

What you need to know about asthma



Asthma is a chronic (long-term) illness. It can be hard to diagnose. The signs of asthma may not be present every day. Unless a doctor sees a child regularly, asthma can be hard to recognize.

If not treated, asthma can seriously affect a child's health. For these reasons, it is important for you to know as much as possible.



Table of contents

My child has asthma. What does that mean?.....	4
How do I find out if my child has asthma?	6
How will a child older than age 5 be diagnosed?.....	7
How did my child get asthma?	8
What is an asthma trigger?	9
How can I protect my child from triggers?.....	10
Should I buy new cleaning tools?.....	14
How can I tell when my child is starting to have an attack?	15
How can I tell when an attack is an emergency?	17
How does asthma medicine work?	18
Are steroids safe for my child?	20
What is the best way to give breathing medicine to a child?	21
What should I do when an attack starts?	27
How can I keep my child safe at school?	30

My child has asthma. What does that mean?

Asthma is a long-term lung problem. Asthma will get better with good care, but it never goes away. It is different than having a cold or pneumonia one time. Asthma problems occur over and over.

Asthma causes lungs to react in an extreme way when irritated. Irritants of the lung are called triggers. Common triggers can be secondhand smoke, pollen or molds. We will talk more about triggers later in this book.

When exposed to a trigger, three things happen in the lung.

- Lung muscles tighten (bronchospasm).
- The lung makes extra mucus (phlegm).
- Airway walls swell with fluid (edema).

These three problems make airway openings very small. Small airways deep in the lung may even swell shut. Breathing becomes very hard work. Oxygen can have trouble getting through the lungs and into the blood.

You often hear that children can grow out of asthma. This is not true. As children grow, their airways also grow and become larger. Asthma attacks can still happen for them, but may not seem as bad because of the larger airways.

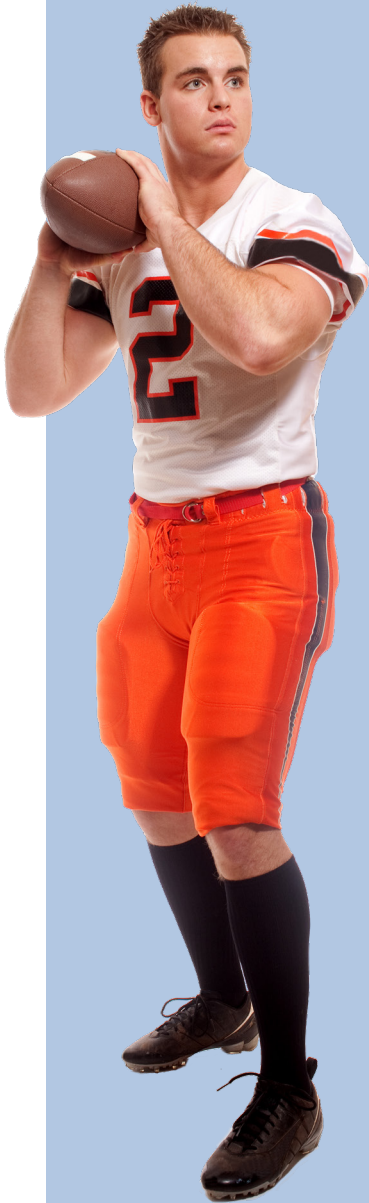
Do not let asthma hold you back

People with asthma have gone on to be:

- Presidents of the U.S.
- Nobel Prize winners
- Admirals and generals
- King of England
- Famous actors
- Famous singers
- Olympic medalists
- Professional athletes

Younger children may have reactions (allergies) to food that look like asthma, but are not. Food allergies often go away as children grow older.





