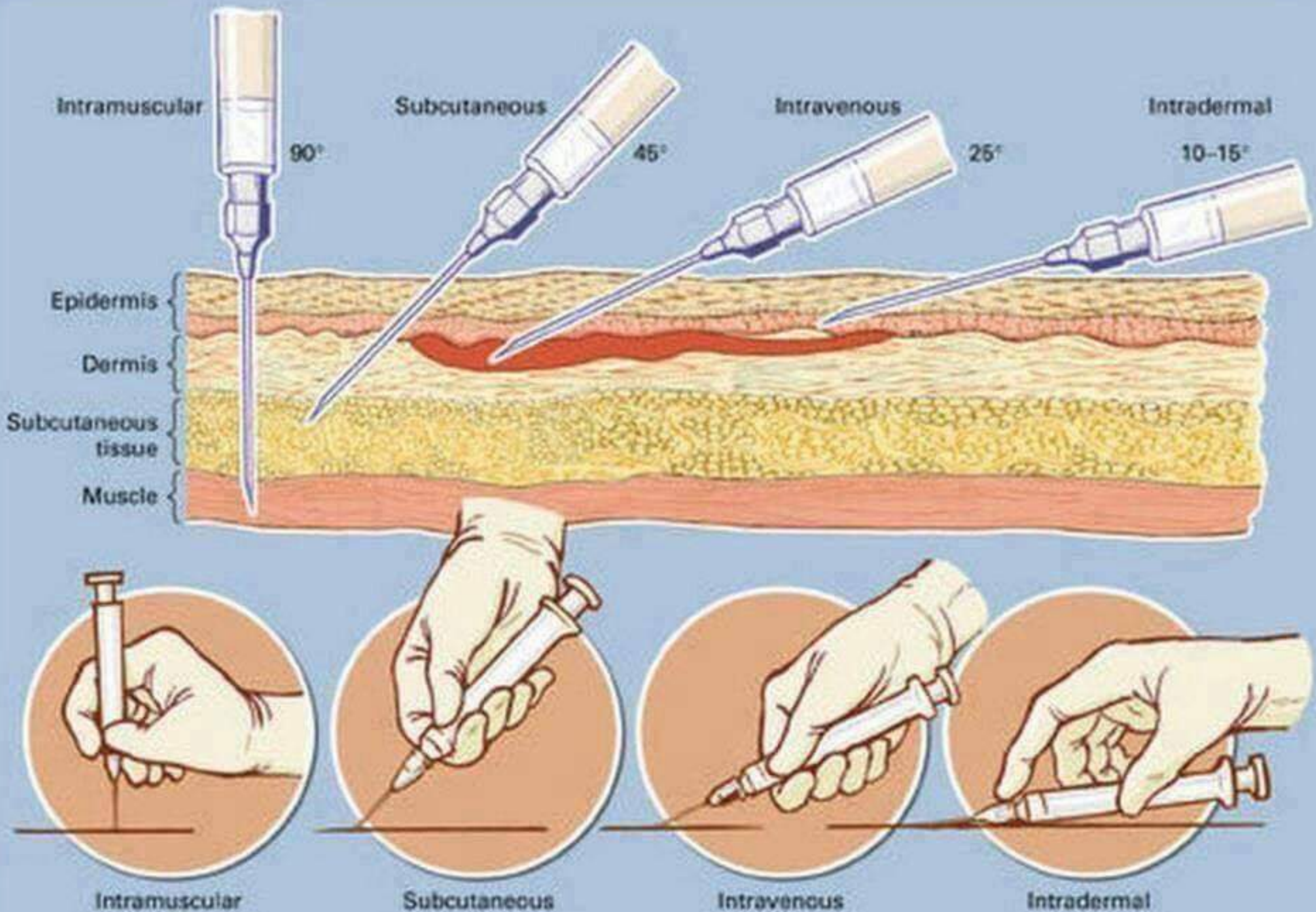


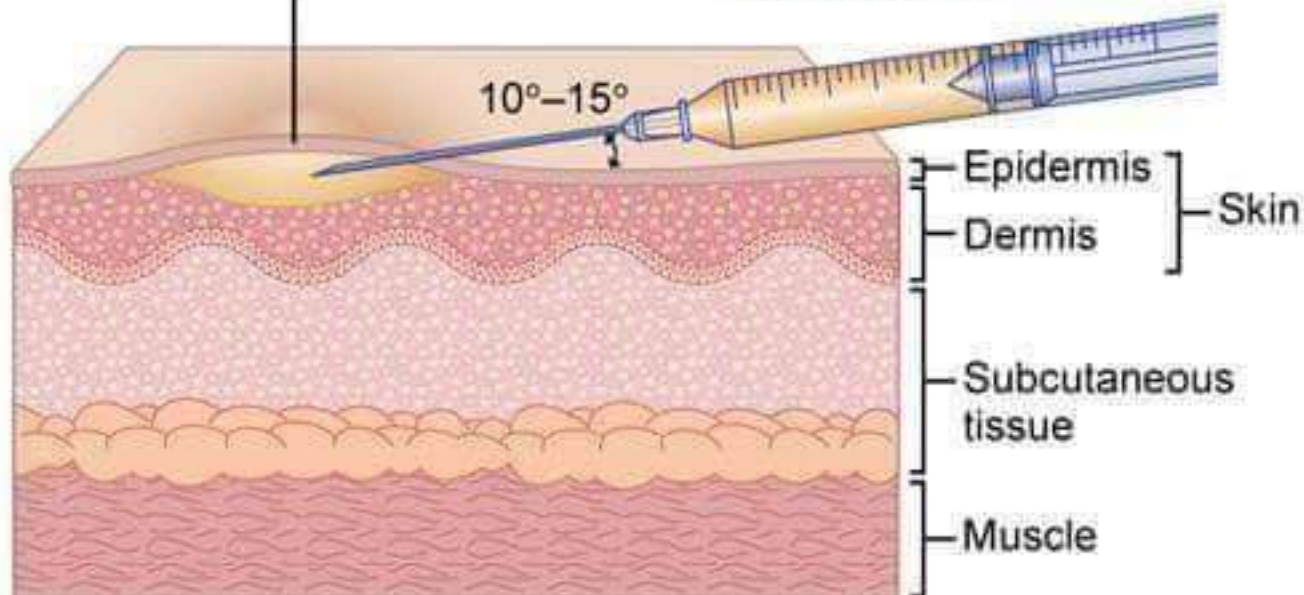
Angles for inserting injections



Bleb

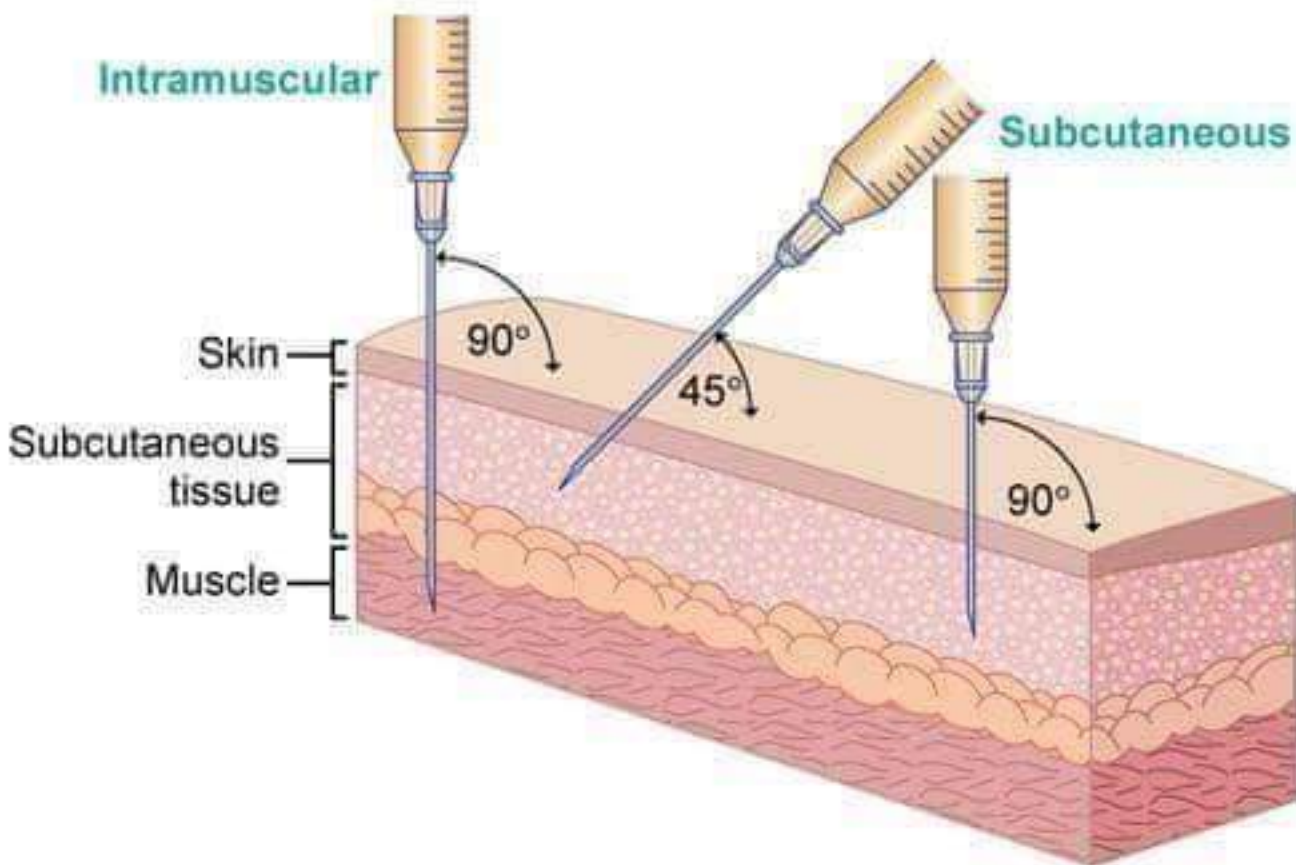
Intradermal

$10^{\circ}-15^{\circ}$



Intramuscular

Subcutaneous



Veins of the Arm

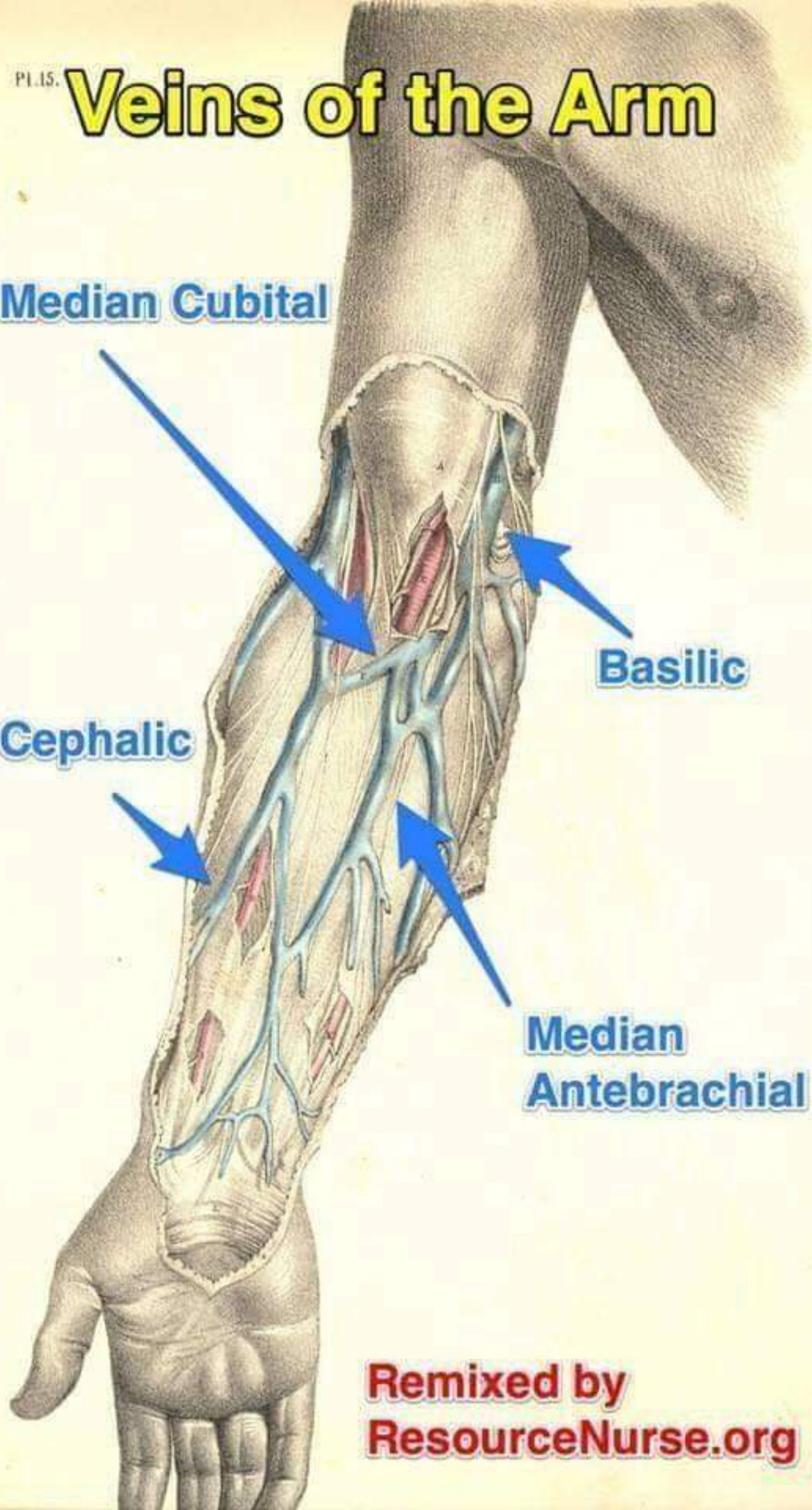
Median Cubital

Basilic

Cephalic

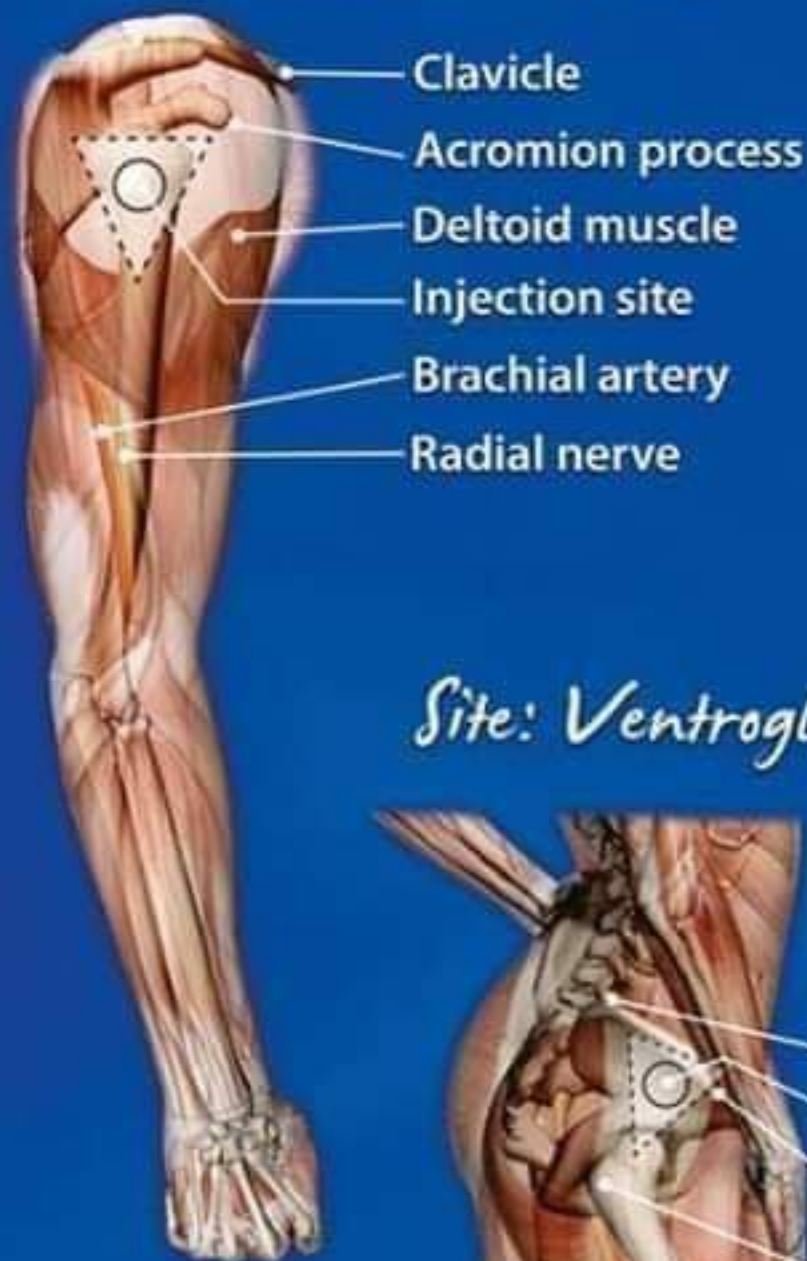
