



CHAPTER 35 ADMINISTERING INTRADERMAL, SUBCUTANEOUS, AND INTRAMUSCULAR INJECTIONS (WILLIAMS)

CHAPTER 2 (FORD)

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VNSG 2331



Objectives

Identify the principles for the safe and effective administration of intradermal, subcutaneous, and intramuscular injections.

List the routes used for administering parenteral medications and the advantages and disadvantages of each route for pediatric, adult, and older adult patients.

Describe how to aseptically and accurately withdraw, measure and/or combine the ordered dose of a medication from a vial or ampule.

Discuss reconstitution of a medication from a powder.

What is Parental?

Medication delivered...

- NOT via the gastrointestinal tract
- Requires use of syringe and needle
- Intravenous catheter

Introduces medication into the body tissues or fluids.

Must be sterile!



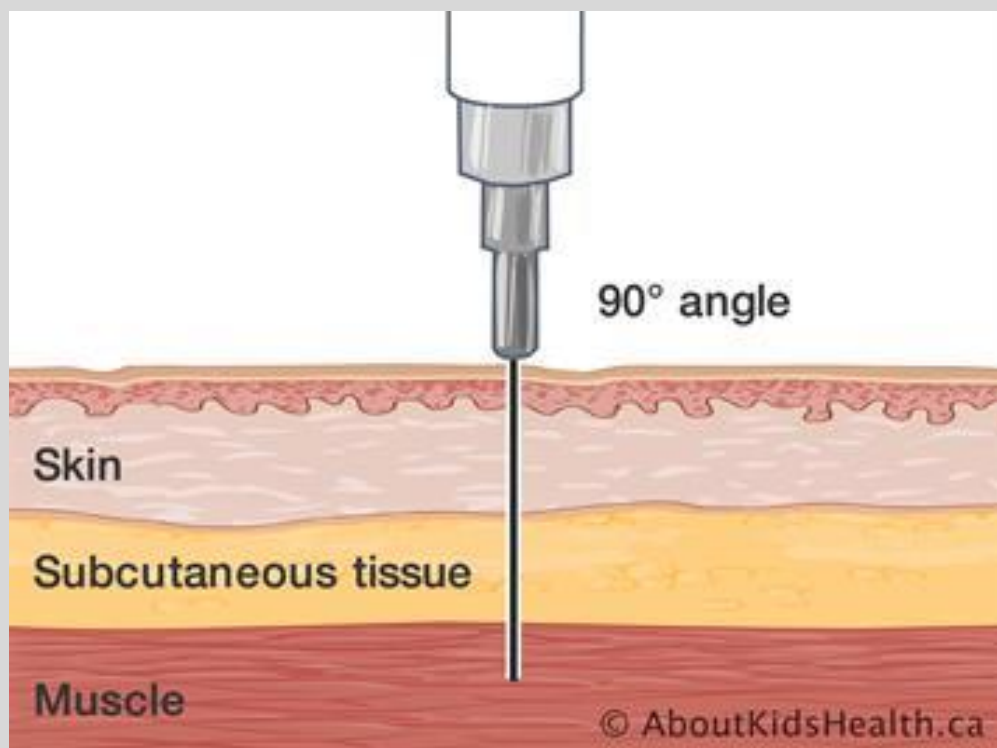
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Parental Injections

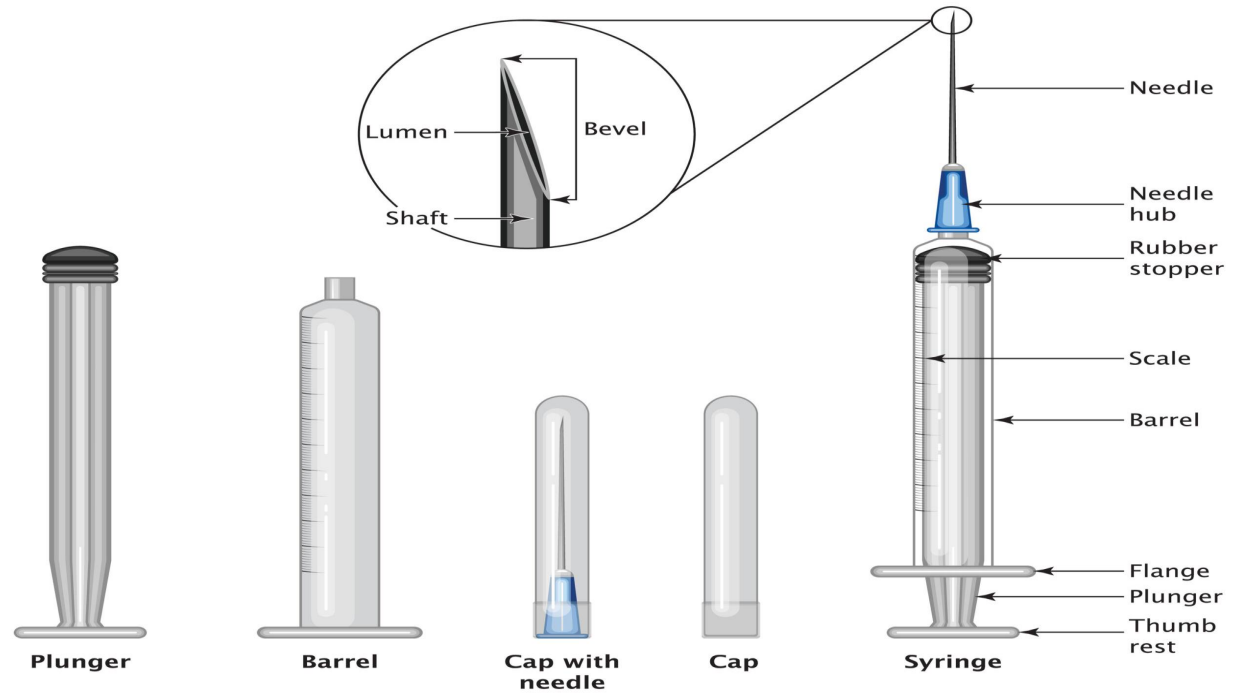
- Often necessary to inject medication into tissue.
- Injections cause pain.
- Make student nurses uncomfortable; causes patient discomfort.
- Students need to learn & practice this skill

