



ASTHMA MANAGEMENT™

The Complete Asthma Disease State Management Resource

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Asthma IQ test

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Develop a cutting-edge strategy with newly revised asthma guidelines

New classifications of severity, new treatment options are spelled out

A teen-ager with mild intermittent asthma used a quick relief inhaler only one day a week or less but still developed a viral upper respiratory infection, recalls **Karen Huss**, RN, DNSc, CANP, FAAN, associate professor at the Johns Hopkins University School of Nursing in Baltimore and member of the National Asthma Education Program Nurses' Committee, part of the Bethesda, MD-based National Heart, Lung, and Blood Institute.

"She went to a family outing for the day, which included horseback riding and being around other furred animals to which she was allergic," Huss says. "Later that evening, she had a severe attack which was not helped by her quick relief medication. She required hospitalization, including intubation for a severe attack."

Recognizing that even a patient with mild intermittent asthma can have a severe exacerbation is one of the many dramatic changes to the institute's asthma guidelines, titled *Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma*. (See excerpt, pp. 39-40. See ordering information, p. 41.)

The guidelines can help you develop a cutting-edge strategy to manage asthma, emphasizes **Richard Nowak**, MD, FACEP, vice chairman of the emergency medicine department at Henry Ford Health System in Detroit.

Focusing on asthma in the ED

A big part of managing asthma is preventing trips to the emergency department (ED). When they are needed, however, new federal guidelines should have a dramatic effect on the treatment that is given.

This issue of *Asthma Management* updates readers on the newly revised asthma guidelines from the National Heart, Lung, and Blood Institute, which detail treatment strategies for the ED.

Special features for this issue include an excerpt from the guidelines, an asthma IQ test, and student information forms to share with your local school district. ■

KEY POINTS

Revised asthma guidelines have been published by the National Heart, Lung, and Blood Institute in Bethesda, MD, to address both acute exacerbations and chronic management.

- Definitions of mild, moderate, and severe have changed to mild intermittent, mild persistent, moderate persistent, and severe persistent.
- Patients at any level of severity can have mild, moderate, or severe exacerbations of asthma.
- New treatment options include anticholinergics for patients with moderate and severe exacerbation and higher dose beta agonists.

“We need to have some scientific basis for our overall approach to asthma,” Nowak says. “The guidelines represent a comprehensive, multidisciplinary overview of both chronic and acute exacerbation management.”

“The idea of the guidelines is to provide quick, efficient care of the asthmatic with exacerbation and have it driven by objective guides such as pulmonary function,” says **Rita Cydulka**, MD, emergency medicine department residency director at Case Western Reserve University in Cleveland. “The guidelines are very clear-cut and easy to institute. Following them will allow for quick, efficient care of the asthmatic patient.”

The guidelines are lengthy, which makes it difficult for busy practitioners to read them in their entirety, notes Huss. “There is a *Practical Guide for the Diagnosis and Management of Asthma*, which is based on the full report,” she explains. “It concentrates on improving asthma care by health care providers within the time constraints of their practices.”

Here are some key points in the revised guidelines:

□ Know changed definitions of severity.

Asthma severity classifications have been changed from mild, moderate, and severe to the following: mild intermittent, mild persistent, moderate persistent, and severe persistent.

“These categories better reflect the clinical manifestations of the disease,” says Huss.

□ Use a stepwise approach.

In a stepwise approach to therapy, the dose and number of medications and frequency of administration are increased or decreased whenever possible. The changed categories for severity make it possible to use a stepwise approach to treat asthma, says Huss. The stepwise approach also emphasizes initiating higher level therapy at the onset to establish prompt control, then stepping down, she explains.

□ Be familiar with the new peak flow parameters.

“It used to be that a severe exacerbation had a peak flow of less than 40% predicted; now it’s less than 50% predicted,” Cydulka says. “Moderate is now from 50% to 80%, and mild is above 80%.”

□ Understand the categories of medications.

The guidelines now categorize medications into two general classes: long-term control medications for control of persistent asthma and quick relief medications to treat acute symptoms and exacerbations. Patients with persistent asthma require both classes of medication, notes Huss.

“The most effective medications for long-term therapy are those having anti-inflammatory effects,” she says. Inhaled steroids are the most effective anti-inflammatory medications, according to the guidelines.

□ Start therapy at triage.

“The guidelines address the recognition of acute exacerbations, objective measurements of that, and initiation of appropriate therapy by nursing staff,” notes Nowak. “Nurses should establish the level of severity and initiate albuterol inhalation. If patients can’t be seen immediately, you should continue to give beta agonists until they are seen.”