**Median
Antebrachial**

**Remixed by
ResourceNurse.org**



Intramuscular Injection Sites

Site: Deltoid Muscle



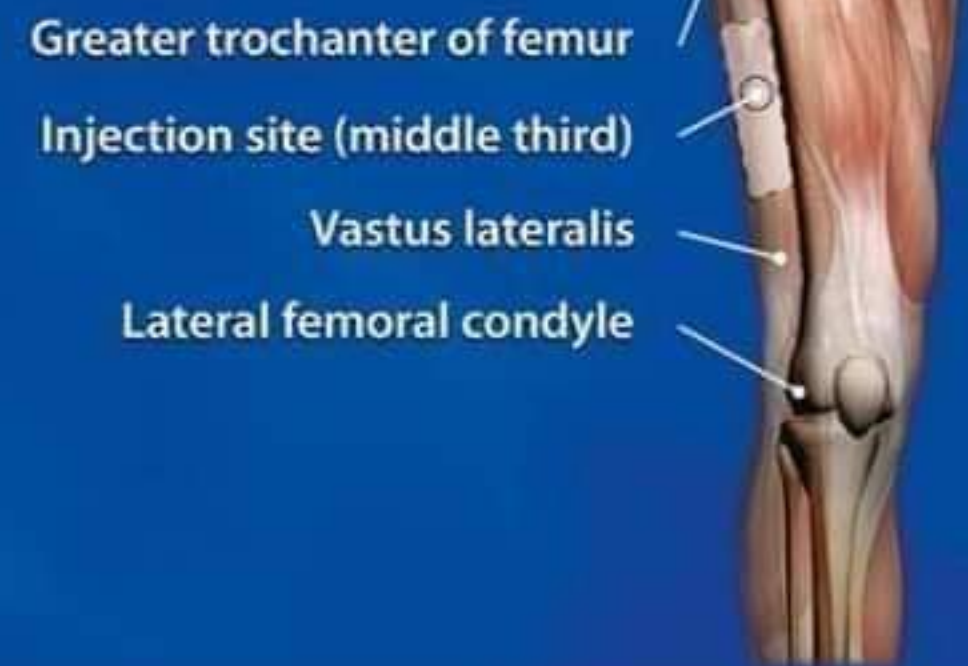
Site: Dorsogluteal Muscle



Site: Ventrogluteal Muscle

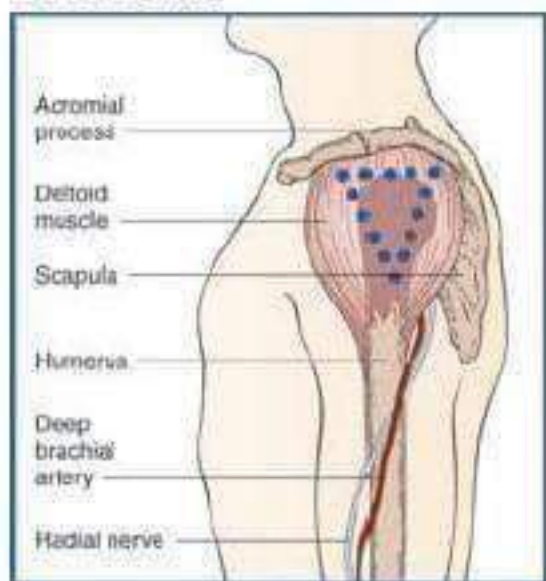


Site: Vastus Lateralis Muscle

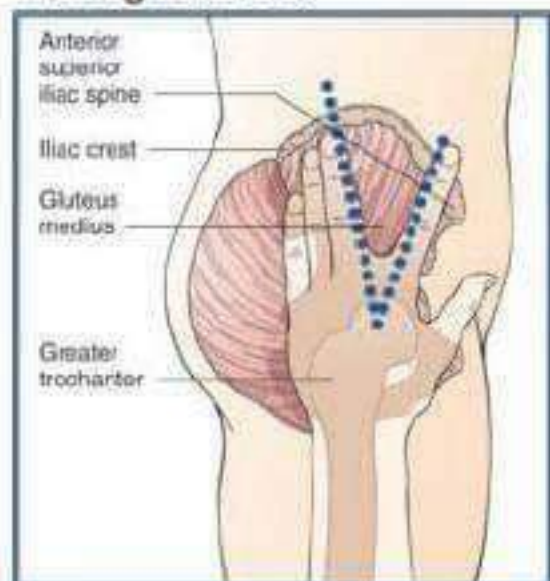


Intramuscular (IM) Injection Sites

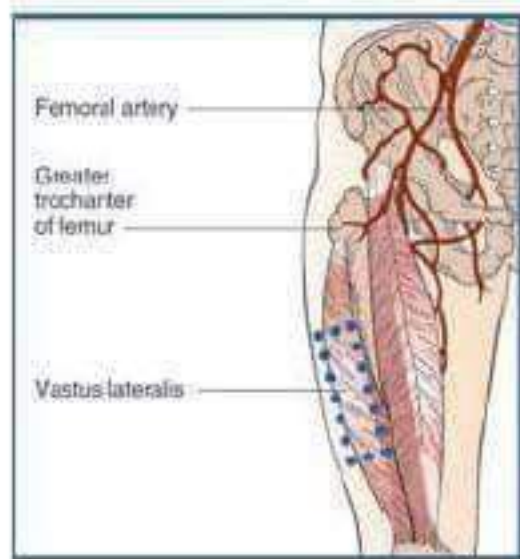
