

What Is Asthma?

Asthma is a chronic disease that affects the airways of your lungs. Your airways are the breathing tubes that carry air in and out of your lungs. There are two main problems in asthma: swelling and increased mucus (inflammation) in the airways, and squeezing of the muscles around the airways (bronchospasm). These problems can make it hard to breathe. Taking medicines and avoiding things that trigger asthma can help control asthma. This fact sheet will address the basics of asthma—what it is, how it is diagnosed, and what are some common triggers. For information on treatment, see part 2, “Treatment of Asthma”.

Figure 1. Normal Airway

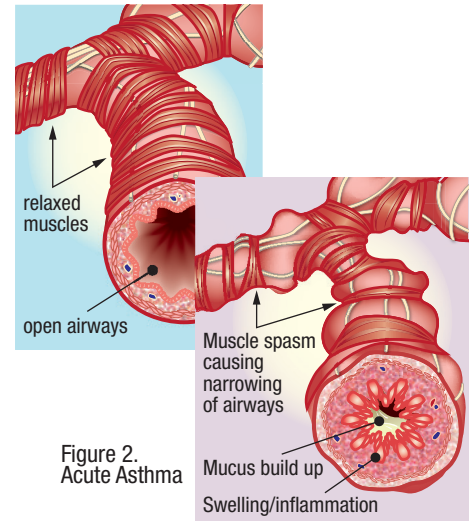


Figure 2. Acute Asthma

How do I know if I have asthma?

Common symptoms of asthma include:

- Cough—often dry and can have harsh bursts
- Wheezing—a whistling sound mainly when you breathe out through narrowed airways
- Chest tightness
- Shortness of breath which may occur with activity or even at rest

When you are having a problem with asthma, you may feel like you are breathing through a straw because it is hard to move air through your narrowed airways. Cough is often a first symptom of an asthma problem. Cough most often occurs at night or early in the morning.

While asthma is a chronic disease, you may not have symptoms every day. You may have days with cough, wheeze and/or shortness of breath and other days when you feel completely fine. If you have symptoms often and/or they are interfering with your activities, you should talk to your healthcare provider.

An “asthma attack” means rapid and severe worsening of your asthma. If you think you are having an asthma attack, follow the emergency (red zone) Action Plan that you developed with your healthcare provider. If you are not getting better, or getting worse, you should immediately seek emergency care.

Diagnosing Asthma

Asthma is usually suspected by a healthcare provider based on a pattern of symptoms and response to medicine called a bronchodilator that can relieve the squeezing of the muscles around the airways. In people over 5 years of age, a breathing test called spirometry (a type of pulmonary function test—PFT) helps confirm the diagnosis. This test can detect narrowing (obstruction) in the airways. A normal

breathing test result does not mean you do not have asthma. Your healthcare provider may recommend other types of testing to look for asthma. For more information about pulmonary function testing, see ATS Patient Information series at www.thoracic.org/patients.

If you have been diagnosed with asthma, but it is not getting better with treatment, you might benefit from seeing an asthma specialist. Sometimes asthma can be difficult to control. At times, other medical problems can make asthma worse or harder to control. Based on your symptoms, your healthcare provider may suggest testing for other problems, such as allergies, sinus disease, vocal cord dysfunction (VCD), inspiratory laryngeal obstruction (ILO), gastric reflux (heartburn), or heart problems.

Work with your healthcare provider to get the tests and treatment you need to be sure you have good asthma control which can improve your quality of life.

What triggers asthma symptoms?

If you have asthma, your airways are more sensitive than normal. Your airways can get irritated easily when exposed to a variety of things, called “triggers.” Exposure to triggers can lead to both muscle spasm and inflammation/swelling described above. Sometimes asthma symptoms occur right away after you are exposed. Sometimes your symptoms may occur hours later. You have to be a detective and think about what may be around you that can trigger your asthma. Knowing and avoiding your triggers can help with asthma control. There may be some triggers that you cannot avoid or control and may need treatment to keep them from causing asthma symptoms. Some common triggers of asthma include allergies, respiratory infections, stress, exercise, and medications.

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Allergies

Allergies are reactions of your immune system as it responds to things in the environment (allergens) that often do not cause most people harm. Having allergies can run in families (be inherited). You may have any or all of these reactions with exposure to allergens:

- skin rashes (eczema or hives)
- nose and sinus problems (rhinitis)
- eye irritation (conjunctivitis)
- asthma symptoms
- severe reaction (anaphylaxis)

Symptoms of nasal allergies include sneezing, itching, runny nose, postnasal drip into the back of your throat, or nasal congestion. If you have nasal allergy problems that are not well controlled, this can also worsen asthma control. If you have allergies, you may be more likely to have asthma. Common allergens include:

- Pollen from weeds, trees, grasses
- Molds
- Cat or dog
- Dust mites and cockroaches

Irritants

Irritants are things that can irritate the airways and cause asthma symptoms. These are different from allergies. Examples of airway irritants include:

