

# Benzylpenicillin (Penicillin G)

## Newborn use only

2018

<b>Alert</b>	The Antimicrobial Stewardship Team has listed this drug under the following categories: Unrestricted.																																																															
<b>Indication</b>	Empiric treatment of early onset sepsis (in combination with an aminoglycoside). Directed treatment of infection due to a susceptible bacterium. Treatment of meningitis due to a susceptible bacterium, including Group B <i>Streptococcus</i> (GBS). Treatment of congenital syphilis.																																																															
<b>Action</b>	Bactericidal agent which inhibits cell wall synthesis.																																																															
<b>Drug Type</b>	Antibacterial - Penicillin																																																															
<b>Trade Name</b>	BenPen																																																															
<b>Presentation</b>	600 mg vial. Contains Benzylpenicillin sodium powder for reconstitution. Contains 3 mmol/g of sodium.																																																															
<b>Maximum Daily Dose</b>	300 mg/kg/day Adjust meningitis doses to comply with maximum daily dose.																																																															
<b>Dosage/Interval</b>	<p><b>Sepsis (excluding meningitis and congenital syphilis): 60 mg/kg/dose. Dosing interval as per table below</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Method</th> <th rowspan="2">Interval</th> </tr> <tr> <th>Corrected Gestational Age/Postmenstrual Age</th> <th>Postnatal Age</th> </tr> </thead> <tbody> <tr> <td>&lt; 30<sup>+0</sup> weeks</td> <td>0-28 days</td> <td>12 hourly</td> </tr> <tr> <td>&lt; 30<sup>+0</sup> weeks</td> <td>29+ days</td> <td>8 hourly</td> </tr> <tr> <td>30<sup>+0</sup>-36<sup>+6</sup> weeks</td> <td>0-14 days</td> <td>12 hourly</td> </tr> <tr> <td>30<sup>+0</sup>-36<sup>+6</sup> weeks</td> <td>15+ days</td> <td>8 hourly</td> </tr> <tr> <td>37<sup>+0</sup>-44<sup>+6</sup> weeks</td> <td>0-7 days</td> <td>12 hourly</td> </tr> <tr> <td>37<sup>+0</sup>-44<sup>+6</sup> weeks</td> <td>8+ days</td> <td>8 hourly</td> </tr> <tr> <td>≥45 weeks</td> <td></td> <td>6 hourly</td> </tr> </tbody> </table> <p><b>Meningitis: 90 mg/kg/dose. Dosing interval as per table below</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Method</th> <th rowspan="2">Interval</th> </tr> <tr> <th>Corrected Gestational Age/Postmenstrual Age</th> <th>Postnatal Age</th> </tr> </thead> <tbody> <tr> <td>&lt; 37<sup>+0</sup> weeks</td> <td>0-7 days</td> <td>12 hourly</td> </tr> <tr> <td>&lt; 37<sup>+0</sup> weeks</td> <td>8+ days</td> <td>8 hourly</td> </tr> <tr> <td>≥ 37<sup>+0</sup> weeks</td> <td>0+ days</td> <td>8 hourly</td> </tr> </tbody> </table> <p><b>Congenital syphilis: 30 mg/kg/dose. Dosing interval as per table below</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Method</th> <th rowspan="2">Interval</th> </tr> <tr> <th>Corrected Gestational Age/Postmenstrual Age</th> <th>Postnatal Age</th> </tr> </thead> <tbody> <tr> <td>&lt; 30<sup>+0</sup> weeks</td> <td>0-28 days</td> <td>12 hourly</td> </tr> <tr> <td>&lt; 30<sup>+0</sup> weeks</td> <td>29+ days</td> <td>8 hourly</td> </tr> <tr> <td>30<sup>+0</sup>-36<sup>+6</sup> weeks</td> <td>0-14 days</td> <td>12 hourly</td> </tr> <tr> <td>30<sup>+0</sup>-36<sup>+6</sup> weeks</td> <td>15+ days</td> <td>8 hourly</td> </tr> <tr> <td>37<sup>+0</sup>-44<sup>+6</sup> weeks</td> <td>0-7 days</td> <td>12 hourly</td> </tr> <tr> <td>37<sup>+0</sup>-44<sup>+6</sup> weeks</td> <td>8+ days</td> <td>8 hourly</td> </tr> </tbody> </table>	Method		Interval	Corrected Gestational Age/Postmenstrual Age	Postnatal Age	< 30 <sup>+0</sup> weeks	0-28 days	12 hourly	< 30 <sup>+0</sup> weeks	29+ days	8 hourly	30 <sup>+0</sup> -36 <sup>+6</sup> weeks	0-14 days	12 hourly	30 <sup>+0</sup> -36 <sup>+6</sup> weeks	15+ days	8 hourly	37 <sup>+0</sup> -44 <sup>+6</sup> weeks	0-7 days	12 hourly	37 <sup>+0</sup> -44 <sup>+6</sup> weeks	8+ days	8 hourly	≥45 weeks		6 hourly	Method		Interval	Corrected Gestational Age/Postmenstrual Age	Postnatal Age	< 37 <sup>+0</sup> weeks	0-7 days	12 hourly	< 37 <sup>+0</sup> weeks	8+ days	8 hourly	≥ 37 <sup>+0</sup> weeks	0+ days	8 hourly	Method		Interval	Corrected Gestational Age/Postmenstrual Age	Postnatal Age	< 30 <sup>+0</sup> weeks	0-28 days	12 hourly	< 30 <sup>+0</sup> weeks	29+ days	8 hourly	30 <sup>+0</sup> -36 <sup>+6</sup> weeks	0-14 days	12 hourly	30 <sup>+0</sup> -36 <sup>+6</sup> weeks	15+ days	8 hourly	37 <sup>+0</sup> -44 <sup>+6</sup> weeks	0-7 days	12 hourly	37 <sup>+0</sup> -44 <sup>+6</sup> weeks	8+ days	8 hourly
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<b>Route</b>	IV IM (only if IV route not possible. IM route can be painful).																																																															

