

Asthma



 **Breathe**[™]
NEW HAMPSHIRE
Improving lung health since 1916

*“For breath is life,
and if you breathe well,
you will live long
on this Earth.”*

– Sanskrit Proverb



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Chances are you will have a child with asthma in your care or in your classroom.

It is important for adults to take steps to manage children's asthma. This booklet will help you, if you care for a child with asthma in your home, daycare, or school.

Children with asthma need to learn how to control it.

Good asthma control allows a child to be healthy and active with few or no symptoms.

Read more to learn about asthma and how to help children manage their asthma.

Chapter 1:

All About Asthma

The first step to helping children control their asthma is understanding asthma. This chapter will help you understand what it means to have asthma.



What is asthma?

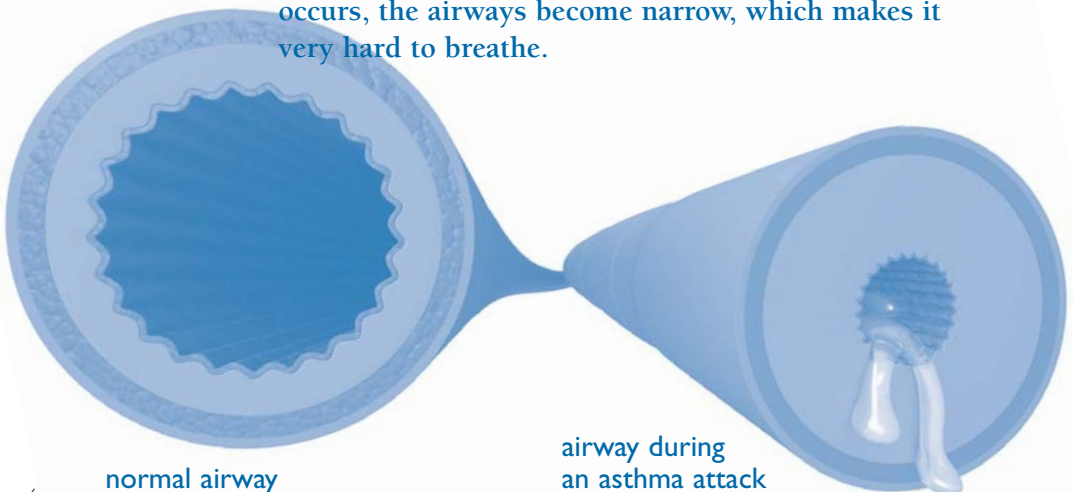
Asthma is a chronic disease of the airways inside the lungs. Although asthma cannot be cured, asthma can be controlled. Good asthma control allows a child to stay healthy and active with few or no symptoms.

When we breathe, we take air in through our nose and mouth. It then goes down our windpipe, through our airways (the tubes that carry air into and out of the lungs), and into our lungs. When we breathe out, the air leaves in the reverse order.

Asthma affects the airways, making the inside walls of the airways inflamed (irritated) all the time. Inflammation makes the airways more sensitive and more likely to react to “triggers.” Triggers are things that a person may be allergic to, or find irritating, such as pollen or tobacco smoke. When children with asthma come into contact with a trigger, their airways react in three ways:

1. The inside lining of the airways becomes more swollen and irritated
2. The muscles around the airways tighten
3. The inside of the airways fills up with extra mucus

This reaction is called an asthma attack. When this occurs, the airways become narrow, which makes it very hard to breathe.



Why do people get asthma?

We do not know the exact causes of asthma, but we know children are more likely to have asthma if:

- It runs in their family
- They were exposed early in life to secondhand smoke, infections, and things that cause allergic reactions

Who is at risk for asthma?

Although asthma affects people of all ages, it often starts in childhood.

What causes an asthma attack?

Asthma symptoms (such as wheezing, coughing, and chest tightness) occur when a child's airways react to triggers or things that can bring on asthma attacks. Not all children with asthma have the same triggers. There are three main groups of triggers:

- 1. Allergens** (things that can cause the body to have a reaction, like sneezing or itchy, watering eyes)
 - Mold
 - Animal dander (flakes of skin from cats, dogs, or other pets)
 - Dust mites
 - Pollen
- 2. Irritants**
 - Tobacco smoke
 - Air pollution
 - Scented products (perfumes, candles)
 - Cleaning products
- 3. Other Triggers**
 - Colds and flu
 - Certain medicines
 - Changes in weather
 - Exercise
 - Strong emotions



How is asthma diagnosed?

