Neonatal

VANCOMYCIN

Read in conjunction with Disclaimer

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.

Formulary: Restricted
Requires Neonatologist or Microbiologist review within 24 hours of initiation.

Presentation	**Pre-filled syringe:** 40 mg/8 mL (5 mg/mL) – KEMH only **Vial:** 500mg
Drug Class	Antibiotic: Bactericidal glycopeptide
Indication	• Empirical Treatment of late onset sepsis. • Confirmed (positive blood culture) gram positive infections including methicillin resistant *S. aureus* (MRSA). • Confirmed (positive blood culture) coagulase negative staphylococcal (CoNS) infections, *staphylococcal*, *enterococcal* and *bacillus* infections due to strains resistant to other antibiotics. • Antibiotic Prophylaxis: Ventriculoperitoneal (VP) Shunt or CSF Reservoir Insertion.
Special Considerations and Precautions	**Use caution with the following risk factors:** • Taking **other nephrotoxic medications** (e.g. gentamicin, piperacillin with tazobactam, furosemide, aciclovir or indometacin). • **Low urine output** (less than 1mL/kg/hour). • **Pre-existing renal impairment** (raised serum creatinine from age specific normal ranges). • **Haemodynamic instability**. • **Confirmed MRSA or CoNS** - organism susceptibility may impact drug choice and dosing; a continuous infusion may be preferred. **Dosage modification/reduction and earlier/frequent trough level monitoring** may be required in patients with above risk factors. Consider contacting microbiology or paediatric infectious diseases physician for advice.
Monitoring	**Renal Function** **Check creatinine, urea and electrolytes at baseline, with the first trough level and every 3 days thereafter at a minimum.** Consider more frequent monitoring of trough levels, creatinine, urea and electrolytes in patients with pre-existing renal impairment or at risk of deteriorating renal function (see precautions) or on other nephrotoxic medications. **In cases of suspected severe sepsis, antibiotic administration should not be delayed while awaiting UEC results; subsequent dose adjustments can be made if renal dysfunction is identified.**

Trough Level Monitoring	**Sampling of Levels** • First level: trough level 1 hour prior to 4th dose and await result. • Change of dose: trough level 1 hour prior to 4th dose and await result. • Previous level within range: trough level in 3 days' time and await result. **Re-initiation of vancomycin at any time:** Perform a trough level prior to commencing treatment and review prior to administering the 2nd dose. **Target Trough Levels** **Intermittent Dosing:** **WARNING:** target levels differ for empirical vs targeted therapy – take extra care when checking levels and adjusting doses. **For empirical treatment: 5-15 mg/L** See Empirical Dose Adjustment Section if the level is not within target range. **For targeted treatment of confirmed CoNS/MRSA: 15-20 mg/L** See Targeted Dose Adjustment Section if the level is not within target range. 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.
Compatibility	**Fluids:** Glucose 5% (preferred), glucose 10%, sodium chloride 0.9%. Refer to KEMH Neonatal Medication Guideline: Y-Site IV Compatibility in Neonates.
Interactions	There is an increased risk of nephrotoxicity in patients who receive combination therapy with other nephrotoxic medications such as NSAIDs (Indometacin), gentamicin or piperacillin with tazobactam.
Side effects	**Common:** Local pain, thrombophlebitis, erythematous rash. **Serious:** Nephrotoxicity, auditory and vestibular deafness, tachycardia, palpitations, red man syndrome, neutropenia, eosinophilia, thrombocytopenia. *The symptoms of red man syndrome are fever, chills, erythema, rash (head, neck and upper chest), hypotension.*
Storage & Stability	**Pre-filled syringe:** Refrigerate at 2-8°C, do not freeze. **Vial:** Store at room temperature, below 25°C.

INTRAVENOUS INFUSION

Presentation

Pre-filled syringe: 40 mg/8 mL (5 mg/mL) – KEMH only

Vial: 500mg

Dosage

IV Intermittent Infusion:

Check baseline renal function (creatinine, urea and electrolytes) and repeat when first trough level is sampled.