Principles of Parenteral Injections

Select	Always:	Use	Select
<ul style="list-style-type: none">• Patient is NPO• Digestion counteracts absorption• Hasten action of drug	<ul style="list-style-type: none">• Ensure accurate dose• Select the correct site• Use sterile equipment	<ul style="list-style-type: none">• Sterile needles & syringes• Appropriate-length needle	<ul style="list-style-type: none">• Injection site carefully• Rotate sites• Site is<ul style="list-style-type: none">• Relatively free of hair• Lesions• Inflammation• Rashes• Moles• Tattoos• Freckles



Anatomy of a Syringe



ML or CC
in routine
syringes

0.5 ml



1 ml



1 ml



3 ml

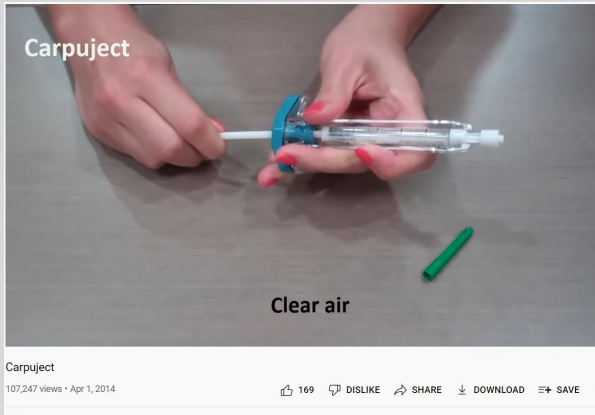


5 ml



One cc = one ml'





<https://www.youtube.com/watch?v=ICJYr-OVlrA>

14 gauge



Large

18 gauge



Medium

21 gauge



Small

Needle Gauges

- Available in sizes from 13 to 30 Gauges
- **Larger the number = the smaller the diameter**
- 25 - 27, 29 gauge = Intradermal injections
- 25 - 27 gauge = Subcutaneous injections
- 21 - 23 gauge = Intramuscular injections

Smaller or larger?

