Some Calculations Involving Parenteral Admixtures

1. A medication order calls for 1000 mL of D₅W to be administered over an 8 hours period. Using an IV administration set that delivers 10 drops / mL, how many drops per minute should be delivered to the patient?

2. 10 mL of 10% calcium gluconate injection and 10 mL of multivitamin infusion are mixed with 500 mL of a 5% dextrose injection. It is to be administered over 5 hr. If the dropper is calibrated to give 15 drops/mL, at what rate (drop/min) should the flow be adjusted to administer the infusion over the desired time interval?

3. An intravenous infusion contains 10 mL of a 1:5000 solution of isoproterenol HCl and 500 mL of 5% dextrose. At what flow rate should the infusion be administered to provide 5 µg per min of isoproterenol hydrochloride and what time interval will be necessary for the administration of the entire infusion?

4. Using a nomogram:

   If 1 L of parenteral fluid is to be infused over 12 hr using an infusion set that deliver 20 drops/mL, what should be the rate of flow in drop/ min?

5. You are provided with 200,000 units Penicillin G sodium and sodium chloride as solvent. How can you prepare the following prescription:

   Rx
   - Penicillin G 15,000 unit / mL
   - Sodium chloride injection ad 10 mL
   Sig: for IM injection.

6. The package information enclosed that 5,000,000 units of Penicillin G potassium that when 23 mL of a sterile solvent are added to dry powder, the resulting concentration is 200,000 units/mL. How many mL of sterile water for injection should be used in preparing the following solution?

   Rx
   - Penicillin G potassium 5,000,000 units
   - Sterile Water for Injection Q.S.
   Sig: one mL = 500,000 unit of Penicillin G potassium. Make a solution containing 500,000 unit of Penicillin G potassium.
7. Streptomycin sulfate is available in 1 g vials, dry powder accounts for 0.8 mL of the final volume. How you would prepare the following:

Rx
Streptomycin sulfate 250 mg
Sodium chloride injection ad 15 mL
Sig: for IM injection.

8. An intravenous infusion is to contain 15 mEq of potassium ion and 20 mEq of sodium ion in 500 mL of 5% dextrose injection. Using potassium chloride injection containing 6 g/30 mL and 0.9% sodium chloride injection, how many milliliters of each should be used to supply the required ions.

9. A medication order for a child weighing 44 lb calls for polymyxin B sulfate to be administered by the intravenous drip method in a dosage of 7500 units/kg of body weight in 500 mL of 5% dextrose injection using a vial containing 500,000 units of polymyxin B sulfate and sodium chloride injection as the solvent, explain how you would obtain the polymyxin B sulfate needed in preparing the infusion.