Deltoid Site



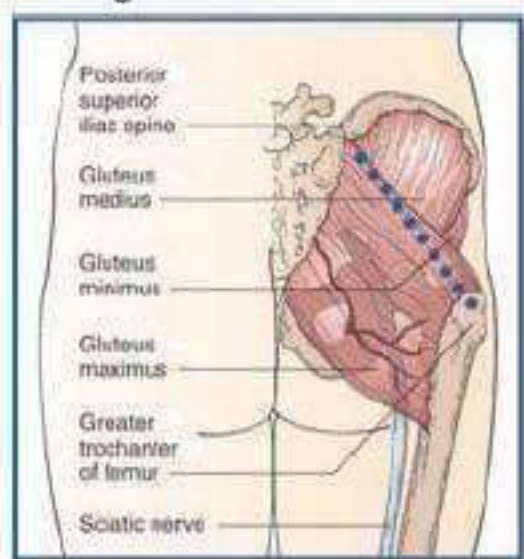
Ventrogluteal Site

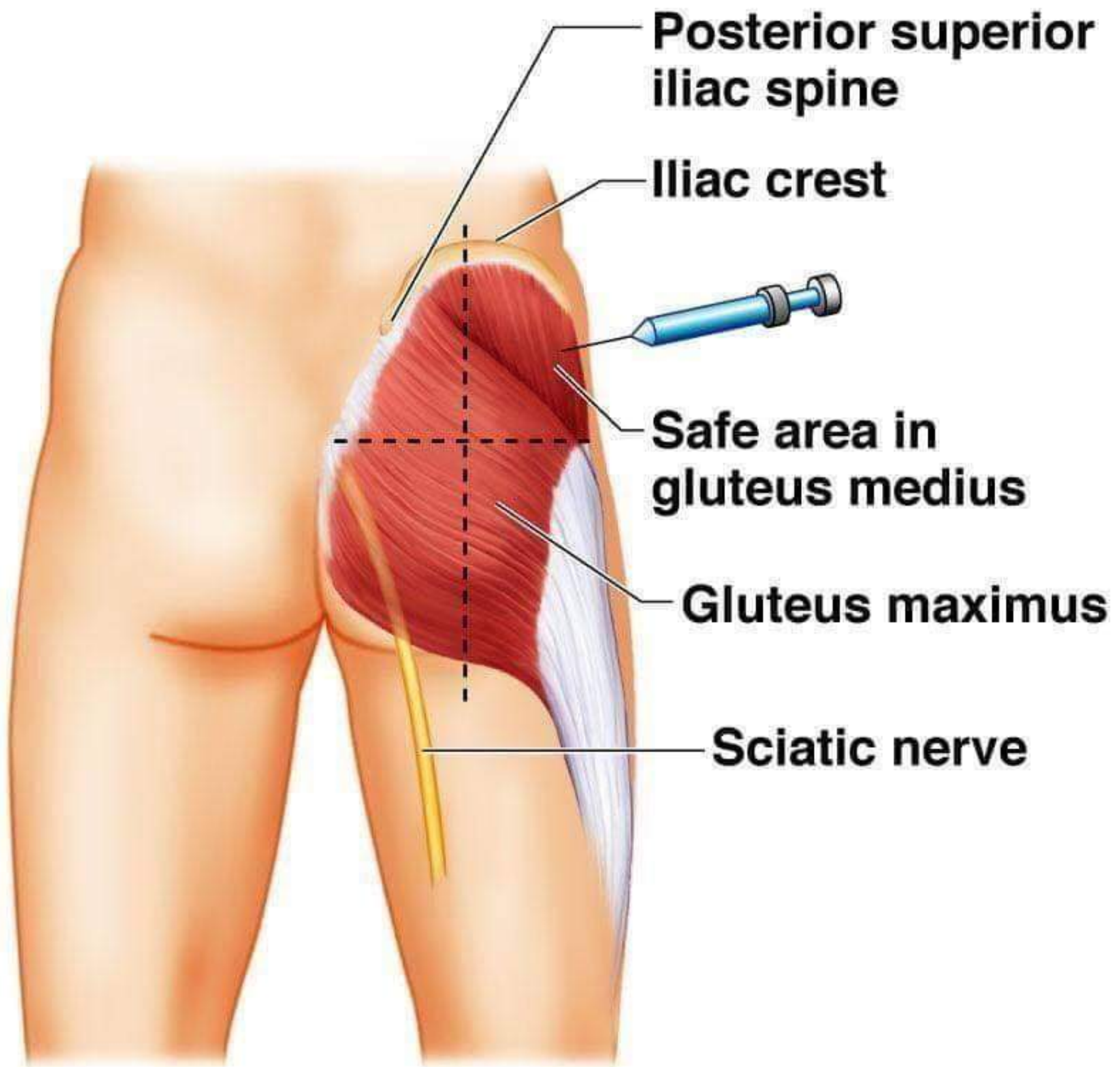


Vastus Lateralis Site



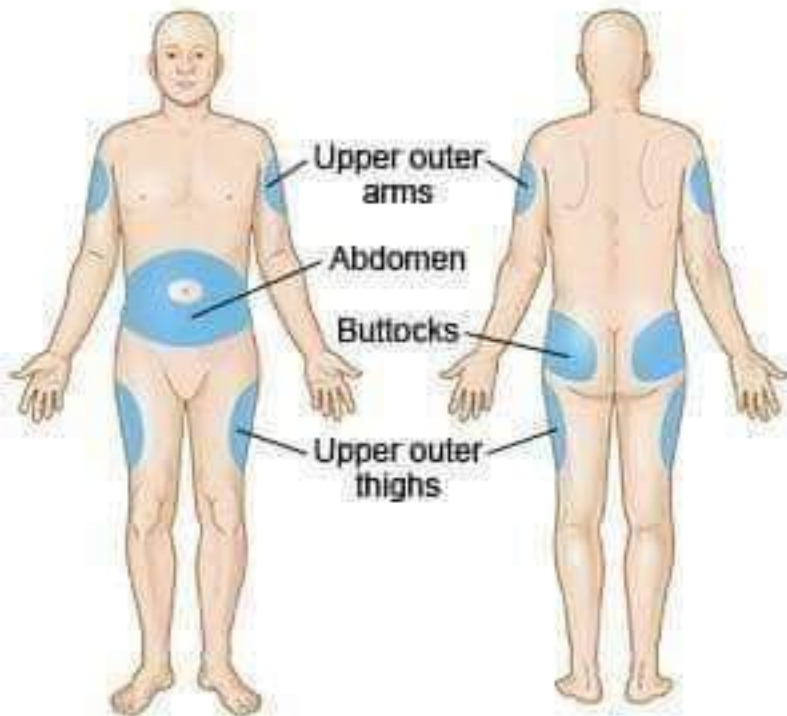
Dorsogluteal Site





(b)

Insulin Injection Sites



Injections Study Guide Cheat Sheet

Needles

	SubQ	IM	ID
Length	1/4" - 5/8"	1"-3"	1/4" -5/8"
Gauge	25-27	21-25	25 – 28
