Aseptic Technique and IV Admixtures
Course Outcome Summary

Course Information
Organization: South Central College
Course Number: PHRM 2106
Total Credits: 3

Description
This course will equip the student with knowledge of aseptic technique through both demonstrations and hands on experiences in the preparation of sterile compounds and IV admixtures. This course covers the preparation, calculations and procedures for intravenous drug admixtures, TPN compounding, and critical care admixtures. Dispensing to nursing units will also be covered, including proper medication storage and stability requirements. This course is intended to satisfy goals 2, 3 and 12 of the model curriculum for pharmacy technician training, developed by the American Society of Health System Pharmacists.
Prerequisites: PHRM 1103, 1104

Types of Instruction
Instruction Type | Contact Hours | Credits
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Lecture | 16 | 1
Lab | 64 | 2

Prerequisites
PHRM 1103. 1104

Exit Learning Outcomes
Core Abilities
A. Critical Thinking
B. Communication
C. Math Logic Reasoning

Competencies
1. Develop a basic knowledge of the need for sterile compounding
   Learning Objectives
   a. List and define various routes of administration of medications indicating which routes require a sterile preparation be used
   b. Differentiate between a peripheral and central line and when each would be indicated for use
2. Demonstrate a pharmacy technician's role in sterile compounding
   Learning Objectives
   a. Discuss the implications of USP Chapter 797
   b. List the five rights of medication administration
   c. Describe the training process for personnel working in a sterile compounding and/or IV admixture environment.
   d. Describe the documentation required in sterile compounding.
e. Compare and contrast process validation, quality assurance and end product testing.
f. Apply the pharmacy technician code of ethics in role play situations related to sterile compounding.

3. **Establish a sterile compounding environment**
   **Learning Objectives**
   a. Explain the types of hoods used in sterile compounding including the advantages and disadvantages of each
   b. Describe the areas of a clean room environment and what is allowed or prohibited in those areas
   c. Differentiate between multiple types of contaminants

4. **Demonstrate knowledge of sterile compounding supplies and their respective functions**
   **Learning Objectives**
   a. Identify a vial, ampule, transfer needle, filter needle, filter straw, stop cock, IV port, port adapter, and IV tubing.
   b. Distinguish between single use vials and multiple dose vials.
   c. Differentiate between common IV base solutions.
   d. Identify the parts of a syringe and needle.
   e. List and describe the different types of finished sterile products.

5. **Apply calculations used in sterile compounding**
   **Learning Objectives**
   a. Demonstrate the proper use of conversions, ratios, proportions and allegations.
   b. Apply dimensional analysis.
   c. Calculate IV flow rates.
   d. Calculate volumes required of stock medications to acquire physician ordered dose strength.
   e. Understand the concept of pediatric dosage calculations and why it varies from the typical adult dosage.

6. **Demonstrate ability to read medication orders**
   **Learning Objectives**
   a. Recognize common medication order abbreviations
   b. Determine the name of drug and desired strength ordered
   c. Identify parts of a medication order required to fill order
   d. List special requirements of sterile compounds and/or IV admixtures containing controlled substances

7. **Apply garbing for sterile product preparation**
   **Learning Objectives**
   a. Demonstrate proper hand washing technique
   b. Demonstrate proper gloving technique
   c. Demonstrate proper aseptic garbing
   d. Demonstrate proper ‘de-garbing’ after compounding

8. **Demonstrate use of hoods**
   **Learning Objectives**
   a. Demonstrate procedure for proper hood cleaning of a horizontal laminar flow hood and barrier isolator.
   b. Explain the terms: clean air, area of turbulence, antechamber, positive pressure, negative pressure and the six inch rule.
c. Compare and contrast how items would be placed in a hood so the clean air flow is not interrupted when using a horizontal laminar airflow hood vs. a barrier isolator.

d. List the advantages and disadvantages of horizontal laminar airflow hood, a biological safety cabinet, and a barrier isolator.

e. List common errors made by technicians when utilizing a horizontal laminar airflow hood and how to avoid them.

9. **Demonstrate application of aseptic technique**

   **Learning Objectives**
   
a. Demonstrate preparation through hand washing, garbing, pre-calculation, and selection of materials.

b. Demonstrate entering a vial

c. Demonstrate opening a glass ampule and properly removing the contents

d. Explain how to manipulate supplies such as needles, filters, and syringes.

e. Explain the theory of clean air

f. Define and explain the importance of proper aseptic technique

10. **Apply compounding of Total Parenteral Nutrition (TPN)**

   **Learning Objectives**
   
a. Explain why a patient receives a TPN

b. List the additives used in making a TPN

c. Describe how to admix a TPN

d. Discuss automatic mixing equipment

11. **Apply compounding use in Chemotherapy**

   **Learning Objectives**
   
a. Explain how cytotoxic agents are used to treat cancer

b. Explain safety procedures for handling chemotherapy agents

c. Discuss appropriate procedures for preparing chemotherapy agents

d. List hazards involved with preparing chemotherapy agents

e. Describe how to clean up a spill involving chemotherapy agents