26 G versus 18 G?

20 G versus 24 G?

16 G versus 27 G?



Needle Length

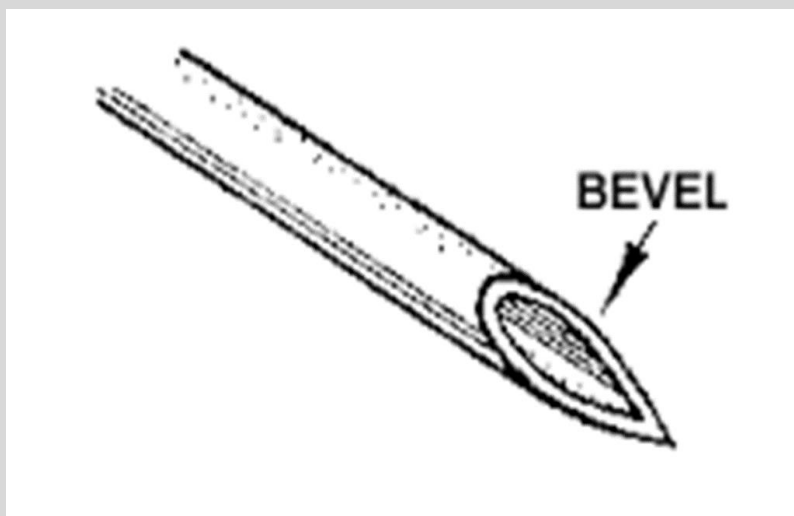
Dependent on
tissue to reach

5/8 to 1/2 inch:
intra dermal
and
subcutaneous

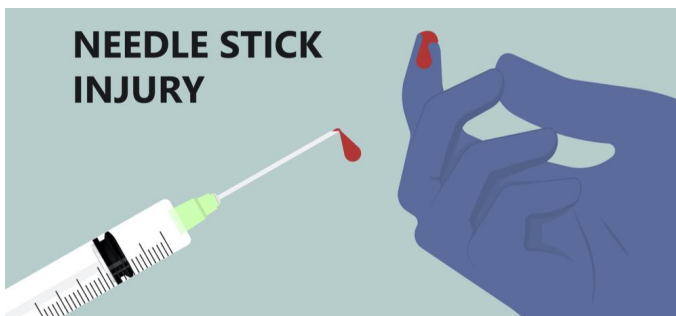
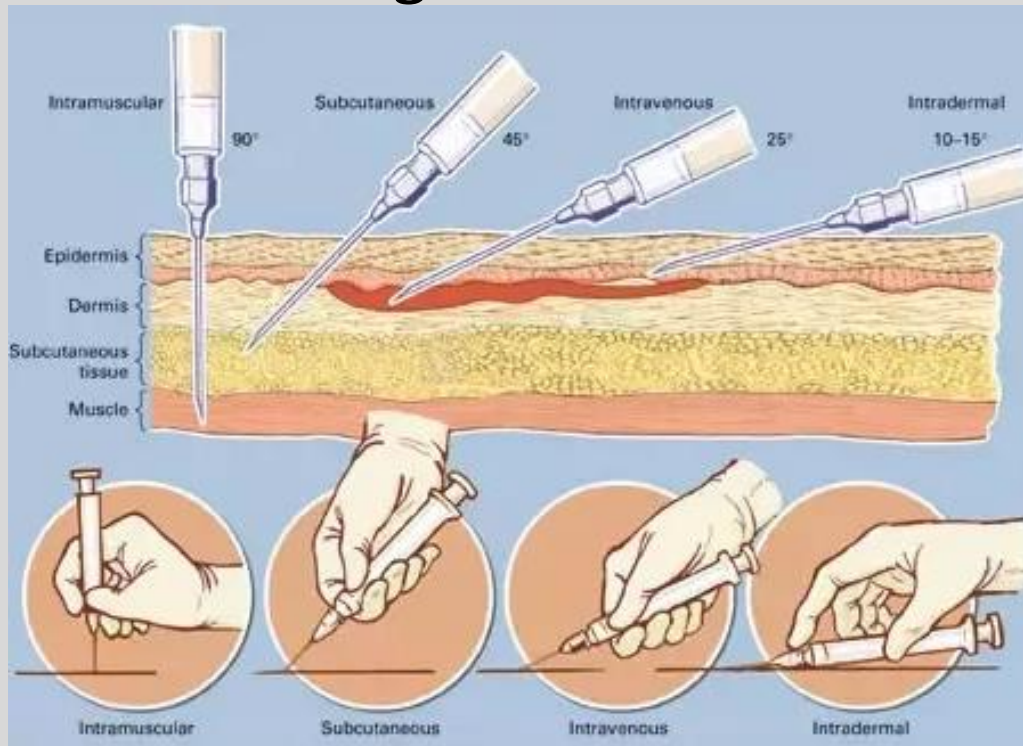
1 inch to 3
inches for
intramuscular



Bevel Up!!



Angle Matters!



Needle Sticks

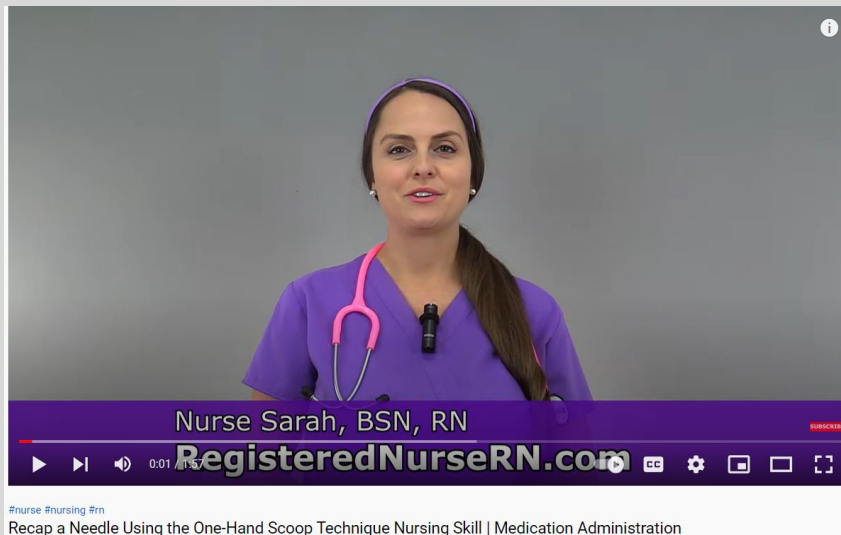
- HIV, Hepatitis B and C can be spread by a needle stick from an infected patient.
- Safety syringes are available and should be used
- Report all needle sticks
- **Immediately dispose of needles after use in Sharps Container!**



