

Section Editors

Polly F. Cromwell, MSN,
RN, CPNP

School-Based Health
Centers Division

Bridgeport Health
Department

Bridgeport, Connecticut

Robert J. Yetman, MD

University of Texas Medical
School at Houston
Houston, Texas

Childhood Asthma Part One: Initial Assessment, Diagnosis, and Education

Nancy Cantey Banasiak, MSN, APRN, BC, PNP

BACKGROUND

Asthma is a chronic inflammatory disorder of the airways that affects 5% to 13% of the pediatric population (Centers for Disease Control, 2006; Masoli, Fabian, Holt, and Beasley, 2003). Over the past 20 years, progress has been made in understanding the pathophysiology of asthma and in identifying crucial domains of preventive and therapeutic care, as well as appropriate levels of pharmacologic therapy. Morbidity and mortality related to asthma appear to have stabilized or decreased in the last 4 years (Mannino et al., 2002).

"Asthma is a chronic inflammatory disorder of the airways in which many cells and cellular elements play a role, in particular, mast cells, eosinophils, T lymphocytes, neutrophils, and epithelial cells. In susceptible individuals, this inflammation causes recurrent episodes of wheezing, breathlessness, chest tightness, and cough, particularly at night and in the early morning. These episodes are usually associated with widespread but variable airflow obstruction that is often reversible

either spontaneously or with treatment. The inflammation also causes an associated increase in the existing bronchial hyperresponsiveness to a variety of stimuli." (National Heart, Lung, and Blood Institute [NHLBI], 1997)

In response to the need to improve the diagnosis and management of asthma, the NHLBI initiated the National Asthma Education and Prevention Program to educate patients, health care providers, and the public about asthma and its treatment. The guidelines for the care of children with asthma were first developed in 1991 and updated in 1997, and selected topics were again updated in 2002 (NHLBI, 2003). Asthma changes over time, depending on multiple factors affecting the patient, i.e., environmental conditions, family and past medical history, life style, activity level, and illness. Maintenance of asthma therapy is continuous with frequent reevaluation and medical treatment adjustments.

Part one of this clinical guideline will focus on the initial assessment and diagnosis, evaluation, and education associated with asthma. Part two will focus on the management of children with asthma.

Nancy Cantey Banasiak is Assistant Professor, Yale University School of Nursing, New Haven, Conn.

Reprint requests: Nancy Cantey Banasiak, MSN, APRN, BC, PNP, Yale University School of Nursing, 100 Church Street South, PO Box 9740, New Haven, CT 06536-0740; e-mail: nancy.banasiak@yale.edu.

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BOX 1. Screening questions for the diagnosis and assessment of asthma

A "yes" answer to any question suggests that an asthma diagnosis is likely.

In the past 12 months . . .

- Have you had a sudden severe episode or recurrent episodes of coughing, wheezing, or shortness of breath?
- Have you had colds that take more than 10 days to go away?
- Have you had coughing, wheezing, or shortness of breath during a particular season or time of the year?
- Have you had coughing, wheezing, or shortness of breath in certain places or when exposed to certain things, i.e., animals, tobacco smoke, or perfumes?
- Have you used any medication that helps you breathe better? How often?
- Are your symptoms relieved when the medications are used?

In the past 4 weeks, have you had coughing, wheezing, or shortness of breath . . .

- At night that has awakened you?
- In the early morning?
- After running, moderate exercise, or other physical activity?

Adapted from National Heart, Lung, and Blood Institute. (1997).

GENERAL EVALUATION

- Identify symptoms associated with asthma (Box 1)
- Obtain medical history (Box 2)
- Differential diagnosis for children with cough or wheezing (Box 3)

PHYSICAL EXAMINATION

- Vital signs and oxygen saturation
- Height and weight, body mass index
- Physical examination of the nasal passages, respiratory tract, chest, and skin

DIAGNOSTIC TOOLS

AVAILABLE AS NEEDED

- Spirometry measurements for children starting at age 4 to 7 years to establish diagnosis, after treatment has started and symptoms have stabilized, and every 1 to 2 years
- Assessment of diurnal variations in peak expiratory flow (PEF)
- Bronchoprovocation
- Chest radiograph may be needed to exclude other diagnoses
- Allergy testing
- Evaluation of nose for polyps and sinuses for sinus disease
- Evaluation for gastroesophageal reflux

ASTHMA CLASSIFICATION

- See Table

REFERRALS

- Referral to an asthma specialist is recommended when:
 - Patient has had a life-threatening asthma exacerbation

- Asthma is unable to be controlled after 3 to 6 months of treatment
- Problems with compliance issues with medical regimen are identified
- Patients are diagnosed with moderate to severe persistent asthma
- Patient require continuous oral corticosteroids or require more than 2 short courses of oral corticosteroids in 1 year
- Making the diagnosis of asthma is difficult
- Additional testing is required for the diagnosis or exclusion of asthma
- Allergist if allergies are suspected
- Patients with psychiatric or family issues interfering with control of asthma should be referred to a mental health provider

PATIENT EDUCATION

- Review asthma pathophysiology
- Review signs and symptoms of asthma exacerbations
- Identification and avoidance of triggers (Box 4)
- Environmental controls
- Understand the importance of medication
 - Quick relief medicines
 - Controller medicines
- Understand the proper use of nebulizers, metered dose inhaler/dry powder inhaler, and spacers
- Daily use of peak flow monitoring
- Review asthma action care plan
- Annual influenza vaccine

FOLLOW UP

- Close follow up of signs and symptoms and exacerbations
 - Every month until stable then every 3 to 6 months thereafter
- Monitor pulmonary function tests and PEF initially, after treatment begins, and every 1 to 2 years thereafter
- Monitor medications use and relief of symptoms
- Monitor patient activities and quality of life

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