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<b>Preparation/Dilution</b>	<p><b>IV</b> Add 3.6 mL of water for injection to the 600 mg vial to make a 150 mg/mL solution. <b>FURTHER DILUTE</b> 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.</p> <p><b>IM</b> Add 1.6 mL water for injection to the 600 mg vial to make a 300 mg/mL solution.</p>
<b>Administration</b>	<p>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.</p>
<b>Monitoring</b>	Plasma concentrations are not usually required. They may be useful for infections with a high Minimum Inhibitory Concentration (MIC).
<b>Contraindications</b>	Hypersensitivity to penicillin.
<b>Precautions</b>	<p>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.</p>
<b>Drug Interactions</b>	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.
<b>Adverse Reactions</b>	<p>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.</p>
<b>Compatibility</b>	<p>Fluids: Glucose 5%, Glucose 10% and sodium chloride 0.9%</p> <p>Y site: Amino acid solutions and fat emulsions.</p>
<b>Incompatibility</b>	Y-site: Aminoglycosides – amikacin, gentamicin, tobramycin; aminophylline, dobutamine, erythromycin, ganciclovir, haloperidol lactate, heparin sodium, labetalol, metaraminol, noradrenaline, pentamidine, phenobarbitone, phentolamine, prochlorperazine, potassium chloride, promethazine, protamine sulfate, suxamethonium, thiopentone, tranexamic acid.
<b>Stability</b>	Administer immediately. Discard unused portion of reconstituted solution.
<b>Storage</b>	Store at room temperature. Protect from light.
<b>Special Comments</b>	<p>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.</p>
<b>Evidence summary</b>	Refer to full version.
<b>References</b>	Refer to full version.

<b>Original version Date: 08/08/2015</b>	<b>Author: ANMF Consensus Group</b>
<b>Current Version number: 2.0</b>	<b>Version Date: 12/11/2019</b>
<b>Risk Rating: Medium</b>	<b>Due for Review: 12/11/2022</b>
<b>Approval by: As per Local policy</b>	<b>Approval Date:</b>

### Authors Contribution

Original author/s	Tejasvi Chaudhari, Jacky Dobson
Review author/s	David Osborn, Srinivas Bolisetty

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Evidence Review	David Osborn
Expert review	Brendan McMullan, Tony Lai
Nursing Review	Eszter Jozsa
Pharmacy Review	Jing Xiao, Mariella De Rosa, Ushma Trivedi, Cindy Chen
ANMF Group contributors	Himanshu Popat, Nilkant Phad, Elizabeth Oliphant
Final editing and review of the original	Ian Whyte
Electronic version	Mariella De Rosa, Cindy Chen, Ian Callander
Facilitator	Srinivas Bolisetty