Facts about asthma

- About 100 children in the U.S. die each year from an asthma attack. Some children who die have had only mild asthma.
- Asthma is very costly. It can lead to:
 - Repeated colds and pneumonias
 - Missed school days
 - Missed work days for parents
 - Extra trips to the doctor or Emergency Department
 - 911 calls and hospital stays to treat bad attacks
- Asthma can keep a child from being active and enjoying sports.
- Lack of energy due to asthma can be one cause of extra weight gain in a child.
- Asthma can cause poor sleep. Poor grades in school can result.
- Poorly treated asthma can cause permanent damage in the lungs over time. This is called airway remodeling. While remodeling is serious:
 - You should not panic. Remodeling is not caused by one bad attack.
 - Changes occur if asthma is poorly treated for long periods of time.
 - With proper care, asthma can almost always be controlled.

How do I find out if my child has asthma?

Your doctor will need your help. You and he may have to be detectives. This is especially true if your child is younger than age 5. Asthma is diagnosed in young children by looking at signs and symptoms. You are the person best able to describe exactly what happens when your child is ill. You also know when, and how often, your child has trouble breathing. It can be hard for a doctor to get all the facts needed to diagnose asthma without your help.



Three things must occur if asthma is truly your child's problem.

- Breathing problems will occur more than once.
- Breathing trouble gets better after using certain medicine (bronchodilators). Bronchodilators relax tight muscles in the lung.
- All other reasons will be ruled out. Acid reflux (GERD), vocal cord problems or heart problems can all look like asthma.

Asthma often looks like a simple cold. Your doctor needs a full history of your child's breathing problems. Tell him if you have seen:

- Repeated breathing problems (including problems too mild for a doctor visit)
- Two or more colds with a cough in a year's time (each lasting for six days or more)
- Breathing problems when around pets, at a certain house or when outside
- Coughing leading to throwing up mucus
- Coughing, especially at night or first thing in the morning

As you can see, all of these signs are quite common for many childhood illnesses.

Airway swelling due to asthma can be hard to detect, even for your doctor. It usually does not show on X-rays. The only sign of the swelling may be a child who has a cough.

It can be frustrating to not quickly know the exact cause of your child's problem. The good news is that a firm diagnosis is not needed to begin treating most breathing problems. The same medicine will be used at first, no matter what is causing the problem. Your child will begin getting the care he needs without a definite diagnosis.

How will a child older than age 5 be diagnosed?

Your child's history will be important. That history must include repeated attacks and breathing that improves when given bronchodilator medicine. All other possible causes must be tested and ruled out. More tests will now be possible and can give more reliable results.

Allergy tests can now be done to identify specific triggers. Your child's allergy defenses (the immune system) are now more mature. Tests are more likely to be accurate. Some children with asthma have many allergies. Some children may have few or none at all. Every child will be different.

A pulmonary function test (PFT) can also be done. Your child is old enough to cooperate in the testing process. This test measures how well air moves into and out of the lungs. Your child will be asked to blow hard into a tube for about six seconds. The test does not hurt at all.



Your doctor may ask that two PFTs be done. One of the tests will be after your child breathes a small amount of lung irritant. It will show how strongly the airway muscles react to irritants.

Do not forget that you still play a key role in helping your child's doctor. You are the person who knows what happens with your child between visits.

How did my child get asthma?

Asthma can have different causes.

- It can be inherited from a close family member.
- It can result from heavy exposure to triggers, such as air pollution or second-hand smoke.
- It may appear after a serious RSV virus infection (bronchiolitis).

Family history (genetics) is a major cause of asthma. Tell your doctor if any close family member has (or had) breathing problems. You may recall talk of relatives having allergies, eczema, reactive airways, bronchitis or wheezy bronchitis. It is important to add if those relatives were also smokers, miners, etc. Those types of lung damage are not inherited by a child. Regarding family history, studies show the chances of a child inheriting asthma are:

- 5 to 15 percent if neither parent has asthma
- 25 percent if one parent has asthma
- 50 percent if both parents have asthma

Studies show that long-term exposure to air pollution increases the risk for asthma. The risk comes from breathing both small particles and chemicals in the air. Both will irritate the entire lung, down to the smallest and deepest airways.

Second-hand smoke and outdoor air pollution are equally harmful to a child's lungs. If smoke is present in a home, children will be unable to escape this damaging irritant. The result may be that a child's lungs stay swollen and irritated all the time.

