st</sup> edition

Adapted from VCH Pharmaceutical Sciences CSU Formulary

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### 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.
3. Using Tables 3 or 4, identify initial dosing interval according to target pre-vancomycin level, age, and serum creatinine.

TABLE 1 INITIAL DOSE PER INTERVAL

TOTAL BODY WEIGHT	LOADING DOSE (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**

Pre-vancomycin Level 10-15 mg/L	Pre-vancomycin Level 15-20 mg/L
<ul style="list-style-type: none"> <li>• Skin and soft tissue infection <u>not</u> due to MRSA</li> <li>• Urinary tract infection (catheter-associated; rule out bacteremia)</li> </ul>	<ul style="list-style-type: none"> <li>• Catheter-associated bacteremia</li> <li>• Central nervous system infection</li> <li>• Deep-seated or sequestered infection (e.g. abscess)</li> <li>• Endocarditis</li> <li>• Osteomyelitis</li> <li>• MRSA bacteremia, pneumonia or skin and soft tissue infection</li> <li>• MSSA bacteremia (penicillin allergic patient)</li> </ul>

**TABLE 3 LOW-TARGET 10-15 mg/L INITIAL DOSING INTERVAL (hours)**

SCr (mcmol/L)	Age Group (years)					
	20-29	30-39	40-49	50-59	60-69	70-79
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					

**TABLE 4 HIGH-TARGET 15-20 mg/L INITIAL DOSING INTERVAL (hours)**

SCr (mcmol/L)	Age Group (years)						
	20-29	30-39	40-49	50-59	60-69	70-79	80-89
40-60	8	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			

\*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.