Mass General Brigham

Pamphlet #8: Developing an Asthma "Action Plan"

Why Consider an Asthma "Action Plan?"

Asthma is a dynamic condition: the narrowing of the air passageways that impairs breathing in asthma is variable. As anyone who has asthma knows, one's breathing can be fine one day and very difficult the next. In fact, under certain circumstances one's asthma can flare up in a matter of minutes. An example might be a woman with asthma who is sensitive to cat dander: if she visits a friend's home and is exposed to the dander of the friend's pet cat, within a brief while she may begin to develop cough, wheezing, tightness in the chest, and difficulty breathing. Another common trigger of asthma symptoms is a respiratory tract infection: a man with asthma who develops a "head cold" may have cough and nasal congestion for a few days, then awaken at 3:00 a.m. with shortness of breath and severe chest congestion. He uses his inhaled bronchodilator but obtains no relief. What should he do?

An easy answer to the question of "what to do" is to call your doctor or other primary medical provider. Oftentimes, this action is the correct response to a crisis or any period of difficulty with your asthma. However, there may be times when your medical provider will not be immediately available and when you need to act quickly, before making contact with him/her.

The purpose of this pamphlet is to help you to consider what actions you might take in the event of worsening of breathing due to asthma, especially if symptoms develop relatively quickly and intensely; that is, an attack of your asthma. Although one cannot possibly anticipate all possible circumstances, it is good to consider in advance, in a general way, "what would I do if...." And to consider further, if you took such and such an action and still were not better, or possibly even worse, what would you do then? You may have family and friends who would like to be useful to you during an acute attack of asthma. We encourage you to share this information with them as well.

Developing an Action Plan

The best way to develop a plan of action for dealing with an asthma attack is to have a discussion about it with the primary medical provider for your asthma. The plan that you and your provider develop will depend in part on how severe overall your asthma has been, on what medicines you usually take for your asthma, and possibly on your past experiences with attacks of asthma. No single plan of action will be right for all persons and for all attacks. What follows is meant only as a broad guideline, one that you might use as a basis for discussion with your provider about your individualized action plan.

Understanding an Asthma Attack

To develop a strategy for dealing with asthma attacks, it is helpful to understand the processes going on in the lungs that are causing difficult breathing. An overview of this subject is provided in a general way in the pamphlet, What is Asthma?, prepared by the staff of the Mass General Brigham Asthma Center. In brief, there are two mechanisms by which the air passageways become narrowed, limiting the flow of air into and (especially) out of the lungs. These two mechanisms require different forms of treatment. The one mechanism is contraction of the involuntary muscles that ring the bronchial tubes. Contraction of bronchial muscles can occur over a period of minutes. It is treated with bronchodilators: medications that cause the bronchial muscles to relax and thereby open the air passageways wider. Inhaled bronchodilators (such as albuterol, formoterol, and levalbuterol) begin to act within minutes.

The other mechanism by which breathing becomes difficult in an asthma attack is swelling of the bronchial tubes and plugging of the tubes with mucus produced by glands in the walls of the bronchial tubes. Swelling of the bronchial tubes and excess mucus production are the result of inflammation — in the same way that your skin swells if you are bit by a bee and the nose makes lots of secretions if you catch a head cold. Bronchodilator medications have no effect on this part of an asthma attack. Medications that reduce bronchial swelling and excess mucus production are called anti-inflammatory drugs. The most effective anti-inflammatory drugs are corticosteroids (see the pamphlets, Asthma and Treatment with Inhaled Steroids and Asthma and Steroids in Tablet Form). Inflammation of the bronchial tubes cannot be made to go away within minutes; it usually takes several hours or days to resolve. Steroid tablets (e.g., prednisone or methylprednisolone) are the most powerful anti-inflammatory treatment available, but they can have considerable side effects. Steroids taken by inhalation (e.g., beclomethasone, budesonide, ciclesonide, fluticasone propionate, fluticasone furoate, and mometasone) are not as powerful as the tablet form, but they have far fewer undesirable side effects and may be sufficient to control the inflammation of a mild-to-moderate flare-up of asthma.

