

Asthma and other Respiratory Disease Medications Defined

Bronchodilator drugs or beta2-agonists open up the airways in the lungs within minutes of inhalation of the drug either by nebulizer, metered-dosed inhaler (MDI), or dry-powdered inhaler (DPI), by relaxing the smooth muscle that surrounds the airways. ***Generic brand names are listed in *italics*.

Short-acting bronchodilators (Quick Relief Medications) – relieves immediate symptoms of asthma:

The effect of the usual type of bronchodilator lasts for 3-4 hours and these *short-acting* drugs *albuterol* (Proventil, Ventolin, ProAir, ReliOn, AccuNeb), *levalbuterol* (Xopenex), *metaproterenol* (Alupent, Metaprel), *pirbuterol* (Maxair), *terbutaline* (Brethaire, Breathine) are used as needed or before exercise to prevent wheezing, chest tightness, and shortness of breath. The short-acting drugs provide rapid relief during a mild or moderately severe asthma episode, but they do nothing for the cause of the attack - *inflammation*. These "rapid acting relievers" may be needed repeatedly until the attack ends on its own or is controlled by an anti-inflammatory drug. There are also combination medications containing short-acting bronchodilators and anticholinergics (Combivent MDI and DuoNeb a nebulizer form).

Long -acting bronchodilators: Although bronchodilators do not prevent asthma attacks, certain *long-acting* bronchodilators *salmeterol* (Serevent) and *formeterol* (Foradil) can improve lung function over 10-12 hour periods. These drugs must NEVER be used for the emergency relief from an acute attack of asthma. Typically, these medications are used in combined medications with corticosteroids for improved relief of asthma symptoms such as Advair and Symbicort.

Anticholinergics: relax the airways and prevent them from getting narrower. This makes it easier to breathe. They may protect the airways from spasms that can suddenly cause the airway to become narrower (bronchospasm). They also may reduce the amount of mucus produced by the airways.

Ipratropium bromide (Atrovent) is a short-acting anticholinergic and *tiotropium* (Spiriva) is a long-acting anticholinergic. Consult your physician and/or pharmacist if you have been prescribed to take both of these medications at the same time as they are in the same class of medication. Your doctor should prescribe a quick-relief medicine/inhaler such as albuterol for sudden attacks of shortness of breath/asthma while you are on this medication.

Short-acting anticholinergics begin to work within 30 minutes, but work best 1 to 2 hours after use and usually last for 3 to 4 hours (but may provide relief for up to 6 hours in some people).

Anti-Inflammatory drugs: work to reduce the irritability of the lung airways by controlling the activities of inflammatory cells in the airway walls. **These drugs are essential to the proper control of asthma.** They are used to reduce asthma severity over a period of time, and must be used on a regular basis, usually 2 times per day. A very common cause of asthma attacks is failure to remember to take the anti-inflammatory drug regularly, as prescribed. These drugs do not provide immediate relief from an asthma attack or episode because they do not act quickly and are not bronchodilators. However, it is often advised (only by a physician or primary health provider) to temporarily increase the dose of the anti-inflammatory drug during an acute attack (refer to your asthma action plan). This type of inhaled medication must be used for several days (sometimes up to 2 weeks) before improving overall lung function and breathing. Two types of anti-inflammatory drugs exist - ***mast cell stabilizers, and corticosteroids.***

Mast Cell Stabilizers: such as *cromolyn sodium* (Intal) or *nedocromil* (Tilade) are effective in controlling mild persistent asthma. Cromolyn sodium must be used 3-4 times daily for at least 8 weeks before improvement occurs. It also has a weak action in preventing wheezing from exercise when used immediately (20-30 minutes) before exercise, but a short-acting bronchodilator is much more effective in preventing exercise-induced asthma when used properly. *Nedocromil* (Tilade) is a more effective mast cell stabilizer drug than cromolyn but has been discontinued from the US market.

Inhaled Corticosteroids (Controller Medications) – controls symptoms of asthma: are the most effective means of controlling asthma and is the drug of choice to be given in the routine anti-inflammatory management of asthma. In the usual doses given, they NEVER cause the long list of side effects that accompany use of corticosteroid tablets or injections, again, these are NOT anabolic or muscle building steroids. Your doctor should prescribe a quick-relief medicine/inhaler such as albuterol for sudden attacks of shortness of breath/asthma while you are on this medication.

