

Asthma Treatment

Gaining good life quality

Asthma is a common disease that affects more than 22 million Americans, including over 6 million children.^{1,2} Asthma is a chronic (long-term) lung disease.² "When you have asthma, your airways narrow and swell. They produce extra mucus, and breathing becomes difficult."³

The most common asthma signs and symptoms are:

- coughing,
- wheezing,
- tight feeling in the chest, and
- difficulty breathing.⁴

"People generally think of asthma in terms of episodes or attacks. Actually, the asthmatic condition is always present, but symptoms may be dormant [inactive] until 'triggered'" "Asthma triggers are things that don't bother most

people but can make inflamed lungs worse if you have asthma." Factors that are known to "trigger" asthma symptoms or make symptoms worse include:

- exposure to allergens (e.g., pollen, dust, mold, feathers, animal dander, and some foods or food additives);^{5,6}
- irritants in the air (e.g., smoke, dirt, industrial chemicals, gases, paints, perfumes, and other odors or fumes);^{5,6}
- respiratory infections (e.g., colds, bronchitis, sinusitis, flu, or other illnesses);⁵
- weather changes (e.g., cold, windy weather; cold, dry air; or sudden changes in the weather);^{5,7}
- exercise (exercise may trigger asthma symptoms in some individuals; however, people with asthma can benefit from an exercise program with well-controlled asthma treatment);⁵
- emotional stress;⁵
- some medications (e.g., about 5 percent of people with asthma experience a decrease in lung function after taking aspirin; ibuprofen may cause similar reactions; beta-blockers may also cause airway constriction in some individuals⁶); and
- other health problems (e.g., obesity, obstructive sleep apnea, depression, acid reflux⁸ – gastroesophageal reflux disease).⁷

Sometimes, asthma symptoms or an asthma attack may occur with no apparent cause.⁷

There is currently no cure for asthma, but its symptoms can be controlled. Fortunately, with the latest medications and other treatments, you can manage your asthma.⁵ "Your goal should be to feel good, be active all day, and sleep well at night. All patients with asthma should accept nothing less. If your asthma is in control, you should expect:

- no or few asthma symptoms, even at night or after exercise;
- prevention of all or most asthma attacks;
- participation in all activities, including exercise;
- no emergency room visits or hospital stays;
- less need for quick-relief medicines;
- no or few side effects from medicines."⁸

Taking Control

Finding the right treatment

When it comes to asthma treatment, building a strong partnership with your doctor is important. Delays in early diagnosis and effective treatment of asthma can lead to permanent lung damage.⁸ Asthma treatment should be tailored for each person and may change over time⁹ as symptoms, how often they occur,



and how severe they are may vary over time.²

“Today, there are many excellent medications for treating asthma. Some are used to prevent asthma symptoms and attacks. Others relieve symptoms when they occur.”⁵ “Doctors usually decide which medicines and how much of each to prescribe, based on your lung function and your pattern of symptoms – how many days and nights you have them, as shown in the chart below. Usually, if you have symptoms no more than two days a week or two nights a month, they will consider your asthma to be mild and intermittent and prescribe only quick-relief medicines to be used when you have symptoms. If you have more frequent symptoms, you probably need daily long-term control medicines to prevent symptoms. It may take several visits before the doctor finds exactly the right medicines and doses for you.”¹⁰

Most people with asthma need two kinds of medicines:

- Quick-relief medicines, sometimes called “rescue” medicines, are to be taken when you need them for immediate relief of your symptoms. These should be taken at the first sign of any asthma symptoms.¹⁰ Quick-relief medicines treat the “noisy part of the disease – the coughing, wheezing, shortness

of breath that can happen during an asthma attack. These drugs help open the airways.”¹¹

- Long-term control medicines are to be taken daily, for a long time, to stop and control the inflammation in your airways (the “quiet” part of the disease¹¹ that causes the symptoms⁸) and thereby prevent symptoms and attacks.¹⁰

The American College of Allergy, Asthma, and Immunology⁵ has compiled tables with some of the most common [quick-relief](#) and [long-term control medications](#).

