

INTRODUCTION

To prevent ARF recurrence and to avoid or minimise RHD, secondary prophylaxis with penicillin is required to stop infections with Group A Streptococcal (GAS) bacteria.

This is most commonly given as an intramuscular injection called benzathine penicillin G (BPG)*. It is the only strategy shown to be clinically effective but only if it is given within every 28 days. Every day past the 28 days leaves the patient at risk of another Strep infection and another episode of ARF.

This treatment is usually required for at least 10 years. This can be stressful and inconvenient, and the injections can be painful.

If we want patients to come back for this regular ongoing treatment, it is important to identify any hurdles the patient might experience and to develop strategies to overcome them.

TREATMENT

Receiving secondary prophylaxis on time, every time, is the best safeguard against a recurrence of ARF. Regular treatment has also been shown to reverse early signs of heart valve damage. The most effective prophylaxis is treatment with a long-acting penicillin. BPG injections can be given before the 28 day due date. It is important that the interval between injections does not exceed 28 days.

IM INJECTIONS SITES AND METHODS

There are three main intramuscular injection sites for volumes of around 2ml and more. The choice of injection site depends on; the clinician's discretion and experience; the patient's preference; the patient's age and weight and your workplace clinical practice policy.

- **DORSOGLUTEAL (DG)** - or Upper Outer Quadrant (UOQ) of the gluteus maximus

CAUTION - Injections into the dorsogluteal muscle have been associated with sciatic nerve injury. Therefore, care must be taken to identify the site correctly.

- **VENTROGLUTEAL (VG)** - Gluteus Medius Muscle

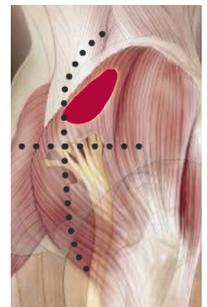
The VG site is defined in some nursing literature to be an option for IM injection delivery, for volumes up to 4-5 ml. When compared to the DG site, the VG site contains a greater thickness of muscle, a narrower layer of fat, and is relatively free of large nerves and blood vessels which can reduce the potential for significant injury or inadvertent injection into subcutaneous or fat tissue.

- **VASTUS LATERALIS (VL)** - Upper Outer Thigh Muscle

The vastus lateralis, or outer middle third of the thigh, is often the site of choice for the IM injections of infants and young children. Here the muscle is well developed and there are no major blood vessels or nerves underlying it.

Dorsogluteal injection method

1. Place the patient in a prone (face down) position, or lying on side. Some patients may prefer standing up.
2. The correct injection site is in the Upper Outer Quadrant. This can be identified in two ways:
 - i. Divide the buttock into four quadrants, select the outer quadrant and inject into this area.
 - ii. Draw an imaginary diagonal line, from the posterior superior iliac spine to the greater trochanter. In the middle of the line, go up and out.



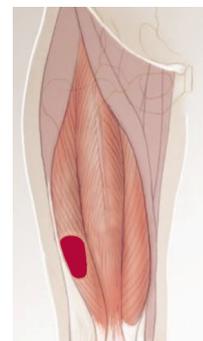
Ventrogluteal injection method

1. Place the patient ideally in a side-lying position.
2. Using your right hand on the patient's left hip; or left hand on right hip.
3. With the palm of your hand, locate the greater trochanter of the femur.
4. Place your index finger towards the front or anterior superior iliac spine, and fan the middle finger as far along the iliac crest as you can reach. The thumb should always be pointed toward the front of the leg.
5. The injection site is in the middle of the triangle between the middle and index fingers.
6. Remove your fingers prior to inserting the needle.



Vastus lateralis injection method

1. Place the patient in a supine (on back) or sitting position.
2. Place one hand on patient's thigh against greater trochanter, the other hand against the lateral femoral condyle near the knee.
3. Visualise a rectangle between the hands across the thigh.
4. The correct injection site is the middle third of the anterolateral thigh.



REDUCING PAIN, STRESS AND INCONVENIENCE

Minimising pain and stress remains very important all through the treatment period but it is in particular so for the very first injections. Take your time and promote a calm environment, especially with a new patient.

Reducing pain - pre injection

- Encourage oral pain relief such as paracetamol or ibuprofen, approximately 30 minutes prior to the injection
- Topical anaesthetic, use according to product information leaflet
- Distraction; depending on age; i.e. a bubble blower, picture book, electronic gadgets, ask about patient's sport / hobbies, play a video or music
- Prepare injection outside of view of the patient
- Immediately prior to injection remove BPG syringe from fridge and warm to room temperature by rolling the syringe between warm hands
- Apply pressure on chosen site immediately prior to injection, for approximately 30 seconds
- Apply an ice pack to help numb area
- Gently tap the injection site immediately prior to insertion of needle
- Encourage relaxation of muscles

Reducing pain - administration

- Allow alcohol from the swab to dry
- Inject slowly over 2 or 3 minutes

Reducing pain - post injection

- Encourage gentle movement or massage of muscle
- Use a cold pack or heat pack (as preferred)
- Encourage pain relief at home, such as paracetamol or ibuprofen

Reducing stress and inconvenience

- Feeling cared for and nurtured, and having a sense of belonging to a health service. Feeling valued may even be more significant than feeling no pain
- Document the patient's preference in relation to pain relief and chosen injection site
- Moving patients quickly and respectfully through the injection procedure; avoid anxious waiting times
- Provide privacy
- Allocate health staff of the same gender
- Allocate the same health professional at each visit
- Ensure BPG is prescribed and issued as a complete pack of 10 pre-filled syringes
- Store the patient's BPG in the health facility's fridge
- Schedule dedicated injection clinics / days; providing regularity and peer support for the patients with ARF and RHD
- Understand and address the reason(s) why patients do not attend the clinic regularly, for example
 - Personal transport problems; organise or provide transport
 - Distance to the health service; investigate Outreach Service
- Recall for injection from the end of the 3rd week after their previous injection so that the next injection is given no more than four weeks, or 28 days, later
- A BPG chart can assist with recall and keeping track of the BPG prophylaxis given
- Patient's own reminder methods; e.g. the reminder app, calendar or alarm function on a mobile phone, or reminder card
- Provide ample and regular education and involve the patient's family and support group; "Education is a patient's right and a healthcare provider's responsibility"

The information contained in this document was developed to be used in conjunction with the free 'Administering Bicillin' e-learning module available on the [RHD Australia website](https://www.rhdaustralia.com.au).

** The only supplier of BPG in Australia is Pfizer, 'Bicillin' is the trade name of BPG. These two terms are often used interchangeably in Australia. Mixing Bicillin with an anaesthetic solution and decanting into a larger syringe poses an infection risk and is not endorsed by the manufacturer Pfizer.*