Asthma

What is asthma?

- Asthma is a chronic long-term condition in which air passages to the lungs become inflamed, swollen, and narrowed. The swelling can narrow passages enough to reduce or block airflow to and from the lungs. As air moves through the narrowed airway, it can make a wheezing sound.
- Children with asthma may have repeated episodes of wheezing, breathlessness, and chest tightness with nighttime or early morning coughing.

How common is it?

Asthma is one of the most common chronic diseases in children, affecting between 5% and 10%.

What are some characteristics of children with asthma?

- Asthma can vary from mild to severe and it can be occasional or continuous.
- Asthma can worsen with infections, weather changes, or exposure to an asthma trigger. Asthma triggers are those things that make asthma worse. Common triggers include viral infections, smoke, dust, mold, dust mites, cockroaches, and animal dander.
- Children with asthma may cough, wheeze, or have no symptoms at all depending on how much air is moving at that time. Cough can be one of the first symptoms that the child experiences when asthma is acting up. Wheezing that can be heard also means there is a problem.
- If the child's airway is badly blocked, nothing might be heard, but the child will look like she is having trouble breathing.
- Asthma can and should be controlled. A child whose asthma is under control will look like any other child, be able to play normally, and only rarely have asthma symptoms. This is one of the goals of asthma care—to have the child live a normal life. Luckily, with good asthma care, this is possible for most children with asthma.
- A key component of good asthma control is management education for parents and self-management education for older school-aged children. Caregivers/teachers should support older children in self-managing their asthma, which includes recognizing symptoms and permitting those children with adequate knowledge, skills, and behaviors to carry and administer quick-relief medication (see "When Should Students With Asthma or Allergies Carry and Self-Administer Emergency Medications at School?" in Chapter 11 on page 173).
- Children who require frequent quick-relief medication for symptoms may need better controller medications. Use of quick-relief medication and any symptoms that keep children from fully participating in activities should be documented. This information is important to give to parents/guardians so they can share it with the child's prescribing health care professional.

What are some elements of a Care Plan for asthma?

- The Asthma Action Plan is a specialized Care Plan for children with asthma.
- Asthma Action Plans should include a list of the child's asthma triggers and which things to avoid. It should be updated after hospitalizations, emergency visits, child absences for illness, and changes in medications. Samples of Asthma Action Plans can be found in Chapter 11.
- Asthma Action Plans are usually designed with 3 zones based on a traffic light—red, yellow, and green.
  - ~ **Green zone** is the plan when the child is doing well and includes any controller medications that the child needs to take to stay healthy (see "Medications").
  - ~ **Yellow zone** outlines the plan if the child begins to develop symptoms such as cough and the plan for quick-relief medications (see "Medications").
  - ~ **Red zone** is the trouble area when the child needs prompt and vigorous treatment.
- Older children may use a peak flow meter to monitor their airway health. Peak flow numbers can be used to determine when children should take their quick-relief medication and to monitor how they are doing at different times of the day.

What adaptations may be needed?

Medications

- Asthma medications are often categorized as *controller* or *quick relief.* These 2 types are used together for better asthma control.
- Controller medications
  - ~ Fight the inflammation and keep the airways open.
  - ~ The most common controller medications are inhaled steroids, which are typically given by parents/guardians at home.
  - ~ There are few side effects of these medications, but the mouth should be rinsed after taking inhaled steroids to avoid thrush, a yeast infection of the mouth lining.
  - ~ Sometimes the child will take oral steroids, like prednisone, by mouth for a short period.

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  - ~ Side effects of oral steroids include mood swings, increased appetite, nausea, weight gain, and behavior changes. If taken over a longer period, the immune system can be suppressed.
- Quick-relief medications
  - ~ Relieve the muscle spasm to allow better airflow on a temporary basis.
  - ~ Sometimes are referred to as *rescue* medications, but this terminology is not preferred because it can imply waiting until symptoms are bad.
  - ~ The most common quick-relief medications are beta agonists such as albuterol. Side effects include jitteriness, fast heart rate, and hyperactivity. Some children will be sleepy after a treatment.
  - ~ Albuterol can be administered in different ways.
    - ❖ Nebulizers—machines that drive air through liquid medication and make it into a mist that can be inhaled. Typically it takes 5 to 10 minutes to complete a treatment using a nebulizer.
      - – Younger children may use a mask over their mouth and nose to get medication; older children may breathe through a mouthpiece.
      - – The delivery device and its tubing should be cleaned regularly and dried completely.
      - – Some children dislike nebulizer treatments and may need a distraction such as reading a book or watching a video.
    - ❖ Metered-dose inhalers and spacers—most people lack the coordination to properly use a metered-dose inhaler and will get a better dose of medication if they use a spacer device. Typically, the child must have the device placed properly and then take several breaths to complete the treatment.
  - ~ Quick-relief medications should be available for children with asthma to use if they need it while they are at school or child care.
  - ~ The ways to recognize that the child needs treatment with a quick-relief medication should be clearly stated in lay language in the Care Plan (see Sample Asthma Action Plan in Chapter 11 on page 167).
- As always, expiration dates of medications should be checked regularly and medications should be stored in a safe location. The number of puffs used should be documented and a cumulative count kept, ensuring that medication is still in the inhaler.
- Children with asthma are especially vulnerable to respiratory infections. All children should get a flu shot every year, but especially those with asthma.

