



NEONATAL Medication Monograph

VANCOMYCIN

This document should be read in conjunction with this [DISCLAIMER](#)

Restricted: Requires Neonatologist or Microbiologist approval within 24 hours of initiation

⚠ HIGH RISK Medication

Incorrect dosing with respect to age, weight and renal function may result in significant ototoxicity and nephrotoxicity. Under dosing may result in treatment failure, monitoring of drug levels is required.

Presentation	Vial: 500mg																								
Classification	Antibiotic: Bactericidal glycopeptide																								
Indication	<ul style="list-style-type: none"> • Empirical Treatment of late onset sepsis • Gram positive infections including Methicillin resistant <i>S. aureus</i> (MRSA) • Coagulase Negative staphylococcal (CoNS) infections, <i>Staphylococcal</i>, <i>Enterococcal</i> and <i>Bacillus</i> infections due to strains resistant to other antibiotics • Antibiotic Prophylaxis : Ventriculoperitoneal (VP) Shunt or CSF Reservoir Insertion 																								
Contraindications and Precautions	<p>Consult microbiologist for dosing if neonate is:</p> <ul style="list-style-type: none"> • On concurrent nephrotoxic medications, or • has low urine output (less than 1mL/kg/hour), or • serum creatinine greater than 80micomol/L, or • is haemodynamically compromised 																								
Dose	<p><u>Infections due to susceptible organisms</u></p> <p>IV Intermittent Infusion:</p> <table border="1"> <thead> <tr> <th>Corrected Gestational Age</th> <th>Postnatal Age</th> <th>Dose</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td rowspan="2">< 30 weeks</td> <td>0 – 7 days</td> <td>10mg/kg/dose</td> <td>12 hourly</td> </tr> <tr> <td>> 7 days</td> <td>10mg/kg/dose</td> <td>8 hourly</td> </tr> <tr> <td rowspan="2">30 - 37 weeks</td> <td>0 – 7 days</td> <td>15mg/kg/dose</td> <td>12 hourly</td> </tr> <tr> <td>> 7 days</td> <td>15mg/kg/dose</td> <td>8 hourly</td> </tr> <tr> <td>37 – 44 weeks</td> <td>All ages</td> <td>25mg/kg/dose</td> <td>12 hourly</td> </tr> </tbody> </table> <p>Check Renal Function (Creatinine, Urea and Electrolytes) prior to commencing treatment and repeat when first trough level is sampled.</p> <p>IV Continuous Infusion: consult microbiologist</p>			Corrected Gestational Age	Postnatal Age	Dose	Frequency	< 30 weeks	0 – 7 days	10mg/kg/dose	12 hourly	> 7 days	10mg/kg/dose	8 hourly	30 - 37 weeks	0 – 7 days	15mg/kg/dose	12 hourly	> 7 days	15mg/kg/dose	8 hourly	37 – 44 weeks	All ages	25mg/kg/dose	12 hourly
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Monitoring	<p><u>Sampling of Levels</u></p> <p>First level: Trough level just prior to the 4th dose. Change of Dose: Trough level just prior to 4th dose. Previous level within range: Trough level in 3 days time</p> <p>Re-initiation of vancomycin within 48 hours: Perform a trough level prior to administration</p> <p><u>Target Trough Levels</u></p> <p>Intermittent Dosing</p> <p>All Indications: 15-20 mg/L</p> <p>Renal function (Creatinine, Urea and Electrolytes) should be monitored regularly throughout treatment. Check renal function prior to commencement of treatment, with first level and every 3 days thereafter at a minimum.</p> <p>Blood levels will need repeating if a drug dose is altered or if the infant's clinical situation (i.e. renal failure) is likely to lead to unpredictable levels.</p> <p>Consider more frequent monitoring if renal function declines or on other nephrotoxic medications.</p>
Dose Adjustment	See table on the following page
Compatible Fluids	Glucose 5% (Preferred) or Sodium Chloride 0.9%
Preparation	<p><u>IV:</u> Available from CIVAS (KEMH & PCH)</p> <p><i>Reconstitution</i></p> <p>Add 10mL of Water for Injections to a 500mg vial. Concentration is now 50mg/mL</p> <p><i>Dilution</i></p> <p>Withdraw 1mL of the above solution and dilute to 10mL with Glucose 5% <u>or</u> Sodium Chloride 0.9%</p> <p><u>Final Concentration is 5mg/mL</u></p> <p>Concentrations of up to 10mg/mL may be used if neonate is fluid restricted</p> <p>Maximum of 10mg/mL concentration, infused through a central line.</p>
Administration	<p><u>IV Intermittent Infusion:</u> Infuse over one to two hours via syringe pump. A two hour infusion is recommended for the first dose or after an incidence of "Red man Syndrome".</p>

Dose Adjustment:

The following table aims to target a vancomycin trough level of **15-20mg/mL**.




