What is Asthma?

We now understand asthma to be an inflammation of the bronchioles. This can either be an acute or chronic process and is present even in patients with mild disease. The severity of the inflammation is reliant upon a complex interplay between inherited tendencies and environmental triggers.

In simple terms, an irritant or antigen is inhaled into the lungs and sets up an inflammatory response. This inhaled antigen interacts with IgE on the surface of mast cells to release mediators such as histamine. These mediators promote inflammation and act on the smooth muscle surrounding the bronchioles to trigger bronchoconstriction. Other inflammatory cells are recruited to the airway and these release powerful agents which cause direct damage to the airway epithelium, promote leakiness of pulmonary blood vessels and increase bronchial hyper reactivity.

Is the Incidence of Asthma increasing?

There is compelling evidence that the incidence of childhood asthma is increasing in this country. A Melbourne study1, demonstrated a greater than two-fold increase in the reported incidence of wheezing in school children between 1964 and 1991. Accumulated evidence suggests that within our own lifetimes, asthma has become more common, more persistent and more lethal.

Do all Asthma Medications do the same thing?

No. Currently there is a confusing array of asthma medications. Asthma medications can be divided into two groups - those which relieve symptoms (relievers) and those which suppress inflammation (preventers).

Preventers

These act by suppressing inflammation and reducing airway sensitivity. This helps minimise asthma symptoms and decreases the severity and frequency of attacks. These drugs are prescribed for children who have persistent symptoms or frequent asthma attacks. They are taken every day whether symptoms are present or not. Preventer medications are only effective when taken over a prolonged period of time and are not helpful during an acute attack of asthma. There are two types of Preventer medications - Non Steroidal and Steroidal.

Non-Steroidal

Trade names: Intal, Tilade.

These are the first-line Preventer drugs of choice in childhood. As a group they are extremely safe having only minor side-effects i.e. mild throat irritation and transient cough.

Steroidal

Trade names: Becotide, Becloforte, Flisolide, Aldecin and Pulmicort.

These drugs are not the same as anabolic steroids which are used by athletes and body builders. They are powerful anti-inflammatory agents which are usually prescribed for children who have not responded to the non steroidal Preventers or who have severe asthma. These drugs are directly inhaled into the lungs by either a puffer device or dry powder inhaler.

Relievers

Trade names - Ventolin, Berotec, Bricanyl and Respolin.

These drugs act quickly to open up narrowed airways by relaxing the smooth muscle which surrounds the bronchioles. As a group they are called Beta Agonists because they act on the Beta 2 receptors of the sympathetic nervous system. They usually begin to work within 10 minutes and continue to work for about 4 hours. These drugs are very safe though do have the side effects of tremor, tachycardia and feelings of jitteriness. In younger children they can cause excitability and behavioural problems. While the bronchodilators are very useful as "rescue" medications they do not reduce inflammation.
There is some concern that systemic absorption of steroid drugs affects linear growth in children. Recent research has suggested that in childhood daily doses of steroid of 800 micrograms or more, are likely to affect growth velocity. To minimise systemic absorption it is recommended that where appropriate, spacer devices be used and that children rinse their mouths after dosing. Ultimately, the sensible use of a steroid Preventer medication far outweighs the risks of poorly controlled asthma.

**Oral Steroids**

To help stop an asthma attack a child may be prescribed oral steroids (Prednisolone, Prednisone). This drug works within hours to suppress inflammation and speed recovery. It is well recognised that high dose steroids when taken for an extended period of time have significant side effects ie reduced growth, increased appetite, puffiness of the face and behavioural changes. Fortunately these do not occur with short courses of less than two weeks duration. Oral steroids when used appropriately are very effective and can save children the trauma of a hospital admission.

**Peak Expiratory Flow Meter**

Peak Expiratory Flow Meters (PEFM) are hand held devices into which a child forcibly blows. Parents can then draw inferences about their child's lung function. Most children need to be at least six years of age before they can effectively use these devices. By plotting peak flow readings twice a day for several weeks it can be determined whether a child's asthma is stable, fluctuating or if preventive medications are warranted.

**Administering Medication**

Medications used in the treatment of asthma are generally more effective if they are inhaled. The three methods of inhaled medication delivery are nebuliser, puffer, or dry powder inhaler.

