



NEONATAL

# VANCOMYCIN

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

**Restricted:** Requires 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.

<b>Presentation</b>	Vial: 500mg																						
<b>Classification</b>	Antibiotic: Bactericidal glycopeptide																						
<b>Indication</b>	<ul style="list-style-type: none"> <li>• Empirical Treatment of late onset sepsis</li> <li>• Gram positive infections including Methicillin resistant <i>S. aureus</i> (MRSA)</li> <li>• Coagulase Negative staphylococcal (CoNS) infections, <i>Staphylococcal</i>, <i>Enterococcal</i> and <i>Bacillus</i> infections due to strains resistant to other antibiotics</li> </ul>																						
<b>Contraindications and Precautions</b>	Dose adjustment may be required in cases of renal impairment. This is defined as serum creatinine greater than 80 micromol/L or urine output less than 1 mL/kg/hour.																						
<b>Dose</b>	<p><b><u>Infections due to susceptible organisms</u></b></p> <p><b>IV Intermittent Infusion:</b></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">&lt; 30 weeks</td> <td>0 – 7 days</td> <td>10mg/kg/dose</td> <td>12 hourly</td> </tr> <tr> <td>&gt; 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>&gt; 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><b>IV Continuous Infusion:</b> 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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<b>Monitoring</b>	<p><b><u>Sampling of Levels</u></b></p> <p>First level: Trough level just prior to the 4<sup>th</sup> dose.  Change of Dose: Trough level just prior to 4<sup>th</sup> dose.  Previous level within range: Trough level in 3 days time</p> <p><b><u>Target Trough Levels</u></b></p> <p><b>Intermittent Dosing</b></p> <p>All Indications: 15-20 mg/L</p> <p>Renal function (Creatinine, Urea and Electrolytes) should be monitored regularly throughout treatment.(every 3 days at 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>
<b>Dose Adjustment</b>	<p>See table on the following page</p>
<b>Guidelines &amp; Resources</b>	<p><a href="#">Infection in the Neonate</a>  <a href="#">General Management and Treatment (Infection)</a></p>
<b>Compatible Fluids</b>	<p>Glucose 5% (Preferred) or  Sodium Chloride 0.9%</p>
<b>Preparation</b>	<p><b><u>IV:</u></b> Available from CIVAS (KEMH &amp; PCH)</p> <p><b><i>Reconstitution</i></b></p> <p>Add 10mL of Water for Injections to a 500mg vial. Concentration is now 50mg/mL</p> <p><b><i>Dilution</i></b></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>
<b>Administration</b>	<p><b><u>IV Intermittent Infusion:</u></b> 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) 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.
	Every 8 hours	
>25 mg/L	Every 12 hours	Withhold further doses and contact Microbiology. Check Renal Function (Creatinine, Urea and Electrolytes) Repeat level 24 hours after last dose (write urgent on pathology form).
	Every 8 hours	

<b>Adverse Reactions</b>	<b>Common</b>	Local pain, thrombophlebitis, erythematous rash
	<b>Serious</b>	Nephrotoxicity, auditory and vestibular deafness, tachycardia, palpitations, red man syndrome, neutropenia, eosinophilia, thrombocytopenia
<b>Interactions</b>	Caution with administration other nephrotoxic medications such as NSAID (Indometacin) or gentamicin as may worsen renal function	
<b>References</b>	<p>Truven Health Analytics. Vancomycin. In: NeoFax [Internet]. Greenwood Village (CO): Truven Health Analytics; 2018 [cited 2018 Apr 26]. Available from: <a href="https://neofax.micromedexsolutions.com/">https://neofax.micromedexsolutions.com/</a></p> <p>Lexicomp. Vancomycin (Paediatric). In: UpToDate [Internet]. Alphen aan den Rijn (Netherlands): Wolters Kluwer; 2017 [cited 2018 Apr 26]. Available from: <a href="https://www.uptodate.com/">https://www.uptodate.com/</a></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: <a href="https://onlinelibrary.wiley.com/doi/abs/10.1002/jppr.1081">https://onlinelibrary.wiley.com/doi/abs/10.1002/jppr.1081</a></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: <a href="http://adc.bmj.com/content/98/6/449.abstract">http://adc.bmj.com/content/98/6/449.abstract</a></p>	

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Standards Applicable:	NSQHS Standards: 1  Clinical Care is Guided by Current Best Practice, 3  Infection Control 4  Medication Safety;		
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