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Patient education: Asthma treatment in adolescents and adults (Beyond the Basics)

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ASTHMA TREATMENT OVERVIEW — Asthma is a common lung disease affecting millions of people worldwide. It is characterized by narrowing of the airways (breathing tubes) in the lungs. This narrowing is partially or completely reversible. Symptoms of asthma include wheezing, coughing, chest tightness, and shortness of breath. These symptoms tend to come and go, and are related to the degree of airway narrowing in the lungs. The airways are sensitive to a variety of stimuli, which may include viral illnesses (eg, the common cold), allergens, exercise, medicines, or environmental conditions.

Asthma can usually be treated successfully. This requires being well informed about the disease and being an active player in managing it.

This topic will review asthma treatment in adolescents and adults (adolescents defined as children 12 years and older). Other topics about asthma are also available. (See "[Patient education: How to use a peak flow meter \(Beyond the Basics\)](#)" and "[Patient education: Asthma inhaler techniques in adults \(Beyond the Basics\)](#)" and "[Patient education: Asthma and pregnancy \(Beyond the Basics\)](#)" and "[Patient education: Exercise-induced asthma \(Beyond the Basics\)](#)".)

Topics about asthma in children are also available. (See "[Patient education: Asthma symptoms and diagnosis in children \(Beyond the Basics\)](#)" and "[Patient education: Asthma treatment in children \(Beyond the Basics\)](#)" and "[Patient education: Asthma inhaler techniques in children \(Beyond the Basics\)](#)" and "[Patient education: Trigger avoidance in asthma \(Beyond the Basics\)](#)".)

CONTROLLING ASTHMA TRIGGERS — The factors that set off and worsen asthma symptoms are called "triggers." Identifying and avoiding asthma triggers are essential steps in preventing asthma flare-ups. Common asthma triggers generally fall into several categories:

- Allergens (including dust, pollen, mold, cockroaches, mice, cats, and dogs)
- Respiratory infections
- Irritants (such as tobacco smoke, chemicals, and strong odors or fumes)
- Physical activity, especially when the air that is breathed is cold
- Certain medicines, known as beta blockers

- Emotional stress
- Menstrual cycle in some women

A small number of patients will develop asthma symptoms after exposure to aspirin or other nonsteroidal antiinflammatory medications, like ibuprofen or naproxen. (See "[Patient education: Trigger avoidance in asthma \(Beyond the Basics\)](#)" and "[Allergen avoidance in the treatment of asthma and allergic rhinitis](#)".)

After identifying potential asthma triggers, you and your clinician should develop a plan to deal with the triggers. There are three main options:

- Avoid the trigger entirely (eg, if allergic to animals, do not own pets; if sensitive to aspirin or related medications, avoid all forms of these medications).
- Limit exposure to the asthma trigger if it cannot be completely avoided (eg, move to another seat if someone with strong perfume is seated nearby; have someone else do house cleaning if allergic to dust mites).
- Take an extra dose of bronchodilator medication before exposure to an asthma trigger. This is a common approach prior to exercise, and we encourage you not to avoid exercise. Talk with a healthcare provider before using this approach in other circumstances (for example, if you are cat-allergic and about to be exposed to cat dander); it should only be used if limiting or avoiding exposure is not possible. Be careful not to use more than twice the amount of medication normally used.

Special approaches to unavoidable allergic triggers include allergy desensitization injections ("allergy shots") and an injected medication targeting allergy proteins in the blood (anti-immunoglobulin E antibody, called omalizumab). In specialized treatment centers, persons who are sensitive to aspirin and related medications can be desensitized to aspirin.

MONITORING SYMPTOMS AND LUNG FUNCTION — Successful asthma treatment relies on your ability to monitor your condition over time. This is done by observing the frequency and severity of symptoms (such as wheezing, coughing, and shortness of breath) and by measuring lung function with a peak flow meter.

