REACTIVE AIRWAY DISEASE:
(ASTHMA)

DEFINITION:
- Wheezing: a high-pitched whistling sound produced while breathing out
- Recurrent attacks of wheezing, coughing, chest tightness, and difficulty in breathing
- Often associated with sneezing and a runny nose
- Usually no fever
(Note: This diagnosis must be confirmed by a physician)

CAUSES:
Asthma is an inherited type of "twitchy" lung. The airways go into spasm and become narrow when allergic or irritating substances enter them. Viral respiratory infections trigger most attacks, especially in younger children. If asthma is caused by pollens or other seasonal triggers, the asthma only flares up during a particular time of year. Asthma often occurs in children who have other allergies such as eczema or hay fever. Although an emotional stress can occasionally trigger an attack, emotional problems are not the cause of asthma. Some common triggers are listed under "Prevention."

EXPECTED COURSE:
Although asthma attacks may be frightening, they are treatable. When medicines are taken as directed, the symptoms are reversible and there are no permanent lung changes. Although asthma can be a long-lasting disease, over half of children outgrow it during adolescence.

HOME TREATMENT:
Asthma is a chronic disease that requires close follow-up by a physician who coordinates your child's treatment program. If you have any doubt about whether your child is wheezing, start the following asthma medicines. The later medicines are begun, the longer it takes to stop the wheezing. Once medicine is begun, your child should keep taking it until he has not wheezed or coughed for 48 hours. If your child has one or more attacks of wheezing each month, he probably needs to be on continuous preventive medicines. Sometimes asthma is recognized by a dry persistent cough, especially at night or with exercise.
**Asthma Inhalers:** Your child will need careful instructions on how to use the inhaler.

- The canister must be shaken.
- The inhaler should be used with a spacer (Aerochamber, Inspirease). If no spacer is available, the inhaler should be held in the open mouth with lips sealed. A spacer is the best way to get enough medicine into the lungs and should be used whenever possible.
- Your child should breathe out completely.
- The spray should be released at the start of slowly breathing in.
- The breath should be held for 10 seconds after the lungs are filled.
- Wait 10 minutes before taking the second puff.

**Spacers:** These inhalers usually can't be coordinated by children less than 6 years old unless you also use a plastic airway spacer (or chamber). The spacer (chamber) will trap the asthma medicine and give your child time to breathe it in. Many experts recommend that even adults use spacers to get maximum benefit from their inhaler. A smaller child may be able to use a spacer fitted with a mask.

**Asthma Nebulizer Treatments:** Children younger than 4 years old usually can't use inhalers. They need nebulized medicine treatment, using a machine. Some people believe that even older children get more of the medicine delivered to their lungs using a nebulizer rather than an inhaler. However, recent studies suggest that a metered dose inhaler used properly with a spacer delivers medicine just as well as a nebulizer.

**ASTHMA MEDICINES**
There are three types of asthma medicines. Short acting, long acting, and oral steroids.

- **Short Acting Medicines:** (Albuterol, Atrovent, Xopenex) work almost immediately and last 4-6 hours. They work to relax the smooth muscles and small airways. They can sometimes make a child shaky or jittery for a brief period of time. Begin treatment early with these medications.

  Many children wheeze soon after they get coughs and colds. If this is the case for your child, start the short acting asthma medicine or inhaler at the first sign of any coughing, chest tightness, or itchy sensation of the chest or neck. Don't wait for wheezing. The best cough “medicine” for a child with asthma is the asthma medicine. Always keep this medicine handy; take it with you on trips. If your supply runs low, obtain a refill.

- **Long acting or Preventive Medicines:** (Flovent, Pulmicort, Singulair, Advair) While there are a few classes of long acting medicines, they all have a common goal: to reduce airway “twitchiness” or reactivity by reducing inflammation in the small airways. Once preventive treatment is begun, whether by mouth or inhaled, it is important to continue this medication a minimum of two to six months unless otherwise instructed. This may help a young child “grow out” of his asthma. Sometimes, an asthma management plan includes increasing maintenance medications during an acute flare. Remember to
continue maintenance medications even when your child is symptom-free until instructed otherwise.

