CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

COPD or *chronic obstructive pulmonary disease* refers to an obstruction of the airflow in the lungs. It is chronic and usually gets worse over time. Normally breathing involves several steps. First, we take in air that is warmed and transported to the lungs. It passes through various lung "tubes" that include the bronchi and bronchioles, and eventually ends up at the *alveoli* (smallest air spaces). Here oxygen is transported to the blood stream and waste products are collected for removal by breathing out. In COPD, physical changes of the lung tissue produce chronic inflammation and constriction of the bronchi, bronchioles, and alveoli; breakdown of lung tissue; hyperinflation of the lungs; loss of lung *elasticity* (unable to expand or contract easily); and thick, mucus secretions. The exact cause of COPD is unknown. Some factors that may contribute to COPD include a positive family history; *antitrypsin deficiency* (inherited problem that lacks a hormone which protects the lung lining); smoking; prolonged exposure to dust, toxic fumes, chemicals, or air pollution; and a viral infection. For the most part, COPD refers to *emphysema*, *chronic bronchitis*, or a combination of these conditions.

Symptoms *may* include:

- Difficulty breathing with shortness of breath (especially with exertion)
- Chronic respiratory infections
- *Tachypnea* (breathing faster than 20 times per minute)
- Nasal flaring, use of ribs and accessory chest muscles to breathe, anxiety, and depression

Chronic bronchitis:

- Productive cough (with sputum)
- Wheezing
- Pale skin
- Edema (fluid build up in ankles, hands, face and lower back)

Emphysema:

- Initially, no symptoms at all
- Barrel-chest shape
- Pink skin color
- Weight loss

What *your doctor* can do:

- Diagnose the disease by asking about your symptoms, doing a physical exam, and ordering laboratory blood tests and a chest x-ray.
- Order pulmonary function tests (breathing through a flexible tube to evaluate inhalation and exhalation abilities); CT scan of the chest; *arterial blood gases* (blood is collected from an artery to identify oxygen and carbon dioxide levels) and a *biopsy* (removal and study of a small amount of lung tissue).
- Prescribe *bronchodilators* to help to open airways; *corticosteroids* to reduce lung tissue inflammation; supplemental oxygen; *antibiotics* to fight bacterial infections; *antitrypsin* supplements to correct deficiency; and *mucolytics* to decrease mucus production
- Recommend an exercise program to increase heart and lung efficiency; *diuretics* to drain excess body fluid; and breathing techniques such as pursed-lip breathing or abdominal muscle support while breathing.

What *you* can do:

- Stop smoking. It is the single most important thing you can do. Ask your doctor if you need help. There are many possible aids if you are ready to quit.
- Start an exercise program with your doctor's permission and advice.
- Organize your day to conserve energy for breathing, eating, and performing special tasks.

- Take medicines as prescribed by your doctor. Report any side effects immediately.
- Follow-ups are important so your doctor may evaluate the effectiveness of treatment.
- Receive prompt treatment for any respiratory infection.
- Get a vaccination to prevent pneumonia and one yearly for influenza.
- Practice breathing techniques daily to improve respiration.

What you can expect:
- COPD is a permanent condition; symptoms may improve with medications and a lung rehabilitation program.
- Complications may include *congestive heart failure* (difficulty breathing while lying down; edema or fluid retention of legs, arms, face, hands or back; crackling sounds in lungs; the inability to fall asleep while lying down); lung failure, *cor pulmonale* (unusual enlargement of the right side of the heart) and death.
- Respiratory infections may be chronic due to the accumulation of mucous in the lungs.

Seek immediate medical assistance if you develop severe shortness of breath, chest pain or any unexplained symptoms.