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Asthma, Reactive Airway Disease, and Bronchiolitis: What Is The Difference?

What Is Wheezing?
Wheezing is common in children. Wheezing may sound like a high-pitched whistling or musical sound when your child is breathing out. Or it may present as persistent nighttime coughing that does not lessen with over the counter cold and cough medicines.

Children less than one year of age may breathe faster (>50 breaths/minute) and develop a more labored breathing pattern (called retractions). Retractions occur when the chest wall muscles are forced to work harder to help get more oxygen into your child's lungs. Retractions are exaggerated inward movements of the chest wall that will appear just above or below the breastbone.

Older children may have chest tightness, difficulty speaking because of shortness of breath, difficulty in breathing, uncontrollable coughing or wheezing.

Reactive airway disease (RAD), bronchiolitis, and asthma all refer to children who wheeze.

RAD refers to children who wheeze when they have a cold.

Bronchiolitis refers to wheezing in infants (usually less than one year old) caused most commonly by a virus called RSV (Respiratory Syncytial Virus).

Asthma refers to a child with recurrent episodes of wheezing, regardless of the cause.

What Causes Asthma?
Wheezing results from narrowing or obstruction of the small airways in the lungs. This narrowing occurs when allergic or irritating substances enter your child's lungs. These substances cause the lining of the airway to swell and produce extra mucus. The best prevention is identifying and avoiding the possible triggers of wheezing.

Viral upper respiratory infections (colds) are the most common trigger of wheezing, especially in younger children.

Other triggers include pollens, dust, mites, molds, pets, exercise and temperature changes If the asthma is due to pollens (hayfever), wheezing occurs only during the season when that pollen is present. Children with eczema or hay fever have a higher risk of developing asthma. Strong odors (cologne), exhaust fumes, frying foods, feather pillows and cigarette / tobacco smoke can also trigger wheezing. Never allow anyone to smoke around your child!

Try to keep pets outside or at least out of your child's room. Indoor pets need a weekly bath to remove allergic particles. Ask us for a handout on how to dustproof your child's bedroom. Change the filters in your heating/air conditioning system monthly.

In children who wheeze after contact with outdoor pollens or animals, pollen or animal dander remaining in their hair or on their clothing, may worsen the wheezing. Your child should shower, wash his or her hair, and put on clean clothes after exposure to these triggers.

What Is Exercise-Induced Asthma?
Exercise can trigger asthma. Children with asthma may have 10 to 15 minute attacks of coughing and wheezing when they exercise strenuously. Running, especially in cold air, is the main trigger.

Symptoms can be prevented by using a metered dose inhaler (albuterol and Intal) with a spacer 10 minutes before exercise. Children with asthma usually have no problems with swimming or sports not requiring rapid breathing. If treated, this problem should not interfere with participation in most sports or require an excuse from gym.

Children who do not respond to the use of an albuterol or Intal MDI, should have a further evaluation.

What Is The Normal Course Of Wheezing?
Some children will wheeze one time when they have a cold, while others may wheeze every time they have a cold.

Still other children may wheeze even when they do not have a cold. All wheezing episodes should be treated (see below). Beginning appropriate treatment early can shorten the course of an asthma attack and prevent hospitalization. When medicines are taken as directed, the lungs usually return to normal between attacks.

Over half of the children diagnosed with asthma will outgrow their asthma during adolescence.

Treatment Of Asthma

The following medicines are used in the treatment of wheezing. Different combinations of these medicines are used depending on the severity of the wheezing.

The medicines work to open up the smaller airways in the lungs, making easier for your child to breathe. Because the inhaled medicines work directly in the lungs, they work faster and have less side effects.

If you are unsure whether your child is wheezing, begin using your child's asthma medicines. The later medicines are started, the longer it takes to control the wheezing. Once treatment with asthma medicines is started, continue the medicine until wheezing and/or coughing has stopped for 48 hours.

If your child has three or more episodes of wheezing each week requiring treatment, he/she probably needs to be on continuous medicines (between wheezing episodes).

Albuterol
Albuterol (Ventolin or Proventil) is the most common medicine prescribed for the treatment of wheezing. It can be given orally (by mouth), by a metered-dose inhaler (MDI), or by nebulizer. Side effects include jitteriness or mild hand-shaking, hyperactivity, and increased heart rate. Side effects can be decreased by lowering the dose of albuterol. If the side effects last longer than 20 minutes, please talk with our office before giving the next dose.

Albuterol is available as:

- Syrup: 2 mg per teaspoon
- Tablets: 2 mg and 4 mg
- Extended release tablet (Proventil Repetabs): 4 mg

The oral form of albuterol is different from the albuterol used in a nebulizer. Never substitute one for the other. The dose (based on your child's weight) is approximately ¼ teaspoon per 10 pounds of body weight up to a maximum of 2 teaspoons (4 mg) per dose. The syrup and tablets are given every 4-6 hours and the long-acting tablets every 12 hours (Repetabs).

