



Asthma

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Australia has one of the highest asthma rates in the world. One in five Australian children and up to one in 10 adults suffer to some degree from this disease. But the good news is that asthma is easily treatable.

Asthma is the only chronic condition that is increasing in the Western world and no one really knows why, although there has been speculation about the role factors such as pollution and house dust mites may play.

Tragically, though, about 454 people die of asthma in Australia each year - and at least half of these deaths are preventable. They are young, otherwise healthy people who get caught out because they are not taking the right medication.

But it's not all bad news. Asthma is easy to treat.

In this Special Report, we explain what asthma is and how it can be managed so those with the condition can lead full and healthy lives.

People with asthma have over-sensitive airways that respond to irritants in the following three ways:

- the smooth muscles which surround the airways contract, causing a narrowing of the air passages
- the mucous membrane which lines the inside of the airways becomes inflamed, further narrowing the air passages
- this causes increased production of mucus, which clogs the narrowed air passages.

When this happens, a person finds breathing difficult, giving rise to the classic symptoms of an asthma attack - wheeze, cough, tight chest and shortness of breath.

According to Dr Peter Van Asperen, who heads the Department of Respiratory Medicine at Sydney's New Children's Hospital at Westmead, the hyper-sensitivity of asthmatic airways is the result of underlying inflammation which predisposes them to contract when irritated.

It's not known why some people's airways are abnormally sensitive. However, there appears to be a genetic component as asthma tends to run in families. Some researchers believe genetic factors may eventually provide an asthma cure.

Most asthmatics are also allergic individuals - their bodies react badly to the presence of various allergens. Thus, you'll often find that asthmatics or their close relatives also have

eczema, hay fever, or other allergic conditions.

Hormones seem to play a role in asthma, too. In childhood, more boys suffer from asthma than girls, but the ratios even out during adolescence, and they are reversed in adulthood when more women than men have the condition. Women's asthma also gets worse pre-menstrually.

Cigarette smoke is well known as a trigger of asthma attacks in people who already have the condition. But it can also cause the disease's onset, especially in children exposed to parental smoking, says Dr David Allen, a respiratory physician in Sydney's St Leonards.

A major cause of adult-onset asthma is exposure to chemicals in the workplace. The two biggest culprits are a chemical used in the plastics industry, toluene diisocyanate, and wood dust, especially western red cedar dust. However, there are more than 200 chemicals that have been implicated in the onset of asthma. These chemicals can also trigger attacks in people who already have the disease.

The onset of asthma can occur at any age, so it's important to recognise the symptoms and seek treatment.

Most asthmatics have an audible wheeze that can be accompanied by a persistent, dry cough and tightness in the chest or shortness of breath. In children, sometimes the only indicator of asthma is a night cough.

A general practitioner (GP) will find it relatively easy to diagnose asthma in most cases. If the symptoms improve after the patient is given reliever medication such as salbutamol (common brands: Ventolin, Respolin), which opens the narrowed air passages, the problem is almost certainly asthma.

At the initial visit the patient may be asked to blow into a device called a spirometer to check the maximum volume and flow rate of air he or she can exhale. The patient may also be asked to blow into a peak flow meter, which measures the force with which he or she is able to exhale.

In a few cases, the diagnosis may be unclear and the GP may refer the patient to a lung function laboratory for further tests. These may include skin tests to check for sensitivity to allergens.

Diagnosis can be more difficult in young children. Dr Van Asperen says that although wheezing is common in infancy, less than half of these children will have asthma. The doctor's observations and a history of the child's symptoms from parents can provide some clues.

Once a diagnosis of asthma has been established, the GP will need to assess its severity and what the triggers may be. Initially, the patient is likely to be given medication to settle the symptoms down and the doctor will design a management plan to keep the asthma under control.

Symptoms vary from individual to individual in duration and severity. Some people are symptom-free apart from occasional mild wheeze; others, if untreated, wheeze every day and may face a life-threatening attack.

According to Dr Van Asperen, asthma is classified as mild, moderate or severe according to the following criteria:

Mild: where an individual has infrequent episodes of asthma - that is, at the most, one bout of wheezing (requiring regular reliever medication) every four-to-six weeks - and is symptom-free between episodes.

Moderate: where an individual has episodes occurring more frequently than every 4-6 weeks, but is symptom-free between episodes.

Severe: persistent asthmatics who have symptoms most days as well as acute flare-ups from time to time.

The aim of treatment is to minimise symptoms and maintain lung function at its best. Doctors usually give their patients a tailor-made asthma management plan. It will detail what medications to take on a daily basis, what to take to relieve symptoms when they arise, and what to do if their asthma deteriorates.

Some doctors suggest patients monitor their lung function twice daily with a peak flow meter. People soon get to know what their optimum score is and if it drops they can increase their medication.

However, Dr Van Asperen says peak flow results are not always reliable indicators of worsening asthma in children. "Kids can have very variable peak flows just related to the fact that they don't feel like blowing today," he says. For most children, he prefers to base asthma management on observation of symptoms.

Medications

The medications used to treat asthma can be divided into two groups - the relievers and the preventers. They are mostly inhaled, and so deliver the medication straight to the lungs.

There are a variety of devices for delivering inhaled medication.

