

Asthma & Allergy

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Online Resources

See Asthma & Allergy Resources for Family Physicians, online at www.aafp.org/asthma/allergyguide.xml for in-depth information, tips and tools, including the following:

- National Asthma Education and Prevention Program (NAEPP) **Guidelines on PDA.**
- Additional information on **spirometry testing**, including examples of results, and "Ten Steps to Good Spirometry Results."
- A list of common **occupational allergens and irritants.**
- Considerations for **treating asthma in pregnant and elderly patients.**
- A sample **visit record and flow sheet.**
- **Links to every Web address** listed in this guide.

The CME quiz for this *Resource Guide*, in loose-leaf form, is enclosed. Please use the quiz card bound in the pages of the *Guide* to submit your answers for CME credit.

Learning Objectives

After reading this resource guide, family physicians should be able to do the following:

1. Identify and diagnose asthma in adults and children using current National Asthma Education and Prevention Program (NAEPP) guidelines.
2. Classify the severity of asthma in both children and adults.
3. Initiate appropriate therapy based on the severity classification and modify treatment based on clinical response.
4. Assess the role of common asthma triggers (e.g., allergens, tobacco smoke, exercise, medications, and emotional and other environmental factors) and help patients understand how to reduce their exposure to such triggers.
5. Identify and implement at least one specific change that improves existing office systems by identifying and tracking patients who have asthma and measuring key endpoints of care, and gauge the success of that effort on patient and practice levels.
6. Use appropriate coding to obtain appropriate reimbursement for asthma care.
7. Promote patient self-management of asthma that includes a tailored, personal and written Asthma Action Plan.
8. Identify key ways to leverage personal and professional influence to build a community in which people who have asthma and their families receive the education and support they need to control and live with their asthma.

Introduction

As one of the United States' most common chronic conditions, asthma causes significant morbidity and mortality and has resulted in a towering public health burden. In the United States, asthma was the primary reason for 10.4 million office visits and 1.8 million emergency department (ED) visits in 2000.¹

Inhalant allergic conditions such as seasonal and perennial allergic rhinitis are also quite common. They affect as many as 40 to 50 million people in the United States and often accompany asthma. In fact, estimates show that 60 percent to 78 percent of people who have asthma also suffer from allergic rhinitis.² Allergic rhinitis is implicated as a trigger for asthma attacks among adults and children.

Controlling allergic rhinitis appears to help control the symptoms of asthma.^{3,4}

Asthma and allergic conditions have become more prevalent during the past three decades.⁵ As the public health toll related to these conditions continues to mount, so does the family physician's responsibility to provide effective care to people who have asthma and allergies. Because family physicians provide integrated care across time and in concert with coexisting conditions, they can play a key role in improving the quality of care for these patients.

What is "quality asthma care"?

Defining the outcomes of quality asthma care is a straightforward matter. When a patient receives quality asthma care and participates actively in the management of his or her disease, symptoms and acute exacerbations occur infrequently and quality of life is improved. Also, patients and their families miss school, recreation and work less often. Describing the components of a system that supports quality care of asthma, or any chronic disease, is more complicated. For a high-level and far-reaching discussion of such a system, refer to the Chronic Care Model, a frame-



An in-depth discussion of the Chronic Care Model is available online at www.improvingchroniccare.org/change/model/components.html.

The Asthma Quality Challenge

The Asthma Quality Challenge

As a quick test to see how well the systems in your office help you manage clinical events, consider doing what members of the Minnesota Academy of Family Physicians (MAFP) and Virginia Academy of Family Physicians (VAFP) did—take the Asthma Quality Challenge.

To take the Challenge:

1. Find your patients who have asthma. Ask a member of your support staff to search your patient database (most likely your billing system) for patients you have seen during the past year who have a diagnosis of asthma or reactive airway disease (ICD-9 codes 493.0-493.9). Don't have a database? Check out *Who's Who? Building a Database* on page 7.

2. Whether your system sorts the patients alphabetically, by patient identification number or by another criterion, make a list of 20 patients from the group identified by your database. If you have a short list (<50 patients), choose every other patient until you get to 20. If you have a longer list (>50 patients), choose every three or four patients until you reach 20.

3. Have a member of your support staff pull these patients' charts.

4. Using the tool provided on page 4, indicate whether each of the following quality indicators has been recorded on each patient's chart (mark only "yes" or "no"). Use only visits from the past year. Remember to record only what is in the chart and not what you remember about the person. If you are not sure whether the chart contains the information, mark "no." You may use a different visit for each question, if necessary.

Quality Indicators:

A. Is the frequency of the patient's daytime symptoms recorded in the chart (e.g., patient has symptoms daily, patient has symptoms only when around cats or patient has symptoms twice a week)? Remember that notes such as "sometimes" or "frequently" aren't specific enough.

