



# Managing Asthma



A health management guide provided to you by:

**MATRIA**<sup>®</sup>  
HEALTHCARE

# 2 | Understanding asthma

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Coping with asthma is a unique challenge.

*There is no cure for asthma.*

It's a chronic respiratory condition that won't go away. What's more, your symptoms may keep changing. And anything from dogs and cats to the weather can make it harder to breathe.

However, asthma is manageable. There are many things you can do to keep it from getting worse. With the right information, it's possible to have fewer asthma attacks, participate in normal activities and live well.

A good place to start is to read this book. Here are just a few of the things you'll learn about inside:

- > Identifying and controlling asthma triggers
- > Taking medications
- > Monitoring your breathing
- > Using an action plan
- > Exercising with asthma

## How we can help

If you have any questions about your asthma symptoms, treatment plan, medications or you just need some advice, all you have to do is pick up the phone. A helpful, registered nurse is available to you around the clock through the toll-free support line.





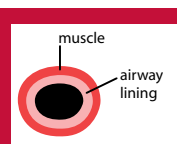
## What is asthma?

Asthma is a trigger-sensitive respiratory disease. With asthma, the lining of your airway passages is very sensitive to a variety of things that “trigger” your airways to swell up. When this happens:

- > The muscles around your bronchial tubes tighten
- > Your airways become smaller
- > Extra mucus is produced that can clog up your airways
- > You have a hard time getting air in and out of your lungs
- > You may wheeze or whistle as you breathe out

## How we breathe

- > Oxygen in the air goes from your nose and mouth into your main airway passage, called the trachea.
- > Then, the air moves through two bronchial tubes into your lungs.
- > The bronchial tubes are covered by bands of muscles. These make the tubes become larger or smaller.
- > The air keeps moving until it reaches the smallest airways that branch off the bronchial tubes, called bronchioles.
- > As the air travels, a sticky substance called mucus, helps keep dust, bacteria and other irritants from getting into your lungs.
- > The bronchial tube ends into air sacs, (called alveoli). That’s where oxygen is exchanged for carbon dioxide and enters your blood. You then breathe out and release the carbon dioxide.



Normal airways  
(a person without asthma)



Inflamed airways (of a person with asthma)  
redness and swelling, mucus buildup



Bronchospasm  
(an asthma attack)  
tightened muscles squeeze the airway

The exact cause of asthma is not known. You can develop the disease at any age. Certain irritants you breathe in may be the reason for your asthma. Or you may have inherited it. You are more likely to develop asthma if a close relative has asthma.

## Partnering with your doctor

A complete evaluation by your doctor is an important step to understanding your asthma. You should tell him or her about any family history with asthma as well as your specific symptoms and triggers. Your doctor may have you perform a lung function Spirometry test. It is painless and measures how much air is moving in and out of your lungs and can also:

- > Show how well your lungs are working
- > Tell your doctor how open your airways are
- > Help determine what medications will work for you
- > Show whether exercise makes your asthma worse

Everyone experiences asthma symptoms differently. Your symptoms can range from mild to a life-threatening attack. Likewise, you may experience symptoms daily, weekly, occasionally or during a certain season.

It is important that you recognize and understand your asthma symptoms. No matter how small or “unimportant” they seem, you should treat symptoms as soon as they appear. Common symptoms include:

- > Shortness of breath. You may have a hard time breathing every once in a while or quite often.
- > A wheezing or whistling sound when you breathe. This is caused by narrow or clogged airways.
- > Cough, with or without mucus. The cough may last more than a week.
- > Tightness in your chest



**BE PREPARED** to tell your doctor all the symptoms you're experiencing during your asthma evaluation



Usually, asthma symptoms get started by things that bother your lungs such as mold or dust. Some other examples of when your symptoms can develop or become worse include:

- > Sleeping at night
- > Exercising
- > Catching the flu or having a respiratory infection
- > Changes in your hormones
- > Taking certain over-the-counter medications
- > Laughing or crying hard
- > Emotional stress

## Stages of asthma

The National Asthma Education and Prevention Program of the National Institutes of Health divides asthma into two stages of severity: **Intermittent** and **Persistent**. Persistent asthma is further staged into three subcategories: Mild, Moderate, Severe. Your doctor may use these to help determine the severity of your asthma. And what treatments are most likely to help you.

