STANDARD PROTOCOLS

INTRAMUSCULAR INJECTIONS

AIM

- The correct site selection and medication administration to adults by the intramuscular route.

BACKGROUND

Intramuscular injections (IMI) administer medications deep into the muscle tissues.\(^1\)\(^,\)\(^2\) This enables fast absorption\(^1\) and systemic action of potentially large doses (up to 5mL) dependent on the muscular site chosen.\(^2\)\(^,\)\(^3\) Usually IMI’s have a slower onset compared with intravenous injections.\(^4\)
KEY POINTS

1. All medication administration shall comply with the following KEMH Pharmacy Guidelines: Medication Safety:
   - Administration of Medications
   - Administration of Schedule 4 & 8 Medications: Schedule 4 Prescription Only Medication Administration
   - Administration of Schedule 4 & 8 Medications: Schedule 8 Controlled Medications Administration

2. Additional medication information available from:
   - MIMS Online via the WNHS Library
   - Australian Injectable Drugs Handbook

3. The following patients may not be suitable for IM injection. Patients with:
   - clotting abnormalities\(^5\) e.g. thrombocytopaenia
   - neutropaenia
   - anticoagulant / thrombolytic therapy.\(^5\) Liaise with the RMO before giving IM injections to these patients.

4. IMI may also be contraindicated in immunocompromised patients, and those with occlusive vascular disease, oedema, shock, myocardial infarction, and/or moderate/severe acute illness as these conditions impair peripheral absorption.\(^5\)

5. Potential complications can include\(^2\):
   - Neuropathy, peripheral nerve injuries and sciatic nerve damage (may result in paralysis, palsy, fibrosis, abscess, tissue necrosis, gangrene and contracture of the muscles)
   - Haematoma formation, persistent nodules, and bleeding
   - Local irritation
   - Pain
   - Infection
   - Arterial punctures.

6. Do not administer the IMI if the site is:
   - Inflamed, irritated, infected, painful, bruised\(^1\) or oedematous\(^6\)
   - Contains moles, birthmarks, abrasions,\(^1\) scar tissue or other lesions\(^6,7\).

7. The injection site is critically important because the medication effect can be enhanced or diminished depending on the site of injection.

8. Topical anaesthetic cream (e.g. EMLA) can be offered and applied >1 hour before the procedure if required.\(^1\)

9. In women with a BMI of 30 or more particular consideration should be given to factors which may impact on the adequacy of the injection, including the site of administration and the length of needle used. The deltoid or anterolateral thigh is the preferred site. The buttocks should be avoided.
SELECTING THE PREFERRED INJECTION SITE

Consider:
- Purpose of the injection
- Volume to be administered
- Body size/mass
- Age and muscle condition (atrophied, sore or inflamed)
- Medical diagnosis

Injections (IM) may be given in the following sites:
- **Ventoogluteal** (the preferred site when possible)
- Deltoid
- Dorsogluteal
- Rectus femoris
- Vastus lateralis.

**VENTROGLUTEAL: THIS SITE SHOULD BE USED WHENEVER POSSIBLE.**
- This site has the greatest thickness of the gluteal muscle and lacks major nerves and blood vessels, thereby minimising potential complications. It is most commonly used for antibiotics, anti-emetics, deep IM and Z-track injections.
- Up to 2.5mL can be injected safely in adults.
- This site reduces the chance of subcutaneous administration as it has the most consistent depth of adipose tissue, whilst also being able to absorb larger volumes.
- Locate the ventrogluteal site by placing the palm of the hand against the greater trochanter of the femur and the index finger on the anterior superior iliac spine of the pelvis.
- Extend the middle finger posteriorly along the iliac crest.
- The V between the two fingers is the site for injection.

![Ventoogluteal Site](image)
DELTOID

- The maximum volume to be administered is <2mL in adults. This is the most accessible site, however due to the size of this area, the number and volume of injections that can be administered are limited.\(^1\),\(^2\)
- Locate the deltoid muscle- ask the patient to relax their arm at the side and flex the elbow.\(^1\)
- Palpate the lower edge of the acromion process. This forms a triangular base which lines up with the midpoint of the lateral aspect of the upper arm.\(^1\)
- The apex of the triangle is located four finger widths below the acromion process.\(^1\)
- The centre of the triangle forms the deltoid injection site, which is approximately 2.5 -5cm (or three finger widths) below the acromion process.\(^1\)