Understand how to assess severity during presentation and the patient’s therapy, says Nowak. “In our ED, nurses administer albuterol, not the respiratory department. There is definitely a role for nurses not only to assess, but to treat,” he adds.

(Continued on page 41)

COMING IN FUTURE MONTHS

■ Inhaled steroids:
Safe (and essential) for
pregnant asthmatics

■ Three important
days in a life with
asthma

■ The psychology of
asthma management

■ Racial differences
in glucocorticoid
response

■ Associations join
forces for asthma
education

Emergency Department and Hospital Management of Asthma Exacerbations (Excerpt)

Severe exacerbations of asthma are potentially life-threatening. Care must be prompt. Effective initial therapies (i.e., a short-acting β_2 agonist and the means of giving it by aerosol and a source of supplemental oxygen) should be available in a physician's office. However, severe exacerbations require close observation for deterioration, frequent treatment, and repetitive measurement of lung function. Therefore, most severe exacerbations of asthma require prompt transfer to an emergency department for a complete course of therapy. An overview of the treatment strategies in emergency departments and hospitals is detailed below.

Assessment:

An expert panel of the National Institutes of Health, National Heart, Lung, and Blood Institute in Bethesda, MD, recommends all clinicians treating asthma exacerbations be familiar with the characteristics of patients at risk for life-threatening deterioration. In the emergency department, treatment should be started as soon as an asthma exacerbation is recognized and assessment of lung function is made.

While treatment is given, obtain a brief, focused history and physical examination pertinent to the exacerbation. Take a more detailed history and complete physical examination and perform laboratory studies only after initial therapy has been completed.

Objectives of functional assessment are to:

- Obtain objective information on the severity of airflow obstruction and the patient's response to treatment.
- In the emergency department, obtain forced expiratory volume in one second (FEV_1) or peak expiratory flow (PEF) on presentation, after initial treatment, and at frequent intervals thereafter, depending on the patient's response to therapy. Rarely, a patient's airflow obstruction may be so severe as to prevent performance of a maximal expiratory maneuver.
- In the hospital, measure FEV_1 or PEF before and 15-20 minutes after bronchodilator therapy during the acute phase of the exacerbation.

Thereafter, measure FEV_1 or PEF at least daily after discharge. Values $<30\%$ of predicted that improve by $<10\%$ after bronchodilator therapy or that fluctuate widely over 24 hours indicate a heightened risk of life-threatening deterioration.

In patients with severe distress or with FEV_1 or PEF $<50\%$ of predicted, assess the adequacy of arterial oxygen saturation by pulse oximetry.

Objectives of the brief history are to determine:

- time of onset and cause of current exacerbation;
- severity of symptoms, especially compared with previous exacerbations;
- all current medications and time of last dose;
- prior hospitalizations and emergency department visits for asthma, particularly within the last year;
- prior episodes of respiratory insufficiency due to asthma (loss of consciousness or intubation and mechanical ventilation);
- other potentially complicating illness, especially other pulmonary or cardiac disease or diseases that may be aggravated by systemic corticosteroid therapy such as diabetes, peptic ulcer, hypertension, and psychosis.

Objectives of the physical examination are to:

- assess the severity of the exacerbation as indicated by the findings;
- assess overall patient status, including level of alertness, fluid status, and presence of cyanosis, respiratory distress, and wheezing. Wheezing can be an unreliable indicator of obstruction; in rare cases, extremely severe obstruction may be accompanied by a "silent chest";
- identify complications (e.g., pneumonia, pneumothorax, or pneumomediastinum);
- identify other diseases that may affect asthma (e.g., allergic rhinitis or sinusitis);
- rule out upper-airway obstruction. Both intrathoracic and extrathoracic central airway obstruction can cause severe dyspnea and may be diagnosed as asthma. Causes include

epiglottitis, organic diseases of the larynx, vocal cord dysfunction, and extrinsic and intrinsic tracheal narrowing. Clues as to their presence include dysphonia, inspiratory stridor, monophonic wheezing loudest over the central airway, normal values for PO_2 , and unexpectedly complete resolution of airway obstruction with intubation. When upper airway obstruction is suspected, obtain further evaluation by flow-volume curves and referral for laryngoscopy.

