

**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:**

- Lewis, et al, Medical-Surgical Nursing, 7<sup>th</sup> ed., Volumes 1 & 2, Mosby Elsevier, 2007  
Page 289 -290
- Lynn (2008) Taylor's Clinical Nursing Skills Read Chapter 15 (p. 831 – 878) and Chapter 5 (204 – 236)
- Pickar 7<sup>th</sup> 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

	<b>Isotonic Solution</b>	<b>Hypotonic Solution</b>	<b>Hypertonic Solution</b>
<b>Osmolarity</b>	250-375 mOsm/L	<250 mOsm/L	> 375 mOsm/L
<b>Physiologic effect</b>	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
<b>Indications</b>	Intravascular dehydration	Cellular dehydration	Intravascular dehydration with intracellular and interstitial overload
<b>Examples</b>	NS, LR, D <sub>5</sub> W	0.45% NaCl, 2.5 %D, 0.33% NaCl	D <sub>5</sub> NS, D <sub>5</sub> ½ NS, D <sub>5</sub> LR, D <sub>5</sub> 0.33% NS, D <sub>10</sub> W

### IV Discussion Questions



- 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?

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## 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