Asthma diary — Your healthcare provider may recommend keeping a daily asthma diary when symptoms are not well controlled or when starting a new treatment. In the diary, your peak flow readings, asthma symptoms (eg, coughing, wheezing), and medications are recorded ([form 1](#)).

A periodic diary may be recommended if you have stable symptoms and your medications have not changed recently. This type of diary can be completed before visiting the healthcare provider and helps you and your healthcare provider to determine whether the asthma treatment plan needs to be adjusted ([form 2](#)).

Peak expiratory flow (PEF) — PEF measures the rate at which you can exhale. This rate is dependent on the degree of airway narrowing: the narrower your bronchial tubes, the slower the air will flow out of your lungs (and so, the lower your peak flow). PEF monitoring can be used to monitor your lung function and response to treatment, assess the severity of asthma attacks, and guide decisions regarding treatment.

Peak flow meters are inexpensive and easy to use. Adults with persistent and troublesome asthma may, at times, use a peak flow meter once or twice daily to monitor their lung function. (See "[Patient education: How to use a peak flow meter \(Beyond the Basics\)](#)".)

Review of treatment — Adolescents and adults with asthma are usually seen by their healthcare provider once or twice a year if their asthma is well-controlled or more often if their asthma is not well-controlled. At these visits, the healthcare provider will evaluate the severity and frequency of your asthma symptoms and response to treatment. If your asthma control has been adequate for at least three months, you may be asked to continue your treatment or your medication dose may be decreased. If control is not adequate, your medication schedule,

the proper use of inhaled medications, and trigger avoidance will be reviewed, and your medication program may be intensified.

CATEGORIES OF ASTHMA SYMPTOMS — The medications used for asthma treatment vary according to your age (young children versus adolescents and adults), the severity of asthma, and how well your symptoms are controlled. The asthma treatment plan must be reviewed and adjusted on a regular basis. If symptoms are well controlled, medication can sometimes be reduced. As symptoms worsen, medication should be increased.

Intermittent asthma — People with intermittent asthma are defined as those who have the following characteristics (see ["Treatment of intermittent and mild persistent asthma in adolescents and adults"](#)):

- Symptoms of asthma occur two or fewer days per week
- Asthma does not interfere with daily activities
- Nighttime symptoms awaken you two or fewer nights per month
- Albuterol is needed to relieve asthma symptoms fewer than two days a week
- Oral steroid treatment (eg, prednisone) is needed no more than once per year to treat increased asthma symptoms

If your asthma is triggered only by vigorous exercise (exercise-induced bronchoconstriction) and can be prevented by pre-treatment with a quick-acting bronchodilator medicine, you might fit into this category, even if you exercise more than twice per week. (See ["Patient education: Exercise-induced asthma \(Beyond the Basics\)"](#).)

Persistent asthma — People with persistent asthma have symptoms regularly. There may be days when your activities are limited due to symptoms, and you may often be awakened from sleep.

Based on how frequently you have symptoms together with measurement of your lung function, the clinician will determine whether your persistent asthma is mild, moderate, or severe. Treatment plans will vary based upon the severity of your asthma, as well as the adequacy of your symptom control. (See ["Treatment of moderate persistent asthma in adolescents and adults"](#).)

The symptoms that are used to determine your asthma severity and control include the number of days per week that you have one or more of the following:

- Symptoms such as cough, wheeze, and shortness of breath
- Nighttime symptoms that awaken you from sleep
- Symptoms that need treatment with a bronchodilator (reliever medication)
- Symptoms that affect your ability to participate in normal activities

ASTHMA RELIEVER MEDICATIONS

Bronchodilators — Short-acting bronchodilators (referred to medically as "beta-2 agonists") relieve asthma symptoms rapidly, by temporarily relaxing the muscles around narrowed airways. In the United States, albuterol (brand names: Ventolin, Proventil, ProAir, and ProAir RespiClick) is the most commonly used short-acting bronchodilator; levalbuterol (Xopenex) is also in this category. These medications are sometimes referred to as "quick-acting relievers" or "rescue medication." People with intermittent asthma, the mildest form of asthma, will require these symptom-relieving medications only occasionally.

