

COMMUNITY COLLEGE OF RHODE ISLAND
NURSING 1020
IV FLUID AND MEDICATION ADMINISTRATION LAB
Objectives and Assignments

STUDENT OBJECTIVES:

At the completion of this lab the student will be able to:

- State the reasons for IV fluid administration
- Describe the nurses role in relation to IV fluid administration
- Identify factors influencing the rate of IV fluid administration
- Accurately calculate the drip rate for IV flow rates with different types of administration sets
- Identify various IV fluid types based upon the concept of tonicity
- Demonstration of skills of initiation and discontinuation of IV fluid therapy
- Identify various peripheral and central administration devices
- List the complications of IV fluid administration and the appropriate nursing interventions
- Demonstrate IV medication administration

Student Preparation:

- Smeltzer et al (2008) Brunner & Suddarth's Textbook of Medical-Surgical Nursing Read Chapter 14 (p.339 - 354)
- Lynn (2008) Taylor's Clinical Nursing Skills Read Chapter 15 (p. 831 – 878) and Chapter 5 (204 – 236)
- Pickar 7th ed. - Review Ch. 14 - IV Calculations and Ch.16 - Advanced IV Calculations
- Complete the attached IV Discussion Questions **before the lab** and **bring completed form to lab**.
- Complete the attached Practice IV Calculation Sheet **before the lab** and **bring completed form to lab**.

Audio-visuals

Taylor's Videos:

- Parenteral Medications
- IV Therapy Central
- Venous Access Devices

Content Outline:

1. Introduction of IV fluid therapy
 - a. Overview
 - b. Purposes in clinical practice
2. Principles of IV therapy
 - a. Body fluids
 - b. Tonicity
 - c. IV fluid types
3. IV orders/rates
 - a. Validation
 - b. Calculation
4. IV therapy administration devices
 - a. Peripheral (INT, midline)
 - b. Central (PICC, portacath, Passport, Hickman, TLC, Groshung)
5. Complications of IV fluid therapy
 - a. Discussion questions
6. Advanced IV therapy administration
 - a. TPN (total parenteral nutrition)
 - b. Blood/blood products
 - c. IV medications
7. Agency policy and procedures
8. Practice session (hands-on practice)

GENERAL CONSIDERATIONS IN FLUID ADMINISTRATION:

- The physician orders the type of solution and the rate of flow.
- The nurse is responsible for initiating the IV and maintaining the rate of flow.
- The nurse must be aware of the fluid composition, desired effect, usual rate of flow and complications associated with its use.

VARIATION IN DROP SIZE WITH DIFFERENT COMMERCIAL SETS:

- ABBOTT 15 GTTS./ML.
- TRAVENOL 10 GTTS./ML.
- CUTTER 20 GTTS./ML.
- MINIDRIP ALL TYPES 60 GTTS./ML.

IV SOLUTIONS & OSMOLARITY

HOW OSMOLARITY AFFECTS A SOLUTION			
	Isotonic Solution	Hypotonic Solution	Hypertonic Solution
Osmolarity	250-375 mOsm/L	<250 mOsm/L	> 375 mOsm/L
Physiologic effect	Fluid initially stays in intravascular compartment; no movement into or out of ICF compartment	Fluid shifts out of intravascular compartment into ICF and interstitial compartments	Fluid shifts out of ICF and interstitial compartments into intravascular compartment
Indications	Intravascular dehydration	Cellular dehydration	Intravascular dehydration with intracellular and interstitial overload
Examples	NS, LR, D ₅ W	0.45% NaCl, 2.5 %D, 0.33% NaCl	D ₅ NS, D ₅ ½ NS, D ₅ LR, D ₅ 0.33% NS, D ₁₀ W

IV Discussion Questions

Directions: Please complete the discussion questions on this sheet before **the IV Lab** and bring the **completed form** to the IV Lab. Incomplete forms will be evaluated as inadequate clinical preparation.

1. What is the formula for calculating IV flow rate in mL/h?

2. What is the formula for calculating IV flow rate in gtt/min?

3. What is the shortcut method using drop factor constant to calculate the IV flow rate in gtt/min?

4. List five general considerations for fluid administration?
 - a.
 - b.
 - c.
 - d.
 - e.

5. State 7 mechanical factors affecting gravity flow rate.
 - a.
 - b.
 - c.
 - d.
 - e.
 - f.
 - g.

6. State 3 uses for isotonic IV solutions.

- a.
- b.
- c.

7. State 2 uses for hypotonic IV solutions.

- a.
- b.

8. State 2 uses for hypertonic IV solutions.

- a.
- b.

9. List 5 complications of IV fluid administration and one nursing intervention for each.

- a.
- b.
- c.
- d.

10. What is the only solution that Dilantin (phenytoin) can be mixed with?

11. What is the purpose for maintaining positive pressure when flushing an IV access device?

Community College of Rhode Island

Nursing 1020

IV Calculations

Directions: Please complete the IV Calculations questions on this sheet before **the IV Lab** and bring the **completed form** to the IV Lab. Incomplete forms will be evaluated as inadequate clinical preparation

1. Mezlocillin 4 g in 100 cc D5W to infuse over 1 hour.

Using IV tubing with a drop factor of 15 gtt/mL infuse at _____ gtt/min

Using IV tubing with a drop factor of 10 gtt/mL infuse at _____ gtt/min

Using IV tubing with a drop factor of 20 gtt/mL infuse at _____ gtt/min

Using an IV infusion pump infuse at _____ mL/h

2. Zantac 150 mg in 50 mL of NS to run over 30 minutes

Using IV tubing with a drop factor of 15 gtt/mL infuse at _____ gtt/min

Using IV tubing with a drop factor of 10 gtt/mL infuse at _____ gtt/min

Using IV tubing with a drop factor of 20 gtt/mL infuse at _____ gtt/min

Using an IV infusion pump infuse at _____ mL/h

3. Administer 2000 mL over 24 hours.

What is the flow rate? _____ mL/h

Using IV tubing with a drop factor of 15 gtt/mL infuse at _____gtt/min

Using IV tubing with a drop factor of 10 gtt/mL infuse at _____gtt/min

Using an IV infusion pump infuse at _____mL/h

4. Administer 1 L of RL to run at 75 cc/h

Using IV tubing with a drop factor of 15 gtt/mL infuse at _____gtt/min

Using IV tubing with a drop factor of 10 gtt/mL infuse at _____gtt/min

Using an IV infusion pump infuse at _____mL/h

5. Add 40 mEq of KCl to 1000 mL of D5W. Supply is 2 mEq/mL. How many mL will you add to the bag?

6. Administer 1000 mL of NS over 6 hours.

Using IV tubing with a drop factor of 15 gtt/mL infuse at _____gtt/min

Using IV tubing with a drop factor of 10 gtt/mL infuse at _____gtt/min

Using IV tubing with a drop factor of 20 gtt/mL infuse at _____gtt/min

Using an IV infusion pump infuse at _____mL/h

7. A standard Heparin drip has 25,000 Units of Heparin per 500 mL of D5W. Calculate the number of units of Heparin per mL of solution _____Units/mL

Calculate the flow rate to administer 500 Units/h _____mL/h

Calculate the flow rate to administer 1200 Units/h