- Dust particles
- Weather changes
- Outdoor air pollution including ozone, smog, and exhaust fumes
- Chemicals, such as pest control sprays or indoor cleaning products
- Odors from paint, hair spray, perfume or cologne
- Smoke or vapors from cigarettes, cigars, electronic cigarettes, marijuana, hookahs, and pipes

Respiratory infections

Lung or sinus infections are the leading cause of asthma-related hospitalizations. They are also the most common reason people with asthma miss school and work. Infections can trigger longer episodes of wheezing and shortness of breath. If you get a respiratory infection, follow your action plan and seek medical care if your asthma symptoms are getting worse. One way to protect yourself from some respiratory infections is to get vaccinated. Talk to your healthcare provider about what vaccinations are right for you and talk about any concerns you may have about getting vaccinated.

Other common triggers

It is important to recognize when these are present, and note how they may affect you:

- Stress—Talk to your healthcare provider about things

that cause you stress and learn stress relieving techniques

- Exercise—talk to your healthcare provider about how to exercise safely with asthma
- Medications, including aspirin and beta-blockers (medicines often used for the heart or blood pressure)
- Sulfites (a type of preservative) in foods/drinks, such as dried fruits, wine, and beer

Action Steps

- ✓ Asthma is a chronic disease that can be controlled. Get help if you are having asthma problems.
- ✓ If you notice shortness of breath, wheezing, chest tightness, or cough, talk to your healthcare provider about whether you could have asthma.
- ✓ Make note of the situations or things in the environment you are exposed to on days when you notice difficulty breathing or cough. These may signal allergens or triggers you should avoid to help you feel better.
- ✓ Be sure you get an asthma action plan and have regular follow-up visits with your asthma healthcare provider.
- ✓ Get recommended vaccines such as flu and COVID, use good handwashing, and avoid ill contacts as possible.

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Resources

American Thoracic Society (ATS)

- <http://www.thoracic.org>
 - Asthma and Exercise
 - How is Asthma Treated?
 - Outdoor Air Pollution
 - Pulmonary Function Tests
 - Vocal Cord Dysfunction/Inspiratory Laryngeal Obstruction

ATS/CHEST

- www.formylunghealth.com

National Heart, Lung, & Blood Institute (NHLBI)

- <http://www.nhlbi.nih.gov/health/health-topics/topics/asthma/>

American Lung Association (ALA)

- <http://www.lung.org/lung-disease/asthma/>

Asthma and Allergy Foundation of America

- www.aafa.org

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Managing Your Asthma: Avoiding Allergens

Triggers are things that can irritate the airways or lead to reactions in those who are sensitized to them. There are two kinds of triggers: allergens and irritants. For people with asthma, exposure to allergens can increase the risk of having asthma symptoms. This fact sheet covers ways you can avoid allergens. For more information about asthma and allergens, go to the ATS Patient Information Series at www.thoracic.org/patients/



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Allergen triggers are things that can cause an allergic reaction. They only affect people who are sensitized (allergic) to them. To find out what your triggers are, your healthcare provider can help you get tested. You may already know about some of your triggers because you have symptoms after being exposed. Symptoms can begin right away or start in the hours after.

This checklist covers ways you can avoid common allergens around you that may cause asthma problems. If you are a parent or caregiver of a child with asthma, help your child learn to avoid these as well. You can ask your healthcare provider for tips about other allergens not included here. Many allergens are hard to avoid completely. If you continue to have problems with asthma control, you can also talk with your healthcare provider or an allergist about whether you might benefit from trying immunotherapy (treatment to help desensitize you) to specific allergens. Treating allergy symptoms of the nose (runny nose or itchy nose) is also important, as these can also trigger asthma problems.

Tips for avoiding or getting rid of common thing(s) you or your child is or may be allergic to:

Dust/dustmite (*dust mites are microscopic insects that live in houses*)

- Wash bedding (sheets, blankets, etc.) in hot water once a week in 130 degrees F°. Avoid feather and natural down bedding.
- Put allergen-proof (also called “mite-proof”) covers on pillows, mattress and box springs—the best products carry the “asthma & allergy friendly® certified” seal.
- Try to keep stuffed toys off beds. Choose washable stuffed toys and wash them regularly. Remove heavy drapery or curtains. Remove wall-to-wall carpets from the bedroom if possible.
- Consider removing carpets and rugs throughout the house. If you cannot, vacuum them weekly (use a high efficiency particulate air (HEPA) vacuum if possible). Wait

2 hours after cleaning for dust to settle down before entering the room. If you are allergic, you should try not to vacuum yourself or consider wearing a N95 particulate mask.

- Change furnace and air conditioner filters at least every 3 months. Install a high efficiency air (HEPA) filter with a MERV rating of 11 or 12 in the furnace and AC unit. Have your heating and air-conditioning units inspected and serviced every 6 months.
- Dust regularly with a damp cloth. Wear a mask while dusting, sweeping or vacuuming.
- If you have asthma, try to stay away when cleaning is being done as dust gets in the air. If you are cleaning, consider wearing an N95 particulate mask.
- Do not use a vaporizer or humidifier. If your home has high humidity (moisture in the air), consider using a dehumidifier. Measure the indoor humidity using a hygrometer. Try to keep humidity below 55 percent. Use vent fans in bathroom and when cooking to remove moisture. Repair all water leaks.

