

MANAGEMENT OF CHRONIC OBSTRUCTIVE LUNG DISEASE

How Your Lungs Work

Breathing is often taken for granted until it becomes an effort to get air into and out of the lungs. It might be helpful if you understand how air travels through your respiratory system and where the trouble spots can be when you have Chronic Obstructive Lung Disease (COPD).

If you take a close look at where the air goes when you breathe in and out, you'll see that the path resembles a tree turned upside down. This is why your respiratory system is often referred to as the **bronchial tree**.

Each time you take a breath, air enters through your nose or mouth and continues down the **trachea**, better known as the windpipe. From there it goes into two sponge-like organs located in your chest called the **lungs**. Air enters the lungs through two large branches of the trachea known as **bronchi**. The air then travels deeper into the lungs through smaller bronchi and about a million miniature passageways called **bronchioles**. The walls of the bronchioles are surrounded by bands of smooth muscle, which provide support. At the end of this maze of little branches are tiny, stretchy air sacs, which are called **alveoli**. Each individual air sac is called an alveolus and is surrounded by microscopic blood vessels. The oxygen in the air you breathe travels across the walls of the alveoli and into your blood so that cells throughout your body can use it. At the same time, carbon dioxide – a waste product – passes from the blood back into the air sacs and leaves the body by traveling back up the same path. This exchange of oxygen and carbon dioxide is very important because every cell in the body needs oxygen to function. It takes a constant supply of oxygen for your cells to live.

The process of moving air in and out of your lungs is called **respiration**. A strong wall of muscle located below your lungs, the **diaphragm**, is the major muscle of respiration. As the diaphragm moves down, it creates suction in the chest and draws in fresh air, which expands the lungs. Then, as this muscle relaxes, it returns to its original position and the air is pushed out of the lungs.

What went wrong?

If you have chronic bronchitis, airways in your lungs have become narrow and partly clogged with mucus. If you have emphysema, some of the air sacs deep in your lungs have been damaged. They cannot push out stale air and bring in oxygen to your bloodstream.

What are the symptoms?

Prolonged coughing with mucus, wheezing, and breathlessness.

How do I know which disease I have?

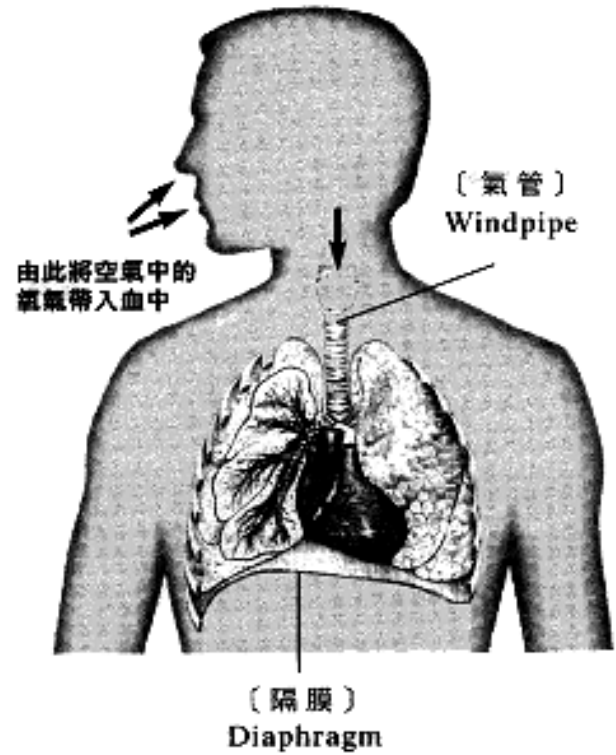
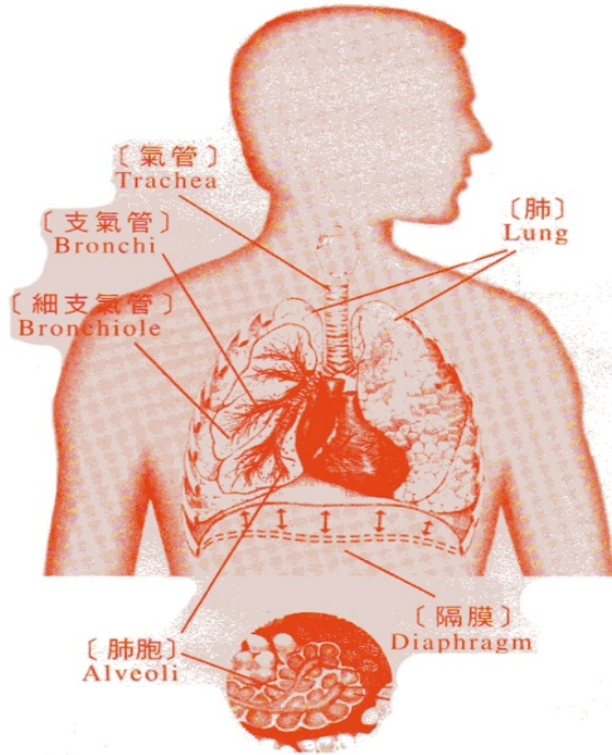
Your doctor may want to take some tests. Other illnesses can cause the same symptoms. Often, there is more than one cause. Many people have both chronic bronchitis and emphysema. Your doctor can diagnose your problem.

