Cromolyn sodium taken before antigen exposure will block this late reaction to antigen as well as the immediate response.

—*Seasonal asthma* occurs in those patients who experience asthma only in relationship to such environmental allergens as pollens, molds, and house-dust mites. Treatment for these individuals can be similar to that of other patients, depending upon the severity of asthma symptoms. If the patient has seasonal asthma on a predictable basis, prophylactic antiasthma therapy should be initiated prior to the anticipated onset of symptoms.

—*Cough variant asthma* is seen in some patients, especially young children. Cough is the principal symptom: because this frequently occurs at night, examinations during the day may be normal. Nocturnal administration of bronchodilators will often be therapeutic and diagnostic.

■ **Seek consultation with an asthma specialist** for pulmonary function studies, evaluation of the role of allergy and irritants, or evaluation of the medication plan if the goals of therapy are not achieved.

■ **Use step-care pharmacologic therapy.** An aim of therapy is to use the optimum medication needed to maintain control with minimal risk for adverse effects. The step-care approach, in which the number of medications and frequency of administration are increased as necessary, is used to achieve this aim.

—In general, every asthma patient must have an inhaled beta$_2$-agonist available for rescue treatment of acute symptoms. This rescue treatment itself has a step-care pattern: medications are added as necessary to control symptoms. The increase is often temporary and depends on the severity and duration of the asthma exacerbation as well as the patient's response. (Note, however, that increasing use of rescue treatment by the patient is an indication to review the medication plan and possibly to increase preventive therapy.)

—Maintenance therapy, or chronic management of asthma, also uses a step-care approach and is based upon severity of disease: mild, moderate, or severe (see Charts 2-7). (For Chart 1, which illustrates the overview of therapy, see the full report.)

■ **Monitor continually.** Continual monitoring, which includes objective measures of assessment, is necessary to assure that therapeutic goals are met.

—While the patient is achieving control of asthma, PEFR variability greater than 10 to 20 percent and continued presence of chronic symptoms indicate a need to reevaluate the patient's technique in using medication, any environmental aggravators and the patient's efforts to control them, the possibility of concomitant upper respiratory disease, and, finally, the possibility that medications need to be increased.

—Once control is established, regular followup visits (at 1- to 3-month intervals) continue to be essential: clinicians need to monitor and review the treatment plans, the medications, and the patients' management techniques (i.e., for using medicines and peak flow meters, for controlling the environment).

—When control is sustained, that is, when PEFR variability is less than 10 percent and there are no asthma symptoms for a reasonable period (2 to 3 days for the exacerbation in mild asthma, several weeks for chronic moderate or severe asthma), reduction—or step-down—therapy can be carefully considered.

Protocol for Management of Asthma in Adults

Treatment plans for adult asthma are based on the goals of therapy, the general principles for managing asthma, and the appropriate roles of medication. This section and its accompanying charts present application of these principles to development of treatment protocols based on the severity of disease.

Mild Asthma (Chart 2)

Inhaled beta$_2$-agonists by themselves are usually sufficient therapy for mild, episodic asthma. If symptoms disappear and pulmonary function normalizes with inhaled beta$_2$-agonists, they can be used indefinitely on an as-needed basis. However, their use more than three or four times a day—or even their daily use—usually indicates a need for additional therapy (see Moderate Asthma).

Oral theophylline does not usually give prompt bronchodilation; its use is recommended for continuous rather than episodic therapy.

Moderate Asthma (Chart 3)

The category of moderate asthma includes those patients who have symptoms that are not controlled or that are poorly regulated by episodic administration of a beta$_2$-agonist. Some patients have frequent (more than twice a week) symptomatic exacerbations of asthma. Other patients do not have acute exacerbations and can regulate symptoms by modulation in lifestyles, but their pulmonary functions (FEV$_1$ or PEFR 60 to 80 percent of predicted range) indicate compromises in airway function. These patients have very "fragile" control of asthma. Many asthma specialists think that all patients with moderate asthma should receive inhaled anti-inflammatory medication to diminish airway inflammation and airway hyperresponsiveness.

■ **Bronchodilators.** The physician has several choices:

—*As-needed (PRN) inhaled beta$_2$-agonist* must be available for treatment of acute exacerbations.

—*Regular administration of inhaled beta$_2$-agonists* is often effective. However, as noted in the Medications section, there is some evidence that prolonged use may be associated with diminished control of asthma. Thus, if the

patient exceeds three to four doses a day of beta$_2$-agonist, other, additional therapy should be considered.

