

# Asthma

The airways or bronchi are tiny tubes that carry air into and from the lungs. These tubes are lined by a wall of smooth muscle cells as well as cells oozing out mucus that keeps the airways smooth and flushes out foreign particles. Asthma is a long-term condition where the cells lining these airways swell up; a situation known as inflammation. This swelling causes the airways to constrict, narrowing the space for the air to pass through. The characteristic symptom of airway constriction is a hissing sound while breathing, also known as wheezing. In addition, the lack of proper airflow results in breathlessness, a feeling of tightness in the chest, and coughing. These symptoms usually come and go. Asthmatics tend to have sudden bouts of flaring up and worsening of these symptoms, which are called asthma attacks. This flaring up is precipitated not only by the inflammation of the walls of the airways, but also by the tightening of the muscles in the wall, and by excessive production of mucus, further blocking up the already narrowed airways.

Some children with asthma may get fewer and fewer attacks as they grow older, and up to half of all children with asthma eventually outgrow it by the time they reach adolescence, either on their own or with the help of medication. However, even in these cases, there is a strong possibility for the condition to recur later in their life. On the other hand, if left untreated, asthma can worsen with time, and can cause irreparable lung damage. Asthmatics are more likely to also develop other allergy-related diseases such as hay fever and eczema.

It is estimated that up to 334 million people worldwide suffer from asthma. While asthma prevalence is coming down in many high-income countries, it is becoming a lot more common in many low- and middle-income countries.

## Risk factors

In individuals susceptible to it, asthma can be triggered by common allergens, such as smoke, dust, mites, pollen, moulds, chemicals, certain kinds of food, or bacterial, viral or parasitic infection. At the same time, extreme emotions such as anger, anxiety, as well as certain environmental factors such as cold weather, a sudden change in weather conditions, and physical exercise are also known to result in an asthmatic bout. Other risk factors include premature birth, having had to use ventilator assistance after birth, low birth weight, and/or having a mother who smoked during her pregnancy. Interestingly, children who are raised in rural environments, or are exposed to farm animals and pets early on in life have less chance of developing asthma.

Another major risk factor for developing asthma is a family history of the condition. Variations in several genes have been implicated in either protecting or conferring risk for asthma. Most of these genes, such as IL33, IL1R1 and TSLP are components of the innate immune system and are known to play a role in the immunologic or inflammatory response.

## Diagnosis and Management

Lung function tests are the most reliable method of diagnosing asthma. Since small children may not be amenable to these tests, a detailed study of the medical and family history is the next best option. The most important and efficient long-term management strategy is to try and identify the triggers, and avoid them. In addition, medications can be used over the short or long-term to lessen the inflammation and decongest the airways. Some of these medications

(eg. corticosteroids) are inhaled in the form of vapour, and go directly to the airways, while others such as the leukotriene inhibitors and beta-agonists are taken in the form of tablets. Formulations of these medicines that can be taken for quick-relief in the case of an asthma attack are also available.

It helps for asthmatics to carry a peak flow meter and an inhaler around, especially in environments where triggers can be expected. The peak flow meter can be used to check lung function easily, and the inhaler can be used to pump medication directly into the lungs if lung function is seen to decrease below 80% of the normal rate.

### Asthma in the Arab World

Some of the highest prevalence rates of asthma in the

Arab World are found in the Gulf region. Saudi Arabia has the highest rate of this condition (24%), followed by Qatar (19.8%), Kuwait (16.8%), UAE (13%), and Oman and Lebanon (both at 10%).

Among asthmatic patients in the Arabian Gulf, studies have shown that the most common triggering factors include an abundance of pollen, especially from trees planted in the past few decades in an attempt to green the environment, frequent sandstorms, sudden changes in temperature and humidity between the outside environment and the air-conditioned interiors, upper respiratory tract infections, and exposure to cockroaches, house dust mites, and cigarette smoke or Bokhour fumes. The winter season is particularly noted for an exacerbation of symptoms, with peak hospitalizations taking place in the months of December and January.

### Asthma - Inflamed Bronchial Tube

