

Subcutaneous and Intramuscular Injections

PURPOSE

To create a temporary intramuscular or subcutaneous access for administration of specified medications.

POLICY

1. RNs and LPNs may administer or instruct patient/caregiver to administer intramuscular or subcutaneous injections in the alternative care setting with a physician's order.
2. Aseptic technique shall be maintained during the procedure. Gloves shall be worn during the procedure to minimize exposure to body fluid drainage.
3. Syringes or needles with sharps engineered safety protection devices (built-in safety features) must be used unless contraindicated for patient care or appropriate device is not available.
4. Areas of tenderness, hardness, scarring, swelling, redness or itching are not appropriate for injection.
5. Sites shall be rotated (within an anatomic region to decrease absorption variation rates) if a series of injections are to be given. If appropriate, a chart shall be given to the patient/caregiver to indicate injection sites used to ensure rotation of sites.
6. A container for disposing of needles shall be placed in the home.
7. Intramuscular Injection Site Selection

Factors to consider when selecting a site for an IM injection include:

- a. The amount and character of the medication injected
- b. The amount and general condition of the muscle mass
- c. The frequency or number of injections to be given during the course of treatment
- d. The type of medication being given
- e. Factors that may impede access to or cause contamination of the site
- f. A child or elderly person's ability to assume the required position safely

Appropriate injection sites for children depend on the factors listed in 7a and include:

- a. Vastus lateralis muscle – anterolateral aspect of the thigh – infants (most often used in infants and children who are not yet walking)
- b. Ventrogluteal – between the greater trochanter of the femur and the iliac crest (free of important nerves and vessels with easy landmarks)

Subcutaneous and Intramuscular Injections

8. Volume of injection:
 - a. Adults
 - No more than 2ml should be given in the deltoid muscle (either subcutaneous or IM)
 - No more than 5ml should be given in the gluteal muscle
 - b. Infants
 - No more than 0.5ml subcutaneously into any one site
 - No more than 1.0ml IM into any site
 - c. Children
 - No more than 0.5ml subcutaneously into any one site
 - No more than 2.0ml IM into any one site
 - Avoid the posterior gluteal area in children who have been walking for less than one year
 - d. Adolescents
 - No more than 2ml subcutaneously into any one site (will depend on weight and build)
 - No more than 3.0ml IM into any one site

9. Z-track method of intramuscular injection shall be used to inject irritating medications to avoid seepage into surrounding tissues. The Z-track technique is:
 - a. Using the non-dominant hand, pull the skin and subcutaneous tissue about an inch to one side or down, whichever is easier.
 - b. Use the thumb and index finger of the non-dominant hand to remove the needle cover. Continue to pull the skin with the remaining fingers.
 - c. Grip the barrel of the syringe with the last 3 fingers of the dominant hand. Keeping firm hold on the skin, insert the needle and aspirate. If no blood returns, inject the drug into the underlying muscle using the thumb to push the plunger with slow, steady pressure (10 seconds per milliliter).
 - d. Some drug manufacturers suggest holding the needle in place prior to withdrawal, follow manufacturer's guidelines. (For example, iron dextran).
 - e. Do not massage the site. Massage can force the medication into the subcutaneous tissue, causing irritation.

EQUIPMENT

Liquid soap and sanitizing gel

Gloves

Alcohol swabs or other skin disinfectant product (Chloraprep®, IV Prep®)

Syringe and 2 needles (safety-engineered) of appropriate size:

- a. 26-30 gauge needle is used for subcutaneous injections

Subcutaneous and Intramuscular Injections

- b. 20-23 gauge needle, 1½ to 2 inches, for IM gluteal injections
- c. 22-25 gauge needle, 5/8 to 1 inch, for deltoid IM injections
- d. Pediatrics (see Pediatric Protocol)
 - 26-30 gauge needle, ½ inch for subcutaneous injections
 - 20-23 gauge needle, 5/8 to 1 inch length in Vastus Lateralis and Deltoid
 - 20-23 gauge needle, ½ to 1 inch length in Ventrogluteal
 - 20-23 gauge needle, ½ to 1½ inch length in Dorsogluteal (use only if no other sites exist)

Sharps container as appropriate

Band-Aid® (if applicable)

PROCEDURE

1. Explain procedure to patient.
2. Wash hands thoroughly with soap and water and dry with clean paper towel.
3. Assemble supplies on a clean surface.
4. Prepare medication, if not using a pre-filled syringe. Change needles between drawing up and injecting medications when giving an intramuscular injection. If drawing up from a glass ampule, use a filter needle. Follow manufacturer's guidelines when using protected needle systems.
5. Put on gloves.
6. Subcutaneous injection:
 - a. Select the site. Use any site with loose connective tissue. Usual sites are the outer aspects of the thighs, backs of the upper arms and subcutaneous tissue of the lower abdomen. The abdomen is not an appropriate site for the pediatric patient. If a series of subcutaneous injections is to be given, have a plan for anatomical site rotation.
 - b. Cleanse the site with an alcohol swab, starting at the center and working out in a circular motion.
 - c. Grasp the tissue with the non-dominant hand elevating it to separate it from the muscle tissue.

Subcutaneous and Intramuscular Injections

- d. With the dominant hand, insert the needle smoothly and quickly at a 30-90 degree angle, determined by the amount of subcutaneous tissue.
- e. Inject the medication. Withdraw the needle and apply gentle pressure to the site with the alcohol swab.
7. Intramuscular injection:
 - a. Cleanse the site with an alcohol swab starting at the center and working out in a circular motion.
 - b. Remove the needle cover and remove all but 0.2ml of air from the syringe (air clears the needle of medication and prevents leakage into subcutaneous tissue by reducing tracking of medication along the needle).
 - c. Using the non-dominant hand, spread the skin at the site unless the patient is very thin; then it may be necessary to hold the skin in a cushion-like manner.
 - d. Insert the needle smoothly and quickly at a 90-degree angle. (In a pediatric patient, insert the needle at a 45-degree angle toward the knee).
 - e. Pull back on the plunger (if applicable) to determine if the needle has entered a blood vessel. If blood appears in the syringe, remove the needle and select a new site and prepare a new syringe.
 - f. If no blood has returned, inject the solution slowly.
 - g. Withdraw the needle and apply gentle pressure to the site with an alcohol swab.
8. Dispose of the needle and syringe in the sharps container as appropriate.
9. Document the procedure in the patient's medical record, including the date, time, medication, dose, route and site.

RESPONSIBILITY

The Clinical Specialist has the responsibility for approval of, compliance with, and revisions to this policy.

MODIFICATION/REVISION

This policy is subject to modification or revision in part or its entirety to reflect changes in conditions subsequent to the effective date of this policy.

Subcutaneous and Intramuscular Injections

REFERENCES

1. Infusion Nursing Standards of Practice – Revised 2016; Journal of Infusion Nursing, Supplement to January/February 2016, Volume 39, Number 1S.
2. Infusion Nursing: An Evidence-Based Approach, Third Edition edited by Mary Alexander, Ann Corrigan, Lisa Gorski, Judy Hankins, and Roxanne Perucca.
3. INS (Infusion Nurses Society) Policies and Procedures for Infusion Nursing, 3rd Edition.