COPD

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.A group of lung diseases that block airflow and make it difficult to breathe.

Emphysema and chronic bronchitis are the most common conditions that make up COPD. Damage to the lungs from COPD can't be reversed.
Symptoms include shortness of breath, wheezing or a chronic cough.

COPD is an umbrella term for a range of progressive lung diseases. Chronic bronchitis and emphysema can both result in COPD.

Chronic bronchitis

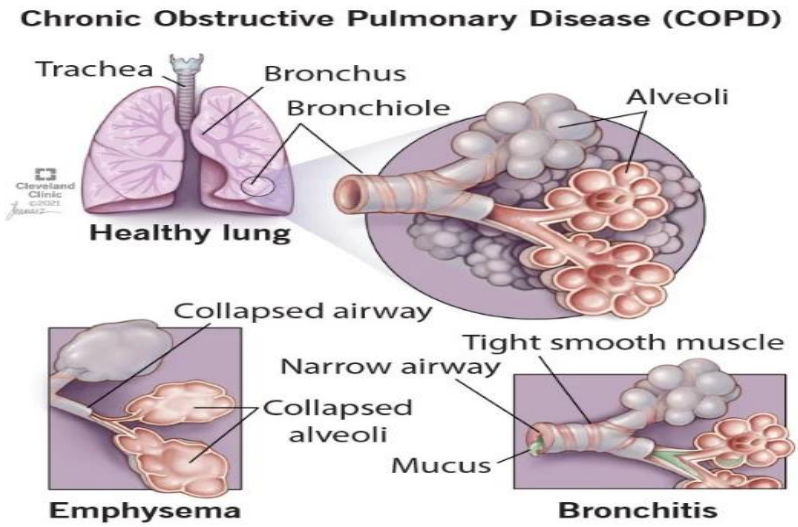
Chronic bronchitis irritates bronchial tubes, which carry air to and from lungs. In response, the tubes swell and mucus (phlegm or "snot") builds up along the lining. The buildup narrows the tube's opening, making it hard to get air into and out of lungs.

Small, hair-like structures on the inside of your bronchial tubes (called cilia) normally move mucus out of your airways. But the irritation from chronic bronchitis and/or smoking damages them. The damaged cilia can't help clear mucus.

Emphysema

Emphysema is the breakdown of the walls of the tiny air sacs (alveoli) at the end of the bronchial tubes, in the "bottom" of lung, lung is like an upside-down tree. The trunk is the windpipe or "trachea," the branches are the "bronchi," and the leaves are the air sacs or "alveoli."

The air sacs play a crucial role in transferring oxygen into your blood and carbon dioxide out. The damage caused by emphysema destroys the walls of the air sacs, making it hard to get a full breath.



Etiology

Smoking tobacco causes up to 90% of COPD cases. Other causes include:

- Alpha-1 antitrypsin (AAT) deficiency, a genetic disorder.
- Secondhand smoke.
- Air pollution.
- Workplace dust and fumes.

Smoking

Tobacco smoke irritates airways, triggering inflammation (irritation and swelling) that narrows the airways. Smoke also damages cilia so they can't do their job of removing mucus and trapped particles from the airways.

AAT deficiency

AAT (alpha-1 antitrypsin deficiency) is an uncommon, inherited disorder that can lead to emphysema. Alpha-1 antitrypsin is an enzyme that helps protect lungs from the damaging effects of inflammation. When you have AAT deficiency, you don't produce enough of alpha-1 antitrypsin. lungs are more likely to become damaged from exposure to irritating substances like smoke and dust. It's not possible to distinguish COPD related to alpha-1 antitrypsin deficiency

from common COPD. Therefore, all people with COPD should get screened for AAT deficiency with a blood test.

