

# Parenteral medications essay sample



**ASSIGN  
BUSTER**

\*absorbed more quickly than oral meds

\*b/c injections are invasive; aseptic technique must be used! Injections:

1. Intradermally- ID

2. Intramuscularly- IM

3. Intravenously- IV

4. Subcutaneously- SubQ

1. Intradermal Injections(ID)- the administration of a drug into the dermal layer of the skin just beneath the epidermis.

\* Frequently used for allergy testing and tuberculosis (TB, aka PPD) screening.

\* Common Sites:

\* Inner lower arm

\* Upper chest

\* Back beneath the scapulae

\* Left arm is commonly used for TB screening and right for everything else

\* Small doses; max amount is 0.1 cc

\* Needle length: 3/8" - 1/2" ; gauge: 25-27

\* Most common length: 25 and gauge: 1/2"

\* Needle inserted at 5-15 degree angle

\* Just under skin; can still see needle under skin

\* Not whole shaft is inserted

\* Do not rub or scratch the injection because it can disperse deeper into the tissue or out thru the needle site.

2. Subcutaneous Injections(SubQ)- beneath the layers of the skin;  
hypodermic

\* Common sites:

\* Outer aspect of the upper arms

\* Anterior aspect of the thighs

\* Abdomen (umbilicus 1-2 inches away)

\* Scapular areas of the upper back

\* Upper ventrogluteal area

\* Upper dorsogluteal area

\* Upper arms and thighs are used b/c they usually have good blood circulation

\* Used for vaccines, insulin, and heparin

\* Things about insulin:

\* Orange is universal color

\* Uses insulin syringe

\* Typical meds to mix

\* Newer insulins can't be mixed, i. e. Lantus is never mixed

\* “ Clear to Cloudy” Method only on Regular and NPH

\* All syringes are based on 100 units (1cc)

\* Ensure at least one person who can inject in an emergency

\* Often refrigerated and one vial is used for many patients

\* If open new bottle, include time and date (must be used within 30 days)

\* Things about heparin

- \* Site is abdomen 2 inches away from umbilicus and above the level of iliac crest

- \* Uses tuberculin syringe

- \* Needle is 3/8" and #25 or #26 or smaller gauge

- \* Inserted at 90 degree angle

- \* DON'T aspirate or massage b/c cause damage to surrounding tissue and cause bleeding and ecchymoses (bruising); also hastens drug absorption \*

Small doses; max amount 1cc

- \* Needle length: 3/8" – 5/8" ; gauge: 25-30

- \* Most common length: 5/8" and gauge: 25

- \* Needle inserted at 45 degree angle

- \* NO aspiration!

- \* Needle length and size is based on pt's body mass, intended angle of insertion, and planned site. \* Rotate sites to minimize tissue damage, aid absorption, and avoid discomfort. Also to prevent lipoatrophy and lipohypertrophy \* Absorbed slowly; Produces sustained effect

3. Intramuscular Injections(IM)- injections into muscle tissue \* absorbed more quickly than Subcutaneous injections b/c of the greater blood supply to the body muscles \* larger fluid volume without discomfort

- \* several factors indicate length and gauge of needle to be used: muscle, solution type, adipose tissue covering muscle, age of client \* major consideration: away from large blood vessels, nerves, and bones \* Z-track technique recommended for all IM injections

\* Less painful and decreases leakage of irritating and discoloring(stain) meds into the SubQ tissue. \* Be sure to aspirate 0.5 mL air whenever using a Z-track \* Be sure to aspirate for blood to; if find blood withdraw and dispose of syringe then start over \* Pull skin over using side of hand

\* After give the meds, hold for 10 seconds to ensure all of the med is delivered \* Let go of skin as pull needle out

\* Common sites:

\* Ventrogluteal Site

\* Preferred site; safest site

\* Suitable for kids over 1 year and adults

\* In the gluteus medius muscle over the gluteus minimus

\* Back, prone, or Side lying position, with knee bent to chest

\* Right hand used for left leg, and left used for right when placing heel of hand on the greater trochanter

\* Vastus Lateralis Site

\* Recommended as the site of choice for IM injections for infants 1 year and younger

\* No major blood vessels or nerves so ok for poorly developed muscles of infants \* On the anterior lateral aspect of the thigh

\* Middle third of the muscle is the site

\* Dorsogluteal Site

\* Composed of the gluteal muscles of the buttocks

\* Should not be used for kids under 3 yrs unless has been walking for at least a year \* Avoid striking the sciatic nerve

