



Western Technical College

## 10515173 Respiratory Pharmacology

### Course Outcome Summary

#### Course Information

<b>Description</b>	Examines basic pharmacology principles, drug dosage, and calculations. Medications for inhalation including mucolytics, bronchodilators, and anti-inflammatories. Also includes cardiac drugs, anesthetic drugs, neuromuscular blockers, and antimicrobials. Emphasis is placed on promotion of evidence-based practice using established clinical practice guidelines and published research for its relevance to patient care.
<b>Career Cluster</b>	Health Science
<b>Instructional Level</b>	Associate Degree Courses
<b>Total Credits</b>	3
<b>Total Hours</b>	54

#### Textbooks

*Integrated Cardiopulmonary Pharmacology-Loose Leaf Plus*. 5th Edition. Copyright 2019. Colbert, Bruce J., Barbara J. Kennedy, and Luis Gonzalez. Publisher: BTV Publishing. **ISBN-13:** 978-1-5178-0509-8. Required.

#### Success Abilities

1. Cultivate Passion: Enhance Personal Connections
2. Cultivate Passion: Expand a Growth-Mindset
3. Live Responsibly: Develop Resilience
4. Live Responsibly: Foster Accountability
5. Refine Professionalism: Act Ethically
6. Refine Professionalism: Participate Collaboratively

#### Program Outcomes

1. Apply respiratory therapy concepts to patient care situations.

#### Course Competencies

## 1. Apply basic pharmacology principles to medication management

### Assessment Strategies

- 1.1. in an oral or written response to scenarios and/or questions

### Criteria

*Your performance will be successful when:*

- 1.1. response differentiates between drug actions and drug effects
- 1.2. response differentiates between systemic effects and local effects
- 1.3. response differentiates between loading dose and maintenance dose
- 1.4. response differentiates among therapeutic, toxic, and lethal dose
- 1.5. response describes various undesirable drug effects

### Learning Objectives

- 1.a. Define key terms related to pharmacologic principles
- 1.b. Differentiate systemic effects and local effects
- 1.c. Differentiate loading dose and maintenance dose
- 1.d. Differentiate therapeutic, toxic, and lethal dose
- 1.e. Discuss principles of drug poisonings, adverse drug reactions, and various undesirable drug effects
- 1.f. Describe the processes of drug absorption, distribution, metabolism and elimination

## 2. Compare and contrast drug forms, routes of administration and vehicles

### Assessment Strategies

- 2.1. in an oral or written response to scenarios and/or questions

### Criteria

*Your performance will be successful when:*

- 2.1. response among between drug forms
- 2.2. response relates routes of administration to onset of action
- 2.3. response determines appropriate route of administration on a given patient scenario

### Learning Objectives

- 2.a. Discuss advantages and disadvantages of different routes of drug administration
- 2.b. Determine the correct route of drug delivery based on patient condition
- 2.c. Relate route of administration to onset of action

## 3. Calculate medication dosage

### Assessment Strategies

- 3.1. by performing dosage calculations

### Criteria

*Your performance will be successful when:*

- 3.1. you calculate dosages based on weight
- 3.2. you interpret and use medical abbreviations pertaining to medication administration
- 3.3. you convert from one measurement system to another
- 3.4. you calculate dosages from percentage-strength solutions

### Learning Objectives

- 3.a. Calculate dosages based on weight
- 3.b. Interpret and use medical abbreviations pertaining to medication administration
- 3.c. Perform conversions between units of measure in the metric and English systems
- 3.d. Calculate the strength of solutions in percentage and ratio form

## 4. Examine the pharmacodynamics of mucolytics, expectorants, surfactants, and antitussives

### Assessment Strategies

- 4.1. in an oral, written, or graphical response to scenarios and/or questions

### Criteria

*Your performance will be successful when:*

- 4.1. examination includes the classifications and actions of the drugs
- 4.2. examination includes examples of when, how and to whom drugs may be administered
- 4.3. examination includes the side effects and special considerations associated with the drugs
- 4.4. examination includes considerations and implications of using the drugs and the cardiopulmonary status of the patient
- 4.5. examination includes recommended age specific dosage

**Learning Objectives**

- 4.a. Classify and state the actions of related drugs
- 4.b. Provide examples of when, how and to whom drugs may be administered including age specific dosage
- 4.c. Explain the side effects and special considerations associated with the drugs
- 4.d. Describe how surface tension relates to oxygenation and work of breathing
- 4.e. Define key terms related to mucokinetic and surfactant agents