Criteria	Intermittent Asthma	Persistent Asthma		
		Mild	Moderate	Severe
Symptoms	≤ 2 days per week	> 2 days per week, but not daily	Daily	Throughout the day
Nighttime awakenings	≤ 2 times per month	3-4 times per month	> 1 time a week, but not nightly	Often 7 times/week
Short-acting rescue inhaler use for symptom control	≤ 2 days per week	> 2 days per week but not daily, and not more than one time on any day	Daily	Several times per day
Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
Asthma flare-ups requiring oral corticosteroid medication	0-1 per year	≥ 2 per year	≥ 2 per year	≥ 2 per year

## 6 | Asthma attacks

**M**ost often, when you have an asthma attack, your lungs are reacting to irritants you breathe in. Your bronchial tubes then become inflamed and swollen. This happens most often to people with mild intermittent, mild persistent, and sometimes, moderate persistent asthma. If you have persistent asthma, you may have frequent attacks that need daily medication. And you are at greater risk for severe attacks.

Attacks are also likely to occur if you have a respiratory infection, such as a cold. Asthma attacks may start suddenly. Or they may take a long time, even days to develop.

### **GET HELP** when your symptoms don't improve

With **severe** attacks, you may experience:

- > Extreme difficulty breathing, walking or talking
- > Bluish lips and nails
- > Sweating
- > Increased pulse rate
- > Severe coughing
- > Tightness in your neck or chest muscles

With these kinds of attacks, it is extremely important to take your asthma medication immediately and get emergency medical help right away. If you don't, the attack can cause serious complications.

More common are **moderate and mild** attacks where you may start to feel tightness in your chest or start coughing and spitting up mucus. You could also wheeze or have trouble sleeping. When this happens, take your asthma medication. Usually, your airways open up in minutes, but it can take longer. If your medicine does not work in the time it is supposed to, call your doctor.

Sometimes, your asthma attack will ease up. But changes can take place in your airways that cause another attack or "**second wave**." This can be more severe and more dangerous than the first attack. In the second wave, your airways continue to swell and make it harder to breathe. You will likely need to see your doctor to get medications that reduce the swelling in your airways and relax the tightened muscles.

In any kind of asthma attack:

- > Don't take cough medicine. This won't help your asthma
- > Take only the asthma medications that your doctor has given you



**D**oes your asthma get worse after a carpet has been vacuumed? Is it harder to breathe when you're around cigarette smokers? Do you have more attacks during the summer? Most asthma episodes or attacks don't just "happen." Something irritates your nose, throat or airways. These are called asthma "**triggers**." There are many kinds of triggers—both indoor and outdoor. They vary from person to person. Smoke, animal dander and cold,

dry environments are common triggers. Even being around cockroaches can be a trigger.

At first, you may find it hard to figure out what exactly starts your asthma episodes. But when you identify and avoid those triggers, you'll be better able to prevent an asthma attack. And reduce the length and severity of it. There are several things you can do to control your triggers. Here are a few examples for some common irritants:

## Dander from pets with fur

- > Wash your hands after playing with your pet
- > Keep pets out of your bedroom and away from carpeted areas
- > Limit the number of trips your pet takes from outdoors to indoors

## Dust

- > Dust often with a damp cloth and avoid aerosol sprays
- > Consider removing carpet and rugs from rooms that are used often
- > Use a dehumidifier (dust mites hate dry air)
- > Replace heavy curtains with plain window shades
- > Use washable pillows or zippered dustproof covers on your pillow and mattress
- > Give refrigerator a good cleaning around coils as often as needed

## Pollen

- > Keep windows and doors shut during pollen season
- > Do your yard work while wearing a pollen or dust mask and change your clothes when coming indoors
- > Avoid hanging laundry outside
- > Stay away from garden trash

## Respiratory infections

- > Wash your hands frequently and completely to prevent respiratory infections or colds
- > Get a yearly flu shot
- > Use acetaminophen for mild pain relief rather than aspirin or non-steroidal anti-inflammatory drugs (e.g. ibuprofen) unless advised otherwise by your doctor

