Department of Health Government of Nunavut	NURSING POLICY, PROCEDURE AND PROTOCOLS		
	Community Health Nursing		
TITLE:		**SECTION:**	**POLICY NUMBER:**
Administering Medications – IM Injection		Pharmacy	09-007-00
EFFECTIVE DATE:	**REVIEW DUE:**	**REPLACES NUMBER:**	**NUMBER OF PAGES:**
February 10, 2018	February 2021		6
APPLIES TO:			
Community Health Nurses			

POLICY:

Intramuscular injections (IM) are given using the Z-track method unless otherwise ordered.

Due to the potential for complications from IM injections, the IM route should be used only when there is no alternative route of administration or the IM route will provide the best clinical outcome (e.g. treating anaphylaxis). If the practitioner has a choice of IM, IV or SC, use the IV or SC choice.

IM injections, for the purpose of immunizations, shall be administered according to the Canadian Immunization Guide.

DEFINITIONS:

Intramuscular Injection (IM): injection into a muscle determined by the injection site being used. The depth to the muscle varies depending on the depth of the subcutaneous tissue.

Subcutaneous injection (SC): injection into the layer of connective tissue below the skin. The depth of the subcutaneous layer varies.

Z-track method: a method of displacing subcutaneous tissue over muscular tissue to interrupt the tract of the IM injection. This recommended technique promotes improved distribution and absorption of the medication, and prevents complications such as seepage, bleeding, discoloration, lumps and indurations.

Ventrogluteal site (VG): Targets the gluteus medius muscle in the buttock and is the preferred site for IM injections.

Deltoid site: Targets the deltoid muscle below the Acromion process in the upper arm.

Dorsogluteal site (DG): Targets the Gluteus maximus muscle in the upper outer quadrant of the buttock. However, the muscle that is located using the quadrant method for the dorsogluteal site is usually the gluteus medius, which is the target muscle of the ventrogluteal site.

Vastus Lateralis site (VL): Targets the muscle below the greater trochanter and within the upper lateral quadrant of the thigh. The vastus lateralis muscle is one of the four quadriceps muscles.

Rectus Femoris site (RF): Targets the rectus femorus muscle of the thigh and is not approved for use as injections are usually painful.

PRINCIPLES:

Some medications are very irritating to subcutaneous tissue and should be given by the IM route. Some medications are not as effective when given by the SC route and need to be given IM.

Potential complications of an IM injection include abscess, cellulitis, tissue necrosis, granuloma, muscle fibrosis and contracture, intravascular injection, hematoma, and injury to blood vessels, bones and peripheral nerves.

Review "Parenteral Medication pages 573-627, Potter and Perry (2010) *Clinical Nursing Skills & Techniques 7th edition*" for further steps in ensuring safe IM medication administration.

RELATED POLICIES, GUIDELINES AND LEGISLATION:

Policy 09-004-00 Medication Administration – Nursing practice
Guideline 09-004-01 Guidelines for Administering Medications
Policy 09-006-00 Administering or Dispensing Medications – Documentation
Pharmacy & Therapeutics Committee. *Nunavut Formulary*
Potter & Perry (2010). *Clinical Nursing Skills & Techniques 7th edition*, Mosby.

Considerations

1. Explore the possibility of administering the medication via an alternate route (e.g. S.C.) due to the potential complications of IM injections.

2. Confirm the need for an IM injection with the physician if the client is on anticoagulants due to the risk of developing a hematoma.

3. Rotate sites for multiple injections. The medication being given may limit the choice of sites available.

4. Maximum volume of an IM injection is 3 ml, except for the deltoid site where the maximum does not exceed 2 ml (1 ml or less is preferred) where the client's muscle mass is adequately developed.

5. Use a solution as concentrated as possible to minimize the volume of the injection, and as small a syringe as possible to hold the medication.

6. Completely expose the injection site to assess the target injection area and accurately locate landmarks and boundaries.