Intal
This is an anti-inflammatory drug used for asthma prevention and exercise induced asthma. It is available in an MDI or as a nebulizer solution. It can not be used to treat an asthma attack.

Corticosteriods
These are anti-inflammatory drugs used to treat asthma. The liquid and tablet forms are given for 4-5 days to treat an asthma attack. The inhaled forms are used along with albuterol in children requiring treatment more than 4 times a week with albuterol alone.

Corticosteroids are available as:

- Liquid: 5 mg/teaspoon and 15 mg/teaspoon (Pediapred or Prelone)
- Tablets: 5-10-20 mg. (Prednisone)
- Inhaled MDI: (Flovent, Flovent Rotadisk, Azmacort, Vanceril)
- Turbuhaler (Pulmicort)

Dose: Liquid and tablet forms can be given as one dose or divided doses given at 8 AM and 12 Noon.

Corticosteriod MDI's are dosed 1-2 times per day (every 10-12 hours).

Anti-leukotrienes
This class of medicines was approved for the use in the treatment of chronic asthma. Leukotrienes are produced by normal cells found in the lining of your child's airways. These compounds are released into the airways in response to environmental allergens (pollen, smoke, dust, etc.)

Leukotrienes, when released into the airways, cause airway spasm as in asthma. The anti-leukotrienes work to block the effects of the leukotrienes, decreasing your child's asthma symptoms.

Singular (Montelukast) has been approved for use in children as young as 6 years. It comes as a 5 mg chewable tablet given once daily at bedtime. It causes significant improvement in chronic mild-to-moderate asthma. These medicines can not be used for emergency treatment of asthma.

Metered-Dose Inhalers (MDI)
The use of a spacer (see below) will greatly improve the delivery of the medicine to your child's lungs. A clear (see-thru) spacer will make it easier to see the medicine in the chamber.

Follow these instructions for teaching your child the proper use of an inhaler:

1. Shake the inhaler.
2. Hold the inhaler upright and insert into the end of the spacer (clear holding chamber).
3. Press the MDI to release one spray into the holding chamber.
4. Your child should breathe out (exhale) completely
5. Place his/her lips over the end of the spacer.
6. Inhale slowly until his/her lungs are completely full.
7. Hold his/her breath for 10 seconds after the lungs are filled.
8. Take a few normal breaths.
9. Repeat these steps to give a second dose of the medicine.

10. Rinse mouth out with water after using a corticosteroid MDI.

How Do I Tell If My MDI Is Empty?

- Place the MDI in water before using the first time.
- When full, it will sink to the bottom.
- When the MDI is half used, it will float with ¼- ½ of the MDI out of the water.
- Discard the MDI when more than ½ the MDI is floating out of the water.
- Shaking the MDI will not tell you how much medicine is left. The other components used to propel the medicine remain in the MDI after it is empty.

Nebulizers For Home Use
A nebulizer is a small machine for home use that uses compressed air to deliver albuterol and Intal. A nebulizer can be used for children of all ages. The medicine is delivered by breathing through tubing connected to a mask or a mouthpiece. The treatment takes about 5 minutes.

Nebulizer treatments deliver albuterol and Intal directly to the lungs. Nebulizer treatments relieve the symptoms of asthma faster and cause less side effects than oral treatments. Treatments can safely be given every 1-4 hours. The nebulizer solution comes as 0.5% solution (2.5 mg / 0.5 cc).

The dose is 0.25 cc (1.25 mg)-0.5 cc (2.5 mg) mixed with 2 cc of saline nebulizer solution or Intal (2 cc vials).

Spacers
Unless the metered-dose inhaler is used in exactly the right way, it will not deliver the proper dose of medicine to your child's lungs. The medication may end up on your child's tongue or in the back of the throat, decreasing the amount of medicine that gets to your child's lungs. Use of a holding chamber (or spacer device) will aid the delivery of the medicine into your child's lungs.

A spacer is a device that attaches to a metered-dose inhaler. It holds the medication in its chamber long enough for your child to inhale all the medicine in one or two, slow, deep breaths. The spacer makes it easy for your child to use the medication the right way (especially if your child is young or your child is having a hard time using just a metered-dose inhaler).

A spacer reduces the cough that some inhalers cause when used alone. A spacer will also help prevent your child from getting a yeast infection in his/her mouth (thrush) when taking inhaled corticosteroid drugs.

Use of a clear (see-thru) spacer makes it easier for your child to see the medicine being dispensed from the metered-dose inhaler into the spacer.