The preferred way of taking medication for mild intermittent asthma is by inhalation with a metered dose (Ventolin, Proventil, ProAir, and Xopenex) or dry powder (ProAir RespiClick) inhaler. This method allows the medication to take effect rapidly with maximum strength and minimal side effects. (See ["Patient education: Asthma inhaler techniques in adults \(Beyond the Basics\)"](#).)

There is no benefit to using short-acting bronchodilators on a regular, scheduled basis. They are meant to be used as needed for relief of asthma symptoms, or preventively prior to an activity that is known to provoke symptoms. If your asthma symptoms are consistently occurring more than two days per week, you should review your treatment plan with a healthcare provider. Other medications are more effective for persistent symptoms in this situation. It is not necessary to wait one minute between inhalations of your short-acting bronchodilator, if you are taking a dose of two "puffs."

Side effects of bronchodilators — Some people feel shaky, have a rapid heart rate, and/or feel anxious after using an inhaled short-acting bronchodilator. Using a single puff rather than the usual two puffs may limit these side effects and only minimally decrease their benefit. In addition, these side effects usually become less noticeable over time.

ASTHMA CONTROLLER MEDICATIONS — People with persistent asthma need to take medication on a daily basis to keep their asthma under control, even if there are no symptoms of active asthma on a given day. Medications taken daily for asthma are called "long-term controller" medicines.

Some controller medicines are delivered by inhaler, while others are taken as a tablet. The doses and types of controller medications prescribed depend upon your asthma severity and adequacy of symptom control. For more severe asthma, more than one controller medication may be needed.

Inhaled steroids — Inhaled steroids (also known as glucocorticoids or corticosteroids) act to decrease inflammation (swelling) of the airways over time. The steroids used to treat asthma are entirely different from the ones athletes take to build muscle. Regular treatment with an inhaled steroid reduces the frequency of symptoms (and the need for inhaled bronchodilators for symptom relief), improves quality of life, and decreases the risk of serious attacks.

A number of different inhaled steroid medications are available, all of which are taken once or twice a day.

An inhaled bronchodilator is still used as needed for relief of symptoms and before exposure to asthma triggers. There is no need to take the inhaled bronchodilator ("to open up the airways") before each daily dose of inhaled steroid.

Side effects of inhaled steroids — Unlike steroids that are taken as tablet or liquid by mouth, very little of the inhaled steroid is absorbed into the bloodstream, and there are few side effects. However, as the dose of inhaled steroid is increased, small amounts of the inhaled medication are absorbed into the bloodstream, and the risk of long-term side effects increases.

The most common side effect of **low-dose** inhaled steroid is oral candidiasis (thrush). This can usually be prevented by rinsing your mouth or brushing your teeth and tongue immediately after inhalation and, if your inhaled steroid is delivered from a metered dose inhaler, by using a spacer (which helps to deliver medication to the lungs, with less deposited in the mouth) ([picture 1](#)).

A hoarse voice and sore throat (without thrush) are less common side effects that are usually managed by changing to a different inhaled steroid preparation or delivery system.

Rare but possible side effects of long-term **high-dose** inhaled steroid treatments, besides oral candidiasis, include cataracts, increased pressure in the eye (glaucoma), easy bruising of the skin, and increased bone loss (osteoporosis).

The risk of these complications is far less with inhaled glucocorticoids compared with oral glucocorticoids (eg, prednisone). Nevertheless, every effort should be made to use the lowest possible dose that controls asthma and minimizes the risk of an asthma attack.