Angle	40°- 90°	90°	5° - 15°

Landmarks

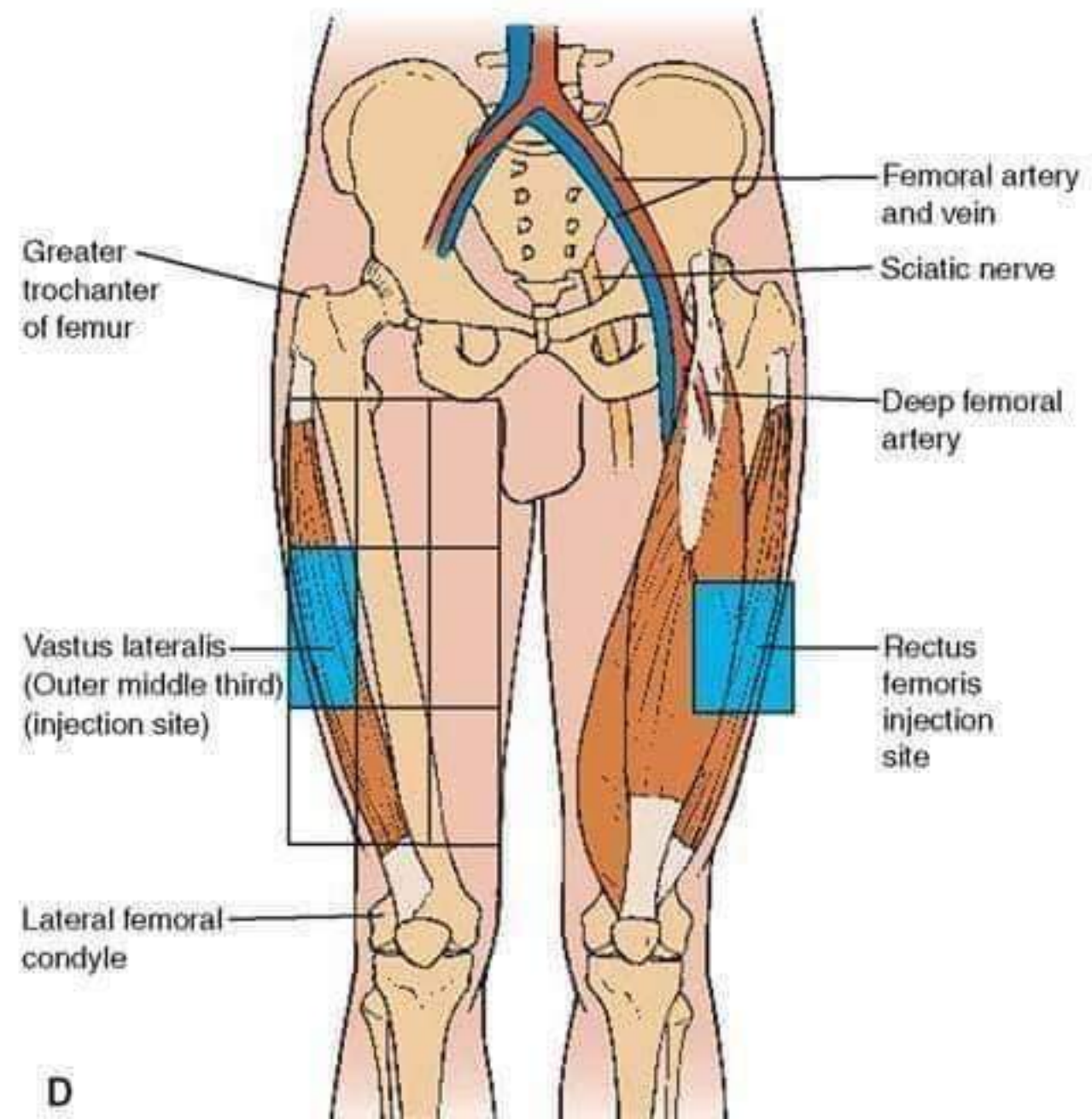
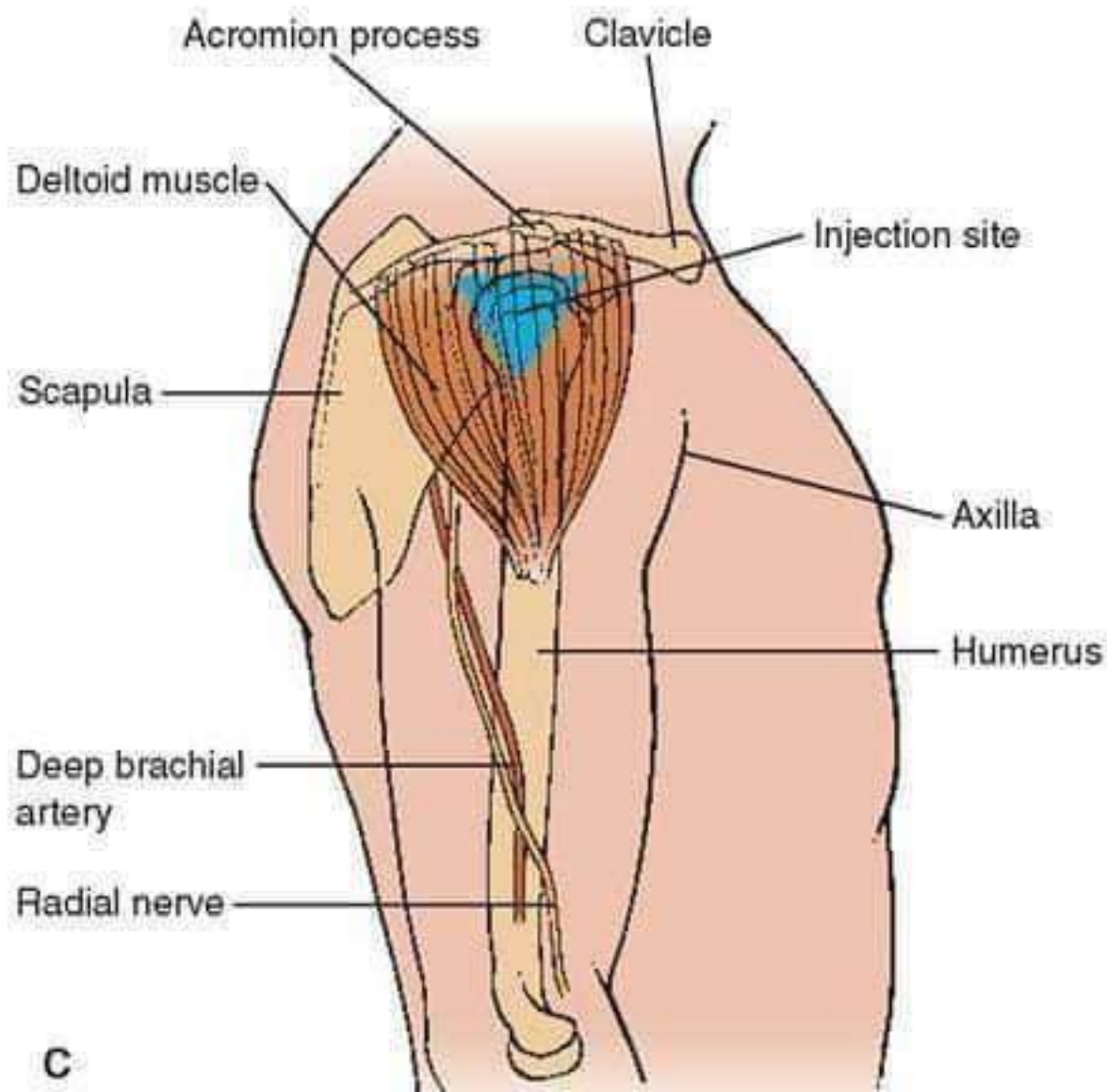
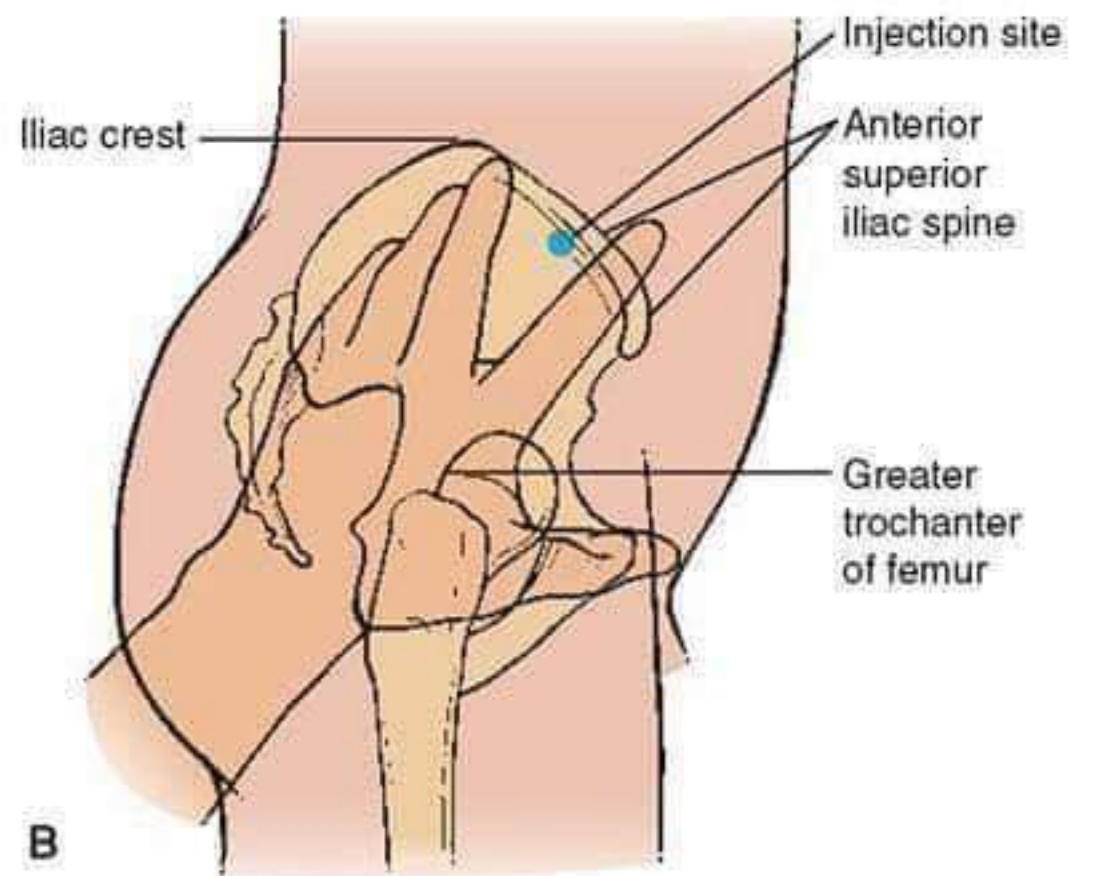
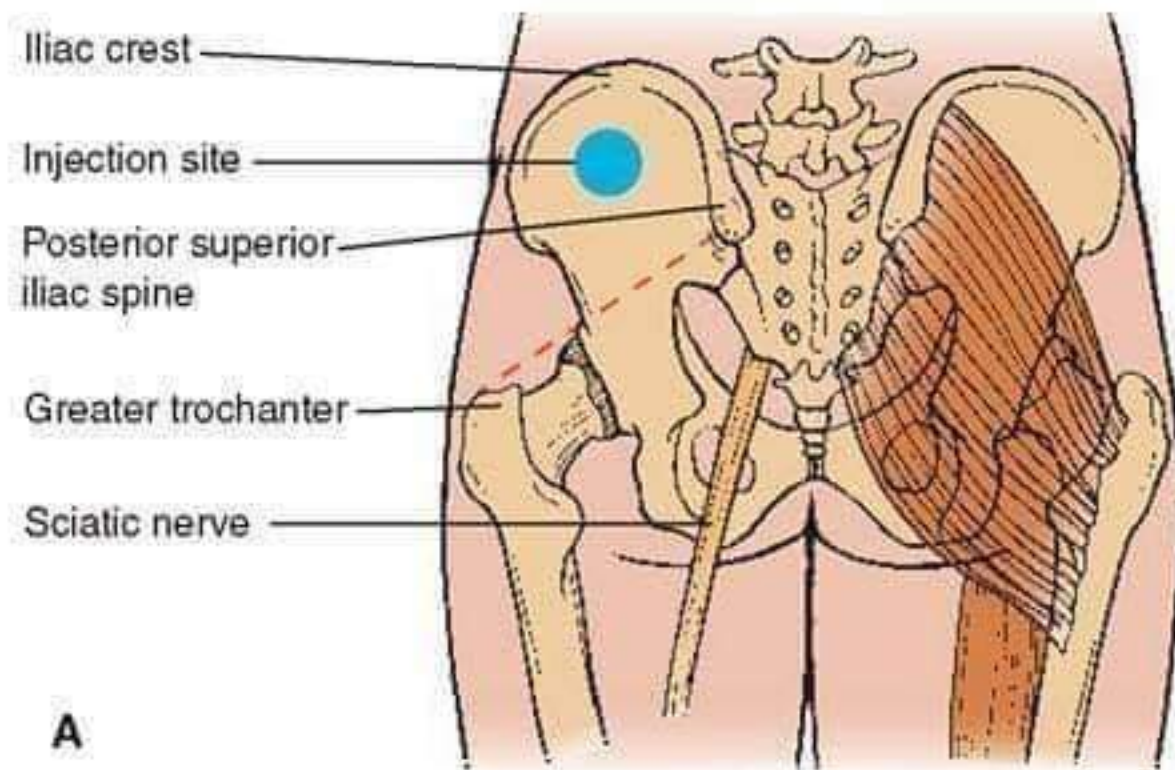
SubQ	IM	ID
Fatty Areas: 1. Abdomen, 2. back of arms, 3. Thighs	Deltoid, Ventral Gluteal, Vastus Lateralis	Lightly pigmented, lesion free, relatively hairless. Commonly ventral forearm

