

LABORATORY BULLETIN



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VANCOMYCIN SERUM CONCENTRATION MONITORING AND DOSING GUIDELINE

REVISED VERSION

A vancomycin serum concentration guideline was previously distributed as a Laboratory Bulletin in August 2005 (Vol.10, No.10). **This document is a revised version of that guideline.** PLEASE REPLACE THAT VERSION WITH THIS ONE.

The major recommendations, namely that routine measurement of serum vancomycin levels is **not** required and peak (post) levels are generally **NOT** necessary, remain intact from the original guideline.

Major modifications have been made to Step 1 (Dosing) which is now based on actual body weight (formerly ideal body weight).

PLEASE POST OR LOCATE GUIDELINE IN A PROMINENT PLACE

This Guideline has been approved by the following in Alberta Health Services – Capital Health: Therapeutic Drug Management Working Group, Chemistry Test Optimization Committee, Antimicrobial Stewardship Committee, Drugs and Therapeutics Committee.

A handwritten signature in cursive script that reads "Fiona Bamforth".

Dr. Fiona Bamforth
Professor and Chair
Department of Laboratory Medicine & Pathology
University of Alberta
Regional Program Clinical Director
Regional Laboratory Services-Alberta Health Services

A handwritten signature in cursive script that reads "Thomas E. Higa".

Thomas E. Higa, MD, FRCPC
Medical Director – Interim
DynaLIFE_{DX}
Diagnostic Laboratory Services

$$DW = 0.4 (ABW - IBW) + IBW$$

- ii. Creatinine clearance measured quantitatively from urine collections.
(Creatinine clearance will be reported in SI units of mL/s. See Adult Dosing Chart below)

b) Choose dosing interval based on chart below:

Calculated Clcr (mL/min)	Measured Creatinine Clearance (mL/s)	Dosing Interval
≥80	≥1.33	q12h**
50 – 79	0.83 – 1.32	q24h
35 – 49	0.58 – 0.82	q36h***
25 – 34	0.42 – 0.57	q48h
<25	<0.42	Obtain pharmacist consult

** Consider q8h if treating CNS infections, osteomyelitis, endocarditis, or pneumonia

*** Note: Caution is required due to an increased potential for medication administration errors with q36h interval. If CrCl estimate allows for q24h or q48h interval instead, suggest using one of these alternatives.

Step 2 Order Appropriate Laboratory Tests

- **Serum Creatinine Levels**
 - A baseline level should be ordered
 - Once weekly (more frequently if renal function changing or if concurrent nephrotoxic drugs)
 - If creatinine changes, refer to adult dosing interval chart (Step 1) for appropriate adjustment.
- **Vancomycin Serum Trough Levels**
 - Order ONLY if patient meets the criteria outlined on page 2.
 - Collect serum specimen 30 minutes or less before dose.
 - Provide dosing information (on ROUTINE requisition or test order entry field) including dose regimen, time last dose started, time last dose completed, time of next dose, and how long on this dose regimen.
 - **DO NOT** use a STAT requisition.
 - **Frequency of Collection:**
 - First level at steady state (in 1-2 days after at least 2 doses)
 - For morbidly obese (≥190% IBW), measure trough before 2nd dose (as clearance is enhanced).
 - Subsequent levels once per week (more frequently if renal function changes or patient on concurrent nephrotoxic drugs)
 - Intermittent hemodialysis (IHD) with high flux filters:
Draw specimen at 48 and 96 hours after the dose (assuming HD at 72 hours).
Obtain pharmacist consult for regimen calculation.

NOTE: Peak (post) levels are **NOT NECESSARY**

Step 3 Interpret Vancomycin Serum Trough Level*

Desired trough levels for vancomycin are 5 – 15 mg/L.

Note: For combined therapy **with aminoglycosides**, desired trough levels are 5 – 10 mg/L

However, there are desired trough levels for specific clinical indications:

Urinary tract infection (UTI): 5 mg/L

Methicillin resistant staphylococcal infection: 10 – 15 mg/L

Central Nervous system (CNS) infection, endocarditis, osteomyelitis, pneumonia:

With aminoglycoside: 10 – 15 mg/L

Vancomycin alone: 15 – 20 mg/L

Therapy*	Measured Trough (mg/L)	Dosing Interval Adjustment
VANCOMYCIN	< 5	If patient on \geq q24h, decrease interval by a 12h increment If patient on q12h, consider a q8h interval in patient with good renal function or obtain pharmacist consult.
	5 - 10	No change unless methicillin resistant staphylococcal (MRS) infection (target 10 - 15 mg/L) or central nervous system (CNS) infection, osteomyelitis, endocarditis, or pneumonia (target 15 - 20 mg/L).
	10 – 15	No change unless CNS infection, osteomyelitis, endocarditis, or pneumonia. For these four specific infections, target 15 - 20 mg/L.
	15 – 20	Increase interval by a 12h increment unless central nervous system (CNS) infection, osteomyelitis, endocarditis, or pneumonia. For these four specific infections, target 15 - 20 mg/L
	>20	Obtain pharmacist consult
VANCOMYCIN with AMINOGLYCOSIDE	< 5	If patient on \geq q24h, decrease interval by a 12h increment. If patient on q12h, consider q8 interval in patient with good renal function or obtain pharmacist consult.
	5 – 10	No change
	10 – 20	Increase interval by a 12h increment unless methicillin resistant staphylococcal infection, CNS infection, endocarditis, osteomyelitis, or pneumonia. For these five specific infections, target 10 - 15 mg/L BUT monitor renal function closely.
	>20	Obtain pharmacist consult

***ADULT patients only.** For neonatal and pediatric patients, obtain a pharmacist consult.

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