

Course Competency

RET 2503 RESPIRATORY CARE PATHOPHYSIOLOGY 2

Course Description

This is a foundation course on cardiopulmonary disease. The student will learn the pathogenesis, diagnosis, treatment and rehabilitation of the diseases that are included in the course. Prerequisite: RET 1484; Prerequisite: RET 1484. (2 hr. lecture)

Course Competency	Learning Outcomes
<p>Competency 1: The student will describe the language and techniques associated with chest radiography and other important radiographic techniques used in assessment of the patient with cardiopulmonary disease by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Describing the fundamentals of radiography 2. Differentiating between the following standard positions and techniques of chest radiography: 1. Posteroanterior radiograph 2. Anteroposterior radiograph 3. Lateral radiograph 4. Lateral decubitus radiograph 3. Defining the following radiologic terms commonly used when inspecting the chest radiograph: 1. Air cyst 2. Bleb 3. Bronchogram 4. Bulla 5. Cavity 6. Consolidation 7. Homogeneous density 8. Honeycombing 9. Infiltrate 10. Interstitial density 11. Lesion 12. Opacity 13. Pleural density 14. Pulmonary mass 15. Pulmonary nodule 16. Radiodensity 17. Radiolucency 18. Translucent 4. Describing the three steps to evaluate technical quality of the radiograph 5. Describing the sequence of examination, and include: 1. Mediastinum 2. Trachea 3. Heart 4. Hilar region 5. Lung parenchyma (tissue) 6. Pleura 7. Diaphragm 8. Gastric air bubble 9. Bony thorax 10. Extrathoracic soft tissues 	

<p>6. Describing the diagnostic values of the following radiologic techniques: 1. Computed tomography (CT) 2. Positron emission tomography (PET) 3. Positron emission tomography and computed tomography scan (PET/CT scan) 4. Magnetic resonance imaging (MRI) 5. Pulmonary angiography 6. Ventilation/perfusion scan 7. Fluoroscopy 8. Bronchography</p>	
<p>Competency 2: The student will describe a variety of general and specific tests to help identify the overall health status of the patient with a primary emphasis on examination of sputum samples to identify potential sources of infection and the levels of red and white blood cells and electrolytes in the blood by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Describing the diagnostic values of the sputum examination, and include common organisms associated with respiratory disorders: 1. Gram-negative organisms (Klebsiella, Pseudomonas aeruginosa, Haemophilus influenzae, Legionella pneumophila) 2. Gram-positive organisms (Streptococcus and Staphylococcus) 3. Viral organisms (Mycoplasma pneumoniae and respiratory syncytial virus) 4. Discussing the diagnostic values of the following tests and procedures: 5. Skin tests 6. Endoscopic examinations (bronchoscopy and mediastinoscopy) 7. Lung biopsy 8. Video-assisted thoracoscopy (VATS) 9. Thoracentesis 10. Pleurodesis 11. Describing the following components of hematology: 12. Complete blood count (CBC) 13. Red blood cell (RBC) count (red blood cell indices and types of anemias) 14. White blood cell count (WBC), and include granular leukocytes and nongranular leukocytes 15. Describing the role of platelet and include: 16. Causes of a platelet deficiency 17. Clinical significance of a platelet deficiency 	

<p>2. Identifying the following blood chemistry tests commonly monitored in respiratory care: 1. Glucose 2. Lactic dehydrogenase (LDH) 3. Serum glutamic oxaloacetic transaminase (SGOT) 4. Blood urea nitrogen (BUN) 5. Serum creatinine</p> <p>3. Identifying the following electrolytes commonly monitored in respiratory care: 1. Sodium (Na⁺) 2. Potassium (K⁺) 3. Chloride (Cl⁻) 4. Calcium (Ca⁺⁺)</p>	
<p>Competency 3: The student will describe and list anatomic alterations associated with a very common form of obstructive lung disease known as asthma with emphasis placed on assessment and treatment of patients with this disease by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Describing the role of the following organizations in the management of asthma: 1. National Asthma Education and Prevention Program (NAEPP) 2. Global Initiative for Asthma (GINA) 3. Listing the anatomic alterations of the lungs associated with asthma 4. Describing the epidemiology and risk factors associated with asthma, including: 5. Extrinsic asthma 6. Intrinsic asthma 7. Describing the challenges associated with the diagnosis of asthma, and include the tests used to diagnosis and monitor asthma 8. Differentiating the classifications of asthma severity 9. Describing the cardiopulmonary clinical manifestations associated with asthma 10. Describing the general management of asthma 2. Describing the definition, assessment, and treatment for chronic obstructive pulmonary disease as well as a focus on chronic bronchitis and emphysema and the anatomical differences between the two forms of COPD. 1. Describing the American Thoracic Society (ATS) guidelines for chronic obstructive pulmonary disease (COPD), chronic bronchitis, and emphysema 2. Discussing 	

