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WHAT IS ASTHMA?

We know a lot more about asthma today than we did just a decade ago, and we have a much better understanding of how to treat it.

BASIC FACTS ABOUT ASTHMA

- **Asthma is a lung disease.** It's a physical and medical problem that needs treatment. It's not something that you imagined or made up. Don't let anyone tell you your asthma is just in your head. It's in your lungs, and it's real.
- **Asthma is serious.** A person can die during an asthma attack. That's why knowing how to take care of your asthma and when to get emergency help is so important.
- **Asthma doesn't go away and it can't be cured.** Once you develop asthma, you're likely to have it for a lifetime. Even when you have no symptoms—even when you're feeling just fine—the asthma is still there and can flare up at any time.
- **Asthma can be managed.** Like diabetes and high blood pressure, asthma takes ongoing monitoring and management to keep it under control.
- **Asthma symptoms result from ongoing inflammation (swelling) that makes your airways very sensitive and narrower than normal.** Inflammation protects our bodies, but it can also be harmful when it occurs at the wrong time or stays around after it's not needed.
- **The symptoms of asthma are different for different people.** Your symptoms and their frequency can also change.

For more information and resources on lung health, visit NHLBI's Learn More Breathe Better program at nhlbi.nih.gov/BreatheBetter.

ASTHMA

People who have asthma say it feels like breathing through a straw.

SYMPTOMS

Most people who have asthma have one or more of these symptoms:

- ✓ **Coughing.** Coughing from asthma is often worse at night, making it hard to sleep. Sometimes coughing brings up mucus.
- ✓ **Wheezing.** Wheezing is a whistling or squeaky sound when you breathe.
- ✓ **Chest tightness.** This can feel like something is squeezing or sitting on your chest.
- ✓ **Shortness of breath.** Some people say they can't catch their breath, or they feel out of breath—like they can't get enough air out of their lungs.



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HOW ASTHMA AFFECTS YOUR AIRWAYS

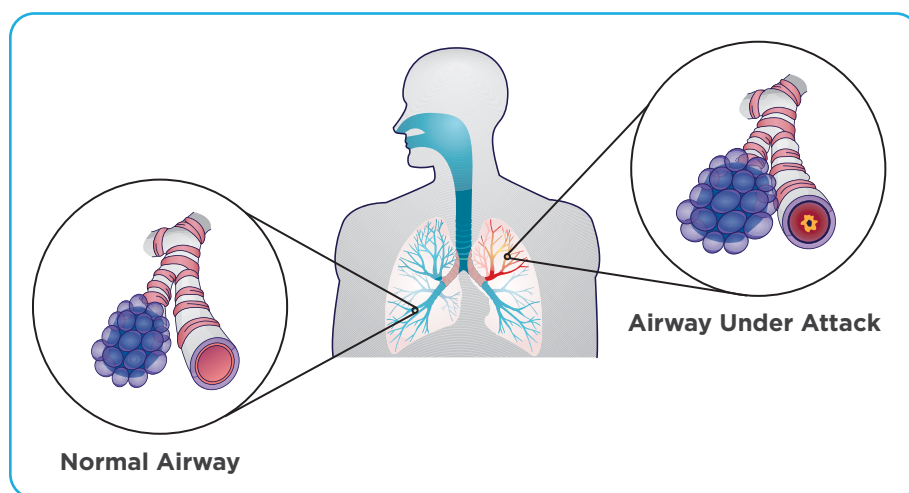
The airways in your lungs are very sensitive to substances, such as tobacco smoke, dust, chemicals, and pollen, or to getting a cold or the flu. We call these asthma “triggers,” because your immune system overreacts to them by triggering the release of cells and chemicals, which cause:

- The inner linings of the airways to become more inflamed (swollen), leaving even less room in the airways for the air to move through.
- The muscles surrounding the airways to get bigger and tighten. This squeezes the airways and makes them smaller. (This is called bronchospasm.)
- Glands in the airways to produce lots of thick mucus, which further blocks the airways.

