Allergy & Asthma NETWORK

Understanding Asthma

Building Blocks for Better Breathing

Special Edition of

Allergy & Asthma Today

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Call 800.878.4403 to order FREE copies; shipping and handling charges apply.

Who We Are

Allergy & Asthma Network is the leading nonprofit patient outreach, education and advocacy organization for people with asthma, allergies and related conditions. Our patient-centered network unites individuals, families, health care professionals, industry and government decision makers to improve health and quality of life for millions of people affected by the conditions.

An innovator in encouraging family participation in treatment plans, Allergy & Asthma Network specializes in making accurate medical information relevant and understandable to all while promoting standards of care that are proven to work. We believe that integrating prevention with treatment helps reduce emergency health care visits, keep children in school and adults at work, and allow participation in sports and other activities of daily life.

Our Mission

To end unnecessary death and suffering due to asthma, allergies and related conditions through outreach, education, advocacy and research.

Allergy & Asthma Network is a 501(c)(3) organization.

Join Allergy & Asthma Network today, as we work to help individuals and families breathe better together.
www.aanma.org/join

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Your Asthma Journey – Step By Step

When I talk about asthma with patients, I often see confusion spread across their faces.

"Asthma? Me?!! Really?!!" says a newly diagnosed patient.

"Why do my symptoms only flare up at home?" asks a young patient struggling with asthma control.

"My asthma is no big deal – why do I still need my inhaler?" wonders another.

These days, there's no need for confusion about asthma. Its patterns are predictable, if you know where to look. Asthma care has been revolutionized with medications targeting lungs to keep you breathing well and devices and management tools to help prevent asthma flares.

This magazine – *Understanding Asthma: Building Blocks For Better Breathing* – presents the journey from what may be a frightening diagnosis to well-managed asthma in easy-to-understand, medically accurate language.

When you understand what's happening inside your lungs and how they respond to allergens and irritants – pollen, dust mites or cigarette smoke, for example – you and your health care team can decide the best treatment options.

Find out why an Asthma Action Plan is vital, on pages 10-15. Check out how prescription medications help alleviate symptoms, on pages 16-19. Learn how to correctly use your inhaler and nebulizer, on pages 22-25. And read tips on reducing exposures to allergens, irritants and pests from indoor environments, on pages 30-33.

The goal is to prevent and minimize asthma symptoms, with no limitation of daily activity while using the least amount of medication possible.

Courtesy of Allergy & Asthma Network, a leading nationwide patient education nonprofit organization first started in 1985, *Understanding Asthma* is intended to supplement the treatment plan and advice from your doctor, and help you overcome any obstacles that may arise.

No more sleepless nights and unscheduled doctor visits. No more sitting on the sidelines of life. Better breathing for you and your family is within your reach.

James Sublett, MD, FACAAI, FAAAAI, FAAP
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What Is Asthma?

Understanding What's Going On In Your Lungs

"My two-year-old daughter coughs all night, then looks, sounds and feels great the next day."

"Brandon always has a runny nose and coughs when he runs."

"I'm out of breath walking up my stairs. I'm tired, too."

"My husband wheezes when he plays basketball and coughs for about 20 minutes afterward."

"Every winter, half our family gets a cold that settles into the chest and doesn't leave until the middle of spring."

Do these symptoms point to asthma?

Possibly.

Asthma is a long-term lung disease that causes episodes of coughing, wheezing and shortness of breath. Like all chronic illnesses, asthma cannot be cured, but it is very manageable.

Most people with asthma experience one or more of the following symptoms:

- **Coughing:** Coughing from asthma is often worse at night or early morning. Sometimes it's your only symptom. It can be dry or mucus-filled.
- **Wheezing:** This is a whistling or squeaky sound especially when you breathe out. Sometimes wheezing is easily heard; other times you need a stethoscope.
- **Chest tightness:** This can feel like something is squeezing or sitting on your chest.
- **Shortness of breath:** You may feel breathless, like you can't catch your breath or breathe deeply enough. You may feel as though you are out of shape and constantly tired.

MYTH:
Asthma is not serious.

TRUTH:
Asthma is a variable disease changing from mild to moderate to severe. It is always serious and can be life-threatening – 10 people die of asthma every day. One-third of all people who die of asthma were diagnosed with a mild form of the disease.

Normally, your lungs bring in fresh air and push out used air, but during an asthma flare it is harder to push out the used air and pull in the fresh because:

- the lining of the airway swells;
- your body makes too much mucus which clogs the airway;
- muscles around the airway get tight, making the airway narrow, with less room for air to pass through.

Asthma is a two-step process: airway inflammation – quiet asthma – and bronchospasm – noisy asthma.

Quiet Asthma

When you have asthma, your airways become easily inflamed and swollen. Since you can't feel or see what's going on, we call this airway inflammation the quiet part of asthma. If it is not treated, each time your airways are exposed to your asthma triggers, the inflammation increases and your symptoms are likely to get worse.

Noisy Asthma

When your airways are inflamed, they are very sensitive. Like sunburned skin hurts when you touch it, inflamed airways react to irritation. It can be an immune system response to allergies or to a cold or flu virus; or a reaction to cold air, strong smells, exercise, stress or even laughter.

Exposure to irritation triggers bronchospasm – the noisy asthma symptoms of coughing, wheezing and shortness of breath.

Asthma is very individualized and not a one-size-fits-all disease – what causes symptoms for you or your family may be quite different from what affects others.

What causes asthma?

Anyone of any age, family background, race, gender or general health can develop asthma. Researchers think many genetic and environmental factors play a role, especially during the first years of life when the immune system is developing.

An important factor is a family history of allergy. If your parents or siblings have allergies or asthma, your chances of developing it also increase. Exposure to secondhand smoke during early childhood or having a mother who smoked while pregnant puts a child at risk, as does exposure to exhaust fumes, air pollution, or some indoor allergens such as dust mites, cockroaches and mold.

Children are also at risk if they were born prematurely or experience certain respiratory illnesses that harm their lungs. For adults, chemical irritants or industrial dusts in the workplace can cause asthma.

MYTH:
Asthma is a childhood condition.

TRUTH:
Asthma can occur in any person at any age.

Faces of Asthma

"Learn all you can about asthma and allergies. Ask questions. Doctors will give you the help you need if they understand what you are telling them."

– Lindsay Dreesen

Is asthma serious?

All asthma is serious. There is no way of telling whether an asthma flare will last seconds, minutes or hours – or when it will turn life-threatening.

No matter what your past diagnosis, how infrequent your symptoms are or how good you're feeling right now, your asthma can change without warning. It's important to know what causes your symptoms, what your medications do, and how to respond to breathing emergencies.

Will I outgrow asthma?

Asthma is a life-long disease that cannot be "outgrown." Your immune system changes throughout your life and your asthma symptoms will too. However, you will always have the potential to experience asthma symptoms and must be aware that they can return at any time.

With correct diagnosis, careful management and appropriate use of medications, you can go years without any problems. However, if you let asthma get out of control, it can cause long-term lung damage.

Most people with asthma should be able to do anything those without asthma can do:

- Be free from troublesome symptoms day and night.
- Have the best possible lung function.
- Participate freely in activities.
- Miss few or no school or work days because of asthma symptoms.
- Have fewer or no urgent care visits or hospital stays for asthma.
- Have few or no side effects from asthma medications.

Dictionary of Asthma

Anti-IgE: medication that blocks the production of IgE antibodies and interrupts allergic reactions.

Anti-inflammatory: medication that reduces and prevents airway swelling and inflammation, the quiet part of asthma that's always there but rarely noticed or felt. Usually taken daily.

Bronchodilator (BRON-ko-dy-lay-ter): medication that relaxes muscles around your airways and treats the noisy part of asthma: coughing, wheezing, choking and shortness of breath.

- **Quick-relief (short-acting) bronchodilators** work for 3-6 hours and should be used at the first sign of symptoms, before exercise and as directed by your doctor.
- **Long-acting (12-hour) bronchodilators** should be taken daily or twice-daily as prescribed, usually in conjunction with an inhaled corticosteroid.
- **Anticholinergics:** bronchodilator used to treat Chronic Obstructive Pulmonary Disease (COPD).

Bronchospasm: twitching and sudden constriction of the airways that causes noisy symptoms of asthma: coughing, wheezing and shortness of breath.

Bronchoconstriction: narrowing and tightness of airways caused by inflammation.

Corticosteroid (cor-tih-co-STER-oyd): the most effective anti-inflammatory medication for asthma.

Combination medication: contains two medicines in one dose, usually a long-acting bronchodilator and an anti-inflammatory corticosteroid.

Daily symptom diary: written record of symptoms, peak flow meter readings, and medications used; helps you see patterns of your disease, identify allergens and irritants that set off symptoms, and record questions for your health care team.

Dry powder inhaler (DPI): device used for powdered medication; breathing in activates the device to release medication. Easy to use and very effective as the tiny particles reach tiny airways.

Fractional exhaled nitric oxide (FeNO): a test that measures exhaled nitric oxide and indicates airway inflammation.

Holding chamber: a valved device that fits onto a metered-dose inhaler (MDI) to trap and suspend medication spray so user can inhale when ready or during 3-5 breaths; also helps reduce amount of spray that hits tongue and inside cheeks.

IgE: antibodies produced by the immune system that set off allergy symptoms.

Leukotrienes (LOU-ka-try-eens): chemicals involved in immune responses that cause inflammation, swelling and tightening of the airways.

Metered-dose inhaler (MDI): a pressurized device used to spray medicine for inhalation.

Nebulizer (NEH-byuh-lye-zur): electric or battery-powered machine that turns liquid medicine into aerosol that can be inhaled.

Peak flow meter: a handheld device that measures peak expiratory flow rate (PEFR), the maximum speed that you can force air out of your lungs.

Spacer: device that fits onto an MDI inhaler (or is a built-in part of the MDI) that helps direct the flow of medicine into the back of your throat; user must coordinate spray with inhalation, as spacer does not trap particles.

Spirometer (Spy-RAW-meter): device that measures how much air you can push in and out of your lungs.

Misleading Terms:

Using shorthand or slang to talk about asthma can be confusing. Reconsider the following terms:

Rescue inhaler: Don't wait until you need "rescue" or are near death before using your quick-relief bronchodilator.

As needed: One person's "Need it now" is another's "Maybe later." Get specific details on when to use each medication.

Controller medication: Most asthma medications "control" symptoms in one way or another. One medication alone may not give asthma patients full symptom control.