Will I get better?

There is no miracle drug for emphysema and chronic bronchitis. But you can stop smoking and take steps now to improve your breathing and feel better.

Patients with severe COPD will become short of breath with most activities and will be admitted to the hospital more often. These patients should talk with their doctor about breathing machines and end-of-life care.

Respiratory System



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What is COPD?

Conditions which obstruct the flow of air from traveling easily through the respiratory system are called “**Chronic Obstructive Pulmonary Disease**” or **COPD**. The two conditions most frequently referred to when discussing COPD are **Emphysema** and **Chronic Bronchitis**. In each, when the flow of air is blocked, or obstructed, it makes it harder to get enough oxygen to meet the body’s needs.

EMPHYSEMA

There are countless air sacs in the lung. Through the air sacs, oxygen from the air can be delivered to the red blood cells located in the thinnest vessels. Red blood cells can then push out carbon dioxide. Normally, this ability of the lung works continuously, so that enough oxygen can be supplied to the body. Emphysema damages the lung such that air sacs become very large and weak. Due to this damage, pressure in the lung elevates. Consequently, part of the heart is weakened. This condition cannot be cured but patients can have improvement in symptoms with the help of medication.

Symptoms

- Shortness of breath with exercise
- Increased breathing difficulty through time

Causes:

- Chronic bronchitis
- Long time smoking
- Heavy exposure to second-hand smoke
- Genetic (rare)

Treatment:

- Medications such as inhaled steroids, bronchodilators and antibiotics
- Quit smoking

- Avoid stress to the lung
- Severe cases may require steroids by mouth or through a vein, nebulizer therapy or continuous oxygen therapy, or assistance with breathing from a machine (through a mask, BiPAP, or endotracheal tube)
- Surgery to remove part of the diseased lung or a lung transplant.

Prevention:

- Avoid smoking and being around others who smoke
- Early diagnosis and treatment
- Eat a healthy diet
- Non-strenuous exercise
- Avoid pollution
- See your physician right away at time of code or any new respiratory symptoms

CHRONIC BRONCHITIS

Bronchitis is an inflammation of the smooth muscle in the large airways. There are acute and chronic types of bronchitis. Acute bronchitis may occur when the body’s immune system is weak. When the bronchi are inflamed due to infections, clusters of thick mucus are formed. Acute bronchitis is not a threat to average healthy adults, but it can easily become a severe condition for infants or elderly. See a doctor right away for symptoms such as gasping or wheezing. The major problem of bronchitis is thick mucus blocking the bronchi. Chronic bronchitis occurs more often in smokers, older people, asthmatics, and people working in dusty environments.

Untreated chronic bronchitis can result in emphysema, heart failure, and pneumonia.

Symptoms

- Prolonged coughing with mucus. Coughing may be worse in the morning, in the evening, in areas of dampness or when the weather is cold
- Breathing with gasping sounds
- Shortness of breath after exercise or at rest
- Frequent episodes of acute bronchitis
- Body discomfort with slight chest pain

Causes:

- Pollutants from the air, factories, cars and wood stove
- Smoking
- Uncontrolled asthma

Treatment:

- Inhaled steroids, /bronchodilators and antibiotics
- Quit smoking
- Severe cases may require steroids by mouth or through a vein, nebulizer therapy or continuous oxygen therapy, or assistance with breathing from a machine (through a mask, BiPAP, or endotracheal tube)

Prevention:

- Avoid smoking or second-hand smoke
- Seek treatment immediately if a cold or any new respiratory symptom develops
- Follow a nutritious diet
- Seek a balanced lifestyle, with adequate rest and exercise
- Ask your doctor about preventive shots for influenza and pneumonia
- Altering the environment may be necessary
- Avoid contacting people with the flu or cold

Tests and Exams

- The best test for COPD is a lung function test called spirometry. This involves blowing out as hard as possible into a small machine that tests lung capacity.
- Physical examination using a stethoscope to listen to the lungs.
- Chest X-rays and CT scans
- Sometimes critical patients need to have a blood test to measure the amount of oxygen and carbon dioxide in the blood.

Support Groups

Joining a support group in which members share common experiences and problems can help ease the stress of the illness.

Possible Complications

- Irregular heartbeat. (arrhythmia)
- Need for breathing machine and oxygen therapy
- Right-sided heart failure or cor pulmonale (enlarged heart and heart failure due to chronic lung disease)
- Pneumonia
- Pneumothorax
- Severe weight loss and malnutrition
- Thinning of the bones (osteoporosis)