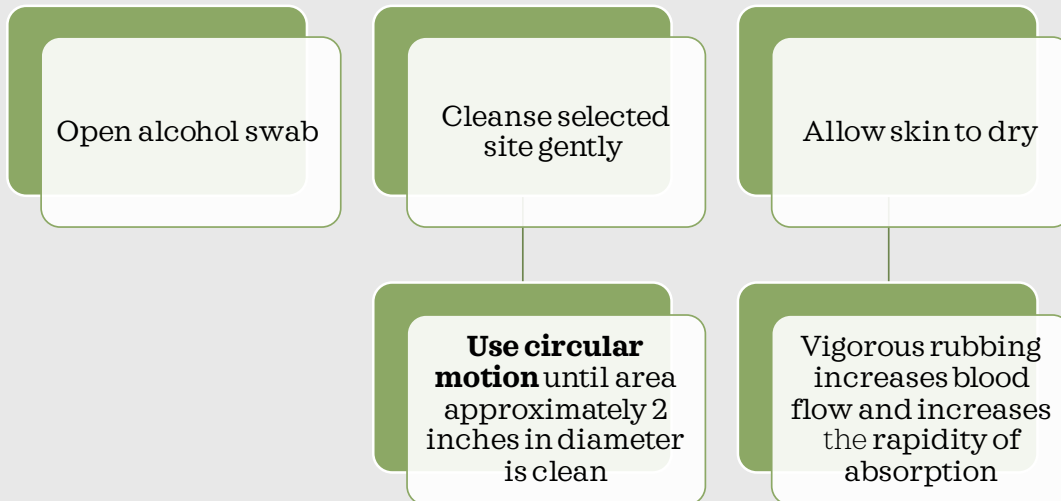
SAFETY-USE ONE-HAND TECHNIQUE FOR RECAPPING NEEDLES

One-Hand Recapping Needle Technique

- <https://www.youtube.com/watch?v=bEeAo2jCJjw>



Cleaning the Injection Site



Pulling Medication-Vial

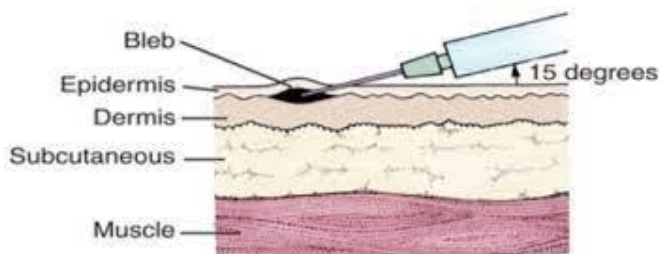
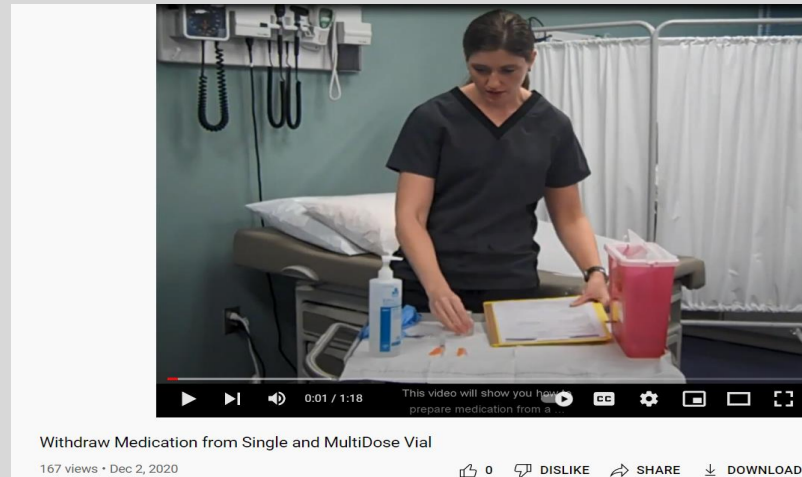


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- Small bottle with rubber stopper
- Attached by metal band
- Volume 1 to 50 ml
- May contain single use or multi-use medication
- **Always inject an amount of AIR into the vial equal to medication to be withdrawn**
- May be in powder form
 - Requires reconstitution
- Before mixing 2 medications in syringe
 - **ALWAYS CHECK FOR COMPATIBILITY**

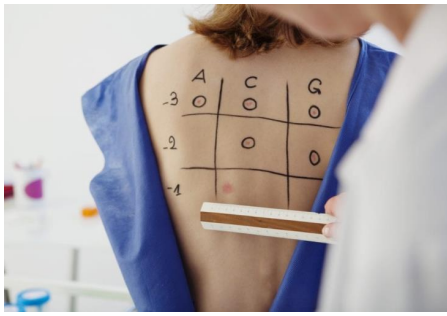
Withdrawing Medication from Vial

- <https://www.youtube.com/watch?v=rjTa2UHQons>



Route-Intradermal

- Med is deposited into the dermal layer
- Used for TB skin and allergy testing, plastic surgery
- **Forms a skin bleb or small bump**
- **Do NOT aspirate or massage area**
- **Produces small wheal (raised area)**
 - If wheal does not appear...good possibility drug entered subcutaneous tissue and test result is considered inaccurate

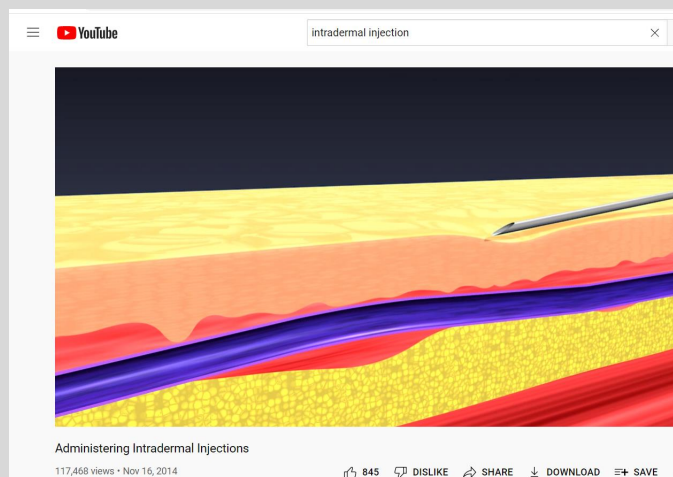


Intradermal

- **Volume**
 - 0.1-0.5 mL volume
- **Sites**
 - Inner part of forearm
 - Upper back
 - Avoid areas with
 - Hair
 - Moles
 - Scars
 - Pigmented skin
- **Syringe**
 - 1-ml syringe (Tuberculin)
 - 25, 27 gauge
 - 1/4 to 5/8 inch length
- **Angle**
 - 5-15 degree angle between upper layers of skin

Intradermal Injection

- <https://www.youtube.com/watch?v=7i6YNqizxwk>



Route-Subcutaneous

- **Volume**

- 0.5-1.0 mL volume

- **Sites**

- Upper outer arm
- Anterior surface of thigh
- **2 inches away from umbilicus on abdomen**

