

700 Children's Drive
Columbus, Ohio 43205-2696
nationwidechildrens.org

ASTHMA AND REACTIVE AIRWAY DISEASE (RAD)

Asthma and Reactive Airway Disease (RAD) are conditions in which the airways (bronchi) in the lungs overreact to certain things. Understanding what the lungs look like and how they work will help you understand asthma or RAD episodes and how to control them. A diagnosis of asthma is made by your doctor and is based on a number of things. These may include family history, the number of RAD events, and other factors.

THE NORMAL LUNG

The lungs are formed like an upside-down tree (Picture 1). It is much like the way the trunk of a tree divides into smaller branches and ends in leaves. The windpipe (*trachea* – TRAY-key-uh) is like the trunk of the tree. The trachea then branches off into smaller airways (*bronchi* – BRON-key) and ends in the air sacs (*alveoli* – AL-VEE-oh-li). Oxygen that is breathed in is carried from the bronchi to the alveoli where it can be used by the body.

Muscles (bronchial smooth muscles) surround the bronchi the way bark covers the outside of a tree. Inside the airways is a mucous membrane that covers the inside of the lungs like the lining of a coat. This membrane produces mucus (*phlegm* – Flem) that helps keep the lungs clean.

THE LUNGS DURING AN EPISODE

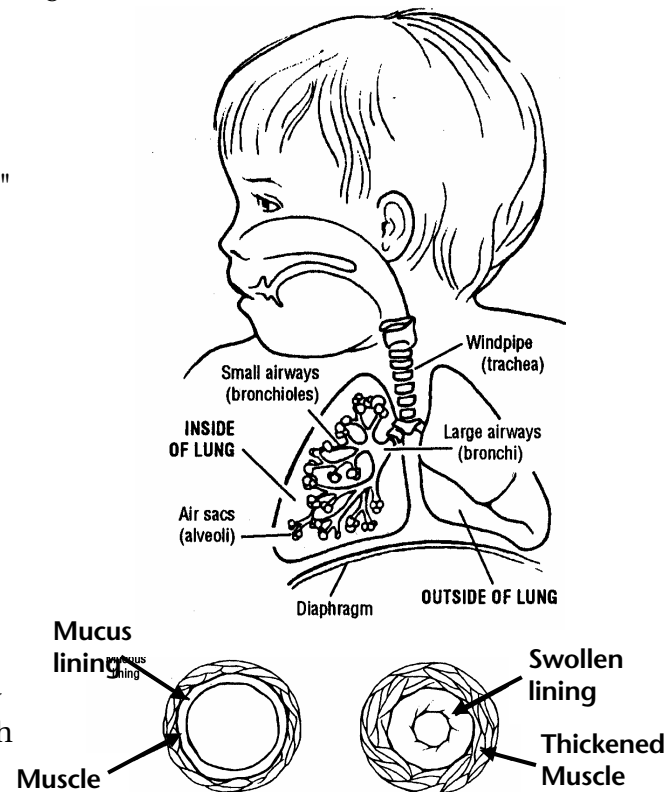
During an asthma or RAD episode three things happen:

- The muscles around the bronchi contract, tighten, or "spasm" (*bronchospasm* – BRON-ko-spa-zim)
- Mucous membranes swell (*edema* – Eh-DEE-muh)
- Mucous membranes produce more mucus than usual.

These changes make the airways narrow, so breathing is more difficult.

CAUSES OF ASTHMA OR RAD EPISODES

An episode occurs when a "trigger" (something that sets off an asthma or RAD episode) causes the airways to overreact and become very narrow. Most people who have asthma or RAD have more than one trigger. These vary from child to child. Being in contact with more than one trigger for a short time may cause an episode. For example, a child may be able to play in leaves and have no problems. But if the child then plays with the family dog, the two together may cause breathing problems. Being around a strong trigger for awhile may also cause an episode. For example, a child may be able to pet a cat for a short time and have no trouble. However, the same child may have severe problems if the cat is kept in the house all the time.



Picture 1 Inside the lungs

TRIGGERS

Once you know what your child's triggers are, it's important to keep your child away from the ones that lead to an asthma or RAD episode (Picture 2).

The most common triggers are **allergies** and **infections** from viruses (like colds) and other germs.

Other triggers include:

- Dust and mold, mildew
- Weather changes
- Smoke (cigarette, wood burning)
- Pollens, trees, and grass
- Strong odors or perfume
- Pets
- Too much physical activity
- Stress and emotions

EARLY SIGNS OF AN ASTHMA OR RAD EPISODE

It is much easier to stop an episode in its early stages. This is because as the episode continues more mucus is produced. Bronchospasms increase and more swelling occurs. Most people have early signs that let them know an episode is starting. Paying attention to these early warning signs can help stop the episode soon after it starts. Each person has different signs. You need to learn which ones happen to your child.

