MONOGRAPH

Benzylpenicillin Monograph - Paediatric

Scope (Staff):	Medical, Pharmacy, Nursing
Scope (Area):	All Clinical Areas

Child Safe Organisation Statement of Commitment

CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations. This is a commitment to a strong culture supported by robust policies and procedures to reduce the likelihood of harm to children and young people.

This document should be read in conjunction with this DISCLAIMER

QUICKLINKS

Dosage/Dosage Adjustments	Administration	Compatibility	Monitoring

DRUG CLASS

Benzylpenicillin (also known as penicillin G) is a narrow spectrum, bactericidal penicillin antibiotic.[1-3]

INDICATIONS AND RESTRICTIONS

- Benzylpenicillin is active against many Gram-positive bacteria including *Streptococcus pyogenes, Streptococcus agalactiae* (Group B Streptococcus) and *Streptococcus pneumoniae.*[1, 2]
- It has activity against some Gram-negative bacteria including *Treponema pallidum* (syphilis).[1, 2]

IV: Unrestricted (green) antibiotic

This is not a restricted agent. Follow standard ChAMP guidelines where appropriate.

CONTRAINDICATIONS

- Hypersensitivity to benzylpenicillin or any component of the formulation or a history of high risk allergy to penicillins.[1, 4-8]

PRECAUTIONS

- Benzylpenicillin may be prescribed in selected patients with high risk allergy to another Beta-lactam sub-class (e.g. some cephalosporins, carbapenems) in discussion with immunology.[1, 5, 7]
- In patients with a previous low risk reaction to benzylpenicillin or another penicillin (delayed rash [>1hr after initial exposure] without mucosal or systemic involvement) the risk of subsequent reaction is low. Re-challenge may be acceptable in discussion with immunology.[5]
- Rapid IV injection of large doses may cause seizures and electrolyte imbalance.[3, 7]
- High doses of benzylpenicillin should be used with caution in renal impairment as it may result in electrolyte disturbances, neurotoxicity and increase the risk of neutropenia.[1, 8]
- Each 600 mg of benzylpenicillin sodium salt contains 38.7 mg (1.8 mmol) of sodium.[3-5]

FORMULATIONS

Listed below are products available at PCH, other formulations may be available, check with pharmacy if required:

- 600 mg powder for injection vial
- 1.2 gram powder for injection vial

Imprest location: Formulary One

DOSAGE & DOSAGE ADJUSTMENTS

Note: 600 mg of benzylpenicillin is equivalent to 1 million units.

Neonates: Refer to Neonatal Medication Protocols

IV or IM

Children ≥ 4 weeks:

- **Usual dose:** 50 mg/kg/dose (to a maximum of 1.2 grams) 6 hourly.[2]
- **Severe infections:** 50 mg/kg/dose (to a maximum of 2.4 grams) 4 to 6 hourly.[2]

Continuous infusions for Hospital in the Home (HiTH) via Baxter Infusor®:

- Consider if IV to oral switch is suitable before prescribing continuous benzylpenicillin infusion.
- **Usual dose:** 200 mg/kg/DAY (to a maximum of 4.8 grams per day) via a buffered continuous infusion.[2]
- **Severe infections:** 200 to 300 mg/kg/DAY (to a maximum of 14.4 grams per day) via a buffered continuous infusion.[2]

Dosing in Overweight and Obese Children: Dose based on measured body weight.[9]

Renal impairment:

eGFR calculator

eGFR	Dose recommendation[2, 6]
≥ 50 mL/minute/1.73m^2	Normal dose
≥ 10 to < 50 mL/minute/1.73m^2	75% dose at the normal dosing interval
< 10 mL/minute/1.73m^2	20-50% dose at the normal dosing interval (maximum total daily dose of 6 grams)

- Sodium content of the injection may accumulate in patients with renal impairment. Electrolyte levels should be closely monitored.[1, 6]

Hepatic impairment:

- No dosage adjustment is required in patients with hepatic impairment.[6, 8]

RECONSTITUTION & ADMINISTRATION

IV reconstitution:

- Reconstitute each vial with the volume of water for injection in the table below.