Molds (*includes many types of fungus, yeast, and mildew—common in wet areas, humid climates and with water damage*)

- Wash visible mold/mildew off hard surfaces with soap and water only. Remember there is often mold and mildew that you cannot see in or behind these materials. Remove particle board, wallpaper, carpeting that is moldy or that cannot be dried thoroughly within 24-48 hours of getting wet.
- Fix water leaks, dampness and moisture problems in your home as these can lead to mold growth.
- Keep drip pans in air conditioner and refrigerator clean and dry.
- Keep humidity levels in the house below 50% (usually with air conditioning). Consider a dehumidifier if you have high humidity.
- Change air conditioner filters every month. Keep windows and doors closed.

- Watch outdoor mold count reports—stay indoors or wear a mask when counts are high. For mold counts, see: <https://www.aaaai.org/Tools-for-the-Public/Allergy,-Asthma-Immunology-Glossary/Mold-Counts-Defined>.
- Avoid walking through uncut fields, raking leaves, or working with hay. Avoid being outside while grass is being mowed.
- Follow mold counts and reduce outside time when mold counts are high.



Pollens (tiny particles in the air given off by plants including trees, weeds and grasses)

- Watch outdoor pollen counts—if high try to stay indoors or wear a mask. Wear a respirator or N95 mask when outdoors with high pollen counts or likely high exposure from mowing or gardening.
- Go to www.pollen.com/Pollen.com.asp to track pollen levels or watch on your local news or weather channels.
- Reduce or avoid outdoor activity when pollen counts are high. If possible, stay indoors during mid-day and afternoon hours when pollen counts are highest.
- Shower and wash your hair at bedtime and/or after working outside; remove your work clothes to wash. Leave footwear at the door and clean pets after walking outside to decrease pollen transfer.
- Don't hang clothes outdoors. Pollen may cling to laundry.
- Put air conditioner on re-circulate air in the car to avoid bringing pollen in.
- Keep windows closed when driving or riding in a car.
- Change air conditioner filters monthly—use high-efficiency particulate air (HEPA) filters if possible.

Pests (such as cockroaches and rodents)

- Do not leave out food, and store leftovers in airtight containers.
- Do not leave out garbage. Store it in covered containers and take it out daily.
- Wash and dry dishes, pots & pans, kitchen counters promptly. Keep surfaces and floors clean and free of clutter.
- Don't store paper bags, newspapers, or cardboard boxes in your home.
- Use baits, boric acid, or traps. Fix any water leaks. Seal plumbing openings, cracks, and crevices.

- If using pest sprays, try to limit spraying to the infested areas. Follow instructions on label. Allow room to air out well after spraying. Make sure the person with asthma is away from the room when spraying and for 8-10 hours after.

Animals (furry or feathered such as dogs or cats)

There is no such thing as a hypoallergenic (allergen-free) pet. If you are allergic to a pet with fur or feathers, you are allergic to a protein in their urine and saliva. There is no evidence to suggest that pets with certain types of fur or shed less are safe for those with pet allergy.

- Keep pets out of the bedroom and other sleeping areas at all times.
- Keep pets off fabric-covered furniture, carpet, and stuffed toys.
- Wash your pet weekly with warm water and soap.
- Use high efficiency particulate air (HEPA) air filters for air conditioners. Change filters monthly.

Action Steps:

You can manage asthma to avoid problems.

Take action by:

- ✓ Knowing your triggers and avoiding them as best you can.
- ✓ Talk to your healthcare provider about ways to manage your allergies.
- ✓ Take your asthma medicines as prescribed and follow your asthma action plan.
- ✓ Keeping regular follow-up with your asthma specialist and primary care provider.

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Resources:

American Thoracic Society

- www.thoracic.org/patients

Centers for Disease Control (CDC)

- <https://www.cdc.gov/asthma/triggers.html>

Asthma and Allergy Foundation of America

- <https://www.aafa.org/asthma-triggers-causes/>

American Lung Association

- <https://www.lung.org/lung-health-and-diseases/lung-disease-lookup/asthma/living-with-asthma/managing-asthma/reduce-asthma-triggers.html>

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Mold-Specific Concerns Associated with Water Damage for Those with Allergies, Asthma, and Other Lung Diseases



After natural disasters such as hurricanes, tornadoes, and floods, excess moisture and standing water may contribute to the growth of mold and other microbial contaminants in homes and other buildings. Sewage contamination increases these risks. When returning to a home that has been flooded, be aware that mold may be present and may be a health risk for you or your family.

Q: How do I know if my home has mold?

Often, mold can be seen and smelled. If you answer yes to one of the following questions, your home may have excess mold:

1. Do the walls and/or ceiling show signs of visible mold growth or water damage?
2. Do you smell a bad odor, such as a musty, earthy smell or a foul stench?