It has not been proven that severe RSV infections cause asthma. There are many cases, however, where asthma symptoms are present for a time after such an infection.

What is an asthma trigger?

A trigger is anything which causes the lungs to become irritated. The lungs react with muscle tightness, swelling and excess mucus. Increased work of breathing, shortness of breath and cough can be the result.

Different children react to different triggers. Some will have many triggers. Some may only have one or two.

Surprisingly, there are often more triggers indoors than outside.



Common triggers for asthma

- Dust
- Pollen
- Cigarette smoke
- Wood smoke
- Dust mites
- Cockroaches
- Mold or mildew
- Pollution
- Pets or other animals
- Chemical fumes
- Strong odors (perfumes, cleaners)
- Strong emotions
- Sinus infections or allergies
- Lung infections
- Hot or cold air
- Exercise*

*Exercise is considered to be a special type of trigger. It is the trigger that should not be avoided. A major goal of asthma care is an improved ability to do exercise. Rescue medicine can be used before exercise if your child has breathing trouble when doing sports or other activities. Talk to your doctor if this is a problem for your child.

How can I protect my child from triggers?

Simple things can go a long way in protecting your child. Many of them will not cost you a lot of money. Here are some of the most effective:

- **Learn your child's triggers.** This can be the most important thing you do for your child. You must know what your child needs to be protected from.
- **Avoid your child's triggers whenever possible.** Help everyone who cares for your child know what to avoid.
- **Clean.** Try serious cleaning before anything else. Do it often. Aggressive cleaning can be very effective in reducing triggers, although no one can keep a completely clean house.
- **Bedrooms are important.** Just as exercise is a special type of trigger, the bedroom is a special room in the home. This is the room your child may spend the most time in every day. You can get the most benefit from your cleaning efforts by tending to the bedroom.



Tips for trigger control in the bedroom are:

- Do not allow pets in the bedroom.
- Dust, vacuum and remove clutter more often than any other room.
- Limit fuzzy toys. Use plastic tubs with lids for storage.
- Wash important fuzzy toys to decrease trigger levels. Freeze for 24 hours in a plastic bag any fuzzy toy that cannot be washed.
- Shampoo carpets every three to four months. Consider removing carpet, if needed.
- Change bed linens weekly. Wash bed linens in very hot (130 degree) water.
- Wash curtains or bed canopies in hot water.
- Buy protective covers for the box spring, mattress and pillows.
- Use disposable filters in central heat and air vents.
- Avoid opening windows in the summer for cooling.
- Consider using HEPA air filtration at night. Run it with the bedroom door closed.



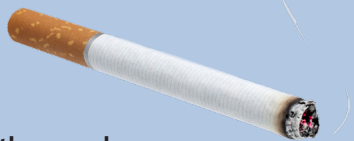
Managing asthma triggers

Air pollution, dust and pollen

- Check weather report for air quality and pollen count.
- Limit outside activity on orange or red air quality days.
- Take extra care during spring and fall pollen seasons (restart controller drugs).
- Use air conditioning instead of window fans in summer.
- Stay inside or wear a mask when grass is mowed.

Cigarette smoke

- Avoid it completely, if possible.
- No smoking in the home.
- Always smoke outside.
- Wear a smoking jacket and a hat when smoking outside. Smoke sticks to clothing and hair.
- Wash hands after smoking.
- No smoking in the car, even when children are absent.
- Teach relatives and all care givers about smoking and asthma.



Other smoke

- Look for home heat sources other than an open fire place.
- If camping, keep away from a camp fire.

Infections and nasal allergies

- Be alert for the early signs. Watch for new coughing or poor sleep.
- Keep your child's nose as clear as possible. Saline drops may help.
- Talk with your doctor about treatments. Treat as early as possible.

Pets and other animals

- Do not allow pets in the bedroom.
- Keep pets outside the home, if necessary.
- Any animal can be a trigger. This includes dogs, birds, rabbits and all farm animals. Beds, pens and cages can also be a problem.
- Saliva, urine, feces, and skin scales can also act as triggers.
- Cat dander is especially light. It floats easily in the air. It sticks to all surfaces when it settles.
- Bathe and groom problem pets.
- Consider giving away a problem animal.