These changes can make it harder for you to breathe. They also can make you cough, wheeze, and feel short of breath.

If you don't treat asthma-related inflammation, each time you're exposed to your asthma triggers, the inflammation increases and your symptoms are likely to get worse.

Normally, your airway is open, so the air you breathe moves in and out of your lungs freely.



When exposed to your asthma triggers, the sides of your airways swell and the muscles tighten, leaving less room for the air to move freely.

Adapted from American College of Chest Physicians



MANAGING YOUR ASTHMA

Discuss your asthma with your health care provider. Together, you can create a treatment plan that will help you:

- ✓ **Reduce impairment**—so you can keep asthma symptoms away, keep up with your usual daily activities, and sleep through the night.
- ✓ **Reduce risk**—so you can prevent asthma attacks, stay out of the emergency room or hospital, and have fewer side effects from your medicines.

Managing your asthma means working with your health care provider, taking your medicines as prescribed, avoiding your triggers, and watching for any changes in your asthma.



ASTHMA ACTION PLAN

For: _____ Doctor: _____ Date: _____

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

GREEN ZONE	DOING WELL	Daily Medications		
	<ul style="list-style-type: none"> No cough, wheeze, chest tightness, or shortness of breath during the day or night Can do usual activities <p>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: _____</p>	Medicine	How much to take	When to take it
		_____	_____	_____
		_____	_____	_____
		_____	_____	_____
		_____	_____	_____
	Before exercise	<input type="checkbox"/> _____	<input type="checkbox"/> 2 or <input type="checkbox"/> 4 puffs	5 minutes before exercise

YELLOW ZONE	ASTHMA IS GETTING WORSE	Add: quick-relief medicine—and keep taking your GREEN ZONE medicine.		
	<ul style="list-style-type: none"> Cough, wheeze, chest tightness, or shortness of breath, or Waking at night due to asthma, or Can do some, but not all, usual activities <p>-Or- Peak flow: _____ to _____ (50 to 79 percent of my best peak flow)</p>	1st →	_____ Number of puffs (quick-relief medicine)	Can repeat every _____ minutes up to maximum of _____ doses
		2nd →	If your symptoms (and peak flow, if used) return to GREEN ZONE after 1 hour of above treatment:	
			<input type="checkbox"/> 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:	
			<input type="checkbox"/> Take: _____ Number of puffs or <input type="checkbox"/> Nebulizer (quick-relief medicine)	
			<input type="checkbox"/> Add: _____ mg per day For _____ (3-10) days (oral steroid)	
			<input type="checkbox"/> Call the doctor <input type="checkbox"/> before/ <input type="checkbox"/> within _____ hours after taking the oral steroid.	

RED ZONE	MEDICAL ALERT!	Take this medicine:		
	<ul style="list-style-type: none"> Very short of breath, or Quick-relief medicines have not helped, Cannot do usual activities, or Symptoms are same or get worse after 24 hours in Yellow Zone <p>-Or- Peak flow: less than _____ (50 percent of my best peak flow)</p>	<input type="checkbox"/> _____ (quick-relief medicine)	_____ Number of puffs or <input type="checkbox"/> Nebulizer	
		<input type="checkbox"/> _____ mg (oral steroid)		
		Then call your doctor NOW. Go to the hospital or call an ambulance if:		
		<ul style="list-style-type: none"> You are still in the red zone after 15 minutes AND You have not reached your doctor. 		
	DANGER SIGNS	→	<ul style="list-style-type: none"> Take _____ puffs of _____ (quick relief medicine) AND Go to the hospital or call for an ambulance _____ NOW! (phone) 	
	<ul style="list-style-type: none"> Trouble walking and talking due to shortness of breath Lips or fingernails are blue 			

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

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. Keep in mind that controlling any allergen usually requires a combination of approaches, and reducing allergens is just one part of a comprehensive asthma management plan. Here are some tips to get started. These tips tend to work better when you use several of them together. Your health care provider can help you decide which ones may be right for you.

