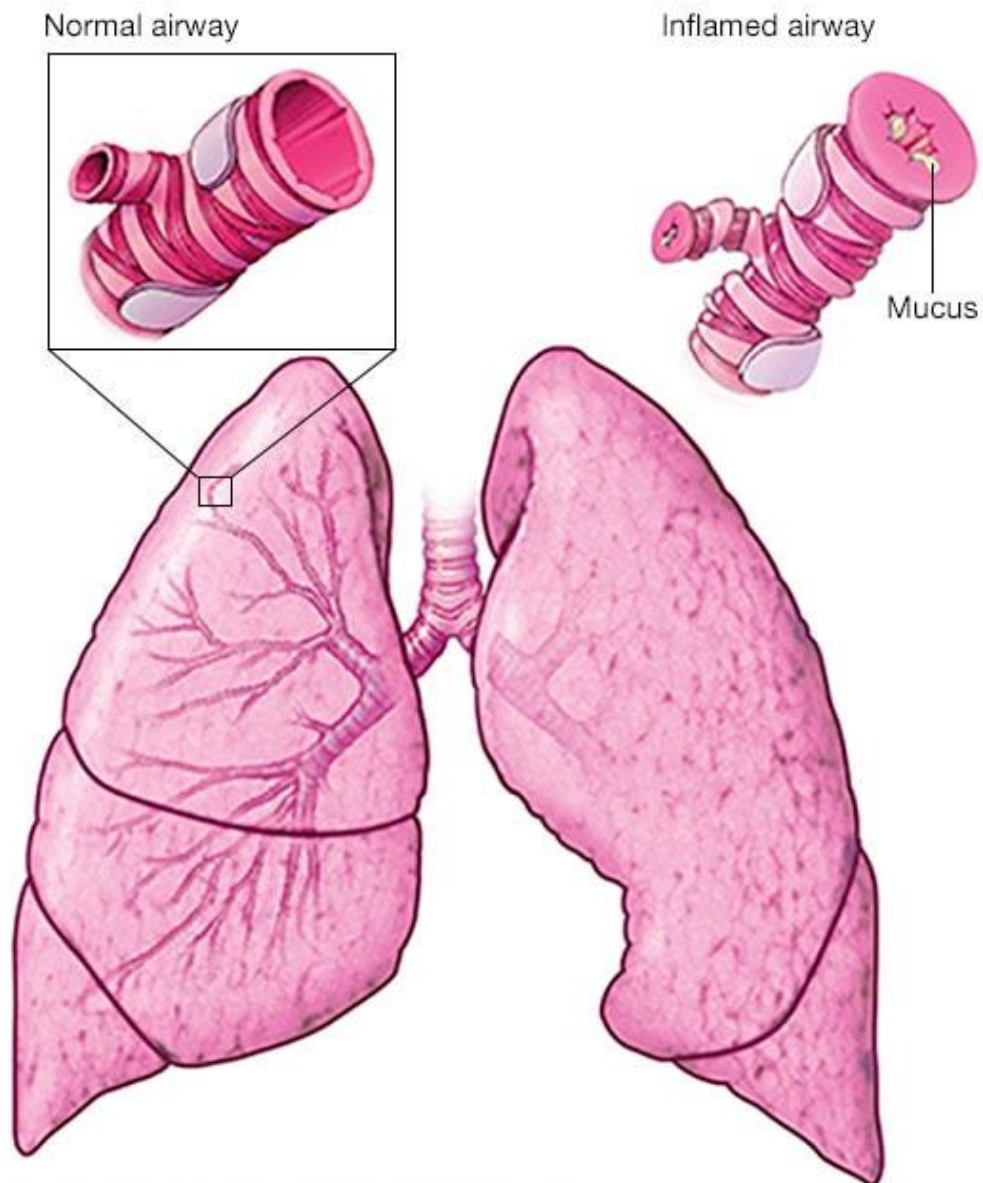


Asthma and Emphysema

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Overview

Around 2.5 million Australian suffers or has suffered asthma, approximately 1 in 10 or 10 and about 1 in 9 or 10 children. Although asthma is prevalent among children, adults are also vulnerable to develop asthma, even at old age. The most common characteristic of asthma is a reversible narrowing of the airways. Asthma is a chronic lung condition; people with asthma have hypersensitive airways in their lungs, making very reactive to triggers, causing a flare up. Flare up is when the muscles around the airways squeeze tight, the airways swell and increased production of mucus — these results in difficulty to breath. The quantity of people with asthma has increased dramatically over the years, but the number of asthma-related deaths has significantly declined.



