

## Introduction

Asthma is a common disease of the lungs, affecting millions of Americans.

This patient education reference summary will help you better understand its 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<sub>2</sub>.

When we breathe, the air goes through the mouth and 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.

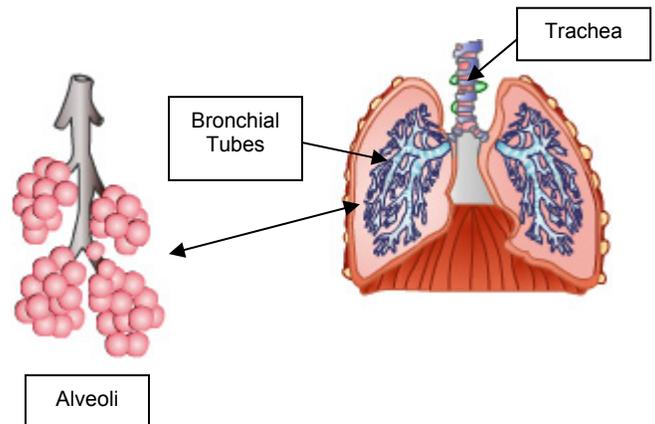
Small balloon-like sacs called alveoli are at the end of the tubes.

The walls of the alveoli are very thin. On the other side of the walls there are small blood vessels. The very thin wall of the alveoli

allows the oxygen to go into the bloodstream and also allows CO<sub>2</sub> to go 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.



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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

Asthma is a condition that makes breathing difficult. This causes a feeling of tightness in the chest.

Patients with asthma are sensitive to certain materials that cause an inflammation or swelling of the inner lining of the lungs. This swelling can cause narrowing of the air passages.

The swelling and inflammation of the inner lining of the lungs can lead to symptoms such as difficulty breathing and tightness in the chest.

The muscles around the bronchial tubes could also tighten abnormally resulting in further narrowing of the air passages.

When an asthma attack occurs, the lining of the lungs quickly becomes swollen. The air passages fill up with thick mucus and the muscles around the bronchial tubes tighten. This greatly decreases the airflow in the lungs; this could potentially be life threatening.



## Triggers

Many things can lead to the inflammation of the lungs and abnormal muscle tightening, these are known as triggers. Triggers include substances to which a person may be allergic. Animal hair or secretions, mold, pollen, and dust are examples of allergens. These allergens can trigger an asthma attack.

Extreme conditions, such as very cold or very hot weather, can also trigger an asthma attack.

Particles in the air from car exhaust or other pollution and medications, such as aspirin or ibuprofen, may act as a trigger.

Smoking and second hand smoke are also well known triggers for asthma.



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Food additives, such as sulfites found in wine, can also act as a trigger.

Some diseases such as colds can trigger an asthma attack.

Stress, and bouts of extreme laughter or crying, can also affect the lungs and cause an asthma attack.

## **Diagnosis**

Repeated occurrences of difficulty breathing and wheezing are indications that the patient may have asthma.

After taking a detailed medical history and listening to your lungs, your physician may ask you to have a special test done known as Pulmonary Function Test. This test aims at determining the ability of your lungs to function.

Peak flow measurement is a part of this test that the patient may be asked to perform on his or her own following the visit to the physician. This test allows patients to monitor their own progress.

The patient is asked to blow into a tube; a marker on the side of the tube indicates the speed at which the breath is exhaled out of the lungs.



A chest X-ray may also be done to check for other diseases that have the same symptoms as asthma.

A skin test may also be done to help the patient recognize possible triggers.

## **Treatment Options**

The most important part of the treatment plan for asthma is to prevent severe asthma attacks.

If an asthma attack has already occurred, the treatment will aim at stopping the attack and restoring breathing to normal as quickly as possible.

It is important for patients to monitor their breathing on a regular basis using the Peak Flow measurement discussed earlier. This allows them to detect and treat breathing problems before an acute attack occurs.

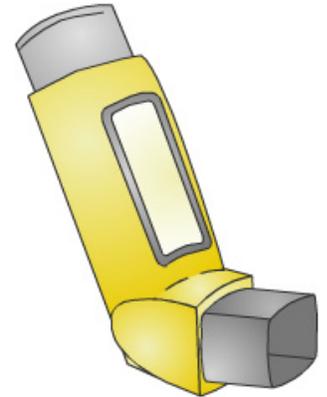
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It is also important to control the triggering factors. Washing pets once a week, getting rid of household items that may accumulate dust (thick carpets, blinds, etc.), and the use of air conditioning are all ways to avoid triggers. Avoid smoking and second hand smoke.

Adequate use of medication is also important in the treatment of chronic asthma and prevention of asthma attacks.

Treating chronic asthma usually involves taking medications that will decrease the inflammation of the bronchial tubes and decrease the sensitivity of the lungs to allergens. These medications include corticosteroids, which can be given as pills or as inhalers. Other types of anti-inflammatory medications are non-steroidal medications such as cromolyn and nedocromil.



To prevent or abort acute attacks of asthma, bronchodilators are usually used.

The aim of these medications is to relax the muscles of the bronchial tubes. Some of these medications act quickly and are inhaled; others act over longer periods of time and are usually taken by mouth.

Even though some asthma attacks can be induced by exercise, exercising under a physician's supervision helps the over all health of the lungs, heart and body.

Asthma Action Plans can help streamline the treatment of asthma. Ask your healthcare provider about an Asthma Action Plan. You need to fill your plan out with the help of your healthcare provider.

## Summary

Asthma is a chronic lung condition that could potentially be fatal. Significant advances in understanding asthma, and treating it, have been made in recent years. Knowing about the disease and its treatment options has helped asthma patients live a better and healthier life.



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