—*Sustained-release theophylline or long-acting oral beta$_2$-agonist* once a day in the evening may be helpful for the patient with primarily nocturnal symptoms because the currently available inhaled beta$_2$-agonists have a limited duration of action—4 to 6 hours. However, when patients who use sustained-release theophylline (or oral beta$_2$-agonist) to control nocturnal symptoms also take anti-inflammatory medication, they may be able to discontinue bronchodilator usage after 4 to 6 weeks.

If theophylline is the primary bronchodilator, beta$_2$-agonist therapy can be administered episodically.

■ **Anti-inflammatory agents** are the primary therapy in moderate asthma.

—*Inhaled corticosteroids* provide improved asthma care with minimal side effects. For example, in Europe and Australia, experience indicates that high doses (e.g., 1,600 to 2,600 μg beclomethasone per day) suppress airway hyperresponsiveness. Smaller doses (400 to 800 μg) may achieve similar effects in milder cases. Immediate benefit will not be evident, however, because suppression of symptoms and PEFR improvement are often not maximal until 2 to 4 weeks of treatment.

—*Cromolyn sodium* is virtually devoid of side effects and is the best nonsteroidal anti-inflammatory drug currently available. Its effectiveness, however, is less predictable than that of inhaled corticosteroids.

—*A burst, or short tapering course, of oral corticosteroids* is indicated when asthma is not controllable by any combination of bronchodilators, cromolyn sodium, or inhaled corticosteroids, even at increased doses. Such deterioration of asthma is characterized by gradual reductions in PEFR (approximately 20 percent) that fail to have a sustained response to inhaled bronchodilators, by greater intolerance of activities or exercise, and by the development of nocturnal symptoms. A short course of, for example, 40 mg prednisone per day (single or divided dosing) for 1 week followed by 7 to 14 days of tapering doses may be effective. At the end of this therapeutic deescalation, oral corticosteroids can be stopped; if asthma symptoms do not occur and pulmonary functions remain normal, no additional therapy is necessary. However, if the burst of prednisone does not control symptoms, is effective for less than 10 to 24 days, or is repeated frequently, the patient has severe asthma and obviously needs additional therapy.

Severe Asthma (Chart 4)

Patients with severe asthma should be evaluated by an asthma specialist.

Patients whose asthma is not controlled on maximal doses of bronchodilators and inhaled anti-inflammatory agents need systemic corticosteroids on a routine basis. In such cases, the physician is tied to the use of long-term oral corticosteroids.

■ The lowest possible dose (alternate day or single daily dose) should be used and administered under the supervision of an asthma specialist.

■ Patients must be monitored closely for corticosteroid adverse side effects (see Medications section).

■ Attempts to reduce oral corticosteroids with persistent administration of high doses of inhaled steroids (e.g., 800 μg or more per day) should be made continually. Use of a spacer with these inhaled corticosteroids may help prevent oral candidiasis.

Protocol for Management of Asthma in Children

The treatment plans for children are also based on the goals of therapy, the general principles, and the appropriate roles of medication described earlier. Charts 5, 6, and 7 accompany the discussion here, and Figure 4 summarizes information on dosages for treatment of childhood asthma.

Mild Asthma (Chart 5)

The medication of choice for mild, intermittent asthma in children is inhaled beta$_2$-agonist taken on an as-needed (PRN) basis. How the therapy is administered depends largely on the patient's age: Most patients 5 years old and over are able to use a metered-dose inhaler; those under 5 usually can not. When a spacer device is used, MDIs can be used by children at an earlier age (3 to 5 years) as well as by older patients who have difficulty with the technique. (A spacer device provides a holding chamber for the medication and thus eliminates the problem of synchronizing actuation and inhalation.) A device that combines a face mask with a spacer may also allow MDIs to be used at an earlier age, although data evaluating this device are limited. Dry powder inhalers use an inhalation technique that requires less synchronization than MDIs and may also be considered.

For most children under 5, however, the choice is between oral and nebulized medication. Because nebulized beta$_2$-agonist medication is more effective and has fewer adverse effects (such as tremor and irritability), it is preferred for the child who has infrequent exacerbations but is nevertheless significantly compromised by them. Nebulizers are both expensive and difficult to transport (for example, to child care); thus children may take a combination of oral medications (away from home) and inhaled medications (at home).

Idiopathic anaphylaxis
or
unknown ~~one~~ mild anaphylaxis

2, recurrent ~~angioedema~~ & not always mild anaphylaxis.
2. recurrent ~~urticaria~~

the hives may ~~take this~~ away from asthma.
must be allergist ~~dx~~!

mixed picture.

Most people with asthma have airway hyperirritability that leads to exercise-induced asthma (EIA). Therefore, this condition should be anticipated in all asthma patients. For some people with asthma, exercise is the only trigger. Approximately 40 percent of children who have allergic rhinitis, but who do not have clinical asthma, have EIA.[1] This situation is probably true for the same percentage of adults.