Asthma can only be diagnosed by a doctor. Doctors listen to a child's breathing and may use a spirometry test to check how much air the child can breathe out after taking a deep breath. Some of the things that a doctor may talk to a parent and child about include:

- An asthma treatment plan- a written set of instructions to help manage asthma
- Asthma triggers- avoiding triggers throughout the year
- Medicines- how to use them and why they are needed
- Peak flow meter- a handheld tool that measures how well the lungs are working

Chapter 2:

Good Asthma Control

Children can learn how to control their asthma. It is important to prevent asthma attacks. This chapter will help you learn the three steps to good asthma control.





What is controlled asthma?

Children's asthma is controlled if they are not limited in what they can do. Children with asthma should:

- have no limits on activities at work, at play, or at school
- have no nighttime symptoms and sleep through the night
- have few to no symptoms

Why is it important to control a child's asthma?

Uncontrolled asthma can lead to lasting lung damage. Over time, constant airway inflammation can cause scarring, which makes the lungs not work as well. In severe asthma attacks, the airways can close up so much that not enough oxygen gets to the rest of the body. Good asthma control allows a child to be healthy and active with few or no symptoms.

Three steps to good asthma control

1. Know triggers and how to avoid them

Triggers are things that can make asthma symptoms worse. Knowing which asthma triggers are a problem is the first step in managing asthma. Because asthma triggers can be different for everyone, it is important for children and those around them to know which triggers need to be avoided.

2. Use a written asthma treatment plan

An asthma treatment plan or action plan is a step-by-step guide that helps children know what to do when their asthma symptoms get worse. Asthma treatment plans should be reviewed with a doctor at least once a year.

Plans often include information about:

- triggers
- peak flow numbers
- medicines
- steps to take if asthma symptoms get worse
- emergency information

3. Take asthma medicines

Asthma medicines help to prevent and control asthma symptoms. Children with asthma should know:

- names of their medicines
- how to use them in the right way
- why they need medicines

Three steps to good asthma control

3. Take asthma medicines (continued)

There are two main types of medicines for treating asthma:

Long-Term Control Medicines - These medicines reduce airway inflammation or swelling. Inflamed airways make asthma attacks more likely. If children have been prescribed long-term control medicines, it is important that they take these medicines every day even if they are feeling well. Sometimes called corticosteroids, these medicines:

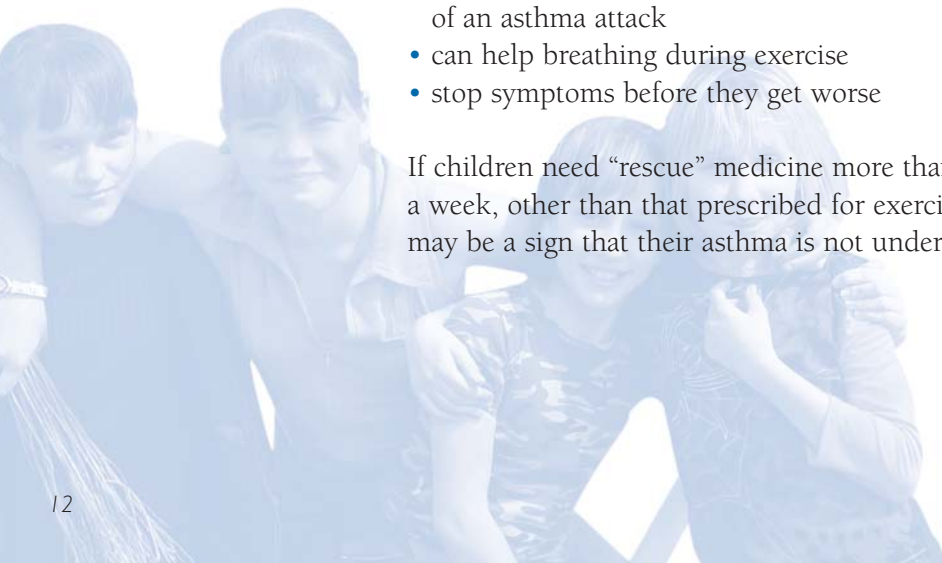
- are often taken every day (inhaled or swallowed)
- control and prevent breathing problems
- reduce airway inflammation

The main goal of long-term control medicines is to prevent breathing problems before they start. If children with asthma stop taking long-term control medicines, their asthma will likely get worse.