Chemicals and strong odors

- Avoid all strong perfumes.
- Avoid strong bath, kitchen and rug cleaners.
- Avoid room deodorizers.
- Use your stove's vent fan to remove cooking odors.

- Fresh paint fumes can be a problem.
- Kerosene or propane heaters can produce fumes.

Dust mites

- Dust mites are very common. Anyone can have them as a problem.
- Change bed linens weekly. Wash in 130 degree hot water. Mites feed on dead skin cells. Bedding contains lots of dead skin cells.
- Use mattress and pillow covers.
- Use a closet light bulb to prevent mold and dust mite growth.

Mold, mildew and cockroaches

- Any home can have mold or roaches.
- Locate all wet or damp places. Look at crawl spaces, basement, baths and spaces under the sink.
- Get rid of as many cardboard boxes as possible.
- Keep home humidity comfortable, but below 50 percent.



Heat and cold

- Rapid changes in air temperature can trigger asthma.
- Use your rescue drug if such temp changes can be foreseen.
- Wear a scarf or mask over the mouth and nose in cold weather.



Emotions

- Be aware that strong emotions can be triggers. Extreme laughter, sadness, anger or fear can cause an attack.
- Teach your child to be aware of this trigger.

Exercise

- As noted, exercise is a special trigger. Sensible exercise should not be avoided.
- Prevent problems by using a rescue drug before exercise.
- Teach your child to stop, tell an adult, and get treatment if they begin to have an attack.

Should I buy new cleaning tools?

Maybe. Your plan should be to try all simpler, cheaper steps first. Buy a costly new tool only if needed, and after doing some research.

- **New vacuum cleaner:** Possibly. Make sure you have a good vacuum that cleans well. Your current vacuum may be just fine. A more costly vacuum will not always be better. Vacuums labeled for treating asthma may not work well at all. Bagless vacuums may be very hard to empty and clean. Do your research before buying.
- **Hepa air purifier:** Possibly, but not right away. Try all simpler, cheaper steps first. Some studies have shown that HEPA air purifiers can be helpful in asthma. Consider using one at night in your child's bedroom with the door closed. It can be quite costly. Do as much research as possible before buying.
- **Room humidifier:** Probably not. Home humidity is mainly for comfort. It is not a primary therapy for asthma. Lots of humidity can lead to mold and dust mite growth. Humidifiers can be hard to clean. Bacteria or mold can grow in it if it is not kept clean.
- **Room dehumidifier:** Possibly, if you think your home may be too humid. You can buy a cheap room humidity monitor (hygrometer). Keep humidity at 50 percent or less, but not so dry as to cause discomfort.



How can I tell when my child is starting to have an attack?

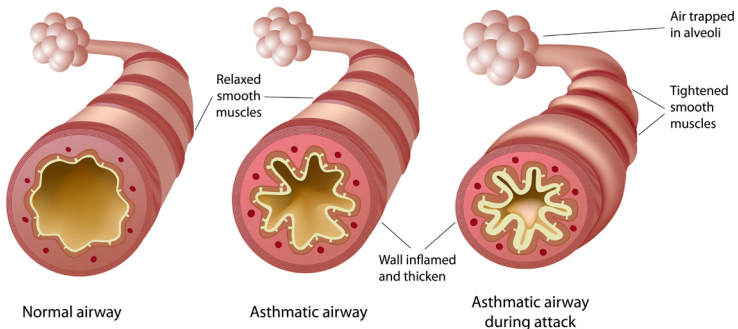
Different children show different signs with an attack. You need to learn the key signs to look for in your child. Knowing your child's signs can lead to early treatment. Treating early will help keep your child out of the doctor's office or the Emergency Department. It is also the best way to avoid a life-threatening attack.