Aerosol puffer - both relievers and preventers are available in this form, which delivers a measured dose of medicated spray. Spacer - a cone-shaped holding chamber. It allows medication to be released from an aerosol puffer into the chamber before the patient breathes in, making the puffer easier to use and increasing the efficiency of medication delivery. Some spacers come with face masks for infants. Dry powder inhaler - there are a number of these that deliver both reliever and preventer medication in powder form. Each pharmaceutical company makes its own dry powder inhaler to deliver its brands of medication - thus, the Rotahaler delivers Ventolin and Becotide, the Turbuhaler delivers Respolin and Pulmicort, and so on. Nebuliser - this is a pump that delivers a mist of medication to the patient via a face mask. It used to be recommended for delivery of medication during acute asthma episodes and for children too young to use an aerosol puffer, but delivery via spacer is now preferred.

Relievers

The relievers, as the name suggests, are taken to relieve the symptoms of asthma. They are bronchodilators, which means they open up the airways by relaxing the smooth muscles

which surround the airways (and which contract during an asthma attack). The most common bronchodilators are the beta2 agonists, salbutamol and terbutaline sulphate. Commonly used brands of salbutamol are Ventolin and Respolin; less common ones are Asmol and Respax. Terbutaline is marketed as Bricanyl.

As well as relieving symptoms, the beta2 agonists can also prevent their onset if taken before exercise or in the presence of a known trigger.

Another bronchodilator which is sometimes given in conjunction with a beta2 agonist is ipratropium bromide (brand name, Atrovent).

Other long-acting bronchodilators occasionally prescribed for severe asthma include salmeterol (Serevent) and theophylline (Nuelin, Theo-Dur). Theophylline is taken orally as tablets, syrup or "sprinkles".

Mild asthmatics may only need reliever medication to treat the occasional episode of wheeze. But people who need to use their bronchodilators three or more times a week should be on preventative medication. In fact, continual use of beta2 agonists is discouraged because their overuse increases airway sensitivity, worsening the underlying asthma. Preventative therapy minimises wheezy episodes and thus the need for bronchodilator medication.

Preventers

The preventers are inhaled twice daily every day, whether or not the patient has symptoms. As the name suggests, their regular use helps to reduce the frequency and severity of a person's asthma attacks. They allow many people to remain symptom free. The preventers work by reducing the underlying inflammation of the lining of the air passages, thereby making them less sensitive. But preventer medication will not open the airways in an asthma attack.

There are two types of inhaled preventer - the non-steroids and the steroids. Dr Van Asperen says the non-steroids - sodium cromoglycate (Intal and Intal Forte) and nedocromil sodium (Tilade) - are the first choice for preventative treatment in children. Children who are well between asthma episodes will usually respond to Intal or Tilade, although children with daily symptoms generally need an inhaled steroid.

Intal and Tilade will also help prevent exercise-induced asthma if taken before sport.

Dr Allen says the non-steroids don't have much of a role in treating adult asthma. "In the adult population the most effective treatment for asthma is inhaled steroids," he says. The two most common inhaled steroids are beclomethasone (Becotide, Becloforte, Aldecin) and budesonide (Pulmicort). They come in inhalers which deliver different sized doses per "puff". Becotide is available in two different puff sizes - 50 mcg and 100mcg; Becloforte delivers 250mcg per puff; and Pulmicort is available in doses of 100mcg, 200mcg and 400mcg per puff.

Dr Allen explains: "The usual sort of doses we would give for moderate to severe asthma would be about 800mcg morning and evening - that would be two puffs of Pulmicort in the morning and two puffs in the evening. We would certainly go higher if they're not controlled with that sort of dose."

Dr Van Asperen says once you've got a person's asthma under control with inhaled steroids, you gradually wind the dose back to the minimum that will maintain control.

Side-effects of inhaled steroids

The most common side-effects of inhaled steroids are relatively trivial - oral thrush and a husky voice, both of which can be overcome by using a spacer and rinsing the mouth out afterwards.

However, doctors are cautious about prescribing inhaled steroids for children because of data that suggests they stunt growth. But there seems to be a "catch-up" effect once children are taken off the medication and, as Dr Van Asperen points out, untreated asthma will itself stunt growth.

Dr Allen says adults can safely take up to 1600mcg of inhaled steroids a day. Long-term doses above that level may cause softening of the bones or easy bruising.

It's worth remembering that the side-effects of poorly controlled asthma can be far worse than those of the medication.

Fluticasone (Flixotide) is a new inhaled steroid that is more potent than either beclomethasone or budesonide but has fewer side effects. As yet, it is only available for people with very severe asthma who have to take oral steroids.

Rescue medication

If a person is suffering an acute asthma attack that is not responding to reliever medication, they may be given a short course (3-10 days) of oral steroid tablets (Prednisone and Prednisolone). These are powerful agents that reduce swelling in the airways.

A short burst of oral steroids will have no harmful long-term side effects. However, a few people have severe asthma that can only be controlled by a daily low dose of oral steroids. Long-term, they may notice side effects including puffiness, increased appetite, mood swings, raised blood pressure, thinning of bones, easy bruising, slowed growth, glaucoma and cataracts.

The inhaled steroid, Flixotide, can be prescribed as an alternative to regular oral steroids.

The sources of the information in this article are:

Dr Peter Van Asperen
Dr David Allen
Asthma Management Handbook 1996, National Asthma Campaign
Asthma Foundation of NSW literature.
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