Quick-Relief/Rescue Medicines - These medicines stop asthma symptoms before they get worse. Sometimes called “rescue” or bronchodilator medicines, these medicines relax the muscles around the airways. These medicines:

- should be with children at all times in case of an asthma attack
- can help breathing during exercise
- stop symptoms before they get worse

If children need “rescue” medicine more than twice a week, other than that prescribed for exercise, it may be a sign that their asthma is not under control.



Chapter 3:

Using Written Asthma Treatment Plans

An asthma treatment plan is a step-by-step guide that helps children when their asthma symptoms get worse. This chapter explains how plans are used by children, parents, caregivers, and schools in a case of an asthma emergency.

What are the three zones in a plan?

Asthma treatment plans are often broken down into three zones: green, yellow, and red. The zones help you know what to do when a child with asthma has certain symptoms.

Green Zone:

- Asthma is under control and breathing is good
- No coughing, wheezing, chest tightness, or shortness of breath during day or night
- Peak flow (80–100 percent of best peak flow)

Yellow Zone (Caution):

- Asthma is getting worse
- Child is beginning to have asthma symptoms. Common symptoms: coughing (especially at night), chest tightness, wheezing, and shortness of breath
- Sleep and activities may be affected
- Child may feel more tired than usual
- Peak flow (50–80 percent of best peak flow)

Red (Danger):

- Asthma is getting worse fast
- Common symptoms: frequent severe cough, severe shortness of breath, wheezing, trouble talking or walking, skin between ribs or neck is sucked in
- Cannot do usual activities
- Peak flow (less than 50 percent of best peak flow)
- Quick relief/rescue medicines are not helping
- **If lips or fingernails turn pale, gray, or blue, get help immediately and call 9-1-1!**

A written asthma treatment plan should be:

- kept in a place that is easy to find
- shared with all those who care for the child, such as daycare workers, school nurses, teachers, babysitters, and family members
- reviewed with a doctor once a year

How can children with asthma measure their breathing?

Children with asthma can measure their breathing to find out how their lungs are working. One easy tool to use is a peak flow meter.



A peak flow meter measures how fast the air moves out of the lungs. Children with asthma learn what number is normal for them. This is called their “personal best number.” Once they know their personal best number, they can tell when their breathing is in danger.

There are different types of peak flow meters. The same peak flow meter should always be used to measure a child’s breathing. Children, who measure their breathing daily, usually know when their asthma is getting worse.



Directions for using a peak flow meter

1. Remove any gum or food from your mouth.
2. Slide the marker to 0.
3. Stand up straight.
4. Take in a deep breath, fill your lungs up, and hold it.
5. Close your lips around the mouthpiece. Do not put your tongue in the hole.
6. Blow out, as hard and fast as you can in one breath. (Do not bend over.)
7. Find the number where the marker stopped. Record this number.
8. Slide the marker back to 0.
9. Do the test two more times. All three numbers should be close in range.
10. Record the highest number out of three.
11. Your personal best peak flow is the highest number recorded over a two- to three-week period when asthma is under control.



Chapter 4:

Taking Asthma Medicines

Asthma medicines help to prevent and control asthma symptoms. It is important for children with asthma to take their medicines as directed by their doctors. This chapter explains the different ways children can take their asthma medicines.

Inhaled medicines

Asthma medicines are available as inhalers or in pill form. There are three different ways to take inhaled asthma medicines:

1. Metered-dose inhaler (MDI)
2. Dry-powder inhaler (DPI)
3. Nebulizer



MDI inhaler

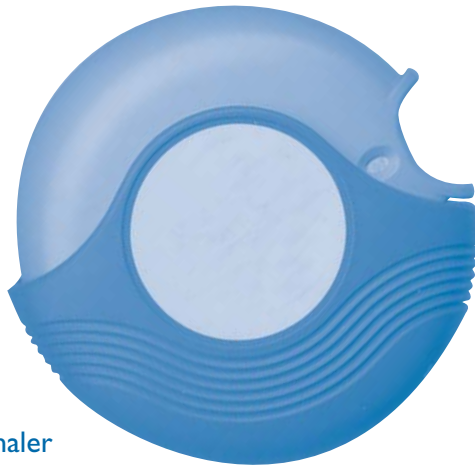
A meter-dosed inhaler or MDI (also called a puffer) sends medicine in a spray directly into the lungs. The medicine helps ease breathing by opening the airways or decreasing inflammation. Using an MDI with a spacer helps a child get the right amount of medicine.