Coughing is often the earliest sign of an attack. Watch for:

- Coughing when waking in the morning
- Waking with a cough at night
- Coughing in the day for no reason
- Extra coughing during play or exercise
- Coughing that leads to throwing up

Restless or poor sleep is a second early sign of asthma. Our bodies make adrenaline when we are awake and active. Adrenaline is a bronchodilator chemical. It is like the asthma medicine albuterol. When we sleep, our adrenaline levels fall. Irritated muscles in the lungs can then tighten. This may wake a child whose chest feels tight. This waking often occurs in the early morning hours.



There are five classic signs of an asthma attack all caregivers should know. They are called the **5-T's**. Look for breathing that is:

- **Too hard**—A child's nostrils may pull outward when they breathe. This is called nasal flaring. You may see your child's skin pulling in at the throat, and between or below the ribs. These are called retractions. They show that breathing is hard work.
- **Too fast**—Count the number of breaths in a minute. Compare that number to the normal rate for your child's age.
 - Younger than a year – 40 to 45 breaths a minute
 - 1 to 2 years – 35 to 40 breaths a minute
 - 3 to 4 years – 30 to 35 breaths a minute
 - 5 to 7 years – 25 to 30 breaths a minute
 - Older than 8 years – 20 to 25 breaths a minute
- **Too noisy**—You may hear musical wheezing sounds when your child exhales.
- **Too tight**—A child may complain he feels tight and unable to take a deep breath.
- **Too tired**—A child may say he cannot catch his breath. He may be unable to keep up with others when playing. He may be sitting down when you expect him to be playing hard.

Children with asthma get used to having trouble breathing. Working hard to breathe can feel normal to them. Children may not be aware of their own problems. They may simply be too busy playing. For this reason, it is important every caregiver be able to recognize the signs of an asthma attack.

While children may not be the best monitors of their asthma, it is still important to teach them about it. Teach them to always tell an adult if they feel an attack coming on.

How can I tell when an attack is an emergency?

All of the signs below are signs of a breathing emergency. Do not ignore them. Do not wait for them to go away. Asthma can be fatal. Some attacks happen very quickly. Mild attacks may start slowly, but become an emergency quickly.



Signs of an asthma emergency

- Grayish or bluish lips, fingernails or skin
- Breathing hunched over
- Having trouble walking
- Having trouble talking or crying (Can't speak a whole sentence.)
- An infant having trouble breathing and feeding
- Being too agitated or restless to sit still or fall sleep
- Having severe retractions due to the hard work of breathing
- Breathing more slowly than is normal
- Breathing very shallow or with pauses (apnea)
- Being difficult to arouse or awaken

How does asthma medicine work?

There are two types of medicine you should know about:

- Quick-acting **rescue medicine**
- Gradual-acting **controller medicine**

Both types play a part in asthma treatment. Both are important in good asthma care.

Rescue medicine

This medicine:

- Relaxes the tight muscles in the lungs. Work of breathing becomes easier as the medicine works.
- Is used whenever breathing is difficult.
- Acts quickly, in about 10 to 15 minutes.
- Works for about four to six hours. The medicine may work for a much shorter time in a serious attack. In very severe attacks, it may not seem to be working at all. Several treatments may be needed to decrease work of breathing in serious attacks.

Types of rescue medicine:

- Albuterol (Ventolin, ProAir, Accuneb)
- Levalbuterol (Xopenex)

Rescue medicine can have some side effects. These are usually not dangerous. They tend to decrease in an hour or so. Possible side effects are:

- High heart rate
- Muscle trembling, jitters
- High activity levels
- Inability to rest or sleep

Rescue medicine is used only when needed. Call your doctor if you are using your rescue medicine often. Discuss with your doctor exactly when they would like you to call them.



Controller medicine

This medicine:

- Is not for use during a breathing emergency. **Only rescue medicine will help your child in an emergency.**
- Calms the muscles and other cells in the lung. This helps both prevent and heal airway swelling. It also reduces and thins airway mucus.
- Must be used daily.
- Must be used exactly as ordered by your doctor. Some children are given two different controllers to take at first. Change how you give them only after talking with your doctor.
- Is usually given for a period of weeks, or even months. You will likely be asked to use the medicine long after your child seems to be well again. The goal is to get complete control and healing before the medicine is weaned or stopped.