- \* Least desirable site
- \* Deltoid Site
- \* Found on lateral aspect of upper arm
- \* Not often used b/c small muscle and close to the radial nerve and artery.
- \* Sometimes considered for adults b/c of rapid absorption \*

Max amount is 1 mL

- \* Recommended for hepatitis B vaccine
- \* Rectus Femoris Site
- \* Belongs to the quadriceps muscle group
- \* Only used occasionally
- \* Situated on the anterior aspect of the thigh
- \* Easy access for those who administer their own injections
- \* Easy access for those who administer their own injections Equipment:

## 1. Syringes

### a. They have three parts

- \* Tip: connects the needle
- \* Barrel: hollow part with the scale markings on it
- \* Plunger: the pusher inside the barrel

### b. Different types:

- \* Hypodermic syringe: comes in 2-, 2.5-, and 3- mL sizes
- \* the syringe usually has two scales marked on it: the minim and milliliter \*
- Insulin syringe: scale is specifically designed for insulin; a 100-unit calibrated scale intended for use with U-100 insulin. \* Only syringe that should be used to administer insulin \*
- Tuberculin syringe: a narrow syringe, calibrated in

tenths and hundredths of a milliliter (up to 1 mL) on one scale and in sixteenths of a minim (up to 1 minim) on the other scale. \* Originally designed to administer tuberculin

\* Useful in administering small or precise measurements

### c. Classification

\* Luer-Lok syringe: has a tip that requires the needle to be twisted onto it to avoid accidental removal of the needle \* Non Luer-Lok syringe: smooth graduated tip, and needles are slipped onto it,

\* avoid letting any unsterile object touch the tip or inside of the barrel, the shaft of the plunger, or the shaft or tip of the needle. 2. Needles:

a. They have three parts:

\* Hub: fits onto the syringe

\* Cannula or Shaft: attached to the hub

\* Bevel: slanted part at the tip of the needle ; always up when inserting b.

Characteristics of needles:

\* Slant or length of the bevel

\* Longer bevels provide sharpest needles and less discomfort \* Long bevels are commonly used for SubQ and IM injections \* Short bevels are used for ID and IV injections b/c long bevel can become occluded if it rests against the side of a blood vessel \* Length of the shaft

\* Appropriate length chosen by client's muscle development, weight and type of injection \* Most common length varies from ½ to 2 inches

\* Gauge(or diameter) of the shaft

\* Varies from #18-#28

\* The larger the gauge number, the smaller the diameter of the shaft \*

Smaller gauges produce less tissue damage but larger are required for

viscous meds c. Classification

\* Passive: the needle retracts immediately into the barrel after the injection \*

Active: the nurse manually pulls a sheath or guard over the needle after the

injection Locating the Sites:

### 1. Ventrogluteal Site:

\* Position: Laying on side with knee bent and raised toward head \* Use 21

gauge, 1 ½" needle and insert at 90 degree angle \* Find the greater

trochanter and place the heel of your hand on it with your fingers pointing

toward the patient's head (use the right hand for the left hip, and left hand

for right hip). \* Then place your index finger on the patient's Anterior

Superior Iliac Spine. \* Then stretch the middle finger dorsally palpating the

crest of the ileum. The triangle formed by the index finger, the middle finger,

and the crest is the site for injection.

### 2. Vastus Lateralis Site:

\* Position: lying on back or sitting

\* Use 21 gauge, 1 ½" needle and insert at 90 degree angle \* Find the greater

trochanter and place your palm below. \* Find the lateral femoral condyle

and place your other palm above. \* Move 1/3 in on each side.

\* Move 1/3 from top and bottom too.

\* The middle third if the site of injection.



### 3. Dorsogluteal Site:

- \* Position: Prone with toes pointed inward
- \* Use 21 gauge, 1 ½" needle and insert at 90 degree angle
- \* Find the greater trochanter by following the natural curvature of the buttocks. \* Palpate the Posterior Superior Iliac Spine and follow to the dimple in the lower back. \* Draw an imaginary line diagonally from the trochanter to the iliac spine. \* Then move lateral and superior just a bit for the injection site.

### 4. Deltoid Site:

- \* Position: sitting upright
- \* Use 23/25 gauge, 1" needle and insert 90 degree angle \* Locate the Acromion Process and place four fingers across arm with the first finger on the acromion process. \* Locate the Axilla and place your palm on it to form a triangle and that is the site of injection. Preparing Medications

1. Ampules: glass container usually designed to hold a single dose of a drug.

- \* Clear glass with a distinctive shape and a constricted neck \* Vary in size from 1 to 10 mL
  - \* Most have colored marks on necks, indicating where they are prescored for easy opening \* Files or gauze pads are used to open ampoules, and they now have plastic caps that open the ampule free of glass \* Once the ampule is open, and the fluid is aspirated into a syringe using a filtered needle to prevent aspiration of any glass
2. Vials: small glass bottle with a sealed rubber cap.