A spacer is sometimes called a holding chamber because it holds the medicine until a child can breathe it in. This makes the inhaler easier to use and helps more medicine get into the lungs.

Directions for using an MDI with a spacer:

1. Read the instructions that come with the MDI and spacer.
2. Stand or sit up straight.
3. Shake the inhaler at least four to five times.
4. Insert the MDI into the open end of the spacer.
5. Breathe out completely to empty lungs.
6. Place the mouthpiece of the spacer between your teeth and seal your lips tightly around it, or place mask to seal over nose and mouth.
7. Press down on the canister once to release the medicine. Breathe in slowly and deeply through your mouth.
8. Hold your breath for at least 10 seconds to allow the medicine to get to your lungs, then exhale. If using face mask, breathe in normally up to five breaths.
9. Wait for about one minute and then repeat these steps for every puff of medicine needed.
10. If using an MDI that is a controller, gargle and rinse your mouth after use.

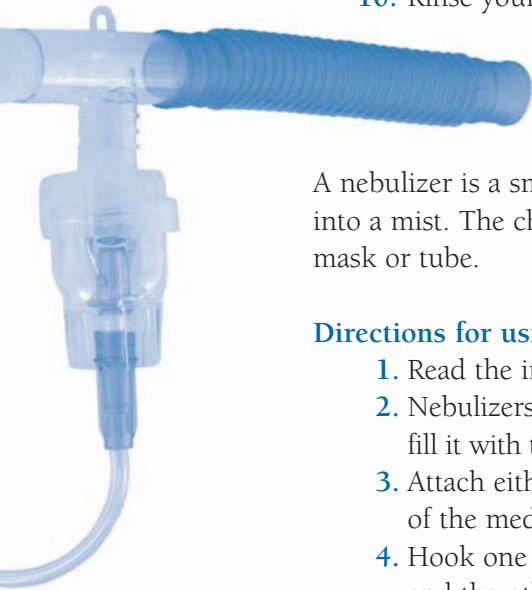


DPI inhaler

Some asthma medicines are in the form of a powder. They are taken using a small, handheld device called a dry powder inhaler, or DPI. Dry powder inhalers send medicine into the lungs when you inhale through the device. Dry powder inhalers are not designed for use with a spacer.

Directions for using a DPI:

1. Read the instructions that came with the DPI.
2. Stand up straight.
3. Hold the inhaler parallel to the floor.
4. Open the inhaler. Mouthpiece should face you.
5. Load a dose into the device as directed. Slide the lever or twist until you hear a click.
6. Breathe out completely to empty your lungs. Do not breathe into the inhaler.
7. Place your teeth over the mouthpiece and seal your lips around it, making sure you do not block the inhaler with your tongue.
8. Breathe in quickly and deeply through your mouth to start the flow of medicine.
9. Hold your breath for at least 10 seconds to allow the medicine to get to your lungs, and then exhale.
10. Rinse your mouth with water.



A nebulizer is a small machine that turns liquid medicine into a mist. The child breathes in the medicine through a mask or tube.

Directions for using a nebulizer:

1. Read the instructions that came with your nebulizer.
2. Nebulizers have a medicine cup. Open the cup and fill it with the medicine, as prescribed by your doctor.
3. Attach either a mouth piece or mask to the end of the medicine cup.
4. Hook one end of the tubing to the medicine cup and the other end to the nebulizer.
5. If using a mouthpiece, seal your lips tightly around the mouthpiece. If using a mask, place the mask firmly to your face to cover your nose and mouth.
6. Turn on your nebulizer.
7. Take slow, deep breaths through the mouth or mask.
8. Continue until all of the medicine is gone (about 10–15 minutes).

Chapter 5:

Managing Symptoms and Attacks

Children can learn how to prevent asthma attacks. This chapter will help you learn the warning signs of asthma and what to do when a child is having an asthma attack.



Asthma attacks rarely occur without warning. Most children with asthma have warning signs (physical changes) before symptoms appear. Warning signs are different from child to child. An attack is easier to stop if medicine is taken as soon as warning signs appear.

What are the common warning signs of asthma?