- **Needle Gauges**

- 25 gauge 5/8 inch
- 27 gauge needle, 1/8 - to 1/2 inch

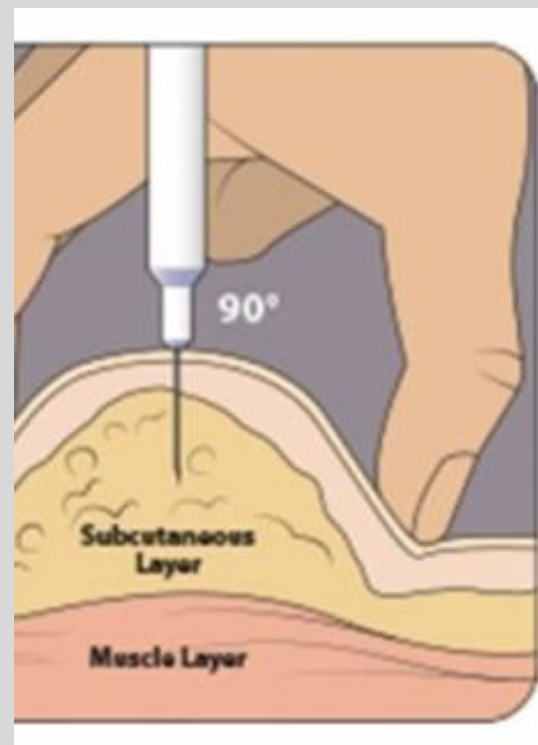
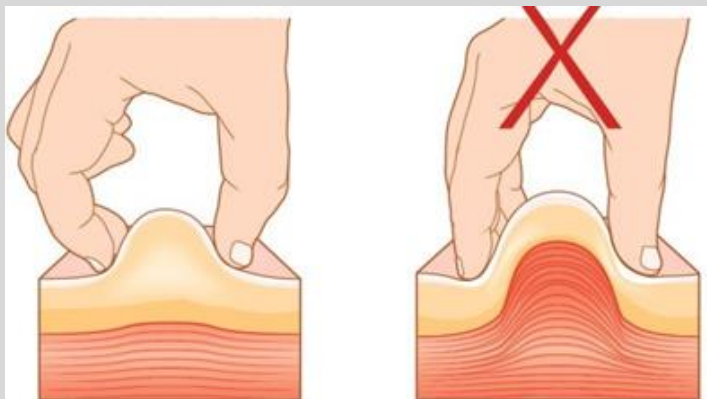
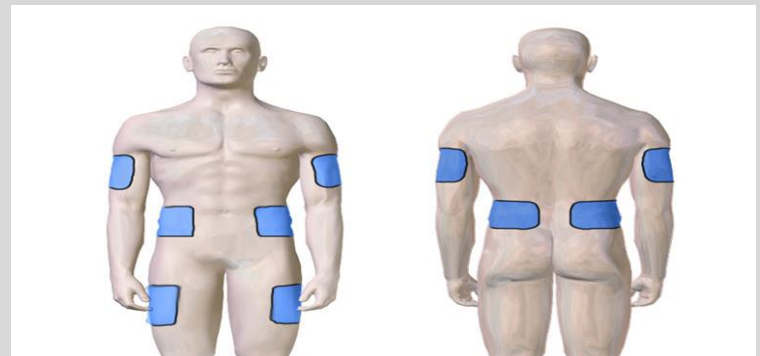
- **Syringe**

- 1ml (Tuberculin)
- 3 mL syringe

- **Angle**

- A 45- or 90-degree angle
- Dependent on size of needle

SQ VOLUME PER SITE	SQ NEEDLE GAUGE	SQ NEEDLE LENGTH
0.5-1ML	25-30	3/8, 5/8, 1/2



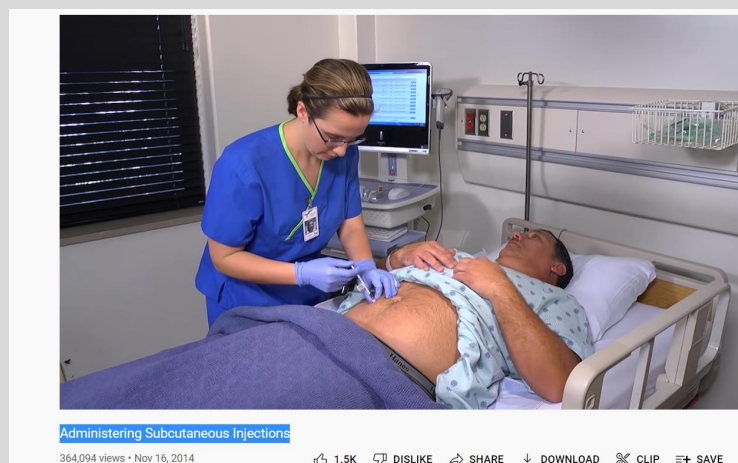


- Have a nurse double check your syringe for correct amount & the vial for correct strength and dose
- Rotate sites within the abdominal area
- **Do not aspirate** – this tends to increase bruising & needle movement could cause tissue damage
- **Do not massage site**

SUBCUTANEOUS ADMINISTRATION OF HEPARIN

Administering Subcutaneous Injections

- <https://www.youtube.com/watch?v=BfP1yZev1lc>



Route-Intramuscular

- **Volume**

- 0.5 to 3 mL

- **Sites**

- Deltoid
- Ventrogluteal- **considered the most comfortable site**
- Vastus Lateralis- **best for infant injections**

- **Needle Gauges**

- 22- to 23 gauge
- 1 to 3 inches; most common 1 to 2 inches

- **Syringe**

- 3 to 5 mL syringe

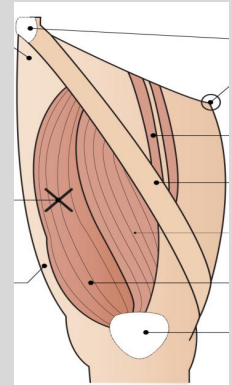
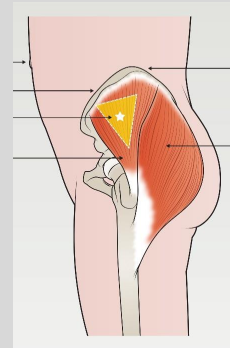
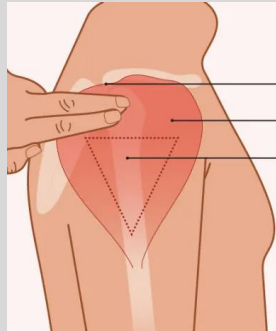
- **Angle**