The most important objective of laboratory studies is detection of actual or impending respiratory failure; other objectives include detection of theophylline toxicity and conditions that complicate the treatment of asthma exacerbations. Do not permit these studies to delay initiation of treatment. For example:

Consider arterial blood gas (ABG) measurement for evaluating arterial carbon dioxide tension (PCO_2) in patients with suspected hypoventilation, with severe distress, or with FEV_1 or PEF 30% of predicted after initial treatment. (Note: Respiratory drive is typically increased in asthma exacerbations, so a "normal" PCO_2 of 40 mm indicates severe airflow obstruction and a heightened risk of respiratory failure.)

Complete blood count (CBC) may be appropriate in patients with fever or purulent sputum; keep in mind modest leukocytosis is common in asthma exacerbations and corticosteroid treatment causes a further outpouring of polymorphonuclear leukocytes within one to two hours of administration.

Measure serum theophylline concentration in patients taking theophylline prior to presentation.

It may be prudent to measure serum electrolytes in patients who have been taking diuretics regularly and patients with coexistent cardiovascular disease because frequent β_2 agonist administration can cause transient decreases in serum potassium, magnesium, and phosphate.

Chest radiography is not recommended for routine assessment but should be obtained in patients suspected of a complicating cardiopulmonary process, such as pneumothorax, pneumomediastinum, pneumonia, lobar atelectasis, or congestive heart failure.

Electrocardiograms need not be routinely

obtained, but a baseline electrocardiogram and continual monitoring of cardiac rhythm are appropriate in patients older than 50 years of age and those with coexistent heart disease or chronic obstructive pulmonary disease. The electrocardiogram may show a pattern of right ventricular strain that reverses promptly with treatment of airflow obstruction.

Assessment considerations unique to children and infants are as follows:

It is often difficult for physicians and parents to determine the severity of the airway obstruction in infants and small children with asthma. However, using a combination of the subjective and objective parameters permits a fairly accurate assessment to guide initial therapy. Many of these parameters have not been systematically studied, so they serve only as general guides.

The differences in the anatomy and physiology of the lungs of infants place them at greater risk for respiratory failure. These differences include greater peripheral airway resistance, fewer collateral channels of ventilation, further extension of airway smooth muscle into the peripheral airways, less elastic recoil, and mechanical disadvantage of the diaphragm. Viral infections, particularly respiratory syncytial virus, are the most common cause of acute wheezing illness in infants. The edematous inflammatory response in the airways leads to air trapping and hyperinflation, atelectasis, increased respiratory rate, and wheezing. This sequence of changes can rapidly progress to respiratory failure. Close monitoring is crucial.

It is particularly important to monitor O_2 saturation by pulse oximetry in infants because their ventilation/perfusion characteristics lead them to become hypoxemic more readily than adults. SaO_2 should be normal for altitude (>95% at sea level). Decreased oxygen saturation is often an early sign of severe airway obstruction, and an SaO_2 <91% on room air is a good predictor of the need for hospitalization in small infants.

Capillary or ABG measurements should be performed in infants suspected of respiratory failure. PCO_2 is the best measurement of ventilation in infants, as it is in adults. Children with a normal PCO_2 , but in obvious respiratory distress, are at high risk for respiratory failure.

Source: Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma: National Institutes of Health, National Heart, Lung, and Blood Institute; Bethesda, MD.

(Continued from page 38)

□ Know correct dosages.

“The guidelines give you a framework for dosage of the beta agonists. If you’re severe, it’s 5 mg. If you’re not, it’s 2.5 mg, with three treatments in the first hour,” says Nowak. “That’s an approach to start with. Then you can follow them closely in terms of repetitive pulmonary function testing.”

□ Look at the big picture.

“We are managing a disease, and acute asthma is a small part of that,” says Nowak. “We need to be sure patients are appropriate with medicines and have some sort of plan, including peak flow monitoring. It’s important that they understand not only the acute management, but also the chronic strategies to keep them out of the hospital.” (See related story, p. 43.)

□ Make sure patients are well-oxygenated.

“The guidelines say that inhaled β_2 agonists are the first-line treatment, and systemic corticosteroids should be considered for all exacerbations in the moderate to severe range,” says Cydulka. “The guidelines also say to consider oxygen to relieve hypoxemia for moderate to severe exacerbations. Response to therapy should be monitored with a serial measurement of lung function,” she adds. “The goal of treatment is to correct hypoxemia to rapidly restore airway function and reduce relapses.”

□ Consider anticholinergics for patients with moderate and severe exacerbation.

“Even though the research is mixed, the guidelines say anticholinergics should be considered,” notes Cydulka.

□ Consider higher dose beta agonists.