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Symptoms

Asthma attacks may differ in frequency and severity; some people can remain symptom-free for longer durations with brief attacks and shortness of breaths, but other people may cough and wheeze most of the time and have several attacks after viral infections, exhaustive activities, and exposure to certain triggers. Wheezing, a musical sound that produced when the person breaths out while is the usual symptom during attacks, but other people may have cough either productive (with phlegm or mucus) or non-productive. In some people, asthma attacks occur at nights, attacks at night indicates poor management and control of asthma.

The most common symptoms of asthma are the following:

- Wheezing – a continuous, high pitched sound coming from the chest while breathing
- Shortness of breath – is often described as an intense tightening in the chest, air hunger or a feeling of suffocation. During an asthma attack, shortness of breath may become severe, creating a feeling of severe anxiety

- Sweating – it is a typical reaction to the effort breathing and anxiety caused by shortness of breath
- Chest tightness – it may be due to shortness of breath
- Cough – it may be the only symptom of sometimes it can occur alongside other symptoms
- Itching on the chest – may be an early symptom, particularly in children.

Diagnosis

Medical personnel mostly base the diagnosis of asthma through physical examination, history taking and person's account of distinguishing symptoms. Chest X-ray may be prescribed alongside the pulmonary function test through spirometry; spirometry measures the volume breathed in and out during the breathing process and can help in determining obstruction. To test susceptibility to allergens, doctors may perform skin prick test by making several pricks to the skin in the arm and introducing an amount of common allergens.

Causes and Triggers

The cause of asthma remains elusive, but experts have explained that it can be due to a complex interface between genes (inherited from parents) and various environmental factors. One theory relates to the occurrence of asthma in the hygiene hypothesis. Hygiene hypothesis tells that childhood exposure to germs and microorganism is helpful to develop a stronger immune system by teaching the immune system to differentiate safe substances from unfavorable substances that may set off asthma attacks.

Certain risk factors are linked to asthma such as:

- The family history of asthma
- Obesity
- Exposure to first or second-hand smoke
- Presence of other types of allergy such as skin allergies (atopic dermatitis) and allergic rhinitis (Hay Fever)
- Exposure to environmental pollutants such as fumes and smokes
- Exposure to occupational substances such as chemicals, insecticides or pesticides.

While asthma triggers vary from individuals to other individuals, the following triggers are thought to induce asthma attacks.

- Environmental elements present every day such as dust, dust mites, animal fur or dander, and mini particles of pests and animal wastes
- Frequent colds and other respiratory infections
- Exhaustive activities such as exercise, heavy walking, and running
- Air pollutants such as cigarette smokers, irritants, smog, and industrial fumes
- Stress and upsurge of emotions
- Food and drink allergies
- Gastroesophageal reflux disease, movement of acid from the stomach to the airways can irritate and trigger an asthma attack.

Treatment and Management

There are two kinds of drugs that the doctors might prescribe to prevent asthma attacks, it aims to reduce inflammations and widen the airways. Drugs are classified as anti-inflammatory drugs and bronchodilators. Anti-inflammatory drugs are given to treat the narrowed airways while bronchodilators work by helping to relax and widen the airways. Doctors can also add drugs called immunomodulators or drugs that alter the immune system and block elements in the body that may prompt inflammation and allergies.

Management and treatment of asthma vary from inhalers to oral medications and drugs distributed through a nebulizer or breathing machine. Below are the steps that can be taken during various stages of asthma attacks from Merck's Manual.

- **MILD ATTACKS:** It can be treated without the assistance of health practitioners. Patients are advised to rest and sit still and get away from environmental triggers that might have caused asthma attacks. Inhalers such as those containing albuterol will be used. Inhalers can be used 3 times at an interval of 20 minutes as the attack usually wanes off in 5 to 10 minutes. If the attack persists after using the inhaler three times, additional treatment with a medical doctor or health professionals is likely needed.
- **SEVERE ATTACKS:** for severe attacks, an emergency room visit is highly recommended.

Doctors may provide beta-adrenergic bronchodilators through a device called nebulizer.

- Doctors may also give bronchodilators in combination with anticholinergic drugs (drugs that block acetylcholine from causing involuntary muscle movements in the lungs)
- Some patients may be given steroids such as prednisone either by mouth or injected through a vein
- Oxygen mask can be provided
- Antibiotics if there is a suspected lung infection
- In a severe case, medical personnel might insert a tube in the airway and will be hooked in mechanical ventilator to assist in breathing and recovery.