*(triggers continued on page 8)*

# 8 | Asthma triggers

## Mold

- > Check for mold in any place that moisture might accumulate such as cellars, basements and garages
- > Clean the tiles in your shower frequently and replace the grout
- > Empty the garbage everyday and throw away spoiled foods. This also helps discourage cockroaches
- > Avoid wet fallen leaves, standing water and firewood



**KEEP A RECORD** of the things that trigger your asthma, and find ways to manage them

## Weather

- > Watch for any type of weather that makes your asthma worse. When that weather comes, pay attention to your symptoms
- > Take notice when ozone or smog alerts are included in the weather forecast
- > When the ozone level is dangerous, stay indoors and avoid doing too much

## Smoke

- > Don't allow anyone to smoke in your home or car
- > Tell people that smoke is harmful to you
- > If someone near you lights up a cigarette, it's okay to ask him or her to extinguish it. Be polite, but assertive

## Allergies

The things that you are allergic to, called allergens, can trigger asthma symptoms. They can also make your asthma worse. However, just because you have asthma, doesn't necessarily mean you have allergies. Tell your doctor if you have any allergy symptoms such as sneezing, congestion, runny nose and itchy eyes and throat. Your doctor may recommend a skin test. Once you know what your allergies are, you can begin to find ways to decrease your exposure to them.

If it is very hard for you to avoid your allergens (for example: your job is outdoors and you are around pollen), immunotherapy with allergy shots may reduce your symptoms. Allergy shots may also help if you have symptoms year-round and drug therapy is not working well. Ask your doctor if this therapy is right for you. Keep in mind that allergy shots take 3 to 5 years to complete. Also, it may take a year or more for your symptoms to improve.

**A**n important part of managing your asthma is to know the names of your medications, how they work and when to use them. You may need to take some asthma medications all the time and others just when needed. A combination treatment may also be prescribed. It depends on your stage of asthma and how severe it is. Your doctor will design the best medication plan for you. He or she can also tell you what medications you should avoid. You should always take your medications exactly as instructed—even if you don't have any symptoms.

Many asthma medications are inhaled. They can also be given as pills, capsules, liquids or injections. People with severe persistent asthma may regularly use pills and liquids. For others, pills and liquids take longer to work and may not be part of your treatment plan.

Everyone's medication program is different. However, your doctor will prescribe bronchodilators to help stop asthma attacks after they've started and prevent expected attacks, such as during exercise. And to keep your airways open all the time, anti-inflammatories, such as corticosteroids, are given to control the inflammation of your airways, reduce swelling and prevent asthma attacks from starting.

Asthma medications are divided into two major groups:

## Quick-relief medications

used to treat asthma symptoms or an asthma attack

**AND**

## Long-term control medications

used daily to control asthma and prevent symptoms

Continue to **TAKE YOUR MEDICATIONS** even if you start to feel better right away



## Common quick-relief medications:

**Short-acting inhaled bronchodilators** should be used for *quick relief* during an asthma attack. Examples of short-acting bronchodilators include: albuterol, terbutaline, metaproterenol, bitolterol, levalbuterol, pirbuterol and ipratropium plus albuterol.

Possible side effects include shakiness, nervousness, dizziness and faster heartbeat. If you need to use these medications more often than prescribed, tell your doctor.

### Inhaled anticholinergics

are a type of bronchodilator that may be used *along with* a short-acting bronchodilator to stop an attack. These should *not* be used alone for quick relief. Anticholinergics take longer to work than short-acting bronchodilators to relax the tightened muscles in your airways. You might experience dry mouth or blurred vision if the medication gets in your eyes.

Call your doctor if your quick-relief medication doesn't give you 4 hours of relief, or if you must use it every 4 hours or more often.

## Common long-term control medications:

**Long-acting bronchodilators** work longer and more slowly to help you breathe. So it's important to remember they *do not* provide fast relief. They should *not* be used in place of a fast-acting bronchodilator *during an asthma attack*. In other words, long-acting bronchodilators can help *prevent* an asthma attack but cannot *stop* one that's started. Types of long-acting bronchodilators include: inhaled salmeterol, formoterol, fluticasone propionate and salmeterol, budesonide with formoterol or swallowed theophylline.