Quick-Relief Medications

For rapid relief

“Medications in [this category](#) are meant to be used to treat an asthma episode or attack – to relieve symptoms and open airways quickly. They also may be used to pre-treat to prevent attacks, such as before exercise.”⁵ [Quick-relief medicines](#) fall into three categories:

- short-acting beta-agonists,
- anti-inflammatory drugs, and
- anticholinergics.

Short-Acting Beta-Agonists.

“These inhaled, quick-relief bronchodilators [airway openers] can rapidly ease symptoms during an asthma attack.... These medications act within minutes, and effects last several hours.”³

“If your symptoms are minor and infrequent, or you have exercise-induced asthma, you may be able to manage

“Your goal should be to feel good, be active all day, and sleep well at night.”⁸

your symptoms with one of these medications alone. However, most people with persistent asthma need to rely primarily on an inhaled corticosteroid or other long-term control medication. Short-acting asthma medications are often used to treat asthma attacks and exercise-induced asthma, but you shouldn’t use them on a regular, daily basis. If you need to use your inhaler more often than your doctor recommends, your asthma is not under control – and you may be increasing your risk of a serious asthma attack.”¹²

Anti-Inflammatory Drugs. Short-acting asthma medications are usually taken with an inhaler but are sometimes taken as pills or syrup. Oral or intravenous corticosteroids may be taken to treat severe asthma attacks. They can cause bothersome short-term side effects (e.g., fluid retention, mood swings)¹³ and serious side effects (e.g., high blood glucose, increased blood pressure, glaucoma, loss of calcium from bones [leading to osteoporosis], increased risk of infection, slower wound healing, suppressed adrenal gland hormone production)¹³ when used long-term, so they should only be used on a short-term basis.^{3, 12}

Anticholinergics. These medications are short-acting bronchodilators that are usually prescribed for emphysema or chronic bronchitis but are sometimes used to treat asthma attacks. Like other

	Days with Symptoms	Nights with Symptoms
Intermittent asthma	No more than 2 days each week	No more than 2 nights each month
Mild persistent asthma	3 days or more a week but no more than one bout of symptoms on any 1 day	3 nights or more a month
Moderate persistent asthma	Every day	More than 1 night a week
Severe persistent asthma	Throughout the day every day	Often

Excerpt from National Heart, Lung, and Blood Institute (2007). So you have asthma [online]. Retrieved September 28, 2010. From http://www.nhlbi.nih.gov/health/public/lung/asthma/have_asthma.pdf.

bronchodilators, anticholinergics relax the airways, making it easier to breathe. They may be used along with – or as an alternative to – short-acting beta agonists.^{3, 12}

Long-Term Control Medications

To prevent asthma symptoms

“The medications in [this category](#) are preventive and meant to be used on an ongoing basis, as prescribed. They are not to be used now and then, or to relieve acute asthma symptoms.”⁵ [Long-term control medicines](#) also fall into three primary categories:

- anti-inflammatory drugs,
- long-acting beta-agonists, and
- leukotriene modifiers.

Anti-Inflammatory Drugs. Inhaled corticosteroids “are the most effective and commonly used long-term control medications for asthma. They reduce swelling and tightening in your airways. You may need to use these medications for several days to weeks before they reach their maximum benefit.... In children, long-term use of inhaled corticosteroids may slightly delay growth, but the benefits of using these medications to maintain good asthma control generally outweighs the risks.... Unlike oral corticosteroids, inhaled corticosteroid medications have a relatively low risk of side effects and are generally safe for long-term use.³ When side effects do occur, they can include mouth and throat irritation and oral yeast infections.”¹² If you’re using a metered dose inhaler, talk with your doctor about using a spacer. Also, be sure to rinse your mouth with water after each use. This reduces the amount of drug that can be swallowed and absorbed into your body.¹²

