

IM and SQ Injections, after Drug PowerPoint

Objective: Students should learn to select the right syringe and needle for any medication, then correctly measure and safely inject medications. Safe disposal of sharps should be reinforced.

Material: Exam gloves; syringes, 1,2,5 cc; needles, 19, 21, and 25 gauge; alcohol or iodine for skin cleaning; sharps disposal; a variety of vials, both powder for adding water, and liquid, both stoppered vials and glass vials that must be broken; non-sterile gauze; a hand-held calculator for each student; oranges or bananas at each station; sterile saline for students to inject each other. Village Medical Manual, Volume 1, Appendix 1B.

Preparation: Prepare stations for the students. At each station, put out a vial and prepare a paper or 3 x 5 card with the age and weight of a patient and the usual adult dose for that patient. An example is given below. The students pass from one station to another, calculate the dose for the patient, show the instructor and then inject the orange or banana with that medication. They should be able to show and perform IM and SQ injections correctly.

Lab lecture: Show the different sizes of syringes and needles; show how to choose the smallest syringe that will suffice for the amount that you need to measure out. Use fine needles for watery medications, thicker needles for thick antibiotics. Inject smaller amounts into the arm and larger into the thigh or buttock.

Lab demonstrations:

1. Breaking the tip of a thin glass vial; withdrawing without injecting air.
2. Using a file to open a thick glass vial; withdrawing without injecting air.
3. Withdrawing water for injection from a stoppered vial or from a plastic twist-top vial.
4. Adding the water to powdered antibiotic.
5. Withdrawing a portion of that antibiotic, using a 19 gauge needle.
6. Showing the choice of injection sites on a human body: upper arm, anterior thigh, and buttock.
Be particularly careful to keep buttock injections in the upper outer quadrant.
7. Showing the difference between IM and SQ injections.

Student steps for measuring and injecting:

A: Practice in measuring amounts and injecting IM or SQ.

1. At each station, read the card that tells about the patient.
2. Choose an appropriate syringe and needle for that patient and that medication.
3. Assemble the syringe and needle.
4. Put on exam gloves.
5. Open the vial of water or medication.
6. Draw up the required amount, eliminating air bubbles.
7. Have your instructor observe as you inject the fruit.

B: Injecting saline into another human being.

1. Choose a partner.
2. Each of you inject the other with 1 ml of sterile saline using the technique you just learned.

Guidelines:

- If a student is squeamish about injecting another human being, you need to force the issue. Have both that student and his subject sit on the floor. If the squeamish one faints, you won't have a head injury to deal with.
- Stress that it is merciful to pierce the skin quickly rather than slowly.
- It may be helpful for students to draw the sciatic nerve in the buttock on the backside of a child volunteer, so they know how to avoid it.

Guidelines:

Be sure the students understand that the higher the number on the needle gauge, the finer the needle. Explain the difference between needle gauge and needle length.

Students must be careful to maintain sterility of the needles and syringes, in particular to not touch the plunger of the syringe when it is withdrawn from the barrel.

Reinforce safe sharps disposal.

Show how to use gauze between fingers and a breaking glass vial

Large adults should get the usual adult dose, not extra.

Be sure the students understand the difference between 0.5 ml and 0.05 ml.

Suggested Data for Injection Stations:

| Patient weight | Drug/concentration | Usual dosage | Syringe/needle | Answer |
|----------------|---|----------------------|-------------------|-------------------|
| 23 kg | Promethazine 25 mg/ml | Adult dose 50 mg IM | 1 ml/25 gauge | 0.5 ml IM arm |
| 5 kg | Epinephrine 1:1000 | Adult dose 0.5 ml SQ | 1 ml/25 gauge | 0.05 ml SQ arm |
| 13 kg | Benzathine Penicillin, 2.4 mu per 10 ml | Adult dose 2.4 mu IM | 3 ml/18-19 gauge | 2.5 ml IM buttock |
| 95 kg | Benzathine Penicillin, 2.4 mu per 10 ml | Adult dose 2.4 mu IM | 10 ml/18-19 Gauge | 10 ml IM buttock |
| 40 kg | Benzathine Penicillin, 2.4 mu per 10 ml | Adult dose 2.4 mu IM | 10 ml/18-19 Gauge | 8 ml IM buttock |
| 9 kg | Chloramphenicol 500 mg/3 ml | 50 mg/kg IM | 1 ml/19 gauge | 0.9 ml IM thigh |
| 32 kg | Atropine 1 mg/ml | 1 mg SQ | 1 ml/25 gauge | 0.7 ml SQ arm |