“Consideration of higher dose beta agonists for everyone except the mildest of exacerbations is new in this set of guidelines,” says Cydulka. “The current thinking is that .5 mg instead of .25 mg seems to be more effective.”

□ Be familiar with ventilation issues.

“The new treatment addressed in these guidelines is permissive hypocapnia. This is a ventilator strategy that minimizes airway pressures and hopefully minimizes barotrauma,” says Cydulka. “Whereas in the past we’d try and make sure that the CO_2 level was normal, now we’ll allow hypocapnia and just treat the respiratory acidosis with bicarbonate.”

□ Know recommended treatments.

“The mainstay of therapy is short-acting inhaled β_2 agonists every two to three minutes for

three treatments for all patients,” says Huss. “Subsequent therapy and disposition depends on response.” (See story on new and controversial asthma treatments, p. 42.)

Corticosteroids are given to most patients, usually orally, Huss says. “Onset of action is four hours or longer,” she explains. “Often, a three- to 10-day course of moderate to high dose steroids is given [in adults, usually 400 to 600 mg daily]. When given in a short course, tapering is not necessary.” (See related story on asthma myths, p. 44.)

[To order the National Heart, Lung and Blood Institute’s Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma (NIH Publication 97-4051) for \$7 per copy, contact: National Heart, Lung and Blood Institute Information Center, P.O. Box 30105, Bethesda, MD 20824. Telephone: (301) 251-1222. Web site: www.nhlbi.nih.gov.] ■

Deciding which asthma patients to admit

“After the patient is worked up, a decision needs to be made: Do they go home, to a clinical decision or observation unit, or get admitted to the hospital?” asks **Richard Nowak**, MD, FACEP, vice chairman of the department of emergency medicine at Henry Ford Health System in Detroit. Here are some things to consider when evaluating a patient’s need for admission:

• **Monitor patients carefully.**

“Nursing monitoring with repetitive monitoring of peak flow and clinical evaluation is an important part of making the decision about admission,” says Nowak.

• **Consider placing patient in observation unit.**

Many asthma patients can be managed in an observation unit in the emergency department (ED), notes Nowak. “A lot of asthmatics don’t need three- or four-day admissions,” he says. “Before, we had only two options: Does the patient go home, or are they a hospital admission? The guidelines don’t make that stipulation; they just identify which patients need more care. Now we have more avenues than before to manage these patients.”

• **Beware of risks of moderate exacerbations that don’t respond to treatment.**

The decision is the most difficult with patients with a moderate exacerbation who don’t respond

well in the ED, notes **Rita Cydulka**, MD, residency director for the department of emergency medicine at Case Western Reserve University in Cleveland.

“It’s unclear whether the right answer is hospitalizing them or sending home with an intensive treatment plan,” she says. “The reality is, it’s frequently a judgment call. You need to consider background information, including past history with asthma, history of hospitalizations, and whether they have access to care quickly.”

- **Consider patient history.**

The decision needs to be based on pulmonary function testing and other criteria, notes Nowak.

“The guidelines give you peak flow criteria, but also a whole set of clinical scenarios that you need to consider when deciding who to admit,” says Nowak. “If a patient has multiple previous admissions, is homeless, or has no access to medical care, you are more likely to admit them.”

- **Monitor patient’s initial response.**

The response to the initial treatment in the ED is a better predictor of the need for hospitalization than the severity of the attack on presentation, notes **Karen Huss**, RN, DNSc, CANP, FAAN, associate professor at the Johns Hopkins University School of Nursing in Baltimore, and member of the National Asthma Education Program Nurses’ Committee. ■

Be familiar with new asthma therapies

New medications are available for treatment of asthma. Here are several that you need to be aware of:

- ✓ **Controversial therapies.**

Controversial therapies include use of anticholinergics, magnesium, and heliox, says **Rita Cydulka**, MD, residency director for the department of emergency medicine at Case Western Reserve University in Cleveland.

How effective are new treatments?

“The use of noninvasive positive pressure ventilation in the treatment of severe asthmatics is also controversial,” says Cydulka. “Inhaled corticosteroids in ED treatment is controversial, as is the usefulness of inhaled corticosteroids at discharge, although the use for maintenance is very clear-cut.”

“The effectiveness of these treatments hasn’t been determined,” she says. “Some of the literature has showed that magnesium sulfate is effective for severe exacerbation, but not very effective for mild or moderate exacerbation,” she says. Likewise, heliox appears to be effective with severe exacerbation, but so far no role has been found for moderate or mild exacerbation, Cydulka says.