You could have headaches, dizziness, nervousness, muscle twitching, faster heartbeat, nausea and trouble sleeping with these medications. When taking theophylline, you may need to have your blood level monitored.

## REFILL PRESCRIPTIONS

before you run out



**Inhaled corticosteroids** are taken regularly to protect your airways from irritants and allergens. They are the most powerful and effective medications to decrease inflammation. A few common inhaled steroids are: beclomethasone, triamcinolone, flunisolide, fluticasone and budesonide.

When used as prescribed, inhaled corticosteroids cause few, if any, side effects. You may experience dry mouth, a mouth infection or hoarseness.

**Oral corticosteroids** may be needed for treating severe asthma symptoms. However, these pills *should not be used alone* to treat asthma. Prescriptions are for short periods of time or for regular use with quick-relief medications. Oral corticosteroids can reduce airway swelling and mucus production. Some usual brands are prednisone, methylpredisolone and prednisolone.

These medications must not be stopped suddenly unless recommended by your doctor. If you stop taking them too quickly, you may experience serious side effects such as high blood pressure, weight gain and repeated infections. Problems with your stomach, bones or eyes, as well as mood changes, bruising and acne are also possible.

**Mast cell stabilizers** are inhaled to prevent symptoms—especially symptoms caused by exercise, cold air and allergies. These drugs should *not* be used as quick-relief medications. They work slowly—maybe up to eight weeks before you see your symptoms get better. Cromolyn sodium and nedocromil are mast cell stabilizers. Side effects are rare, but may include dry throat, heartburn or nausea.

**Leukotriene modifiers** are tablets taken daily to control bronchial inflammation, but *not* for treating symptoms during an attack. Examples of leukotriene modifiers are zafirlukast, zileuton or montelukast. With zileuton, your doctor may monitor your blood to check your liver function. You could experience headache, dizziness, nausea, vomiting or diarrhea with these medications.

# 12 | Inhaled medications

**M**any asthma treatment plans include inhaled medications. There are a variety of effective methods that deliver the medication directly to your airways and lungs. Your doctor will help you choose the best one for you. He or she will take into consideration your age, activity level and personal preference. Usually, inhaled medications are:

- > Metered dose inhalers (MDI) and spacers
- > Dry powder inhalers
- > Nebulizers

**Metered dose inhalers (MDI) and spacers** are the most commonly used asthma medication devices. An MDI lets you inhale a dose of medication. When you press the canister, particles of medication are thrust toward your throat to breathe in.

Spacers are hand-held devices you use with an inhaler. They hold the puff of medication between you and the inhaler so that you can inhale it slowly and more completely. That way, more medication gets into your lungs, rather than staying in your mouth. If you don't currently use a spacer, ask your doctor about whether you should.

Proper use of an MDI is very important:

1. Take the cap off and shake the inhaler well
2. Breathe out all the way
3. If not using a spacer, hold the inhaler 1 to 2 inches from your mouth
4. Start breathing in slowly through your mouth; press down on the inhaler one time; breathe in slowly and deeply

*OR, if you are using a spacer:*

1. Spray 1 puff into the spacer and breathe in slowly and deeply
2. Slowly count to 10 while holding your breath to get the medication deep into your lungs
3. Slowly breathe out while puckering your lips
4. If you've been told to use more than 1 puff at a time, wait about 30 seconds between puffs, unless your doctor advises a different approach. Then shake the inhaler and repeat the above steps
5. Rinse your mouth with water when you're done



**BREATHE IN** enough medication to your lungs by using your inhaler correctly

Inhalers only last for a certain number of puffs. You don't want your medication to run out. To keep track of how many puffs you use:

- > Look at the label on the inhaler to find out how many puffs it has
- > Divide this number by how many puffs you are told to use in one day. This gives you the number of days your medication should last. For example, if your inhaler provides 200 puffs and you use 4 puffs a day:  $200 \text{ divided by } 4 = 50 \text{ days}$
- > Mark your calendar and inhaler with the date the medication will run out
- > Replace your MDI

**Dry powder inhalers** release medication as a powder when you breathe in fast enough. Examples of these inhalers include: Turbohaler, Diskus and Rotahaler. Talk with your doctor or nurse about exactly how to use your dry powder inhalers.