Mild or moderate asthma: All asthma is serious. Mild asthma symptoms can turn severe in a moment.

Outgrowing asthma: Your child may have fewer or no asthma symptoms into teenage years, or may have a lifetime of asthma and allergy symptoms. Airways are always sensitive for life.

Puffer: Inhaler asthma medications don't puff up or inflate your lungs.

Is This Asthma?

Find Out For Sure

Steps To An Accurate Diagnosis

All that wheezes or coughs is not necessarily asthma.

Getting to an accurate diagnosis begins with a conversation with your doctor. Like a skilled detective, the doctor combines information from your medical tests, physical exam and verbal reports to determine whether asthma or some other cause is responsible for your symptoms.

Some questions to discuss:

- When did you first notice symptoms, how long did they last, what made them better or worse?
- Do you or does someone in your family have a history of eczema, allergies, asthma, food allergies, rhinitis, seasonal bronchitis, colds that linger for months instead of days?
- Does anyone in your family, home or workplace smoke?
- Do you have breathing problems when exercising or sleeping through the night?
- What is your home, school, and work environment like? Do you have pets, carpets or wood floors, water damage in your basement?

Next, the doctor will do a physical exam, looking for signs of conditions that often go along with asthma such as rhinitis (inflammation of the nose), sinusitis (inflammation of the sinuses), nasal polyps (mucus-filled

bulbous sacks in the nose), eczema or dermatitis (skin irritation).

The physician will look inside your nose, watch the way your chest and stomach muscles move when you breathe, and use a stethoscope to listen to air flowing in and out of your lungs.

If the signs begin to point to asthma, the doctor may use a spirometer to check how well your lungs are working. You'll be asked to take a deep breath in and then breathe out as hard as you can into the machine. The spirometer shows the amount of air you are able to breathe in and out and how fast you did it over a certain time period. If your airways are inflamed and narrowed, or if the muscles around your airways tighten up, the results will show it.

You may do this test several times, perhaps before and after using a quick-relief bronchodilator to relax the airways. Test results that improve after using the medicine are a strong indication of asthma.

If you are having no symptoms on the day of your exam, the results of your lung function testing may be normal. In this case, your doctor may order another test called a methacholine challenge. This medication causes a brief tightening of the airways that is more intense in people who have asthma.

Other tests might include:

- Allergy testing.
- A test to see how your airways react to exercise.
- Tests for other conditions, such as gastroesophageal reflux disease (GERD) or obstructive sleep apnea.
- A test for sinus disease.
- A chest x-ray or electrocardiogram to find out if a foreign object or other lung or heart disease could cause your symptoms.
- A fractional exhaled nitric oxide (FeNO) test to measure lung inflammation.

About Your Treatment Plan

Your doctor might describe your asthma as mild, moderate or severe, intermittent or persistent. These categories determine a treatment plan only.

These terms are misleading. People diagnosed with mild asthma can die from a sudden, severe flare. If you underestimate the seriousness of asthma and ignore prevention and treatment recommendations, you expose the airways to long-term lung damage.

A person diagnosed with severe, persistent asthma can have a mild episode easily controlled with an extra dose of medications or avoiding triggers – and can move from severe to mild by learning to manage symptoms effectively. Again, these terms should be used by the doctor only to determine a treatment plan.

Factors your doctor will consider to determine severity:

- Number and frequency of symptoms experienced.
- Degree to which symptoms interfere with your breathing and ability to function.
- Results of diagnostic testing.
- Hospitalizations or emergency visits, missed school or work days, and sleepless nights.
- Types of medications needed to maintain control over symptoms.

Your Asthma Action Plan

A Personal Guide to Recognizing, Treating & Preventing Symptoms

After the diagnosis, you and your doctor will draw up your personal plan of treatment, called an Asthma Action Plan.

This written document should spell out how to treat your asthma daily, what to do when symptoms get worse, and how to handle situations such as exercise or when you have a cold or virus.

As you are developing your plan with your health care team, **be sure you understand the following information:**

1. What medicines you should take, especially:

- What each is called.
- Why you need it.
- How much to take.
- When to take it.
- How to use the inhaler or nebulizer device.
- How soon to expect results.
- Potential side effects.

2. What allergens and irritants set off your asthma symptoms and how to reduce or eliminate contact with them.

3. How to monitor your asthma by tracking symptoms or peak flow readings.

4. How to recognize and handle worsening asthma, including:

- What signs to watch for.
- How to adjust medicines in response.
- When to seek emergency care from your doctor or the emergency room (ER).
- What numbers to call in an emergency.

If you don't have an Asthma Action Plan designed specifically for you, make an appointment to talk with your health care professional about it as soon as possible. Go over each detail with your health care team until

you are confident you understand it and can follow it in your daily life. Ask questions. Talk about any problems you think you might run into.

Your Asthma Action Plan will change as your asthma improves or worsens. Review the plan with your doctor at every appointment, including follow-up visits when your asthma is under control.

What are some warning signs of asthma?

Warning signs vary from one person to another but can be as simple as a tickle in the throat or chest, a sharp or sudden cough, a feeling of extreme tiredness or the feeling that you simply can't get a good, deep breath. When you keep a daily symptom diary, you will recognize the pattern of your early warning signs.

What's the first thing to do when symptoms begin?

The moment you first notice symptoms, use your prescribed quick-relief bronchodilator (such as albuterol or levalbuterol). These medications relax the muscles that surround the airways, making it easier to breathe within a few short minutes. Some people mistakenly call these medications "rescue inhalers," which gives the impression that they should only be used in an emergency situation. Using these medications at the first sign of symptoms or before exercise can prevent symptoms from getting out of control.

What are the signs that asthma symptoms are worsening?

One or more of these signs indicate the need for immediate medical treatment:

- Symptoms don't respond as indicated in your Asthma Action Plan.
- It feels like you can't catch a good deep breath or can't get the air out of your chest.
- You can't talk except in short phrases.
- You have a cough that will not stop or you simply feel too exhausted to breathe.
- Your shoulders tense and raise closer to your ears than normal.
- It's easier to breathe while sitting and leaning forward than when lying down.
- Your fingernails turn blue, or your lips become bluish or gray in color.

- You start sweating even though your skin feels clammy and cold.
- The skin around your chest, ribs and collarbones sinks in with each breath and you're using stomach muscles to help you breathe.
- You experience swelling of your throat, tongue or limbs.

MYTH:
Children outgrow asthma.

TRUTH:
Asthma can go into periods of remission or may be so well controlled that symptoms are not experienced for long periods. However, once you have asthma, you always have asthma.

How do I prevent symptoms from coming back?

Once the obvious symptoms of an asthma flare end, think about what happened in the moments, hours or days leading up to the episode. Look for clues as to what may have started the symptoms.

A daily symptom diary like Allergy & Asthma Network's AsthmaTracker® (see page 35 for more information) can help you track how well your symptoms respond to steps in your written Asthma Action Plan. By writing down your symptoms, medication use, and peak expiratory flow rate (the reading from your peak flow meter) each day, you'll notice a pattern to your symptoms. Use a daily symptom diary for at least three months (12 months is best) to find patterns that you wouldn't otherwise notice. With each discovery, you'll see a new opportunity to stop the symptoms before they can stop you.

When you find out what sets off your symptoms, do your best to avoid them. This may require a change

in lifestyle, such as avoiding all exposure to cigarette, cigar and pipe smoke; keeping pets out of the bedroom or removing them from the home; and placing dust-mite-proof encasings on your pillows and mattress. It may mean changing your furnace filters more often or removing moldy carpeting and fixing the water leak that caused it.

However, you may not be able to avoid every circumstance likely to result in asthma symptoms, such as going outside when pollen counts are high. That's why asthma medications are a necessary part of your Asthma Action Plan.

In addition, allergy shots or immunotherapy can teach your immune system to respond less strongly to allergens such as animal dander, dust mites, molds and pollens. If you have allergic asthma, controlling allergies will help control your asthma.

Faces of **Asthma**

"I learned my early warning signs at a young age and make sure I treat my asthma when these signs are present. I have carried my inhaler with me for so long that it is automatic for me. I have multiple inhalers – one at home, one at work, and one in my gym bag."

– Andrew Morales

How do I reduce the need for medications?

Over time, you will learn about your asthma and what makes your symptoms worse. As a result, you'll find many ways to reduce your need for asthma medications.

1. Find things in your home, work or school that bring on your symptoms and try your best to get rid of them wherever possible.

2. Learn about your treatment options and how to use your medications correctly. Different medications treat different parts of asthma. Find out from your medical care team exactly what each does in your body and when you're supposed to use it. Some of these medications are used daily while others are used only when you're having symptoms.

3. Treat asthma symptoms at the very first hint that they're even present. The longer asthma symptoms are allowed to continue, the more likely you will need to take even more medications to get things back to normal.

4. Take good care of yourself – eat healthy, exercise and get enough sleep.

Cut out or make a copy

Asthma Action Plan

For: _____ Doctor: _____ Date: _____

Doctor's Phone Number _____ Hospital/Emergency Department Phone Number _____

GREEN ZONE

Doing Well

- No cough, wheeze, chest tightness, or shortness of breath during the day or night
- Can do usual activities

And, if a peak flow meter is used,

Peak flow: more than _____
(80 percent or more of my best peak flow)

My best peak flow is: _____

Take these long-term control medicines each day (include an anti-inflammatory).

Medicine	How much to take	When to take it
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
Before exercise ❒ _____	❒ 2 or ❒ 4 puffs _____	5 minutes before exercise

YELLOW ZONE

Asthma Is Getting Worse

- Cough, wheeze, chest tightness, or shortness of breath, or
- Waking at night due to asthma, or
- Can do some, but not all, usual activities

-Or-

Peak flow: _____ to _____
(50 to 79 percent of my best peak flow)

First

Add: quick-relief medicine—and keep taking your GREEN ZONE medicine.

_____ ❒ 2 or ❒ 4 puffs, every 20 minutes for up to 1 hour
(short-acting beta$_2$-agonist) ❒ Nebulizer, once

Second

If your symptoms (and peak flow, if used) return to GREEN ZONE after 1 hour of above treatment:
❒ Continue monitoring to be sure you stay in the green zone.

-Or-

If your symptoms (and peak flow, if used) do not return to GREEN ZONE after 1 hour of above treatment:
❒ Take: _____ ❒ 2 or ❒ 4 puffs or ❒ Nebulizer
(short-acting beta$_2$-agonist)
❒ Add: _____ mg per day For _____(3–10) days
(oral steroid)
❒ Call the doctor ❒ before/ ❒ within _____ hours after taking the oral steroid.