Note that mold may not always be seen or smelled, and will require testing to detect. Testing should be done by a certified industrial hygienist (CIH). A list of qualified CIH professional is available on the American Industrial Hygiene Association (AIHA) website at: <https://www.aiha.org/public-resources> or through your local health department.

If you do choose to hire a CIH to conduct testing for mold, you may wish to ask the following questions:

1. What services do you provide?
2. What is your timeline from inspection to final report?
3. What fees do you charge?
4. What does your scope of work include or exclude?
5. Which lab do you use and is it AIHA accredited?
6. How many projects of this nature have you performed?

There are also home kits available to test for mold, but more research is needed to determine the accuracy of these kits.

Top Health Considerations for Entering a Flooded Home

1. Electricity and gas should be turned off immediately to avoid shock and gas leak. (For information on how to do this, go to http://www.redcross.org/images/MEDIA_CustomProductCatalog/m4540081_repairingFloodedHome.pdf).
2. Consider all mud and water that has entered the home to be contaminated. Wear personal protective equipment (preferably N95 mask or other approved respirator, gloves, goggles) as you re-enter the area and until cleanup is complete.
3. Soiled or saturated porous materials such as carpets, carpet pads, and furniture should be discarded to prevent mold and other microbial growth.
4. Solid materials can be cleaned with water and detergent. Use extreme caution if using bleach. Read labels on household cleaners and avoid mixing them together.
5. If you know or suspect your home contains lead or asbestos, do not attempt remediation without first calling 1-800-424-LEAD or the EPA TSCA Assistance Service at 202-554-1404 for asbestos.
6. Become aware of conditions that would place you at increased risk of adverse health effects should you come into contact with contaminated water (pregnancy, chronic lung diseases such as asthma and emphysema, older age, immunocompromised state).
7. Know who to contact should you develop symptoms consistent with mold exposure (e.g., cough, shortness of breath, fevers). This may include your primary care provider or local health department.

Q: Why should people with allergies or lung problems avoid mold?

People with asthma, allergies, or other respiratory conditions may be more sensitive to mold. People with immune suppression (such as people with HIV infection, cancer patients taking chemotherapy, patients on immunosuppressive medications, and people who have received an organ transplant) are more susceptible to fungal infections. Therefore, if you are allergic to mold or have asthma, being around mold may make your condition worse. ***If you have a chronic lung condition or a weakened immune system, you could develop fungal infections in your lungs, and you should try to avoid buildings contaminated with mold. Even if you do not have underlying allergies or lung problems, exposure to mold can result in respiratory symptoms and lung conditions.***

Q: What are the symptoms of mold sensitivity?

Symptoms of mold sensitivity can occur early or late following exposure. Early symptoms (within hours of exposure) include stuffy nose, irritated eyes, or skin irritation. Shortness of breath, cough, and wheezing can also occur quickly and may be more likely to occur in people with a history of asthma or emphysema (COPD). Late symptoms (days to weeks following exposure) may include signs of infection including fever, productive cough, shortness of breath and weight loss. If you or your family members have health problems after exposure to mold, contact your healthcare provider.

Q: How do I prevent mold growth?

Controlling moisture in your home is the most critical factor for preventing mold growth. Clean up and dry out your home as quickly as possible using these steps:

- Open doors and windows.
- Use fans, air conditioning units, and dehumidifiers (if available).
- Clean wet items and surfaces with detergent and water.
- Remove and discard items that cannot be washed and disinfected (such as mattresses, carpeting, carpet pads, rugs, upholstered furniture, cosmetics, stuffed animals, baby toys, pillows, foam-rubber items, books, wall coverings, and most paper products).
- Remove and discard drywall and insulation that has been contaminated with sewage or flood waters.
- Thoroughly clean all hard surfaces (such as flooring, concrete, molding, wood and metal furniture, countertops, appliances, sinks, and other plumbing fixtures) with hot water and laundry or dish detergent.



N95 Mask

Q: How do I protect myself while cleaning up mold?

- Buy an N95 mask or other respirator at your local home supply store and wear it. If available, wear rubber boots, rubber gloves, and goggles (protective eyewear).
- Mark the area clearly to alert other people that the area may be contaminated.
- After completing the cleanup, wash your hands with soap and warm water.
- If you have a chronic lung condition or weakened immune system it is best to enlist others to help clean up as you should avoid exposure to mold.
- Never mix bleach with ammonia or other household cleaners. Mixing bleach with ammonia or other cleaning products may produce dangerous, toxic fumes.
- Always read the labels and use cleaning products carefully.
- Seek immediate medical attention if you become injured or ill.

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For More Information

American Thoracic Society (ATS)

- <https://www.thoracic.org/patients>

Centers for Disease Control & Prevention (CDC)

- <https://www.cdc.gov/disasters/floods/cleanupwater.html>
- <https://www.cdc.gov/disasters/mold/>

Environmental Protection Agency (EPA)

- <https://www.epa.gov/mold/ten-things-you-should-know-about-mold>

American Industrial Hygiene Association (AIHA)

- <https://www.aiha.org/public-resources>

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How is Asthma Treated?