Common signs may include:

- Chest tightness
- Drop in peak flow readings
- Coughing or waking at night
- Mood changes — feeling irritable
- Dark circles under eyes
- Itchy, watery eyes
- Clearing throat often
- Feeling tired or restless
- Headache or stomachache
- Change in face color (pale or flushed)
- Stuffy or runny nose and/or sneezing

Common complaints you may hear from kids:

- “My chest hurts.”
- “I can’t breathe.”
- “My neck feels funny.”
- “I feel like I’m dying.”
- “I have a tummy ache or headache.”
- “I feel sick.”

What are common symptoms of an asthma attack?

During an attack, it becomes hard to breathe. A child may have any or all of the symptoms listed below:

- Persistent coughing, especially at night, in the morning, or after activity
- Shortness of breath
- Chest tightness (one of the first signs asthma is getting worse)
- Wheezing (a high-pitched whistling sound when breathing out)



Steps to manage asthma attacks

Follow an asthma treatment plan

- Know the child's warning signs and peak flow zones so you can begin treatment early.
- Remove the child from the trigger, if you know what it is. Treatment does not work well if the child is still around the trigger.
- Stay calm. If the child sees that you are upset, it could make the child more nervous and his/her asthma could worsen.
- Give the child the correct amount of medicine as prescribed by his/her doctor. Use the asthma treatment plan as a guide. Always call the child's doctor if more medicine is used than prescribed.
- Measure peak flow numbers 10 minutes after each treatment to see if breathing improves.



When to seek emergency medical care for asthma

- Wheezing, coughing or shortness of breath gets worse even after the child takes his/her medicine. Most quick-relief or rescue medicines work within 10 minutes.
- Peak flow numbers do not improve after treatment with quick-relief medicines or drop to 50 percent or less of personal best.
- If the child's breathing is getting worse or you see any of these signs in a child:
 - ~ Chest skin and neck pulled in with each breath
 - ~ Space between ribs shows
 - ~ Hunching over
 - ~ Struggling to breathe
 - ~ Trouble walking or talking
 - ~ Inability to restart his/her play or activity
 - ~ Lips or fingernails are pale, gray, or blue

If any of these signs are present, seek emergency help right away!

Chapter 6:

Managing Asthma at Daycare and School —

This chapter explains how children, parents, doctors, schools, and caregivers can work together to make sure a child's asthma is always managed properly.

Children who control their asthma:

- sleep well through the night
- avoid anxiety or embarrassment about asthma symptoms
- spend time in the classroom, not in the nurse's office
- study, run, play sports, and fully participate in all school activities

What can parents do?

Prepare your child before going to school or daycare. Depending on your child's age, it is important for him/her to learn:

- Asthma warning signs and symptoms
- How to use a peak flow meter and quick-relief medicine with a spacer
- To keep quick-relief medicine with him/her at all times and have backup with the school nurse
- Triggers and how to avoid them
- How and when to tell an adult if he/she is having problems breathing

Work with your doctor to:

- Create a written asthma treatment plan
- Sign any health forms before school begins
- Get your child a flu shot every year
- Have your child demonstrate correct inhaler use to the doctor, if your child is old enough

Communicate with the daycare/school:

- Provide copies of your child's asthma treatment plan and emergency contact information
- Meet with the school nurse and classroom teachers to discuss:
 - ~ your child's asthma treatment plan
 - ~ how to reach you and your child's doctor
 - ~ triggers found within the school (animal dander, mold, dust)
 - ~ plans for handling treatment during any off-site activities
 - ~ the school's rules regarding asthma medicines

What can schools and daycare centers do?

Children with asthma need support at their daycare or school to be fully active and in control of their asthma. Here are some tips to keep your classroom and school asthma-friendly.



- Use a written asthma treatment plan for every student with asthma
- Have an emergency plan for severe asthma attacks
- Provide education for all staff
- Offer students modified options for physical activity and give time to pre-medicate if needed
- Use low-emission markers and art supplies
- Avoid excess clutter
- Rotate artwork and books to reduce dust and mold
- Organize materials (papers, folders) in clear plastic binders or tubs to help reduce dust and mold
- Use animals and plants for instructional use only, not permanently. Find out if any child is allergic before allowing animals and plants in class
- Allow only vinyl-covered chairs and sofas in classroom
- Do not block ventilation units and make sure they are working properly
- Be fragrance- and perfume-free
- Remain tobacco-free at all times (including school events)

Controlling Asthma Triggers in Your Home

Knowing which asthma triggers are a problem is the first step in managing a child's asthma. Because asthma triggers can be different for every child, it is important for children with asthma and those around them to know their triggers and how to avoid them.