RED ZONE

Medical Alert!

- Very short of breath, or
- Quick-relief medicines have not helped, or
- Cannot do usual activities, or
- Symptoms are same or get worse after 24 hours in Yellow Zone

-Or-

Peak flow: less than _____
(50 percent of my best peak flow)

Take this medicine:

❒ _____ ❒ 4 or ❒ 6 puffs or ❒ Nebulizer
(short-acting beta$_2$-agonist)

❒ _____ mg
(oral steroid)

Then call your doctor NOW. Go to the hospital or call an ambulance if:
- You are still in the red zone after 15 minutes AND
- You have not reached your doctor.

DANGER SIGNS
- **Trouble walking and talking due to shortness of breath**
- **Lips or fingernails are blue**

- **Take ❒ 4 or ❒ 6 puffs of your quick-relief medicine AND**
- **Go to the hospital or call for an ambulance _____ NOW!**
(phone)

See the reverse side for things you can do to avoid your asthma triggers.

Cut out or make a copy

How To Control Things That Make Your Asthma Worse

This guide suggests things you can do to avoid your asthma triggers. Put a check next to the triggers that you know make your asthma worse and ask your doctor to help you find out if you have other triggers as well. Then decide with your doctor what steps you will take.

Allergens

❒ Animal Dander

Some people are allergic to the flakes of skin or dried saliva from animals with fur or feathers.

The best thing to do:

- Keep furred or feathered pets out of your home.

If you can't keep the pet outdoors, then:

- Keep the pet out of your bedroom and other sleeping areas at all times, and keep the door closed.
- Remove carpets and furniture covered with cloth from your home. If that is not possible, keep the pet away from fabric-covered furniture and carpets.

❒ Dust Mites

Many people with asthma are allergic to dust mites. Dust mites are tiny bugs that are found in every home—in mattresses, pillows, carpets, upholstered furniture, bedcovers, clothes, stuffed toys, and fabric or other fabric-covered items.

Things that can help:

- Encase your mattress in a special dust-proof cover.
- Encase your pillow in a special dust-proof cover or wash the pillow each week in hot water. Water must be hotter than 130° F to kill the mites. Cold or warm water used with detergent and bleach can also be effective.
- Wash the sheets and blankets on your bed each week in hot water.
- Reduce indoor humidity to below 60 percent (ideally between 30—50 percent). Dehumidifiers or central air conditioners can do this.
- Try not to sleep or lie on cloth-covered cushions.
- Remove carpets from your bedroom and those laid on concrete, if you can.
- Keep stuffed toys out of the bed or wash the toys weekly in hot water or cooler water with detergent and bleach.

❒ Cockroaches

Many people with asthma are allergic to the dried droppings and remains of cockroaches.

The best thing to do:

- Keep food and garbage in closed containers. Never leave food out.
- Use poison baits, powders, gels, or paste (for example, boric acid). You can also use traps.
- If a spray is used to kill roaches, stay out of the room until the odor goes away.

❒ Indoor Mold

- Fix leaky faucets, pipes, or other sources of water that have mold around them.
- Clean moldy surfaces with a cleaner that has bleach in it.

❒ Pollen and Outdoor Mold

What to do during your allergy season (when pollen or mold spore counts are high):

- Try to keep your windows closed.
- Stay indoors with windows closed from late morning to afternoon, if you can. Pollen and some mold spore counts are highest at that time.
- Ask your doctor whether you need to take or increase anti-inflammatory medicine before your allergy season starts.

Irritants

❒ Tobacco Smoke

- If you smoke, ask your doctor for ways to help you quit. Ask family members to quit smoking, too.
- Do not allow smoking in your home or car.

❒ Smoke, Strong Odors, and Sprays

- If possible, do not use a wood-burning stove, kerosene heater, or fireplace.
- Try to stay away from strong odors and sprays, such as perfume, talcum powder, hair spray, and paints.

Other things that bring on asthma symptoms in some people include:

❒ Vacuum Cleaning

- Try to get someone else to vacuum for you once or twice a week, if you can. Stay out of rooms while they are being vacuumed and for a short while afterward.
- If you vacuum, use a dust mask (from a hardware store), a double-layered or microfilter vacuum cleaner bag, or a vacuum cleaner with a HEPA filter.

❒ Other Things That Can Make Asthma Worse

- Sulfites in foods and beverages: Do not drink beer or wine or eat dried fruit, processed potatoes, or shrimp if they cause asthma symptoms.
- Cold air: Cover your nose and mouth with a scarf on cold or windy days.
- Other medicines: Tell your doctor about all the medicines you take. Include cold medicines, aspirin, vitamins and other supplements, and nonselective beta-blockers (including those in eye drops).

U.S. Department of Health and Human Services
National Institutes of Health

National Heart Lung and Blood Institute

For More Information, go to: www.nhlbi.nih.gov

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When to See an Asthma Specialist

Most often, the original asthma diagnosis comes from a primary care provider who may also take a blood test to identify allergies that may trigger your asthma.

Is that enough, or should you ask for a referral to a specialist? It depends on how well the treatment plan is working and how complicated your medical situation is.

Asthma is a complex, ever-changing condition that requires constant attention. If you or your child continue to experience symptoms that disrupt sleep or everyday activities, even after strictly following your management plan, then a visit to a specialist is in order.

National Institutes of Health (NIH) asthma guidelines recommend seeing a specialist if any of the following apply:

- ❑ You have had a life-threatening asthma episode.
- ❑ You are not responding to treatment after 3-6 months.
- ❑ You have persistent asthma symptoms, limited physical activity and frequent flares.
- ❑ You need continuous high-dose inhaled corticosteroids or more than two courses of oral corticosteroids in one year.
- ❑ You need additional testing like allergy tests, complete spirometry breathing tests, rhinoscopy (looks into nasal passages and sinuses) or bronchoscopy (looks into the lungs).
- ❑ You are being considered for immunotherapy (allergy shots).
- ❑ You have conditions that complicate your asthma or diagnosis, such as severe hay fever, sinusitis, GERD (gastroesophageal reflux) or exercise-related breathing problems.
- ❑ You require additional education on complications of therapy or allergen avoidance at home, school or work.

For children, NIH guidelines say toddlers under age 3 who require daily anti-inflammatory medicine should see a specialist, and those under 4 with symptoms three or more days a week and two or more nights a month should consider seeing one.

When looking for a specialist, check to see if the doctor is board certified in the field. Board certification is a voluntary process that indicates a physician is going above and beyond licensing requirements – it shows a commitment to continually expanding knowledge in a medical specialty, according to the American Board of Medical Specialties.

Specialists Who Treat Asthma & Allergies

Allergist/Immunologist: Specializes in diagnosis and treatment of allergies, asthma and immune disorders, including allergy testing and immunotherapy. Usually the first specialist to see, since allergies are a common trigger of asthma symptoms.

Pulmonologist: Specializes in diagnosis and treatment of lung diseases; often treats asthma complicated by colds, flu and pneumonia.

Your treatment is not working if:

- You have asthma symptoms more than two days a week
- Your asthma wakes you up two or more times a month
- You are using your quick-relief bronchodilator more than two days a week (except before exercise)
- Your asthma prevents you from your usual activities
- You are not sure what triggers your asthma
- You have not been allergy tested

Medicine Matters

Asthma medications play a central role in your treatment plan. Some prevent or reduce airway inflammation; others interrupt the allergic reaction that triggers symptoms; others relieve the coughing and wheezing, making it easier to breathe.

Your doctor will work with you to find the right combination of medicines to manage your asthma, and will adjust the type and amount based on your symptoms and control. The goal of asthma treatment is to have you feel your best with the least amount of medicine.

Get to know your medications. Understand how and why they heal and soothe your lungs – then follow your plan to better breathing.

Inhaled Quick-Relief Bronchodilators (also called "short-acting")

• ProAir HFA (albuterol) • Proventil HFA (albuterol) • Ventolin HFA (albuterol) • Xopenex HFA (levalbuterol)

What they do:

Relieve noisy asthma symptoms of coughing, wheezing, shortness of breath (bronchospasm) by relaxing muscles around the airways.

What you need to know:

- Use at the first sign of symptoms; do not wait to see if symptoms go away on their own. The earlier you begin treatment, the less damage there is to recover from.
- Use according to your Asthma Action Plan until you no longer have symptoms.
- Use if prescribed before exercise or exposure to one of your triggers to prevent symptoms.

What to expect:

- Breathing improvements within minutes, lasting 3-6 hours.
- Possible increase in heart rate or shakiness; children may seem more energetic and excitable.

Talk with your doctor if you use your quick-relief medicine to treat asthma symptoms more than twice a week (other than to prevent exercise-induced symptoms), or two or more nights a month.

If symptoms are not going away as expected, or if more medication is needed than prescribed, it could be a sign of:

- Worsening asthma; follow your Asthma Action Plan – time to call the doctor.
- Poor inhaler technique.
- A partially clogged inhaler; when was the last time you cleaned it?
- An empty inhaler; it runs out of medication before the canister feels empty.

When asthma symptoms are controlled the way they should be, you won't need quick-relief bronchodilators every day or even every week except to prevent exercise-induced symptoms or particular exposures. Even though the different bronchodilators are similar in many ways, the Food and Drug Administration (FDA) states there are distinct differences among them. One brand should not be substituted for the other without both the patient/parent and doctor agreeing and understanding the differences.

MYTH:
I can control my asthma with over-the-counter drugs.

TRUTH:
Asthma is not a do-it-yourself condition; it requires careful, coordinated treatment plans worked out with qualified health care professionals.

Long-Acting Bronchodilators

• Arcapta (indacaterol) • Foradil (formoterol) • Serevent (salmeterol)

What they do:	What you need to know:	What to expect:
Help reduce bronchospasm for up to 12 hours when taken twice a day as part of a comprehensive treatment plan.	• Should always be used along with inhaled corticosteroids when treating asthma. • Do not use more often than once every 12 hours. • Do not use to relieve sudden-onset asthma symptoms.	• No immediate sensation that it is working. • Over time, less need for quick-relief bronchodilators.