Needles

SubQ	IM		ID
1 mL or less / 20-30min	Large Person:	no more than 3mL	1 mL or less?
	Small adult, older pt, children:	2 mL	
	infants:	1 mL or less	

Medication Route Onsets

SubQ	IM	ID	PO
20-30 min	10-20 min	Immediate	30-40 min, may take days or weeks. Assume 60 min
		Find More @	www.NCLEXQuiz.com



The nurse's quick guide to I.V. drug calculations

Basic dosage calculations

$$\frac{D \text{ (desired dose)}}{H \text{ (amount on hand)}} \times V \text{ (volume)} = \text{Dose}$$

I.V. drips in mcg/minute

$$\frac{\text{mg}}{\text{mL}} \times \frac{1,000 \text{ mcg}}{1 \text{ mL}} \times \frac{\text{mL}}{1 \text{ hour}} \times \frac{1 \text{ hour}}{60 \text{ minute}} = \text{mcg/minute}$$

(÷ by kg to get mcg/kg/minute)

I.V. drips in unit per hour

$$\frac{D \text{ (desire)}}{H \text{ (on hand)}} \times V \text{ (volume)} = \text{units/hour (\# mL x units/mL = dose)}$$

Dosage calculation conversions

$$1 \text{ mg} = 1000 \text{ mcg}$$

$$1 \text{ gm} = 1000 \text{ mg}$$

$$1 \text{ L} = 1000 \text{ mL}$$

$$1 \text{ mL} = 1 \text{ cc}$$

$$5 \text{ mL} = 1 \text{ Tsp}$$

$$3 \text{ Tsp} = 1 \text{ Tbsp}$$

$$15 \text{ mL} = 1 \text{ Tbsp}$$

$$30 \text{ mL} = 1 \text{ oz}$$

$$1 \text{ oz} = 2 \text{ Tbsp}$$

$$8 \text{ oz} = 1 \text{ Cup}$$

$$1 \text{ kg} = 1000 \text{ gm (g)}$$

$$1 \text{ kg} = 2.2 \text{ lbs}$$

Intramuscular Injection Guidelines for Needle Length and Gauge Selection*

INTRAMUSCULAR (IM)**		Location of Injection	Needle Length	Needle Gauge	Needle Angle
Pediatric	Infants < 18 months	• Vastus lateralis muscle (<0.5 mL vol.)	7/8" - 1"	25 - 27 G	90°
	Children (>18 months and walking to 18 years)	• Deltoid muscle • Ventrogluteal site • Dorsogluteal site—not recommended for <3 years • Vastus lateralis muscle	7/8" - 1 1/4"	22 - 25 G	90°
Adult	> 18 years	• Deltoid muscle, Ventrogluteal site—may be best site for cachectic adults • Dorsogluteal site—avoid in obese adults • Vastus lateralis muscle	1" - 1 1/2" (up to 3" for large adults)	19 - 25 G	90°

* Adapted from Fundamentals of Nursing: Human Health and Function, R. Craven, C. Hirnle, 4th ed, Lippincott Williams & Wilkins 2003

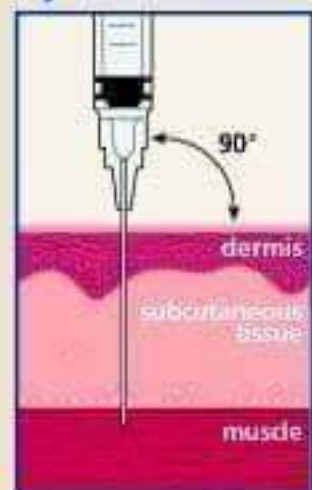
** Prior to administering an IM injection, refer to your procedure manual to determine the injection site utilizing body landmarks.

