



Asthma Educator

Asthma can be a desperate struggle for breath that sufferers relive over and over again if the underlying inflammation is not properly treated. The condition affects 4.1 million children under the age of 18, but many others have a "hidden" or undiagnosed problem.

Asthma is the leading serious chronic illness among children. It's the main cause of school absenteeism and the third highest cause of hospitalization in children under the age of 15. But medical advances have greatly improved the outlook for a child with asthma. With proper treatment, almost everyone with the condition can go to school, participate in sports, and live a normal life.

How Does Asthma Obstruct Breathing?

In asthma, normal functions designed to protect the lungs from harmful materials (muscle contraction, mucous membrane swelling and mucus formation) go into

overdrive. The airways are abnormally sensitive to various "triggers" so the muscles tighten in what is known as a bronchospasm and the mucous membranes swell, reducing the diameter of the airways. In addition, mucus production becomes extreme, sometimes forming sticky 'plugs' in the bronchial tubes.

Some People Are Asthma Prone

Asthma affects people of any sex, age and race, but there are some factors that increase risk:

- **Inflammation.** Chronic irritation of the airways is a hallmark in all asthma patients. Recent studies indicate that it is the major component of the disease. This inflammation may be triggered by allergy, infections and air irritants.
- **Allergies.** About 75-80 percent of children, and about 25% of adults with asthma have significant allergies, which induce airway inflammation. Studies indicate that allergies produce both immediate and delayed reactions because chronic airway inflammation can cause scarring.
- **Tobacco Smoke.** Recent studies suggest that children of smokers are twice as likely to develop asthma as the children of non-smokers. Even apparently healthy babies born to women who smoked during pregnancy have abnormally narrowed airways that may predispose them to

asthma. Adult smokers have great difficulty controlling their asthma.

- **Race.** African-Americans and Hispanics have a higher risk of asthma than non-Hispanic whites (see "Race Disparity").

Symptoms of Asthma

Signs that a person may have asthma include a persistent dry cough, nighttime coughing that disturbs sleep, wheezing, coughing, or shortness of breath with physical activity. Wheezing, though characteristic of asthma, is not its most common symptom. Coughing is noted with even "hidden" or undiagnosed asthma.

Infants who have rattle-like coughs, rapid breathing or excessive bouts of pneumonia or chest colds should be evaluated for asthma. Also, if your child is diagnosed with bronchitis, consider getting a second opinion because this condition is rare in children and is usually misdiagnosed asthma. (Bronchiolitis, a viral infection of the lower respiratory tract, is a different disease that occurs in infants under 18 months of age.) Obvious wheezing episodes might not be noted until after 18-24 months of age. Chest tightness and shortness of breath are other signs of asthma that may occur alone or in combination with any of the above symptoms. However, since any of these symptoms can arise without asthma, other respiratory diseases must always be considered.

Triggers for an Asthma Attack

Asthma is a chronic disease that causes breathing problems, known as attacks or episodes often triggered by the following conditions:

- **Allergens.** During an allergic reaction, chemicals, such as histamine, are released from specialized cells. These substances cause mucous membrane swelling, excessive mucus secretion and muscle contraction in the airways. Dust, pollen, mold, food, animals, etc., can all cause allergic reactions.
- **Exercise.** Activities such as running can trigger an episode in over 80 percent of children and in some adults with asthma.
- **Respiratory Infections.** Viruses and Bacteria trigger production and release of inflammatory substances causing an asthma attack in much the same way allergens do.
- **Irritants.** Cigarette smoke, air pollution, strong odors, aerosol sprays and paint fumes are some of the substances that can irritate the tissues of the lungs and upper airways. The reactions (coughing, wheezing, runny nose, watery eyes) they produce can be identical to those produced by allergens.

- **Weather.** Studies have demonstrated that breathing cold air provokes an attack in most children with asthma.
- **Emotions.** People do not develop asthma as a result of psychological problems, however psychological problems and stress can cause an attack or worsen an existing one.

Asthma Treatment

Although asthma cannot be cured, in most cases its frequency and severity can be reduced so that it does not interfere with normal activities, especially since most asthma attacks develop gradually over days. Many children "outgrow" asthma as they get older and their airways get bigger, but they are still at higher risk for it as adults. These steps can help you and your doctor control your or your child's asthma:

1) Identify triggers: There are a wide range of possible asthma triggers and you may need to do some "sleuthing" to figure out what starts an asthma attack. It may appear that they occur out of the blue, but this generally isn't true. Something usually sets off an attack, and you and your physician must make an individualized evaluation to try to determine these triggers. They may also recommend allergy testing to determine which allergens are triggers. Special diets and careful tests with suspected foods usually help detect food allergies.

