

# ASTHMA MEDICINES AND HOW THEY WORK

Written by: Prof Robin Green,  
Dr Mike Levin and Mr Andy Gray. (2008)  
Based on an original by: Dr Sam Risenga,  
Dr Bhadrish Vallabh, Dr Des Cohen,  
Dr Archie Mhlambi

For more information on asthma please visit  
the National Asthma Education Programme  
web site at: [www.asthma.co.za](http://www.asthma.co.za)  
P.O. Box 72128, Parkview, 2122.  
Tel: (011) 643 2755, Fax: 088 011 678 3069,  
E-mail [naepr@netactive.co.za](mailto:naepr@netactive.co.za).



Asthma usually causes symptoms over a long period and cannot be cured. But asthma can be kept under control so that those affected are able to live normal lives enjoying full involvement in sport and all other activities.

To keep asthma under control you need to know what your asthma medicines are, and how they work. There are two types of medicines used in the treatment of asthma - controllers and relievers.

Medicines that are used regularly, whether symptoms are present or not are called controllers (sometimes preventers). **Controllers work by reducing the swelling, mucus and muscle tightening around the airways.** They are used every day, whether you feel sick or whether you feel well, just like people with high blood pressure, epilepsy or diabetes have to take their medicine every day to stay well.

In addition, but not in place of controllers, your doctor will give you a reliever treatment to use when you need to. **Relievers are the emergency treatment to open up your airways when they are even tighter / more closed than usual.** They help to make you feel better for a short while, but they do not treat the underlying inflammation. It is important to know that relying on relievers only is a poor way to control symptoms, because the symptoms will keep on coming back after some temporary relief.

Although medicines are essential, it is important to remember that they are not the only part of asthma treatment. You also need to avoid triggers of asthma attacks. (see "risk factors for asthma and triggers for asthma attacks").

If you are on controller medicine, you need to take this treatment regularly and correctly. Always make sure somebody shows you how to use an inhaler correctly. Bring all your pumps and medicines with you to your visit so your doctor, nurse or pharmacist can explain to you what type of medicine it is, and check whether your technique in using it is good enough. (See "inhaler devices in asthma")

## CONTROLLERS

- Controllers build up a protective shield in the linings of the breathing tubes (called airways or bronchi) and stop swelling, mucus build-up and muscle tightening.
- They will not work unless used regularly, so must be taken every day, even when you are well.
- They do not bring any relief from symptoms (see Relievers below)
- They take about 14 days to build up the protective shield. You will not see an immediate effect but after 1-2 weeks they will make a big difference in the amount of asthma symptoms you have



## RELIEVERS

- Airways that are inflamed and swollen may also get tightening of the muscle around the airways called airway spasm or bronchospasm (see "What is Asthma?"). This causes cough, wheezing (whistling in the chest) or a tight chest with difficult breathing.
- Relievers are the emergency treatment to open up your airways when they are even tighter / more closed than usual in order to make breathing easier.
- Relievers produce almost instant relief and are used as emergency treatment for asthma symptoms or attacks. Always carry them with you for first aid treatment! But relievers have no effect on the swelling in the airways or the build up of mucus.
- Relievers are used only when you have symptoms. If you need to use a reliever more than 3 times a week, then your asthma is not well controlled and you should also be on a controller, or your medication and technique may need to be checked by a doctor.

## CONTROLLERS

### Steroid controllers

- Steroids are chemicals made by the body. One group of steroids, the corticosteroids, are used to treat asthma. Corticosteroids are different from the anabolic steroids taken by some athletes. Anabolic steroids are not used to treat asthma.
- Steroids are the strongest controller treatment for asthma.
- Your doctor should advise you whether to decrease or increase the dose you are taking, or stop these medicines where possible. Do not adjust your doses without your doctor's advice.
- They are usually given by breathing them into the lungs.

**Inhaled (breathed in) steroids:** beclomethasone (sold as Beclate<sup>®</sup> and Qvar<sup>®</sup>), budesonide (sold as Budeflam<sup>®</sup>, Inflammide<sup>®</sup> and Pulmicort<sup>®</sup>), ciclesonide (sold as Alvesco<sup>®</sup>), and fluticasone (sold as Flixotide<sup>®</sup>). These may also be combined with another medicine, such as fluticasone plus salmeterol (sold as Seretide<sup>®</sup>) and budesonide plus formoterol (sold as Symbicord<sup>®</sup>).

- Inhalation is best because the medicine goes straight to the lungs where it is needed. Because the smallest dose possible is used, side-effects are uncommon.
- The most common side effect is a hoarse voice or oral thrush, both of which can be prevented by rinsing your mouth with water after inhalation.
- Side-effects are reduced if a spacer is used, so if you are using a high dose, you should use a spacer.
- Children can take up to 4 puffs per day and teenagers/adults up to 8 puffs per day of most steroids without fear of severe side-effects.
- Asthmatics on higher doses of inhaled steroids should have their treatment reviewed by an expert.