Long-acting bronchodilators — A long-acting inhaled bronchodilator is often recommended, in combination with an inhaled steroid, for adults with persistent asthma. Long-acting bronchodilators (salmeterol, formoterol, vilanterol) are recommended because they work for a longer period than short-acting bronchodilators (for 12 or more hours). A device that contains both an inhaled steroid and a long-acting bronchodilator is usually preferred (sample brand names: Advair, Breo, Dulera, Seretide [in Europe], Symbicort). A short-acting bronchodilator is still used as needed for immediate relief of asthma symptoms. Theophylline is a long-acting bronchodilator available in tablet form. It is rarely used because of frequent associated side effects, drug interactions, limited effectiveness, and risk of life-threatening complications from medication overdose.

Tiotropium (Spiriva) is a once-daily, long-acting bronchodilator that works by a different mechanism than those listed above (which, like albuterol, are "beta agonists"). It too is best used in combination with an inhaled steroid. It is available as a dry-powder system (a capsule containing the medication is loaded into its delivery system for each dose) or as a multi-dose, soft-mist inhaler called Respimat.

Leukotriene modifiers — Leukotriene modifiers, such as montelukast (Singulair), zafirlukast (Accolate), or zileuton (Zyflo) are an alternative to inhaled glucocorticoids. Leukotriene modifiers work by opening narrowed airways, decreasing inflammation, and decreasing mucus production. They are taken by mouth as a pill once or twice daily and have very few side effects. Mood alteration and depression are rare side effects. However, compared with inhaled glucocorticoids, leukotriene modifiers are generally somewhat less effective in controlling asthma.

Leukotriene modifiers can be used to prevent symptoms before exposure to a trigger or before exercising, but need to be taken three or more hours prior to the exposure or exercise. (See "[Patient education: Exercise-induced asthma \(Beyond the Basics\)](#)".)

Oral steroids — If symptoms are not controlled with the above medications, an oral steroid (eg, prednisone or methylprednisolone) may be added to the treatment regimen. Most healthcare providers recommend a 5 to 10 day course of oral glucocorticoids for flares of asthma. Side effects are common, including increased energy, insomnia, hunger, agitation, and mood alteration, but they generally can be tolerated for a short period during which restoration of normal breathing is the priority.

Omalizumab — The antibodies that cause allergies to pollen, animal dander, dust mite, cockroach, and mold are in the immunoglobulin E family. Omalizumab is an anti-IgE monoclonal antibody that inhibits the action of IgE. It can help decrease asthma symptoms and asthma exacerbations in people with allergic asthma. It works best in people with a blood IgE level between 30 and 700 units/mL who are allergic to year-round allergens, like dust mite, mold, animal dander, and cockroach. Omalizumab is given by injection every 2 to 4 weeks.

Anti-IL-5 agents — Interleukin-5 (IL-5) is a protein that is associated with a certain subtype of asthma (called "eosinophilic asthma"). People with this type of asthma may benefit from medications called anti-IL-5 monoclonal antibodies. Available medications in this category include mepolizumab (brand name: Nucala) and reslizumab (brand name: Cinqair). Mepolizumab is approved for people age 12 and older with severe eosinophilic asthma and is given as an injection under the skin every four weeks. Reslizumab is approved for people age 18 and older with severe eosinophilic asthma and is given intravenously ("IV") in a hospital or clinic once a month.

EXERCISE-INDUCED ASTHMA — If exercise is a trigger for asthma, an extra dose of bronchodilator medication or a leukotriene modifier can be used to prevent asthma symptoms. If these agents alone do not fully prevent asthma symptoms with exercise, addition of daily inhaled steroid "controller" medication may be needed to decrease inflammation in the airways. A topic review that discusses exercise-induced asthma is available separately. (See "[Patient education: Exercise-induced asthma \(Beyond the Basics\)](#)".)

ASTHMA IN PREGNANCY — Asthma is the most common chronic medical condition that affects the lungs during pregnancy. About 8 percent of pregnant women have asthma. With good asthma treatment during pregnancy, most women can breathe easily, have a normal pregnancy, and give birth to a healthy baby. It is essential to keep asthma well controlled during pregnancy to ensure that optimal levels of oxygen reach the baby.

