X-Plain
Chronic Obstructive Pulmonary Disease (COPD)
Reference Summary

Introduction

Chronic obstructive pulmonary disease (COPD) and emphysema are common diseases of the lungs, affecting millions of Americans.

This reference summary will help you understand better their causes, symptoms, and treatment options.

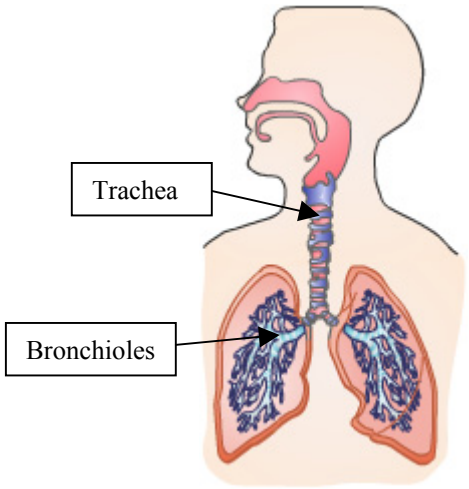
Anatomy

Oxygen is vital for life. Without it, death occurs very rapidly.

The lungs allow us to fill our blood with oxygen.

The air we breathe comes in close contact with the blood in the depth of the lungs.

The blood then fills up with oxygen and releases unwanted carbon dioxide, CO_2 .

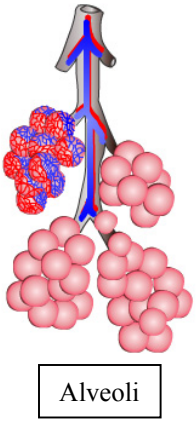


When we breathe, the air goes through the mouth and/or nose. From there it goes to the air pipe, known as the trachea.

From the trachea it goes into an increasing number of smaller tubes, called bronchial tubes.

Small balloon-like sacs called alveoli are at the end of the tubes.

The walls of the alveoli are very thin. On the other side of the walls small blood vessels exist. The very thin wall of the alveoli allows the oxygen to go into the bloodstream and also allows CO_2 to go



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from the blood to your lungs to be exhaled.

Muscles surround the bigger bronchial tubes.

The inner lining of these bronchial tubes secretes special substances called mucus. The mucus helps trap dirt from the air. Mucus is continuously expelled from the lungs.

Very small brushes, known as cilia, on the outside of the lung cells continuously push the mucus to the outside.

If the mucus becomes sufficiently big, it is coughed out.

Symptoms And Their Causes

COPD and emphysema are conditions that make breathing difficult.

Frequent coughing and thick sputum may be common.

Wheezing can also occur.

Patients have difficulty catching their breath. Even minimal physical activities become very difficult to perform because of the shortness of breath.

Supplemental portable oxygen may be necessary for survival.

Lung infections, known as pneumonia, become frequent.

Weight loss and depression may follow.

Causes

Active or passive smoking is the major cause of COPD and emphysema.

Exposure to other irritants and pollution can also harm the lungs.

There are also rare genetic conditions, such as antitrypsin deficiency, that lead to an increased number in lung infections.

Severe lung infections can also damage the lungs.

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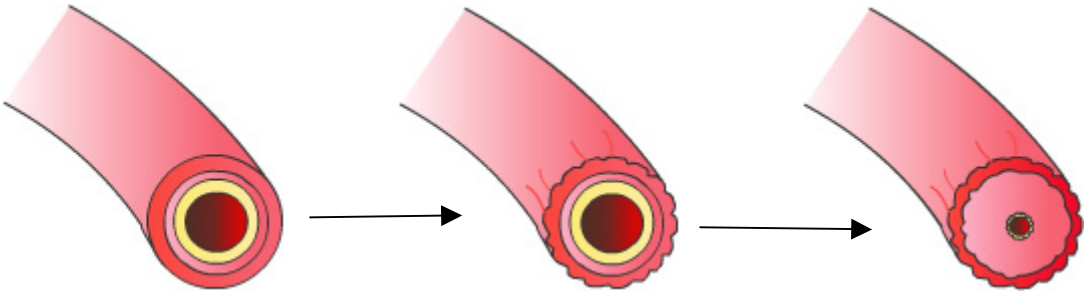
Smoking, irritants, and lung infections can cause inflammation of the bronchial tubes, the alveoli, and most of the cells lining the inside of the lungs.

Inflammation causes thickening of the bronchial tubes and alveoli. This causes narrowing of the inside of these tubes and a decrease in the capacity of the lungs to exchange oxygen for CO_2.

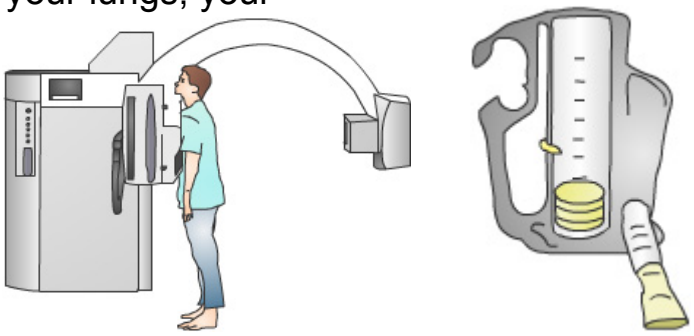
The cilia also become unable to expel the dirt accumulated in the lungs. This causes thick sputum to develop, which cannot be coughed out easily.



This causes further inflammation and infections that worsen the condition. A vicious cycle is created.

Diagnosis

After taking a detailed history and listening to your lungs, your physician may ask you to take a test known as a pulmonary function test.



This test aims at determining how well your lungs are functioning.

A chest x-ray may also be done.

Specialized blood tests can check the amounts of oxygen and CO2 in your blood.

Treatment

Preventing COPD and emphysema is better than having to treat them.

Avoiding smoking and the smoke from others is essential in preventing the lung damage associated with these diseases. Avoiding other irritants and pollution is also

important.

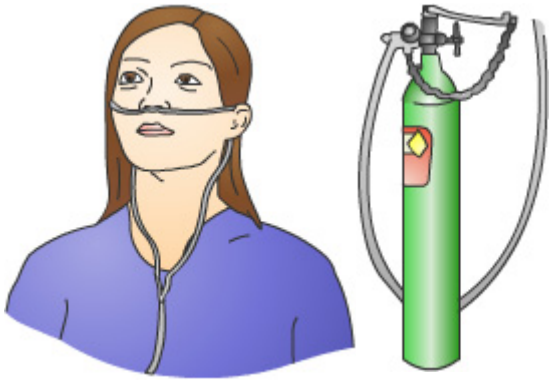
Likewise, repairing lung damage is very difficult if the patient continues to be exposed to smoke and pollutants.

In cases of advanced lung damage, patients can take special measures to help decrease the symptoms.

Humidifiers may help.

Bronchodilators, medications that open up the bronchioles, may be tried.

Steroid medications such as prednisone may help decrease the inflammation and may help alleviate some of the symptoms.



Chest physical therapy may help in improving the cough and expelling dirt from the lungs.

Antibiotics may be necessary to fight infections.

Supplemental oxygen may also be necessary.

However, eliminating exposure to smoke is the most important.

Recently some surgical procedures have been used in the treatment of these conditions. They are a last resort, and unfortunately they are not very successful in alleviating the symptoms.

Summary

COPD and emphysema are chronic lung conditions that could potentially be fatal.

Significant advances in understanding and treating

these diseases have been made in recent years.

The most important way people can decrease their risk of getting these diseases is to stay AWAY from smoking.