Alert
The Antimicrobial Stewardship Team has listed this drug under the following categories:
Unrestricted- treatment up to 48 hours
Obtain approval from the Infectious Diseases Team- treatment > 48 hours

Indication
Treatment of suspected or proven gram negative infection.
Often used in combination with a beta-lactam antibiotic as empiric therapy for sepsis in the newborn.

Action
Bactericidal agent that acts by inhibiting protein synthesis in susceptible bacteria.

Drug Type
Aminoglycoside

Trade Name
DBL gentamicin, Gentamicin BP, Gentamicin Pfizer

Presentation
10 mg/mL ampoule- paediatric strength
80 mg/2 mL ampoule- adult strength

Dosage / Interval
5mg/kg/dose. Dosing interval as per Tables below

<table>
<thead>
<tr>
<th>Gentamicin level</th>
<th>Interval</th>
</tr>
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<tbody>
<tr>
<td>≤ 1.2 mg/L</td>
<td>Every 24 hours after previous dose</td>
</tr>
<tr>
<td>1.3 mg/L – 2.6 mg/L</td>
<td>Every 36 hours after previous dose</td>
</tr>
<tr>
<td>2.7 mg/L – 3.5 mg/L</td>
<td>Every 48 hours after previous dose</td>
</tr>
<tr>
<td>≥ 3.6 mg/L</td>
<td>Hold dose, repeat concentration 24 hours later</td>
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Subsequent dose interval is based on a gentamicin concentration at 22 hours after the administration of the 2nd dose as indicated in the table below.

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Monitoring
Routine therapeutic drug monitoring for ≤ 48 hours duration of therapy is not necessary unless renal function is impaired.
For therapy > 48 hours, perform gentamicin concentration 22 hours after the 2nd dose and determine the dose interval as described in the dosage section.
Further gentamicin concentrations are not necessary unless renal function is impaired.
Renal impairment: Perform gentamicin concentration 22 hours after every dose to determine the dose interval.
Peak concentration may be important if an organism has a high minimum inhibitory concentration (MIC) – speak with your microbiologist. Target peak concentration: 5–12 mg/L.
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**Peak concentration should be drawn at 30 minutes post dose.**

### Contraindications

Concurrent therapy with other ototoxic or nephrotoxic drugs.

### Precautions

CAUTION in patients with pre-existing renal impairment, auditory or vestibular impairment, hypocalcaemia, depressed neuromuscular transmission.

### Drug Interactions

Gentamicin should not be mixed with penicillins parenterally as inactivation occurs. Ensure line is adequately flushed between antibiotics.

### Adverse Reactions

Toxicity is rare in the newborn but can include:

1. **Nephrotoxicity**
   
   Associated with excessive accumulation of gentamicin. The initial symptoms may be due to renal tubular concentrating defect. These include excessive losses of sodium, calcium and magnesium. This may progress to proteinuria, increased urea, oliguria, increased serum creatinine. Renal impairment is most usually reversible.

2. **Ototoxicity**
   
   Primary vestibular but also auditory toxicity. Associated with excessive high plasma gentamicin concentrations and duration of therapy. Effects often irreversible.

3. **Neuromuscular blockade**
   
   Muscular paralysis and respiratory failure may occur particularly when used with other neuromuscular blockers such as pancuronium.

4. **Hypersensitivity**
   
   Very rare – rash, urticaria, fever, laryngeal oedema, eosinophilia.

**NEPHROTOXICITY AND OTOTOXICITY ARE MORE PRONOUNCED WITH ADDITION OF OTHER NEPHROTOXIC/OTOTOXIC AGENTS SUCH AS FRUSEMIDE AND VANCOMYCIN.**

### Compatibility

**Fluids:** Glucose 5%, glucose 10%, Hartmann’s, mannitol, sodium chloride 0.9%

**Y-Site:** Amino acid solutions, amifostine, amiodarone, anidulafungin, atracurium, aztreonam, bivalirudin, caspofungin, ciprofloxacin, cisatracurium, dexametomidine, esmolol, fluconazole, fosfarnet, granisetron, hydromorphone, labetalol, linezolid, magnesium sulfate, midazolam, morphine sulfate, palonosetron, panceuronium, pethidine, potassium chloride, remifentanil, tigecycline, vecuronium, zidovudine.

### Incompatibility

**Fluids:** Fat emulsions.

**Y-site:** Azathioprine, azithromycin, chloramphenicol, dexamethasone, fluocicloxacin, folic acid, frusemide, ganciclovir, heparin sodium, indomethacin, pentamidine, propofol, teicoplanin.

### Stability

Administer immediately, discard unused portion.

### Storage

Protect from light. Store below 25°C

### Evidence summary

As per NeoMed Consensus Group. Refer to reference manual or electronic version.

### References

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