



MONOGRAPH

Benzathine Benzylpenicillin (Benzathine Penicillin G) Monograph - Paediatric

Scope (Staff):	Medical, Pharmacy, Nursing
Scope (Area):	Perth Children's Hospital (PCH)

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
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DRUG CLASS

Penicillin-Narrow Spectrum.⁽¹⁾

INDICATIONS AND RESTRICTIONS

- Benzathine benzylpenicillin is predominantly used in the treatment and secondary prevention of acute rheumatic fever/rheumatic heart disease and in the treatment of infections susceptible to prolonged, low concentrations of benzylpenicillin (e.g. early or latent syphilis).⁽¹⁾
- It may also be used in the treatment of impetigo and Group A Streptococcal Tonsillitis/Pharyngitis.^(2, 3)
- Benzathine benzylpenicillin may also be used as a second line agent for invasive Group A Streptococcal (iGAS) contacts unable to tolerate oral antibiotics.

IM: Unrestricted (green) antibiotic

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

CONTRAINDICATIONS

- Benzathine benzylpenicillin is contraindicated in patients with a history of [high risk allergy](#) to penicillins. ^(1, 3)

PRECAUTIONS

- Benzathine 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.^(3, 4)
- In patients with a previous [low risk allergy](#) to benzathine benzylpenicillin or another penicillin (delayed rash [>1 hr after initial exposure] without mucosal or systemic involvement) the risk of subsequent reaction is low. Re-challenge may be acceptable in discussion with immunology.
- Care must be taken with intramuscular administration of benzathine benzylpenicillin to avoid intravenous or intra-arterial administration or injection in or near major peripheral nerves or blood vessels due to the risk of neurovascular damage.^(1, 4, 5)

FORMULATIONS

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

- Benzathine benzylpenicillin tetrahydrate 1,200,000 units/2.3mL in aqueous suspension (Bicillin L-A[®]), pre-filled syringe for IM injection.

Note:

- In 2019 the manufacturer updated the labelling and packaging of benzathine benzylpenicillin to include the tetrahydrate salt and describe the active ingredient in 'units' rather than 'mg'. There was no change to the contents of the product.
- Imprest location: [Formulary One](#)

DOSAGE & DOSAGE ADJUSTMENTS

Doses of benzathine benzylpenicillin should be expressed as units only.

Neonates (less than 30 days of age):

- Not routinely used in neonates except in cases of congenital syphilis, [refer to Neonatal Medication Protocols](#) or contact Infectious Disease or Clinical Microbiology consultants for advice

Congenital Syphilis (less than 30 days of age):

- Low-risk infants <3 kg: contact Infectious Diseases for advice, benzyl penicillin may be appropriate.
- Low-risk infants ≥ 3 kg: 50,000 units/kg IM as a single dose^(6, 7)
- High-risk: treatment with IV benzylpenicillin required.⁽⁶⁾

Children:

Impetigo (>1 month to 18 years):

In remote Indigenous communities *S. pyogenes* is usually the pathogen, even if *S. aureus* is isolated.⁽²⁾

- <10 kg 450,000 units IM (0.9mL) as a single dose
- 10 to <20 kg 600,000 units IM (1.2mL) as a single dose
- ≥ 20 kg 1,200,000 units IM (2.3mL) as a single dose⁽⁸⁾

Presumed *Streptococcus pyogenes* (>1 month to 18 years): (Group A Streptococcus) tonsillitis or pharyngitis, scarlet fever:

- <10kg 450,000 units IM (0.9mL) as a single dose
- 10 to <20kg 600,000 units IM (1.2mL) as a single dose
- ≥20kg 1,200,000 units IM (2.3mL) as a single dose⁽⁸⁾

Rheumatic fever (>1 month to 18 years):

Acute episode:

- < 20kg: 600,000 units IM (1.2mL) as a single dose
- ≥ 20kg: 1,200,000 units IM (2.3mL) as a single dose.⁽⁸⁾

Prevention of recurrence:

- < 20kg: 600,000 units IM (1.2mL) every 3 to 4 weeks for 5 to 10 years.
- ≥ 20kg: 1,200,000 units IM (2.3mL) every 3 to 4 weeks for 5 to 10 years.⁽⁸⁾
- Duration of antibiotic prophylaxis for prevention of rheumatic fever recurrence depends on patient factors such as age, likelihood of ongoing exposure to *S. pyogenes* and time since last episode of acute rheumatic fever refer to: [The 2020 Australian guideline for prevention, diagnosis and management of acute rheumatic fever and rheumatic heart disease \(3rd edition\)](#).