Before becoming pregnant, women with asthma should learn as much as they can about the condition and talk with their healthcare providers about asthma treatment during pregnancy. More information about asthma during pregnancy is presented separately. (See "[Patient education: Asthma and pregnancy \(Beyond the Basics\)](#)".)

ASTHMA ATTACK TREATMENT — The term "asthma attack" is somewhat confusing because it does not distinguish between a mild increase in symptoms and a life-threatening episode. In general, an asthma attack refers to an increase in asthma symptoms above one's usual level in a way that interferes with normal activities. Symptoms may be aggravated by changes in air quality, the common cold, exercise, exposure to allergens, or changes in the weather. These triggers can cause mild, moderate, or severe symptoms to develop. Any of these changes could be considered an asthma "attack."

Some people have periodic, mild asthma attacks that never require emergency care, while others have severe and sudden asthma attacks that require a call for emergency medical services.

Asthma action plan — You should work with your healthcare provider to develop personalized directions (also called an asthma action plan) to follow when symptoms increase or your peak flow begins to decrease. Asthma action plans for adolescents and adults ([form 3](#)) and school asthma action plans ([Asthma and Allergy Foundation asthma action card](#)) are available.

Peak expiratory flows can be divided into three zones, which are assigned colors like those of a traffic light. These zones can be used to make decisions about the need for treatment:

Green — Green signals that the lungs are functioning well. When symptoms are not present or are well controlled, you should continue your regular medicines and activities.

Yellow — Yellow is a sign that the airways in the lungs are somewhat narrowed, making it difficult to move air in and out; asthma symptoms may be more frequent or more severe. A short-term change or increase in medication is generally required. You should change or increase your medication according to the plan that was discussed with your provider.

Red — Red is a sign that the airways are severely narrowed and require immediate treatment. Symptoms are usually more severe and frequent. In addition to using 2 to 4 puffs of the quick-acting reliever inhaler (eg, albuterol), oral steroid tablets are often required to bring relief, according to the plan discussed with your provider.

Emergency care plan — You should work with your healthcare provider to formulate an emergency care plan that explains exactly what to do if symptoms worsen. This may include more frequent use of a reliever medication (eg, albuterol) and starting or increasing the dose of a controller medication (eg, prednisone).

However, if symptoms are severe and worsen or do not improve after use of a quick-acting reliever medication, you (or a helper) should immediately call for emergency medical assistance. Severe asthma attacks can be fatal if not treated promptly. In most areas of the United States, emergency medical assistance is available by calling 911. You should **not** attempt to drive yourself to the hospital, and you should not ask someone else to drive. Calling 911 is safer than driving for two reasons:

- From the moment Emergency Medical Service (EMS) personnel arrive, they can begin evaluating and treating your asthma. When driving in a car, treatment is generally delayed until you arrive in the emergency department.
- If a dangerous complication of asthma occurs on the way to the hospital, EMS personnel will be able to treat the problem immediately.

Following an asthma attack, most people are given a 5 to 10 day course of an oral steroid medication (eg, prednisone). This treatment helps to reduce the risk of a second asthma attack.

Wear medical identification — Many people with chronic medical conditions wear a bracelet, necklace, or similar alert tag at all times. If an accident occurs and you cannot explain your condition, the identification will help responders provide appropriate care.

The alert tag should include a list of major medical conditions and allergies, as well as the name and phone number of an emergency contact. Some devices provide a toll-free number that emergency medical workers can call to find out a person's medical history, list of medications, family emergency contact numbers, and healthcare provider names and numbers.

WHERE TO GET MORE INFORMATION — Your healthcare provider is the best source of information for questions and concerns related to your medical problem.

This article will be updated as needed on our web site (www.uptodate.com/patients). Related topics for patients, as well as selected articles written for healthcare professionals, are also available. Some of the most relevant are listed below.

Patient level information — UpToDate offers two types of patient education materials.

