

Cook Children's Medical Center

Vancomycin Dosing and Therapeutic Drug Monitoring Guidelines

PURPOSE: The Antimicrobial Stewardship Program has established a standardized approach to dosing and monitoring of vancomycin in patients with the intention of improving clinical outcomes.

Initial (Empiric) Vancomycin Dosing

Initial vancomycin dosing has been standardized in neonatal, pediatrics, and adult patients. The dosing interval should be based on the patient's age, renal function, site of infection, and other clinical indicators.

Neonatal Dosing*

Dose: 15 mg/kg/dose

Gestational Age ≤ 27 Weeks			Gestational Age >27 Weeks		
Postnatal Age	SCr	Interval	Postnatal Age	SCr	Interval
0-3 Weeks	≤0.5	Q12H	0-3 Weeks	≤0.7	Q12H
	0.6-0.7	Q18H		0.8-1.2	Q18H
	0.8-1.1	Q24H		>1.2	Q24H
	>1.1	Q36H			
4-7 Weeks	<1	Q12H	4-7 Weeks	<1	Q8-12H
	1-1.2	Q18H		1-1.2	Q18H
	>1.2	Q24H		>1.2	Q24H
≥ 8 Weeks	<1	Q8H	≥ 8 Weeks	<1	Q8H
	1-1.2	Q12H		1-1.2	Q12H
	>1.2	Q18-24H		>1.2	Q18-24H

*Cook Children's NICU Drug Handbook 2022

Cardiac ICU Patients – Post-Operative Prophylaxis*

<1 month of age: 15 mg/kg/dose every 12 hours

≥1 month of age: 15 mg/kg/dose every 8 hours (max: 1000 mg per dose)

*Recommended for immediate post-op period (post-op days 0-7); for regimens started after 7 days post-op, refer to general dosing recommendations based on age and renal function

Pediatric and Adult Dosing (assumes normal renal function[†])

3 months to <13 years of age: 15 mg/kg/dose every 6 hours

≥13 years of age: 15 mg/kg/dose every 8 hours

Initial maximum*: 1,000 mg/dose and 3,000 mg/day

[†] In patients with renal dysfunction, the dosing interval may need to be extended. Consult pharmacy for dosing assistance.

* Max 1500 mg/dose q8h (4.5 gm/day) may be considered in severe infections (i.e. meningitis, CNS infections, sepsis, etc.). Close renal clearance and early trough monitoring is strongly recommended.

Overweight (BMI 25-30 and >85th percentile but < 95th percentile) and Obese Patients (BMI >30 and >95th percentile)

Dose based on the pediatric and adult dosing mentioned above and using actual bodyweight (ABW).

Vancomycin Dosing Recommendations for Dialysis and Renal Replacement Therapies

All ages: 10 mg/kg pulse dose

Repeat dosing based on patient specific pharmacokinetic parameters; consult pharmacy or Infectious Disease Services for assistance

****Maximum initial dose for all patient populations is 1,000 mg/dose (3 grams/day)****

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Vancomycin Level Monitoring

1. The vancomycin pharmacokinetic / pharmacodynamic (PK/PD) parameter best correlated with efficacy is the ratio of the area under the curve (AUC) to the minimum inhibitory concentration (MIC). Trough level is a surrogate marker for AUC/MIC. It is preferable to monitor AUC. Pharmacy can be consulted to manage vancomycin. See [Pharmacist-Managed Dosing & Therapeutic Monitoring of Vancomycin \(MT025\)](#) for more detailed guidance.
2. Vancomycin levels should only be drawn if anticipated duration of therapy exceeds 48-72 hours
3. Vancomycin levels may be drawn sooner than 48-72 hours in the following populations and circumstances:
 - ❖ Neonates
 - ❖ Post-op cardiac surgery
 - ❖ Renal dysfunction/instability, or at risk of acute kidney injury (AKI)
 - ❖ Extracorporeal Membrane Oxygenation (ECMO)
 - ❖ Severe or worsening infections (e.g. osteomyelitis, meningitis, endocarditis)
 - ❖ Thermal injuries (burns, electrocution)
 - ❖ Doses of ≥ 3 grams/day
 - ❖ When rapid attainment of goal concentrations is critical (suspected or documented bacteremia, sepsis, endocarditis, pneumonia, osteomyelitis, meningitis, etc, due to MRSA)
4. Target AUC₂₄/MIC ratio of 400-600 mg*hr/L to maximize clinical efficacy and minimize toxicity (assuming a MIC of 1 mg/L) for all indications
5. When monitoring AUC, random levels are an option to minimize lab draws. Consult ID or pharmacy for assistance
6. The trough level should be collected within 30 minutes prior to next dose
 - ❖ The next dose should NOT be held unless specified in the order
7. Peak levels are rarely indicated; consult ID or pharmacy for assistance
8. Goals for trough levels
 - ❖ 5-15 mcg/mL for all indications (may target 10-15 mcg/mL for severe infections)
 - ❖ Surrogate marker for AUC
9. Follow-up vancomycin levels should be checked at least every 7 days unless otherwise clinically indicated to check more frequently (e.g. infants less than 44 weeks post-conceptual age, renal instability, changes in clinical status, etc.)
10. A baseline serum creatinine should be drawn for all patients. For patients receiving vancomycin for more than 72 hours, serum creatinine is recommended to be followed daily.

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Cook Children's Medical Center

Vancomycin Dosing and Therapeutic Drug Monitoring Guidelines

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