**5. Examine the pharmacodynamics of bronchodilators**

**Assessment Strategies**

- 5.1. in an oral, written, or graphical response to scenarios and/or questions

**Criteria**

*Your performance will be successful when:*

- 5.1. examination includes the classifications and actions of the drugs
- 5.2. examination includes examples of when, how and to whom drugs may be administered
- 5.3. examination includes the side effects and special considerations associated with the drugs
- 5.4. examination includes considerations and implications of using the drugs and the cardiopulmonary status of the patient
- 5.5. examination includes recommended age specific dosage

**Learning Objectives**

- 5.a. Classify the three pharmacologic methods for bronchodilation (sympathomimetic, anticholinergic, and xanthine) and the mode of action of each
- 5.b. Describe the side effects and special considerations associated with these drugs
- 5.c. Describe appropriate techniques for monitoring the patient's response to bronchodilator therapy
- 5.d. Recommend appropriate bronchodilator therapy for various patients situations including age, drug dosage, frequency, and route of delivery
- 5.e. Describe neurologic control of bronchial smooth muscle including sympathetic and parasympathetic nerves, their chemical mediators, and how bronchodilation occurs

**6. Examine the pharmacodynamics of anti-inflammatories, steroidal and non steroidal**

**Assessment Strategies**

- 6.1. in an oral, written, or graphical response to scenarios and/or questions

**Criteria**

*Your performance will be successful when:*

- 6.1. examination includes the classifications and actions of the drugs
- 6.2. examination includes examples of when, how and to whom drugs may be administered
- 6.3. examination includes the side effects and special considerations associated with the drugs
- 6.4. examination includes considerations and implications of using the drugs and the cardiopulmonary status of the patient
- 6.5. examination includes recommended age specific dosage

**Learning Objectives**

- 6.a. Classify and state the actions of anti-inflammatory and antiasthmatic drugs
- 6.b. Provide examples of when, how and to whom drugs may be administered including age specific considerations
- 6.c. Discuss the side effects and special considerations associated with the administration and use of anti-inflammatories including steroid dependency
- 6.d. Describe the physiology of corticosteroids

**7. Examine the pharmacodynamics of cardiopulmonary drugs, vasodilators, pulmonary vasodilators vasoconstrictors, diuretics**

### **Assessment Strategies**

7.1. in an oral, written, or graphical response to scenarios and/or questions

### **Criteria**

- 7.1. examination includes the classifications and actions of the drugs
- 7.2. examination includes examples of when, how and to whom drugs may be administered
- 7.3. examination includes the side effects and special considerations associated with the drugs
- 7.4. examination includes considerations and implications of using the drugs and the cardiopulmonary status of the patient

### **Learning Objectives**

- 7.a. Classify and state the action of drugs used to treat cardiovascular insufficiency
- 7.b. Provide examples of when, how and to whom drugs may be administered
- 7.c. Discuss the side effects and special considerations associated with the use of cardiovascular drugs
- 7.d. Relate cardiovascular physiology to pharmacologic treatment of acute coronary syndrome, arrhythmias, and heart failure

## **8. Examine the pharmacodynamics of anesthetics, muscle blockers, analgesics, sedatives, hypnotics, and tranquilizers**

### **Assessment Strategies**

8.1. in an oral, written, or graphical response to scenarios and/or questions

### **Criteria**

*Your performance will be successful when:*

- 8.1. examination includes the classifications and actions of the drugs
- 8.2. examination includes examples of when, how and to whom drugs may be administered
- 8.3. examination includes the side effects and special considerations associated with the drugs
- 8.4. examination includes considerations and implications of using the drugs and the cardiopulmonary status of the patient

### **Learning Objectives**

- 8.a. Classify and state the actions of the drugs
- 8.b. Provide examples of when, how and to whom drugs may be administered
- 8.c. Discuss the side effects and special considerations associated with these drugs
- 8.d. Describe the implications of using the drugs and the possible effect on the cardiopulmonary status of the patient

## **9. Examine the pharmacodynamics of antimicrobials, antivirals, antiinfectives, smoking cessation medications and vaccines**

### **Assessment Strategies**

9.1. in an oral, written, or graphical response to scenarios and/or questions

### **Criteria**

- 9.1. examination includes the classifications and actions of the drugs
- 9.2. examination includes examples of when, how and to whom drugs may be administered
- 9.3. examination includes the side effects and special considerations associated with the drugs
- 9.4. examination includes considerations and implications of using the drugs and the cardiopulmonary status of the patient

### **Learning Objectives**

- 9.a. Classify and describe the actions these drugs
- 9.b. Provide examples of when, how and to whom drugs may be administered
- 9.c. Discuss the side effects and special considerations associated with these drugs
- 9.d. Discuss the effects and possible side effects of these drugs on the cardiopulmonary status of the patient