“There have been a few studies on inhaled corticosteroids, but there is not enough literature out on that yet,” she adds. “Leukotriene modifiers are in the process of being addressed, but their role in an exacerbation has not been delineated yet at all.”

- ✓ **Methylxanthines.**

Sustained-release theophylline is a mild-to-moderate bronchodilator used principally as adjuvant to inhaled corticosteroids for prevention of nocturnal asthma symptoms, says Cydulka. “However, the guidelines do not recommend use of methylxanthines,” she notes.

- ✓ **Antibiotics.**

“Antibiotics are also still not recommended unless there is an infection noted. And aggressive hydration is not recommended unless indicated,” Cydulka adds.

- ✓ **Long-acting inhaled β_2 agonists.**

Long-acting inhaled β_2 agonists is adjunctive therapy to inhaled corticosteroids, especially for night-time symptoms, says **Karen Huss**, RN, DNSc, CANP, FAAN, associate professor at the Johns Hopkins University School of Nursing in Baltimore, and member of the National Asthma Education Program Nurses’ Committee, part of the Bethesda, MD-based National Heart, Lung, and Blood Institute.

Duration of action is 12 hours, Huss says. “It is not to be used for acute symptoms or acute exacerbations because it takes at least 30 minutes to work,” she explains.

- ✓ **Leukotriene modifiers.**

Leukotriene receptor antagonist for age 12 and older, is used BID, says Huss. “Leukotriene modifiers may be useful as daily long-term control medications for patients with mild persistent asthma,” she says. “Their role in helping asthma in more severe cases is not yet established.”

- ✓ **Zileuton lipoxygenase inhibitor.**

Zileuton lipoxygenase inhibitor is used qid for ages 12 and older, says Huss.

- ✓ **Montelukast leukotriene receptor agonist.**

Montelukast leukotriene receptor agonist is used for ages 6 and older with once-a-day dosage, Huss says. ■

Ask your patients these seven asthma questions

Many patients don't know enough about management of asthma, warns **Rita Cydulka**, MD, residency director for the department of emergency medicine at Case Western Reserve University in Cleveland.

"The goal is to make asthmatics responsible for their care at home, recognize when they are able to adequately treat themselves at home, and seek emergency care before it's too late," she recommends. "We need to make the general population realize that although asthma is very common and we frequently think of it as a mild disease, about 4,000 people die from it each year."

Take the time to ask asthmatics the following questions:

1. Do you understand what asthma is?

Explain to patients that asthma is a chronic inflammatory disorder of the airways, recommends **Karen Huss**, RN, DNSc, CANP, FAAN, associate professor at the Johns Hopkins University School of Nursing in Baltimore, and member of the National Asthma Education Program Nurses' Committee, part of the Bethesda, MD-based National Heart, Lung, and Blood Institute. "This has implications for the diagnosis, management, and prevention of the disease," she says.

Asthma includes the following immunohistopathologic features, she says:

- denudation of airway epithelium;
- collagen deposition beneath basement membrane;
- edema;
- mast cell activation;
- inflammatory cell infiltration;
- airway inflammation contributes to airway hyper-responsiveness to a wide variety of stimuli;
- airway inflammation contributes to airflow limitation including acute bronchoconstriction, airway edema, mucus plug formation, and airway wall remodeling. These lead to bronchial obstruction; and atopy, the genetic predisposition for the development of mediated response to common aeroallergens, is the strongest identifiable predisposing risk factor for developing asthma.

Before discharge, patients must know how to take their medications through written and verbal information, (usually) be provided with a peak flow meter, trained on inhaler technique, and

referred for medical follow-up, says Huss. "Also, they should know when to return to the ED if symptoms return or peak flows drop," she advises.

2. Do you know what triggers your asthma?

Studies demonstrated that patients presenting to EDs for asthma have a high rate of sensitization to indoor allergens, says Huss. "About 80% of young children and 50% of more of adults will have an allergic component to their disease."

Asthmatics may be allergic to indoor allergens such as house dust mites, cat hair, dog dander, and cockroaches, says Huss. "Once I determine what the patient is allergic to by allergy skin testing, I emphasize allergen specific environmental control measures to reduce chronic inflammation in the airways."

3. Do you know when to come to the ED?

Revised asthma guidelines from the National Heart, Lung, and Blood Institute include a home management protocol that gives a sample strategy for using the inhaler with two or three puffs every 20 minutes for an hour.