Once you are diagnosed with asthma, it is important to work closely with your healthcare provider to control your asthma. This fact sheet describes commonly used asthma medicines and other actions you can take to control asthma.

Your Asthma Action Plan

An Asthma Action Plan is a tool that you and your healthcare provider develop to help you manage your asthma. It will list your medicines, when you should take them, and how to monitor your breathing and asthma control.

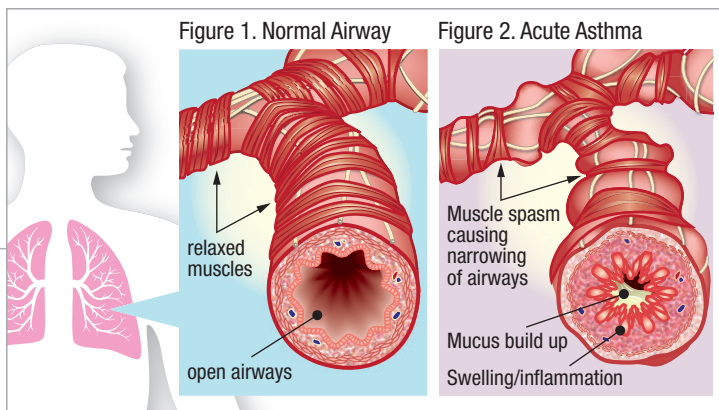
With asthma, there are two main problems: swelling (inflammation) of the airways, and tightening of the muscles around the airways (bronchoconstriction). Different medicines used to control asthma are designed to address both of these issues, making it easier to breathe. These medicines come in multiple forms, including inhalers, pills, and injections (shots). It is important to use your medicines exactly as instructed by your healthcare provider. You will be given a “rescue” inhaler (see below), and your healthcare provider will help you decide if you need any other types of medicine for your asthma.

Inhaled medicines

These most often come in the form of inhalers (sometimes called puffers), which release a dose of medicine to breathe in when you activate them. Inhaled medicine may also be given using a machine called a nebulizer, which turns liquid medication into a mist that you inhale. It is important for you to review with your healthcare provider or pharmacist the correct way to use each medicine. Remember to rinse your mouth after each use of inhalers that contain inhaled steroids.

- **Short-acting inhaled medicines**—also known as rescue or quick relief inhalers

Short-acting medicines for asthma are bronchodilators that relax the muscles around the airways. The most common types are the short-acting beta agonists, albuterol or levalbuterol. A



second type is the short-acting anti-cholinergic medicine ipratropium, which is often paired with another medicine. When used correctly, they usually start to work within 10 minutes to improve your breathing. You should keep one of these inhalers with you at all times.

- **Long-acting inhaled medicines**—It is important to work closely with your provider regarding the most appropriate frequency of long-acting inhaled medications for you, based on the severity and characteristics of your asthma. These are sometimes called controller medications. They work over time to keep your airway swelling (inflammation) and tightening under good control long-term.
 - ◆ **Inhaled steroids**
These treat swelling (inflammation) in the airways and keep the airways open. Examples: beclomethasone, budesonide, ciclesonide, flunisolide, fluticasone, mometasone.
 - ◆ **Long-acting bronchodilators**
These come in two categories:
 - Long-acting beta agonist—Used together with inhaled steroids to keep the airways open and improve asthma control. Examples: salmeterol, formoterol, vilanterol.
 - Long-acting anticholinergic—May be added for better control of asthma, to relax the muscles around the airways and decrease mucus production. Examples: tiotropium, umeclidinium.

Oral (pill) medications

- Leukotriene modifying medications may be used in addition to your inhaled medications, particularly if you have allergies. They do not work quickly and should not replace your inhaler(s). Examples: montelukast, zafirlukast, zileuton.
- Oral steroids, most commonly prednisone, may be used to treat a flare of your asthma, in order to reduce the swelling in your airways that makes it hard for you to breathe.

Injections

If your asthma is not well controlled using inhaled and oral medications, your asthma specialist may recommend additional medicines. These medicines affect parts of your immune system that may be contributing to your asthma symptoms. They are selected based on test results. Examples of these medicines include omalizumab, benralizumab, mepolizumab, and dupilumab.

Besides medicines, what else can I do to help control my asthma?

Taking an active role in the management of your asthma by partnering with your healthcare provider will help you to breathe easier. It is important to follow your asthma action plan and take your medicines as prescribed. There are other things you can do to help manage your asthma. These include:

- Thinking about your environmental triggers
- Avoiding irritants like tobacco smoke or vape
- Managing your allergies

Irritants and Triggers

Identify which exposures and experiences seem to trigger your asthma so that you can avoid them when possible. It may be helpful to keep a journal of your activities and symptoms to help find patterns. It is very important to avoid exposure to or stop any smoking or vaping.