ASTHMA AND ALLERGY FOUNDATION OF AMERICA

Metered-dose inhaler

ANDREW SILK

Inhaler with spacer for asthma medications

Dietary considerations

Diet may need to be modified for children with asthma who have food allergies.

Physical environment

- Indoor environment—be tobacco free; control mold and mildew by fixing any water leak quickly; avoid furry or feathered pets; clean frequently; use integrated pest management to limit pesticide use and pests; use dust covers for bedding; ensure good ventilation; change air filters frequently; and avoid strong perfumes or scented cleaning products.
- Outdoor play—be aware of ozone and pollen levels. Extremes of air temperature can sometimes be a problem but should be balanced with the child's need to run and play outdoors. These are good issues to problem solve with parents/guardians and health care professionals. Children with exercise-induced asthma may need to use their albuterol inhaler before physical activity.

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AAP

Devices for asthma medication

ANDREW SILK

A peak flow meter measures how fast a person can blow air out of the lungs.

Transportation considerations

- Consider how to handle respiratory distress that develops during transportation to and from school or child care settings if transportation is not done by parents.
- If the child's asthma is temperature sensitive, be aware of vehicle temperatures and take time to use heat or air conditioning to stabilize the temperature as necessary before the child enters the vehicle.

What should be considered an emergency?

- Notify parents/guardians if
  - ~ Symptoms do not improve with one dose of prescribed quick-relief medication.
  - ~ Two or more doses of quick-relief medication have been needed during the day.
- Always notify parents about any asthma symptoms, even when they do not reach the level that constitutes an emergency, so that parents can work with the child's health care professional to monitor the control of the child's asthma and keep the symptoms under good control. A daily symptom checklist can be a good communication tool to use with parents.
- Call emergency medical services/911 for
  - ~ Severe breathing problems such as struggling to breathe, or pulling in at the neck or under the rib cage with every breath.
  - ~ Child is having difficulty talking or walking.
  - ~ Lips or fingernails are turning blue.
  - ~ Symptoms are not improving after a second dose of quick-relief medication.
- Keep emergency contact information updated at all times.

What types of training or policies are advised?

- Preventing exposure of the child to asthma triggers.
- Recognizing the symptoms of an acute asthma episode.
- Treating acute episodes including the purpose of treatment, expected response, and possible side effects. Caregivers should be able to assist and supervise the child during the treatment.
- Using health consultants for training.
- Look for asthma coalitions in your area.
- Work as a team.
- Track absences and early dismissals.
- There should be a clear policy about exclusion and readmission for active wheezing.

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What are some resources?

- American Academy of Pediatrics, American Public Health Association, National Resource Center for Health and Safety in Child Care. Standard 3.062: management of children with asthma. In: American Academy of Pediatrics, American Public Health Association, National Resource Center for Health and Safety in Child Care. *Caring for Our Children: National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care Programs.* 2nd ed. Elk Grove Village, IL: American Academy of Pediatrics; 2002:120–122
- National Asthma Education and Prevention Program and National Heart, Lung, and Blood Institute, www.nhlbi.nih.gov/health/prof/lung (look under "Asthma Materials for Schools")
  - ~ How Asthma-Friendly Is Your Child-Care Setting? (www.nhlbi.nih.gov/health/public/lung/asthma/chc_chk.pdf)
  - ~ How Asthma-Friendly Is Your School? (www.nhlbi.nih.gov/health/public/lung/asthma/friendly.pdf)
  - ~ *Managing Asthma: A Guide for Schools* (2003 Edition) (www.nhlbi.nih.gov/health/prof/lung/asthma/asth_sch.pdf)
- US Environmental Protection Agency, *Indoor Air Quality (IAQ) Tools for Schools,* www.epa.gov/iaq/schools
- Centers for Disease Control and Prevention, www.cdc.gov/HealthyYouth/asthma/strategies.htm
- Asthma and Allergy Foundation of America, www.aafa.org
- American Lung Association, www.lungusa.org/site/pp.asp?c=dvLUK9O0E&b=22542
- National Institute of Allergy and Infectious Diseases, www3.niaid.nih.gov

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