Alert
The Antimicrobial Stewardship Team has listed this drug under the following categories: Unrestricted.

Indication
Directed treatment of infection due to a susceptible bacterium.
Treatment of meningitis due to a susceptible bacterium, including Group B Streptococcus (GBS).
Treatment of congenital syphilis.

Action
Bactericidal agent which inhibits cell wall synthesis.

Drug Type
Antibacterial - Penicillin

Trade Name
BenPen

Presentation
600 mg vial. Contains Benzylpenicillin sodium powder for reconstitution. Contains 3 mmol/g of sodium.

Maximum Daily Dose
300 mg/kg/day
Adjust meningitis doses to comply with maximum daily dose.

Dosage/Interval
Sepsis (excluding meningitis and congenital syphilis): 60 mg/kg/dose. Dosing interval as per table below

<table>
<thead>
<tr>
<th>Method</th>
<th>Corrected Gestational Age/Postmenstrual Age</th>
<th>Postnatal Age</th>
<th>Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 30th weeks</td>
<td>0–28 days</td>
<td>12 hourly</td>
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<tr>
<td></td>
<td>&lt; 30th weeks</td>
<td>29+ days</td>
<td>8 hourly</td>
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<tr>
<td></td>
<td>30th–36th weeks</td>
<td>0–14 days</td>
<td>12 hourly</td>
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<td></td>
<td>30th–36th weeks</td>
<td>15+ days</td>
<td>8 hourly</td>
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<tr>
<td></td>
<td>37th–44th weeks</td>
<td>0–7 days</td>
<td>12 hourly</td>
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<td></td>
<td>37th–44th weeks</td>
<td>8+ days</td>
<td>8 hourly</td>
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<tr>
<td></td>
<td>≥45 weeks</td>
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<td>6 hourly</td>
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Meningitis: 90 mg/kg/dose. Dosing interval as per table below

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<th>Postnatal Age</th>
<th>Interval</th>
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<tbody>
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<td>&lt; 37th weeks</td>
<td>0–7 days</td>
<td>12 hourly</td>
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<tr>
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<td>&lt; 37th weeks</td>
<td>8+ days</td>
<td>8 hourly</td>
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<tr>
<td></td>
<td>≥37th weeks</td>
<td>0+ days</td>
<td>8 hourly</td>
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Congenital syphilis: 30 mg/kg/dose. Dosing interval as per table below

<table>
<thead>
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<th>Postnatal Age</th>
<th>Interval</th>
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<tbody>
<tr>
<td></td>
<td>&lt; 30th weeks</td>
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<td>12 hourly</td>
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<tr>
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<td>&lt; 30th weeks</td>
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<td>8 hourly</td>
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<td>0–14 days</td>
<td>12 hourly</td>
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<td>12 hourly</td>
</tr>
<tr>
<td></td>
<td>37th–44th weeks</td>
<td>8+ days</td>
<td>8 hourly</td>
</tr>
</tbody>
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Route
IV
IM (only if IV route not possible. IM route can be painful).
**Preparation/Dilution**

**IV**
Add 3.6 mL of water for injection to the 600 mg vial to make a 150 mg/mL solution.

**FURTHER DILUTE**
Draw up 1 mL (150 mg of penicillin) of solution and add 4 mL of sodium chloride 0.9% to make a final volume of 5mL with a concentration of 30 mg/mL solution.

**IM**
Add 1.6 mL water for injection to the 600 mg vial to make a 300 mg/mL solution.

**Administration**

**IV** infusion over 15–30 minutes.
IV infusion over 30–60 minutes recommended for larger doses (e.g., for meningitis).
Separate from aminoglycoside administration by clearing the line with a flush as penicillins inactivate aminoglycosides.
IM injection: Only if IV route is not possible.

**Monitoring**
Plasma concentrations are not usually required. They may be useful for infections with a high Minimum Inhibitory Concentration (MIC).

**Contraindications**
Hypersensitivity to penicillin.

**Precautions**
Hypersensitivity to cephalosporins.
Significant CNS toxicity including seizures may occur with high doses and rapid infusions.
Consider sodium load, especially in renal failure – a dose of 300 mg/kg/day provides 0.90 mmol/kg/day of sodium.
Dose reduction is recommended in significant renal insufficiency.

**Drug Interactions**
Aminoglycosides including gentamicin should not be mixed with penicillin when both drugs are given parenterally as inactivation occurs. Ensure line is adequately flushed between antibiotics.

**Adverse Reactions**
Allergy. Note hypersensitivity to penicillin has not been reported in neonates.
Bone marrow suppression, granulocytopenia and hepatitis are rare.
Significant CNS toxicity including seizures may occur with high doses and rapid infusions.

**Compatibility**
Fluids: Glucose 5%, Glucose 10% and sodium chloride 0.9%
Y site: Amino acid solutions and fat emulsions.

**Incompatibility**
Y-site: Aminoglycosides – amikacin, gentamicin, tobramycin; aminophylline, dobutamine, erythromycin, ganciclovir, haloperidol lactate, heparin sodium, labetalol, metaraminol, noradrenaline, pentamidine, phenobarbital, phenolamine, prochlorperazine, potassium chloride, promethazine, protamine sulfate, suxamethonium, thiopentone, tranexamic acid.

**Stability**
Administer immediately. Discard unused portion of reconstituted solution.

**Storage**
Store at room temperature. Protect from light.

**Special Comments**
CSF penetration is poor even when meninges are inflamed, hence larger doses in meningitis.
Prescribe in terms of mg rather than units.
60 mg = 100 000 Units of penicillin.
60 mg vial contains 0.18 mmol sodium.

**Evidence summary**
Refer to full version.

**References**
Refer to full version.

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**Authors Contribution**

Original author/s: Tejasvi Chaudhari, Jacky Dobson
Review author/s: David Osborn, Srinivas Bolisetty
<table>
<thead>
<tr>
<th>Evidence Review</th>
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<tbody>
<tr>
<td>Expert review</td>
<td>Brendan McMullan, Tony Lai</td>
</tr>
<tr>
<td>Nursing Review</td>
<td>Eszter Jozsa</td>
</tr>
<tr>
<td>Pharmacy Review</td>
<td>Jing Xiao, Mariella De Rosa, Ushma Trivedi, Cindy Chen</td>
</tr>
<tr>
<td>ANMF Group contributors</td>
<td>Himanshu Popat, Nilkant Phad, Elizabeth Oliphant</td>
</tr>
<tr>
<td>Final editing and review of the original</td>
<td>Ian Whyte</td>
</tr>
<tr>
<td>Electronic version</td>
<td>Mariella De Rosa, Cindy Chen, Ian Callander</td>
</tr>
<tr>
<td>Facilitator</td>
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