Types of controller medicine:

- Inhaled steroids (Flovent, Pulmicort, QVAR, Asmanex)
- Leukotriene inhibitors (Singulair)
- Long acting bronchodilators (Foradil, Serevent)
- Anti-allergy medicine (Allegra, Zyrtec)
- Nasal medicine (Nasonex)
- Combination devices containing two types of medicine (Advair, Combivent, Symbicort)

Controllers work slowly over time. You may feel like nothing is happening. Be patient. Complete healing from a bad attack often takes two or three months. You will know the controller medicine has done its job when your child:

- Uses rescue medicine no more than two times in a week.
- Sleeps well at night with no waking or coughing.
- Is able to take part in activities without distress.

Are steroids safe for my child?

Steroids have a bad reputation. They are very powerful medicine. If not used correctly, they can harm the body. If used correctly, they are good for treating asthma. They can help your child stay out of the doctor's office and the Emergency Department.

- Steroids given by mouth or in an I.V. can only be used for a short time. Our bodies make steroids for us. Extra steroids put into the blood for too long stop our body from doing this job. Oral or I.V. steroids are used for several days to get an attack under control. They help the lungs begin to heal. Oral doses will be weaned slowly by your doctor, then stopped.
- Inhaled steroids (inhaled corticosteroids or ICS) are different. They can be used safely for long periods of time. The doses are much smaller than those given by mouth or I.V. These steroids are inhaled directly into the lungs. Very little of it crosses over into the blood. This lessens its effect on the rest of the body.
 - Many studies support the safety of inhaled steroids. Some children on high doses of ICS may have a bit of growth slowing for a time. These children almost always catch up in growth. Children who are sick a lot may also grow more slowly than normal. Do not hesitate to discuss concerns you have about using an ICS with your doctor. This medicine can be a very important tool for treating asthma.
 - If you give ICS to your child, have them brush their teeth afterward. Rinsing the mouth or taking a drink will also work. ICS can allow thrush to grow in the mouth and throat. Thrush is a fungus, and is quite irritating. Its most common sign is a white coating of the tongue or throat that will not wash off.



What is the best way to give breathing medicine to a child?

There are two main ways to give breathing medicine:

- **Nebulizer**
- **Metered dose inhaler (MDI)**

Both work equally well. The correct device will be the one that works best for you and your child. MDIs are easy to use when your child is away from home. Some families have both a nebulizer and an MDI for their child. Discuss your needs with your doctor.

Tips for using a nebulizer

- A nebulizer is often referred to as a breathing machine or a neb. It is a small air compressor and a plastic cup to hold a liquid medicine. A thin plastic tubing connects the medicine cup to the compressor. A jet of compressed air breaks up the liquid medicine into a fine mist. This mist of medicine can then be breathed directly into the lungs.
- Young children need a close-fitting mask to get a good treatment. Older children can use a mouth piece. Blowing a mist of medicine in the open air (blow-by) near a child's face will not give good results. Very little of the medicine given this way makes it to the lungs where it is needed. Work with your child on wearing a mask and taking good treatments.
- Nebulizing a medicine can take six to eight minutes. This can be a long time for a small child. Some children are so restless they seldom get a good nebulizer treatment. If this is what you find, ask your doctor about trying an MDI. Most children quickly get over any fear of treatments. Let them play with their mask. Let them give treatments



to a favorite stuffed animal or doll. Children often learn that they feel better after getting a treatment.

- Treatments are best when given to an awake, calm child. Try to make treatments fun. Play games with your child. Read or sing to your child. Watch a video. If needed, treatments can sometimes be given to a child while napping or sleeping.
- A child does not get more medicine when crying. A crying child may breathe in short, shallow gasps. They may exhale for several seconds at a time. No medicine is delivered to the lungs during much of a crying session.
- Rinse the plastic medicine cup with tap water after each treatment. Let it air dry on a clean towel. Wash it in warm water with regular dish washing liquid once each day when it is being used. Some cups are safe to wash in a dish washer. Read your instruction booklet to find out. Do not wash the tubing that connects the medicine cup and compressor. It is very hard to dry and may grow harmful germs.
- Medicine cups wear out. They have tiny air holes that can warp or get clogged. This definitely happens if a cup is used every day. You may not see any visible change in the mist your cup puts out, but the medicine particles can be too large. Large particles often do not make it into the lungs. Your instruction booklet will tell you how often your cup needs to be changed. Contact your supplier to get a new one.