Dust mites

- Remove wall-to-wall carpeting, especially in your child's bedroom; if you use area rugs, wash them regularly in hot water
- Vacuum upholstered furniture and carpeting at least twice a week with a HEPA vacuum cleaner
- Use dust mite-proof covers on mattress and pillows
- Wash bedding every two weeks in hot water
- Keep humidity below 50 percent to reduce dust mite growth
- Avoid comforters, feather pillows, and stuffed animals

Tobacco smoke

- Keep your home and car tobacco-free
- If smokers are present, create a place for smoking outside

Mold

Water and too much humidity make it easy for mold to grow in your home.

- Repair all leaks
- Keep your home dry and well ventilated
- Increase air circulation by opening windows and doors, and using fans
- Use a dehumidifier in basement and bathrooms
- Keep humidity below 50 percent
- Vent clothes dryers to the outside

Pets (if allergic)

- If you cannot remove the pet from your home, keep it outdoors as much as possible and out of your child's bedroom
- Wash pets weekly

Odor and chemicals

- Avoid scented products; choose fragrance-free and environmentally friendly products
- Avoid air fresheners, incense, scented candles, and perfumes
- Use non-toxic household cleaners
- Open a window or use an exhaust fan when cooking on a gas stove

Cockroaches and other pests (rodents)

- Use least toxic pest control methods, such as baits
- Reduce clutter, cover pet food bowls, and clean kitchen surfaces frequently
- Do not leave food out
- Caulk cracks and fill small holes

Pollen and outdoor pollution

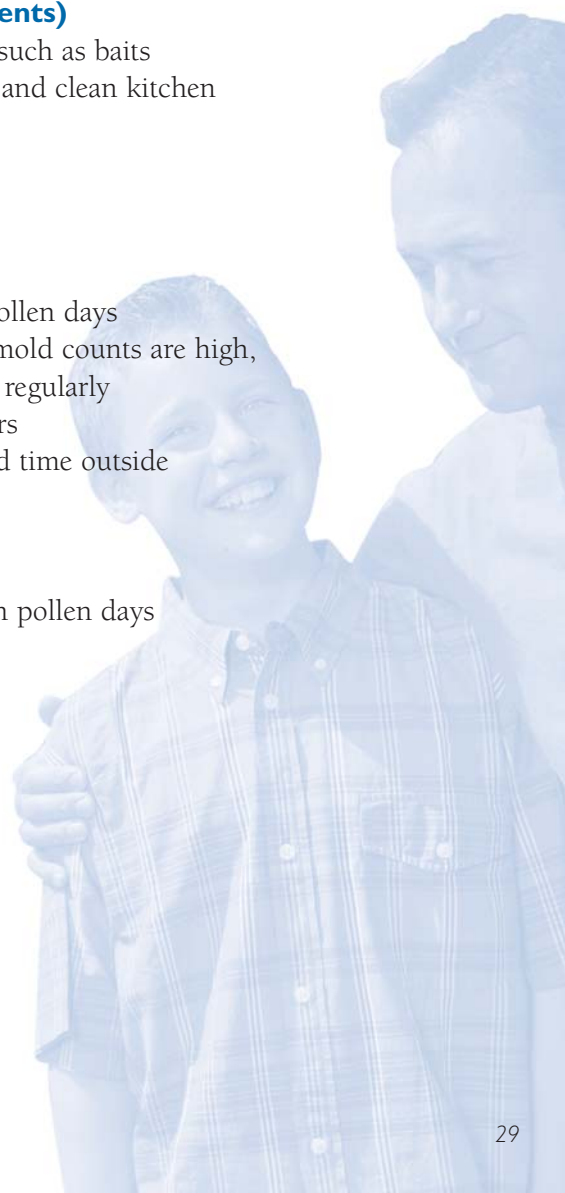
- Keep your windows closed on high pollen days
- Use air conditioning when pollen or mold counts are high, and replace filters on air conditioners regularly
- Avoid hanging laundry to dry outdoors
- Have children shower after they spend time outside to reduce pollen on hair and skin

Exercise

- Avoid exercising outdoors during high pollen days
- Pre-medicate if prescribed
- Avoid high-traffic areas
- Plan warm-up and cool-down time

Illness

- Get a flu shot every year



Asthma Glossary

This glossary includes words that are often used to talk about asthma.