Inhaled Anti-inflammatory Corticosteroids

• Aerospan (flunisolide) • Alvesco (ciclesonide) • Asmanex (mometasone) • Flovent (fluticasone) • Pulmicort (budesonide) • QVAR (beclomethasone)

What they do:	What you need to know:	What to expect:
Treat and prevent airway inflammation – the quiet part of asthma you are not likely to notice.	• Take daily as prescribed, whether you think you need them or not. • Do not use at higher doses or more frequently than prescribed. • Tell your health care provider if you are using more than one type of corticosteroid medication, such as nasal sprays, eye drops, skin creams or pills. • Not related to anabolic steroids used by some athletes to build muscle mass.	• No immediate sensation that it is working. • A gradual improvement in symptoms and peak flow meter readings. • Over time, less need for quick-relief bronchodilators.

Inhaled Combination Medications

• Advair (fluticasone and salmeterol) • Breo Ellipta (fluticasone furoate and vilanterol)
• Dulera (mometasone and formoterol) • Symbicort (budesonide and formoterol)

What they do:	What you need to know:	What to expect:
Combine inhaled corticosteroid with a long-acting bronchodilator in one device to treat underlying airway inflammation as well as reduce bronchospasm.	• Take no more than once every 12 hours. • Do not use to relieve sudden-onset asthma symptoms; use the quick-relief bronchodilator listed in your Asthma Action Plan.	• No immediate sensation that it is working • Over time, less need for quick-relief bronchodilators

Leukotriene Modifiers

• Singulair (montelukast) • Accolate (zifirlukast) • Zyflo (zileuton)

What they do:	What you need to know:	What to expect:
Block the action of leukotrienes, chemicals involved in immune responses that cause inflammation, swelling and tightening of the airways.	• Available as granules, chewables and tablets. • Do not use to treat sudden-onset asthma symptoms; always have a quick-relief bronchodilator available. • May reduce severity of exercise-induced bronchospasm symptoms.	• No immediate sensation that it is working • Gradual improvement in allergy and asthma symptoms.

Anti-IgE Biologic

• Xolair (omalizumab)

What it does:	What you need to know:	What to expect:
Blocks IgE antibodies that cause allergy symptoms.	• Delivered by injection in a doctor's office. • Approved as add-on therapy for patients age 12 years and up who have allergies and asthma not controlled by inhaled corticosteroids. • Approved to treat chronic hives (urticaria) • First FDA-approved medication in the class of biologics (immunomodulators) that interrupt immune reactions caused by allergens.	• A gradual reduction in allergy symptoms and the asthma that they may trigger.

Allergy & Asthma NETWORK

Respiratory Inhalers At a Glance 2014

Allergy & Asthma Network (AAN) is a national nonprofit organization that provides award-winning patient education, advocacy and community outreach services.

Helping Families Breathe Better Together

aanma.org • 800.878.4403

123 = DOSE COUNTER
A = ASTHMA
C = COPD
★ = BUILT-IN SPACER

Short-acting bronchodilators

relax tight muscles in airways and offer quick relief of symptoms such as coughing, wheezing and shortness of breath for 3-6 hours

ProAir® HFA
albuterol sulfate
A 123

Proventil® HFA
albuterol sulfate
A

Ventolin® HFA
albuterol sulfate
A 123

Xopenex HFA®
levalbuterol tartrate
A

Long-acting bronchodilators

relax tight muscles in airways and offer lasting relief of symptoms such as coughing, wheezing and shortness of breath for at least 12 hours

Arcapta™ Neohaler™
indacaterol inhalation powder
C

Foradil® Aerolizer®
formoterol fumarate inhalation powder
A C

Serevent® Diskus®
salmeterol xinafoate inhalation powder
A C 123

Inhaled corticosteroids

reduce and prevent swelling of airway tissue; they do not relieve sudden symptoms of coughing, wheezing or shortness of breath

Aerospan® 80 mcg
flunisolide
A ★

Asmanex® Twisthaler® 110 mcg 220 mcg
mometasone furoate inhalation powder
A 123

Alvesco® HFA 80 mcg 160 mcg
ciclesonide
A 123

Flovent® Diskus® 50 mcg 100 mcg 250 mcg
fluticasone propionate inhalation powder
A 123

Flovent® HFA 44 mcg 110 mcg 220 mcg
fluticasone propionate
A 123

Pulmicort Flexhaler® 90 mcg 180 mcg
budesonide inhalation powder
A 123

QVAR® (HFA) 40 mcg 80 mcg
beclomethasone dipropionate
A

Combination medications

contain both long-acting bronchodilator and inhaled corticosteroid

Advair Diskus® 100/50 250/50 500/50
fluticasone propionate and salmeterol inhalation powder
A C 123

Advair® HFA 45/21 115/21 230/21
fluticasone propionate and salmeterol
A 123

Breo® Ellipta® 100/25 mcg
fluticasone furoate and vilanterol inhalation powder
C 123

Dulera® 100/5 200/5
mometasone furoate and formoterol fumarate
A 123

Symbicort® (HFA) 80/4.5 160/4.5
budesonide and formoterol fumarate dihydrate
A C 123

Anticholinergics

relieve cough, sputum production, wheeze and chest tightness associated with chronic lung diseases

Anoro™ Ellipta®
umeclidinium and vilanterol inhalation powder
C 123

Atrovent® HFA
ipratropium bromide
C 123

Combivent® Respimat®
ipratropium bromide and albuterol
C 123

Spiriva® HandiHaler®
tiotropium bromide inhalation powder
C

Tudorza™ Pressair™
aclidinium bromide inhalation powder
C 123

Reviewed by Dennis Williams, PharmD

Asthma Management Tools

What You Need to Know

Asthma flares don't just happen. Subtle signs are there if you know where and how to look. Coughing, sneezing, wheezing and congestion indicate a patient is already compromised. You need to detect problems from the very beginning.

The following devices and suggestions remove some of the worry in keeping you and your family healthy. Always keep the goal of preventing and minimizing asthma and allergy flares in mind.

Nebulizer

Nebulizers turn liquid medicines into a fine aerosol that can be inhaled deep into the airways. Though studies show they are no more effective than MDIs, they offer an alternative for patients who have difficulty with MDI coordination or who prefer a slower delivery of medication. Some say they benefit from taking extra time during an asthma flare for a nebulizer treatment, giving them a chance to sit down, relax and breathe normally, while relieving inflammation and bronchospasm.

In a nebulizer system, the machine is called the compressor and the medicine cup is the nebulizer; the two are connected with tubing. Small, one-piece, battery-powered units are also available. Discuss with your doctor if a nebulizer is right for your family.

Blow-By Myth: Never use the "blow-by" technique of gliding the mist over the patient's face.

Valved Holding Chamber

Mastering inhaler technique takes coordination and practice. A valved holding chamber attached to your inhaler captures the mist for you to inhale the dose. Best of all, it traps large particles unable to make it into your airways and prevents them from settling in your throat and mouth.

Don't confuse spacers with holding chambers. Both devices direct the medicine to where it is supposed to go, but only a holding chamber "holds" the medicine to help inhalation.

Dose Counter

Dose counters record and display the number of sprays remaining in your inhaler, providing you with an accurate measurement of life-saving medication. Allergy & Asthma Network believes all metered-dose inhalers should be required to have dose counters.

Peak Flow Meter

This small handheld device measures your Peak Expiratory Flow Rate (PEFR). That is the maximum speed you can force air out of your lungs' large airways, indicating how well your lungs are working. A peak flow meter can signal early signs of an asthma flare. Keep track of two important numbers: your "personal best" representing the best you can expect to achieve when your asthma is under very good control; and your "predicted" representing the

average of someone of your height, sex or age. It is these two numbers you need to discuss with your doctor when your personal best begins to fall.

Spirometer

This measures volume and speed that air is expelled in and out of the lungs. Results assist in the diagnosis of asthma. Home spirometry monitoring does not give the same information as spirometry testing in a doctor's office.

Asthma Action Plan/AsthmaTracker®

This combo keeps you organized and current on your daily health needs. Used in conjunction with each other, symptom patterns jump out ready for any preventable requirements.

Your Asthma Action Plan may change. Basic information includes: medications responding to symptoms, specific symptoms, allergies and triggers. The plan covers daily treatment as well as what to do when symptoms worsen.

AsthmaTracker® is an easy-to-use daily diary to help you identify the subtle and not-so subtle pattern of symptoms and tells you how well your management plan is working. (See page 35 for more information.)

Stethoscope

A stethoscope is a medical device designed to listen to body sounds for diagnostic purposes. It's an inexpensive device for listening to breathing patterns and hearing subtle changes, detecting wheezing not audible without one and hearing where there are no sounds – a very dangerous sign. Everyone has a distinct breathing pattern. When that breathing pattern changes, it usually signifies something is brewing.

When asthma is triggered by infections, episodes progress very quickly from congestion to pneumonia. Stethoscopes address episodes quickly, giving you extra time for medicines to kick in and get to the hospital if that is what is required. Stethoscopes are not difficult to use. Discuss thoroughly with your doctor.

Early Warning Signs

Typical warning signs include the obvious – coughing, sneezing, wheezing, chest tightness – and subtle signs like feeling overtired. It may take a while, but you will soon notice very specific early warning signs requiring extra vigilance.

Respiratory Rate

Measured in breaths per minute (BPM), respiratory rates increase as an episode progresses. It's measured by numbers of times patient's chest rises and falls. BPM ranges from 30-60 for a one-month-old child to 18-22 for an adult. Check with your doctor for specific rates and if this measurement is helpful for you and your family.

Well Visit With Your Doctor

Follow-up visits, setting goals, changes in an Asthma Action Plan, checking inhaler technique and seeing a healthy and active patient keeps your doctor clued in to your health. The patient-doctor relationship rests on a foundation of trust. If the patient is a child or young adult, this relationship may make the difference with compliance in taking medication and following the plan. Keep those well appointments.

Mastering Your Inhaler

Inhaling medication delivers it quickly and directly to inflamed and congested airways. Pills or tablets must go through the digestive system and bloodstream, slowing down their effectiveness.

There are two basic types of inhalers:

- metered-dose inhalers (MDIs), pressurized canisters that release medication in a fine spray
- dry powder inhalers (DPIs), devices of many different styles that release medication as a fine powder for inhaling

Proper inhaler technique is important for each. Before using, become familiar with your specific inhaler by reading the patient instructions.

Metered-Dose Inhalers (MDIs)

Different MDIs look the same on the outside, but each is distinctly different in operation and maintenance.

You must inhale the spray quickly enough to prevent it from landing on your tongue or inside your cheek, yet slowly enough to let it get deep into your lungs.