Tips for using an MDI

- There are several types of MDI. The most common is a small, pressurized canister (puffer). You may also encounter dry powder inhalers (DPIs). DPIs contain medicine as a dry powder that is not under pressure. Most pressure MDIs are triggered by a finger squeeze. Some MDIs (and most DPIs) are triggered when a user inhales. Be sure to use any device exactly as the instructions say.
- MDIs allow for very short treatment times. This can be a big benefit with an active child. MDIs may seem to be a less effective device due to their short treatment times. This is not true. If used properly, they are very effective.
- Every pressure canister MDI should be used with a spacer (holding chamber). This is a plastic tube that fits between an MDI and the user's mouth. Medicine exits from an MDI at high speed. A spacer provides time for a puff of medicine to slow down before it hits the back of the throat. The throat is wet, and a mist of medicine can stick there. Any medicine that sticks will not make it into the lungs. Children's Hospital advises that all pressure MDI puffs be given using a spacer. This advice applies to all adults as well as to children.



- Spacers also allow a puff of medicine to be breathed in over several breaths. This is good for young children who cannot time a single breath to inhale a puff of medicine. A spacer allows pressure MDIs to be used even for infants.
- Spacers have either a soft mask or a mouth piece. Children younger than age 5 usually need a spacer with mask. It is important that the mask be correctly sized. Having a good seal over both mouth and nose is important. Older children will be able to inhale when told, and hold a breath for a count of ten. They can use a spacer with mouth piece.
- Most MDIs now come with a dose counter built in. If your device does not have a counter, carefully track the doses used. **It is very important to never have an empty rescue medicine MDI.** If you use an MDI or DPI every day, simply write the refill date on your



calendar or on the device. This works well for many daily controller medicine. Rescue medicine is not normally used every day. Make a mark on the rescue MDI's box, or on a slip of paper kept with the device every time you use it.

- **Never use an MDI or DPI for more doses than it is said to contain.** Empty MDIs may still produce visible puffs of powder. That puff may contain little or no actual medicine, however. Be safe rather than sorry. Being sorry can carry a high price when dealing with asthma.



When will my child's MDI or DPI be empty or need to be replaced?

You can easily answer that question. Most MDIs or DPIs now have counters, but not all. Use these steps if your MDI or DPI does not have a counter.

1. Read the label or package insert. Find the total inhalations the MDI or DPI contains. (Example: 120 inhalations)
2. If the medicine will be used daily, figure the total inhalations you are to give each day. (Example: If your child takes two inhalations twice a day, that is a total of four inhalations a day.)
3. Divide the number you found in the first step by the total inhalations you give your child each day. (Example: 120 inhalations divided by four inhalations a day equals 30 days)
4. Make a note on your calendar about one week before your child's MDI or DPI will be empty. Begin the process to get a new one on the date you marked. You may need to talk to your child's doctor about a new prescription. If you do, you will have the time to do so.

How to use a canister MDI

1. **Shake the canister well for 10 to 15 seconds.** Do not skip this step. Shake either before or after connecting an MDI to its spacer. Shaking is needed to deliver the right amount of drug.
2. **Prime the device, if needed.** Priming means delivering one or more drug puffs into the air. Do this if a device has not been used recently. Read the specific instructions for your device.
3. **Exhale fully.** (Skip this step with children using a spacer with mask.)
4. **Seal lips on the spacer mouth piece (or place mask onto face).** In either case, make sure there is a good seal. If using a mouth piece, make sure the tongue does not block the mouth piece opening.
5. **Tilt chin slightly upward.** Look where the ceiling and a wall meet. This opens our airway as wide as possible.
6. **Activate the MDI one time.** Deliver a single puff of drug into the spacer.
7. **Inhale slowly and steadily.** Take in a full breath. Do not stop till the lungs are full.
8. **Hold the breath for 10 seconds, then exhale.** If a 10-second hold is not possible, hold as long as possible. Shortness of breath and coughing are sometimes a problem during an attack. For children using a spacer with mask, keep the mask in place till they have taken six breaths.
9. **Wait one minute before giving a next puff.** Repeat all steps as many times as ordered by your doctor.
10. **Mark the number of puffs given on your tally sheet.** (Skip this step if a device has its own built in counter.)