- **Oral Steroids:** (Prednisone, Prelone, Pediapred, Orapred) These are given when an asthma flare is more severe than can be managed by the asthma plan. They are strong anti-inflammatory medicines that are safe to take for short periods of time. Your child may be more energetic, hungrier, or more irritable while taking this medication. It is bitter so feel free to mix it with chocolate syrup or a small amount of food provided it is taken completely.

**Peak Flow Meters:** Peak flow meters (PFM) measure how fast your child can move air out of the lungs. Every child over age 6 should use a PFM. These measurements will tell you when to increase medications (flow rate less than 80% of baseline) and when to see a doctor immediately (less than 50%).

**Fluid Intake:** Normal hydration keeps the normal lung mucus from becoming sticky. Encourage your child to drink a normal intake of clear fluids. Sipping warm fluids may improve the wheezing.

**Exercise-Induced Asthma:** Many people with asthma also get 20- to 30-minute attacks of coughing and wheezing with strenuous exercise. Running, especially in cold air or polluted air, is the main trigger. Using an inhaler 10 minutes before exercise can prevent the symptoms. This problem should not interfere with participation in most sports nor require a physical education excuse. If it does, then consult with your doctor. Children with asthma usually have no problems with swimming or sports not requiring rapid breathing.

**Hay Fever:** For hay fever symptoms, it's okay to give antihistamines. Poor control of hay fever can make asthma attacks worse. Recent research has shown that although antihistamines can dry the airway, they don't make asthma worse.

**Going to School:** Asthma is not contagious. Your child should go to school during mild asthma attacks but avoid gym and sports on these days. Arrange to have the asthma medicines available at school. If your child uses an inhaler, he should be permitted to keep it with him so he can use it readily. For continued wheezing, your child should be seeing a physician on a daily basis.

**Common Mistakes:** The most common mistake is delaying the start of asthma medicines or not replacing them when they run out. Nonprescription inhalers and medicines are not helpful. Another is to use a long-acting medication (Flovent, Advair, Pulmicort) instead of albuterol for acute symptoms. Another common error is keeping a cat or dog that your child is allergic to. Also, prohibit all smoking in your home; tobacco smoke can persist for up to a week. In addition, don't panic during asthma attacks. Fear can make tight breathing worse, so try to remain calm and reassuring to your child. Overuse of short acting medications by teenagers and underuse of their preventive medications can lead to
severe complications. Don’t hesitate to call our office if you have any concerns. Finally, don’t let asthma restrict your child's activities, sports, or social life.

PREVENTION BY AVOIDING ASTHMA TRIGGERS
Try to discover and avoid the substances that trigger attacks in your child. Second-hand tobacco smoke is the biggest offender. If someone in your household smokes, your child will have more asthma attacks, take more medication, and require more emergency room visits. Try to keep pets outside or at least out of your child's bedroom. Learn how to dust-proof the bedroom. Avoid feather pillows. Change the filters on your hot air heating system or air conditioner regularly. For allergies to molds or carpet dust mites, try to keep the house humidity less than 50%. If there has been any recent contact with grass, pollen, weeds, or animals that your child might be allergic to, the pollen remaining in the hair and clothing may keep the wheezing going. Have your child shower, wash his hair, and put on clean clothes. For infants and toddlers, try to reduce your child’s exposure to colds. Try to avoid the use of large daycare centers by using a sitter or small daycare center.

CALL OUR OFFICE IMMEDIATELY IF:
- The wheezing is severe.
- The breathing is difficult or tight.
- The peak flow rate is less than 50% of normal.
- The wheezing or breathing is not improved after the second dose of asthma medicine.
- You need to give short acting medicine more frequently than every 3-4 hours.
- Your child starts acting very sick.
- Breathing becomes more labored and difficult. Take the shirt off to observe breathing while the child is at rest. Call if you observe the following:
  - Retractions (caving in above the collarbone, between the ribs or below the ribcage).
  - Grunting or flaring (widening) of the nostrils with each breath.
  - Rapid breathing at rest: Count breaths taken in 60 seconds.

Call if your child’s breathing is:
Greater than 60 if <6 months
Greater than 50 if 6-12 months
Greater than 40 if 1-3 years
Greater than 30 if 3-5 years
Greater than 20 if >5 years

During regular hours if:
- The wheezing is not completely cleared by 5 days.
- You need to give short acting medicine every 4 hours around the clock for more than 24 hours.
- You have other questions or concerns. (Revised 1/09)