Asthma medicines and how they work

Writtenby:
ProfRobinGreenandDrMikeLevin
RevisedbyDrMikeLevinand
ProfRobinGreen2012
Basedonapreviousversionby:
ProfRobinGreen,DrMikeLevin
andMrAndyGray

naepr@netactive.co.za

www.asthmasa.org

SOUTH AFRICAN THORACIC SOCIETY

ALLSA

Asthma is a chronic lung disease, which means it cannot be cured. But with the right treatmentasthmacan be kept under controlsothatthoseaffectedareabletolivecompletelynormal livesenjoyingfullinvolvementinsportandallotheractivities.

Asthmais caused by infammation, which is thereall thetime. Thiscausesswelling andnarrowingoftheairways (See "What is asthma"). On top of this infammation, people with asthma sometimeshave spasm of the airways which may lead to an asthmaattack.To keepasthmaundercontrolyouneedtoknow what your asthmamedicines are, and how they work. There are two types of medicines used in the treatmentof asthma– controllersandrelievers.

Medicinesthatareusedregularly,whethersymptomsarepresent ornotarecalledcontrollers(sometimespreventers).**Controllers work by reducing the infammation that results in swelling, mucus and muscle tightening around the airways.** Becausetheinfammationisthereallthetimetheyare usedevery day, whetheryoufeelsickorwhetheryoufeelwell, justlike people with high blood pressure,epilepsy or diabetes havetotaketheirmedicineeverydaytostaywell.

Inaddition,butnotinplaceofcontrollers,yourdoctorwill give a reliever treatmentto use when you need to. **Relievers are the emergency treatment to open up your airways when they are even tighter / more closed than usual (an asthma attack)**. Theyhelptomakeyoufeelbetterfora shortwhile, buttheydonottreattheunderlyinginfammation,it isimportanttoknowthatrelyingonrelieversonlyisapoorway tocontrolsymptoms,becausethesymptomswillkeeponcoming backaftersometemporaryrelief.

Althoughmedicinesareessential,itisimportanttorememberthat theyarenottheonlypartofasthmatreatment.You alsoneedto avoid triggers of asthmaattacks. (See "Risk factors for asthma andtriggersforasthmaattacks")

Ifyouareoncontrollermedicine,youneedtotakethistreatment regularly and correctly. Always make sure somebody shows you how to use an inhaler correctly. Bring all your pumps and medicines with you to every visit so your doctor, nurseor pharmacistcanexplain toyou what type ofmedicineitis, and checkwhetheryourtechniqueinusingitisgoodenough. (See "Inhalerdevicesinasthma")

Controllers

- Controllersbuildupaprotectiveshieldintheliningsof thebreathingtubes(calledairwaysorbronchi)andstop swelling,mucusbuild-upandmuscletightening.
- Theywillnotworkunlessusedregularly,somustbetaken everyday,evenwhenyouarewell.
- Theydonotbringanyrelieffromsymptoms(SeeRelievers below)
- Theytakeabout14daystobuilduptheprotectiveshield. Youwillnotseeanimmediateeffectbutafter1-2weeksthey will makeabigdifferenceintheamountofasthmasymptoms youhave.

Relievers

- Airwaysthatareinfamedandswollenmayalsoget tighteningofthemusclearoundtheairwayscalledairway spasmorbronchospasm(see"WhatisAsthma?").This causescough,wheezing(whistlinginthechest)oratight chestwithdiffcultbreathing.
- Relieversaretheemergencytreatmenttoopenupyour airwayswhentheyareeventighter/moreclosedthan usualinordertomakebreathingeasier.
- Relieversproducealmostinstantreliefandareusedas emergency treatmentforasthmasymptomsorattacks.Always carrythemwithyouforfrstaidtreatment!Butrelievershave noeffectontheswellingintheairwaysorthebuildupof mucus.
- Relieversareusedonlywhenyouhavesymptoms.Ifyou needtousearelievermorethan3timesaweek,thenyour asthmaisnotwellcontrolledandyoushouldalsobeon acontroller,oryourmedicationandtechniquemayneedto becheckedbyadoctor.

Controllers

Steroid controllers

- Steroidsarechemicalsmadebythebody.Onegroup ofsteroids,thecorticosteroids,areusedtotreatasthma. Corticosteroidsaredifferentfromtheanabolicsteroidstaken bysomeathletes.Anabolicsteroidsarenotusedtotreat asthma.
- Steroidsarethestrongestcontrollertreatmentforasthma.
- Yourdoctorshouldadviseyouwhethertodecreaseor increasethedoseyouaretaking,orstopthesemedicines wherepossible.Donotadjustyourdoseswithoutyour doctor'sadvice.
- Theyareusuallygivenbybreathingthemintothelungs.

Inhaled (breathed in) steroids: beclomethasone(sold as Beclate®andQvar®),budesonide(soldasBudefam®,Infammide® and Pulmicort®), ciclesonide (sold as Alvesco®) and futicasone (soldas Flixotide®). Thesemay also be combinedwith another medicine, such as futicasone plus salmeterol(sold as Foxair®, Serefo®andSeretide®)andbudesonideplusformoterol(soldas Symbicord®).

- 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 you 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 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 Aspelone ®, Capsoid ®, Lenisolone ®, Prefam ® 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 Topraz ®) and zafrlukast (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® and 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 futicasone (sold as Foxair®, Serefo ® and 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. All medication containing long acting beta agonists are not recommended for children below the age of 5.

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 Venteze® and Ventolin®), terbutaline (sold as Bricanyl®) and tiotropium (sold as Forvent® and Spiriva®). Combinations are also available in a single inhaler as ipratropium plus salbutamol (sold as Combivent®) and Ipratropium plus fenoterol (sold as Duovent®). Inhaled relievers may also be available as dry powder inhalers e.g. Asthvavent 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.

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®, Nuelin®, Sandoz Theophylline®, Solphyllin®, Theophen®, Theoplus® and Uniphyl®).

- 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 the 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 you 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.

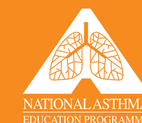
Key points to remember

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 infammation or swelling of the airways.
- If you need relievers a lot (more than 3 times 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.



Join the NAEP!
sign up on www.asthmasa.org