7. Use a new needle to administer the injection when a needle is used to draw up the medication. This prevents medication from adhering to the needle causing irritation of the tissue.

8. Do not give Meperidine (Demerol) in the Vastus Lateralis Site.

9. For IM immunizations:

    a. Use vastus lateralis in infants only.

    b. Use the deltoid site for all children over the age of one (1) unless the muscle mass is assessed to be too small.

    c. Refer to the Canadian Immunization Guide for further details.

Antiseptic use

Contact time includes scrubbing and drying time.

Alcohol Swab or Chlorhexidine 2% in alcohol 70%: contact time 30 seconds

Equipment for Z-Track IM Injections

- 1 vial adaptor for multi dose vials of medication with 1 blunt cannula or
- 1 vial access cannula or
- 1 Blunt fill needle
- 1 needle--length and gauge as determined by client assessment
    - 22 g 11/2" (0.7mm x 40mm)
    - 23 g 1" (0.6mm x 25mm)
    - 25 g 1" (mm x 25mm)
- 1 syringe (no larger than needed for the volume of medication)
- 1 alcohol swab
- 1 pair of non-sterile gloves
- 1 Sterile Gauze 5cm x 5cm or band aid
- 1 strip of non-allergic tape

Procedure for Z-Track IM Injection

1. Assess the client to determine the most appropriate site for the injection and the correct needle length for the injection.

    a) Check documentation to determine the sites used for previous injections in order to rotate sites (if applicable).
    b) Damaged or scarred tissue, poor muscle mass, accessibility and mobility are factors that may prevent the use of a particular site.
    c) Thin or cachectic clients must be assessed carefully to determine a muscle with adequate mass for the injection.
    d) Determine if the client has a preference for the site used.
    e) To determine needle length:
        i. by pinch test:
            - For the deltoid and quadriceps muscles, grasp the muscle between thumb and forefinger. The needle length is ½ the distance between the thumb and forefinger plus 0.6 cm to 1.2 cm extra to penetrate the muscle.
            - For the gluteus muscle, pinch skin and subcutaneous tissue between fingers. Depth to the muscle is ½ the distance between fingers. Add 0.6 cm to 1.2 cm to penetrate the muscle.

        ii. by weight for the gluteus muscle
            - 31-40 Kg use a needle 1 inch long
            - 40-90 Kg use a needle 1½ -3 inches long
            - 90 Kg and more use a needle 4-6 inches long

2. Perform hand hygiene. Prepare the medication. Use a vial adapter and blunt cannula for multi dose vials, a vial access cannula for single dose vials and a blunt fill needle for ampoules (if blunt cannula are not available, a needle may be used to draw up medications).

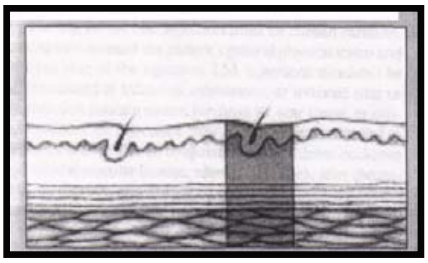
3. Attach the appropriate size and length of needle. If a needle was used to draw up the medication change the needle. Expel any air bubbles from the syringe making sure that the medication does not contact the outside of the needle.

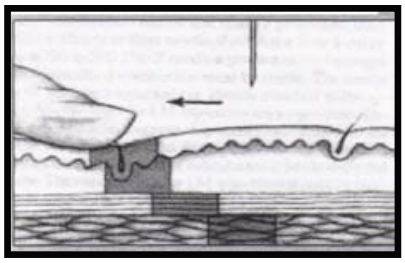
4. Perform hand hygiene. Put on gloves. Position client so the target muscle is relaxed.

5. Landmark and cleanse the injection site with an alcohol swab. Prepare the skin using a circular motion from the center outward cleaning an area at least 7cm in diameter. Allow the alcohol to dry. Contact time for cleansing and air drying the skin is 30 seconds.