Lifestyle

Regular exercise is an important part of managing your asthma and staying healthy. It can also help to decrease stress. Talk to your healthcare provider about how to exercise safely with asthma. You may also consider learning more about ways to control any excess stress, as stress can contribute to your asthma symptoms.

Vaccinations

Get a flu shot (vaccine) every year to prevent the flu or reduce the severity of the flu. You may also ask

your healthcare provider if a pneumococcal vaccine to prevent a type of bacterial pneumonia is right for you.

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Rx Action Steps

- ✓ Talk to your asthma specialist or primary healthcare provider to develop an Asthma Action Plan.
- ✓ To get the most benefit from your inhalers, be sure that you are using them correctly. Show your healthcare provider and/or pharmacist how you use them to get feedback.
- ✓ Keep a rescue inhaler with you at all times.
- ✓ Know your asthma triggers and take steps to minimize exposure to them.
- ✓ See your healthcare provider regularly. Ask how often you need to follow-up. Asthma visits may include breathing tests, reviewing your Action Plan, and making sure you are up to date on vaccines.

Healthcare Provider's Contact Number:**Resources****American Thoracic Society**

- www.thoracic.org/patients/
 - Using your Metered Dose Inhaler
 - Quick-relief Bronchodilators
 - What is Asthma?
 - Asthma and Exercise

National Heart, Lung, & Blood Institute (NHLBI)

- <http://www.nhlbi.nih.gov/health/health-topics/topics/asthma/>

American Lung Association (ALA)

- <http://www.lung.org/lung-disease/asthma/>

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PATIENT EDUCATION | INFORMATION SERIES

Treating Asthma Symptoms with Quick Relief Bronchodilators: Prescription or Over-The-Counter Inhalers

Asthma is a chronic lung disease. When a person has asthma, he or she can have serious airway symptoms that may come on quickly. The most common symptoms of asthma are coughing, wheezing (whistling sound when you breathe), chest pain or tightness, and/or shortness of breath. This fact sheet will focus on using quick relief bronchodilators for treating asthma flare-ups. For more detailed information about asthma, see ATS Patient Information Series fact sheet on Asthma at <http://www.thoracic.org/patients>.



Coughing can be the first sign of an asthma problem. Symptoms may be intense right away or can get worse over time. These symptoms can be scary and need treatment right away. A common treatment for symptom flare-ups is a quick relief bronchodilator (bron-ko-die-lay-tor).

What are quick relief bronchodilators?

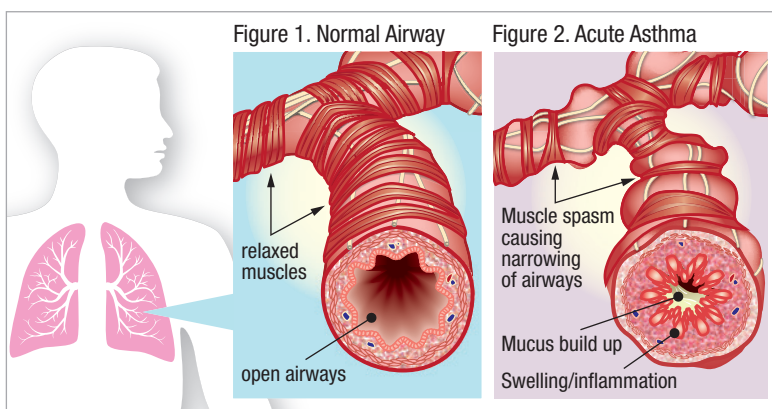
When you are having asthma symptoms or are having an asthma attack (flare-up), you need to treat your symptoms with quick relief medicines that can give fast, but not lasting relief by relaxing the airway muscles.

These medicines are inhaled using a metered dose inhaler (MDI), dry powder inhaler, slow mist inhaler (SMI), or a nebulizer (mist formed from liquid medicine in an air compressor). Inhalers work best if used with a valved holding chamber (spacer). A prescription is needed for nebulizers and spacers.

The most commonly used bronchodilators are beta-agonist medicines and include albuterol (inhaler brand names include ProAir® HFA, ProAir Respiclick®, Proventil® HFA, Ventolin® HFA) and levalbuterol (inhaler brand name Xopenex HFA®). These are available only by prescription. They start to work within a few minutes and can last for up to 4-6 hours. All types are also available as nebulizer liquid.

Another type of bronchodilator used at times is anti-cholinergic medicine. Ipratropium comes as a MDI or liquid for the nebulizer (brand Atrovent®). It also is available in combination with albuterol as a MDI (brand Combivent®) or liquid for nebulizer (Duoneb®).

A prescription is required and your healthcare provider can help decide if this is something for you to try.