What should I do when an attack starts?

Some attacks get bad very quickly after exposure to a trigger. Some attacks progress slowly, but become severe quite suddenly. Your plan of action should be built on two principles.

- Never ignore the early signs of an attack.
- Begin using your rescue medicine as quickly as possible.

Attacks that are treated late can be very hard to control. Keep a written **Asthma Home Care Plan** to guide you and all others caring for your child. Most action plans are broken down into three zones. See the next two pages for an example.



Here are the three zones of an Asthma Home Care Plan:



Green zone

What you will see:

Your child is well. There are no signs of an attack.

Green zone action:

- All controller medicine should be given exactly as ordered.



Yellow zone

What you will see:

You see one or more early signs of an attack.

Yellow zone actions:

- Increase your alertness. Watch for worsening. Watch for other signs to appear.
- Continue giving all controller medicine as ordered.
- Begin giving rescue medicine as needed. Each rescue treatment should provide relief for at least four hours.
- If rescue medicine works for less than four hours, think about calling your doctor. Do not give rescue treatments at home every two hours without getting help.
- If a rescue treatment gives no relief in 20 minutes, move to red zone actions. You may be nearing an emergency.



Red zone

What you will see:

A child is having obvious signs of distress. Rescue medicine is not working well. You need help quickly.

Red zone actions:

- Give a rescue treatment if you have not already done so.
- Call your doctor if you have not already done so.
- Give another rescue treatment in 15 to 20 minutes if the first has not improved the distress.
- If your child turns blue, or has signs of severe distress, call 911, then give another rescue treatment. You may choose to go to the Emergency Department yourself. You can give another rescue treatment on the way. Choose the quickest and best way to get your child to the help they need.
- Every child needing red zone treatment must see a doctor as soon as possible. This is true even if extra rescue treatments begin to work. Do not assume that the attack is over.

A note about chest X-rays and asthma:

Your child may not have an X-ray ordered every time they are treated for asthma. A chest X-ray can be ordered if other problems are thought to be present. Protecting your child from unneeded radiation is an important treatment goal.

How can I keep my child safe at school?

Sending a child back to school after an asthma attack can be scary. Work with your child's teacher and the school to make sure your child will be safe. The following tips may help.

Meet with your child's teacher, the school nurse, or the principal. Your teacher can help you decide who you need to meet with. The meeting is to discuss fully your child's asthma. It is to develop an action plan at school in case of an attack. Take your **Asthma Home Care Plan** to the meeting.

The Tennessee state law covering prescribed medicine at school is T.C.A. 49-5-415. Older children are allowed to carry a rescue MDI inhaler on their person at school. They should be trained to self administer the



medicine if needed. Your school system may have several forms that you and your doctor need to complete. Some children may not need to have a rescue medicine at school. This is a decision you, your doctor and possibly your child will need to make.

If your child is young, his rescue medicine should be kept as close to him as possible. In his classroom is the best place. Rescue medicine should not be locked away and out of reach if needed.

If your child is given their rescue medicine at school, make it clear that you need to be called. Explain that if your child says they need their rescue medicine, it should be given, and a call made to you. You will then decide what should happen next.

Stress that your child should never be left alone if having an attack. If an attack appears severe, make sure the school knows to call 911. They should also give a rescue treatment to your child without delay.

Some children may have extra breathing trouble at school. Work with the school to see if mold, dust, class pets, or strong odors might be present as triggers.