COMMON SIGNS OF AN ASTHMA OR RAD EPISODE

- Many children have one or more of these signs that may signal an asthma episode.
- Abnormal breathing where there is a deep "sucking in" when your child takes in a breath, making it easy to see the outline of his ribs. This is called *retractions*.
- In some cases you may not hear wheezing yet other symptoms are present
 - Irritability - caused by the body "just not feeling right"
 - Tightness in the chest or shortness of breath - caused by the tightening of the bronchial muscles
 - Dry cough - caused by airway spasms and swelling of the mucous membrane
 - Mild wheezing - caused by narrowed airways.
 - Pale skin
 - Coughing nonstop
 - "Hunched over" shoulders
 - Sweating
 - "Glassy" look in eyes
- Sometimes you might also see:
 - Decreased appetite
 - Nausea
 - Feeling tired (listless)



Picture 2 Keep your child away from things that could trigger an episode

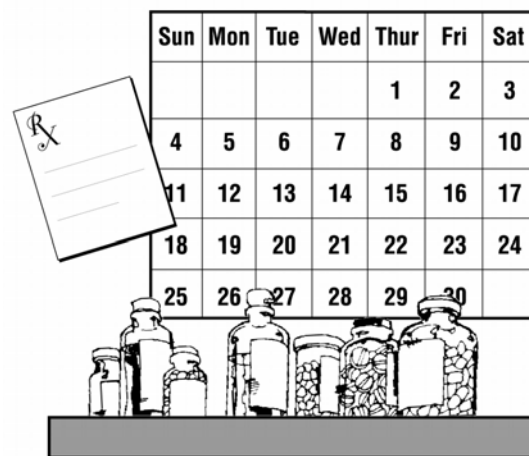
STEPS TO TREAT AN ASTHMA OR RAD EPISODE

1. **Notice early warning signs. Do not ignore them!**
2. **Remove the cause if possible.** Get your child away from what triggered the episode.
3. **Stay calm.** Someone having an asthma or RAD episode is frightened. If those around him are upset, he will become even more upset and the episode may become worse.
4. **Rest and relax.** Have your child stop whatever he is doing and begin breathing exercises.
5. **Take medicine** that has been prescribed by your doctor. Use only as directed.
6. **Drink warm liquids.** Warm liquids help keep the mucus thin. Ice cold liquids may make the spasm worse. Milk and milk products may also thicken mucus.
7. **Get help. If the above steps don't make the symptoms go away, call your doctor.**
8. **If you notice the following symptoms, get help and call 911:**
 - Very pale skin color or slightly blue around the mouth or eyes.
 - You can hear your child wheeze loudly when sitting next to him.
 - Your child's chest sinks in and out when breathing (retractions).

TAKING MEDICINES

Some children with asthma or RAD need to take medicine regularly to prevent breathing problems (Picture 3). There are many different medicines. Some important points about medicines are:

- Give medicines as directed even though your child is doing well. Medicines need to be taken on a regular schedule.
 - Get refills on all medicines **before** the medicine is gone.
 - If medicines need to be taken at school, tell your child's teacher and the school nurse.
 - Don't stop giving these medicines without first talking with the doctor who prescribed them (even when new medicines are prescribed).
 - Tell the doctor if your child has unusual symptoms with the medicines. The doctor may want to change the medicine or dosage.
-
- Don't give your child medicines to treat cold or flu or other non-prescription medicines unless you have discussed this with the doctor who treats your child. These may interfere with the medicines your doctor has prescribed to help control asthma or RAD.
 - If the doctor prescribes an inhaler or aerosol, your child should **use it only as directed**. If too much medicine is inhaled, it can cause increased breathing problems or an emergency situation.
 - Call your doctor for advice if your child doesn't breathe easier after using the medication as prescribed.



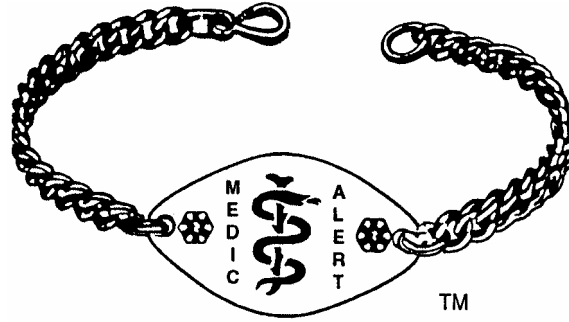
Picture 3 Take medicine on a regular schedule.

A POSITIVE OUTLOOK

Most of the time your child is not "sick." Avoid treating him as a "sick" child. The child with asthma or RAD **does** need to be careful about some things, but many of the things that cause breathing problems can be controlled. As your child gets older, he should take more responsibility for controlling his asthma or RAD. Talk with your doctor or nurse about ways to encourage this.

IN CASE OF EMERGENCY

- It is a good idea to buy a medical ID bracelet or necklace for the child with asthma or RAD (Picture 4). The bracelet tells that the child has asthma or RAD and also gives an emergency phone number. These ID's can be purchased at most pharmacies or ordered by mail.
- Talk with your doctor about having an emergency plan so you will know what to do when your child has symptoms.
- Be sure to tell your child's teacher and school nurse about your child's condition so they will know what symptoms to look for.



Picture 4 A medical ID bracelet

IMPORTANT PHONE NUMBERS

Complete this list of phone numbers and tape it by your phone.

Doctor(s): _____

Emergency Squad: _____

Information for the squad (your address): _____

Your home phone number: _____

Work number: _____

Cell phone: _____

Clinic: _____

Nursing Unit: _____

Local Pharmacy: _____

Community Health Nurse: _____

School Nurse/Teacher: _____

Other: _____

Complete this list of phone numbers and keep it near your phone.

If you have any questions, be sure to ask your doctor or nurse, or call _____.