Vial strength	Volume of water for injection required	Powder volume[3, 10]	Resulting concentration
600 mg	9.6 mL	0.4 mL	60 mg/mL
1.2 gram	19.2 mL	0.8 mL	60 mg/mL

IV infusion:

- Infuse the reconstituted vial (maximum concentration of 60 mg/mL) over 30 to 60 minutes.[3, 10]
- Avoid rapid infusion due to the risk of seizures.[1]

HiTH administration:

- Give via continuous Baxter® infusion. This solution must be buffered with sodium citrate to ensure stability.[3]

Volumes available	Maximum concentration	Minimum concentration	Minimum dose
240 mL, 120 mL	60 mg/mL	15 mg/mL	1800 mg per 24 hours **OR** 720 mg per 24 hours if using a 2-day Infusor

IM reconstitution:

- Reconstitute each vial with the volume of water for injection in the table below.

Vial strength	Volume of water for injection required	Powder volume[3, 10]	Resulting concentration
600 mg	1.6 mL	0.4 mL	300 mg/mL
1.2 gram	3.2 mL	0.8 mL	300 mg/mL

IM Injection:

- If IV access is not available this medication may be given by IM injection. [3, 8]
- Reconstitute as directed above with water for injection to a concentration of 300 mg/mL and inject as per PCH guideline Intramuscular Injections (internal link).

COMPATIBILITY *(LIST IS NOT EXHAUSTIVE)*

Compatible fluids:

- Glucose 5%
- Sodium chloride 0.9%[3, 10]

Compatible at Y-site:

Compatibilities of IV drugs must be checked when two or more drugs are given concurrently.

MONITORING

Renal & hepatic function and full blood count should be monitored weekly with prolonged high-dose therapy (i.e. longer than 10 days).[1, 6, 8]

ADVERSE EFFECTS

Common: diarrhoea, nausea, pain and inflammation at injection site, skin reactions, fever.[1, 5]

Infrequent: *Clostridioides difficile*-associated disease, vomiting, arthralgia, leucopenia.[1, 5]

Rare: black tongue, electrolyte disturbances (due to high sodium content), neurotoxicity with high doses (including; drowsiness, hallucinations, coma, seizures), bleeding, blood dyscrasias (including neutropenia & thrombocytopaenia).[1, 5]

STORAGE

- Store vials below 25˚C and protect from light.[3, 4]

INTERACTIONS

This medication may interact with other medications; consult PCH approved references (e.g. Clinical Pharmacology), a clinical pharmacist or PCH Medicines Information Service on extension 63546 for more information.

Please note: The information contained in this guideline is to assist with the preparation and administration of **benzylpenicillin**. Any variations to the doses recommended should be clarified with the prescriber prior to administration

Related CAHS internal policies, procedures and guidelines
Antimicrobial Stewardship Policy
ChAMP Empiric Guidelines and Monographs
KEMH Neonatal Medication Protocols

References

1. Australian Medicines Handbook. Adelaide, S. Aust.: Australian Medicines Handbook; 2025 [cited 2025 9th October]. Available from: https://amhonline-amh-net-au.pklibresources.health.wa.gov.au/.
2. Antibiotic Writing Group. Therapeutic Guidelines - Antibiotic. West Melbourne: Therapeutic Guidelines Ltd; 2025. Available from: https://tgldcdp-tg-org-au.pklibresources.health.wa.gov.au/etgAccess.
3. Symons K. Wong Ee. Australian injectable drugs handbook. Abbotsford: The Society of Hospital Pharmacists of Australia; 2023.
4. AusDI [Internet]. Health Communication Network Pty Ltd. 2025 [cited 9th October 2025].
5. Paediatric Formulary Committee. BNF for Children: 2025. London: BMJ Group Pharmaceutical Press; 2025.
6. Clinical Pharmacology powered by ClinicalKey [Internet]. Elsvier. 2025 [cited 9th October 2025]. Available from: https://www-clinicalkey-com.pklibresources.health.wa.gov.au/pharmacology/.
7. IBM Micromedex [Internet]. Truven Health Analytics. 2025 [cited 9th October 2025]. Available from: http://www-micromedexsolutions-com.pklibresources.health.wa.gov.au/micromedex2/librarian.
8. Up To Date - Paediatric Drug information [Internet]. Lexicomp. 2025 [cited 9th October 2025]. Available from: https://www-uptodate-com.pklibresources.health.wa.gov.au/contents/table-of-contents/drug-information/pediatric-drug-information.
9. Kendrick JG, Carr RR, Ensom MH. Pediatric Obesity: Pharmacokinetics and Implications for Drug Dosing. Clin Ther. 2015;37(9):1897–923.
10. Paediatric Injectable Guidelines 9th Ed [Internet]. Royal Children's Hospital 2024 [cited 25th September 2025].

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