The Basics — The Basics patient education pieces answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials.

[Patient education: Asthma in adults \(The Basics\)](#)

[Patient education: Avoiding asthma triggers \(The Basics\)](#)

[Patient education: How to use your metered dose inhaler \(adults\) \(The Basics\)](#)

[Patient education: How to use your dry powder inhaler \(adults\) \(The Basics\)](#)

[Patient education: Medicines for asthma \(The Basics\)](#)

[Patient education: Asthma and pregnancy \(The Basics\)](#)

[Patient education: Exercise-induced asthma \(The Basics\)](#)

Beyond the Basics — Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are best for patients who want in-depth information and are comfortable with some medical jargon.

[Patient education: How to use a peak flow meter \(Beyond the Basics\)](#)

[Patient education: Asthma inhaler techniques in adults \(Beyond the Basics\)](#)

[Patient education: Asthma and pregnancy \(Beyond the Basics\)](#)

[Patient education: Exercise-induced asthma \(Beyond the Basics\)](#)

[Patient education: Asthma symptoms and diagnosis in children \(Beyond the Basics\)](#)

[Patient education: Asthma treatment in children \(Beyond the Basics\)](#)

[Patient education: Asthma inhaler techniques in children \(Beyond the Basics\)](#)

[Patient education: Trigger avoidance in asthma \(Beyond the Basics\)](#)

Professional level information — Professional level articles are designed to keep doctors and other health professionals up-to-date on the latest medical findings. These articles are thorough, long, and complex, and they contain multiple references to the research on which they are based. Professional level articles are best for people who are comfortable with a lot of medical terminology and who want to read the same materials their doctors are reading.

[Antileukotriene agents in the management of asthma](#)

[Allergen avoidance in the treatment of asthma and allergic rhinitis](#)

[An overview of asthma management](#)

[Diagnosis of asthma in adolescents and adults](#)

[Evaluation of severe asthma in adolescents and adults](#)

[Identifying patients at risk for fatal asthma](#)

[Natural history of asthma](#)

[Severe asthma phenotypes](#)

[Management of acute exacerbations of asthma in adults](#)

[Treatment of intermittent and mild persistent asthma in adolescents and adults](#)

[Treatment of moderate persistent asthma in adolescents and adults](#)

[Treatment of severe asthma in adolescents and adults](#)

The following organizations also provide reliable health information.

- The National Library of Medicine

(www.nlm.nih.gov/medlineplus/healthtopics.html)

- National Heart, Lung, and Blood Institute

(www.nhlbi.nih.gov/)

- American Lung Association

(www.lungusa.org)

- American Academy of Allergy, Asthma, and Immunology

(www.aaaai.org/patients.stm)

- American College of Allergy, Asthma, and Immunology

(www.acaai.org/allergist)

[1-3]

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2. National Asthma Education and Prevention Program: Expert panel report III: Guidelines for the diagnosis and management of asthma. Bethesda, MD: National Heart, Lung, and Blood Institute, 2007. (NIH publicatio

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Topic 371 Version 18.0

Self-assessment form*

Asthma diary for follow-up visits

Name: _____ **Date:** _____

Your asthma control

How many days in the past week have you had chest tightness, cough, shortness of breath, or wheezing (whistling in your chest)?

___0___1___2___3___4___5___6___7

How many nights in the past week have you had chest tightness, cough, shortness of breath, or wheezing (whistling in your chest)?

___0___1___2___3___4___5___6___7

Do you perform peak flow readings at home?

___Yes ___No

If yes, did you bring your peak flow chart?

___Yes ___No

How many days in the past week has asthma restricted your physical activity?

___0___1___2___3___4___5___6___7

Have you had any asthma attacks since your last visit?

___Yes ___No

Have you had any unscheduled visits to a doctor, including to the emergency department, since your last visit?

___Yes ___No

How well controlled is your asthma, in your opinion?

