



CAL ACE Nursing Academy

NAC Number 7118

City of Milpitas Business License: #43213

1535 Landess Avenue, Unit 103, Milpitas, California

SMS/Phone: +1 (408) 901-0080 | eFax: +1(855)201-4679 email: canursingacademy@gmail.com

23. COPD - Chronic Obstructive Pulmonary Disease [1ceu]

Course Material

Chronic obstructive pulmonary disease (COPD) is a chronic inflammatory lung disease that causes obstructed airflow from the lungs. Symptoms include breathing difficulty, cough, mucus (sputum) production and wheezing. It's typically caused by long-term exposure to irritating gases or particulate matter, most often from cigarette smoke. People with COPD are at increased risk of developing heart disease, lung cancer and a variety of other conditions.

Emphysema and chronic bronchitis are the two most common conditions that contribute to COPD. These two conditions usually occur together and can vary in severity among individuals with COPD.

Chronic bronchitis is inflammation of the lining of the bronchial tubes, which carry air to and from the air sacs (alveoli) of the lungs. It's characterized by daily cough and mucus (sputum) production.

Emphysema is a condition in which the alveoli at the end of the smallest air passages (bronchioles) of the lungs are destroyed as a result of damaging exposure to cigarette smoke and other irritating gases and particulate matter.

Although COPD is a progressive disease that gets worse over time, COPD is treatable. With proper management, most people with COPD can achieve good symptom control and quality of life, as well as reduced risk of other associated conditions.

Symptoms

COPD symptoms often don't appear until significant lung damage has occurred, and they usually worsen over time, particularly if smoking exposure continues.

Signs and symptoms of COPD may include:

- Shortness of breath, especially during physical activities
- Wheezing
- Chest tightness
- A chronic cough that may produce mucus (sputum) that may be clear, white, yellow or greenish
- Frequent respiratory infections
- Lack of energy
- Unintended weight loss (in later stages)
- Swelling in ankles, feet or legs

People with COPD are also likely to experience episodes called exacerbations, during which their symptoms become worse than the usual day-to-day variation and persist for at least several days.

Talk to your doctor if your symptoms are not improving with treatment or getting worse, or if you notice symptoms of an infection, such as fever or a change in sputum.

Seek immediate medical care if you can't catch your breath, if you experience severe blueness of your lips or fingernail beds (cyanosis) or a rapid heartbeat, or if you feel foggy and have trouble concentrating.

Causes

The main cause of COPD in developed countries is tobacco smoking. In the developing world, COPD often occurs in people exposed to fumes from burning fuel for cooking and heating in poorly ventilated homes.

Only some chronic smokers develop clinically apparent COPD, although many smokers with long smoking histories may develop reduced lung function. Some smokers develop less common lung conditions. They may be misdiagnosed as having COPD until a more thorough evaluation is performed.

How your lungs are affected

Air travels down your windpipe (trachea) and into your lungs through two large tubes (bronchi). Inside your lungs, these tubes divide many times — like the branches of a tree — into many smaller tubes (bronchioles) that end in clusters of tiny air sacs (alveoli).

The air sacs have very thin walls full of tiny blood vessels (capillaries). The oxygen in the air you inhale passes into these blood vessels and enters your bloodstream. At the same time, carbon dioxide — a gas that is a waste product of metabolism — is exhaled.

Your lungs rely on the natural elasticity of the bronchial tubes and air sacs to force air out of your body. COPD causes them to lose their elasticity and over-expand, which leaves some air trapped in your lungs when you exhale.

Causes of airway obstruction

Causes of airway obstruction include:

- **Emphysema.** This lung disease causes destruction of the fragile walls and elastic fibers of the alveoli. Small airways collapse when you exhale, impairing airflow out of your lungs.
- **Chronic bronchitis.** In this condition, your bronchial tubes become inflamed and narrowed and your lungs produce more mucus, which can further block the narrowed tubes. You develop a chronic cough trying to clear your airways.

Cigarette smoke and other irritants

In the vast majority of people with COPD, the lung damage that leads to COPD is caused by long-term cigarette smoking. But there are likely other factors at play in the development of COPD, such as a genetic susceptibility to the disease, because not all smokers develop COPD.

Other irritants can cause COPD, including cigar smoke, secondhand smoke, pipe smoke, air pollution, and workplace exposure to dust, smoke or fumes.

Alpha-1-antitrypsin deficiency

In about 1% of people with COPD, the disease results from a genetic disorder that causes low levels of a protein called alpha-1-antitrypsin (AAt). AAt is made in the liver and secreted into the bloodstream to help protect the lungs. Alpha-1-antitrypsin deficiency can cause liver disease, lung disease or both.

For adults with COPD related to AAt deficiency, treatment options include those used for people with more-common types of COPD. In addition, some people can be treated by replacing the missing AAt protein, which may prevent further damage to the lungs.

Risk factors

Risk factors for COPD include:

- **Exposure to tobacco smoke.** The most significant risk factor for COPD is long-term cigarette smoking. The more years you smoke and the more packs you smoke, the greater your risk. Pipe smokers, cigar smokers and marijuana smokers also may be at risk, as well as people exposed to large amounts of secondhand smoke.
- **People with asthma.** Asthma, a chronic inflammatory airway disease, may be a risk factor for developing COPD. The combination of asthma and smoking increases the risk of COPD even more.
- **Occupational exposure to dusts and chemicals.** Long-term exposure to chemical fumes, vapors and dusts in the workplace can irritate and inflame your lungs.
- **Exposure to fumes from burning fuel.** In the developing world, people exposed to fumes from burning fuel for cooking and heating in poorly ventilated homes are at higher risk of developing COPD.
- **Genetics.** The uncommon genetic disorder alpha-1-antitrypsin deficiency is the cause of some cases of COPD. Other genetic factors likely make certain smokers more susceptible to the disease.

Complications

COPD can cause many complications, including:

- **Respiratory infections.** People with COPD are more likely to catch colds, the flu and pneumonia. Any respiratory infection can make it much more difficult to breathe and could cause further damage to lung tissue.
- **Heart problems.** For reasons that aren't fully understood, COPD can increase your risk of heart disease, including heart attack
- **Lung cancer.** People with COPD have a higher risk of developing lung cancer.
- **High blood pressure in lung arteries.** COPD may cause high blood pressure in the arteries that bring blood to your lungs (pulmonary hypertension).
- **Depression.** Difficulty breathing can keep you from doing activities that you enjoy. And dealing with serious illness can contribute to the development of depression.

Prevention

Unlike some diseases, COPD typically has a clear cause and a clear path of prevention, and there are ways to slow the progression of the disease. The majority of cases are directly related to cigarette smoking, and the best way to prevent COPD is to never smoke — or to stop smoking now.

If you're a longtime smoker, these simple statements may not seem so simple, especially if you've tried quitting — once, twice or many times before. But keep trying to quit. It's critical to find a tobacco cessation program that can help you quit for good. It's your best chance for reducing damage to your lungs.

Occupational exposure to chemical fumes and dusts is another risk factor for COPD. If you work with these types of lung irritants, talk to your supervisor about the best ways to protect yourself, such as using respiratory protective equipment.

Here are some steps you can take to help prevent complications associated with COPD:

- Quit smoking to help reduce your risk of heart disease and lung cancer.

- Get an annual flu vaccination and regular vaccination against pneumococcal pneumonia to reduce infections.
- Talk to your doctor if you feel sad or helpless or think that you may be experiencing depression.