- \* Can be single dose or multidose
- \* Must be pierced with needle
- \* Air must be injected into vial before medication can be withdrawn otherwise, it leaves a vacuum that makes it difficult to withdraw
- \* Can be dispensed as a powder; a liquid (diluent) must be added before injected, also known as reconstitution; they usually have written instructions; commonly used diluents are sterile water or sterile saline; be sure to include date and time written on label when making reconstituted meds
- \* Must use a filter needle to prevent any rubber particles being aspirated

Skills:

#### 1. Preparing Meds from Ampules

- \* Check the MAR against the label (1) when it is taken from the cart, (2) before it is withdrawn, (3) and after withdrawing the medication
- \* Perform hand hygiene and observe other infection control procedures
- \* Prepare the med ampule for drug withdrawal by flicking the upper stem to bring the medication down. Then place a sterile gauze piece over the neck and break away from yourself and others and make sure to dispose in the sharps container.
- \* Withdraw the medication by placing the ampule on a flat surface and attaching a filter needle to the syringe to prevent glass particles from being aspirated. Then draw the medication by holding the ampule slightly on its side and remember not to let the needle tip or shaft touch the rim to keep it sterile. If just a single dose: Then dispose of the filter needle in the sharps container and replace it with a regular needle. Verify needle and gauge and placement before giving injection.

#### 2. Preparing Meds from Vials

- \* Check the MAR against the label (1) when it is taken from the cart, (2) before it is withdrawn, (3) and after withdrawing the medication
- \* Perform

hand hygiene and observe other infection control procedures \* Prepare the med vial for drug withdrawal by mixing the solution if necessary by rotating it btw the palms of the hands, NEVER shake b/c it may cause mixture to foam. Be sure to clean the rubber cap with an antiseptic wipe by rubbing in a circular motion for 30 seconds. \* Withdraw the medication by attaching a filter needle to the syringe to ensure no rubber particles are aspirated. Draw up the amount of air equal to the volume of the med order and carefully insert the needle into the upright vial, maintain the sterility of the needle.

This allows the med to be drawn out easier b/c negative pressure will not be created in the vial and remember to keep the bevel above medication to avoid contamination and making bubbles. \* Withdraw the prescribed amount by either holding the vial down and ensure the needle tip is below fluid level and avoid drawing up the last few drops to allow particulate matter to precipitate out of the solution to reduce chance of withdrawing foreign particles; OR invert the vial and ensure the needle tip is below the fluid level to prevent air from being drawn into the syringe. Remember to hold syringe at eye level and if necessary tap the syringe barrel to dislodge any air bubbles present. \* If just single dose; Then dispose of the filter needle in the sharps container and replace it with a regular needle. Verify needle and gauge and placement before giving injection. 3. Mixing Insulin

\* Check the MAR against the label (1) when it is taken from the cart, (2) before it is withdrawn, (3) and after withdrawing the medication \* Inject the amount of air into the NPH vial and withdraw the needle( There should be no insulin in the needle and the needle should not touch the insulin to ensure there is no cross contamination) \* Inject the amount of air into the Regular

vial and immediately withdraw the prescribed amount of units into the syringe. (ALWAYS withdraw from the Regular vial first to minimize the possibility of the Regular insulin becoming contaminated with the additional protein in the NPH) \* Reinsert the needle into the NPH vial and withdraw the prescribed amount of units into the syringe. (Be careful to only withdraw the amount ordered and not to create air bubbles b/c you can't return it back to the vial b/c you would dilute the NPH with the Regular. If you draw up an excess amount, discard the syringe and begin again. ) 4. Administering an ID injection for skin tests

\* Check the MAR against the label (1) when it is taken from the cart, (2) before it is withdrawn, (3) and after withdrawing the medication \* Perform hand hygiene and observe other infection control procedures \* Prepare the medication from the ampule or vial using above skills \* Prepare the client by introducing self and verify client's identity and explain the procedure to them. \* Explain that the med will produce a small wheal or bleb, which is a small raised area, like a blister. \* Provide for privacy

\* Select and clean the site (i. e. the forearm about a hand's width above the wrist and three or four fingerwidths below the antecubital space; avoid using inflamed, tender areas that have lesions) Put on gloves if policy and cleanse the skin by using a firm circular motion starting at the center and widening the circle outward and allow to dry thoroughly. \* Prepare the syringe for injection by removing the needle cap and expelling any bubbles present in the syringe. (Small bubbles that adhere to the plunger are ok b/c a small amount of air will not harm the tissues) grasp the syringe in your dominant hand close to the hub, holding it btw thumb and forefinger.