The typical side effects when using corticosteroids are: Candida or “thrush” in the mouth, tongue, or throat; a dry mouth and/or throat irritation; these issues are usually prevented by rinsing the mouth with water and spitting after each dose, however, if these issues persist – contact your physician and/or

pharmacist. For issues with children - watch for bone growth, as high doses of steroids (either inhaled, pill, injected, or I.V.) can alter this.

Usually, recommended doses are safe! Examples of inhaled corticosteroids are *beclomethasone* (QVAR, Beclovent), *budesonide* (Pulmicort), *flunisolide* (Aerobid), *fluticasone* (Flovent), *mometasone furoate* (Asmanex Twisthaler) and *triamcinolone* (Azmacort). Combined preparations containing a corticosteroid and a long-acting bronchodilator (Advair, Symbicort) are proving to be useful in limiting the amount of corticosteroid needed for the control of asthma.

Leukotriene Modifiers (leukotriene antagonists): are long-term control medications used to manage allergic rhinitis or allergies, and prevent asthma episodes by controlling leukotrienes in the body. They are not used to treat sudden symptoms and it may take several weeks for the medicine to take effect. You must continue to take these medications even when you are feeling well as symptoms may not always be obvious. Leukotriene Modifiers do not work for everyone.

Leukotrienes are inflammatory chemicals the body releases after coming in contact with an allergen or allergy trigger and cause tightening of airway muscles along with the production of excess mucus and fluid. These chemicals play a key role in allergies and/or allergic rhinitis and also cause uncomfortable bronchospasm that tightens your airways, making it difficult to breathe. Many of the people with asthma also have symptoms of allergies. In addition, untreated allergies often cause sinusitis, sore throats, cough, sleep problems, irritability, and low productivity at school and in the workplace. Examples of Leukotriene Modifiers include: Singulair (*Montelukast Sodium*) approved for children age 2 and older; Accolate (*Zafirlukast*) approved for children age 7 and older; and Zyflo (*Zileuron*) not approved for children. Currently, all of these medications are only available in pill form.

Xanthines (Theophylline): a medication used to treat and prevent wheezing and trouble breathing caused by ongoing lung disease such as asthma, emphysema, and chronic bronchitis. It works in the airways by relaxing muscles, opening air passages to improve breathing, and decreasing the lungs' response to irritants. This medication is taken in a time released pill form. Frequent blood analysis must be done while taking theophylline to monitor the levels of the medication in the body in order to reach desired effect and prevent overdose.

This medication does not work immediately and should not be used for sudden attacks of breathing trouble. Your doctor should prescribe a quick-relief medicine/inhaler such as albuterol for sudden attacks of shortness of breath/asthma while you are on this medication. You should always have a quick-relief inhaler with you. Consult your doctor or pharmacist for more details.

Anti-IgE Medications - Xolair (*Omalizumab* – injection only, once or twice per month): this medication is used to treat poorly controlled moderate to severe persistent asthma, those having year round allergies, and who are taking routine inhaled corticosteroids in adults and children over 12 years of age. It works by blocking your immune system's natural response to allergic triggers that can lead to an acute asthma attack. This action on your immune system (specifically immunoglobulin E-IgE), helps keep air passages open and, over time, it keeps asthma in better control. This medication is not for the quick relief of an asthma episode and is only given in the presence of a physician. There are several common side effects with Xolair, as well as, several rare, yet severe side effects that have been reported.

Glucocorticoids: such as Prednisone decreases the body's immune system's response to various diseases to reduce swelling, and allergic-type reactions. It is used to treat various conditions such as asthma, emphysema, and chronic bronchitis. Prednisone comes as a tablet, a solution (liquid), and a concentrated solution to take by mouth.

If you have severe worsening asthma symptoms, your doctor may prescribe a brief course of oral steroids such as prednisone. Oral steroids may also be prescribed when your asthma symptoms worsen but you do not require hospitalization. Prednisone is a systemic steroid that goes into the bloodstream and can cause several side-effects with use. Prednisone is used with other asthma medications to either control sudden and severe asthma attacks or to treat long-term, hard-to-control asthma and other respiratory diseases.

If you are taking prednisone to treat a chronic disease, the medication may help control your condition but will not cure it. Continue to take prednisone even if you feel well. Do not stop taking prednisone without talking to your doctor. If you suddenly stop taking prednisone, your body may not have enough natural steroids to function normally which may cause severe symptoms and side-effects. Call your doctor if you experience unusual symptoms while you are taking prednisone or after you stop taking the medication.

Modified July 2010 by Cynthia Keely Wilson, AEPP Program Manager, www.wvasthma.org