



Introduction to Asthma

Childhood asthma can be controlled through education and treatment. Working as a team, school personnel, healthcare providers and parents can help children with asthma participate fully in school, sports and home activities.

What is Asthma?

Asthma is one of the most common chronic diseases of childhood, affecting more than 6 million children.

Asthma is a chronic inflammatory lung disease that can cause repeated episodes of cough, wheezing and breathing difficulty.

During an acute asthma episode, the airway lining in the lungs becomes inflamed and swollen. In addition, mucus production occurs in the airway and muscles surrounding the airway spasm. Combined, these cause a reduction in air flow.

Asthma is characterized by:

- Airway inflammation: The airway lining becomes red, swollen, and narrow.
- Airway obstruction: The muscles encircling the airway tighten causing the airway to narrow making it difficult to get air in and out of the lungs.
- Airway hyper-responsiveness: The muscles encircling the airway respond more quickly and vigorously to small amounts of allergens and irritants.

Common signs and symptoms of an acute asthma episode include:

- Coughing
- Wheezing — may be absent
- Breathlessness — while walking or while at rest
- Respiratory rate increased
- Chest tightness
- Chest or abdominal pain
- Fatigue, feeling out of breath
- Agitation
- Increased pulse rate
- Inability to participate in sports

Key Messages:

There is a difference between medications:

- **Long-term control medications:** prevent symptoms, often by reducing inflammation. Must be taken daily. Do not expect them to give quick relief
- **Quick-relief medications:** relax airway muscles to provide prompt relief of symptoms. Do not expect them to provide long-term asthma control

Parents or caregivers play an important role in controlling childhood asthma by:

- Taking daily actions to control a child's asthma and monitor symptoms
- Understanding and avoiding environmental exposures that worsen asthma, such as pollen, mold, animal dander and tobacco smoke

Not everyone has the same asthma symptoms.

An **Asthma Action Plan** is crucial to monitoring asthma and knowing when to seek help.

During an acute asthma episode, signs and symptoms of increasing respiratory distress or breathing difficulty include:

- Inability to talk in sentences, using phrases or only words
- Retractions — increased use of chest, neck or abdominal muscles
- Refusal to lie down — a child may prefer to sit or lean forward in order to make breathing easier

It is important to remember that not everyone with asthma has the same symptoms.

Asthma Triggers

- Allergic reactions to environmental allergens such as pollens, molds, dust mite or animal dander
- Colds and viral respiratory infections
- Exercise
- Changes in weather, exposure to cold air or sudden temperature change
- Irritants such as tobacco smoke, air pollution, paints and cleaning agents
- Strong odors and/or perfumes

Exercise-Induced Bronchoconstriction, (EIB)

For some people, asthma symptoms may only occur during exercise. A history of cough, shortness of breath, chest pain or tightness, wheezing or endurance problems during exercise suggests EIB. EIB is often a marker of inadequate asthma management. Typically, these individuals respond well to regular anti-inflammatory therapy.

For those with chronic asthma, EIB should be anticipated.

Teachers and coaches should be notified that a child has EIB, that the child should be able to participate in activities and that the child may need inhaled medication before activity.

Certain medications, including albuterol, broncodilators and steroids are regulated in competitive athletics, so parents with children involved in these activities need to be aware that this medication use should be disclosed, and they should adhere to standards set by the sports-governing bodies. Coaches and parents can find more information on the U.S. Anti-Doping Agency Drug website <http://www.usada.org/drugline/>.

Asthma should not be an excuse to not participate in physical education, sports or exercise.

Asthma Medications

Medications for asthma are categorized into two general classes. Long-term control medications are used to achieve and maintain control of persistent asthma. Quick-relief medications treat acute symptoms and exacerbations.

LONG-TERM CONTROL MEDICATIONS

Taken daily on a long-term basis, long-term medications achieve and maintain control of persistent asthma. The most effective long-term-control medications are those that attenuate the chronic inflammatory aspect of asthma.

Examples include:

- Inhaled corticosteroids: The most consistently effective long-term control medication.
- Long-Acting bronchodilators (LABAs): These are used in combination with inhaled corticosteroids.
- Theophylline: Used as alternative controller medications (not preferred).
- Leukotriene modifiers: Used as alternative controller medications.
- Immunomodulators: Biologic medications modify the allergic immune response.

QUICK-RELIEF MEDICATIONS

Taken as needed, short-acting beta agonists (SABAs) relax airway muscles to give prompt relief of symptoms.

Examples include:

- Albuterol
- Levalbuterol

Asthma Control

Parents of children with asthma should be taught to recognize symptoms that indicate poor asthma control and the need for additional therapy.

Symptoms indicating poor control include:

- Daytime asthma symptoms (wheezing, cough, chest tightness or shortness of breath)
- Waking up during the night due to asthma symptoms
- Frequently using SABA for relief of symptoms
- Inability or difficulty performing normal activities (including exercise) because of asthma symptoms

Peak flow monitoring can be considered for patients with: moderate or severe persistent asthma, a history of severe exacerbations or perceived airflow obstruction and worsening asthma. Long-term daily peak flow monitoring can be helpful to:

- Detect early changes in asthma control that require adjustment in treatment
- Evaluate responses to changes in treatment
- Provide a quantitative measure of impairment

Asthma Action Plans

A plan is an important tool that can help manage the care of children with asthma. All children with asthma/EIB should have a written asthma management plan or action plan on file at school.

An asthma action plan includes:

Signs and symptoms of an acute asthma episode

1. The steps to take for treating acute asthma episodes
2. Long-term control medications when prescribed
3. Emergency numbers to call
4. For the appropriate patient, best peak flow, or peak flow zones

ACTION PLAN FOR ACUTE EPISODES

Children with increasing asthma symptoms or decreased peak flow measurements need attention. Follow the steps prescribed by the child's health care provider in his or her asthma action plan.

Here are some other useful tips:

Give the child quick relief medication immediately! Quick relief medications are needed to get control of the acute asthma episode

1. Help the child to sit in a comfortable position. Children may lean forward to assist breathing.
2. Talk calmly to the child.
3. Encourage deep, slow breathing.
4. Measure peak flow and assess symptoms before and after treatment.

Seek emergency care (911) immediately if any of the following are present:

- The child has trouble walking and talking due to shortness of breath
- The child is struggling to breathe
- The child's fingernails or lips are turning blue
- The child's peak flow measurement is in the red zone
- There is no improvement in the child's symptoms within 20–30 minutes of taking rescue medication

Download the AAAAI's Asthma Action Plan at aaaai.org.