the Global Initiative for Chronic Obstructive Lung Disease (GOLD) definition of COPD 3. Listing the epidemiology and risk factors associated with COPD 4. Describing the Global Initiative for Chronic Obstructive Lung Disease (GOLD) global strategy for diagnosing COPD 5. Describing the key indicators for considering a COPD diagnosis 6. Dyspnea 7. Chronic cough 8. Chronic sputum production 9. History of exposure to risk factors 10. Describing the three main pulmonary function study measurements used to confirm the clinical suspicion of COPD: 11. FVC 12. FEV1 13. FEV1/FVC ratio 14. Differentiating among the following four stages of COPD as outlined by GOLD: 15. Stage I: Mild COPD 16. Stage II: Moderate COPD 17. Stage III: Severe COPD 18. Stage IV: Very severe COPD 19. Discussing additional diagnostic studies for patients identified as having either Stage II, Stage III, or Stage IV COPD 20. Bronchodilator reversibility testing 21. Chest x-ray 22. Arterial blood gas measurement 23. Alpha-1 antitrypsin deficiency screening 24. Listing the anatomic alterations of the lungs caused by both chronic bronchitis and emphysema 25. Listing the cardiopulmonary clinical manifestations caused by the anatomic alterations and pathophysiologic mechanisms associated with chronic bronchitis and emphysema 26. Identifying the key distinctive differences between chronic bronchitis and emphysema—the “pink puffer” and the “blue bloater” 27. Describing the Global Initiative for Chronic Obstructive Lung Disease (GOLD) global strategy for the management and prevention of chronic obstructive pulmonary diseases 28. Describing additional treatment considerations for emphysema, including: 29. Alpha1 antitrypsin replacement therapy 30. Lung volume reduction surgery 31. Lung transplantation

<p>Competency 4: The student will describe the pathologic abnormalities associated with cystic fibrosis as well as the typical clinical findings and treatment modalities used to treat patient with CF by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Listing the anatomic alterations of the lungs associated with cystic fibrosis 2. Describing the causes and classifications of cystic fibrosis 3. Listing the cardiopulmonary clinical manifestations associated with cystic fibrosis 4. Describing the general management of cystic fibrosis 	
<p>Competency 5: The student will describe changes in the lung that occur with pneumonia as well as the clinical findings and treatment by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Listing the anatomic alterations of the lungs associated with pneumonia 2. Describing the causes and classifications of pneumonia 3. Listing the cardiopulmonary clinical manifestations associated with pneumonia 4. Describing the general management of pneumonia 	
<p>Competency 6: The student will describe the pathology, clinical findings, and treatment associated with pulmonary tuberculosis by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Listing the anatomic alterations of the lungs associated with tuberculosis 2. Describing the causes of tuberculosis 3. Listing the cardiopulmonary clinical manifestations associated with tuberculosis 4. Describing the general management of 	

tuberculosis	
Competency 7: The student will describe the pathological change, clinical signs, and the treatments associated with pulmonary edema by:	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Listing the anatomic alterations of the lungs associated with pulmonary edema 2. Describing the causes of pulmonary edema 3. Listing the cardiopulmonary clinical manifestations associated with pulmonary edema 4. Describing the general management of pulmonary edema 	
Competency 8: The student will describe the findings associated, general management, and respiratory care often provided to treat patients with the diagnosis of pulmonary embolism by:	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Listing the anatomic alterations of the lungs associated with pulmonary embolism 2. Describing the causes of pulmonary embolism 3. Listing the cardiopulmonary clinical manifestations associated with pulmonary embolism 4. Describing the general management of pulmonary embolism 	
Competency 9: The student will describe the anatomical defects in the lung and chest wall, the assessment, and treatment associated with flail chest by:	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Listing the anatomic alterations of the lungs associated with a flail chest 2. Describing the causes of a flail chest 	