___Very well controlled

___Somewhat controlled

___Not well controlled

Average number of puffs per day _____

Taking your medicine

What problems have you had taking your medicine or following your asthma action plan?

Please ask the doctor or nurse to review how you take your medicine.

Your questions

What questions or concerns would you like to discuss with the doctor?

How satisfied are you with your asthma care?

___Very satisfied

___Somewhat satisfied

___Not satisfied

* These questions are examples and do not represent a standardized assessment instrument. Other examples of asthma control questions: Asthma Control Questionnaire (Juniper); Asthma Therapy Assessment Questionnaire (Vollmer); Asthma Control Test (Nathan); Asthma Control Score (Boulet).

Reproduced from: National Heart, Blood, and Lung Institute Expert Panel Report 3 (EPR 3): Guidelines for the Diagnosis and Management of Asthma. NIH Publication no. 08-4051, 2007.

Graphic 54723 Version 2.0

Accessory devices used with metered dose inhalers



These pictures show different types of spacers, with and without a face mask. A spacer makes it easier to use an inhaler and helps more of the medicine reach the lungs. Picture A shows an AeroChamber spacer. Picture B shows an AeroChamber spacer with a face mask. Picture C shows an InspirEase spacer.

Graphic 56533 Version 4.0

Asthma action plan

My Asthma Action Plan

Age ≥5 years

Patient name: _____

Medical record #: _____

Clinician's name: _____ DOB: _____

Clinician's phone #: _____ Completed by: _____ Date: _____

Long-term control medicines	How much to take	How often	Other instructions
		_____ times per day EVERY DAY!	
		_____ times per day EVERY DAY!	
		_____ times per day EVERY DAY!	
		_____ times per day EVERY DAY!	
Quick-relief medicines	How much to take	How often	Other instructions
		Take ONLY as needed	NOTE: If this medicine is needed frequently, call clinician to consider increasing long-term control medications.

Special instructions when I feel ● **good**, ● **not good**, and ● **awful**.

GREEN ZONE

I feel **good**.

 {My peak flow is in the GREEN zone.}

I do **not** feel good.
 {My peak flow is in the YELLOW zone.}

My symptoms may include one or more of the following:

- Wheeze
- Tight chest
- Cough
- Shortness of breath
- Waking up at night with asthma symptoms
- Decreased ability to do usual activities

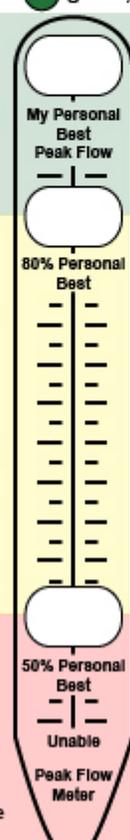
YELLOW ZONE

I feel **awful**.
 {My peak flow is in the RED zone.}

Warning signs may include one or more of the following:

- It is getting harder and harder to breathe
- Unable to sleep or do usual activities because of trouble breathing

RED ZONE



My Personal Best Peak Flow _____

80% Personal Best _____

50% Personal Best _____

Unable _____

Peak Flow Meter

PREVENT asthma symptoms everyday:

- Take my long-term control medicines (above) every day.
- Before exercise, take _____ puffs of _____
- Avoid things that make my asthma worse like: _____

CAUTION. I should continue taking my long-term control asthma medicines every day AND:

- Take _____

If I still do not feel good, or my peak flow is not back in the Green Zone within one hour, then I should:

- Increase _____
- Add _____
- Call _____

MEDICAL ALERT! Get help!

- Take _____ until I get help immediately.
- Take _____
- Call _____

Danger! Get help immediately! Call 9-1-1 if you have trouble walking or talking due to shortness of breath or lips or fingernails are gray or blue.

%: percent.

Reproduced from: National Heart, Blood, and Lung Institute Expert Panel Report 3 (EPR 3): Guidelines for the Diagnosis and Management of Asthma. NIH Publication no. 08-4051, 2007.

Graphic 53142 Version 3.0

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