- 90-degree angle

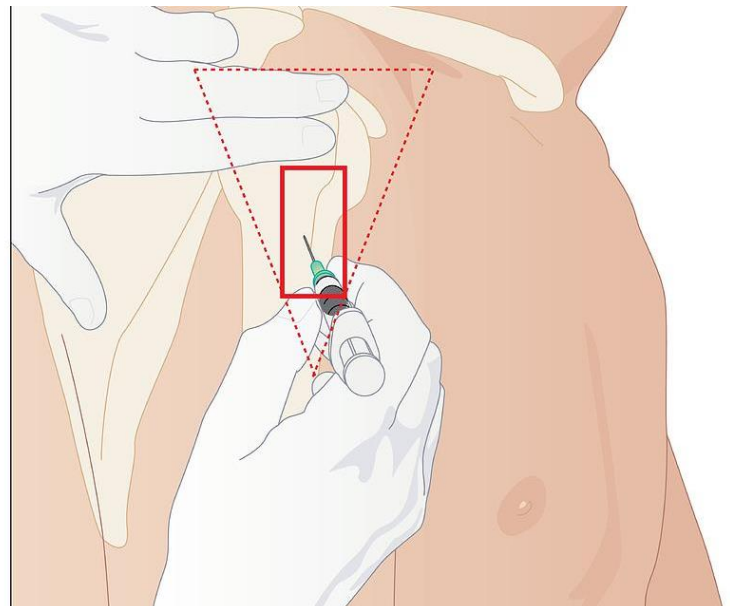
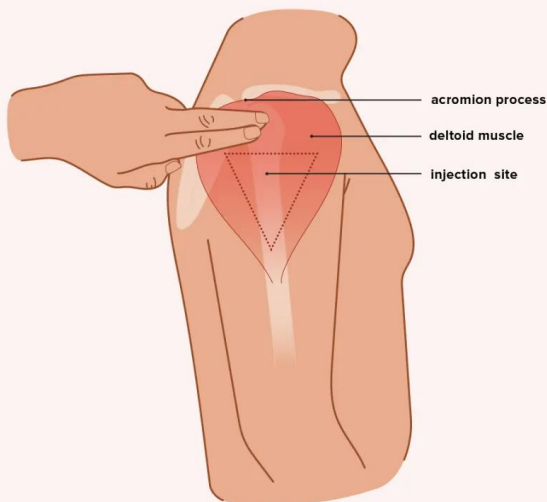
- **Technique**

- **Aspirate by pulling back the plunger!**
- **Z-track!**

IM volume per site	IM needle Gauge	IM needle length
0.5-3 ML	20-23	1-3 INCH

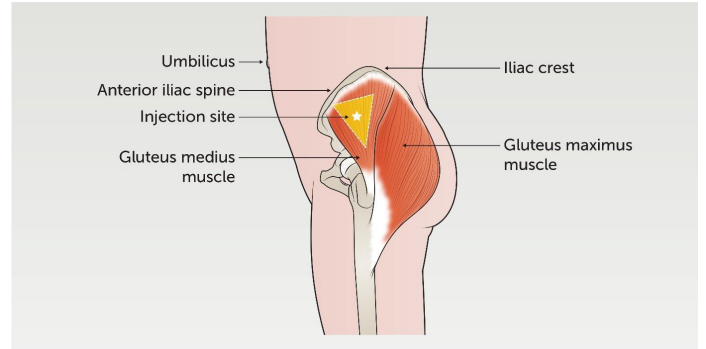
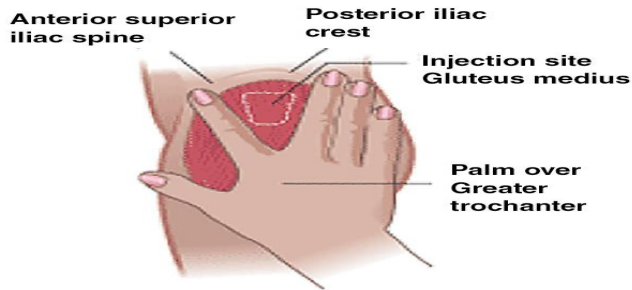


Deltoid muscle of the arm

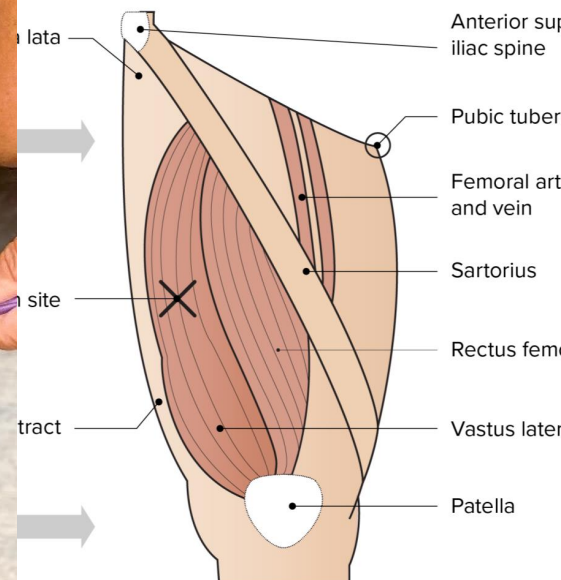
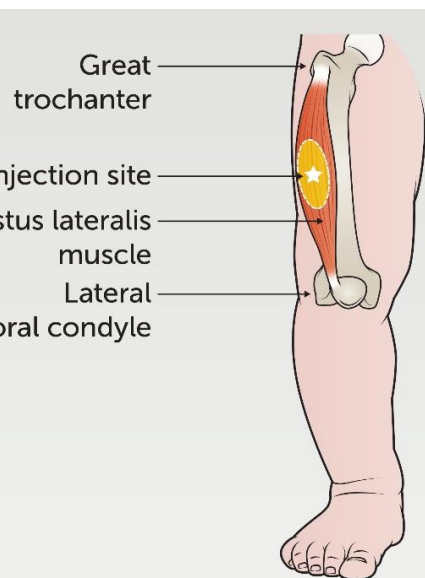


