Parenteral Medications

Parenteral drug administration is any non-oral administration, generally meaning an injection route. Parenteral drugs are administered by several routes. Intravenous (IV), is fast-acting and carries the greatest risk of all parenteral routes. Intramuscular (IM) is also absorbed fast, and common injections sites include the deltoid, vastus lateralis, ventrogluteal and dorsogluteal muscles. Common medications administered IM include vaccines, such as the flu shot and epinephrine. There should be no more than 3 mL of medication administered into an IM injection site, and for the deltoid, the limit is 1 mL. The subcutaneous injection (SC) route is absorbed slower, and the most common injection sites are the abdomen (about two inches away from the navel) the arm (the back or side of the upper arm) or the front of the thigh. Commonly administered SC medications are insulin and hormones. Medications administered by subcutaneous injection include drugs that can be given in small volumes (1 mL, but up to 2 mL is safe). Intradermal injections (ID) are administered into the dermis, below the epidermis. Medication administered into the dermis takes the longest to absorb of all the parenteral routes. The most common sites for this injection is the back of the forearm, and the upper back, under the scapula. These injections are given for diagnostic purposes, such as tuberculosis or allergy testing.The dosage for ID injections is usually under 0.5 mL.



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Intravenous (IV)

Fast-Acting
Fast-rabbit
The intravenous (IV) route of administration can deliver a fast-acting effect, which is vital in emergency situations. IV medications are also useful for pain management and are more easily absorbed compared to the other route of parenteral administration.

Greatest Risk
Great-White Risk
The IV route carries the greatest risk of any of the parenteral routes for drug administration. By administering directly into the systemic circulation, the drug is instantaneously distributed to its sites of action. If medications are given too quickly or incorrectly, significant damage may occur. Reactions can occur, as well as the possibility of damage to the surrounding tissues. It is important to remember that IV medications should never be administered in the same IV line that is infusing blood, blood products, heparin IV, insulin IV, or parenteral nutrition solutions.

Intramuscular (IM)

Common Injections Sites: Deltoid, Vastus Lateralis, Ventrogluteal, and Dorsogluteal Muscles
Deltoid, Vastus Lateralis, Ventrogluteal, and Dorsogluteal Muscles
Common injection sites include the deltoid muscle in the arm, the vastus lateralis muscle of the thigh, the ventrogluteal muscle of the hip (which is the safest site for adults and children over the age of seven months, as it's deep and not close to any major blood vessels and nerve), and the dorsogluteal muscles of the buttocks, which used to be the commonly selected site, but is not recommended as it has risk for injury because of proximity to the sciatic nerve.

Absorbed Fast
Absorbent-sponge and Fast-rabbit
Intramuscular (IM) injections may be used instead of IV because some drugs are irritating to veins, and/or it may be used instead of oral administration because some drugs are destroyed by the digestive system when a drug is swallowed. The intramuscular injections are absorbed faster than subcutaneous injections, because muscle tissue has a greater blood supply, as well as being able to hold a larger volume of medication than subcutaneous tissue.

Vaccines and Epinephrine
Vaccine and Epi-pen
Common medications administered IM include vaccines, such as the flu shot. Epinephrine, which comes in an automated injector form (EpiPen) is intended to be administered via IM, but can be administered subcutaneously as well.

3 mL Limit
(3) Tree with Millionaire-liter-of-cola and Limit-sign
There should be no more than 3 mL of medication administered into an IM injection site, and for the deltoid, the limit is 1 mL.

Subcutaneous (SC)

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Common Injections Sites: Abdomen, Arm, and Thigh

Abdomen, Arm, and Thigh

The drug administration for an SC injection needs to be injected into the fatty tissue just below the skin. The most common injection sites are the abdomen (about two inches away from the navel) the arm (the back or side of the upper arm) or the front of the thigh.

Absorbed Slower

Absorbent-sponge and Slow-tortoise

Subcutaneous (SC or SubQ) means under the skin. With this type of medication administration is where a short needle is used to inject a drug into the tissue layer between the skin and the muscle. SC injections are absorbed more slowly than if injected into a vein, sometimes over a period of 24 hours. This type of administration may be used instead of oral administration because some drugs are destroyed by the digestive system when a drug is swallowed.

Insulin and Hormones

Insect-syringe and Harmonica

Commonly administered SC medications are insulin and hormones. It is important to note that the nurse should rotate administration sites when giving SC injections.

Small Volumes

Small Vial

Medications administered by subcutaneous injection include drugs that can be given in small volumes (1 mL, but up to 2 mL is safe).

Intradermal (ID)

Common Injection Sites: Back of Forearm and Upper Back

Back of Forearm and Upper Back

The most common sites for this injection is the back of the forearm, and the upper back, under the scapula.

Longest to Absorb

Long Sponge

Intradermal injections (ID) are administered into the dermis, below the epidermis. Medication administered into the dermis is absorbed slowly because of the limited blood supply of the skin, so of all the parenteral routes, it is the longest absorption time.

Tuberculosis and Allergy Testing

TB-TV and Allergy Alligator

These injections are given for diagnostic purposes, such as tuberculosis or allergy testing, and the reactions are easy to visualize.

Under 0.5 mL

(.5) Hand and Millionaire-liter-of-cola

The dosage for ID injections is usually under 0.5 mL. Aspiration is not needed for intradermal administration as the dermis is without vessels, relatively. Do not massage the area after an ID injection, as it may spread the solution to the subcutaneous tissue.

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