"But it's guided by pulmonary function testing, and if it's not improving, then patients need to go to the ED," says **Richard Nowak**, MD, FACEP, vice chairman of the department of emergency medicine at Henry Ford Health System in Detroit.

Patients may be managed by primary care practitioners who aren't following the guidelines, notes Nowak. "You may need to look at what the chronic care physician is doing. They might not meet the [institute's] recommendations. If a patient comes in who isn't being managed as well as they should be, we should write them a prescription for analgesic steroids if they need them."

The goal is to reduce visits to the ED, says Nowak. "In addition to treating acute exacerbation, it would be nice if we can add therapies so the patient can better control the disease."

4. Do you understand the difference between your medications?

"Review with patients which are the long-term medications that prevent symptoms and reduce inflammation, and which are the quick-relief meds like bronchodilators to take if you feel obstructed to help relax the muscles around their airways," says Cydulka.

A common problem occurs when a patient uses long-term control medications when they have an exacerbation, she says. "So they'll furiously take puffs on steroid inhaler and expect quick relief when that's not the way those medications work," Cydulka explains.

Know how to dispel eight asthma myths

When treating asthmatics, keep in mind these eight myths:

Myth 1: If patients have already used beta agonists at home, there is no reason to give beta agonist therapy. “Failure of beta agonist therapy at home does not translate to failure of beta agonist in the ED [emergency department],” says **Rita Cydulka**, MD, residency director for the department of emergency medicine at Case Western Reserve University in Cleveland.

Myth 2: A silent chest is not an ominous sign. “Those people are probably near moribund,” Cydulka says. “When you listen to the chest of asthmatics, you usually hear wheezing. But sometimes you hear nothing, which means they’re so obstructed they aren’t able to generate a sound. You need to be very worried about these patients.”

Myth 3: A normal PCO₂ in an asthmatic that is breathing rapidly is not cause for concern. “Actually, you should be concerned. One would expect that an asthmatic with a rapid respiratory rate would have diminished PCO₂,” says Cydulka. “You would see a PCO₂ of 40 to 42 in an otherwise healthy person without asthma.”

But in an asthmatic with an increased respiratory rate, that is considered a CO₂ retention, because they should have a PCO₂ in the 25 to 30 range, Cydulka explains. “If the level is normal, it means they are failing to blow it off and having signs of ventilatory failure,” she says.

Myth 4: You shouldn’t treat pregnant asthmatics with steroids. “Actually, the opposite is true,” advises Cydulka. “You need to be very vigilant in caring for pregnant asthmatics and give them steroids very readily. Asthmatics who do poorly have lots of maternal and fetal complications. They tend to be eclamptic and wind up with abruptions and babies small for gestational age babies. So you need to be extra careful rather than withholding treatment from them,” she states.

Myth 5: Clinical judgment and physician exam

are just as good an indicator of the state of the airways as pulmonary functions. “We have done studies where physicians were asked to guess the pulmonary functions of patients, and the results were not good,” Cydulka says. “You really need pulmonary functions to assess the level of obstruction. There have been multiple studies showing that vital signs and breath sounds normalize long before pulmonary function does.”

Myth 6: Metered-dose inhalers (MDIs) don’t work as well as nebulized aerosols during exacerbation. “If patients are properly educated in the correct use of MDIs or given a spacer device to use, MDIs are just as effective for treating exacerbation as aerosolized beta agonists,” says Cydulka.

Myth 7: Most asthma patients will not be able to live a normal life. That is a common misconception, says **Richard Nowak**, MD, FACEP, vice chairman of the department of emergency medicine at Henry Ford Health System in Detroit. “The guidelines clearly show that when asthmatics are appropriately managed, they can live a totally normal life,” Nowak says. “That includes not waking up at night, being able to exercise, and not being impaired in lifestyle. That is a realistic goal with appropriate strategies and avoidance of triggers.”

Myth 8: Asthmatics don’t belong in the ED. “It’s not that every asthmatic is incorrigible. Some can’t get to see their doctors; others are mismanaged or just don’t take their meds,” says Nowak.

“If we can’t educate people to take inhaled corticosteroids, maybe it’s our problem and we’re not doing it right. It’s a real challenge, but the more you know about the disease, the better you can educate the patient. You don’t want people to stay at home and die of an acute exacerbation of the disease,” he adds.

Asthmatics with very severe exacerbations should never hesitate to come to the ED, stresses Cydulka.

“When you have an asthmatic with acute ventilatory failure and respiratory failure, you may need to intubate and ventilate to maintain their oxygenation. However, that is not a cure, and it’s fraught with many complications,” she says. “Those are very frightening patients.” ■

5. Will you seek follow-up care?

“The ED nurse should emphasize the importance of follow-up with primary care provider or an asthma doctor so they can develop action plans,” says Cydulka.