Syphilis (>1 month to 18 years):

- 50,000 units/kg given IM (to a maximum of 2.4 million units) as a single dose.⁽⁹⁻¹¹⁾
- Early latent syphilis requires a single dose, for late latent syphilis, 3 doses given at one week intervals is required. Contact Infectious Diseases for advice.^(9, 10)

Dosing in Overweight and Obese Children: Dose based on measured body weight

Renal impairment:

- Excretion of benzathine benzylpenicillin is delayed in renal impairment and it should be used with caution in patients requiring repeat dosing. There are no recommendations regarding dose reduction in renal impairment.^(2, 5)
- [eGFR calculator](#) (Google Chrome[®])

Hepatic impairment:

- No dosage adjustment is necessary in hepatic impairment.⁽¹⁰⁾

RECONSTITUTION & ADMINISTRATION

Benzathine benzylpenicillin may be administered with lidocaine. It is reported to significantly reduce pain during injection and in the first 24 hours after injection. ⁽⁸⁾

- Benzathine benzylpenicillin must only be administered via intramuscular injection into the mid-lateral aspect of the thigh (preferred in children) or upper, outer quadrant of the buttock.⁽³⁾
- It should be administered at a slow, steady rate preferably over 2-3 minutes to avoid blockage of the needle and to minimise pain.⁽⁴⁾ The injection site should be rotated for subsequent doses.⁽⁴⁾
- After insertion of the needle, aspiration is recommended and the barrel should be observed for any blood or discolouration. If there is any discolouration, the needle should be withdrawn

and the syringe discarded.⁽⁵⁾

- Stop injection immediately if there is severe pain at the injection site.⁽⁴⁾

The pain of administration can be reduced by;

- Allowing the alcohol from the alcohol swab to dry before injection
- Applying pressure with thumb for 10 seconds before injection
- Warming the syringe to room temperature immediately prior to the injection
- Using a 21 gauge needle.^(4, 8)

Administering Benzathine Benzylpenicillin with Lidocaine⁽⁸⁾:

Equipment:

- Pre-filled Benzathine Benzylpenicillin syringe
- 3 mL syringe
- 2 drawing-up needles
- 21G needle

Preparation:

1. Attach a drawing-up needle to a 3 mL syringe.
 2. Draw the required contents of Benzathine Benzylpenicillin from the pre-filled syringe into the 3mL syringe (2.3 mL for 1,200,000-unit dose and 1.2 mL for 600,000-unit dose).
 3. Using a new needle, draw up 0.5 mL of lidocaine 1% into the tip of the 3mL syringe.
 4. Avoid mixing to keep the lidocaine in the tip of the syringe.
 5. Push plunger up carefully to remove any air in the syringe.
 6. Remove the drawing-up needle.
 7. Attach IM needle (e.g. 21 gauge) to the syringe to administer injection.
- Note: Lidocaine is contraindicated in people with a known hypersensitivity to local anaesthetics of the amide type; second or first degree heart block.⁽⁸⁾

COMPATIBILITY (LIST IS NOT EXHAUSTIVE)

- Not applicable: Benzathine benzylpenicillin must only be administered via intramuscular injection.^(1, 4)

MONITORING

- In patients being treated for syphilis and other spirochete infections monitor for Jarisch-Herxheimer reaction (fever, chills, headache, hypotension and flare-up of lesions lasting for 12-24 hours). Consideration should be given to the use of prednisolone to minimise the likelihood of this in patients where this could be dangerous (i.e. cardiovascular syphilis or neurosyphilis).⁽¹⁾

ADVERSE EFFECTS

Caution: Inadvertent intravascular administration may result in neuromuscular damage, seizures, cardiac arrest and/or severe, and potentially permanent, neurovascular damage. CNS effects include anxiety, agitation, fear of death and hallucinations.^(1, 5, 10)

Common: pain and inflammation at the injection site, rash, urticaria, skin eruptions (most commonly maculopapular), nausea, diarrhoea, fever, fatigue, Jarisch-Herxheimer reaction (fever, chills, headache, hypotension and flare-up of lesions due to the release of pyrogens from the organism at the time of first administration e.g. syphilis).^(1, 3, 12)

Rare: *Clostridium difficile*-associated disease, anaphylaxis or other immediate hypersensitivity reactions, black tongue, electrolyte disturbances, neurotoxicity with high doses (including drowsiness, hallucinations, coma and seizures), blood dyscrasias, bleeding.^(1, 3)

STORAGE

- Store between 2-8°C. Refrigerate, do not freeze.⁽³⁾
- Benzathine benzylpenicillin may be stored below 30°C for a single period of up to 2 months prior to expiry.⁽³⁾ The date the product is placed outside of refrigerated storage and stored below 30°C should be written in the space provided on the carton.

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 **Benzathine Benzylpenicillin**. Any variations to the doses recommended should be clarified with the prescriber prior to administration

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File Path:	W:\Paediatrics\PMH\ChAMP\Monographs\FINALISED\00 Current version 00		
Document Owner:	Head of Department – Infectious Diseases		
Reviewer / Team:	Children’s Antimicrobial Management Program Pharmacist		
Date First Issued:	January 2015	Last Reviewed:	April 2021
Amendment Dates:	April 2020, June 2020, March 2021	Next Review Date:	April 2024
Approved by:	Medication Safety Committee	Date:	April 2021
Endorsed by:	Drugs and Therapeutics Committee	Date:	April 2021
Standards Applicable:	NSQHS Standards:  NSMHS: N/A Child Safe Standards: N/A		

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