B. Does the chart indicate the number of nights per week that the patient experiences nighttime symptoms?

C. Does the chart document the patient's triggers or allergens?

D. Does the chart contain a severity classification for any visit in the past year?

E. If the patient's asthma is classified as persistent (mild, moderate or severe), does the chart show that he or she has been given a prescription for an inhaled corticosteroid or a cromolyn (Intal) inhaler?

F. Has this patient visited your office for a nonurgent asthma care visit (i.e., a "planned visit") within the last calendar year? A regular health maintenance exam qualifies only if asthma was specifically discussed.

G. If this patient visited the ED or was hospitalized for asthma within the last calendar year, did you see the patient within two weeks of the ED visit or hospitalization?

H. Does this chart document the number of days the patient was absent from school or work?

I. Does this chart show that the patient has received asthma education, including observation of his or her inhaler technique?

After recording your answers on the chart, total and average the numbers of "yes" and "no" answers in each category. If you average a "no" on more than two or three quality indicators, this resource guide should help you reassess your asthma care and the office systems that may not be providing adequate support. After making changes, retake the Challenge and consider using it every six to 12 months to follow your care, progress and systems improvement.

What About Asthma Guidelines?

This resource guide is designed to provide support in implementing accepted asthma guidelines. The National Asthma Education and Prevention Program (NAEPP) Expert Panel issued revised guidelines in 2002; these are included separately with this guide. The Full Report from the NAEPP Expert Panel, including the 2002 Update, can be accessed at www.nhlbi.nih.gov/guidelines/asthma/index.htm. The NAEPP guidelines are evidence-based and contain varying levels of evidence, from “strongly supported by research” to “expert opinion where no research exists.” The severity index from the guidelines is an empirically based tool designed to make implementation of the guidelines easier. The levels of symptom frequency used to label asthma as “persistent” or “intermittent” are based on the experience of the guidelines committee.

Using symptom frequency and the impact of symptoms on usual activities to determine what treatment is needed and to judge the success of that treatment is familiar to family physicians. While these severity labels may not be perfect for primary care, they offer a reasonable and logical place to begin. How the NAEPP guidelines and the severity index can be effectively incorporated into your care of patients is discussed in the *Treatment of Asthma and Allergies* section, beginning on page 14.

Clinical care guidelines are everywhere, and yet nearly 50 systematic reviews have proved that the mere existence of guidelines does little to influence or improve clinical outcomes.⁶ The reason: Knowing the right thing to do is less than half the battle. Organizing your practice, your staff and your time to ensure that the right thing to do is also the easiest thing to do, and finding the energy and motivation to do it, is the hard part.



NAEPP Guidelines on PDA

A Palm-based version of the NAEPP Guidelines, developed by the AAFP, is available for download at www.aafp.org/asthmaallergyguide.xml.

Find the Patients

If your practice doesn't have an electronic health record (EHR) that integrates clinical and financial data, use your billing records to identify the majority of your patients who have been diagnosed with asthma (ICD-9 codes 493.0–493.9). Working from this list, identify patients who have been diagnosed with asthma but who have not been seen within the past one or two years. Next, have your staff call or send letters to these patients, asking them to come in for a short review of their asthma and breathing symptoms. (For more on planned visits, see page 20.)

Identifying your patients in a systematic way can also help you stay on your toes during unexpected acute-care visits. Once you've identified which of your patients have asthma, try placing a discreet, color-coded sticker on their paper charts (if paper charts are used). Seeing an asthma chart sticker reminds you to think, "This patient has asthma. I need to review his or her clinical data (e.g., symptoms and current medications) before I make or change any treatment decisions." Chart stickers can also be used to prompt your front desk staff and nurses to attach and fill out the asthma visit record and patient flow sheet (see page 21 for more information on these tools).

Who's Who? Building a Database

Fundamentally, a database is simply a tool—a part of the system that helps to support quality asthma care. Like any tool, it can be as simple or as sophisticated as it needs to be to get the job done. The most basic databases are paper-based records that contain key pieces of clinical information relative to each patient who has asthma. More sophisticated versions are computerized and enable the user to quickly and efficiently search, analyze and manipulate the same kind of data. When data are this easy to use, it's easier for you and/or your office staff to reach out to patients when they're well, rather than waiting for them to present during an acute asthma attack. When the patient database is even more sophisticated and is part of a system-wide EHR, you can use it to find patients who have been to the ED and have them come in for an office visit to get their asthma back under control. A note about terminology: Patient databases are also referred to as registries by some. However, this guide uses the term "database" in order to emphasize that keeping track of your patients who have asthma is a practice-based—rather than regional or nationwide—effort.

Don't Reinvent That Wheel

Quality care of any chronic disease depends heavily on a systematic approach to gathering, maintaining and using important information. Thus, the database that supports quality asthma care will bear a striking resemblance to the database that supports quality diabetes care, for example. Creating a comprehensive patient database in an established practice will take some time and should always be viewed as a work in progress. However, the payoffs in terms of efficiency and systems refinement can be great. Should you decide to take on quality improvement projects for other diseases, your asthma database will probably require only a few minor tweaks before it's ready to handle those additional chronic conditions as well.

