COPD Algorithm
Review definition and pathophysiology

Assess for the presence of major risk factors
- Cigarette smoking
  - Most patients with COPD have smoked at least 20 cigarettes per day for 20 or more years before the onset of the common symptoms of cough, sputum, and dyspnea. Presentation commonly occurs in the fifth decade of life.
  - Age of initiation of smoking, total pack-years, and current smoking status predict COPD mortality. People who smoke have a greater annual decline in FEV₁. Overall, tobacco smoking accounts for as much as 90% of the risk.
  - Secondhand smoke, or environmental tobacco smoke, increases the risk of respiratory infections, augments asthma symptoms, and causes a measurable reduction in pulmonary function.
- Air pollution
- Airway hyperresponsiveness
  - The possible role of airway hyperresponsiveness as a risk factor for the development of COPD in people who smoke is unclear.
- Alpha1-antitrypsin deficiency

Source: Chronic Obstructive Pulmonary Disease @ Emedicine retrieved at http://www.emedicine.com/med/TOPIC373.HTM#section~Introduction

Are Risk Factors Present?

YES

- A productive cough, worse in the mornings with a small amount of colorless sputum.
- Breathlessness
- Wheezing may occur in some patients, particularly during exertion and exacerbations.
- Cyanosis and right heart failure
- Weight loss with disease progression
- Tachypnea, use of accessory muscles
- Decreased FEV₁
- Barrel chest, hyperresonance

NO

Initiate client education for Health Seeking Behaviors to identify:
- Instruct client in s/s of risk factors to report
- Teach smoking cessation
- Teach s/s of respiratory infection
- Encourage flu vaccine/pneumococcal vaccine to minimize likelihood of respiratory infection

Box 1

Are positive findings present?

YES

Initiate the plan of care for a Risk for Ineffective Therapeutic Regimen management:
- Teaching in box 1
- Teach about disease course and progression
- Assist client in strategies to reduce modifiable risk factors.
  - Encourage smoking cessation
- Teach client about bronchodilator therapy (beta agonist, anticholinergic) long acting and rescue, anti-inflammatory therapy, mucolytics and supplemental oxygen
- Reinforce need for pulmonary rehabilitation and prevent resp infection
- Monitor for s/s of complications of COPD; spontaneous pneumothorax, cor pulmonale, sleep disorders, weight loss, advancing disease

NO

Follow plan of care for PC: exacerbation of COPD, chronic respiratory failure
See also plan of care for hypoxia
Collaborative Problem

**PC: Exacerbation of COPD**

**ASSESS s/s of exacerbation of COPD**

- A productive cough,
- Breathlessness
- Wheezing
- Cyanosis
- Tachypnea,
- use of accessory muscles
- Decreased FEV1

Of sudden onset associated with exposure to a trigger

**Assess for contributing factors:**

- infection
- Exposure to respiratory irritants
- Exacerbation of co morbid disease

**Monitor**

Monitor peak flow result and compare to personal best
Pulse oximetry if less than 88% perform ABGs and follow plan of care for PC hypoxia
Mon chest Xray results for evidence of air trapping and isolation of infection
Monitor sputum culture results
Monitor CBC for left shift and leukocytosis
Monitor Pulmonary Function tests results

**Monitor for complications**

Perform ROS to identify complications of spontaneous pneumothorax, cor pulmonale

**DO**

**Stop tracheobronchial constriction:**
Administer short acting beta agonists
Administer anticholinergic, mucolytics and anti-inflammatory agents.

**Improve gas exchange**
Provide supplemental oxygen therapy
Teach pursed lip breathing
Position HOB elevated

**Treat contributing factors**
Administer prescribed antibiotics according to culture report
Continue therapy for co morbidities

Monitor nutritional status and space activities to ensure adequate nutrition
Implement activities to minimize activity intolerance

**CALL**

Worsening hypoxemia, pneumothorax,
Hemodynamic instability unresponsive to prescribed regimen, development of peripheral edema, JVD

Initiate airway management, non invasive hemodynamic monitoring and call rapid response team and MD

**OUTCOMES/BENCHMARKS:**

- No coughing, wheezing, no adventitious breath sounds
- Peak Flow in green zone (80-100% of personal best) Pulse oximetry > 90%
- Able to participate in ADLS
**ASSESS s/s of Chronic Respiratory Failure**

- Altered mental status
- Skin color changes; cyanosis, pallor
- Barrel chest
- Adventitious breath sounds
- JVD, ascites, and leg edema
- Inability to complete activities

**Assess for contributing factors:**

- Infection
- Exposure to respiratory irritants
- Exacerbation of co morbid disease

**Monitor**

- Monitor peak flow result and compare to personal best
- Pulse oximetry if less than 88% perform ABGs follow plan of care for PC hypoxia
- Mon ABGs for fully compensated respiratory acidosis with hypoxemia indicating long standing disease
- Monitor chest Xray results for evidence of air trapping and cor pulmonale
- Monitor CBC for Polycythemia indicating long standing disease
- Monitor Pulmonary Function tests results

**Monitor for complications**

- Monitor for s/s of tension pneumothorax; deviated trachea, absent breath sounds on affected side and hemodynamic compromise
- Monitor for s/s of exacerbation of cor pulmonale; EKG show cardiac enlargement, dysrhythmia, hemodynamic compromise

**DO**

**Manage Chronic Respiratory Failure:**

- Position HOB elevated
- Provide supplemental oxygen therapy to achieve a PAO2 of 60 mm Hg or pulse ox > 90%
- Prepare client for assist ventilation of hypoxemia persists:
  - Heliox (helium and oxygen mix) or CPAP may be considered before intubation
- Prepare client for Lung volume reduction surgery if ordered

**Treat contributing factors**

- Administer prescribed antibiotics according to culture report
- Administer bronchodilators in an exacerbation
- Provide Methylxanthines as ordered

- Monitor nutritional status and space activities to ensure adequate nutrition
- Implement activities to minimize activity intolerance

**OUTCOMES/BENCHMARKS:**

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**CALL**

- Worsening hypoxemia, pneumothorax, Hemodynamic instability unresponsive to prescribed regimen, development of peripheral edema, JVD
- Initiate airway management, non invasive hemodynamic monitoring and call rapid response team and MD