



## NEONATAL MEDICATION GUIDELINE

# Vancomycin

FOR PROVEN BLOOD CULTURE POSITIVE INFECTIONS  
 (Target trough level 15-20mg/L)

**Scope (Staff):** Medical, Nursing and Pharmacy staff

**Scope (Area):** NICU KEMH, NICU PCH, NETS WA

This document should be read in conjunction with the [Disclaimer](#).

### Quick Links

[Dose](#)

[Monitoring](#)

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### Restrictions

**[Formulary: Highly Restricted](#)**

Requires (Neonatologist/Microbiologist/Paediatric Infectious Diseases physician) approval before commencing

**[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.

### Description

Antibiotic: Bactericidal glycopeptide

### Presentation

**Vial:** 500mg

**Pre-filled syringe:** 40mg/8mL (5mg/mL) available at KEMH

### Storage

**Vial:** Store at room temperature, below 25°C

**Pre-filled syringe:** Refrigerate at 2-8°C, do not freeze.

### Indications

- 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

## Contraindications and Precautions

- Concurrent use of nephrotoxic medications (e.g. gentamicin, piperacillin/ 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

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.

## Dose

### Infections due to susceptible organisms

#### 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	10mg/kg/dose	12 hourly
	Greater than 7 days	10mg/kg/dose	8 hourly
30 - 37 weeks	0 – 7 days	15mg/kg/dose	12 hourly
	Greater than 7 days	15mg/kg/dose	8 hourly
37 – 44 weeks	All ages	15mg/kg/dose	8 hourly

## Monitoring

### Sampling of Levels

- First level: trough level 1 hour prior to 4<sup>th</sup> dose and await result
- Change of dose: trough level 1 hour prior to 4<sup>th</sup> 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 2<sup>nd</sup> dose

### Target Trough Levels

#### Intermittent Dosing:

For targeted treatment of confirmed CoNS/MRSA: **15-20 mg/L**

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.

## **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.

## **Dose Adjustment**

See [Dose Adjustment Table](#) on the next page

## **Preparation**

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

**Doses can also be ordered from Pharmacy at PCH.**

*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**

*Safety Tip: Preparation requires a double dilution- minimise distractions during the preparation of this solution*

#### **Step 1 Reconstitution:**

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

#### **Step 2 Dilution:**

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

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

Final Concentration is 5mg/mL

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

## **Compatible Fluids**

Glucose 5% (Preferred), Glucose 10% or Sodium Chloride 0.9%

## Dose Adjustment Table

The following table aims to target a vancomycin trough level of **15-20mg/L (for confirmed blood culture positive infections)**

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. 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 22mg/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 23mg/L 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 25mg/L	Every 12 hours	Withhold further doses and contact microbiology or paediatric infectious diseases. Check Renal Function (Creatinine, Urea and Electrolytes) Repeat level 24 hours after last dose (write urgent on pathology form).
	Every 8 hours	

## Adverse 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*

## 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.

## Guidelines & Resources

[Sepsis: Neonatal](#)

[Ventriculoperitoneal \(VP\) Shunt or CSF Reservoir Insertion](#)

[Neonatal Vancomycin Monograph- Intermittent Empirical Therapy](#)

[Neonatal Vancomycin Monograph- Continuous Infusion](#)

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## Vancomycin for proven blood culture positive infections

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