Hold the needle almost parallel to the skin [angle= 5-15 degrees] with the bevel of the needle up \* Insert the fluid with the non-dominant hand, pull the skin at the site until it is taut b/c it allows for easier entry of the needle and less discomfort for patient. Insert the needle tip just far enough to place the bevel thru the epidermis into the dermis. (The outline of bevel should be visible thru the skin surface). Inject the medication slowly to see the wheal form. Withdraw the needle quickly at the same angle and discard into sharps container. DO NOT massage the area b/c it can disperse the meds into the tissue or out thru the needle site. DO NOT recap the needle to prevent needle stick injuries. \* Document all relevant information (testing material given, the time, dosage, route, site, and nursing assessments) 5.

#### Administering a SubQ Injection

\* Check the MAR against the label (1) when it is taken from the cart, (2) before it is withdrawn, (3) and after withdrawing the medication \* Perform hand hygiene and observe other infection control procedures \* Prepare the medication from the ampule or vial using above skills \* Provide for privacy

\* Prepare the client by introducing self and verify client's identity and explain the procedure to them. Assist the client into a position in which the arm, leg, or abdomen can be relaxed to minimize discomfort. \* Select and clean the site (avoid using frequent, inflamed, swollen, tender areas that have lesions b/c these sites could hinder the absorption of the meds and increase likelihood of injury and discomfort) Put on gloves if policy and cleanse the skin by using a firm circular motion starting at the center and widening the circle outward about 5 cm (2 inches) and allow to dry thoroughly. Keep

antiseptic swab btw third and fourth fingers on non-dominant hand or just above area of injection for readily accessibility.

\* Prepare the syringe for injection by removing the cap and pulling it straight off as to not contaminate the needle. Dispose of needle cap \* Inject the meds by grasping the syringe in your dominant hand by holding it btw thumb and fingers. With palm facing to the side or upward of a 45 degree angle insertion or palm downward with a 90 degree angle insertion. Using the non-dominant hand, pinch the skin at the site and insert the needle with a firm steady push. Needle should be embedded within the skin for 5 seconds after insertion to ensure complete delivery of dose. \* Remove the needle smoothly while depressing the skin with your non-dominant hand to minimize discomfort when the needle is withdrawn. If bleeding occurs, apply pressure to the site with dry sterile gauze until it stops. \* Dispose of the supplies appropriately.

\* Document all relevant information (testing material given, the time, dosage, route, site, and nursing assessments) 6. Administering an IM Injection

\* Check the MAR against the label (1) when it is taken from the cart, (2) before it is withdrawn, (3) and after withdrawing the medication \* Perform hand hygiene and observe other infection control procedures \* Prepare the medication from the ampule or vial using above skills \* Provide for privacy

\* Prepare the client by introducing self and verify client's identity and explain the procedure to them. Assist the client into to a supine, lateral prone, , or sitting position. If the target site is the ventrogluteal site, have the pt in the

supine position with flex knees; in the lateral position, flex the upper leg, and prone position, toe in. \* Select, locate and clean the site. (avoid using frequent, inflamed, swollen, tender areas that have lesions) Put on gloves if policy and cleanse the skin by using a firm circular motion starting at the center and widening the circle outward about 5 cm (2 inches) and allow to dry thoroughly. Keep antiseptic swab btw third and fourth fingers on non-dominant hand or just above area of injection for readily accessibility.

\* Prepare the syringe for injection by removing the cap and pulling it straight off as to not contaminate the needle. Dispose of needle cap. Make sure no medication is left on needle as it can cause pain when it is tracked thru the SubQ tissue. \* Using a Z-Track; use the ulnar side of the non-dominant hand to pull the skin approximately 2.5 cm (1 inch) to the side. Holding the syringe btw the thumb and forefinger (like a pencil) pierce the skin quickly and smoothly at a 90 degree angle. Hold the barrel with non-dominant hand, and aspirate with your dominant hand for 5-10 seconds to look for blood. If blood appears, withdraw and dispose the syringe and begin again. If no blood, slowly (approx 10 sec/ mL) while holding steady to allow tissue expansion and absorption. After injection, wait 10 seconds to permit all the med to disperse into the muscle. \* Withdraw the needle and at the same time release hand. Discard the needle and dispose of other supplies. \* Document all relevant information (testing material given, the time, dosage, route, site, and nursing assessments)