1. **Remove the MDI mouthpiece cap and look at the tiny exit hole where the medication comes out of the canister.** It should be free of debris or white powder. If it's not, follow package instructions to thoroughly clean the inhaler.

2. **Shake the inhaler** to mix the crystalline powder medication with propellants and other ingredients inside the canister. Check your patient instruction sheet to see if your inhaler requires shaking (and how much), as a few brands (including Alvesco and QVAR) are blended differently and don't need shaking.

3. **Prime the inhaler if necessary.** When the MDI is new or hasn't been used in a while, the ingredients may separate. Priming ensures the dose you inhale contains the labeled amount of medication. Note: Priming instructions are different for each MDI brand; check your patient instruction sheet. When using a **valved holding chamber,** insert the MDI mouthpiece into the end port of the chamber after priming.

4. **Stand or sit up straight and breathe out completely.** Emptying your lungs as much as possible gives you room to inhale the medication slowly and deeply.

5. **Hold the inhaler upright** about 1-2 inches away from your open mouth, with the mouthpiece at the bottom and the top pointing up to the sky. If using a valved holding chamber, place the mask tightly on the user's face or put the chamber's mouthpiece between your teeth and close your lips tightly around it. Some doctors recommend putting the MDI mouthpiece between your teeth and closing your lips tightly around it. Talk with your health care team about what method is best for you.

6. **Begin to inhale slowly, then activate the inhaler** a split-second later. If you wait too long, you won't have enough breath left to inhale the medicine deep into your small airways.

MYTH:
I can stop my medications during seasons I don't have exposure to my asthma triggers.

TRUTH:
It's important to follow your Asthma Action Plan and take your anti-inflammatory medications daily, as prescribed. Once your asthma symptoms are well under control, your physician may recommend reducing your daily medication dosage or schedule. It is dangerous to do this without medical supervision.

Know Your Count

Even the most perfectly timed inhalation won't do you any good if there's no medicine left in the inhaler. That's why it's important to count each dose and priming spray and replace the inhaler after using the labeled number of sprays.

Don't rely on how it "feels": Long after the active medication has been used up, MDIs will continue to spray or feel full when shaken.

Allergy & Asthma Network believes all inhalers should have a built-in dose counter. If yours does not, develop a system to keep track. For daily medications, simply mark the canister when you first open it and figure how long it will last. With inhalers like quick-relief bronchodilators that you take only when needed, you must keep track as you go.

Do not use MDIs beyond the recommended number of doses on the canister label, even if you are tempted. There is no way to know if the dose inhaled contains medication.

7 **Continue inhaling slowly for 3-5 seconds,** until your lungs are full. You might be surprised at how long a time that is, so test yourself. Using a stopwatch device or clock with a second hand, begin to inhale and pretend to actuate your inhaler. See how long it takes you to fill your lungs. Did you run out of room in your lungs before three seconds? If so, try it again, more slowly. Practice until you're able to get it right. Then practice again...and again. One type of holding chamber features a whistle that goes off if you are inhaling too forcefully, a signal that you need to slow down.

8 **Hold your breath for 10 seconds,** if possible. (You can take the inhaler out of your mouth.) When you hold your breath, you allow the tiny particles of medication to settle on the surface of your airways.

9 **Exhale slowly.**

10 **Repeat steps 2 through 9** if your Asthma Action Plan says to take a second dose. (Skip step 3; your inhaler would not need to be primed again so soon.)

11 **Replace the cap on your inhaler** and store it where it won't be exposed to moisture or extreme temperature changes. Check your patient instruction sheet to see if your inhaler needs to be stored in an upright position; some do. For best results, store and use the inhaler at normal room temperature – about 77 degrees F. In very cold weather, keep it close to your body, not in your car or in a backpack. In cold temperatures, warm the inhaler with your hands before using it.

12 **Clean the inhaler** according to your patient instructions, usually weekly. If using water, leave time for the inhaler to air dry. Holding chambers also need to be washed according to instructions.

Faces of Asthma

"Inhaling at the right speed is like driving a car. If you drive at 100 mph, you're going to go off the road at the first major turn. You can't get around it. And if you take a very fast breath with your inhaler, the medication will slam into the wall of your airway at the first big curve, instead of travelling down into the lungs."

– Ben Francisco, AE-C

Dry Powder Inhalers (DPIs)

Medication particles in DPIs are so small that they can easily reach the tiniest airways, and you may not taste or feel the medication as you inhale.

The medicine is released to your airways when you take a deep, fast breath from the inhaler. Inhaling the dry powder may cause some people to cough; talk with your doctor to make sure a DPI is right for you.

Follow the manufacturers' instructions to maintain and use your DPI. Once the medicine is loaded and ready, follow these basic steps:

1. **Exhale slowly,** pushing as much air out of your lungs as possible.
2. **Put your mouth on the mouthpiece** and inhale deeply and forcefully.
3. **Hold your breath** for 10 seconds.
4. **Exhale slowly.**
5. **Repeat** as instructed.

Nebulizers

When Only the Mist Will Do…

Research studies say that inhalers can be as effective as nebulizers at getting medication deep into your airways. However, many users say otherwise: Inhalers are great when you're out and about, but if you're under the weather and feeling short of breath, there's nothing more therapeutic than inhaling the cool, medicated mist of your trusty nebulizer.

For small children and others unable to coordinate inhaler timing, they are essential.

Today's nebulizers are easy to use – and many are small enough for travel or dorm rooms and quiet enough for silent nights. Medications come in sterile, unit dose vials – no measuring and mixing necessary! Follow these steps to maximize the mist:

1. **Wash your hands**
   To keep your nebulizer – and your lungs – free of germs, always wash your hands before handling the medication and equipment.

2. **Check your medication**
   Before you begin, look closely at your medicine:
   - Has it expired?
   - Is the vial crushed or damaged?
   - Does the medicine look discolored?
   - Has it been exposed to any extremely hot or cold temperatures?

   If you answer "yes" to any of these, replace the medicine.

Faces of **Asthma**

"When my daughter uses a nebulizer, we sit together and I let her hold my watch or another piece of jewelry that's usually off-limits to her. She loves trying on my jewelry."

– Kiara Jordan

3 Gather your equipment

In most set-ups, you have a compressor (the basic machine), tubing, a cup (the nebulizer) for the medicine, and a mouthpiece. You might also have a mask.

The compressor forces air into the medication in the cup, breaking the liquid into an aerosol. The cup design determines how well the system can produce droplets that are the right size to travel deep into the airways. Breath-enhanced and breath-actuated units allow less medication to escape into the air.

Very young children, as well as handicapped or elderly patients unable to use a mouthpiece dependably should always use a mask. Choose one that is soft and pliable enough to fit snug on the face and large enough to cover the mouth and nose.

4 Pour medication into the nebulizer cup

Unit-dose vials are a snap to use; just twist off the top and pour. Choose a nebulizer cup that will sit flat for easy pouring. Take a sniff as you pour and throw out any medication that smells foul, spoiled or like it may contain rubbing alcohol. If it smells of alcohol, it may be an illegal solution, not FDA-approved.

5 Sit back and relax

Put the mask in place or place the mouthpiece over your tongue and close your teeth and lips tightly around it, then turn on the machine. Breathe normally. If you start to cough, turn the machine off until you can breathe freely again. Continue the breathing treatment until the cup is empty. If the medication foams or bubbles, stop the treatment; you may have defective or contaminated medicine or equipment.

6 Wash up

Follow manufacturer's instructions to keep your nebulizer cup, mouthpiece and tubing clean. Be thorough; whatever gets into your cup – from your hands, medication or house dust – will get into your lungs. When everything is clean and dry, store the system where it will stay dust-free.

Nebulizer cup/mouthpiece units and tubing don't last forever. The plastic will break down over time. Replace them as recommended – and don't forget to clean or change the air filter. Most machines have one.

Danger Zone

- *Never mix your own nebulizer medications from powdered capsules, crushed tablets or liquid medicines. Using medications other than those that are FDA-approved for nebulization can result in airway injury or infection.*
- *Don't overfill your nebulizer cup. It won't aerosolize the medication at the correct particle size.*
- *Don't "blow by" or mist the medication in front of your child's face. This will simply release the medicine into the air, not the lungs.*

Allergy Testing & Immunotherapy

Most children and adults with asthma have allergies to things they breathe, touch or eat – and these allergies can set off asthma symptoms.

Knowing which allergens affect you puts you one step closer to asthma control. Make an appointment with a board-certified allergist who will take a detailed medical and family history, discuss your symptoms, and use skin prick or blood tests to confirm a diagnosis.

Allergists consider **skin tests** to be the gold standard for allergy testing. They are quick, inexpensive and produce reliable results, when interpreted by a trained allergist.

Another option is a **blood test,** often done by primary care doctors as an initial screening or by allergists where skin prick tests are not recommended. Results must be interpreted in conjunction with your medical and family history and pattern of allergy symptoms, as a positive result does not always mean that you will experience a reaction to the allergen.

Once you know for sure what you are allergic to, you and your doctor can make a plan to avoid exposure. Some allergens, such as pollen, mold, dust mites, animal dander and insect stings are very difficult to avoid. However, allergies – and the asthma flares they spark – often can be dramatically improved with immunotherapy, or allergy shots.

Immunotherapy

Immunotherapy is the process of introducing controlled amounts of an allergen to the immune system on a regular schedule, gradually increasing your tolerance. It has been proven very successful in treating insect sting, pollen and animal dander.