ALLERGENS

Dust Mites

These tiny bugs, too small to see, can be found in every home—in dust, mattresses, pillows, carpets, cloth furniture, sheets and blankets, clothes, stuffed toys, and other cloth-covered items. If you are sensitive:

- Mattress and pillow covers that prevent dust mites from going through them should be used along with high efficiency particulate air (HEPA) filtration vacuum cleaners.
- Consider reducing indoor humidity to below 60 percent. Dehumidifiers or central air conditioning systems can do this.

Cockroaches and Rodents

Pests like these leave droppings that may trigger your asthma. If you are sensitive:

- Consider an integrated pest management plan.
- Keep food and garbage in closed containers to decrease the chances for attracting roaches and rodents.
- Use poison baits, powders, gels, or paste (for example, boric acid) or traps to catch and kill the pests.
- If you use a spray to kill roaches, stay out of the room until the odor goes away.

Animal Dander

Some people are allergic to the flakes of skin or dried saliva from animals with fur or hair. If you are sensitive and have a pet:

- Consider keeping the pet outdoors.
- Try limiting to your pet to commonly used areas indoors.

Indoor Mold

If mold is a trigger for you, you may want to:

- Explore professional mold removal or cleaning to support complete removal.
- Wear gloves to avoid touching mold with your bare hands if you must remove it yourself.
- Always ventilate the area if you use a cleaner with bleach or a strong smell.

Pollen and Outdoor Mold

When pollen or mold spore counts are high you should try to:

- Keep your windows closed.
- If you can, stay indoors with windows closed from late morning to afternoon, when pollen and some mold spore counts are at their highest.
- If you do go outside, change your clothes as soon as you get inside, and put dirty clothes in a covered hamper or container to avoid spreading allergens inside your home.
- Ask your health care provider if you need to take or increase your anti-inflammatory medicine before the allergy season starts.

IRRITANTS

Tobacco Smoke

- If you smoke, visit smokefree.gov or ask your health care provider for ways to help you quit.
- Ask family members to quit smoking.
- Do not allow smoking in your home or car.

Smoke, Strong Odors, and Sprays

- If possible, avoid using a wood-burning stove, kerosene heater, or fireplace. Vent gas stoves to outside the house.
- Try to stay away from strong odors and sprays, such as perfume, talcum powder, hair spray, and paints.

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 must vacuum yourself, using HEPA filtration vacuum cleaners may be helpful.

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



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For more information and resources on asthma,
visit nhlbi.nih.gov/BreatheBetter.

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Asthma



is a serious lung disease



causes chest tightness, wheezing, and coughing



can be controlled with proper treatment

How many people in the U.S. have asthma?

About **1 in 13** people



Data Source: 2017 National Health Interview Survey

Because of poorly controlled asthma, each year about

4 in 9 children miss school



1 in 3 adults miss work



7 in 13 adults limit their activities



Data Source: BRFSS Asthma Call-back Survey, United States, 2012-2014

When you control your asthma, you can lead a full and active life. **You deserve nothing less!**

Work with your health care provider to develop an asthma action plan that includes



How to take your medications



How to track symptoms and triggers



When to see your provider



What to do when you have an attack



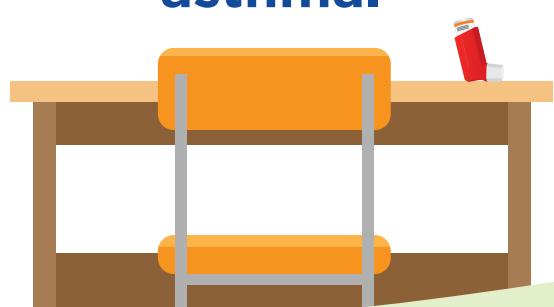
Asthma in Kids

Asthma is the most common chronic disease of childhood.



In an average classroom of **30** kids,

about **3** have **asthma.**



About **4** in **10** children who wheeze when they get colds or respiratory infections will be **diagnosed with asthma.**

An estimated 5 million children in the U.S. have asthma.