DELTOID

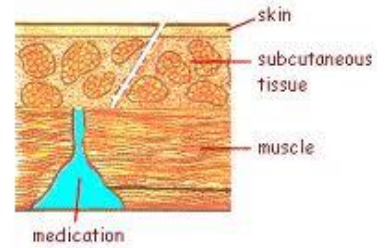
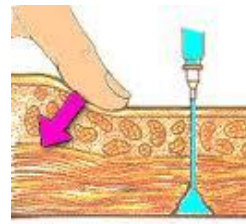
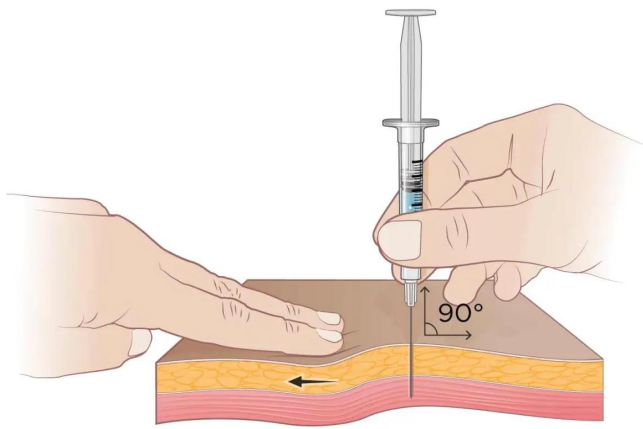
Ventrogluteal Site



VENTROGLUTEAL SITE



VASTUSLATERALISSITE



Z-TRACK-INTRAMUSCULAR INJECTIONS (IM)

Reconstitution Medication from a Vial

Medications that are unstable in liquid form

- Can be prepared in powdered form

Solute

- Powder
- Mixed with diluent (liquid)
- Once mixed
 - Medication is drawn up in syringe for injection

Diluents

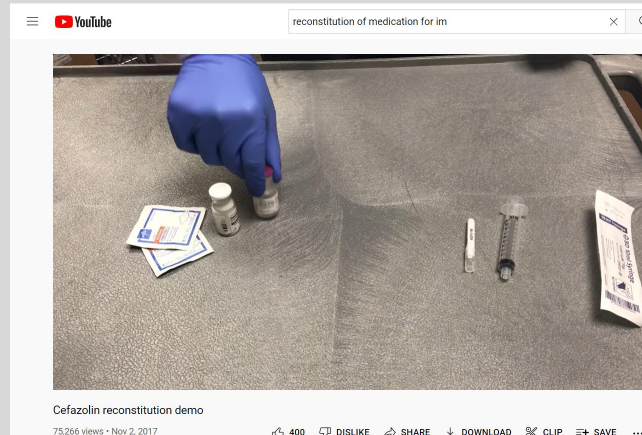
- Liquid
- Sterile water
- Saline
- Lidocaine

Follow directions on vial or package

- Proper reconstitution

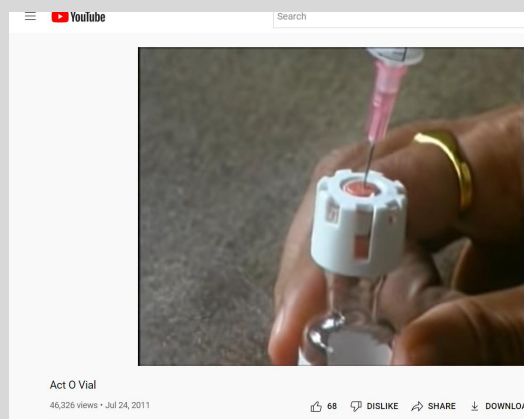
Reconstituting Medication from a Vial

- <https://www.youtube.com/watch?v=kjUmi2O5CaY>



Reconstituting Medication from a Mix-O-Vial

- <https://www.youtube.com/watch?v=YrepmnSElmw>



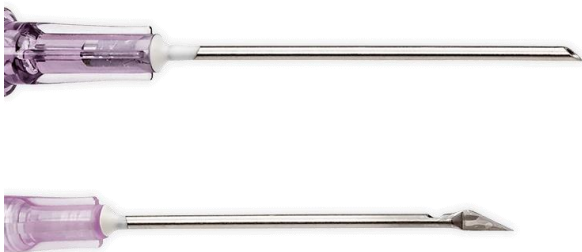
Ampules

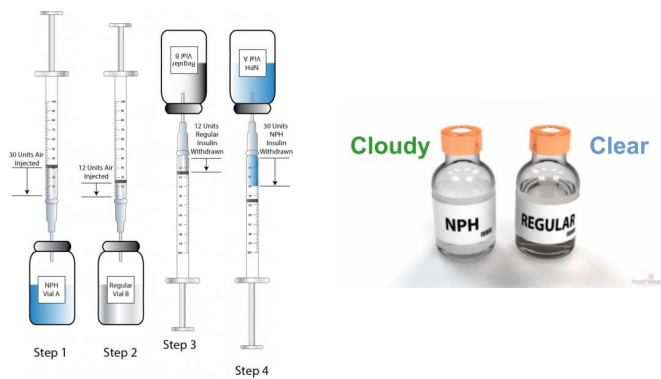
- Made of glass or polyurethane; consist of a body, neck, and stem; usually contain a single medication dose
- All medication must be in the ampule body before the neck is broken.
- Use protection to keep from cutting fingers on the sharp neck edge and a filter needle to withdraw the medication. A new needle is used for injection.