Spacers are available at your local pharmacy. Some insurance companies will cover the cost. Prices vary with the Easivent costing $15. Aerochamber and Ispirease are other common spacers used.

How To Use A Spacer

1. Attach the inhaler to the spacer as shown in our office or by using the directions that come with the spacer.
2. Shake the spacer and MDI well.
3. Press the button on the inhaler. This will put one puff of the medication in the holding chamber.
4. Place the mouthpiece of the spacer in your mouth and inhale slowly. (A face mask may be helpful for a young child.)
5. If you hear a whistle as you inhale, your child is inhaling too fast. Inhaling should be slow enough to not hear the whistle sound.
6. Hold your breath for 5 seconds and then exhale.
7. Repeat steps 3, 4 and 5 two more times.
8. If two puffs have been prescribed, wait one minute between puffs.
9. Repeat steps 2 through 6 again.
10. Clean the spacer after each use.
11. You can use more than one type of medicine with the same spacer.

Vaporizers And Humidifiers
Humidification relieves the discomfort of dry, heated indoor air by placing moisture into the air. Wheezing can worsen when the air is too dry. Breathing moist air will make your child more comfortable.

Steam humidifiers, also called vaporizers are fairly inexpensive. They bring water to a boil and disperse it as steam into the air. Cool mist humidifiers deliver a steady flow of cool water vapor into the air. They are also inexpensive to purchase. Ultrasonic humidifiers disperse an aerosol of cool water droplets into the air and may be more effective, but are more expensive.

Why Is It Necessary To Begin Treatment Early?
Many children wheeze soon after they get an upper respiratory infection. Begin the asthma inhaler, oral medicine, or nebulizer at the first sign of any coughing, shortness of breath, or wheezing. Always keep the medicine handy and take it with you on trips. Keep enough medicine at home in the event of a middle of the night emergency. The earlier treatment is started, the easier it will be to control your child’s asthma.

What Is A Peak Flow Meter?

The most reliable way to detect the start of an asthma attack is by using a peak flow meter. A peak flow meter can measure the air flow out of the lungs. As wheezing increases, air flow out of the lungs decreases and the peak flow readings will decrease. Early detection of decreased air flow, even before wheezing has occurred, will alert you to institute earlier treatment. Peak flow meters can be used by children as young as 5 years old.

See the article called "Asthma Treatment: Nebulizer Guidelines" found on the Parents link page of our Web Site. It gives guidelines on how to use peak flow readings to help you manage your child's asthma.

How Do I Know If My Child Needs Continuous Asthma Medicine?
Most children with asthma need medicines only during wheezing episodes. Children with the following symptoms usually need daily asthma medicines to allow them to engage in normal activities:

- three or more attacks of wheezing per week.
- asthma flareups lasting several days.
- the need for emergency room care despite proper use of an inhaler.
- asthma triggered by pollens (requires daily use of asthma medicines during the entire pollen season).

Are Extra Fluids Helpful?
Adequate fluid intake keeps the lung mucus from becoming thick. Excessive fluid intake is not necessary. If you feel your child is not drinking enough fluids, please call our office. Signs of dehydration include dry mouth, decreased tears, and decreased urine output.

When Can My Child Return To School?
Asthma is not contagious. Your child should go to school during mild asthma attacks but avoid gym on these days. Arrange to have the asthma medicines available at school. Children using an MDI with a spacer should be permitted to keep it with them at school for routine and emergency treatments.

Children who miss too many days of school because of asthma, need to be evaluated for additional treatment.

What Can I Do To Help My Child's Asthma?

- The most common mistake is delaying the start of prescribed asthma medicines or not replacing the medicines before they run out. Nonprescription inhalers and medicines are not helpful.
- The most serious error is continuing to expose your child to known triggers of asthma, such as pets.
- Never smoke around your child- second hand smoke can trigger wheezing. Never allow

smoking in your home as tobacco smoke can linger in the air for up to a week.
- Don't panic during asthma attacks. Fear can make tight breathing worse. Remain calm and reassure your child.
- Do not let asthma restrict your child's activities, sports, or social life.

Books About Asthma

One Minute Asthma; by Thomas Plaut, M.D.; Pedipress, 1990

Asthma:The Complete Guide To Self-Management Of Asthma And Allergies For Patients And Their Families; by Allen M.Weinstein, M.D.; Fawcett, 1990

A Parent's Guide To Asthma; by Nancy Sander; Doubleday, 1989

Children With Asthma: A Manual For Parents; by Thomas Plaut, M.D.; Pedipress, 1986

Newsletter (monthly) Mothers of Asthmatics, Inc.10875 Maine Street, Suite 210Fairfax, Virginia 22030