Among all U.S. children, asthma affects about:



11% of all children living in poverty

11% of all boys ages 5-14

14% of all Black children

Each year, children with poorly managed asthma have more than:

10 million missed school days



74,000 hospital stays



767,000 trips to the emergency room



Children with asthma may experience:



Coughing



Wheezing



Chest tightness



Shortness of breath

If your child has asthma...

Work with their **healthcare provider** to:

- ✓ Develop an **asthma action plan**
- ✓ Identify and avoid **triggers**
- ✓ Take **medicines** as prescribed
- ✓ Watch for any **changes**

Share the **asthma action plan** with your child's caretakers and school.



Your child can lead a full and active life with proper asthma management.



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ASTHMA MANAGEMENT GUIDELINES AND YOUR CARE

ASTHMA

WHAT ARE ASTHMA GUIDELINES AND HOW DO THEY AFFECT YOUR CARE?

The *2020 Focused Updates to the Asthma Management Guidelines* are designed to improve the care of people living with asthma and also help primary care providers and specialists make informed decisions about asthma management.

These guidelines are based on the best available scientific evidence in selected topics and can be used by your health care provider to develop a treatment plan that is right for you. Health care providers nationwide can use the information to deliver the best possible care—hopefully with the best possible outcomes—to everyone living with asthma.

Asthma care involves not only a proper diagnosis and treatment, but also long-term, regular follow-up medical care that helps achieve and maintain control of your asthma so that you can lead a full and active life.

Work with your health care provider to develop a comprehensive prevention and treatment plan that includes:

- Taking prescribed medications
- Addressing environmental factors that worsen symptoms
- Helping you learn skills to manage your asthma on your own
- Monitoring your care to assess how well it's working and how to adjust, if needed



U.S. Department of Health and Human Services
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National Heart, Lung,
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For more information and resources on asthma,
visit nhlbi.nih.gov/BreatheBetter.

WHO DEVELOPED THE ASTHMA GUIDELINES?

The guidelines were developed by the Expert Panel Working Group of the National Asthma Education and Prevention Program Coordinating Committee, which is coordinated by the National Heart, Lung, and Blood Institute, part of the National Institutes of Health.

The panel included asthma experts (pediatric and adult pulmonologists and allergists, an emergency room physician, and a pharmacist), primary care physicians (pediatric, internal medicine, and family medicine providers), health policy leaders, and experts skilled at helping turn policies into practice. It received support from individuals experienced in the use of a system called GRADE that helps assess scientific evidence. GRADE, which stands for Grading of Recommendations Assessment, Development and Evaluation, provided a way for the panel to rate their recommendations as “strong” or “conditional,” based on the strength and quality of the evidence.

WHY IS IT NECESSARY TO UPDATE THE ASTHMA GUIDELINES?

The original guidelines, published in 1991, were last updated in 2007. Since then, researchers have made much progress in understanding the origins of asthma and how the disease evolves over time. In addition, the U.S. Food and Drug Administration has approved several new asthma treatments.

The new guidelines help health care providers and people with asthma work together to develop a comprehensive management plan based on the most promising, evidence-based treatment options available.



DOES THIS UPDATE REPRESENT A COMPLETE REVISION OF THE EXISTING GUIDELINES?

No. The *2020 Focused Updates to the Asthma Management Guidelines* address health questions in six important areas:

- Intermittent inhaled corticosteroids
- Long-acting muscarinic antagonists (LAMAs)
- Indoor allergen reduction
- Immunotherapy
- Fractional inhaled nitric oxide (FeNO) testing
- Bronchial thermoplasty

Other important aspects of care—such as asthma education and tools to assess asthma control and patient compliance—are not covered.



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**ASTHMA MANAGEMENT
GUIDELINES AND YOUR CARE**

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WHAT DO THE NEW ASTHMA GUIDELINES ADDRESS?