The most common reason why an asthma drug fails to work is failure to take it correctly. This is especially true when the medication has to be inhaled into the lungs via a puffer. A larger portion will sit in the mouth where it may cause local side effects. To combat this problem spacer devices have been developed. These are plastic chamber which act as drug reservoirs. A puff of medication is put in at one end and the child inhales from the other. Spacer devices are also useful for infants and young children who have difficulty in taking their medications. As an alternative many children over six years of age are able to generate enough respiratory effort to use a dry powder inhaler (Turbuhaler). Table One indicates the age at which each type of delivery system can be used.

<table>
<thead>
<tr>
<th>Table One</th>
<th>Delivery Systems By Age</th>
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<tbody>
<tr>
<td>0-4 years</td>
<td>Nebuliser</td>
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<td>Small Volume Spacer and Mask</td>
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<td>4 years and above</td>
<td>Nebuliser</td>
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<tr>
<td></td>
<td>Large Volume Spacer</td>
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<tr>
<td>6 years and above</td>
<td>Nebuliser</td>
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<td>Large Volume Spacer</td>
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<td>Turbuhaler</td>
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<tr>
<td>8 years and above</td>
<td>Nebuliser</td>
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<td>Large Volume Spacer</td>
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<td>Turbuhaler</td>
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**An Asthma Management Plan**

An Asthma Management Plan is a written plan which is formulated by the treating doctor in consultation with the child and family. It should be specific enough to cater for that individual's needs. It should clearly detail how to manage the child's asthma:
1. on a daily basis
2. with an attack
3. in an emergency.

The written plan should be kept in a prominent place so that it can be read quickly and easily. Copies should be provided for the child's school and other caregivers. An outline of a plan might include elements of the following:

1. **THE ACUTE ATTACK.**
   Most doctors agree that using third hourly reliever medication is appropriate for an acute attack. If a child needs treatment more frequently it is an indication that he/she should be seen by a doctor for further assessment.

2. **IN AN EMERGENCY**
   In this situation a child might have severe difficulty breathing, be unable to talk and may even be going blue. An ambulance should be called as the child requires oxygen. While waiting, parents should give the child reliever medication every few minutes using a spacer device or continuously by a nebuliser.

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**References**

2. Wolthers, O D and Pederson, S, Controlled study of linear growth in Asthmatic Children During Treatment with Inhaled glucocorticosteroids, Pediatrics 1992; V 89; 839 - 842
Cough is a most efficient mechanism for protecting the lungs against the accidental inhalation of particulate and foreign matter and for the removal of excess secretion or exudate. It is probably the commonest symptom of respiratory disease in children and one that frequently worries parents. Parents will often complain that their child has a chronic cough but what they are usually talking about is a recurrent cough rather than a persistent or chronic cough. Recurrent cough implies repeated episodes of cough with symptom free periods of weeks or months whereas a chronic or persistent cough is present almost every day for many months or years. There are many causes of recurrent or persistent cough and some are listed in the table.

In most instances extensive investigation is unnecessary. Specific infections such as pertussis (whooping cough) are still quite common. Fully immunised children can develop whooping, although it is usually mild. Paroxysmal cough may occur but the classic cough with facial suffusion, vomiting and the characteristic whooping is often absent. Suppurative lung disease and focal lesions are easily ruled out with a good history, physical examination and a chest radiograph. Recurrent or persistent cough resulting from pulmonary infection due to nasopharyngeal incoordination or gastro-oesophageal is also usually easily excluded. Psychogenic cough usually has a typical honking quality. This type of cough is seen most frequently in adolescent girls and importantly the cough is not heard when the child is asleep.

The two major causes of recurrent cough are repeated viral infections and asthma. By far the most frequent cause of cough in children is a respiratory tract infection, which is usually viral in origin. These children often have other features suggesting viral infection such as rhinorrhea, minor fever and sore throat. In the early years of life a child would have at least 4 to 8 viral respiratory infections per year. Although most are predominantly upper respiratory tract infections some will involve the lower respiratory tract as well and cough will be a predominant feature. This cough is initially dry but after a few days may become loose and rattly. The cough occurs during the day and night but appears to be worse at night and sleep disturbance is common. The cough usually settles in 7 to 14 days. In some instances it may last several weeks or even months. It is possible that these children have an undue sensitivity of their cough receptors within the airways. Parental smoking is a well documented risk factor for lower respiratory infections in younger children.

