

COLLEGEWIDE COURSE OUTLINE OF RECORD

RESP 105, CARDIOPULMONARY PATHOPHYSIOLOGY

COURSE TITLE: Cardiopulmonary Pathophysiology

COURSE NUMBER: RESP 105

REREQUISITES: RESP 103 Cardiopulmonary Anatomy and Physiology

SCHOOL: Health Sciences

PROGRAM: Respiratory Therapy

CREDIT HOURS: 3

CONTACT HOURS: Lecture: 3

DATE OF LAST REVISION: Fall, 2019

EFFECTIVE DATE OF THIS REVISION: Spring, 2020

CATALOG DESCRIPTION: This course introduces etiology, symptomatology, diagnosis, therapeutics, diagnosis and prognosis of selected pulmonary diseases. Students will be expected to identify pertinent information from a patient's record and apply assessment techniques as it relates to various disease processes.

MAJOR COURSE LEARNING OBJECTIVES FROM 2020 NBRC MATRIX: Upon successful completion of this course the student will be expected to:

1. Evaluate data in the patient record
 - a. Patient history (history of present illness (HPI), orders, medication reconciliation, progress notes, DNR status/advanced directives, and social/family/medical hx)
 - b. Physical exam relative to the cardiopulmonary system (vitals, physical findings)
 - c. Lines, drains, and airways (chest tube, vascular lines, artificial airways)
 - d. Laboratory results (CBC, electrolytes, coagulation, Sputum C&S, cardiac biomarkers)
 - e. Blood gas analysis and/or hemoximetry (CO-oximetry) results
 - f. PFT results (spirometry, lung volumes, DLCO)
 - g. Imaging studies (radiographs, CT, PET, V/Q, Ultrasound/echocardiography)
 - h. Sleep study results
 - i. Trends in monitoring:
 - i. fluid balance
 - ii. vital signs
 - iii. pulmonary compliance
 - iv. airway resistance
 - v. work of breathing
 - vi. noninvasive pulse oximetry
 - vii. Cardiac monitoring results (ECG and hemodynamic parameters)
 - j. Determination of a patient's pathophysiological state
2. Perform clinical assessment by interviewing patient to determine:
 - a. Level of consciousness, orientation, emotional state and ability to cooperate
 - b. Level of pain
 - c. Presence of dyspnea, sputum production and exercise tolerance

- d. Smoking history
 - e. Environmental exposures
 - f. Activities of daily living
3. Perform clinical assessment by performing inspection to assess:
 - a. General appearance
 - b. Characteristics of the airway (patency, Mallampati classification, tracheal shift)
 - c. Cough, sputum amount, and character
 4. Perform a clinical assessment by palpating to assess:
 - a. Pulse, rhythm, and intensity
 - b. Accessory muscle activity
 - c. Asymmetrical chest movements, tactile fremitus, crepitus, tenderness, tactile rhonchi, and tracheal deviation
 5. Perform clinical assessment by diagnostic percussion.
 6. Perform clinical assessment by auscultating
 - a. Breath sounds
 - b. Blood pressure
 7. Perform clinical assessment by reviewing a chest radiography:
 - a. Quality of imaging, (patient positioning, penetration, lung inflation)
 - b. Presence and position of airways, lines and drains
 - c. Presence of foreign bodies
 - d. Heart size and position
 - e. Presence or change in:
 - i. Cardiopulmonary abnormalities (pneumothorax, pleural effusion, consolidation, pulmonary edema, pulmonary artery size)
 - ii. Diaphragm, mediastinum, or trachea
 8. Evaluate procedure results:
 - a. Noninvasive monitoring
 - b. Peak flow
 - c. Tidal volume, minute volume, MIP, and vital capacity
 - d. Blood gas analysis/hemoximetry
 - e. Hemodynamic monitoring
 - f. Pulmonary compliance and airways resistance
 - g. Overnight pulse oximetry
 - h. CPAP/NPPV titration during sleep
 - i. Spirometry screening inside or outside of a pulmonary function laboratory
 - j. DLCO screening inside of a pulmonary function laboratory
 - k. Lung volumes screening inside of a pulmonary function laboratory
 9. Recommend diagnostic procedures:
 - a. Testing for tuberculosis
 - b. Laboratory tests (electrolytes, CBC, coagulation studies, sputum C&S, cardiac biomarkers)
 - c. Imaging studies
 - d. Bronchoscopy (diagnostic and therapeutic)
 - e. Bronchoalveolar lavage (BAL)
 - f. Pulmonary function testing
 - g. Noninvasive monitoring (pulse ox, capnography)
 - h. Blood gas and/or hemoximetry analysis

- i. Exhaled gas analysis (CO₂, CO and NO (FeNO))
 - j. Sleep studies
10. Discusses the administration of medications and specialty gases for specific disease pathologies:
- a. Antimicrobial
 - b. Pulmonary vasodilators
 - c. Bronchodilators
 - d. Mucolytics/proteolytics
 - e. Steroid
 - f. Heliox
 - g. INC
11. Utilize evidence-based medicine principles or clinical practice guidelines to/for:
- a. Classify disease severity
 - b. Recommend changes in the therapeutic plan when indicated
 - c. Application of guidelines (ARDS Net, NAEPP, GOLD)
12. Use Objectives #1-11 to discuss each of the following pathologies:
- a. Obstructive Disorders (Emphysema, Chronic Bronchitis, Bronchiectasis, Asthma, Cystic Fibrosis)
 - b. Fibrosis)
 - c. Trauma (Chest: pneumothorax, flail chest, hemothorax)
 - d. Cardiovascular Disease (CHF/pulmonary edema, DVT/Pulmonary emboli)
 - e. Neurologic/Neurosurgical (Myasthenia Gravis, Guillain Barre' Syndrome, Drug Overdose, Poliomyelitis, Tetanus, Muscular Dystrophy, and ALS)
 - f. Sleep Disorders (Obstructive, Central, and Mixed Sleep Apnea)
 - g. Infectious Diseases (Pneumonia, Tuberculosis, Lung Abscess, Fungal Disease, and HIV/AIDS)
 - h. Pleural and Chest Wall Disorders (Pleural effusion and Empyema)
 - i. Neoplastic Lung Disease (Lung Cancer)
 - j. Diffuse Alveolar Disease (ARDS)
 - k. General Medical/Surgical (Post op Atelectasis, Near Drowning/Hypothermia, and Smoke Inhalation/Burns/CO poisoning)
 - l. Environmental Lung Diseases (Chronic Interstitial Lung Disease)
 - m. Respiratory Failure (Ventilatory versus Oxygenation versus Combined)

COURSE CONTENT: Topical areas of study include –

Disease processes identified in Objective 12
Review and evaluations

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Students are expected to attend and participate regularly in class meetings, online learning activities and other activities assigned as a part of a course of instruction. Faculty are required to report student participation in compliance with institutional policies and federal financial aid guidelines. Faculty and staff shall be sensitive to students' religious beliefs and observances, including an expectation that instructors make reasonable arrangements when a student must miss an exam or other academic exercise due to their religious observance. When notified in advance, and when possible, faculty will make allowances for students to make up missed work.

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If students write or speak about having survived sexual violence, including rape, sexual assault, dating violence, domestic violence, or stalking, federal law and Ivy Tech policies require that instructors share this information with the Campus Title IX Coordinator. The Campus Title IX Coordinator will contact students to let them know about accommodations and support services at the College and in the community as well as options for holding accountable the person who harmed them. When contacted, students are not required to speak with the Campus Title IX Coordinator.

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