**Nebulizers** are sometimes called “breathing treatments.” Nebulized medications come in a liquid. An air compressor machine is connected to the nebulizer. It then creates a mist out of the liquid that makes it easier to breathe into your lungs. These can be helpful if you have trouble using an MDI with a spacer. Treatments take about 5 to 15 minutes. It's important to keep the nebulizer clean and working properly.





# 16 | Peak flow monitoring



**Y**ou should monitor your breathing even when you don't have symptoms. To help, your doctor may ask you to use a peak flow meter. A peak flow meter is an inexpensive, hand-held device. It measures how fast you push air out of your lungs. If your airways are becoming narrow and blocked due to asthma, you can't blow air out as well and your peak flow values drop.

There are many advantages to using a peak flow meter. Continuing treatment and monitoring your peak flow readings helps to:

- > Monitor your symptoms
- > Stop your asthma from getting worse by alerting you to warning signs hours or days before you start having symptoms
- > Signal possible asthma attacks
- > Determine the best medication and treatment plan that will bring your lung function as close to normal as possible
- > Prevent future problems

## How to use a peak flow meter:

1. Move the marker on the meter to the lowest number on the scale
2. Stand or sit up straight
3. Take as deep a breath as you can
4. Place the mouthpiece in your mouth and close your lips tightly around it
5. Blow air out as hard and fast as you can (You want to move the marker as far as you can with your breath)
6. Take the meter out of your mouth
7. Look at the marker and write down the number
8. Set the marker back to the lowest number on the scale
9. Repeat the test 2 more times
10. Write down the date, time and highest of the 3 numbers. This is your peak flow reading number. Use this number as a guide.


Your "normal" peak flow reading is based on your age, height, sex and race. The highest number you can blow on a regular basis is your "personal best." You and your doctor can determine your personal best and normal peak flow numbers.

You and your doctor can also establish your asthma zones. They can indicate how well you're breathing and the actions you need to take. Zones follow the "traffic light" model. Your peak flow numbers determine which asthma zone you are in: green, yellow or red.


## FOLLOW THE RIGHT ACTIONS

in your green, yellow and red asthma zones


### Asthma Zones

 The green zone means that your symptoms are under control. Your peak flow reading is 80% to 100% of your personal best.

**Action:** continue taking your regular daily medications even when you are feeling well.

 The yellow zone indicates that your asthma is getting worse. Peak flow readings are 50% to 79% of your personal best.

**Actions:** know what medications to take to bring your breathing back under control and avoid your asthma triggers.

 The red zone indicates that your symptoms are severe- your reading is less than 50% of your personal best.

**Actions:** contact your doctor right away or go to the emergency room. Call 911 if you are struggling to breathe, can't walk or talk because of shortness of breath, or your lips or fingernails are turning blue.

This chart is an example of a daily record for tracking your peak flow numbers:

Month	Day	Time	Green Zone	Yellow Zone	Red Zone	Medication	Trigger
March	15	2pm	520				
March	16	10am			320	Ventolin	Cat
March	16	1pm		380			
March	17	8am	500				
March	18	10am			350	Ventolin	Jogging
March	18	2pm		460			
March	19	4pm	550				
March	20	2pm	520				



## MANAGE YOUR ASTHMA

effectively by knowing your symptoms, triggers, medications and peak flow reading

## Using an asthma action plan

**Y**ou've read about the different steps you can take to gain control of your asthma. Now it's time to write down an action plan designed around you. An action plan is like an asthma "diary" you'll create with your doctor. It is essential to managing your asthma. Based on changes in your symptoms, your peak flow readings, or both, an action plan helps you:

- > Be aware of your symptoms and know how to control them daily
- > Understand when and how to use your quick-relief and long-term medications

- > Safely manage asthma attacks at home
- > Make quick decisions about treatment, such as when to see your doctor or go to the emergency room

Many action plans use the zone system for letting you know how you're doing. On the following page is an example of what an asthma action plan could look like.