Untreated EIA can limit and disrupt normal life. Although individual episodes of EIA are short lived, their severity and impact can be striking. As a result, in the long term, people with untreated EIA often limit their activities unnecessarily.

Chart 14 accompanies this chapter's discussion.

Pathophysiology

Exercise-induced asthma refers to airway narrowing that occurs minutes after the onset of vigorous activity. It typically reaches its peak about 5-10 minutes after cessation of activity and usually resolves in another 20-30 minutes. Figure 9-1 shows the typical time course and lung function changes of a person with EIA who is challenged with an exercise period.[2,3]

The existence of a late phase of EIA, occurring 4-12 hours after the initial exacerbation, is now being assessed.[4] This late phase, if it does exist, is uncommon and not severe, unlike the late phase of allergen-induced asthma, which can be serious.

For some patients who engage in continuous, repetitive exercise periods, EIA diminishes or is completely abated during a refractory period that usually lasts 2 hours after an exercise challenge. During this period, EIA is significantly reduced from its initial level.[2]

Although asthma, in general, is characterized by smooth muscle constriction and airway inflammation, exercise-induced asthma is due mainly to smooth muscle constriction. Therefore, some investigators prefer the term "exercise-induced bronchospasm" (EIB) to "exercise-induced asthma" (EIA). Both terms are used.

While some debate remains,[5] it is generally established that EIA results from loss of heat or water, or both, from the lung during exercise. This results from hyperventilation of air that is cooler and dryer than that of the respiratory tree.[6] The chain of events that ties heat and water loss to airway narrowing has not yet been clarified. It has been suggested that heat and water loss leads to changes in airway osmolarity that cause constriction in the smooth muscles.

Most asthma patients should be able to participate in any activity they choose without experiencing asthma symptoms.

Diagnosing EIA

Taking a History

A history of cough, shortness of breath, chest pain or tightness, wheezing, or endurance problems during exercise suggests EIA.

Conducting an Exercise Challenge

When there is doubt, an exercise challenge can establish a diagnosis of EIA. In an exercise challenge, the patient exercises at a level of ventilation high enough to produce the intra-airway thermal events that evoke obstruction. This situation can usually be achieved through exercise for 4-8 minutes that achieves 50 percent or more of the patient's maximum predicted oxygen consumption.

An exercise challenge can be formal or informal. If a patient complains of problems with exercise, an adequate challenge would consist of having the patient undertake whatever task has caused the problem. In the formal laboratory setting, challenge is often done with treadmill exercise capable of raising the patient's heart rate to that which produces 80-90 percent of oxygen utilization by the heart for a period of 6-8 minutes.[7] Pulmonary function measurements, e.g., PEFR and FEV_1, are determined before and after exercise and at 5-minute intervals for 20-30 minutes. Although a drop in PEFR or FEV_1 of greater than 12 percent is compatible with EIA,[8] using a decrease of 15 percent may be more acceptable; this is because it avoids the possibility of confusing variability of spirometry technique with a true drop in pulmonary function. The best of three expiratory maneuvers is taken at each time period.

Alternatively, the clinician can have the patient run outdoors for 4-8 minutes at a brisk pace. PEFR can be monitored after this challenge. This free run challenge can actually be more asthmogenic than the treadmill because air coolness and dryness will enhance the asthmatic response.

For middle-age and elderly people, it is important to conduct the exercise challenge in a facility with the capability to monitor heart rate and rhythm as part of the challenge.

Managing EIA

The goal of treating EIA is to enable patients to participate in any activity they choose without experiencing asthma symptoms. Many Olympic athletes have asthma: 67 athletes at the 1984 Olympic games had asthma; many won medals.[9] Athletic conditioning can improve muscle and

CIS *continued*

Korean border, will probably be one site for Volunteers. Keeton and his team are expected to return in early May. OMS staff will soon make health and environmental assessment visits to potential Volunteer sites. We hope to have more information on these new country entries in the next *Healthwise.*

BCG VACCINATIONS AND PPD TESTS

Tuberculosis is a health risk to populations in many developing countries and a growing public health problem in the United States because of the increase in TB among HIV infected populations. TB is relatively easily transmitted by airborne particles during close contact with infected persons, many of whom are not even aware of their infection.

Experts in tuberculosis detection and prevention agree that the intradermal skin test (PPD test) for TB and the use of INH therapy for recent converters or reactors under 35 years of age are important in preventing the disease from manifesting itself and spreading to other people. In developing countries, the BCG vaccine is also widely used to protect children against severe forms of tuberculosis. It is also used in Europe to protect adults traveling to areas where the risk of TB is high. The protective effect of BCG in adults, however, is unclear.