Filter Needles

- **Meds drawn from an ampule may contain glass**
- Filter needles
 - Used to withdraw meds from an ampule to trap the glass particles
- **Filter is discarded...New needle is attached to the syringe before injection**

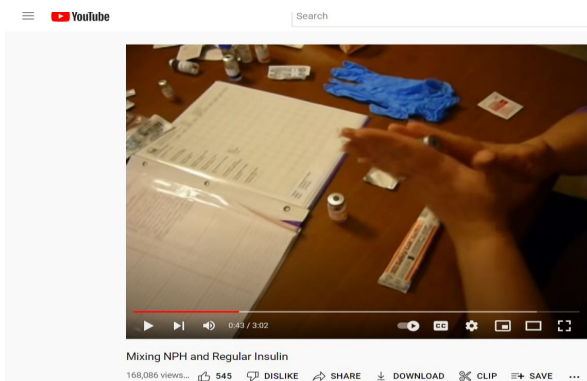




Drawing Up Short and Long Acting Insulins

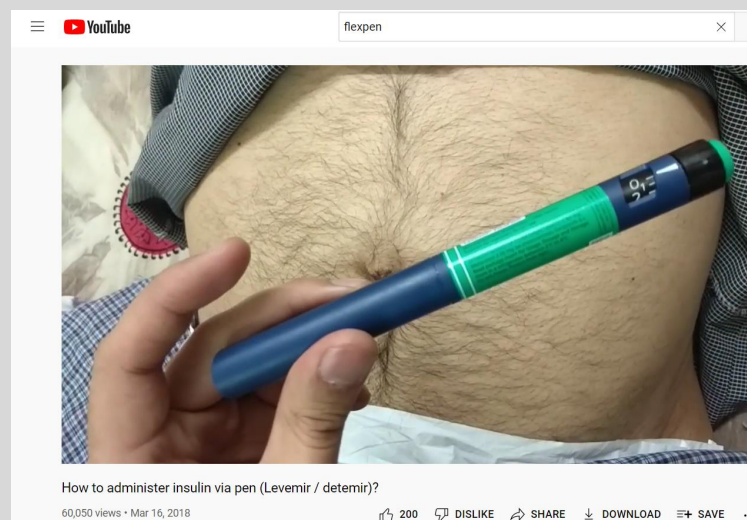
- **Step 1**
 - Inject air into LONGER-acting insulin (CLOUDY!)
- **Step 2**
 - Inject air into SHORT-acting insulin (CLEAR!)
- **Step 3**
 - Withdraw amount of SHORT-acting insulin (CLEAR!)
- **Step 4**
 - Withdraw amount of LONG-acting insulin (CLOUDY!)

◦ <https://www.youtube.com/watch?v=WlYcAy6P-hE>



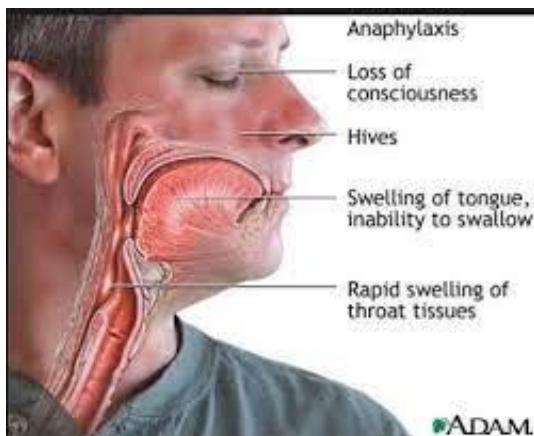
Flexpens for Insulin Administration

◦ <https://www.youtube.com/watch?v=2qtdweVsdHc>



Incompatibility of Medications

- If medications are incompatible
 - Color of medication may change
 - Precipitation may occur
 - Clouding may occur



- May be caused by medications to which the patient is allergic
 - Always check your patient 30 minutes after administering a medication.
- Symptoms of anaphylactic shock:
 - Urticaria, bronchiolar constriction, edema, circulatory collapse


ANAPHYLACTIC SHOCK

NURSING PROCESS- ASSESSMENT


- Check order, pt identifiers, and allergies
- Assess pt for side effects to previous doses
- Determine previous sites; rotate sites
- Assess pt's size and anatomy, locate landmarks

NURSING PROCESS- NURSING DIAGNOSIS

- The goal for the patient will be based on the nursing diagnosis you are addressing.
- Ex: Risk for infection r/t surgical procedure
- The goal would be:
 - No signs of infection will be present at discharge.

- 
- Select the correct needle size and syringe for the type of injection to be given.
 - Maintain asepsis
 - Observe the 6 rights
 - Proper disposal of needles and syringes

NURSING PROCESS- PLANNING & IMPLEMENTATION

- 
- Always check for allergies.
 - Know expected and possible side-effects
 - Date all multidose vials when you open them.
 - Question any order that does not make sense.
 - Always follow the 6 Rights.
 - Know your landmarks and injection techniques for each type of injection.

THINGS TO REMEMBER