### RED ZONE Danger Signs:

- > Trouble walking and talking due to shortness of breath.
- > Lips or fingernails are blue.  
Take 4 or 6 puffs of quick-relief medicine and go to the hospital or call an ambulance

**GREEN ZONE:** Peak flow is more than  I'm doing well.

I have no cough, wheeze, chest tightness or shortness of breath during the day or night.  
I can do my usual activities. I take these drugs every day:

*Drug:*

*How Much & When:*

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**Action:** Keep following daily treatment plan.

Additional instructions:

**YELLOW ZONE:** Peak flow is between  and   
My asthma is getting worse.

I have coughing, wheezing, chest tightness, shortness of breath or waking at night due to asthma. Or, I can do some but not all — of my usual activities.

I add this quick relief drug (and keep taking my GREEN ZONE drugs):

*Drug:*

*How Much & When:*

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**Action:** Take quick relief medication in addition to regular daily medications.

Get away from triggers.

Additional instructions:

**RED ZONE:** Peak flow is less than  **Medical Alert!**

I am very short of breath. Quick-relief drugs have not helped, I cannot do usual activities, or symptoms are the same/worse after 24 hours in the yellow zone.

*Drug:*

*How Much & When:*

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**Actions:** Take quick relief medication in addition to regular daily medications.

Get away from triggers. After taking quick-relief medication, call the doctor NOW!

Go to the hospital or call 911 for an ambulance if still in the red zone after 15 minutes and haven't reached doctor.

Additional Instructions:

## Exercising with asthma

**H**aving asthma doesn't mean you have to avoid exercise. Many world-class athletes and Olympians have asthma.

When you follow a well-planned, regular exercise routine, your heart and lungs work more efficiently.

It is crucial to have your doctor determine which activities are appropriate for you. You should also know what medications should be used for maximum benefit. Here are some exercise do's and don'ts:

- > Warm up properly to help prevent the quick changes that trigger symptoms
- > Begin with low-level exercise such as walking or leisure biking
- > Swimming is a good exercise since the air is warm and moist
- > Cold, dry air can bring on asthma attacks; try to breathe through your nose or wear a protective scarf
- > Avoid exercise outdoors when the air is polluted or when pollen counts are high
- > Don't exercise when you have a viral infection
- > Listen to your body, pace yourself. You should be able to talk easily at all times
- > If you feel asthma symptoms coming on, you may need to slow down or stop exercising
- > Take time to cool down for at least five minutes after exercise to avoid attacks

For some people, exercise is the main trigger that makes their asthma symptoms worse. This is called **exercise-induced asthma or EIA**.

True exercise-induced asthma occurs when exercising causes your airways to tighten. You may wheeze, cough, or have tightness in your chest. You may notice these symptoms right when you start exercising. However, it is more common to have symptoms soon after you stop.

You can still exercise with EIA. Sports that involve bursts of activity, such as football or baseball, are less likely to trigger EIA than sports like soccer or basketball. However, with proper treatment and preparation, symptoms should be preventable with any activity. Your fast-acting or long-term control medications may be used. Or a combination of the two may work best for you.



**LEARN MORE** about asthma  
to improve your quality of life



**Y**our doctor, nurse and other health care professionals are your partners in controlling your asthma. By working together, you can prevent asthma flare-ups and keep your asthma from getting worse. Visit your doctor regularly. In general, check-ups are recommended:

- > About every 6 months if you have intermittent or mild persistent asthma that has been under control for at least 3 months
- > Every 3 to 4 months if you have moderate persistent asthma
- > Every 1 to 2 months for uncontrolled or severe persistent asthma

When you go, make sure you fully understand what's happening to you. Ask any questions you have about your treatment. Here are some tips to prepare for your doctor visit:

- > Bring your inhaler, spacer, medicines and peak flow meter with you so your doctor can watch your technique
- > Review your action plan with peak flow numbers, symptoms, triggers

that have caused symptoms and other things you've noticed about your health

- > Make a list of all prescription and over-the-counter medications that you take
- > Before your visit, write down any questions and take them with you so that you'll remember

Dealing with asthma can put an emotional strain on you and your loved ones. If it is interrupting your personal or professional life, don't be embarrassed to seek out the help you need. Remember, with this program you have the support of compassionate registered nurses available anytime, day or night. Just a toll-free phone call away, nurses can personally advise you on tests, medications, treatments and your overall quality of life. Also, the organizations and experts listed on the next page are great sources for additional information, education and services.

