vancomycin

500mg injection

Note:

This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this statewide guideline is current at the time of publication.

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Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient's medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

This is a High Risk Medication ⚠

An overdose can cause permanent toxicity.

Checklist

Before administering a dose:

- A trough level should be done within one hour prior to the dose. Do not wait for levels to give the next dose.
- Check the date and time when the next blood level is required; and
- Document the ongoing plan in the Nursing Care Plan and/or Medication Chart.

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Dose and Indications

Infection due to susceptible organisms

Intravenous Intermittent Infusion

Corrected Age (weeks) [Gestational Age PLUS Postnatal Age]	Postnatal Age (days)	Dose (mg/kg)	Frequency
<30	0-7	10	Every 12 hours
	>7		Every 8 hours
30-36	0-7	15	Every 12 hours
	>7		Every 8 hours
≥ 37	All Ages	25	Every 12 hrs

Intravenous Continuous Infusion – Recommended in serious bacterial infections including Central Nervous System infections, endocarditis, osteomyelitis and sepsis where vancomycin is the only available treatment option.

Corrected Age (weeks) [Gestational Age PLUS Postnatal Age]	Postnatal age (days)	Loading Dose (mg/kg)	Maintenance Dose (mg/kg/day)
<30	0-7	10	20
	>7		30
30-36	0-7	10	25
	>7		35
≥ 37	0-7	15	30
	>7		35

Preparation and Administration

There are **TWO STEPS** to this process.

STEP ONE: Add 10mL of Water for Injection to the vial (500mg) and shake gently to dissolve (total of 10mL). The resulting solution contains **50mg/mL** vancomycin.

The reconstituted solution is stable for 24 hours stored under refrigeration – check with local policy about re-accessing vial for the same patient.

STEP TWO: Further dilute 2mL of the 50mg/mL vancomycin solution with 18mL of compatible fluid (total of 20mL). The resulting solution contains **5mg/mL** vancomycin.

Dose	5mg	10mg	20mg	30mg	40mg	50mg	60mg	75mg
Volume	1mL	2mL	4mL	6mL	8mL	10mL	12mL	15mL

Discard remaining solution from the second dilution.

Intravenous Intermittent Infusion

Infuse over at least 2 hours.

Intravenous Continuous Infusion: Make separate syringes for loading and maintenance doses

Loading dose: Infuse over 2 hours

Maintenance Dose: Start the maintenance dose after the loading dose is finished. Calculate the total maintenance dose and administer over 24 hours

Withdraw only the required dose in a syringe and infuse over 24 hours

Small doses may be further diluted (up to 2mg/mL) if required, for ease of administration.

Compatible Fluids

Glucose 5%, Glucose 10%, Sodium chloride 0.9%

Adverse Effects

Common

Thrombophlebitis, nephrotoxicity (more common when administered with other nephrotoxic drugs such as aminoglycosides)

Rare

- “Red man” syndrome (see practice points)
- Thrombocytopenia, neutropenia, leucopenia
- Ototoxicity (more common when administered for extended periods of time, in impaired renal function and when given with other ototoxic medications such as aminoglycosides).

Monitoring

For Intermittent infusions

- If duration of therapy is likely to exceed 48 hours, liaise with Infectious Disease team to coordinate therapeutic drug monitoring. Consider the timing of levels and the likelihood of results returning out of hours.

Level	Next Level Taken	Target Trough Level
First Level OR After change of dose	8-hourly - dosing just prior to the 6th dose 12-hourly dosing - just prior to the 4th dose	Currently there is insufficient evidence to determine appropriate target trough ranges for intermittent infusion in neonatal patients. A suggested target trough range is **10-15mg/L** If levels fall outside this range, seek Infectious Diseases advice
Ongoing monitoring	Trough level every 3 days	

- Consider taking trough level earlier if concerns regarding renal function
- 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
- Consider more frequent monitoring if renal function declines or on other nephrotoxic medications
- Full blood count periodically, particularly with prolonged therapy.
- Trough level can be interpreted in context with MIC values for the organism being treated in conjunction with Infectious Diseases team

For Continuous infusions

- Target level at 24 hours after starting the infusion is **15-20mg/L** - or as directed by Infectious Disease Team.
- The timing is not critical and samples could be drawn at the same time as "routine" bloods.
- Trough level can be interpreted in context with MIC values for the organism being treated in conjunction with Infectious Diseases team
- If dose adjustment required:
  - New adjusted dose (mg) = $\frac{20 \times \text{Last maintenance dose (mg)}}{\text{Last measured vancomycin level (mg/L)}}$

Practice Points

- Vancomycin may induce nephrotoxicity and ototoxicity, although uncommon these are more often seen when given in conjunction with other nephrotoxic/ototoxic medications
- Use with caution in patients with renal impairment and adjust the dose where necessary.
- "Red man" syndrome symptoms include erythema, flushing, facial and upper torso rash,

which may be followed by hypotension, angioedema and itch. The effect is largely due to histamine release after too rapid an IV infusion

> Vancomycin is very irritant to tissue and may cause necrosis if extravasated

> Y-site compatibility has been demonstrated between vancomycin and some parental nutrition preparations, consult your pharmacist for further advice

Reference

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Document Ownership & History

Developed by: SA Maternal, Neonatal & Gynaecology Community of Practice
Contact: Health.NeoMed@sa.gov.au
Endorsed by: SA Health Safety and Quality Strategic Governance Committee
Next review due: 6/8/2024
ISBN number: 978-1-74243-438-4
PDS reference: **CG062**
Policy history: Is this a new policy (V1)? **N**
Does this policy amend or update and existing policy? **Y**
If so, which version? **Version 2.0**
Does this policy replace another policy with a different title? **N**
If so, which policy (title)?

Approval Date	Version	Who approved New/Revised Version	Reason for Change
6/8/2019	V2.1	SA Health Safety and Quality Strategic Governance Committee	Amendment – addition of comment under 'monitoring'
March 2017	V2	SA Health Safety and Quality Strategic Governance Committee	> Review > Dosing regimen and monitoring changes based on new evidence > Inclusion of continuous infusion
November 2012	V1	SA Maternal & Neonatal Clinical Network	Original SA Maternal & Neonatal Clinical Network approved version.