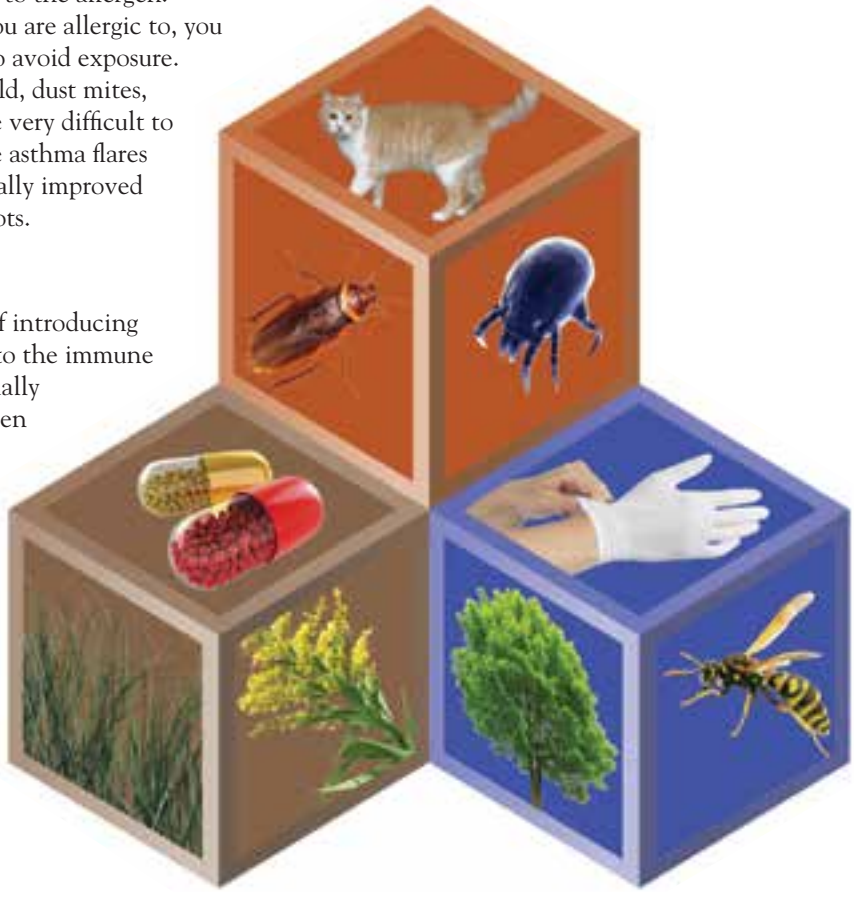
Traditional immunotherapy uses allergy shots, given in a board-certified allergist's office once or twice a week. Auto-injectable epinephrine should be readily available in case the allergy shot provokes anaphylaxis, a severe allergic reaction. After 3-5 years, the shots can usually be discontinued.

Under-the-tongue therapy

A new form of immunotherapy called sublingual immunotherapy (SLIT) uses tablets that dissolve under the tongue. In 2014, the Food and Drug Administration (FDA) approved the first SLIT tablets for grass and ragweed allergies. Unlike allergy shots that can treat multiple allergens at the same time, tablets are specific to one or a few related substances and are taken daily either seasonally or year-round.

Another form of SLIT involves drops of liquid allergens held under the tongue. Concentrated allergen extracts for drop therapy have not been approved yet in the United States and are still considered experimental. This treatment is typically not reimbursed by insurance companies.

Discuss immunotherapy options with a board-certified allergist to determine which is best for you.



The Asthma-Food Allergy Connection

The *Guidelines for the Diagnosis and Management of Food Allergies in the U.S.*, from the National Institutes of Health, provides clear instructions for managing the often-overlapping symptoms of asthma and food allergies.

Five things people with asthma need to know about food allergies:

Studies show that *35-50 percent* of people with food allergy have asthma.

It's suspected there are many people with asthma who don't know that food allergies are affecting their asthma flares.

The connection between the two starts with the genetic factors that put a person at risk of developing allergy-related conditions such as atopic dermatitis (eczema), food allergy, asthma and allergic rhinitis (hay fever).

People who have both asthma and food allergy are at higher risk of severe food allergy reactions than those without asthma.

Respiratory symptoms are common during anaphylaxis – the life-threatening allergic reaction sometimes set off by food allergy – even in people who do not have asthma.

The person develops wheezing, their airways become swollen and blocked, and this can lead to death. So when a person with asthma, whose airways are already sensitive or inflamed, develops anaphylaxis from a food they are allergic to, they are at greater risk of complications.

People with both conditions are more likely to be hospitalized for their asthma than those without food allergy.

The genetic factors that make people more vulnerable to food allergy also put them at risk for other allergies – all of which can set off asthma symptoms or make them worse.

Seasonal colds, flu or sinus infections complicate the picture. Patients should focus on food and environmental allergen avoidance, vaccines and other preventive measures to manage asthma.

Adolescents and young adults with asthma and food allergy face a high risk of death from anaphylaxis.

Eighty percent of life-ending episodes from food allergy occur in people between ages 15 and 30 years. It may be the risk-taking behavior common to that age group or their reluctance to carry epinephrine auto-injectors or tell others about their allergy – or it may be something hormonal.

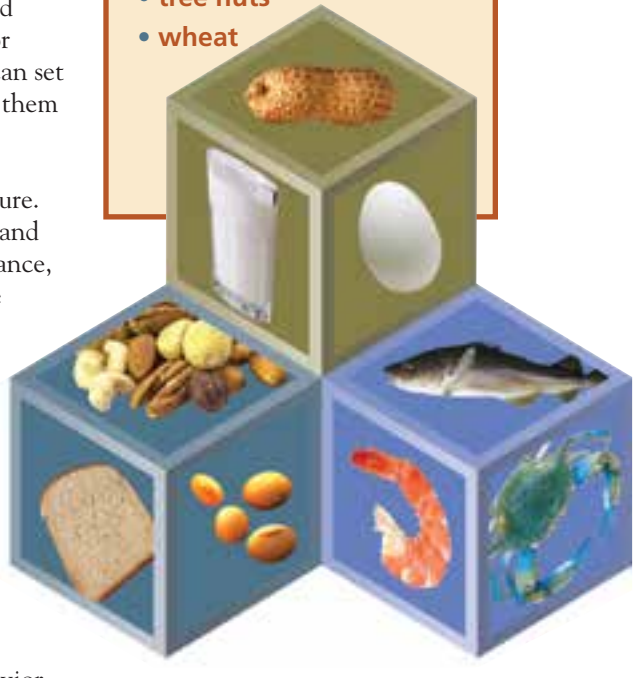
The key message to parents is to help children understand their food allergy and take ownership of their disease so when they get older and are away from their parents, they know how to manage their condition.

The first line of treatment for anaphylaxis is an epinephrine auto-injector. The second line is an inhaled bronchodilator.

A patient's anaphylaxis action plan should detail what steps to take to treat a serious allergic reaction. For people with asthma, a bronchodilator may be part of treatment, but epinephrine is always the first treatment to use at the earliest sign of anaphylaxis.

Approximately 12 million Americans have a food allergy, including 3 million children. Most are allergic to one of eight foods:

- cow's milk
- hen's eggs
- peanuts
- tree nuts
- wheat
- soy
- fish
- shellfish



The Bottom Line:

Many people with unrecognized food allergy don't know it's playing a part in their asthma symptoms. It's best to get an evaluation by a board-certified allergist for a possible food allergy.

Any person diagnosed with asthma and food allergies – no matter what the food or how mild symptoms were in the past – must carry and know how to use an epinephrine auto-injector.

Exercise and Asthma:

Don't Let It Keep You On the Sidelines

About one in 10 people experience asthma-related coughing or shortness of breath during or shortly after physical activity, whether playing soccer, bicycling, swimming or jogging. Many don't recognize the problem and simply avoid strenuous exercise.

It's called EIB – exercise-induced bronchospasm.

Faces of **Asthma**

"Before I go for a jog, I pack my inhaler and a water bottle. I always check the weather and I take note if it's particularly warm and humid, or if it's very cold. The last thing I want to feel is sick, out of breath and out of energy."

– Debbie Alford

Airway muscle spasms constrict airflow and cause shortness of breath, coughing, wheezing, chest tightness and fatigue. Often these symptoms are a sign of underlying asthma and lung inflammation.

Come In From the Cold

People with EIB have airways that are very sensitive to sudden changes in temperature and humidity, especially when breathing cold, dry air. Nasal passages act as a mini-sauna for the air we breathe – warming the air and adding moisture – in addition to filtering unwanted particles out. But most people breathe through their mouths when they exercise, allowing cold, dry air (plus allergens and other irritants) to reach the lower airways. Mouth breathing is also common among athletes and patients with stuffy noses from colds, sinusitis and allergic rhinitis.

Other factors can lead to wheezing with exercise, including air pollution, high pollen counts and

respiratory infections.

Symptoms of EIB usually appear 5 to 10 minutes after exercise starts or ends.

Treatment Tips: 15-20 minutes of warm-up exercises and cool-down periods may help minimize symptoms. Asthma symptoms occur due to rapid cooling and rapid warming of lower airways, which causes the airways to constrict. By making a gradual temperature shift, you lessen the chances of airway constriction and thus asthma symptoms.

Manage With Medications: Many doctors prescribe inhaled bronchodilators (medication that opens constricted airways) such as albuterol or formoterol for EIB. Using an inhaled bronchodilator before exercise can help prevent the bronchospasms. These medications can also be used to relieve symptoms when they occur.

If you think you have EIB, make an appointment with a doctor familiar with EIB. The doctor will take your medical history and have you perform breathing tests after exercise and while resting.

MYTH:
I don't need to take my bronchodilator until I start wheezing.

TRUTH:
Don't be deceived by thinking your quick-relief bronchodilator is a "rescue" medicine that should be used only when absolutely necessary. Use it at the first sign of symptoms. If you're wheezing, you're already well into danger territory.

Evaluate Your Environment: Athletes with EIB should keep exercise to a minimum when other potential asthma triggers are present (for instance, when an athlete has a viral infection, when it's cold outside or when pollen and air pollution levels are high). Schedule your outdoor exercise during times when pollen counts are low. Breathing through the nose or wearing a scarf or mask during cold weather may also help by warming the air you inhale and filtering out allergens.

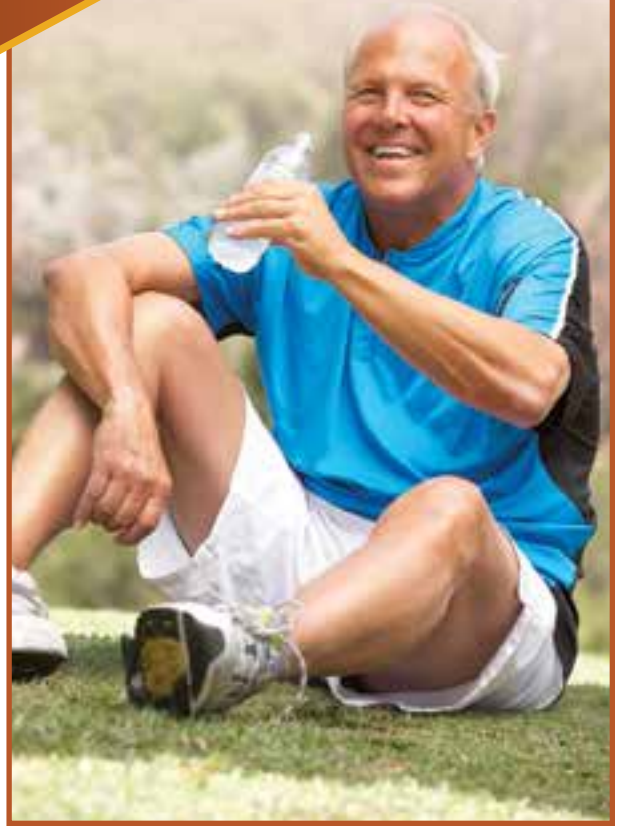
Some activities are better than others for people with EIB. Swimming is often a good choice because it's done in a warm, humid environment, plus the horizontal position may help move mucus from the bottom of your lungs. But if you are sensitive to chlorine, try walking, leisure biking or hiking – these forms of exercise can be paced more readily than vigorous activities.

