Dose and Indications

Infection Due To Susceptible Gram Negative Organisms

Intravenous

Infectious Disease (ID) advice should be sought if therapy is required beyond 3 days

<table>
<thead>
<tr>
<th>GESTATION (At birth) in weeks</th>
<th>Postnatal age (days)</th>
<th>0-14</th>
<th>&gt;14</th>
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<tbody>
<tr>
<td>&lt; 33</td>
<td>6mg/kg every 48 hours</td>
<td>6 mg/kg every 24 hours</td>
<td></td>
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<tr>
<td>≥ 33</td>
<td>5mg/kg every 24 hours</td>
<td>6mg/kg every 24 hours</td>
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</table>

For babies with corrected age (gestational age + postnatal age) ≥ 44 weeks, follow paediatric intravenous guidelines.
Checklist  (for IV administration)

Before administering a dose:

> Check if gentamicin serum level results need to be acted upon prior to the administration of the next dose
> Check if the dosing interval needs amendment as a result of the blood level results
> 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.

Preparation and Administration

**Intravenous**

A dilution will be required **only if using gentamicin 80mg/2mL injection**.

Dilute 2mL of the 80mg/2mL gentamicin solution with 6mL of compatible fluid (to a total volume of 8mL). The resulting solution contains 10mg/mL of gentamicin.

The intravenous solution contains 10mg/mL gentamicin

<table>
<thead>
<tr>
<th>Dose</th>
<th>4mg</th>
<th>8mg</th>
<th>12mg</th>
<th>16mg</th>
<th>20mg</th>
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<tbody>
<tr>
<td>Volume</td>
<td>0.4mL</td>
<td>0.8mL</td>
<td>1.2mL</td>
<td>1.6mL</td>
<td>2mL</td>
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</table>

Administer over at least 5 minutes

Compatible Fluids (Intravenous)

Glucose 5%, glucose 10% and sodium chloride 0.9%

Adverse Effects (Intravenous)

**Common**

Non-oliguric renal impairment (increase in plasma urea and creatinine), ototoxicity – vestibular and auditory.

**Rare**

Oliguria, anaphylaxis, respiratory depression.
Monitoring

> There is no need to monitor levels if the anticipated duration of gentamicin is ≤ 48 hours. Where gentamicin is to be continued beyond 48 hours monitoring should be done.
> There are two methods by which gentamicin levels can be monitored. Trough level monitoring is the method routinely in use at all sites in SA at this time.
> If AUC24 or peak monitoring is clinically required after microbiology results are available, please consult the WCH pharmacy and infectious diseases (ID) department for advice.

Monitoring Gentamicin by Trough Levels

<table>
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<th>Dosing frequency</th>
<th>Monitoring</th>
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<tr>
<td>48 hourly</td>
<td>Two hours before the second dose</td>
</tr>
<tr>
<td>24 hourly</td>
<td>Two hours before the third dose</td>
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</table>

> Levels should be measured prior to 2nd dose if there is uncertainty of adequate renal clearance, as in renal failure or to optimise blood levels in the context of culture proven sepsis.
> The patient should have adequate renal clearance. A rising urea and creatinine, urine output <2mL/kg/hour and extreme prematurity may be indicators of inadequate clearance.

Interpreting Gentamicin Trough Levels

<table>
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<tr>
<th>Gentamicin level</th>
<th>Interpretation</th>
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<tr>
<td>≤ 1.2mg/L</td>
<td>Give next gentamicin dose</td>
</tr>
<tr>
<td>1.3mg/L - 2mg/L</td>
<td>Delay next gentamicin dose by 12 hours. No repeat level required before next dose.</td>
</tr>
<tr>
<td>&gt; 2mg/L</td>
<td>Hold dose. Repeat gentamicin level in 12 hours</td>
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> The next gentamicin dose should be held until the results of the trough level are available.
Practice Points

- Take care with use of any medication that can reduce renal function in particular vancomycin or ibuprofen/indometacin, with renal impairment or renal abnormalities. In these situations consider alternative options for antibiotic coverage where appropriate.
- Take care with concomitant furosemide (frusemide) therapy due to an increased risk of hearing impairment.
- Gentamicin injection can be administered intramuscularly but this route is painful and difficult in neonates. AUC monitoring is also not reliable when using this route.
- Gentamicin is contraindicated if the parents of the infant have a known or suspected genetic predisposition to gentamicin ototoxicity.
- IV penicillins and cephalosporins can inactivate IV aminoglycoside antibiotics (e.g., gentamicin). Preferably separate doses by 1 hour. If it is not possible to separate doses, flush the line well with sodium chloride 0.9%, before and after giving each medication.

References


Document Ownership & History

Developed by: SA Maternal, Neonatal & Gynaecology Community of Practice
Contact: Health.NeoMed@sa.gov.au
Endorsed by: SA Safety and Quality Strategic Governance Committee
Next review due: 15/12/2022
PDS reference: CG029
Policy history:
Is this a new policy (V1)? N
Does this policy amend or update and existing policy? Y
If so, which version? V3.0
Does this policy replace another policy with a different title? N
If so, which policy (title)?

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