The *2020 Focused Updates to the Asthma Management Guidelines* contain 19 recommendations that address the following areas:

- Intermittent inhaled corticosteroids for people with recurrent wheezing or persistent asthma. This medicine helps control inflammation, or swelling, in your airways over time.
- Use of long-acting antimuscarinic agents (LAMAs) with inhaled corticosteroids for long-term asthma management. A LAMA is a bronchodilator, a medicine that helps to keep airway muscles relaxed.
- The benefit of reducing exposure to indoor allergens (such as house dust mites or pet dander) when a person has a known sensitivity to a specific allergen.
- The role of immunotherapy for some people with allergic asthma. Immunotherapy may make your body less sensitive to allergens (such as grass or ragweed pollen).
- The value of fractional exhaled nitric oxide (FeNO) testing to manage asthma or help confirm an asthma diagnosis in some patients when a diagnosis is unclear. FeNO testing measures the amount of nitric oxide, a byproduct of inflammation, in the air you breathe out. It is a safe test that can help determine how much inflammation you have in your airways.
- The risks and benefits of a procedure called bronchial thermoplasty (BT) to treat selected adults with severe asthma. BT uses heat to reduce the smooth muscle around the airways that tighten during asthma attacks and makes it hard to breathe.

WHAT ARE THE KEY POINTS?

INTERMITTENT INHALED CORTICOSTEROIDS

- ✓ **In children ages 0-4 years with recurrent wheezing**, a short (7-10 day) course of daily inhaled corticosteroids along with an as-needed short-acting bronchodilator (such as albuterol sulfate) is recommended at the start of a respiratory tract infection.
- ✓ **In people ages 4 years and older with mild to moderate persistent asthma who use inhaled corticosteroids daily**, increasing the regular inhaled corticosteroid dose for short periods is not recommended when symptoms increase or peak flow decreases.
- ✓ **For people ages 4 and older with moderate to severe persistent asthma**, the preferred treatment is a single inhaler that contains an inhaled corticosteroid and the bronchodilator formoterol. This should be used as both a daily asthma controller and quick-relief therapy.
- ✓ **People ages 12 and older with mild persistent asthma** may benefit from inhaled corticosteroids with a short-acting bronchodilator for quick relief. Treatment may include inhaled corticosteroids daily or as needed when asthma gets worse.



LONG-ACTING MUSCARINIC ANTAGONISTS (LAMAs)

If inhaled corticosteroids alone do not control asthma, a health care provider may add a long-acting bronchodilator such as a long-acting beta₂-agonist (LABA) or LAMA.

- ✓ For children under 12 and most people ages 12 and older with asthma that is not controlled by an inhaled corticosteroid alone, adding a LABA rather than a LAMA to an inhaled corticosteroid is preferred.
- ✓ For people 12 years old and older, if a LABA cannot be used, a LAMA may be used with inhaled corticosteroid treatment instead of continuing the inhaled corticosteroid alone.
- ✓ For people 12 years old and older whose asthma is not controlled with an inhaled corticosteroid plus a LABA, adding a LAMA is recommended.

INDOOR ALLERGEN REDUCTION

- ✓ For people with asthma who are sensitive to indoor substances (such as house dust mites), using multiple strategies to reduce the allergen is recommended (such as pillow and mattress covers that prevent dust mites from going through them along with high efficiency particulate air [HEPA] filtration vacuum cleaners). Using only one strategy often does not improve asthma outcomes.
- ✓ Integrated pest management is recommended for those who are allergic and exposed to cockroaches, mice, or rats.
- ✓ These strategies are not recommended for people who are not allergic to indoor substances.