30 G 29 G 28 G 27 G 26 G 25 G 24 G 23 G 22 G 21 G 20 G 19 G 18 G

ISO Hub Color Standards for safety-engineered needles

Intramuscular (IM) Injection Guidelines:

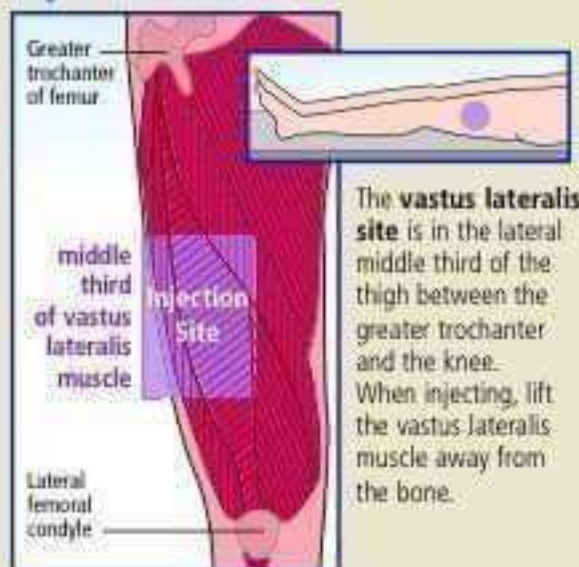
Injection Route:



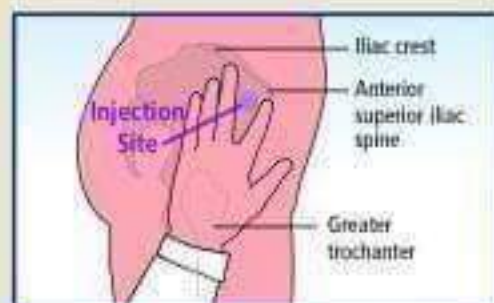
Injection Procedure:

- Spread the skin taut, (except in vastus lateralis which requires lifting the muscle) and insert the needle at a 90° angle.
- Pull back plunger slightly. If blood appears, remove needle, dispose properly and prepare a new injection.
- If no blood is present inject medication slowly.

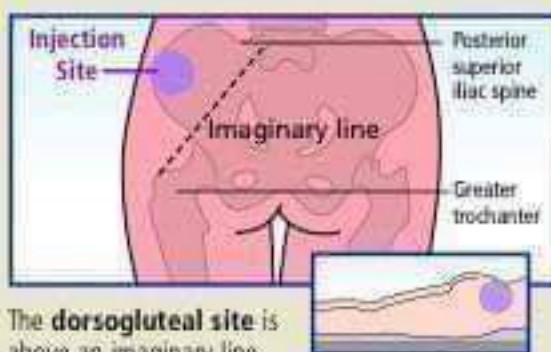
Injection Sites:



The thickest part of the **deltoid muscle** is 2.5-5cm (1-3 finger breadths) below the lower edge of acromion process of the scapula over the midaxillary line.



The **ventrogluteal site**: place the palm over the greater trochanter, form a "V" with the middle finger toward the iliac crest and the index finger toward the anterior superior iliac spine. Inject within the center of the "V," below the anterior superior iliac crest.



The **dorsogluteal site** is above an imaginary line between the greater trochanter and the posterior superior iliac crest. The injection is administered laterally and superior to this imaginary line.



14 GAUGE

COLOR: GREEN

OUTER DIAMETER: .072IN (1.83MM)



15 GAUGE

COLOR: AMBER

OUTER DIAMETER: .065IN (1.65MM)



16 GAUGE

COLOR: GRAY

OUTER DIAMETER: .064IN (1.63MM)



18 GAUGE

COLOR: GREEN

OUTER DIAMETER: .050IN (1.27MM)



20 GAUGE

COLOR: PINK

OUTER DIAMETER: .036IN (.91MM)



21 GAUGE

COLOR: PURPLE

OUTER DIAMETER: .033IN (.83MM)



22 GAUGE

COLOR: BLUE

OUTER DIAMETER: .027IN (.70MM)



23 GAUGE

COLOR: ORANGE

OUTER DIAMETER: .025IN (.63MM)



25 GAUGE

COLOR: RED

OUTER DIAMETER: .020IN (.53MM)

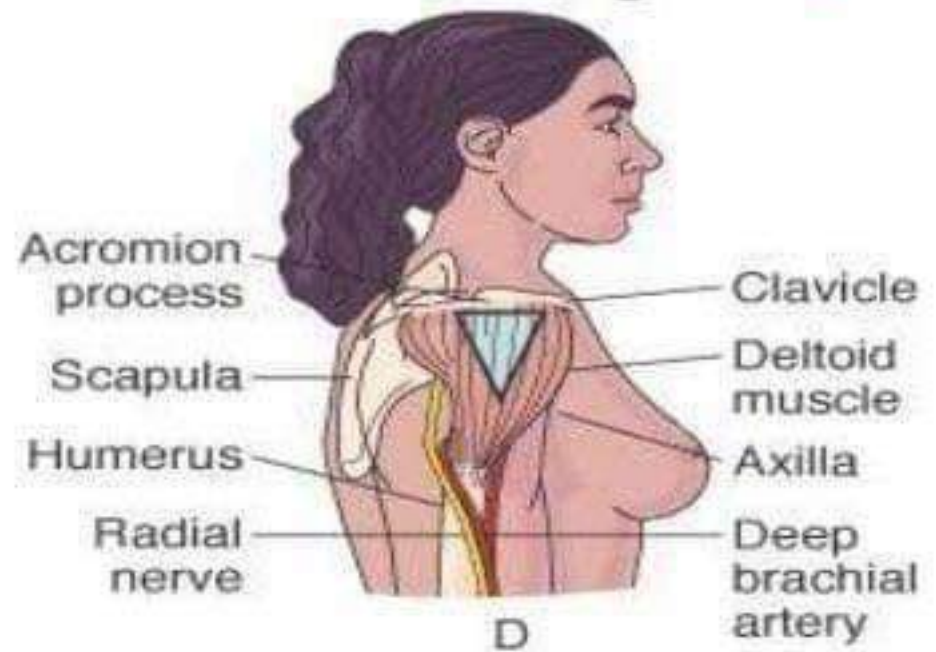
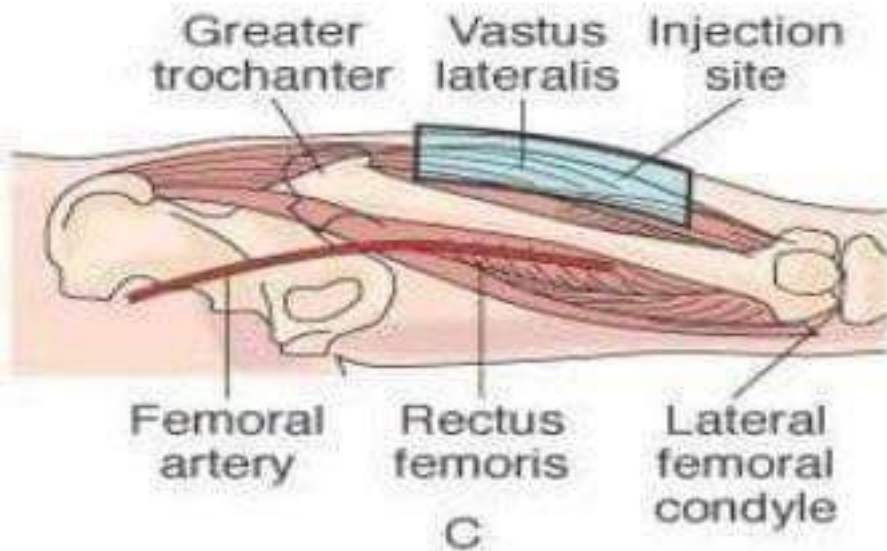
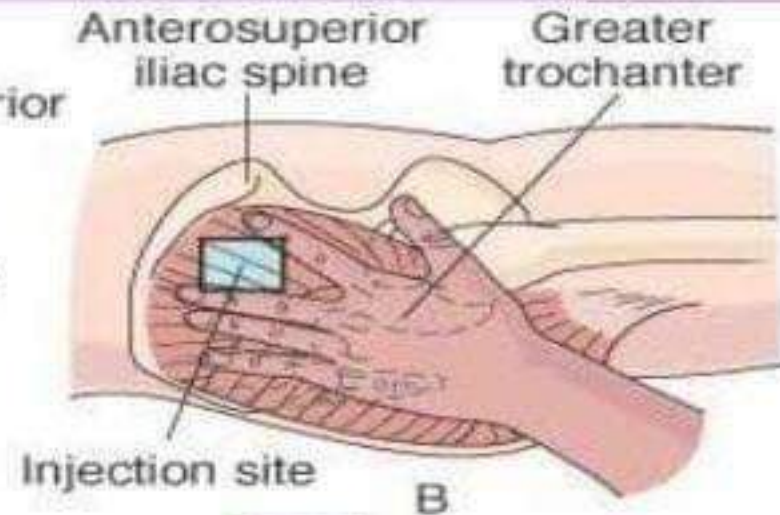
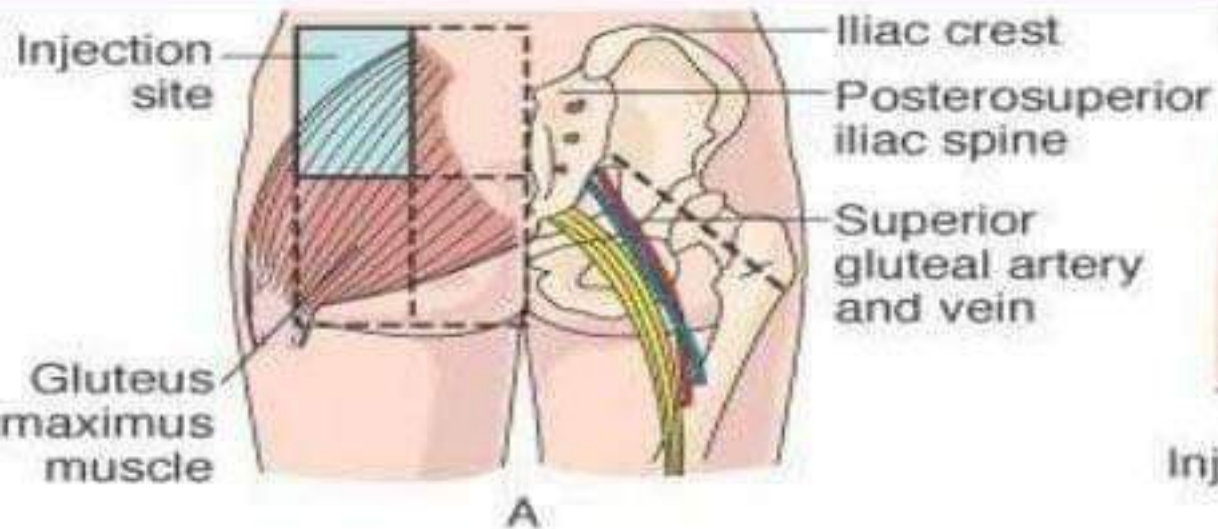