Get Up and Go

If you have exercise-induced bronchospasm (EIB), or have been diagnosed with chronic asthma and know that exercise is one of your triggers, treatment and prevention are the keys to getting in the game.

"Warming up, cooling down, hydration and pre-treatment with albuterol will help the body function better whether your EIB is caused by asthma or not," says Timothy J. Craig, DO, vice chairman of the Asthma Diagnosis and Treatment Committee of the American Academy of Allergy, Asthma & Immunology. "And always keep your albuterol with you during exercise, in case you need it."

Staying hydrated can also minimize symptoms. "It's the dryness of the airway that causes EIB, which is more prevalent in cold, dry weather," Craig says. "Control your allergies and rhinitis since the humidity provided by your nose may decrease dryness of your lower airway."



Healthy Home Guide

People spend more time indoors these days, so breathing healthy air in your home is critical. Indoor allergens and irritants can come from many unlikely places. **James Sublett, MD**, of the American College of Allergy, Asthma & Immunology, offers these tips to help families eliminate asthma triggers in the home. Make healthy air your goal!

Say no to smokers. Environmental tobacco smoke, or secondhand smoke, is a major indoor pollutant. Set a no-smoking policy both inside and around your house. Smoking is a major health issue for everyone.

Monitor moisture. Too much humidity makes your home a playground for mold and dust mites. Too little can irritate inflamed airways. Meet in the middle with a goal of 50 percent household humidity. An instrument called a hygrometer will measure your humidity level. Keep bacteria and mold under control by cleaning dehumidifiers and humidifiers regularly.

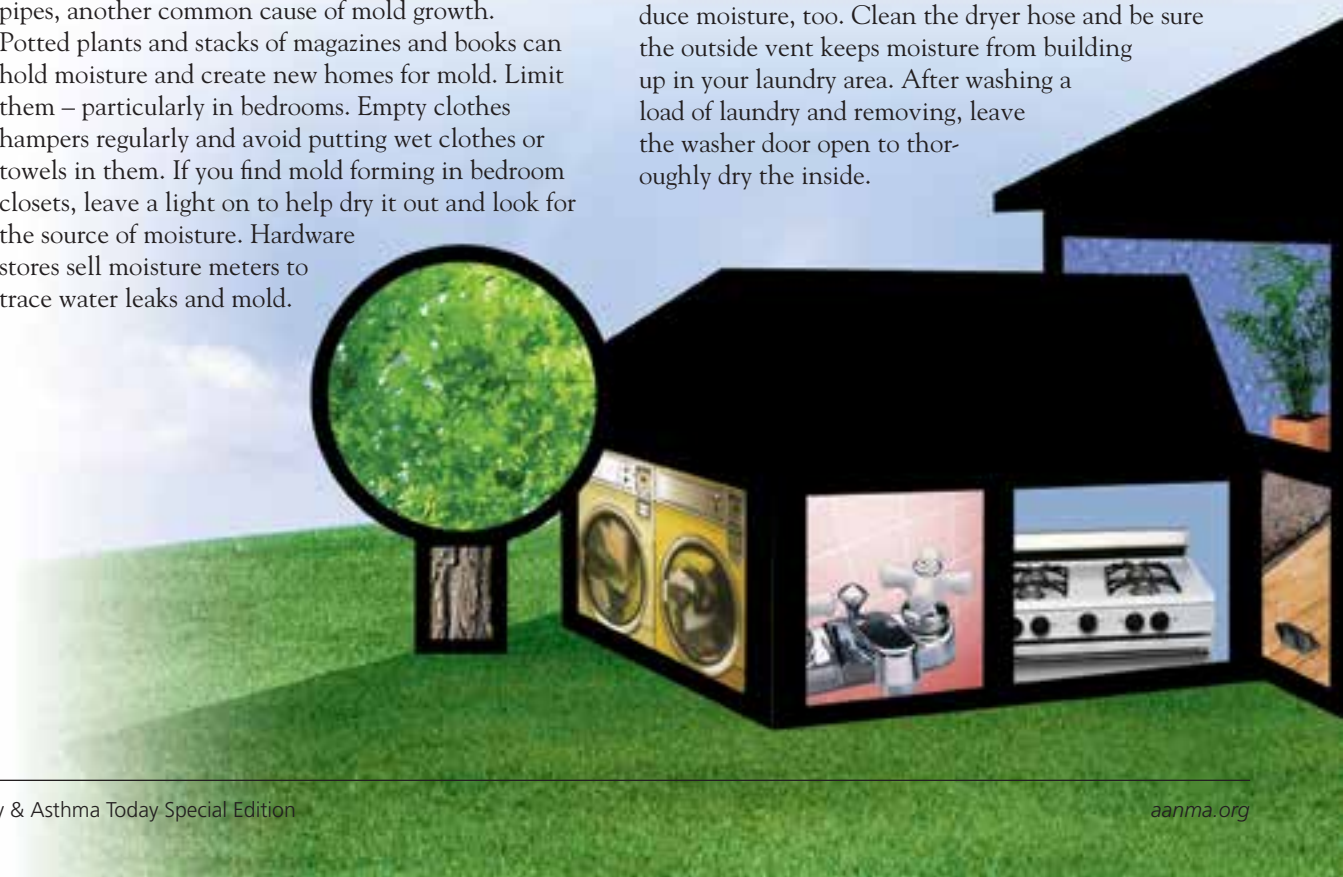
Move out mold. Use exhaust fans in bathrooms and vent outside to keep humidity low and make these areas less friendly for mold. Check for leaks around pipes, another common cause of mold growth. Potted plants and stacks of magazines and books can hold moisture and create new homes for mold. Limit them – particularly in bedrooms. Empty clothes hampers regularly and avoid putting wet clothes or towels in them. If you find mold forming in bedroom closets, leave a light on to help dry it out and look for the source of moisture. Hardware stores sell moisture meters to trace water leaks and mold.

Create 'no vacancy' for pests. When the weather turns cold, cockroaches, mice and other household pests move indoors too, bringing allergens that can cause asthma and allergy flare-ups. Seal cracks around pipes and windows. Remove boxes, newspapers and other pest hiding places. Don't leave garbage out, and clean dishes and food and drink spills right away. Avoid using pesticide sprays, which can irritate sensitive airways.

Put a wrap on dust mites. One of the mainstays of dust mite diets is skin flakes, and your bed is full of them. Encase pillows and mattresses with allergen covers to put a barrier between you and dust mites. This will protect you from mites inside your pillow or mattress; wash encasements as instructed to get rid of mites living on the outside of your encasements.

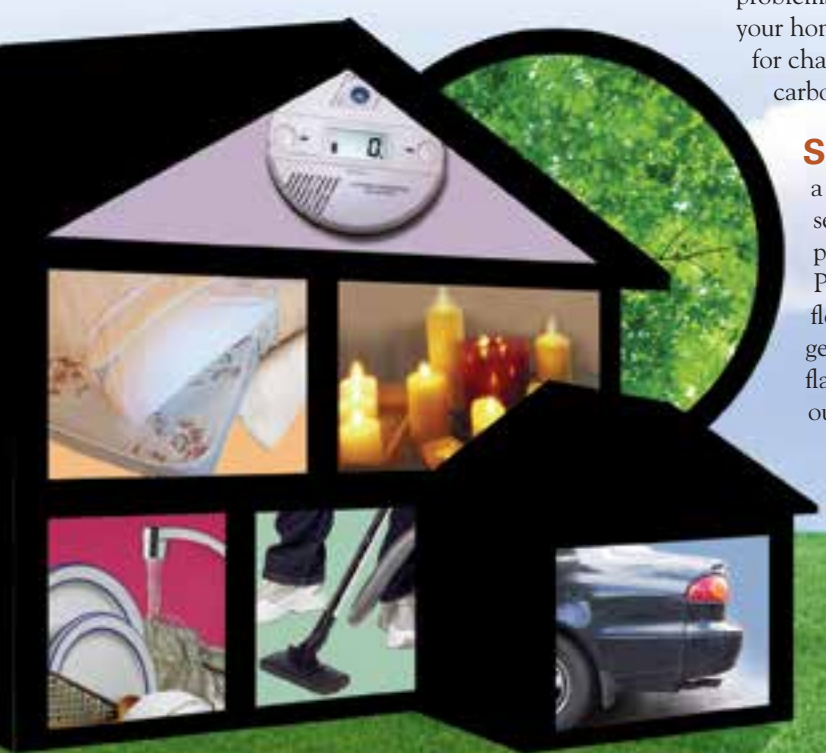
Nix noxious gases. Gas stoves, fireplaces and heaters can leak nitrogen dioxide (NO_2), irritating eyes, nose, throat and lungs. Gas appliances must vent outside. Install an exhaust fan above your stove, vent outside and maintain gas appliances according to the manufacturer's recommendations to reduce NO_2 emissions.

Put a spin on clothes. Clothing dryers produce moisture, too. Clean the dryer hose and be sure the outside vent keeps moisture from building up in your laundry area. After washing a load of laundry and removing, leave the washer door open to thoroughly dry the inside.



Upgrade your filter. The filter that comes with your HVAC (heating, venting and air conditioning) system isn't designed to help you breathe better – it just keeps dust and debris from clogging up the working parts of your system. Improve the quality of the air you breathe and take your HVAC system up a notch with a high-efficiency MERV 11 or higher disposable filter. Measure before you buy – a good fit is critical to air quality or an attached air cleaning unit. The filters should be changed at least every three months; your furnace and air conditioner unit should be serviced at least once a year.

