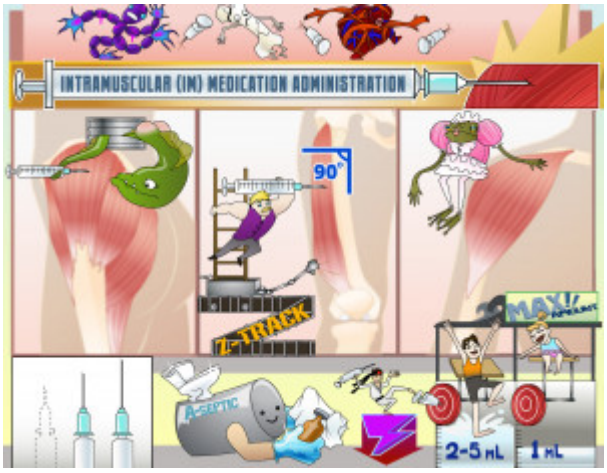
Intramuscular Medication (IM) Administration

Compared to subcutaneous tissue, muscular tissue has more vascularity, allowing for a faster rate of absorption via intramuscular (IM) injections. It is important to always confirm the route of administration for any medication, particularly for IM injections given the specific restrictions, risks and adverse effects possible from the improper administration. While vaccines are the most common IM administrations, it is important to note that other routes are considered safer due to the documented risks associated with IM injections.



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Risks

Injury to Nerves, Bone, and Blood Vessels

Injured Nerve, Bone, and Blood Vessels

Using correct landmarks on the patient to locate the injection site can reduce risks that are associated with intramuscular (IM) injections. Some medications can cause nerve and blood vessel damage resulting in numbness, pain, bleeding, or swelling. Bone damage can also occur from inserting the needle too deeply and hitting bone. This can cause severe pain and places the patient at risk for breaking the needle tip off inside the muscle.

Sites

Deltoid

Doll-toad

The deltoid, derived from a term meaning “triangular”, is the thick, three-segment muscle covering the shoulder joint. The deltoid forms an inverted triangle with its base comprised of the acromion and its tip located at the deltoid tuberosity, approximately midway down the humerus bone, where distal insertion of the deltoid muscle occurs. The deltoid intramuscular (IM) injection site is located in the middle third of this triangle, about 1 to 2 inches below the acromion process. This site should only be used for small medication volumes (less than 2 mL).

Vastus Lateralis

Vested-muscle-man on Ladder

This intramuscular (IM) injection site is located approximately midway down the anterolateral aspect of the thigh and is the preferred site when giving injections to infants and children less than 3 years of age. Softly grasp the middle portion of the thigh before and during the injection to ensure the medication enters muscular tissue.

Ventrogluteal

Vent-glute-eel

The gluteus medius is the safest and most ideal injection site when administering high volume medication to every age group. To locate the landmark, position the patient in a side-lying or supine position. Placing your palm on the greater trochanter of the femur, place your middle finger on the iliac crest and index finger on the anterior superior iliac spine (ASIS). The center of the V-shaped triangle formed by your extended fingers helps to identify this injection site.

Nursing Considerations

Selection of Needle Length

Selection of Needle Lengths

Needle size will depend on the patient’s anatomy, amount and placement of adipose tissue, muscularity, and a variety of other factors. A child or thin adult may need a 1-inch needle while an obese individual may require a 3-inch needle. The gauge of the needle may depend on facility policies and supply, but it is recommended to administer injections with the smallest gauge needle of the appropriate length.

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Aseptic Technique for Drawing Up

A-septic-tank using Aseptic Techniques for Drawing Up

In addition to wearing gloves and disinfecting the injection site, it is important to always clean the ampule, vial or other medication container with alcohol before inserting the needle or drawing up the medication. When withdrawing medication from a glass ampule, remember to use a filter needle to prevent any glass shards or debris from entering the medication, being certain to replace the filter needle with the correct injection needle prior to administration.

Z-Track

Z-track pulling on skin

The Z-track injection method is an important and preferred technique when administering intramuscular (IM) injections. After cleaning the injection site, place your nondominant hand below the site and pull the skin inferior and laterally to move the overlying skin and subcutaneous tissue about an inch. After needle insertion at a 90-degree angle, inject the medication, withdraw the needle, and release the skin. By manipulating the skin in this way prior to insertion, superficial dermis irritation is reduced and the medication becomes trapped inside muscle tissue instead of leaking into surrounding subcutaneous tissue.

90 Degree Angle

90 Degree Angle

Intramuscular (IM) injections are always injected at a 90-degree angle to insure that the needle is sufficiently penetrating through subcutaneous tissue and into muscle.

Max Amount (2-5 mL Adult, 1 mL Child)

Max-amount-game for an Adult and Child

In adults, muscle size, composition and maturity allows for 2 to 5 mL of medication administration in an intramuscular (IM) injection. However, larger volumes increase the likelihood of improper absorption. It is recommended that children and infants receive no more than 1 mL of medication via IM injection. Important to note that Vastus lateralis is the injection site most likely to allow for a max volume of 5 mL.

Techniques to Reduce Pain

Using Technique to Reduce Pain-bolt

In an effort to reduce pain associated with intramuscular (IM) injections, remember to inject the medication in a single, fluid, steadily progressive motion. Ask the patient to relax their muscle prior to inserting the needle. Once inserted, remembering to use the Z-track method, avoid moving the needle around inside the muscle tissue during injection. After injection, ask the patient to avoid rubbing the site, as this can cause more irritation inside the muscle. Hesitation, jerking, interrupted advancement of the needle to the level needed to reach muscle, excessive or inadequate skin pulling for the Z-track technique, improper landmark identification, larger needle gauge selection than necessary, excessive force or depth during insertion and improper angle of needle insertion are all common pitfalls to be avoided to improve patient tolerance of IM injections.

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