Acute - Quick, short-term, not long-lasting.

Airways - Tubes that take air in from your nose and mouth and move the air to your lungs.

Allergen - Things that can cause the body to have a reaction, like sneezing or wheezing.

Allergy - Sensitivity to certain things such as animals or pollen. Common signs of an allergic reaction are headaches, stuffy nose, itchiness, and sneezing. Allergies can make asthma worse.

Anti-inflammatory - Something that reduces swelling. Anti-inflammation medicines help prevent asthma attacks from starting by keeping inflammation under control.

Asthma - Chronic, inflammatory disease of the airways inside the lungs.

Asthma treatment plan or action plan - Step-by-step guide that helps people with asthma, or those who care for them, prevent and take care of asthma symptoms.

Atopy - Likely to be allergic to things.

Belly/pursed lip breathing - Way to breathe that helps a person relax and stay calm.

Bronchial tubes - Tubes that allow air to flow in and out of the lungs (airways).

Bronchodilator - Asthma medicine that lets more air flow into the lungs by relaxing the muscles around the airways. Also known as quick relief or rescue medicine.

Chronic - Lasting a long time, possibly a lifetime.

Constriction - Tightening of the muscles that surround the airways of the lungs.

Controller medicines - Medicines taken daily that keep asthma under control, also known as anti-inflammatory medicines. These medicines are taken even when you feel well.

Corticosteroid - Medicine used to treat asthma by reducing inflammation of the airways.

Dander - Flakes of skin shed by all animals. Many people are allergic to dander.

Dilate - To become larger or wider.

Dry-powder inhaler (DPI) - Small handheld device that sends medicine (in powder form) directly to the lungs.

Episode - Period of time in which asthma symptoms are worse.

GERD (Gastroesophageal Reflux Disease) - Chronic condition of acid reflux and heartburn that causes an unpleasant, sour taste in the mouth.

HEPA (high efficiency particulate air) filter - Removes tiny particles from the air.

Inflammation - Red and swollen condition.

Irritants - Things that can cause soreness, sensitivity, or breathing trouble.

Lungs - Balloon-like organs in the chest used for breathing.

Metered-dose inhaler (MDI) - Small, handheld device that sends medicine directly to the lungs in a spray. An MDI contains medicine and an aerosol propellant.

Mites - Tiny animals that look like spiders. Mites cannot be seen by the eye. They live in clothing, bedding, and upholstered furniture.

Mold - Tiny plant (fungus) that grows on food and damp surfaces.

Mucus - Thick, sticky fluid that coats and protects the inside of the nose, mouth, bronchial tubes, and other parts of the body. Too much mucus can make it hard to breathe.

Nebulizer - Machine that turns asthma medicine into a mist, making it easier to breathe into the lungs.

Peak flow meter - Small tool used to measure how fast you can blow air out of your lungs and measures how open airways are.

Pollen - Common allergen; small grains of powder released from grass, trees and weeds.

Quick reliever/rescue medication - Also known as short-acting bronchodilator medicine, this medicine opens up the airways quickly by relaxing the muscles that squeeze around the airways.

Side effect - Reaction to a medicine.

Sign - Something that indicates an illness.

Spacer - Chamber device that can be attached to an MDI, and helps send more medicine into the lungs.

Spirometer - Machine used to measure the air that moves in and out of the lungs.

Symptoms - Feeling of illness: coughing, wheezing, difficulty breathing, and chest tightness are common examples of asthma symptoms.

Treatment - Action or medicine used to take care of a sickness or injury.

Triggers - Things such as dust mites, exercise, colds, and pollen that can bring on asthma symptoms.

Wheeze - To breathe out with difficulty, making a whistling sound.



**For more information about asthma,
please visit these websites:**

www.breathenh.org
Breathe New Hampshire

www.asthmanow.net
New Hampshire Asthma Control Program

www.cdc.gov
Centers for Disease Control and Prevention

www.nhlbi.nih.gov
National Heart, Lung, and Blood Institute

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

Breathe New Hampshire has served the people of New Hampshire for over 90 years. Through education, advocacy, research, and partnerships, we are working to eliminate lung disease and improve the quality of life for those living with lung disease in New Hampshire.

We invite you to join us as a volunteer, partner, or donor, so that we can continue to strengthen our efforts.



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