Solve the carpet conundrum. Carpets are a favorite living area for dust mites and other allergens. If you can't remove carpets, vacuum them regularly and steam clean once a year to minimize allergens and the skin cells that dust mites feed on. Vacuuming won't suck out the dust mites themselves – they have barbs on their legs to cling to carpets and soft furnishings; plus, gravity keeps allergens and irritants permanent embedded. Use a vacuum with a HEPA (high-efficiency particulate air) filter to prevent vacuumed allergens from escaping into the air. Central vacuum systems that are vented outdoors may also help. Also, do not eat in carpeted areas.



Faces of **Asthma**

"Replace window blinds – they collect unwanted dust – with window shades. Have your child draw a picture on the window shade or even make it a fun family project!"

– Lynn Carroll

Delve into ducts. Are allergens lurking in your home's air ducts? Generally not, especially if you have a decent filter in place. Duct cleaning is frequently advertised as beneficial, but there is no scientific evidence that this is true in most homes. Consider having your ducts professionally cleaned under the following circumstances:

- a history of flooding or water damage to duct work;
- high prevalence of mold contamination;
- a history of infestation with rodents or insects;
- high prevalence of dust or construction debris.

Steer clear of duct-cleaning services that want to add chemicals to your ducts – it can cause lung irritation.

Stop idling around the house. Don't warm up your car in the garage or near the house – carbon monoxide (CO) from the car exhaust seeps into the house. Even at low levels, CO can cause respiratory problems. Buy a CO detector for the bedroom areas of your home (one on each floor is even better) and watch for changes in CO levels for an early warning before carbon monoxide levels become dangerous.

Snuff out candles. Candles produce a double whammy: Fragrances often irritate sensitive airways and their burning can produce soot, smoke and other airborne irritants. Potpourri can contain mold spores in the dried flowers and leaves. And burning incense can generate irritants and carbon monoxide. Keep a flashlight handy if you need light during a power outage and rethink air freshening strategies.

Indoor Air Cleaner Basics

When indoor air is compromised due to allergens, a portable room air cleaner may be helpful for those with asthma and allergies.

No air cleaner can do it all. They will only help clean air in one room, not the entire house. Cleaning up indoor air is a multi-step process, and first you must eliminate the source of the allergen, whether it's mold, dust mites, pet dander or insects. Air filtration is only one of several ways to remove indoor allergens from your home.

How Do Air Cleaners Work?

The Environmental Protection Agency (EPA) describes three kinds of air cleaners:

Mechanical air cleaners use flat or pleated-surface filters to sift particles out of the air or capture them with charged plastic film. Look for HEPA (high efficiency particulate air) filters for best results. To filter out gases, look for HEPA air cleaners with an adsorption filter.

Electronic air cleaners use an electric field to trap charged particles on a washable collector plate.

Ion generators use a static charge to remove particles from the air. Ions attach to the particles, charging them so they will stick to nearby surfaces such as walls, floors, draperies – even people – or attach to one another and settle out of the air. Some ion generators collect charged particles.

Never buy ozone-generating air purifiers. According to EPA, ozone is a respiratory irritant and may actually worsen allergy and asthma.

What is HEPA?

A HEPA rating indicates filters will remove at least 99.97 percent of airborne particulates that are 0.3 microns in size or larger. That includes many of the particles affecting people with allergies and asthma, such as pet allergens, pollen, mold spores and bacteria.

Look for air cleaners labeled *true HEPA* or genuine *HEPA filtration*; filters labeled *HEPA-like* aren't the real thing.

Before You Buy

The effectiveness of an air cleaner depends on how much air it pulls through the machine and how well it removes particles that pass through it. The air cleaner won't grab dust mites or pollen trapped in your carpet, dander from pets on your bed, or smoke particles in your drapes.

Choose a HEPA unit based on the following:

- **Room size:** Measure the size of the room, then find one to fit your needs.
- **Noise:** Try it out at the store or make sure you can return it if the noise level is disturbing at home.
- **Ease of use:** Is the filter difficult to replace without releasing particles back in your air? Is it light enough for you to move?
- **Odor:** If the cleaner has a separate filter for gases, check the ingredients – zeolite or activated alumina may be less irritating to sensitive airways than activated charcoal, which can be dusty.
- **Cost:** Check the price of replacement filters and how frequently they need to be changed. Add in shipping costs if filters are not available locally.
- **Guarantee:** Look for companies that offer a money-back return policy and read the fine print on the return policy.

Keep the Creepy-Crawlies Out


Courtesy of AllergyBuyersClub.com

Dust mites and cockroaches are common indoor pests and a leading cause of asthma and allergy symptoms. Take steps to eliminate them from your home with these family-friendly tips:

Dust Mites

Dust mites are invisible to the naked eye – you can fit about 50 on the head of a pin. How do you get rid of something too small to see?

- ❑ **Hang 'Em Out to Dry.** Dust mites need two things to live: water (drawn from humid air) and food (your skin). You can't do much about skin you shed each day, but you can adjust the humidity in your home. Control humidity with exhaust fans, dehumidifiers and air conditioning. Keep humidity around 50 percent.

- ❑ **Nix the Nests.** Removing carpets, drapes and upholstered furniture controls your home's dust mite population by eliminating their homes. Focus on rooms where you spend the most time, such as bedrooms.

- ❑ **Put Up Barriers.** Covering mattresses and pillows prevents mites from getting into airways because they can't get through tightly woven encasings.

- ❑ **Wash 'Em Away.** Bedding should be washed weekly to decrease dust mite allergen levels, and very hot water is not necessary during the wash cycle.

Cockroaches

Hundreds of cockroaches may live in a colony. If you see one, it's a safe bet that many more are lurking out of sight.

- ❑ **Do It Yourself.** Minor home improvements can improve your chances of keeping cockroaches out. Caulk cracks or gaps around piping, fix water leaks and improve ventilation to damp areas.

- ❑ **Keep a Lid on Food.** Store food in airtight containers or in the refrigerator. Minimize trash kept inside the house, wash dishes immediately after you use them, and eliminate piles of newspapers and magazines that are hiding spots. Rinse bottles and cans before you toss them in your recycling bin and take out recycling at least once a week.

- ❑ **Make a Clean Sweep.** If you have an infestation, you may need very aggressive cleaning to get rid of their allergens. Ordinary household cleaners are usually very effective.

And Finally…

- ❑ **Make a Commitment.** Reducing exposures to dust mites and cockroaches is reasonable and may reduce need for medications. Make these home measures a priority and part of your routine.

5 Building Blocks for Better Breathing

A healthy, active life with asthma for you and your family is within reach. Getting there begins with a thoughtful, personalized evaluation from your health care team about what's causing your symptoms and how they can be prevented. It continues with a plan of action that fits your family, lifestyle and budget.

Every person's asthma is different so don't settle for a one-size-fits-all treatment. Look closely at the following five building blocks to asthma control. What changes do you need to make to meet your goal?

1 Become an active player on your health care team. Your team has the knowledge and tools to interpret your symptoms and develop an Asthma Action Plan. Set a schedule of regular asthma checkups so they see you when you're feeling good as well as when you're having problems. Discuss what is working and what isn't. Ask them to watch how you use your inhaler, to make sure you're doing it correctly. Ask whether a valved holding chamber or spacer would help. Make sure you understand everything in your Asthma Action Plan.

2 Know your triggers. Identify and avoid the allergens and irritants that bring on your asthma flares. Does exercise set off coughing and wheezing? There are solutions to most problems. Discuss them with your health care team.

3 Know your medications. Take some time to learn why each is important for your lungs, and you'll understand how they fit into your treatment plan. Remember: It takes more medication to put out an asthma flare than to prevent it. As your asthma health improves, talk with your health care team about gradually decreasing your medication schedule or dosage. Never stop or change any of your prescribed medications without thoroughly discussing with your health care team. Bring these medications with you on every visit to the doctor's office.

4 Know your body. Any change in your health can affect your asthma. Flares don't just happen. There are subtle and not-so-subtle warning signs. Your health care team will teach you what to look for and exactly what to do, following your Asthma Action Plan. Let them know immediately about any other health problems you develop.

5 Live healthy. Healthy living keeps your body energized and your immune system working. That will mean better breathing. Many choices are yours: No smoking or exposure to smoke; nutritious eating habits; regular exercise; healthy sleep patterns; and age-appropriate vaccinations including an annual flu shot.

Websites

Allergy & Asthma Network
www.aanma.org

American Academy of Allergy, Asthma & Immunology
www.aaaai.org

American College of Allergy, Asthma & Immunology
www.AllergyAndAsthmaRelief.org
www.acaai.org

U.S. Centers for Disease Control and Prevention
www.cdc.gov/asthma

U.S. Environmental Protection Agency
www.epa.gov/asthma

Guidelines for the Diagnosis and Management of Asthma
www.nhlbi.nih.gov/guidelines/asthma

Publications

Indoor AIRepair™ At Home, School and Play
Family friendly tips to find and reduce allergens and irritants indoors. Download a FREE copy at *www.aanma.org/publication*. Available in English and Spanish

My Personal Allergy & Asthma Guide
Award-winning guidebook offers step-by-step solutions to attain freedom from allergy and asthma symptoms. $18.95 plus S/H.

AsthmaTracker™
Easy-to-use 2-sided daily diary to track symptoms and medications for better understanding of your asthma and communication with your health care provider. 12 month pack: $10 plus S/H.

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Language of Asthma™ Quiz

Match these terms to their meaning, then check the answers to see how you did!

1. Inhaled corticosteroid
2. Bronchodilator
3. Holding chamber
4. Metered-dose inhaler
5. Peak flow meter
6. Asthma Action Plan
7. Daily symptom diary

a. Lists vital instructions, medications, triggers and management tools
b. Measures how fast you can push your breath out, in liters per second
c. Reduces and prevents airway swelling
d. Tracks your progress every day
e. Traps and suspends aerosol medication while you slowly inhale
f. Pressurized medication delivery system
g. Relaxes the muscles around your airways

Your Score

7 correct: You're fluent in the Language of Asthma! Now tell your medical care team what you learned.
4-6 correct: You need another language class. Review this publication again and retake the quiz.
1-3 correct: Go over this quiz with your health care professional to learn the terms, then retake the quiz.

Correct answers: 1-c, 2-g, 3-e, 4-f, 5-b, 6-a, 7-d.

Breathe Better Together!

Allergy & Asthma Network engages, educates and empowers families to win over allergies and asthma.

Since 1985, it's been our mission to end needless death and suffering due to asthma, allergies and related conditions.

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