2) Avoid known triggers: Once triggers are identified, a plan must be formulated to avoid them in order to lessen the severity of attacks (see "Preventing Attacks"). For example, if eggs are found to be culprits, eliminate them from the diet.

3) Nutrition: Nutritional supplementation is vital to maximize health as none of us eat properly balanced meals and get the maximum RDI of nutrients recommended by the Government.

- **Essential Fatty Acids** (EFA's) should be added for their beneficial anti-inflammatory effect which stems from them entering the same anti-inflammation pathway as do the arthritis medications. People with asthma and other allergic disorders seem to have an altered ability to process fatty acids, especially essential fatty acids (EFA's). They are "essential" because we must have them in our diet, they cannot be made by our body. This can result in a deficiency of gamma-linolenic acid (GLA), one of the essential fatty acids.⁵ GLA is found in evening primrose oil (EPO), borage oil, and black currant seed oil. EFA's benefit not only asthma, but also skin conditions and arthritis!
- **Soy products** added to the diet are helpful in many people with asthma. Soy has a wonderful anti-inflammatory effect because soy "fat" is about 50 percent linoleic acid, another Essential Fatty Acid, which helps with an overall decrease in asthma flares and severity of attacks.

4) Medications: There are four types of medications used to manage asthma:

- **Anti-inflammatory agents** - these act directly to reduce the inflammatory response of the airways. They come in pill (Singulair/Accolate) and aerosol (Intal/Tilade) forms. These must be used regularly to be effective.
- **Anti-Allergy drugs** help prevent triggers from causing attacks, but they do not work after one starts.
- **Bronchodilators** - These may be used regularly (Proventil) and also to help once an attack occurs. They are used to relax the muscles of the airways and open them up. They are available as liquids, tablets, puffers, and solutions for breathing machines. Puffers are preferred to oral medications because they act faster, are more effective, and have fewer side effects. However, young children (usually under 4) cannot use puffers appropriately so oral medication or a breathing machine are used. Newer longer acting bronchodilators (Serevent) are used regularly twice daily.
- **Corticosteroid medications** - these form the **cornerstone of traditional medical therapy** and are highly effective in controlling the inflammatory component of asthma. Steroids are hormones normally produced by the body - they are not related to the steroids athletes take. They are used in two ways:
 1. **Puffers:** (Flovent, Beclovent, Azmacort, Advair) are used on a regular basis to treat the underlying inflammation of asthma.
 2. **Oral corticosteroids:** are limited to a) treatment of severe flares of asthma or b) severe chronic asthma that cannot be controlled with a combination of other medications. Long term use of oral steroids can cause weight gain, stomach ulcers, high blood pressure, adrenal gland suppression, cataracts, growth suppression in children and thinning of the bones among many other side effects. Since uncontrolled severe asthma may be fatal this represents a much greater risk than knowledgeable use of oral corticosteroids.

5) Allergy injections: Hyposensitization, allergy shots, immunotherapy or desensitization are synonyms for injection treatments which may reduce a person's sensitivity to certain allergens. These are mostly recommended for allergens that cannot be avoided, such as ragweed. Usually a one-year trial of allergy injections is prescribed to determine their effectiveness. If proven effective, injections are then continued on a schedule determined by your physician. Note: Allergy injections are **not a substitute for avoiding asthma triggers**.

Early treatment of asthma episodes

Most episodes do not occur suddenly; they develop gradually over days. Emergency room visits and hospitalization can be reduced by recognizing the subtle signs of an impending asthma episode, including a hacking or tight cough, coughing at night or after exercise, and an increased need for medication. Your doctor will recommend the use of a peak flow meter—a portable, inexpensive, hand-held device used to measure a person's ability to push air out of the lungs. These devices can be used reliably by most children over the age of five and are an important part of every person's asthma management plan.

Keep a chart of your peak flow rates and discuss the readings with your doctor to determine what is normal, what calls for increased attention, and what calls for immediate action. Also, have your doctor outline the treatment plan including the medication and dosage you should use at these times. If the flare does not respond to this initial treatment, call the office for further instructions. Early aggressive treatment will usually prevent progression into a severe acute episode.