Because of misunderstandings about the effectiveness of the BCG vaccine and the mechanism underlying the PPD test, many U.S. physicians believe that lifelong false positive skin tests inevitably occur after BCG vaccination. In actuality, most individuals vaccinated with BCG as children will have normal PPD tests. Those with positive tests are likely to have a subclinical (silent) TB infection, especially if they belong to a high risk group for TB.

When monitoring an individual who has received a BCG vaccination, health professionals should be aware that the frequency, size, and duration of skin test reactivity during a 10-15 year period following the vaccination is highly variable. Of the people who received BCG, those who received it during early childhood have the lowest rate of subsequent positive response to the PPD test, in some studies less than 20%. Positive PPD reactions due to BCG are very unlikely 10-15 years after vaccination.

"...most individuals vaccinated with BCG as children will have normal PPD tests."

Thus, a reaction greater than 10mm after a 5-unit PPD test is highly suggestive of TB infection. Responses due to BCG vaccination are uncommon and usually less than 9 mm.

Most persons who have a positive PPD test should be given INH therapy regardlesss of whether they have been vaccinated with BCG. However, because there is some disagreement among physicians about the need to use INH in some PPD-positive persons who have received BCG, Peace Corps uses the following guidelines. 1) All Volunteers, regardless of BCG vaccination status, must have a PPD test unless they have had a positive test in the past 10 years or they have been treated for tuberculosis. 2) Volunteers who were vaccinated with BCG in the past and who are found to have a PPD reaction of less than 10mm on preservice testing should continue to have annual testing. The absolute criteria for PPD conversion in this subgroup are lacking, as some persons will show a booster effect resulting in moderate increases in PPD reaction size on repeated testing. Those cases should be referred to OMS for a field consultation before beginning INH therapy.

Tuberculin test conversion among Volunteers is defined by an increase of 10mm in the size of the PPD intradermal reaction within a two year period, or a 5mm or greater in a person who has had close contact with a known TB patient. TG 560 will be updated to clarify the optimal duration of INH preventive treatment, as 6, 9, and 12 month courses each have value in specific situations. Until then, contact OMS for specific guidance if you identify the need to begin INH in a current or COSing Volunteer.

TIPS FOR DEALING WITH ANGRY PEOPLE

When individuals express anger toward us, we can often feel defensive, overly responsible, helpless, or intimidated. Based on these feelings we may respond with anger or fear or even attempt to avoid the whole situation. Take a minute to think how you tend to react when someone is expressing anger. How might your reaction differ if the anger were directed toward you or toward someone else? It is crucial to be aware of these feelings so that we do not base our interventions on our own needs but on the needs of the individual we are trying to help. Following are some suggestions for dealing with angry individuals. Many of you may already be doing these things either instinctively or because you learned them elsewhere. If so, the list should be reassuring; if not, it should provide you with some helpful tools.

1. Acknowledge the anger, respecting the person's right to his/her feelings. One can respect the right of someone to be angry without agreeing with the reasons underlying the anger.

2. Express support and understanding. Show empathy for the person, without losing the objectivity of your role. For example, you could say, "This seems to have been a very upsetting situation for you."

3. Allow the person an opportunity to express his/her anger, by listening empathetically, without encouraging or adding to the anger, or becoming defensive or aggressive in your response.

4. If necessary, set limits on how the anger is being expressed. For example, if the individual is shouting too loudly or throwing things, this may not be acceptable behavior for the circumstances. Staying calm, but firm, and speaking in a comforting voice can be very effective in these extreme situations.

5. Acknowledge the person's underlying pain. For example, "I can see how distressing this is for you."

6. Ask questions that seek information to gain a thorough understanding of the situation from the individual's perspective.

7. Paraphrase what you hear the angry person saying to be sure that you have understood him/her accurately and so that he/she can also reflect on what has been said.

8. Have the angry person identify some things that might be done to begin to resolve the problem. Urge him/her to consider alternatives less extreme than those his/her anger might initially engender.

9. Suggest alternatives you believe might help the situation, but do not force them on the angry person.

10. Agree to some next steps and follow-up. Try to get the person to agree to do something within the next few days that will have a positive effect on the situation.

In general you want people to leave with a sense that you listened and understood their perspective, and to have their commitment to begin to do something about the problem.

Trainings *continued from page one.*

spring and fall rather than all at once in the summer, which we hope will be better timing for all the PCMOs.

In addition to the CMEs, the Africa Region and OMS are planning a 2-3 day workshop with all of the Africa APCMOs to discuss and clarify their roles and responsibilities. This workshop will take place either the first or the third week of August in one APCMO's base country. Funding permitting, we hope to invite several Country Directors to attend also.

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