In 2018, the US FDA approved another kind of beta-agonist bronchodilator, inhaled epinephrine (brand Primatene® Mist HFA), as an MDI inhaler to treat acute asthma symptoms. Inhaled epinephrine is different from the other beta-agonist medicines in several ways, including:

- A person can buy this medicine without a prescription (over-the-counter).
- It acts quickly but does not last as long as the prescription medicines.
- It is more likely to cause side effects such as rapid heart rate.
- The FDA approved its use for people who are 12 years and older.
- The FDA approved its use only by people who have mild asthma with intermittent (not regular) asthma symptoms. People who have persistent (chronic or long-lasting) asthma or have had repeated asthma attacks can benefit from daily controller medicines that help prevent problems.

A similar drug, racepinephrine (brand names Asthmanefrin® and S2®), is available as an inhaled solution over-the-counter. Like epinephrine, it does not last as long and can have more side effects. It is approved for use only with mild asthma in adults and children 4 years and older.

If you need to use a bronchodilator regularly or are not getting relief of your symptoms, you need to seek medical care. Quick relief medicines treat symptoms, but not the airway problems that cause the symptoms in the first place. Even people with mild asthma can have a severe flare-up that can be life threatening.

What are possible risks or side effects of using quick relief bronchodilator medicines?

Any inhaled bronchodilator can cause side effects. Side effects are more likely to occur with higher doses or with more frequent use.

Inhaled epinephrine (Primatene Mist®) is more likely than beta-agonist medicines to cause:

- Increased blood pressure
- Increased heart rate. This may be more of a concern for people who have heart disease or hypertension (high blood pressure) and could even lead to a heart attack or stroke.
- Nervousness, sleeplessness, shakiness (tremor), and seizures.

Using inhaled epinephrine can also cause problems if you:

- Have certain health conditions
- Take certain medicines
- Eat or drink foods or beverages containing caffeine.

Check with your healthcare provider or pharmacist about whether it is safe for you to use inhaled epinephrine. They can also tell you about possible risks and side effects of other medicines you may be taking. Your pharmacist may recommend that you see your doctor to discuss the need for prescription asthma medicines.

Can asthma be controlled?

Yes, asthma CAN be controlled. Work with your healthcare provider to create your Asthma Action Plan. See your healthcare provider at least once a year for your asthma check-up. During your checkup, you will review your overall asthma control, solve any problems with your treatment, discuss how you can avoid future symptoms, problems, and have a better quality of life.

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Rx Summary and Action Steps

- ✓ Quick relief bronchodilators can give quick but not lasting relief of intense symptoms of asthma like cough or wheezing.
 - ✓ Make sure you know how to use your inhaler or nebulizer correctly.
 - ✓ Asthma can be controlled. You should get help to avoid symptoms that can affect your quality of life.
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- ✓ Seek emergency care if you are having distress and difficulty breathing or are not getting better in 20 minutes after using a quick relief bronchodilator.
 - ✓ See your healthcare provider right away if:
 - Your asthma symptoms are getting worse,
 - You need more to use a quick relief bronchodilator for more than 24 hours for an asthma flare-up every 4-6 hours (day and night), or have more than two asthma attacks in a week. These may be signs that your asthma is getting worse.
 - ✓ Talk to your healthcare provider if you have symptoms that are affecting your quality of life, such as:
 - You are not able to do your normal daily activities because of your asthma, and/or
 - You have symptoms of asthma regularly (every week or several nights a month)
 - You have had repeated asthma attacks or have had to go to an urgent care or emergency room or stayed in the hospital because of asthma.

Healthcare Provider's Contact Number:

Resources

American Thoracic Society (ATS)

<http://www.thoracic.org>

- Asthma
- Asthma and Exercise
- Breathlessness

National Asthma Education Prevention Program (NAEPP)

https://www.nhlbi.nih.gov/files/docs/public/lung/asthma_actplan.pdf

This information is a public service of the American Thoracic Society. The content is for educational purposes only. It should not be used as a substitute for the medical advice of one's health care provider.



Asthma and Exercise for Children and Adults

Exercise is for **EVERYONE**.

Regular exercise is an important part of a healthy lifestyle.

While exercise is good for you, exercise is also a common trigger of asthma. When asthma is well controlled, you should not be limited in your activity levels. By working with your healthcare provider, you can make a plan that will allow you to feel good and take part in normal activities and exercise.



What is exercise-induced asthma?

Most people who have poorly controlled asthma will have symptoms with exercise. Some people may have asthma symptoms that are only brought on by exercise. This form of asthma is called exercise-induced asthma (or EIA). Common symptoms of asthma that can occur with exercise are coughing, wheezing, shortness of breath, chest pain or tightness, tiredness, and difficulty keeping up with others.

Asthma symptoms can occur during vigorous activity, but usually start 5-10 minutes after stopping the activity. Sometimes symptoms of asthma can return hours later. Whether exercise brings on asthma symptoms may depend on how long you are active, how intense the activity is, and the environment where you exercise. Very intense sports such as swimming, soccer, and long-distance running are most likely to cause asthma symptoms but do not always need to be avoided since the symptoms can usually be controlled.