27 GAUGE

COLOR: WHITE

OUTER DIAMETER: .016IN (.42MM)

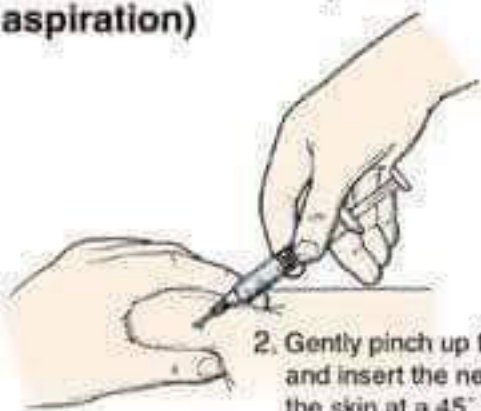
INTRAMUSCULAR INJECTION SITES



How to Give a Subcutaneous Injection (with aspiration)



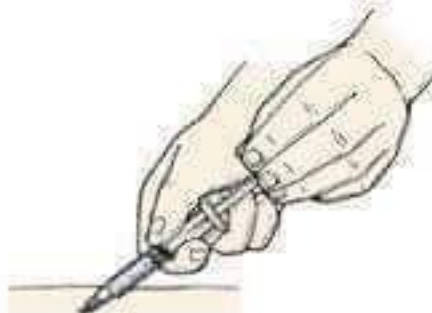
1. Use an alcohol swab to clean the skin where you will give yourself the shot.



2. Gently pinch up the skin and insert the needle into the skin at a 45° angle.



3. After you insert the needle completely, release your grasp of the skin.



4. Gently pull back on the plunger of the syringe to check for blood. (If blood appears when you pull back on the plunger, withdraw the needle and syringe and gently press the alcohol swab on the injection site. Start over with a fresh needle.)

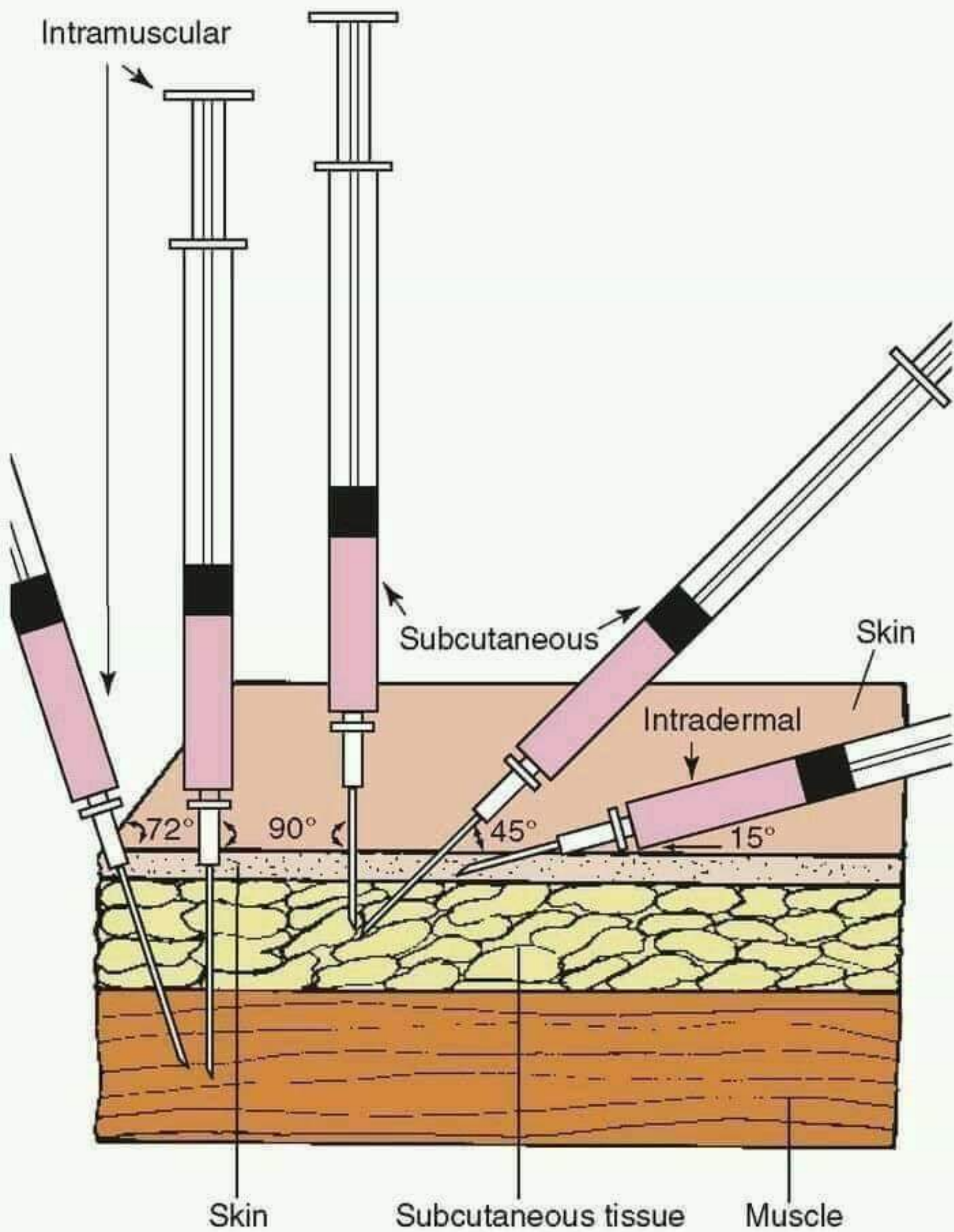


5. If no blood appears, inject all of the solution by gently and steadily pushing down the plunger.

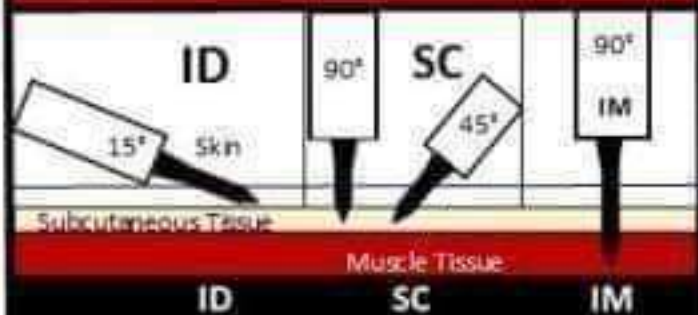


6. Withdraw the needle and syringe and press an alcohol swab on the spot where the shot was given.

Intramuscular



Intradermal (ID) Subcutaneous (SC) Intramuscular (IM)



	ID	SC	IM
Site	Inner Forearm, chest back	Outer upper arm, anterior thigh, abdomen	Gluteus, thigh, deltoid
Gauge Length	27-30 g 1/4-3/8 "	25-28g 5/8 "	23 g 1-1 1/2
Angle	10-15°	45°- 90°	90°
Volume	0.1-0.2 ml	0.5-1 ml	Up to 3ml Deltoid Small Muscles ≤ 1 ml
Insert, Aspirate, Inject, Withdraw Massage			