Long-Acting Beta-Agonists (LABAs). These inhaled medications open narrowed airways and reduce inflammation.³ “Their effects last at least 12 hours, and they’re used to control moderate to severe asthma and to prevent nighttime symptoms.”¹² Although they’re effective, LABAs alone have been linked to severe asthma attacks. For this reason, LABAs should be taken only in combination with an inhaled corticosteroid.¹²

Leukotriene Modifiers. These medications are taken orally.³ They block the effects of leukotrienes, immune system chemicals that cause asthma symptoms, and can help prevent asthma symptoms for up to 24 hours.¹² “In rare cases, these medications have been linked to psychological reactions such as agitation, aggression, hallucinations, depression, and suicidal thinking. See your doctor right away if you have any unusual reaction.”¹²

Treatment Goals

Best control – least medication

“The goal [of treatment] is to have you feel your best [maintain the best control possible²] with the least amount of medication.”⁸ Work with your doctor. Track your symptoms in a diary that you can take to your doctor’s office so you can review it together and make any needed changes to your asthma treatment plan. If your asthma is well-controlled, you should experience:

- symptoms two days a week or fewer,
- nighttime awakenings two times a month or fewer,
- no interference with normal daily activities,
- need for quick-relief medicine to control symptoms two days a week or fewer, and

- a [peak flow](#) or [FEV](#) (forced expiratory volume) of more than 80 percent of your predicted personal best.⁹

“If you follow your asthma treatment plan but you’re still having bothersome symptoms, see your doctor. You may need to increase or change your medication. On the other hand, if your asthma is well controlled all the time, you may be able to reduce the amount of medication you take. This is known as the “stepwise” approach to asthma control. For some people with seasonal allergy triggers, medication may need to be “stepped up” or “stepped down” at certain times of the year.”⁹

Treatment for Allergy-Induced Asthma

Allergy shots & medications

Allergies and asthma often occur together. In fact, allergy-induced asthma is the most common type

of asthma in the United States.¹⁴ “If you have both allergies and asthma, the



same substances that trigger your allergy symptoms can also inflame your airways, leading to asthma symptoms. For many people with asthma, their asthma symptoms are triggered by an allergy to airborne substances such as pollen, dust mites, or pet dander. In some people, skin or food allergies can cause asthma symptoms.”¹⁴

“An allergic response affects the lining of the nose and the lining of the airways in a similar way. Symptoms occur when antibodies in your blood are exposed to an allergy-causing substance (allergen). These antibodies can trigger allergy symptoms such as nasal congestion, scratchy eyes, or a skin reaction – and for many,

inflammation of the airways associated with asthma."¹⁴

Some allergy treatments can reduce asthma symptoms. These may include the following.

Allergy shots (immunotherapy).

"Allergy shots [also called immunotherapy] can help treat asthma by gradually reducing your immune system response to certain allergy triggers. Immunotherapy involves getting regular injections of a tiny amount of the allergens that trigger your symptoms. Your immune system builds up a tolerance to the allergens over time, and your allergic reactions diminish. In turn, asthma symptoms decrease as well. This treatment generally requires regular injections over a period of three to five years."¹⁴



Leukotriene modifier.

"Montelukast (Singulair) is a medication that eases both allergy and asthma symptoms. Called a leukotriene modifier, this daily pill helps control immune system chemicals released during an allergic reaction. In rare cases, this and other leukotriene modifiers have been linked to psychological reactions, including suicidal thinking. Seek medical advice right away for any unusual psychological reaction to one of these medications."¹⁴

Anti-immunoglobulin E (Anti-IgE). "If you have allergies, your immune system produces allergy-causing antibodies to attack substances that generally cause no harm, such as pollen, dust mites, and pet dander."¹² Omalizumab (Xolair) is a man-made antibody

against IgE. This anti-IgE blocks the action of these antibodies, reducing the immune system reaction that causes allergy and asthma symptoms.¹⁵ In 2003, the Food and Drug Administration (FDA) approved this treatment for teens and adults with uncontrolled asthma.¹⁵ It is not recommended for children under 12.¹² "Xolair is given by injection every two to four weeks.... In rare cases, this medication has triggered a life-threatening allergic reaction (anaphylaxis). Anyone who takes omalizumab should be monitored closely by health professionals after getting an omalizumab injection in case of a severe reaction."¹²

