

Types of Inhaled Medications

Bronchodilator drugs or beta2-agonists open up the airways in the lung within minutes of inhalation of the drug either by nebulizer or metered dosed inhaler (MDI), by relaxing the smooth muscle that surrounds the airways.

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

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 rescue from an acute attack of asthma. (Serevent is currently being discontinued in the United States – January 2009)

Anticholinergics: 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.

Short-acting anticholinergics begin to work within 15 minutes, work best after 1 to 2 hours, and usually last from 3 to 4 hours (but may last 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 because they do not act as 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). Two types of anti-inflammatory drugs exist - *mast cell stabilizers*, and *corticosteroids (steroids)*.

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 (steroids) are the most effective means of controlling asthma and are the usual type of drug 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, these are NOT anabolic muscle building steroids. The only side effect to be concerned about with approved doses is Candida (thrush) in the mouth or throat, a problem that is usually prevented by rinsing the mouth with water after each dose. Usually, recommended doses are safe! 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 control of asthma. Examples of inhaled corticosteroids are beclomethasone (QVAR, Beclovent), budesonide (Pulmicort), flunisolide (Aerobid), fluticasone (Flovent), mometasone furoate (Asmanex Twisthaler) and triamcinolone (Azmacort).