## American Academy of Allergy, Asthma, and Immunology

555 East Wells Street, Suite 1100  
Milwaukee, WI 53202  
1-414-272-6071  
www.aaaai.org

## American Lung Association

61 Broadway, 6th floor  
New York, NY 10006  
1-800-548-8252  
www.lungusa.org

## Asthma and Allergy Foundation of America (AAFA)

1233 20th Street, N W Suite 402  
Washington, DC 20036  
1-800-727-8462  
www.aafa.org

## Dr. Greene Asthma Care Guide

9000 Crow Canyon Road, Suite S220  
Danville, CA 94506  
1-925-964-1793  
www.drgreene.org

## National Asthma Education and Prevention Program

National Heart, Lung and Blood  
Institute Information  
P.O. Box 30105  
Bethesda, MD 20824-0105  
1-301-592-8573  
www.nhlbi.nih.gov

## National Jewish Medical and Research Center

Attention: LUNG LINE  
1400 Jackson Street  
Denver, CO 80206  
1-800-222-5864  
www.njc.org

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**Action plan** A written set of directions or a chart that tells you what to do if asthma symptoms occur, depending on their severity. Many charts use the green/yellow/red zone system.

**Allergen** A substance that triggers an allergic reaction. Many allergens are responsible for triggering asthma attacks, including pet dander, dust mites and mold.

**Alveoli** Small air sacs in the lungs, located at the end of the narrowest airways, where oxygen crosses into the blood stream and exchanges with carbon dioxide.

**Anticholinergics** Medications that help relax the tightened muscles in your airways.

**Anti-inflammatories** Medications that help reduce and relieve swelling of airways in the lungs.

**Asthma** A chronic, trigger-sensitive respiratory disorder of the airways characterized by breathing difficulties, coughing, chest tightness and other possible symptoms.

**Bronchial tubes** Two airways that go from the main airway passage (trachea) into each lung.

**Bronchioles** Small airways that branch off of the bronchial tubes.

**Bronchodilators** Medications that relax the muscles around the airways, thus opening them up and making it easier to breathe. Some are used for quick relief and some are used daily to prevent asthma symptoms.

**Corticosteroids** The most common and effective medications used for long-term control of asthma symptoms. Swallowed or inhaled, they work to decrease or prevent inflammation.

**Dry powder inhaler** A small device similar to a metered dose inhaler that delivers medication in a powder form.

**Immunotherapy** Also called allergy shots, it reduces the body's reaction to allergens.

**Leukotriene modifiers** Oral medications used to prevent asthma symptoms.

**Mast cell stabilizers** Inhaled long-term anti-inflammatory medication. Cromolyn sodium and nedocromil are examples.

## **Metered dose inhaler (MDI)**

The most common device used to take asthma medication. It allows you to inhale a prescribed “dose” of medication.

**Mucus** Slippery, sticky substance that moistens and protects the airways by trapping small particles of dust in the air and prevents them from going further into the lungs.

**Nebulizer** A device that creates a mist out of your asthma drug, allowing you to breathe in the medication slowly. Using a nebulizer is sometimes called a “breathing treatment.”

**Peak flow** A measurement of how well you can blow air out of your lungs. If your airways become narrow and blocked due to asthma, you can’t blow air out as well, and your peak flow values drop. This is done at home with a small, inexpensive plastic meter.

**Quick-relief medication** Also called “rescue drug” or “fast-relief” medication, it is used as needed to relieve symptoms during asthma attacks.

**Spacer** A device that works with an MDI to deliver medication more easily and effectively.

**Spirometer** An important test for diagnosing asthma. It measures the maximum volume of air that you can exhale after breathing in as much as you can.

**Theophylline** A medication sometimes used to help control mild to moderate persistent asthma, especially to prevent nighttime symptoms.

**Trigger** Irritants that can cause or “trigger” an asthma attack. Common triggers include cold, dry air, exercise, respiratory infections and allergens.