Recognizing an Asthma Attack

The first step in dealing with an attack of asthma is recognizing that an attack is present. Certainly, if one is having severe symptoms and "can't breathe," recognition of the attack poses no problem! However, at other times, it is all too easy to minimize one's symptoms of an asthma attack — to attribute them to a "cold" or an "allergy," or to assume that "everything will just get better in a little while." Here is where a home peak flow meter often proves very useful (see the pamphlet Asthma and Peak Flow Monitoring). A peak flow meter is a portable and easily used plastic device that allows you to measure your breathing and to determine accurately how severely it is impaired. It can demonstrate clearly whether you are having an asthma attack (because your peak flow will be reduced significantly from its usual) and alert you to how severe it is (based on how low your peak flow has fallen).

If you are dealing with an asthma attack without the benefit of a peak flow meter, you must rely solely on your symptoms. You can be guided in part by how short of breath you feel. In general, an asthma attack is severe when you feel short of breath with just light exertion (such as walking slowly or dressing) or when the peak flow is half of your normal value or less.

The second step is to get away from triggers of your asthma, if at all possible. These may include furry animals, strong fumes, cigarette smoke, fresh cut grass, etc. You should also rest and avoid strenuous exertion that would put extra demands on your breathing.

Treating an Asthma Attack

The best first treatment for an asthma attack is your inhaled quick-acting bronchodilator (e.g., albuterol, formoterol, or levalbuterol; salmeterol is not rapid in onset and is not meant for quick relief). For it to be effective, you must inhale the medication slowly and deeply into your lungs. The usual dose is two inhalations (or "puffs"), although for severe attacks you may obtain greater relief with 3 or 4 inhalations.

In an attack of asthma, it is safe for you to use your bronchodilator inhaler even if you had already taken it within the past few hours. In fact, if you are not getting better after the first treatment with your inhaler, you can use it again as often as every 20 minutes over the next one hour until the distress of the acute attack lessens. If you have an electric compressor and nebulizer available, you can administer your inhaled bronchodilator as a "wet aerosol" or mist breathed over 10-15 minutes. The same medications (albuterol, formoterol, and levalbuterol) can be given in this manner.

Beyond Bronchodilators

Remember that none of the bronchodilator medicines treats the inflammation of the bronchial tubes. The biggest mistake that you can make in treating an attack of asthma is to rely solely on bronchodilators when your asthma attack is not getting better, or when it improves only briefly, then worsens again. Other medicines are needed to treat the swelling and excess mucus in the bronchial tubes — usually these are corticosteroids. Steroids will take time to act; inflammation will resolve only slowly. In our opinion, the greatest danger from overuse of inhaled bronchodilators is delay in treatment with other needed (anti-inflammatory) medications.

In fact, current thinking encourages the use of an inhaled steroid each time that you are having asthma symptoms and needing your quick-relief ("rescue") bronchodilator. Combining two inhalations of an inhaled steroid with two inhalations of your quick-relief bronchodilator brings about better asthma control than use of the bronchodilator alone – an approach referred to as "anti-inflammatory rescue" or AIR. Combination inhalers are available that include a quick-acting bronchodilator and an inhaled steroid in one device, simplifying this approach. They include albuterol combined with budesonide (AirSupra®) and formoterol combined with

budesonide (Symbicort®). You can also combine use of a steroid inhaler and quick-acting bronchodilator given by nebulizer.

Managing Severe Attacks

For more severe attacks, or for attacks where the breathing (and peak flow) are getting worse rather than better, the steroids will need to be taken by mouth. You will need to begin a "short course of oral steroids" — or if you take oral steroids on a regular basis, the dose will need to be increased. Oral steroids are powerful medications with multiple possible side effects; their use should be undertaken in consultation with your medical provider. Often, if you have had a short course of oral steroids in the past, your physician may provide you with a prescription for prednisone or Medrol® to have at home for use in an asthma crisis such as described here. That is, he/she may prescribe oral steroids for use as part of your Asthma “Action Plan.” Beginning oral steroids in a timely fashion is often the most effective means to avoid deterioration to the point of needing hospitalization for severe asthma.

If home measures are not working, you should go to your nearest emergency room or acute care facility for help. Have a plan as to where you will go in an asthma crisis and how you will get there; it would be good to share this plan with your family or friends. One final word of caution: an "action plan" is not meant to make patients into their own doctors nor to encourage you to stay home if your asthma needs emergency department care. You do not have to deal with asthma attacks by yourself. At Mass General Brigham Asthma Center, a physician is available at all times to help you make good decisions regarding the care of your asthma and to keep you breathing safely.