NRSR 0032 - IV THERAPY TECHNIQUES AND MEDICATION ADMINISTRATION IN NURSING

Catalog Description

Prerequisite: Acceptance into the Sierra College Associate Degree Nursing program
Corequisite: Concurrent enrollment in NRSR 22
Hours: 18 lecture
Description: Designed to equip healthcare professionals with the essential knowledge and practical skills required for safe and effective intravenous (IV) therapy. The course focuses on foundational concepts, principles, and techniques essential for nurses who administer IV therapy in diverse healthcare settings. This course combines theoretical knowledge with practical application, ensuring that participants are well-prepared to deliver safe and competent IV therapy. (pass/no pass grading) (CSU)

Course Student Learning Outcomes

- CSLO #1: Analyze and apply pharmacological principles to accurately prepare and administer intravenous medications, blood and blood products.
- CSLO #2: Explain the indications, contraindications, and potential side effects of commonly used IV drugs, blood, and blood products.
- CSLO #3: Accurately perform dosage calculations for IV medications, including conversion between measurement systems, rate calculations, and adjustments based on patient-specific factors, to ensure safe and effective medication delivery.

Effective Term

Fall 2025

Course Type

Credit - Degree-applicable

Contact Hours

18

Outside of Class Hours

36

Total Student Learning Hours

54

Course Objectives

1. Explain the principles of IV therapy, including indications, contraindications, and complications.

2. Demonstrate proficiency in calculating appropriate IV fluid volumes and infusion rates based on patient weight, condition, and treatment goals.

3. Explain the importance of maintaining fluid and electrolyte balance in the body and the role of IV therapy in achieving this balance.

4. Identify common types of IV solutions, their composition, and their clinical applications.

5. Describe the mechanisms of action, indications, and potential complications of commonly used IV medications.

6. Perform accurate dosage calculations for IV medications, considering factors such as patient weight, drug concentration, and infusion rate.

7. Demonstrate proper techniques for preparing IV medications, including reconstitution, dilution, and admixture.

8. Apply the principles of aseptic technique and infection control when handling IV equipment and administering IV therapy.

9. Describe signs and symptoms of fluid and electrolyte imbalances and explain how to adjust IV therapy accordingly.

10. Evaluate patient responses to IV therapy, including monitoring vital signs, fluid intake and output, and electrolyte levels, and modify treatment plans as needed.

11. Demonstrate proper procedures for the administration of blood and blood products via IV therapy, including verification of compatibility, monitoring for transfusion reactions, and adherence to transfusion safety protocols.

Dosage Calculation Objectives

1. Calculate the intravenous (IV) flow rate by infusion pump in milliliters per hour (mL/hr).
2. Identify the two types of IV administration tubing used for infusion by gravity.
3. Calculate the IV flow rate for IV infusion by gravity in drops per minute (gtt/min).
4. Calculate the IV flow rate for medications administered IV piggyback (IVPB).
5. Calculate the infusion and completion times for an IV.
6. Calculate infusion times when a rate in mL/hr is not indicated.
7. Calculate the rate for medications administered IV push.
8. Calculate dosages based on milligrams per kilogram.
9. Calculate insulin and heparin dosages being administered intravenously (mL per hr, units per hr).

General Education Information

- Approved College Associate Degree GE Applicability
- CSU GE Applicability (Recommended-requires CSU approval)
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

Articulation Information

- CSU Transferable

Methods of Evaluation

- Objective Examinations
  - Example: Sample Test Questions: A client is receiving continuous hypertonic IV infusion. Which assessment data will require the most rapid response from the nurse? 1. Radial pulse is 105 beats/min. 2. Sediment and blood in the client's urine. 3. Blood pressure increases from 120/80 to 134/84 mm Hg. 4. Crackles in both lung fields
- Problem Solving Examinations
  - Example: Students must take a dosage calculation quiz. Sample Test Question, Dosage Calculation: Round answers per Sierra College Nursing Program Policy, and label answer with correct measurement/label/unit. A patient has a double-lumen central line. Calculate the 24-hour intravenous intake in mL. The patient received: • Piperacillin/Tazobactam (Zosyn) 3.375 mg in 100 mL NS every 8 hours • Ceftriaxone (Rocephin) 1 gram in 100 mL NS daily • Vancomycin 250 mg in 250 mL NS every 12 hours • D5W 45% NS 50 mL/hr continuously

Repeatable

No

Methods of Instruction

- Lecture/Discussion

Lecture:

1. The instructor will lecture on the different types of intravenous fluids administered in the acute care setting. The student will compare and contrast the differences between these IV fluids.

Typical Out of Class Assignments

Reading Assignments

Read textbook chapters on practice guidelines and protocols to medication administration and be prepared to apply in class.

Writing, Problem Solving or Performance

Use chapter information to complete practice dosage problems.

Other (Term projects, research papers, portfolios, etc.)

Required Materials

- Phillip's Manual of IV Therapeutics
  - Author: Gorski, L. A.
  - Publisher: F. A. Davis
  - Publication Date: 2023
  - Text Edition: 8th
  - Classic Textbook?: Yes
  - OER Link:
  - OER:
- Calculate With Confidence
  - Author: Morris, D. C.
  - Publisher: Elsevier
  - Publication Date: 2022
  - Text Edition: 8th
  - Classic Textbook?: Yes
  - OER Link:
  - OER:

Other materials and-or supplies required of students that contribute to the cost of the course.