Bronchial Thermoplasty **The latest in asthma treatment**

In April 2010, the FDA approved a procedure called bronchial thermoplasty (conditional on a five-year post-approval study of the device to look at long-term safety and effectiveness).^{16,17} This treatment is intended for patients ages 18 and older with severe or persistent asthma that doesn't improve or is not well-controlled with inhaled corticosteroids or other long-term control asthma medications.³

This is the first approved treatment of its kind, which changes the anatomy of the lung.¹⁸ An instrument is inserted through the mouth or nose down into your windpipe and into your bronchial tubes. It delivers a very controlled radiofrequency energy (essentially controlled heating) that heats the insides of the airways in the lungs with an electrode, reducing the smooth muscle inside the airways.^{3,18} The result is that the smooth muscle around your

windpipe is decreased in amount and size.¹⁸ "This limits the ability of the airways to tighten, making breathing easier and may reduce asthma attacks."³

Bronchial thermoplasty is completed over the course of three procedures, each separated by two weeks, in which several sites along the airway are treated,¹⁶ which is necessary to reach different parts of the lung. The procedure is done on an outpatient basis. In clinical trials, there was a significant reduction of severe asthma attacks with this procedure.¹⁷

Bronchial thermoplasty, however, is a complex procedure and not without potential side effects. "Possible side effects during the course of treatment may include asthma attacks, wheezing, chest tightness or pain, partially collapsed lung, coughing up blood, anxiety, headaches, and nausea."¹⁶ Bronchial thermoplasty "is designed to reduce the number of severe asthma attacks on a long-term basis. However, there is a risk of immediate asthma attacks during the course of the treatment."¹⁷

Bronchial thermoplasty isn't widely available.³ Doctors will need to be trained in how to perform the procedure, and appropriate facilities with full resuscitation equipment should be made available.¹⁸ More research is needed to determine whether the benefits of this treatment outweigh the possible risks and potential side effects.³

Considering alternative treatments for asthma? See [this information](#) from the Mayo Clinic, and always communicate with your doctor about your asthma care and control.

To view the references used in this newsletter, go to:
<http://fcs.tamu.edu/health/healthhints/2010/dec/ref.php>

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Medications for the Treatment of Asthma

(The following is an excerpt from American College of Allergy, Asthma, and Immunology [2007]. [You've been referred to an asthma specialist...here's what to expect.](#))

Today there are many excellent medications for treating asthma. Some are used to prevent asthma symptoms and attacks. Others relieve symptoms when they occur. Some of the most common medications are listed below.

Quick-Relief Medications

Medications in this category are meant to be used to treat an asthma episode or attack – to relieve symptoms and open airways quickly. They also may be used to pre-treat to prevent attacks, such as before exercise.

Short-Acting Beta-Agonists	Anti-Inflammatory Drugs	Anticholinergics
<p>These medications are bronchodilators and are used to relax the muscles and open airways. Short-acting beta-agonists work quickly to increase airflow and are the treatment of choice for acute asthma symptoms and attacks.</p> <ul style="list-style-type: none"> • Albuterol • Alupent® • Combivent®** • Maxair™ Autohaler™ • ProAir® HFA • Proventil® (albuterol) • Proventil® HFA (albuterol) • Ventolin® HFA (albuterol) • Xopenex® • Xopenex® HFA 	<p>These medications are used to prevent or reduce inflammation and swelling in the airways.</p> <p>Oral Corticosteroids (also may be used for long-term control)</p> <ul style="list-style-type: none"> • Medrol® • Orapred® • Orapred ODT™ • Pediapred® • Prednisone • Prelone® 	<p>These medications may be used as an alternative or in addition to other therapies. Generally, they are not the first treatment of choice.</p> <ul style="list-style-type: none"> • Atrovent® (Note: does not block exercise-induced asthma) • Atrovent® HFA (Note: does not block exercise-induced asthma) • Combivent®**

**Combination medication of Atrovent and Albuterol

Long-Term Control Medications

The medications in this category are preventive and meant to be used on an ongoing basis, as prescribed. They are not to be used now and then, or to relieve acute asthma symptoms.