DORSOGLUTEAL

- Up to 4mL can be injected in adults.\(^6\) This site has the lowest drug absorption rate,\(^6\) and is not advised for IMI due to potential complications with the sciatic nerve and gluteal arteries.\(^2\),\(^6\),\(^7\)
- Be aware the muscle mass may have atrophied in older people, non ambulant patients and emaciated patients,\(^2\),\(^6\) or of excess subcutaneous tissue preventing injection reaching muscle.\(^6\)
- Locate the Dorsogluteal muscle in the upper quadrant of the buttock approximately 5-8cm below the iliac crest. Palpate the posterosuperior iliac spine and the greater trochanter of the femur. An imaginary line is drawn between the two anatomical landmarks.
- The injection site is above and lateral to the line.
RECTUS FEMORIS

- The rectus femoris muscle is used primarily for anti-emetics, opioids, sedatives, injections in oil, deep intramuscular and Z-track injections. 1-5mL can be injected in adults. 6
- This site is rarely used by midwives/nurses on adults, but is used on infants, and is easily accessible for self-administration of injections. 2, 6 (see diagram below)

Rectus Femoris & Vastus Lateralis Sites

VASTUS LATERALIS

- Up to 5mL can be injected safely in adults. 3, 6
- This site should be used when the size of the ventrogluteal muscle is insufficient, such as infant <7 months and in patients unable to walk, 2, 7 and as a better option in obese women. 6
- The vastus lateralis is located on the anterior lateral aspect of the thigh and extends from a handbreadth above the knee to a handbreadth below the greater trochanter of the femur.
- The middle third of the muscle is the best site for injection (see diagram above).

EQUIPMENT

- Syringe
- Drawing up needle
- Injection needle (choice affected by medication volume, body mass & site) 2
- Equipment tray for needles
- Alcohol wipe
- Sharps container
- Gauze swab or cotton ball (tape optional)
PROCEDURE (FOR ADULTS)

1. Check the medication and the patient’s medication chart/order with a second nurse/midwife, including the six rights of medication administration. See KEMH Clinical Guideline: Pharmacy: Medication Safety: Administration of Medications.

2. Prepare equipment and draw up the medication for administration. Discard the drawing up needle into the sharps container, and apply an appropriate length administration needle.

3. Explain the procedure to the patient, gain verbal consent, reconfirm no allergies/contraindications and re-check the medication order and the patient’s details at the bedside.

4. Close the curtain or door to maintain the patient’s privacy.

5. Select the preferred site of injection.

6. Position the patient comfortably exposing the chosen site. Encourage the patient to relax the muscle.

7. Perform hand hygiene and don gloves.

8. Clean the chosen site, from centre of site outward in a circular action, with isopropyl 70% swab (alcohol swab) and allow to air dry.

9. Ensure the site is completely dry before performing the injection. Remove the needle cap and hold the syringe in the dominant hand.

10. Stretch the skin tautly prior to injection. Applying pressure to the injection site prior to injection may reduce discomfort.

11. Insert the needle at a 72-90° angle (45° in a very thin patient). Leave 0.5cm of the needle showing.

12. Withdraw the plunger to observe for blood.

13. If blood is visible:

   - Withdraw the needle completely,
   - Explain what has happened to the patient,
   - Dispose of the needle and syringe in the sharps container, and
   - Draw up new solution and repeat the procedure in a different site.

14. If no blood is visible in the syringe, slowly depress the plunger until the full dose of medication is administered.

15. Withdraw the needle and release the skin.

16. Apply gentle pressure with a dry swab/gauze.

17. Do not re-cap the used needle. Dispose of needle and syringe in sharps container.

18. Assist the patient to reposition as required. Perform hand hygiene.

19. Sign the medication chart (MR810, MR810.04 or relevant medication chart) as soon as the medication is given.

20. Ask the patient to report symptoms of acute pain, burning, tingling or numbness at the injection site. This should be reported to the patient’s medical team, with review as required.

REFERENCES (STANDARDS)


National Standards – 4- Medication Safety
Legislation – *Poisons Act 1964*
Related Policies
Other related documents – KEMH Clinical Guidelines, Pharmacy, Medication Safety:
- Administration of Medications
- Administration of Schedule 4 & 8 Medications: Schedule 4 Prescription Only Medication Administration
- Administration of Schedule 4 & 8 Medications: Schedule 8 Controlled Medications Administration

RESPONSIBILITY
Policy Sponsor Nursing & Midwifery Director OGCCU
Initial Endorsement June 2010
Last Reviewed March 2016
Last Amended
Review date March 2019

Do not keep printed versions of guidelines as currency of information cannot be guaranteed.
Access the current version from the WNHS website.
© Department of Health Western Australia 2016