Meropenem
Newborn Use Only

Alert
The Antimicrobial Stewardship Team recommends this drug is listed under the following category:
Restricted.
Widespread use of carbapenems has been linked with increasing prevalence of infections caused by methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant enterococci (VRE), multi-resistant Gram-negative organisms and *Clostridium difficile*.

Indication
Severe infections (e.g., sepsis or meningitis) caused by Gram-negative organisms resistant to other conventional antibiotics but susceptible to meropenem e.g., Extended Spectrum Beta Lactamase (ESBL)-producing organisms.
Note: Meropenem is NOT active against many resistant Gram-positive organisms, such as MRSA and most *Staphylococcus epidermidis*. Vancomycin is first-line therapy for these. Meropenem does have activity against penicillin-susceptible Gram-positive organisms and most anaerobic organisms. For individual advice, discuss therapy with a microbiologist or infectious diseases physician.

Action
Meropenem is a carbapenem. It inhibits cell wall synthesis.¹
Meropenem is a better choice than imipenem for central nervous system infections. Meropenem attains a higher concentration in the cerebrospinal fluid particularly with inflamed meninges and has a lower incidence of seizures than imipenem.

Drug Type
Carbapenem antibiotic.

Trade Name
Meropenem APOTEX, Meropenem DBL, Meropenem Kabi, Meropenem Ranbaxy, Meropenem Sandoz, Merrem

Presentation
500 mg vial
1000 mg vial

Dosage / Interval

<table>
<thead>
<tr>
<th>Non-CNS and Non-Pseudomonas Sepsis</th>
<th>Gestational Age at birth</th>
<th>Postnatal Age</th>
<th>Dose</th>
<th>Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 32⁰woeks</td>
<td>0–13 days</td>
<td>20 mg/kg</td>
<td>12 hourly</td>
<td></td>
</tr>
<tr>
<td>&lt; 32⁰woeks</td>
<td>14+ days</td>
<td>20 mg/kg</td>
<td>8 hourly</td>
<td></td>
</tr>
<tr>
<td>≥ 32⁰woeks</td>
<td>0–13 days</td>
<td>20 mg/kg</td>
<td>8 hourly</td>
<td></td>
</tr>
<tr>
<td>≥ 32⁰woeks</td>
<td>14+ days</td>
<td>30 mg/kg</td>
<td>8 hourly</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Meningitis and Pseudomonas Sepsis*</th>
<th>Gestational Age at birth</th>
<th>Postnatal Age</th>
<th>Dose</th>
<th>Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any</td>
<td>Any</td>
<td>40 mg/kg</td>
<td>8 hourly</td>
<td></td>
</tr>
</tbody>
</table>

*Assess for any renal impairment prior to using higher doses as meropenem is primarily excreted via the kidneys.

Route
IV infusion.

Maximum Daily Dose

<table>
<thead>
<tr>
<th>Preparation/Dilution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add 9.6 mL of WFI to the 500 mg powder for reconstitution to make a volume of 10 mL with a concentration of 50 mg/mL.</td>
</tr>
<tr>
<td>Draw up 2 mL (100 mg of meropenem) of solution and add 8 mL sodium chloride 0.9% to make a final volume of 10 mL with a concentration of 10 mg/mL.</td>
</tr>
</tbody>
</table>

Larger doses or neonates with a fluid restriction
Add 9.6 mL of WFI to the 500 mg powder for reconstitution to make a volume of 10 mL with a concentration of 50 mg/mL.
Draw up 4 mL (200 mg of meropenem) of solution and add 6 mL sodium chloride 0.9% to make a final volume of 10 mL with a concentration of 20 mg/mL.

Administration
IV infusion over 4 hours.
May be given over 15 to 30 minutes if longer infusion not feasible due to line access issues from other infusions.

Monitoring
Monitor renal function. Dose may need to be adjusted in impaired renal function.

Contraindications
Hypersensitivity to penicillins, cephalosporins and carbapenems.
### Precautions
- Colitis—due to risk of pseudomembranous colitis.
- Renal impairment.

### Drug Interactions
- Sodium valproate—meropenem may result in clinically significant reduction in concentration of sodium valproate, which may cause seizures.

### Adverse Reactions
- Injection site inflammation, diarrhoea (up to 6% in children), anaemia and eosinophilia.

### Compatibility
- **Fluids:** Glucose 5%, glucose 10%, sodium chloride 0.9%.
- **Y-site:** Amino acid solutions, anidulafungin, caspofungin, linezolid, atropine sulfate monohydrate, dexamethasone sodium, gentamicin, heparin sodium, metronidazole.

### Incompatibility
- **Fluids:** No information
- **Y-site:** Dolasetron, ketamine, mycophenolate mofetil, zidovudine.

### Stability
- Merrem: Solutions in sodium chloride are stable for 3 hours below 25°C and 24 hours at 2–8 °C. Use solutions in glucose 5% immediately.
- Meropenem (DBL, Kabi, Ranbaxy, Sandoz): Solutions in sodium chloride are stable for 8 hours below 25°C and 24 hours at 2–8 °C. Solutions in glucose 5% are stable for 3 hours below 25 °C and 14 hours at 2–8°C. Diluted solutions are potentially unstable, particularly glucose containing solutions and should be discarded if not used immediately.

### Storage
- Vial: Store at room temperature.

### Special Comments
- Meropenem 1 g vial contains 3.92 mmol of sodium.

### Evidence summary
- Refer to full version.

### References
- Refer to full version.