6. Landmark again to ensure proper injection site.

7. With the non-dominant hand, displace the skin laterally by pulling about 2-3 cm away from the injection site.





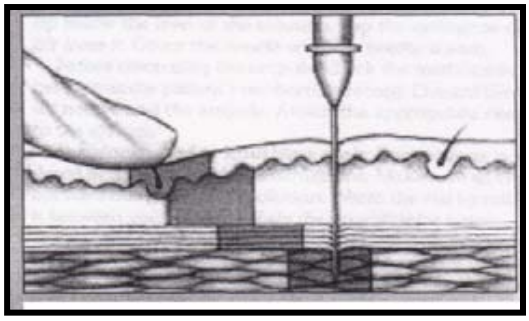
8. Insert the needle at a 90 degree angle using a firm, quick motion.

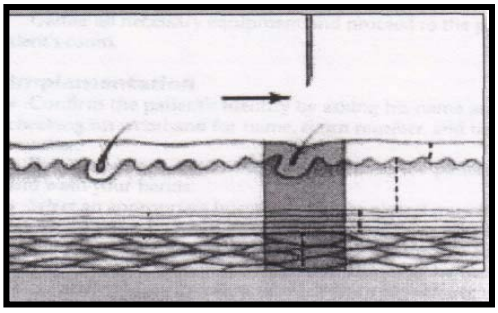
9. Aspirate for 5-10 seconds to assess for blood return. If blood is aspirated, do not inject the medication, discard the medication and prepare a new syringe starting the procedure back at step 2.

10. If there is no blood return after aspirating, hold the position firmly and inject the medication slowly (about 10 seconds per ml) to allow distribution within the muscle. If the client complains of excessive pain, severe burning, or nerve pain stop the injection.

11. Wait 10 seconds before withdrawing the needle to ensure the medication is dispersed and prevent backfilling into the injection tract.

12. Withdraw the needle quickly and release the skin.





13. Apply firm pressure to the site using the sterile gauze or alcohol swab. Apply a band aid if needed. Do not massage the site after a Z-track injection to prevent medication from seeping back along the zigzag path into the subcutaneous tissue causing irritation and to prevent trauma to the site.

14. Assess the client's response to the medication in about 15-30 minutes as appropriate.

15. Reassess the injection site if the client complains of acute pain, burning, numbness or tingling at the site that may indicate injury to underlying nerves or bones. Notify the physician.

Paediatric Considerations:

- Assistance is often required for proper positioning and holding of the child during IM injections. Distractions, such as blowing bubbles and pressure at the injection site before giving the injection, can help alleviate the child's anxiety.

- If possible, apply EMLA cream on injection site at least 2 ½ hours before IM injection to decrease pain.

Documentation:

Record the date, time, dose, route of medication and site of injection. Also document any reactions.

Client Education:

1. Assess client knowledge of the medication and educate as necessary.
2. Encourage client to ambulate if permitted.
3. Following the injection the client may apply a warm compress for 20 minutes to facilitate absorption of the medication.
4. Instruct client not to massage the site of the injection.
5. For clients having multiple injections, encourage the client to keep a diary of injected sites.

References:

Potter, P.A.: & Perry, A.G. *(2010). Clinical Nursing Skills & Techniques*, 7th edition, Mosby.

The Ottawa Hospital Parenteral Administration Manual

Nocoll, L.and Hesbym A. (2002). Intramuscular injection: An Integrative Research Review and Guideline for Evidence-Based Practice. *Applied Nursing Research*, *16*(2). pp149-162.

Rodger, M. A. & King, L. (2000). Drawing up and Administering Intramuscular Injections: A review of the literature. *Journal of Advanced Nursing*, 31(3) pp 574-582.

Nisbet, A. C. (2006). Intramuscular Gluteal Injections in the Increasingly Obese Population: Retrospective study. *BMJ* , 332. Pp 637- 638.

Approved by:	Effective Date:
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