Encourage a Normal Lifestyle

It is important to remember that **while asthma must be controlled, it should not control your or your child's life** - keep your child involved in and encourage normal childhood activities! Don't keep him or her cooped up out of fear of an attack. Take a positive approach to the problem - The American Lung Association (ALA) affirms that learning to control asthma can help a child gain confidence and learn self-discipline and personal responsibility. The same message applies to adults - keep active and enjoy life!

Encourage physical activity within your child's limits. The vast majority of children with asthma can participate in all activities - including vigorous sports like track, tennis, basketball, football, and soccer. Every Olympics has medal winners who have asthma - often one can see athletes use "puffers" at an event. Also, the ALA sponsors about 141 summer residential or day camps around the country for children with asthma. For more information on the camps, asthma management, stop smoking programs or other asthma projects, call the ALA at 800-586-4872, which will automatically dial your local ALA chapter.

Race Disparity

In 1985 the prevalence of asthma among African Americans was 7 percent greater than among whites. By 1991, the difference was 21 percent. Among Hispanic children 6 months to 11 years old, 20 percent suffered from asthma - more than any other ethnic group. This racial disparity is particularly dramatic

in one study that shows from 1982 to 1986, 82 percent of those hospitalized for asthma in New York City were African Americans or Hispanics and those two groups accounted for 76 percent of asthma deaths. The reason certain ethnic groups are harder hit by asthma seems to be more economic than genetic. Lack of adequate medical attention leads to a failure to diagnose asthma and to keep it under control. Also, urban living conditions, which are usually crowded and more polluted, lead to a greater exposure to allergens. Cigarette smoking is also more prevalent in ethnic groups and markedly impairs asthma treatment efforts.

In fact, a study in the medical journal Lancet in 1992, confirmed that avoiding exposure to allergens in the first year of life can help prevent or delay childhood asthma. In this study, infants in one group were breast fed or given allergen-free formula. Their diets were free of cows' milk, eggs, fish, nuts, soy products, wheat and oranges (breastfeeding mothers followed the same diet). The bedrooms and living areas of this group were cleaned with anti-dust mite solution for the first year of life (dust mites are microscopic bugs that live in carpets and bedding and are the cause of allergies to dust). The infants in the other group ate freely and lived in untreated environments. After one year, the specially treated group had a 13 percent rate of allergies and asthma while the untreated one had a 40 percent rate.

Preventing Attacks

The following tips can help your child avoid triggers and thus lessen the frequency and severity of his attacks:

- **Make sure your child's home is smoke-free.**
- **Keep your child's room as uncluttered and dust-free** as possible by:
 1. Removing any carpet or rugs so the floor is easy to clean - washable throw rugs may be used.
 2. Making sure stuffed animals are washable or are kept covered with plastic when not in use.
 3. Using washable drapes on the windows instead of venetian blinds.
 4. Avoiding open book shelves, upholstered furniture, fuzzy blankets, feather or wool-stuffed comforters and pillows. Use a washable mattress cover and wash all the bedding once a week in hot water.
 5. Dust mite resistant solutions, mattress covers and pillows are also available.
- **Steam or hot water heat is recommended** - by The National Institute of Health instead of forced air heat for asthmatics. If there is a forced air furnace outlet in your child's room, install an extra filter made of several

layers of cheesecloth or some other adequate material (such as old nylon hose) and change it frequently. Make sure that the main furnace filters are replaced every 2 months, and think about installing an electronic air cleaner.

- **Clean your child's room daily** - Once a week do a more thorough cleaning of floors, furniture, tops of doors, window frames, etc., with a damp cloth or oil mop. Air the room while cleaning, but then keep windows closed.
- **Avoid strong odors** - they often provoke symptoms. The National Allergy and Asthma Network / Mothers of Asthmatics (800-727-8462) advises that parents use the following away from children: aerosol cans (deodorants, paints, insecticides), detergents, chemicals, household cleaners, strong soaps, perfumes, cosmetics, air fresheners, potpourri.
- **Test children and adults to see if they are allergic to pets** - Cats, dogs, birds, etc., can cause problems for asthmatics. - the animal dander ("dandruff" from animals), or bird feathers can irritate the respiratory passages.
- **Help your child avoid breathing cold air** - In cold weather, have them cover their nose and mouth with a scarf or cold weather mask (available in drug stores).
- **Make sure you or your child get regular exercise** - to improve the strength of the lungs and airways. If vigorous exercise triggers an attack, talk with your primary care physician. Adjusting the medication or exercise may help.