Subsequent doses may be increased incrementally up to a **maximum dose of 80mg/kg/day** based on serum trough levels if clinically appropriate (e.g. absence of renal impairment or concomitant use of nephrotoxic medications).

In the event that dose escalation to 80mg/kg/day does not achieve the target level, consider changing to a continuous vancomycin infusion, in consultation with Infectious Diseases and/or Clinical Microbiology. Any further dose increases require approval from Infectious Diseases and/or Clinical Microbiology.

Only adjust a dose after confirming last doses were given correctly and at stated times, in addition to checking relevant microbiology results.

Reported Trough level	Current Dose Frequency	Suggested adjustment
Less than 7 mg/L	Every 12 hours	Use the same dose, Increase frequency to every 8 hours.
	Every 8 hours	Increase dose by 75% (1.75 times current dose) and keep frequency at every 8 hours
7 to 10 mg/L	Every 12 hours	Use the same dose, Increase frequency to every 8 hours.
	Every 8 hours	Increase dose by 60% (1.6 times current dose) and keep frequency at every 8 hours
11 to 12 mg/L	Every 12 hours	Keep the frequency the same.
	Every 8 hours	Increase dose by 40% (1.4 times current dose)
13 to 14 mg/L	Every 12 hours	Keep the Frequency the same.
	Every 8 hours	Increase dose by 25% (1.25 times current dose)
15 to 20 mg/L	Every 12 hours	No Adjustment required.
	Every 8 hours	
21 to 22mg/L	Every 12 hours	Continue current dose. Check renal function (Creatinine, Urea and Electrolytes)
	Every 8 hours	Repeat level in 24 hours. Do NOT withhold dose unless worsening renal function.
Vancomycin trough levels >23mg/L consultation with Microbiology and Pharmacy		
23 to 25 mg/L	Every 12 hours	Check Renal Function (Creatinine, Urea and Electrolytes)
	Every 8 hours	Do NOT withhold dose unless worsening renal function. Reduce dose by 20%. (0.8 times current dose) – frequency to remain the same. Repeat level in 24 hours.
>25 mg/L	Every 12 hours	Withhold further doses and contact Microbiology.
	Every 8 hours	Check Renal Function (Creatinine, Urea and Electrolytes) Repeat level 24 hours after last dose (write urgent on pathology form).

Adverse Reactions	Common	Local pain, thrombophlebitis, erythematous rash
	Serious	Nephrotoxicity, auditory and vestibular deafness, tachycardia, palpitations, red man syndrome, neutropenia, eosinophilia, thrombocytopenia
Interactions	Caution with administration other nephrotoxic medications such as NSAID (Indometacin) or gentamicin as may worsen renal function	
Guidelines & Resources	Sepsis: General Management and Treatment Sepsis: Neonatal Ventriculoperitoneal (VP) Shunt or CSF Reservoir Insertion	
References	<p>Truven Health Analytics. Vancomycin. In: NeoFax [Internet]. Greenwood Village (CO): Truven Health Analytics; 2018 [cited 2018 Apr 26]. Available from: https://neofax.micromedexsolutions.com/</p> <p>Lexicomp. Vancomycin (Paediatric). In: UpToDate [Internet]. Alphen aan den Rijn (Netherlands): Wolters Kluwer; 2017 [cited 2018 Apr 26]. Available from: https://www.uptodate.com/</p> <p>Teoh WKS, Shearer S, Kristensen J. Neonatal vancomycin compliance after protocol changes. Journal of Pharmacy Practice and Research [Internet]. 2015;45(2):242-3. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1002/jppr.1081</p> <p>Zhao W, Lopez E, Biran V, Durrmeyer X, Fakhoury M, Jacqz-Aigrain E. Vancomycin continuous infusion in neonates: dosing optimisation and therapeutic drug monitoring. Arch Dis Child [Internet]. 2013;98(6):449. Available from: http://adc.bmj.com/content/98/6/449.abstract</p>	

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