6. Do you know how to use your inhaler?

“I find that many patients in the ED just don’t know how to use their inhalers,” says Cydulka. “Have the patients show you how they use it,

then review with them step by step. There are picture guides in the guidelines which you can use.”

7. Do you monitor symptoms at home?

“Talk to them about monitoring their symptoms and peak flows at home, so they can recognize early on that their asthma is worsening,” suggests Cydulka. “It’s rare that we see patients early on in the asthma attack. We usually see them as time goes on.”

[For more information, contact:

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aging asthma patients in a timely manner and documents delays in available beds, information, and supplies or ancillary services.

An educational packet was created and is handed out to every asthma patient. "It's written at the third-grade reading level and includes things to do at home to keep asthma from flaring up, such as reminders to do peak flow monitoring," says Lopez.

The packet includes a coloring book, asthma calendar, and asthma IQ quiz. (**See asthma IQ test, inserted in this issue.**)

All children ages 5 to 18 are trained in peak flows before they leave the ED. Patients are educated about controlling environmental triggers,

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California ED zeroes in on pediatric asthma

At Hemet Valley Medical Center's ED in Hemet, CA, a task force targets pediatric asthma with a focus on education. The program began after one child had nine emergency department (ED) visits in one month and was at risk of dying.

"She came in cyanotic with acute conditions many times," says **Jessica Lopez**, RCP, CRTT, RTT, respiratory therapy educator for the ED.

The child wasn't able to get her inhalers refilled because she would use all of her doses in two weeks, Lopez recalls.

"She had many middle-of-the-night trips to the ED, and her family had no car or phone, which increased our concern," she says. "It was clear she was going to be a frequent flier constantly if we didn't correct this."

Asthmatic children who visit the ED frequently are at risk of death, stresses Lopez.

"A lot of times they don't follow through with their primary care provider, so they are at great risk," she says. "Asthma visits have been increasing every year, especially among young children. Our goal is to keep them from having a debilitating illness or permanent brain injury from their asthma."

A task force was formed to address the problem, including monthly tracking of pediatric asthma patients. A tracking form is used to review charts of all asthma patients ages 0 to 18, then the data is compiled into quarterly data. A Variance Tracking Sheet is used to track problems of man-

Environmental Preventions for Asthma

- ✓ One bottle boric acid solution (8 ounces) added to water (2-3 gallons) only in steam cleaner. Clean 9-by-15 room. If carpets need to be cleaned, clean carpets, then rinse carpet thoroughly once with water only, then use boric acid solution. Allow carpet to dry thoroughly. Use solution every three months.
- ✓ Cover pillows and mattress with zippered plastic covers.
- ✓ Change pads in swamp coolers every month during use.
- ✓ In central heat and air system, change disposable filters every month if possible or every three months without fail. Washable filters should be cleaned monthly and allowed to dry completely before returning. When washable filters no longer fluff up, replace them. (3M has a filter now that even picks up .4 mc particles such as viruses).
- ✓ Cleaning and disinfecting household surfaces can be done using one part white vinegar and one part tap water. Wipe down surfaces in kitchen, bathroom, play areas, and any washable surface. Allow to dry thoroughly.
- ✓ Weekly, remove bedspread, comforter, pillows, and stuffed animals from room. Hang on clothesline for two hours or place in dryer on "air fluff" for 20 minutes to remove dust and dander from these items.
- ✓ Change bedding weekly. Wash bedding in hot water and dry thoroughly. Vacuum mattress if not covered with plastic. If there is a cover on the mattress, wipe down with vinegar solution.

Source: Hemet Valley Medical Center, Hemet, CA.



Valley Health System

A California Local Health Care District
1117 East Devonshire Avenue • Hemet, California 92343
(909) 652-2811 • TDD (909) 652-6173

Asthma Student Action Information



GENERAL INFORMATION

Name _____ Age _____

Teacher _____ Room _____ Grade _____

Parent/Guardian Name _____ Home Phone _____

Address _____ Work Phone _____

Parent/Guardian Name _____ Home Phone _____

Address _____ Work Phone _____

EMERGENCY AND PHYSICIAN CONTACTS

Emergency Contact #1 _____
Name Relationship Phone

Emergency Contact #2 _____
Name Relationship Phone

Emergency Contact #3 _____
Name Relationship Phone

Physician for Asthma Treatment _____
Name Phone

Other Physician _____
Name Phone

DAILY ASTHMA MANAGEMENT PLAN

Identify things that start asthma episode (check all that applies to student)