IMMUNOTHERAPY

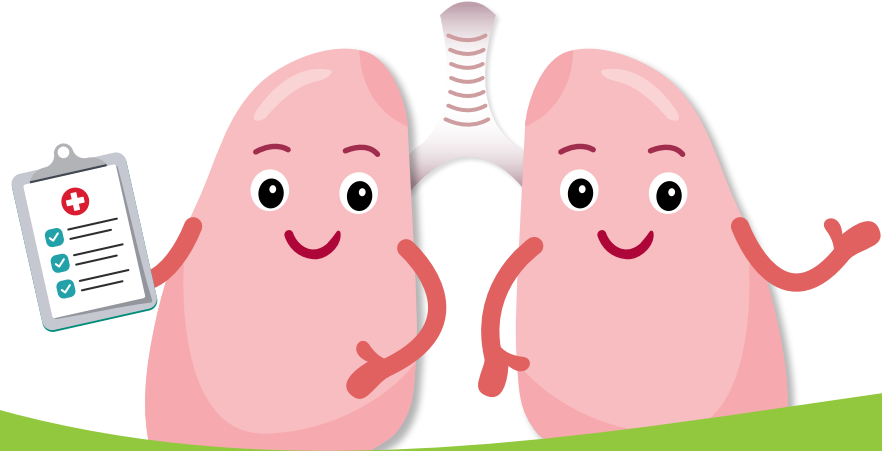
- ✓ Allergy shots, known as subcutaneous immunotherapy, are recommended for people who have allergic asthma and whose symptoms worsen after exposure to certain allergens.
- ✓ Sublingual immunotherapy, which involves placing liquid drops or tablets containing allergens under your tongue, is not recommended for the treatment of allergic asthma.

FRACTIONAL EXHALED NITRIC OXIDE (FeNO TESTING)

- ✓ FeNO testing in individuals ages 5 and older is recommended when either the diagnosis or the approach to therapy is uncertain.
- ✓ FeNO testing should not be used alone to assess asthma control or predict the course of the ailment. In children ages 4 years and younger who have recurrent episodes of wheezing, FeNO measurement does not reliably predict the future development of asthma.

BRONCHIAL THERMOPLASTY

- ✓ Most individuals ages 18 years and older with uncontrolled, moderate to severe persistent asthma should not undergo bronchial thermoplasty because the benefits are small, the risks are moderate, and the long-term outcomes are uncertain.
- ✓ Some individuals with moderate to severe persistent asthma who have troublesome symptoms may be willing to accept the risks of bronchial thermoplasty and, therefore, might choose this intervention after shared decision making with their health care provider.



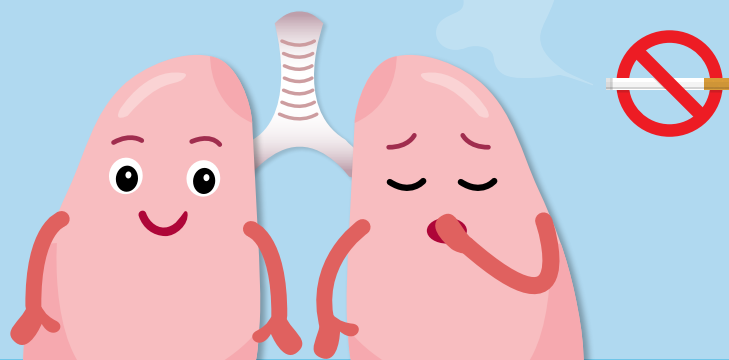
Look Out for Your Lungs:

5 Steps to Keep Your Lungs Healthy

DON'T SMOKE

Quit smoking to reduce:

- The risk of COPD and other conditions
- Lung infections
- Asthma symptoms
- Breathing problems



Avoid secondhand smoke

Steer clear of areas where smoking is allowed.

AVOID AIR POLLUTION

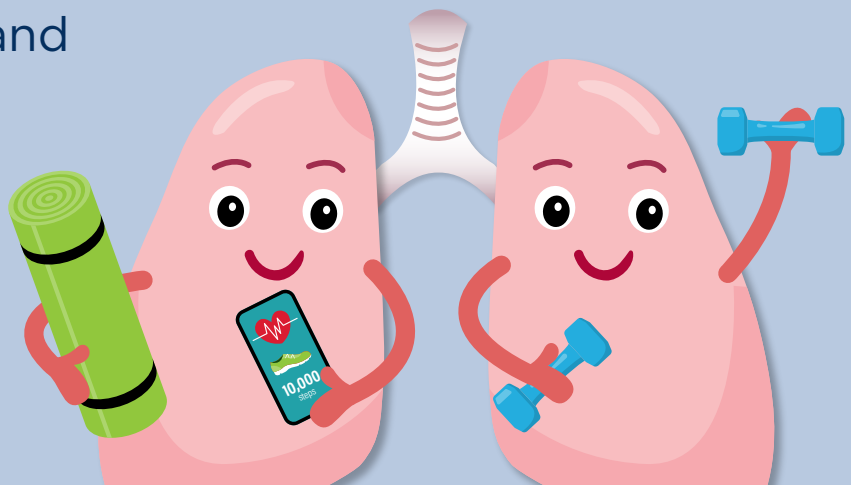
- Use protective gear if you're exposed to pollutants at work
- Ventilate indoor spaces and clean often
- Don't use products with strong odors
- Check outdoor air quality at airnow.gov