Heparin & Lovenox SQ Shots 25g-26g @ 90° angle (45° thin patients) Do not aspirate or massage site



Order of Draw

Tube Closure Color	Collection Tube	Mix by Inverting	Min. Clot Time
	 Blood Cultures – SPS	8 to 10 times	N/A
	 Citrate Tube (Light Blue)	3 to 4 times	N/A
	 Serum Separator Tubes (Gold and Tiger)	5 times	30 minutes
	 Serum Tube (Red)	5 times (plastic) None (glass)	60 minutes
	 Rapid Serum Tube (Orange)	5 to 6 times	5 minutes
	 Plasma Separator Tube	8 to 10 times	N/A
	 Heparin Tube (Green)	8 to 10 times	N/A
	 EDTA Tube (Lavender)	8 to 10 times	N/A
	 PPT Separator Tube (Pearl)	8 to 10 times	N/A
	 Fluoride Tube (Gray)	8 to 10 times	N/A



Plain Tube



EDTA Tube



Heparin Tube



PT Tube



Serum Tube



SST Tube



ESR Tube



Glucose Tube



Multi Sample Needle



Butterfly Needle



Hypodermic Needle



Disposable Syringes



Blood Lancets



Tourniquet

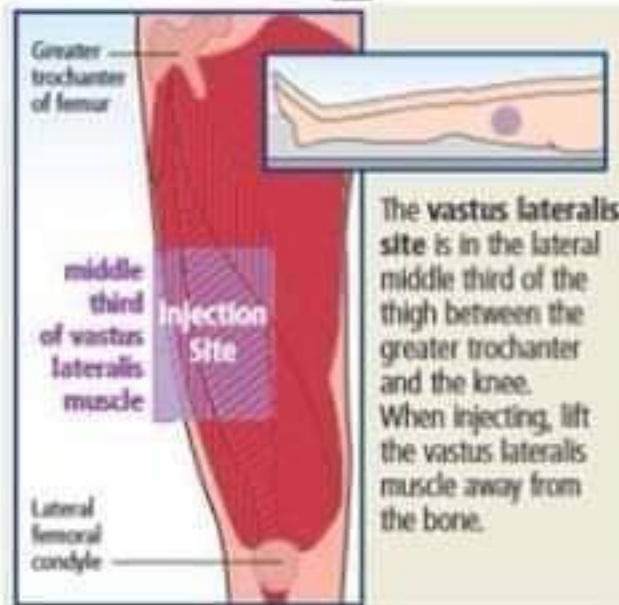


Needle Holder

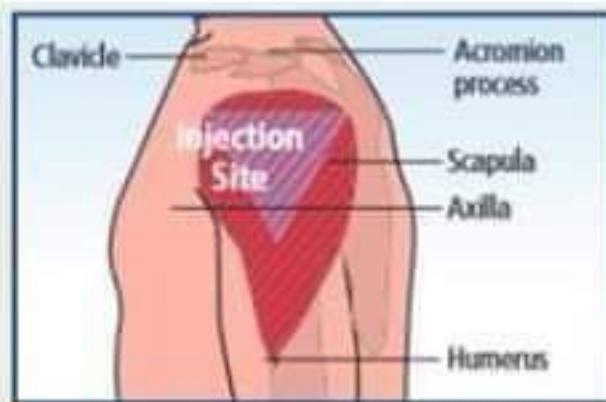


Specimen Container

Thigh



Arm



The thickest part of the **deltoid muscle** is 2.5-5cm (1-3 finger breadths) below the lower edge of acromion process of the scapula over the midaxillary line.

Hip



The **ventrogluteal site**: place the palm over the greater trochanter, form a 'V' with the middle finger toward the iliac crest and the index finger toward the anterior superior iliac spine. Inject within the center of the 'V' below the anterior superior iliac crest.

Buttocks



The **dorsogluteal site** is above an imaginary line between the greater trochanter and the posterior superior iliac crest. The injection is administered laterally and superior to this imaginary line.

How to Give an Intramuscular Shot



1. Use an alcohol swab to clean the skin where you will give the shot.



2. Hold the muscle firmly and insert the needle into the muscle at a 90° angle (straight up and down) with a quick firm motion.



3. After you insert the needle completely, release your grasp of the muscle.



4. Gently pull back on the plunger of the syringe to check for blood. (If blood appears when you pull back on the plunger, withdraw the needle and syringe and gently press the alcohol swab on the injection site. Start over with a fresh needle.)



5. If no blood appears, inject all of the solution by gently and steadily pushing down the plunger.



6. Withdraw the needle and syringe and press an alcohol swab gently on the spot where the shot was given.

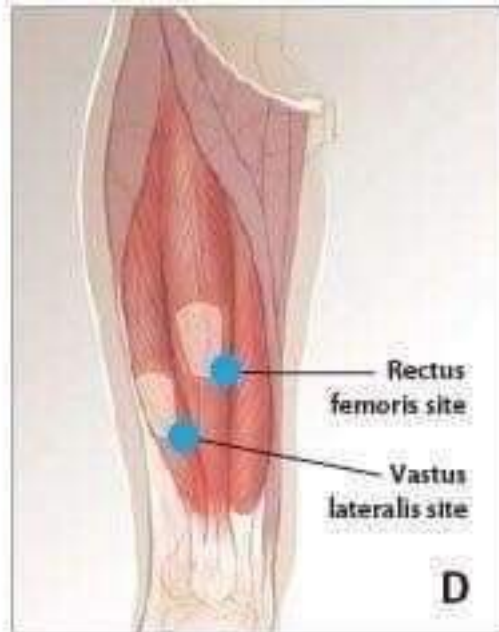
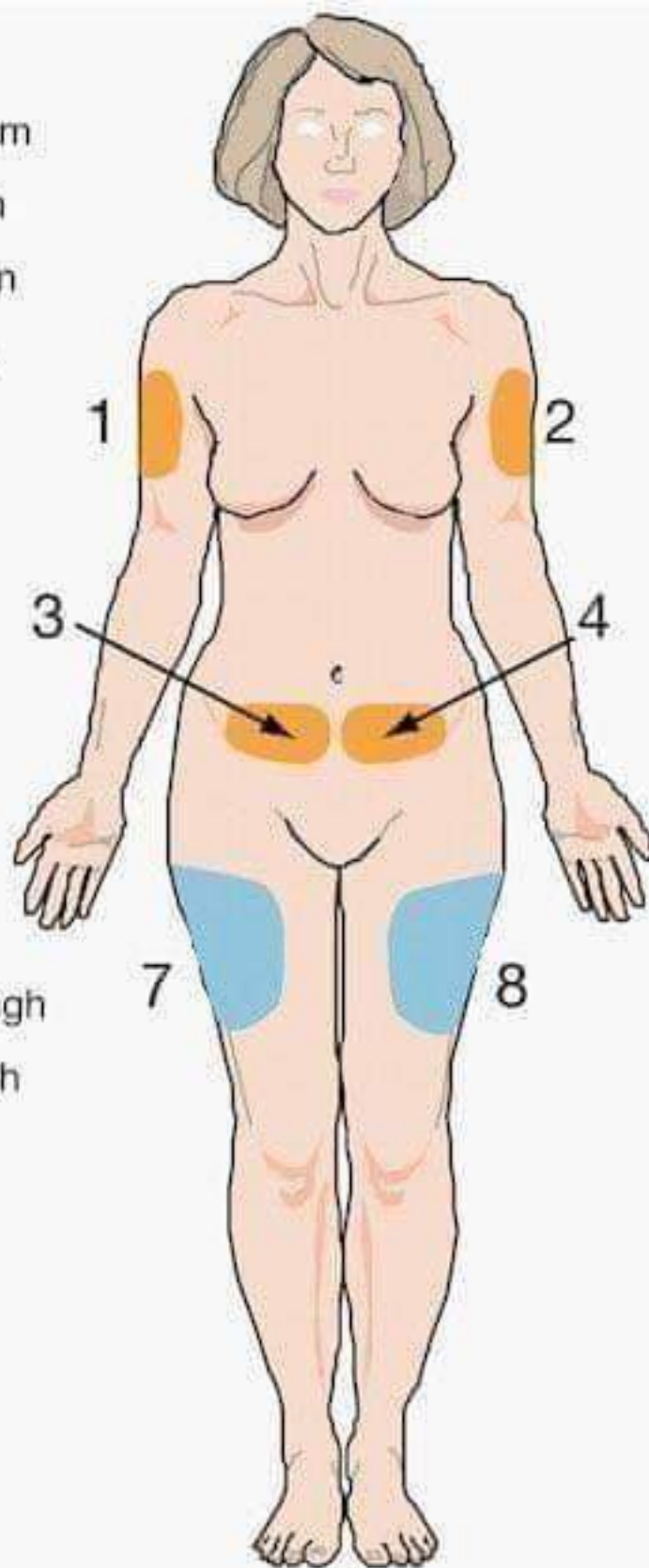


FIGURE 1B, C, D. Potential sites for intramuscular injection: Deltoid, ventrogluteal, rectus femoris, and vastus lateralis sites

- 1 Right upper arm
- 2 Left upper arm
- 3 Right abdomen
- 4 Left abdomen
- 5 Left buttock
- 6 Right buttock



- 7 Right lower thigh
- 8 Left lower thigh