It is not clear why some children have more cough in association with viral respiratory infections than others. It has previously been suggested that those children with frequent cough fall into the category of having underlying hyperreactive airways, and that they may have asthma. While asthma can be a cause of recurrent cough in early childhood, the majority of children with recurrent cough associated with viral infections do not have asthma. There is no medication that is effective in treating the cough in these children. Bronchodilators, antihistamines and a variety of so-called cough suppressants have been widely advocated and used with little or no benefit.

Another group of children have a pattern of recurrent cough not obviously associated with a viral infection. The cough is dry, often worse at night and aggravated by cold or exercise. Some of these may have a history of eczema or hay fever or a family history of asthma. A few have a wheeze at times and the cough responds to bronchodilators and the diagnosis of asthma is usually easy. In some however, the wheeze may be absent and the term 'cough variant asthma' has been used. Confirmation of the diagnosis of asthma in these children is often difficult. There is no diagnostic test and the response to bronchodilators is variable. There has been a tendency to over diagnose all these children as having asthma and bronchodilators including theophyllines as well as preventive medicine such as sodium cromoglycate and inhaled steroids used extensively without any evidence of real benefit. Most of these children do not develop classic asthma later on.

This pattern is often more distressing and frustrating to the parents than to the child. A trial of a bronchodilator such as an inhaled sympathomimetic is worthwhile but if there is no change then it should not be continued. Cough suppressants are of no limited value but may occasionally be helpful if the cough is dry and irritable and keeping the child awake at night. Narcotics such as codeine were previously widely used. They are however general suppressants of the central nervous system and potential addictive. Pholcodine has less potential for addiction and depression of the central nervous system.

Allergic factors are often inerminated as a cause of nocturnal cough and many steps advocated as part of the management, such as various dietary manipulations and elaborate methods to control house dust mites. In most instances these have been shown to be of limited value and the measures adopted often create more problems than they solve. A good history is probably still the best test of possible allergic factors. If there seems to be some factor which can be avoided by simple means then it is worth doing.

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Transport - Pedestrian
Blaming Children for Child Pedestrian Injuries

These New Zealand authors present a case study of a 10 year old girl killed while walking home from school. Their aim is to show how the prevailing political ideology of victim blaming ignores the root causes of the problem. In the findings of the coroner’s inquest into the death, “Poverty, the volume of traffic, the lack of provision of safe places to cross and particularly in this case, the state’s inability to enforce its own speed limits are ignored” and the child is blamed for causing her own death. Other studies have shown that police find child pedestrians responsible for their own deaths in 90% of cases.

The authors note: “The reason why locus of responsibility is a public health concern is that assignment of responsibility to children leads to child orientated prevention strategies which are, in general, likely to be much less effective than those guided by a structural approach. For example, the belief that unsatisfactory child pedestrian behaviour is the cause of child pedestrian injuries results in the choice of pedestrian skills education programmes as the primary strategy for prevention”. Since few such programs have been shown to actually reduce injuries, the authors maintain that fresh approaches are required. Victim blaming is the same ideology that gave rise to the “lifestyle paradigm for the prevention of chronic diseases”. The authors conclude by issuing a plea for greater recognition of the political basis of this ideology in order to implement truly effective interventions.

ON THE SHELF
NEW BOOKS

Great Ideas for Tired Parents
Author: Michael Grose. 1994, pp 162 Australian. Price $19.95 (plus $3.50 for mail orders)

This book is certainly worthwhile for single, married, working or at-home parents. If your time no longer seems to be your own then read how to:-
- recharge your batteries and maintain yourself as a person
- deal with a partner who has a different approach
- keep cool in a crisis
- talk and become friends with your children
- get children to help
- know what’s a real worry and what’s a myth
- have your kids and your life!

Great Ideas for Tired Parents also deals with important issues such as coping as a sole parent or as a stepparent. Many parents will find the book a source of inspiration and support.

A complete booklist is available from the Child Health Information Centre Phone (03) 9345 6429, 9.30pm - 4.00pm weekdays.