RSPT 60C: PULMONARY DIAGNOSTICS

Foothill College Course Outline of Record

Heading	Value
Units:	3
Hours:	2.5 lecture, 2 laboratory per week (54 total per quarter)
Prerequisite:	RSPT 51C.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	CSU
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

Student Learning Outcomes

- Relate results to disease process and recommends appropriate therapy.
- Perform selected cardio-pulmonary diagnostic tests.

Description

Selection, performance, and interpretation of tests used to diagnose cardiopulmonary abnormalities. Intended for students in the Respiratory Therapy Program; enrollment is limited to students accepted into the program.

Course Objectives

The student will be able to:
A. Identify and describe pulmonary function testing fundamentals
B. Interpret blood gases and related tests
C. Describe the uses and limitations of cardiopulmonary exercise testing
D. Describe metabolic studies and discuss their uses and limitations
E. Identify important aspects of bronchoscopy related to the diagnosis of lung disease
F. Discuss the importance of quality control procedures

Course Content

A. Pulmonary function testing fundamentals
1. Indications for pulmonary function testing
2. Pulmonary function equipment basics
3. Spirometry and related tests
a. Flow/volume loops in pulmonary diagnosis
b. Flow/time tracings for specific disease states
4. Bronchial provocation
a. Methacholine challenge
5. Measuring lung volumes
a. Plethysmography
b. Helium dilution
c. Nitrogen washout and discuss its uses
6. Distribution indices
7. Diffusing measurement
8. Resistance and compliance measurement
9. Calculations and application of norms
a. Individual variations
b. Racial influences on test results
B. Blood gases and related tests
1. Collection and interpretation of arterial blood gases
2. Non-invasive measurements in pulmonary medicine
a. Pulse oximetry
b. Capnography
3. Blood gas analyzers
a. Standard analyzers
b. Point of care analyzers
C. Cardiopulmonary exercise testing
1. Exercise protocols
2. Testing monitoring
D. Metabolic studies
1. Oxygen consumption measurement
2. Carbon dioxide production
E. Bronchoscopy
1. Indications and hazards related to bronchoscopy
2. Preparation of the patient for bronchoscopy
3. Procedures that may be performed with bronchoscopy
F. Quality control procedures
1. Calibration of pulmonary diagnostic equipment
2. Cleaning and sterilization techniques for pulmonary diagnostic equipment
3. Criteria for acceptability of results of pulmonary function tests

Lab Content

A. Students will learn hands-on how to perform pulmonary function tests, including:
1. Indications for pulmonary function testing
2. Equipment basics including calibration
3. Spirometry and related tests
a. Flow/volume loops
b. Flow/time tracing
4. Students will learn the concepts and indications for bronchial provocation tests
a. Methacholine challenges for diagnostic purposes
5. Students will perform lung volume measurements, including:
a. Plethysmography
b. Helium dilution
c. Nitrogen washout
6. Students will learn about distribution indices
7. Students will learn diffusion measurements
8. Resistance and compliance measurement
9. Calculations and application of norms
a. Individual variations
b. Racial influences on test results
B. Blood gases and related tests
1. Arterial blood gases: collection and interpretation
2. Non-invasive measurements
a. Pulse oximetry
b. Capnography
3. Principles of operation of blood gas analyzers
a. Standard analyzers
b. Point of care analyzers
C. Cardiopulmonary exercise testing
1. Exercise protocols
2. Monitoring
D. Metabolic studies
1. Oxygen consumption
2. Carbon dioxide production
3. Calorimetry
E. Students will be able to describe bronchoscopy procedures

1. Indications and hazards
2. Preparation of the patient
3. Procedures that may be performed
F. Students will learn quality control procedures, including:
1. Calibration and maintenance
a. Gas analyzers
b. Spirometers and lung volume equipment
2. Cleaning and sterilization
3. Criteria for acceptability of results

Special Facilities and/or Equipment

Laboratory with diagnostic equipment, supplies, compressed gas, cleaning/disinfection capability and storage facilities. Lecture facility with overhead projector/computer and internet access.

Method(s) of Evaluation

Methods of evaluation may include:
A. Quizzes and midterm
B. Lab assignments
C. Written final exam

Method(s) of Instruction

Lecture and lab demonstration.

Representative Text(s) and Other Materials

Mottram, Carol. Ruppel's Manual of Pulmonary Function Testing. 10th ed. St. Louis: Mosby, 2013. ISBN: 978-0323085052

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

Assigned reading from textbook: approximately one chapter per week, averaging 30 pages.

Discipline(s)

Respiratory Technologies