<ol style="list-style-type: none"> 3. Listing the cardiopulmonary clinical manifestations associated with a flail chest 4. Describing the general management of a flail chest 	
<p>Competency 10: The student will describe the anatomical defects, causes, clinical findings, and treatment associated with a pneumothorax by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Listing the anatomic alterations of the lungs associated with a pneumothorax 2. Describing the causes of a pneumothorax 3. Listing the cardiopulmonary clinical manifestations associated with a pneumothorax 4. Describing the general management of a pneumothorax 	
<p>Competency 11: The student will describe pleural problems cause unique clinical manifestations and need specific treatment by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Listing the anatomic alterations of the lungs associated with pleural diseases 1. Describing the causes of pleural diseases 2. Listing the cardiopulmonary clinical manifestations associated with pleural diseases 3. Describing the general management of pleural diseases 	
<p>Competency 12: The student will describe the key issues related to kyphoscoliosis to include pathology, causes, clinical findings, and treatment associated with this medical problem by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Listing the anatomic alterations of the lungs associated with kyphoscoliosis 2. Describing the causes of kyphoscoliosis 	

<ol style="list-style-type: none"> 3. Listing the cardiopulmonary clinical manifestations associated with kyphoscoliosis 4. Describing the general management of kyphoscoliosis 	
<p>Competency 13: The student will describe the pathologic changes in the lung, causes, clinical findings, and treatment associated with chronic interstitial lung disease by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Listing the anatomic alterations of the lungs associated with chronic interstitial lung disease 2. Describing the causes of chronic interstitial lung disease 3. Listing the cardiopulmonary clinical manifestations associated with chronic interstitial lung disease 4. Describing the general management of chronic interstitial lung disease 	
<p>Competency 14: The student will describe the pathological changes in the lung, causes, clinical findings, and treatment for lung cancer by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Listing the anatomic alterations of the lungs associated with cancer of the lung 2. Describing the causes of cancer of the lung 3. Listing the cardiopulmonary clinical manifestations associated with cancer of the lung 4. Describing the general management of cancer of the lung 	
<p>Competency 15: The student will describe the pathological changes, causes, clinical findings, and treatment of ARDS by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy

<ol style="list-style-type: none"> 1. Listing the anatomic alterations of the lungs associated with acute respiratory distress syndrome 2. Describing the causes of acute respiratory distress syndrome 3. Listing the cardiopulmonary clinical manifestations associated with acute respiratory distress syndrome 4. Describing the general management of acute respiratory distress syndrome 	
<p>Competency 16: The student will describe the pathologic changes, causes, clinical findings, and treatment for Guillain-Barré syndrome by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Listing the anatomic alterations of the lungs associated with Guillain-Barré syndrome 2. Describing the causes of Guillain-Barré syndrome 3. Listing the cardiopulmonary clinical manifestations associated with Guillain-Barré syndrome 4. Describing the general management of Guillain-Barré syndrome 	
<p>Competency 17: The student will describe the pathology, causes, and treatment of myasthenia gravis by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Listing the anatomic alterations of the lungs associated with myasthenia gravis 2. Describing the causes of myasthenia gravis 3. Listing the cardiopulmonary clinical manifestations associated with myasthenia gravis 4. Describing the general management of myasthenia gravis 	

<p>Competency 18: The student will describe clinical findings and treatment for obstructive and central sleep apnea by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Listing the anatomic alterations of the lungs associated with sleep apnea 2. Describing the meaning of the apnea-hypopnea index and oxygen desaturation index 3. Describing the general management of sleep apnea 4. Describing the causes of sleep apnea 5. Describing how a sleep study is performing 6. Listing the cardiopulmonary clinical manifestations associated with sleep apnea 	
<p>Competency 19: The student will describe two potential causes, clinical findings, and treatment of upper airway narrowing due to infection in croup and epiglottitis by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Listing the anatomic alterations of the lungs associated with croup syndrome 2. Describing the causes of croup syndrome 3. Listing the cardiopulmonary clinical manifestations associated with croup syndrome 4. Describing the general management of croup syndrome 	
<p>Competency 20: The student will describe the pathological changes in the lung, causes, clinical findings, and treatment of near drowning, smoke inhalation and postoperative atelectasis by:</p>	<ol style="list-style-type: none"> 1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy
<ol style="list-style-type: none"> 1. Listing the anatomic alterations of the lungs associated with near drowning 2. Describing the causes of near drowning 3. Listing the cardiopulmonary clinical 	

<p>manifestations associated with near drowning</p> <ol style="list-style-type: none">4. Describing the general management of near drowning5. Listing the anatomic alterations of the lungs associated with smoke inhalation and thermal injuries6. Describing the causes of smoke inhalation and thermal injuries7. Listing the cardiopulmonary clinical manifestations associated with smoke inhalation and thermal injuries8. Describing the general management of smoke inhalation and thermal injuries9. Listing the anatomic alterations of the lungs associated with postoperative atelectasis10. Describing the causes of postoperative atelectasis11. Listing the cardiopulmonary clinical manifestations associated with postoperative atelectasis12. Describing the general management of postoperative atelectasis	
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