

Louth: Antimicrobial Guidelines - Louth Hospitals: Antimicrobial Guidelines: Neonatal - ■BenzATHINE benzylpenicillin IM

Neonatal - BenzATHINE benzylpenicillin "1,200,000" IM

Tall Man lettering has been used to differentiate benzaTHINE benzylpenicillin and BENZYLpenicillin.

BenzATHINE benzylpenicillin is a prolonged release penicillin antibiotic used for the treatment of infections related to maternal syphilis serology reactive and confirmed positive [1,2].

MEDICATION SAFETY ISSUES

- A fatal neonatal medication error has been reported after confusion between BENZYLpenicillin and benzATHINE benzylpenicillin [3]. A series of errors led to the IV administration of benzaTHINE benzylpenicillin which should only be administered IM. Inadvertent IV administration has resulted in thrombosis, severe neurovascular damage, cardiac arrest and death [4]. **DO NOT GIVE INTRAVENOUSLY.**
- It is essential to use the correct needle size when reconstituting and administering this product to reduce the risk of the patient not receiving the full dose [1].
- Avoid concomitant use with BCG vaccine [5].

USES

Used for the treatment of congenital syphilis in infants during the first month of life [2,6].

PRESENTATION

Benzetacil® "1,200,000" powder for solution for Intramuscular injection.

1,200,000 units is equivalent to 900mg of benzATHINE benzylpenicillin.

DOSAGE

Neonatal: Asymptomatic congenital syphilis: Intramuscular 50,000 units/kg as a single dose [2,5].

BenzATHINE benzylpenicillin 50,000 units/kg = 37.5 mg/kg [2].

RECONSTITUTION

The reconstituted suspension must be used immediately.

Using a needle size of 20G (available in NICU), reconstitute the Benzetacil® 1,200,000 unit vial with 3mL of the solvent provided to give 1,200,000 units in 3mL (400,000 units per mL).

ADMINISTRATION

The injection should be reconstituted **immediately** before use. The needle may become blocked if injection is not made at a slow, steady rate due to high concentration of suspended material in the product [6].

Administer the correct dose using the reconstituted solution **immediately** via the **intramuscular route using a 20G needle**. Using a smaller diameter needle may lead to blockages and failed injection attempts. Avoid injection into or near an artery or nerve.

Paracetamol for pain relief should be given prior to administration. Oral sucrose should be given for comfort throughout treatment as required.

SAMPLE CALCULATION

Case: 3.28 kg baby with asymptomatic congenital syphilis.

Dose: 50,000 units per kg = $50,000 \times 3.28 = 164,000$ units.

When reconstituted, **benzaTHINE** benzylpenicillin contains 1,200,000 units in 3mL.

Dose =

What you want X Volume it is in

What you have got

= $\frac{164,000 \text{ units}}{3\text{mL}}$

1,200,000 units

= 0.41mL

STORAGE

Use immediately once reconstituted.

MONITORING

BenzATHINE benzylpenicillin is renally excreted. In young infants and patients with renal impairment, excretion is prolonged [6].

ADVERSE EFFECTS

Hypersensitivity reactions may occur [1,4].

REFERENCES

1. [Benzetacil Patient Information Leaflet S.A. Laboratorio Reig Jofre, Editor.](#)
2. [The Rainbow Clinic 2015, Preventing Perinatal Transmission: A Practical Guide to the antenatal and perinatal management of HIV, Hepatitis B, Hepatitis C, Herpes Simplex & Syphilis, Our Lady's Children's Hospital, Crumlin and The Children's University Hospital, Temple Street, Dublin.](#)
3. Institute for Safe Medication Practices, *A case riddled with latent and active failures*. ISMP Medication Safety Alert!, 1998(February 11): p. URL:http://www.ismp.org/newsletters/acutecare/articles/19980211_2.asp?ptr=y. Accessed: 23rd April 2014.
4. Health, W.K. UpToDate clinical decision support resource, Penicillin G Benzathine (Intramuscular) Pediatric drug information. 2020; Available from: <http://www.uptodate.com>. Accessed 17/11/2020.
5. [Takemoto Carol, e.a., Pediatric and Neonatal dosage handbook 18 ed, ed. Lexicomp. 2011-2012.](#)
6. [Reuters, T., Neofax A manual of drugs used in neonatal care. Vol. 24. 2011.](#)

Summary of Changes from Previous Versions

Date	Change
Feb 2021: Rev. No. 1	<p>Updated based on Rotunda BenzATHINE benzylpenicillin Monograph Nov 2018. Changes to OLOL monograph:</p> <ul style="list-style-type: none">• Title of monograph changed from "BenzATHINE penicillin" to "BenzATHINE benzylpenicillin"• OLOL monograph reworded as required to align with Rotunda monograph• Brief introduction reworded to align with Rotunda monograph• Benzetacil® 1,200,000 units stocked in OLOL compared to multiple preparations in Rotunda – adjustments throughout the monograph as required.• Dosage: 50,000 units/kg = 37.5mg/kg is already included in OLOL monograph since 2015.• Reconstitution: Added that 1,200,000 units in 3mL = 400,000 units per mL.• Administration: Added that paracetamol and oral sucrose may be given at the time of administration as per Rotunda. Addition of images of administration as per Rotunda.• Sample calculation format in OLOL monograph (same as 2015 version) is different to sample calculation format in Rotunda.• References updated.
Apr 2015	<p>This is the first version of this guideline. It is based on the Rotunda Hospital Neonatal Monograph for Benzathine penicillin, Doc. No. 1, Revision No. 0, date of issue 10/11/14.</p> <p>Changes in OLOL monograph compared to the Rotunda monograph:</p> <ul style="list-style-type: none">• Benzetacil® 1,200,000 units stocked in OLOL compared to 2,400,000 units in Rotunda – adjustments throughout the monograph as required.• Brief intro section for benzathine penicillin simplified.• Dosage: added that 50,000 units/kg = 37.5mg/kg [2].• Sample calculation format amended.