Purpose

The purpose of this worksheet is to provide specific drug dosing and therapeutic drug monitoring information to assist with safe prescribing of Vancomycin in our paediatric patient population.

This worksheet is intended to be used by medical, nursing and pharmacy staff.

All patients receiving Vancomycin should have appropriate drug levels ordered at the time of prescribing.

All patients requiring more than 48 hours of Vancomycin, need Infectious Diseases (ID) input and approval to receive ongoing therapy.

Instructions

Dosing – all patients:
Commence dose of intravenous (IV) Vancomycin at age appropriate mg/kg dose.

Starting doses:
- Neonates 34 to 44 weeks post conceptional age: 25mg/kg/dose every 12 hours
- Infants and children <12 years: 15mg/kg/dose (max initial dose 500mg) every 6 hours
- Children >12 years: 12.5mg/kg (max initial dose 500mg) every 6 hours

Special dosing considerations:
- For critically ill patients OR patients with renal impairment, contact Pharmacist or ID team for advice on dosing prior to commencing Vancomycin.
- Obese patients: Use actual body weight for calculation of initial Vancomycin dose.
- Meningitis: Give every 6 hours for meningitis with Gram positive cocci.
- If clinician prefers twice daily Vancomycin dosing, this should be discussed with ID Consultant on a case-by-case basis.
- For continuous infusion: Seek ID Consultant and Pharmacist advice PRIOR to commencement.

Dose calculation/conversion and monitoring require expert input.

It is recommended that the Vancomycin dose is diluted to a maximum concentration for administration of 5mg/mL (if fluid restricted 10mg/mL via central line only) and infused over at least 2 hours (due to risk of rate-related red man syndrome).

Hypotension, shock and cardiac arrest can also occur with rapid administration. Infusions can be given over a shorter time if necessary, however check with Pharmacist first, and monitor carefully.

Maximum rate 10mg/minute or over at least 60 minutes, whichever is longer.

Your Clinical Pharmacist or ID Consultant is available for advice on all dose adjustments.
Vancomycin Therapeutic Drug Monitoring

**Information on Therapeutic Drug Monitoring**

- **Time to steady state:** 1-2 days.
- **Sampling time:** Trough level (blood sample taken 30 minutes prior to dose) on day 2 of therapy (ideally just before the fourth dose to coincide with achievement of steady state).
- Indicate when this due on medication order at time of prescribing (circle box for fourth dose and write ‘trough level’ above or below.)
- Vancomycin level must be checked and dose adjustments made (if needed) before next dose is given.
- Vancomycin exhibits linear pharmacokinetics; an increase or decrease in dose should result in a proportionate increase or decrease in plasma concentrations (in stable renal function).
- In renal impairment the frequency of dosing is extended. Seek specialist advice.
- Repeat levels once or twice a week, or more frequently if rapidly changing renal function or critically ill patient.

**Therapeutic range**

- **15-20mg/L (trough) if dose is every 6 hours (non-meningitis)**
- **20-25mg/L (trough) if dose is every 6 hours (meningitis)**
- **12-18mg/L (trough) if dose is every 12 hours**

Dose recommendations are based on attainment of the **targets**. Consider patient’s clinical condition,

**When dose change is indicated**

- Retest trough level 24 hours after dose change (trough level pre fourth dose).
- Consider ease of administration when finalising dose.
- **Trough level:** Blood sample should be taken 30 minutes BEFORE dose is due.

**When decision is to remain on current dose**

- For critically ill OR renally impaired, repeat trough level in approximately 3 days time.
- For non-critically ill patients (with stable renal function), recheck trough level in 5 to 7 days time

Modified Schwartz formula is used to calculate Paediatric Creatinine Clearance (CrCl)**:

\[
CrCl \text{ (mL/min/1.73m}^2\text{)} = \frac{[36.5 \times \text{Height (cm)}]}{\text{Creatinine (micromol/L)}} = \ldots \text{mL/min/1.73m}^2
\]

**Not validated to be used in children <1 year of age. Cap CrCl at maximum of 120mL/min/1.73m².

**Further reading:**
**Therapeutic Drug Monitoring Recording**

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<tr>
<th>Nurse to complete</th>
<th>Pharmacist/Doctor to complete</th>
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<tbody>
<tr>
<td>Date of blood test</td>
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<tr>
<td>Time bloods taken</td>
<td>Dose (mg)</td>
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<td>Dosing interval (specify)</td>
<td>Patient's target level (e.g. 15-20mg/L)</td>
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<td>AUSCARE/ AUSLAB collection time correlates</td>
<td>Pharmacy management plan</td>
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<tr>
<td>Plan communicated to (specify Doctor's name, date and time)</td>
<td>Plan acknowledged by</td>
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- Check vancomycin level before fourth dose is given, and whenever 'trough level' indicated on medication form.
- Discuss results with doctor (or pharmacist) to ensure prescribed dose can be given.
- If Vancomycin result is not available prior to next dose, notify doctor immediately and discuss whether to withhold pending results, or administer with or without taking a trough level prior. Document decision on this form (Record management plan section)
- Accurate recording of times for administration and blood sampling is essential as small deviations can alter the interpretation of trough level results and accuracy of dose recommendations. If administration duration/ time variations occur, please note details and reason on this form.

**Sign:** Date: 

**Yes**  
**No**
### Therapeutic Drug Monitoring Recording

**Indication for therapy:**
- Check vancomycin level before fourth dose is given, and whenever 'trough level' indicated on medication form.
- Discuss results with doctor (or pharmacist) to ensure prescribed dose can be given.
- If Vancomycin result is not available prior to next dose, notify doctor immediately and discuss whether to withhold pending results, or administer with or without taking a trough level prior. Document decision on this form (*Record management plan section*).
- Accurate recording of times for administration and blood sampling is essential as small deviations can alter the interpretation of trough level results and accuracy of dose recommendations. If administration duration/time variations occur, please note details and reason on this form.

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**Patient’s target level:**

- Vancomycin

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(Affix patient identification label here)