Anti-Inflammatory Drugs	Long-Acting Beta-Agonists	Leukotriene Modifiers
<p>These medications are used to prevent or reduce inflammation and swelling in the airways.</p> <p>Inhaled Corticosteroids</p> <ul style="list-style-type: none"> • Advair Diskus®* • Advair® HFA • AeroBid® • Asmanex® • Twisthaler® • Azmacort® • Flovent® HFA • Pulmicort Respules® • Pulmicort Turbuhaler® • QVAR® • Symbicort® <p>Oral Corticosteroids (also may be used for quick relief)</p> <ul style="list-style-type: none"> • Medrol® • Orapred® • Orapred ODT™ • Pediapred® • Prednisone • Prelone® <p>Cromolyn and Nedocromil</p> <ul style="list-style-type: none"> • Intal® • Tilade® 	<p>These medications are bronchodilators and are used to relax the muscles and open airways. Long-acting beta-agonists are used as maintenance drugs because they provide longer term control and have a slower onset of action. They should not be used as quick-relief medications.</p> <p>Inhaled Bronchodilators</p> <ul style="list-style-type: none"> • Advair Diskus®* • Foradil® Aerolizer® • Serevent® Diskus® <p>Theophylline</p> <ul style="list-style-type: none"> • Theolair™ • Uniphyl® <p>Oral Bronchodilators</p> <ul style="list-style-type: none"> • VoSpire ER® 	<p>These medications modify the inflammatory response in asthma.</p> <ul style="list-style-type: none"> • Accolate® • Singulair® • Zyflo®

*Combination medication of Serevent and Flovent

Source:

American College of Allergy, Asthma, and Immunology (2007). You've been referred to an asthma specialist... here's what to expect [online]. Retrieved September 6, 2010. From <http://www.acaai.org/Patients/resources/Documents/YouveBeenReferred.pdf>.

Check Your Lung Function

(The following is an excerpt from Mayo Clinic [2008]. Asthma treatment: 3 steps to better asthma control <http://www.mayoclinic.com/health/asthma-treatment/AS00011>.)

Lung function tests can help determine your level of asthma control. Decreased lung function is a sign you need to adjust your medications according to your treatment plan. If you're following your treatment plan but still have decreased lung function, work with your doctor to adjust your medications. There are two primary lung function tests:

- **Peak flow.** By learning how to use a simple, hand-held device called a peak flow meter, you can detect subtle changes in your airways before you notice symptoms. A peak flow meter can be used at home to measure how well you can breathe. Peak expiratory flow (PEF) is the reading that indicates the fastest rate at which you force air out of your lungs. If your PEF readings are lower than usual, it's a sign your asthma may be about to flare up. Your doctor can give you instructions on how to deal with low readings as part of your asthma treatment plan.

- **Spirometry.** Spirometry tests are lung function (pulmonary) tests done at your doctor's office with a machine called a spirometer. Some people also use a hand-held spirometer to take measurements at home. Spirometry tests measure how much air your lungs can hold and how much air you can exhale after you've taken a deep breath. This measurement is called forced expiratory volume (FEV). Your doctor compares your FEV measurement with the predicted result for people who don't have asthma. This comparison is expressed as a percentage. Lower percentages mean your lungs aren't working as well as they should be, a sign your asthma is flaring up.

Source: Mayo Clinic (2008) Asthma treatment: 3 steps to better asthma control [online]. Retrieved September 2, 2010. From <http://www.mayoclinic.com/health/asthma-treatment/AS00011>.



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