**Oral steroids:** prednisone (sold as Betabs Prednisone®, Meticorten®, Panafcort® and Pulmison®) and prednisolone (sold as Capsoid®, Lenisolone®, Preflam®, and Prelone®)

- Oral steroids are usually given for only a short time of 7-14 days to relieve an acute attack of asthma. Oral steroids for a short time are safe and highly effective.
- Many patients will keep some at home which can be used when their asthma is not under control, with the help of their action plan. (See "Keeping asthma under control")
- A small group of asthmatics need to take low dose oral steroids on a long-term basis because their asthma is not controlled, despite other types of therapy.
- Long term steroids can have serious side effects, and this form of treatment is becoming less common with better therapies. If you are on long term oral steroids, you need to see your doctor frequently. If you are on oral steroids but are not taking inhaled steroids, then your treatment needs to be changed.

### Non Steroid controllers

**Leukotriene receptor blockers:** montelukast (sold as Singulair®) and zafirlukast (sold as Accolate®)

- These are both available as tablets for adults. Montelukast is available for children as chewable tablets and as a formulation that can be sprinkled on food.
- Are useful for young children and as add-on therapy for asthmatic children and adults not controlled on current controller therapy.
- Are useful in patients who also have allergic rhinitis
- Are used to reduce the number of asthma episodes induced by the common cold in small children.
- Are extremely safe.

**Long acting Beta agonists:** formoterol (sold as Foradil®, Foratec®, Merck-Formoterol®, Oxis®) and salmeterol (sold as Serevent®).

Inhaled long-acting beta-agonists are only given in combination with steroid controller medicines. This combination therapy may get better asthma control without having to increase the dose of the inhaled steroid. They may be used in single pumps, together with a steroid inhaler, or as combinations in a single pump or asthma device. The combinations that are available are salmeterol plus fluticasone (sold as Seretide®) and formoterol plus budesonide (sold as Symbicord®). Formoterol plus budesonide (Symbicord®) can be used as required for reliever treatment as well as regularly as a controller.

### RELIEVERS

Relievers are sometimes called "bronchodilators" because they open (dilate) the airways (bronchi).

Inhaled relievers: fenoterol (sold as Berotec®), ipratropium (sold as Atrovent®, and Ipvent®), salbutamol (sold as Asthavent®, Venteze® and Ventolin®), terbutaline (sold as Bricanyl®) and tiotropium (sold as Spiriva®). Combinations are also available in a single inhaler as ipratropium plus salbutamol (sold as

Combivent®) and ipratropium plus formoterol (sold as Duovent®). Inhaled relievers may also be available as dry powder inhalers e.g. Asthavent DP caps®, Bricanyl turbuhalers® or Ventolin Accuhaler®.

- Inhaled medicines are better because they go straight to the airways where they are needed. Inhaler medicines can be given by pump (with or without a spacer), other devices or by nebuliser (see "Inhaler devices in asthma")

### Oral relievers

- They are available as syrups, tablets or capsules. They take longer than inhaled bronchodilators to work as they have to go the 'long way round' before they act on the lungs.
- There are two types of oral relievers:
  - beta-agonists
  - theophyllines

### Oral beta-agonists

- Because higher strengths have to be used than inhaled beta-agonists, side effects such as shakiness, headache, sleeplessness and a nervous feeling often occur.

Theophyllines: aminophylline (sold as Phyllocontin SR®), theophylline (sold as Alcophyllin®, Euphyllin Retard®, Microphyllin®, Nuelin®, Pulmophyllin SR®, Sandoz Theophylline®, Solphyllin®, Theophen®, Theoplus® and Uniphyll®).

- Over the last few years these medicines have been prescribed less frequently, mainly because they commonly produce side-effects. Rectally administered theophyllines can be potentially dangerous and are not recommended. However long acting theophyllines are still sometimes prescribed as a controller treatment.
- Long-acting theophyllines are started in low doses and are used once or twice a day. If you take long acting theophyllines, your doctor may send you for a blood test to measure the level of theophylline in the blood to determine the correct dosage.

### OTHER MEDICINES

- Homeopathic medicines are not commonly recommended for asthma. If you do wish to use these please do not stop your child's usual asthma medicines as prescribed by your doctor.
- Antihistamines can be used for other allergic conditions such as hay fever but are not considered to be standard asthma medicines.
- Antibiotics are rarely necessary as viral infections are by far the most common triggers of asthma attacks, but your doctor may use them for a bacterial infection.
- Cough mixtures usually do not help the cough of an asthmatic. Oral relievers may be found in small amounts in combination cough mixture remedies, but even these are not effective in an asthma attack. The cough may be a sign of poor asthma control and need inhaled reliever medicines.

## Key points to remember

### Controllers

- Controllers must be used every day whether you are feeling well or feeling unwell.
- Inhaled steroids are the most effective controller medicines.
- Inhaled steroids are safe at doses used most commonly.
- Spacers reduce the risk of side-effects.
- Steroid tablets may need to be used in a short course for an asthma attack.

### Relievers

- Relievers are used for emergency relief of symptoms, but do not help with the underlying inflammation or swelling of the airways.
- If you need relievers a lot (more than 3 per week) it means you are not getting enough controller medicine.
- Relievers should only be used when asthma symptoms appear, not every day.
- The technique of using your pump will affect how well it relieves your symptoms.



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