Corrected Gestational Age	Postnatal Age	Dose	Frequency
Less than 30 weeks	0 – 7 days	10 mg/kg/dose	12 hourly
	Greater than 7 days	10 mg/kg/dose	8 hourly
30 – 37 weeks	0 – 7 days	15 mg/kg/dose	12 hourly
	Greater than 7 days	15 mg/kg/dose	8 hourly
37 – 44 weeks	All ages	15 mg/kg/dose	8 hourly

Preparation

KEMH: Use pre-filled syringes where available to prevent any need for double-dilutions.

PCH: Doses can also be ordered from Pharmacy.

Safety Tip: Discard an appropriate volume from a pre-filled syringe to achieve the correct dose prior to administration.

IV Infusion: Method for double dilution

WARNING: double dilution required – Take extra care and minimise distractions.

Step 1 Reconstitution:

Add 10 mL of water for injections to a 500 mg vial. Concentration is now 50 mg/mL.

Step 2 Dilution:

Withdraw 1 mL of the above solution and dilute to 10 mL with glucose 5% or sodium chloride 0.9%.

Safety Tip: Discard the contents of the first syringe immediately after the 1 mL is withdrawn.

Final Concentration is 5 mg/mL.

Maximum concentration: Concentrations of up to 10 mg/mL may be used if neonate is fluid restricted.

10 mg/mL solutions must be infused through a central line.

Administration

IV Intermittent Infusion

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”.

Pre-filled syringes do not need to remain protected from light during the infusion.

Dose Adjustment

EMPIRICAL THERAPY

Reported Trough Level	Current Dose Frequency	Suggested Adjustment
Less than 5 mg/L	Every 12 hours	Use the same dose, increase frequency to every 8 hours.
	Every 8 hours	Increase dose by 50% (1.5 times current dose) and keep frequency at every 8 hours.
5 to 15 mg/L	Every 12 hours	No adjustment required.
	Every 8 hours	
16 to 20 mg/L	Every 12 hours	Check renal function (creatinine, urea and electrolytes). Reduce dose by 30% (0.7 times current dose) – frequency to remain the same. Repeat level in 24 hours.
	Every 8 hours	
Vancomycin trough level greater than 20 mg/mL requires consultation with Microbiology/Paediatric ID and Pharmacy		
Greater than 20 mg/L	Every 12 hours	Check renal function (creatinine, urea and electrolytes). Withhold further doses and contact clinical microbiology or paediatric infectious diseases. Repeat level 24 hours after last dose (write urgent on pathology form).
	Every 8 hours	

BLOOD CULTURE POSITIVE TREATMENT

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. Increase dose by 40% (1.4 times current dose).
	Every 8 hours	
13 to 14 mg/L	Every 12 hours	Keep the Frequency the same. Increase dose by 25% (1.25 times current dose).
	Every 8 hours	
15 to 20 mg/L	Every 12 hours	No adjustment required.
	Every 8 hours	
21 to 22 mg/L	Every 12 hours	Continue current dose. Check renal function (Creatinine, Urea and Electrolytes). Repeat level in 24 hours. Do NOT withhold dose unless worsening renal function.
	Every 8 hours	
Vancomycin trough level greater than 23 mg/mL requires consultation with Microbiology/Paediatric ID 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	
Greater than 25 mg/L	Every 12 hours	Withhold further doses and contact microbiology or paediatric infectious diseases for advise. Check renal function (creatinine, urea and electrolytes) Repeat level 24 hours after last dose (write urgent on pathology form).
	Every 8 hours	

Related Policies, Procedures, and Guidelines

HDWA Mandatory Policies:

MP 0131/20: WA High Risk Medication Policy

Clinical Practice Guidelines:

Neonatology – Sepsis: Neonatal

WNHS Pharmaceutical and Medicines Management Guidelines:

High Risk Medicines

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Document history

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