- | | | | |
|---|--|---|---|
| <input type="checkbox"/> Exercise | <input type="checkbox"/> Strong odors or fumes | <input type="checkbox"/> Molds | <input type="checkbox"/> Foods #1 _____ |
| <input type="checkbox"/> Respiratory infections | <input type="checkbox"/> Chalk dust | <input type="checkbox"/> Windy conditions | <input type="checkbox"/> Foods #2 _____ |
| <input type="checkbox"/> Change in temperature | <input type="checkbox"/> Carpets | <input type="checkbox"/> Air pollution | <input type="checkbox"/> Other #1 _____ |
| <input type="checkbox"/> Animals | <input type="checkbox"/> Pollens | | <input type="checkbox"/> Other #2 _____ |

Comments: _____

Control measures for school environment (list pre-medications, dietary restrictions, and environmental control to prevent asthma episode). _____

Peak Flow Monitoring Peak flow number _____ Monitoring times _____

DAILY MEDICATION PLAN

	Name	Amount	Time to use
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____

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Source: Hemet Valley Medical Center, Hemet, CA.

Asthma Student Action Information

Name _____

EMERGENCY TREATMENT PLAN

Emergency action is necessary when the student has symptoms such as _____

or has peak flow reading of _____ .

STEPS TO TAKE DURING ASTHMA EPISODE

1. Give medication listed below.
2. Have student return to classroom if _____

3. Contact parent

- ✓ Immediately if severe respiratory distress.
- ✓ Any time treatment has been given, notify parents before child goes home from school.
- ✓ Other parental instructions.

4. Seek medical care if student has any of the following:

- ✓ No improvement 15-20 minutes after initial treatment and a relative cannot be reached.
- ✓ Peak flow of _____
- ✓ Hard time breathing with:
 - x chest and neck pulled in with breathing.
 - x child hunched over.
 - x child is struggling to breathe.
- ✓ Difficulty walking.
- ✓ Unable to talk in two or three words without struggling to breathe or hard to understand or hear words.
- ✓ Stops playing and cannot start activity again.
- ✓ Lips or fingernails are gray or blue.

**IF THIS HAPPENS (#4)
GET
EMERGENCY HELP NOW!!!!**

GET EMERGENCY HELP NOW

EMERGENCY ASTHMA MEDICATIONS

	Name	Amount	Time to Use
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____

Special Instructions: _____

For Inhaled Medications:

- I have instructed _____ in the proper use of his/her medications. It is my professional opinion that _____ should be allowed to carry and use that medication by him/herself. (It is recommended that the nurse/teacher be notified by student when use of inhaler is required for any respiratory distress).
- It is my professional opinion that _____ should not carry his/her inhaler medication by him/herself.

Physician Signature Phone Date

Parent/Guardian Signature Parent/Guardian Signature Date

(Continued from page 45)

through smoking cessation, removing or cleaning carpet, and covering mattresses and pillows with plastic, she notes. (See box on environmental preventions for asthma, p. 45.)

A pediatric asthma chart for children under 18 includes nursing diagnosis, response to interventions after 20 minutes, one hour, and three hours, and referrals. "The form includes making sure all children patient receives asthma education before they leave the ED, and get a referral to our Huff and Puff classes, which are held each month at one of three hospitals," says Lopez. (See *Asthma Management*, March 1999, p. 31, for more on the Huff and Puff program.)

Outreach education is done at schools with local pediatricians. "Our ED asthma committee is currently meeting with our two school districts to provide further education for teachers and students," she reports.

A form is given to schools for asthmatic children, including emergency contact information, daily asthma management plan, daily medication plan, and steps to take during asthma episodes. (See *Asthma Student Action Information form*, pp. 46-47.)

Insurance companies provided incentives for ED patients if they complete the hospital's asthma programs, such as gift certificates to local supermarkets. ■

CE objectives

Asthma Management will give readers a concise, dependable way to track the latest developments in the field, thus helping health care professionals improve patient care by using the latest management and care techniques, particularly for high-risk, high-cost patients.

After reading *Asthma Management*, health care professionals will be able to:

1. Identify management, clinical, educational, and financial issues relevant to the care of patients with asthma.
2. Explain how those issues affect asthmatic patients and the providers who care for them.
3. Describe practical ways to solve problems commonly encountered by care providers in their daily activities. ■

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