DESCRIPTION	Benzathine penicillin (also known as benzathine benzylpenicillin, BPG) is a long-acting, intramuscular injection. It interferes with bacterial cell wall synthesis by binding to penicillin binding proteins resulting in cell lysis.[1] Benzathine penicillin is mainly active against Gram positive organisms and is inactivated by beta-lactamases. It 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 primary treatment of impetigo or pharyngitis.
ChAMP INDICATIONS AND RESTRICTIONS	**IM: Category A: Unrestricted** This is not a restricted agent. Follow standard ChAMP guidelines where appropriate.
FORMULATIONS	900mg/2.3mL in aqueous solution, pre-filled syringe for IM injection
DOSAGE	The doses listed below fall within the standard range. Higher doses may be prescribed for certain situations. This should be in consultation with Infectious Diseases or Microbiology consultants. **Intramuscular Injection:** **Presumed *Streptococcus pyogenes* (group A streptococcus) tonsillitis or pharyngitis:** < 20kg: 450mg as a single IM dose ≥ 20kg: 900mg as a single IM dose[2] **Rheumatic fever:** • Acute episode: < 20kg: 450mg as a single IM dose ≥ 20kg: 900mg as a single IM dose[2,3] • Secondary Prevention: < 20kg: 450mg as an IM injection every 3 to 4 weeks ≥ 20kg: 900mg as an IM injection every 3 to 4 weeks[2,3] **Neonates:** Not routinely used in neonates, contact Infectious Disease or Microbiology consultants for advice
DOSAGE ADJUSTMENT	No dosage adjustment is necessary in renal impairment.[3]
RECONSTITUTION	Not applicable
ADMINISTRATION	Benzathine penicillin should only be administered via intramuscular injection into the midlateral aspect of the thigh (preferred) or upper, outer quadrant of the buttock.[2,4] It should be administered at a slow, steady rate to avoid blockage of the needle and to minimise pain.[5,9] The injection site should be altered for repeat doses.[6] 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 If there is any discolouration, the needle should be withdrawn and the syringe discarded. Dosage delivery should be discontinued if there is severe pain at the injection site or for infants or young children, there are signs and symptoms of severe pain.[5,6] If part dosing of a syringe is required, the concentration is 442mg/mL, however, this is only approximate, as the syringe is not graduated.[1,2,6] The pain of administration can be reduced by massaging the muscle or injecting the viscous formula slowly. Other pain reduction measures are discussed in: The Australian guideline for prevention, diagnosis and management of acute rheumatic fever and rheumatic heart disease (2nd edition) [9]

MONITORING	Haematological and renal function including electrolytes should be conducted during extended therapy, especially during high dose therapy.[4,7]
ADVERSE EFFECTS	Inadvertent intravascular administration may result in cardiac arrest[8] and/or severe neurovascular damage.[1,7] CNS effects include anxiety, agitation, fear of death and hallucinations. These reactions usually resolve in less than half an hour, but may persist for up to 24 hours.[1] **Common:** pain and inflammation at the injection site, rash, urticaria, skin eruptions (most commonly maculopapular rash) nausea, vomiting, eosinophilia, fatigue, fever, Jarisch-Herxheimer reaction (fever, chills, headache, hypotension due to the release of pyrogens from the organisms e.g. syphilis).[1,5,7] **Rare:** *Clostridium difficile*-associated disease, anaphylaxis or other hypersensitivity reactions, neuropathy, agitation, hallucinations (with inadvertent IV administration), renal failure (acute interstitial nephritis), airway oedema, haemolytic anaemia, thrombocytopenia.[5,7]
COMPATIBLE FLUIDS	Not applicable – should only be administered via intramuscular injection.[1,6]
PRECAUTIONS	Benzathine penicillin is contraindicated in patients with a history of severe allergy to a penicillin antibiotic. Care should also be taken with cephalosporins and carbapenems as cross reactivity may occur between penicillins, cephalosporins and carbapenems.[1,6] Care should be taken with the IM administration to avoid IV or intra-arterial administration or injection in or near major peripheral nerves or blood vessels due to the risk of neurovascular damage.[4,6]
COMMENTS	900mg of benzathine penicillin is equivalent to 1.2 million units.[1]

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

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