BE PHYSICALLY ACTIVE

Exercise to help your lungs and heart work more efficiently:

- Aim for at least 2 ½ hours each week
- Combine moderate and vigorous exercise



AIM FOR A HEALTHY WEIGHT

Maintain a healthy weight and follow a healthy eating plan:

- Set specific, realistic goals
- Exercise with a friend
- Track your progress
- Celebrate when you meet your goals



GET REGULAR CHECK-UPS & STAY UP TO DATE ON VACCINES

Talk to your healthcare provider about:

- Breathing problems
- Tips for quitting smoking
- Any symptoms you notice
- Vaccines for flu, pneumonia, and COVID-19



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REDUCING ALLERGENS IN YOUR HOME

ASTHMA 

Avoiding asthma triggers may help reduce the inflammation in your lungs, reduce symptoms, and reduce your need for emergency relief medication. Indoor allergy triggers, such as dust or animal dander, could affect your asthma if you are sensitive to them, and using a strategy that removes or minimizes these allergens may be helpful.

Your health care provider can help you identify your sensitivities by looking at your medical history or through allergy testing.

Keep in mind that controlling any allergen usually requires a combination of approaches, and reducing allergens is just one part of a comprehensive asthma management plan.

Here are some tips to get started. These tips tend to work better when you use several of them together. Your health care provider can help you decide which ones may be right for you.

ALLERGENS

Animal Dander: Some people are allergic to the flakes of skin or dried saliva from animals with fur or hair. If you are sensitive and decide to have a pet:

- Consider keeping the pet outdoors.
- Try limiting your pet to commonly used areas indoors.

Dust Mites: These tiny bugs, too small to see, can be found in every home—in dust, mattresses, pillows, carpets, cloth furniture, sheets and blankets, clothes, stuffed toys, and other cloth-covered items. If you are sensitive:

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Cockroaches and Other Rodents: Pests like these leave droppings that may trigger your asthma. If you are sensitive:

- Consider an integrated pest management plan.
- Keep food and garbage in closed containers to decrease the chances for attracting roaches and other rodents.
- Use poison baits, powders, gels, or paste (for example, boric acid), or traps to catch and kill the pests. If you use a spray to kill roaches, stay out of the room until the odor goes away.

Indoor Mold: If mold is a trigger for you, you may want to:

- Explore professional mold removal or cleaning to support complete removal.
- Wear gloves to avoid touching mold with your bare hands if you must remove it yourself.
- Always ventilate the area if you use a cleaner with bleach or a strong smell.

Pollen and Outdoor Mold: When pollen or mold spore counts are high you should try to:

- Keep your windows closed.
- If you can, stay indoors with the windows closed from late morning to afternoon, when pollen and some mold spore counts are at their highest.
- If you do go outside, change your clothes as soon as you get inside, and put dirty clothes in a covered hamper or container to avoid spreading allergens inside your home.
- Ask your health care provider if you need to take or increase your anti-inflammatory medicine before the allergy season starts.

IRRITANTS

Tobacco Smoke:

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- Ask family members to quit smoking.
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Smoke, Strong Odors, Sprays, and Fumes:

- Avoid using a wood-burning stove, kerosene heater, or fireplace, if possible. Vent gas stoves to outside the house.
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