Signs and symptoms

- Cough with mucus that persists for long periods of time.
- Difficulty taking a deep breath.
- Shortness of breath with mild exercise (like walking or using the stairs).
- Shortness of breath performing regular daily activities.
- More coughing or wheezing.
- Swelling in your ankles, feet, or legs that is new or has become worse and doesn't go away after a night's sleep with your feet up.
- Unexplained weight loss or gain of 2 lbs. in a day or 5 lbs. in a week.
- Frequent morning headaches or dizziness.
- Fever, especially with cold or flu symptoms.
- Restlessness, confusion, forgetfulness, slurring of speech or irritability.
- Unexplained, extreme fatigue or weakness that lasts for more than a day.
- Wheezing.

Sputum (mucus) changes

Examples include:

- Changes in color.
- Presence of blood.
- Changes in thickness or amount. You have more mucus than usual or more than you're able to cough out.
- Odor.

DIAGNOSIS AND TESTS

To assess lungs and overall health, take medical history, perform a physical exam and order some tests, like breathing tests.

Physical exam

To help with the diagnosis, your provider will do a physical exam that includes:

- Listening to your lungs and heart.
- Checking your blood pressure and pulse.
- Examining your nose and throat.

- Checking your feet and ankles for swelling.

Tests

Providers use a simple test called spirometry to see how well lungs work. For this test, blow air into a tube attached to a machine. This lung function test measures how much air can breathe out and how fast can do it.

- **Pulse oximetry:** This test measures the oxygen in your blood.
- **Arterial blood gases (ABGs):** These tests check your oxygen and carbon dioxide levels.
- **Electrocardiogram (ECG or EKG):** This test checks heart function and rules out heart disease as a cause of shortness of breath.
- **Chest X-ray** or **chest CT scan:** Imaging tests look for lung changes that COPD causes.
- **Exercise testing:** Your provider uses this to determine if the oxygen level in your blood drops when you exercise.

MANAGEMENT AND TREATMENT

How is chronic obstructive pulmonary disease managed?

COPD treatment focuses on relieving symptoms, such as coughing and breathing problems, and avoiding respiratory infections.

- **Bronchodilators:** These medicines relax airways. You inhale a mist containing bronchodilators that help you breathe easier.
- **Anti-inflammatory medications:** You inhale steroids or take them as a pill to lower inflammation in the lungs.
- **Supplemental oxygen:** If blood oxygen is low (hypoxemia), you may need a portable oxygen tank to improve your oxygen levels.
- **Antibiotics:** COPD makes you prone to lung infections, which can further damage your weakened lungs. You may need to take antibiotics to stop a bacterial infection.
- **Vaccinations:** Respiratory infections are more dangerous when you have COPD. It's especially important to get shots to prevent flu and pneumonia.
- **Rehabilitation:** Rehabilitation programs teach effective breathing strategies to lessen shortness of breath and on conditioning. When maintained, fitness can increase the amount you can do with the lungs you have.
- **Anticholinergics:** These drugs relax the muscle bands that tighten around the airways and help clear mucus from the lungs. Relaxed muscles let more air in and out. With the airways open, the mucus moves more freely and can therefore be coughed out more easily. Anticholinergics work differently and more slowly than fast-acting bronchodilators.

- **Leukotriene modifiers:** These medications affect leukotrienes, chemicals that occur naturally in the body that cause tightening of airway muscles and production of mucus and fluid. Leukotriene modifiers block the chemicals and decrease these reactions, helping improve airflow and reducing symptoms in some people.
- **Expectorants**: These products thin mucus in the airways so you can cough it out more easily. You should take these medications with about 8 ounces of water.
- **Antihistamines:** These medicines relieve stuffy heads, watery eyes, and sneezing. Although effective at relieving these symptoms, antihistamines can dry the air passages, making breathing difficult, as well as causing difficulty when coughing up excess mucus. Take these medications with food to reduce upset stomach.
- **Antivirals:** Your provider might prescribe these to treat or prevent illnesses caused by viruses, most frequently to treat or prevent influenza ("the flu"). Influenza is particularly dangerous for people who have COPD.
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