Asthma symptoms may occur with exposure to triggers in the environment where exercise is taking place. For example, a person may breathe comfortably indoors on a basketball court, but will have asthma symptoms when running in a grassy field or ice skating in cold weather. Triggers that can be a problem include outside temperature, humidity, air pollution, pollen or molds in the air, and chemical fumes including those found at some ice rinks and pools. The triggers that affect you, may be different from triggers that affect someone else.

How can I prevent asthma problems with exercise?

To stay active with asthma, or to become more active, these steps can help:

- Identify your exercise-induced asthma triggers,
- Take your pre-treatment asthma medicine at least 15–30 min before exercising,
- Warm up before exercise, and
- End with a cool-down exercise.

How do I identify and control my exercise-induced asthma triggers?

- If cold air triggers your asthma, you can try wearing a scarf or cold weather mask over your nose and mouth to warm the air. Try to breathe through your nose when exercising.
- If you have allergies to any molds or pollens, check mold or pollen counts and avoid outdoor activity when the counts are very high.
- Avoid exercising close to traffic due to car and truck exhaust.
- Air pollution levels are usually highest during the midday or afternoon. Ozone is a common outdoor air pollutant in the summer months. When the levels are high, you should avoid outdoor activities. Check the Air Quality Index updates in your local newspaper, television or radio weather reports. Air quality information for many U.S. cities is also available on the Environmental Protection Agency (EPA) AIRNow website (<http://www.airnow.gov>).

What are pre-treatment asthma medicines?

There are several kinds of medicine that can be given before exercise to prevent symptoms during exercise.

The two main types are: bronchodilators and anti-inflammatory medicines.

Bronchodilators (medicines that open your airways by relaxing the muscles around your breathing tubes). There are short-acting and long-acting bronchodilators. Your healthcare provider will help you decide if a long-acting bronchodilator would be helpful for your asthma control and how its use might change your pre-treatment plan.

Short-acting beta-agonist bronchodilators include albuterol and levalbuterol. Ipratropium is a short-acting anti-cholinergic bronchodilator that is also used at times for exercise pre-treatment. You should take your short-acting bronchodilator 15–30 minutes before starting to exercise. It will not last longer than 4–6 hours.

Anti-inflammatory medicines (medicines used to prevent swelling in your breathing tubes). These include both corticosteroid (such as budesonide, ciclesonide, fluticasone, mometasone) and non-steroid medicines (such as montelukast and zifirlukast). Anti-inflammatory medicines are usually taken on a regular schedule to control your asthma. They are called “controller medicines”. You may not notice any immediate improvement when you use these medicines. They can take time to work. If you have regular asthma symptoms (more than twice a week during the day or twice a month at night) you should talk to your healthcare provider about using a controller medicine.

Why is it important to do warm-up and cool-down exercises?

Spending 5 to 10 minutes warming-up before exercising can help to prevent asthma symptoms during exercise. During warm up exercise, begin walking slowly and slowly increase activity or speed over 3-5 minutes. Slowly cooling down for 5 to 10 minutes after exercising can help prevent asthma symptoms that might start after exercising. Your cool down activity can be walking or stretching.

What do I do if I have symptoms when I exercise?

Even if you use your bronchodilator medicine before exercise, asthma symptoms can occur during exercise. If they do occur, you should slow down your exercising. If symptoms continue to get worse, you may need to use your quick-relief medicine like albuterol. Even if you took this medicine before exercising, it is OK to take it again to relieve your symptoms. If you feel your breathing is limiting your ability to exercise, tell your healthcare provider.

Is my fitness level important?

If you are overweight or have not been getting regular exercise, you may be out of shape or in poor physical condition. Poor conditioning can make a person feel out of breath and be confused with asthma symptoms. Lack of physical fitness makes exercise seem harder and a person may feel out of breath sooner. It takes time and effort to build physical fitness and get in good shape. Make a plan to get in good condition gradually.

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R_x Action Steps

- ✓ Make a plan to be active and exercise regularly.
- ✓ Talk with your healthcare provider before starting an exercise program to be sure you are stable enough and your and your plans for exercise are right for you.
- ✓ Do a gradual warm-up before exercise and a cool-down after exercising.
- ✓ Ask about the use of asthma medicines to help prevent breathing problems while exercising.
- ✓ Check the environment for asthma triggers before exercising.

Healthcare Provider's Contact Number:

Resources:

American Thoracic Society

- www.thoracic.org/patients
 - How is Asthma Treated?
 - Exercise and Lung Disease
 - Using Your Metered Dose Inhaler

National Heart, Lung and Blood Institute

- Asthma and Physical Activity in the School
<http://www.nhlbi.nih.gov/health/resources/lung/asthma-physical-activity>

Bam! Body and Mind—Meeting the Challenge: Don't let asthma keep you out of the game

- www.cdc.gov/bam/activity/challenge-asthma.html

Exercise-induced asthma

- <https://myhealth.alberta.ca/health/Pages/conditions.aspx?hwid=hw161742&#hw161742-sec>

Asthma UK

- <http://www.asthma.org.uk/knowledge-bank-exercise>

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