What's in a name?

Asthma. Reactive airway disease. Wheezy bronchitis. Chronic bronchitis. If your patient is having trouble breathing, does it really matter what you call it? Yes, it does!

Calling asthma something other than asthma can affect a patient's—or a patient's family's—perception of the disease. Some may think of "wheezy bronchitis" as a mild condition that doesn't require daily medication. Others may not react promptly to a "reactive airway attack." A patient whose diagnosis changes from "asthma" to "chronic bronchitis" and back again may lose trust in the physician who can't seem to make up his or her mind.

In addition, any patient who receives a diagnosis other than asthma (or who presented only once with asthma symptoms but was not officially diagnosed) will not be found when searching your records for ICD-9 code 493 and, thus, may not be added to your database of patients who have asthma. These patients may need a planned care visit (see page 20) as much as—or more than—some patients with an established diagnosis of asthma.

Providing a patient with a clear and consistent diagnosis helps prevent miscommunication and confusion. So, if it's asthma, call it asthma—every time.⁷



Two free asthma patient databases (Microsoft Excel and Access formats) are available for download on the Health Disparities Collaboratives Web site at www.healthdisparities.net/training_manuals_and_tools.html.

What's the Severity of Disease?

Identifying your patients who have asthma is step 1 in providing high-quality care; classifying them according to severity is step 2. Classification is key to designing appropriate therapy. Quality indicators A and B (see page 5) describe this in a practical way. According to the NAEPP guidelines, severity classification comes down to two things: symptom frequency and objective lung function testing. The NAEPP severity score does not take into account whether a patient is currently taking asthma medications and, if so, what kind and how much. However, physicians often consider both symptoms and current medications used to estimate severity and level of control. For example, a person on low-dose inhaled steroids who experiences symptoms less than once a week may have well-controlled mild persistent asthma. A person taking high-dose inhaled steroids and, additionally, long- and short-acting beta₂-agonists who has symptoms one or two hours a day probably has incompletely controlled severe persistent asthma. Using the score in this manner is helpful to guide step-up or step-down therapy.⁸

Severity classification changes over time; that is, patients' severity may go up or down seasonally or in response to other triggers. That's why having a written self-management plan (see page 27) can help patients adjust medication and know when to come to your office for future changes. For example, adding therapy prior to a known exacerbation period, such as the spring pollen season, may prevent an increase in symptoms and missed activities.



Did You Know?

In addition to asking patients about whether and how symptoms affect their lives, it is also important to ask patients how often they avoid certain activities—both organized sports and general play—out of fear that their asthma may be exacerbated. Patients who do not experience symptoms may have simply learned to avoid them by abstaining from rigorous activity or, in some cases, from any activity at all.

Spirometry in Family Practice

Pulmonary function testing, the most objective test used for diagnosing asthma, is useful in patients older than 7 years of age who can adequately perform the procedure. Spirometry often is the most readily available and practical option for family physicians. The NAEPP guideline recommendations, based on expert opinion, indicate that spirometry should be performed at the time of initial assessment and after optimal control is achieved. Once a diagnosis of asthma is made, reassessment should occur every few years to monitor airway function and to check the accuracy of the peak flow meter. Spirometry can also be used in patients who are not responding to treatment or whose symptoms are worsening.⁹

To make the diagnosis of asthma, spirometry should show a partially reversible airflow obstruction. Significant reversibility is demonstrated by an increase of 12 percent or more in FEV₁ (at least 200 mL) 15 minutes after inhaling a short-acting bronchodilator.⁸

Today's spirometers are much more convenient for use in the primary care setting than were previous models. Most allow for instant readout, whether on a computer screen or by printer. Many are portable and handheld; some are sold with their own printers or are compatible with common printers that may already be in use in the family physician's office. Most of the newer portable spirometers use a flow sensor or pneumotach which monitors pressure change proportional to flow. Some newer models come with automated grading of the test quality and automated interpretations. Previous spirometers used volume sensors, which monitored the volume of air exhaled. Outpatient spirometers are priced between \$800 and \$3,000 and usually come with an initial set of sensors and calibration materials. Purchasing an office spirometer does require an up-front investment, but the device will usually pay for itself through billing. Family physicians should keep in mind that, in addition to asthma, spirometers can be used to diagnose and monitor other respiratory conditions, such as chronic obstructive pulmonary disease.



Online resources

See Asthma & Allergy Resources for Family Physicians, online at www.aafp.org/asthmaallergyguide.xml, for more information on spirometric testing, including examples of spirometry results (volume time and flow volume curves), CPT codes and fees, and "Ten Steps to Good Spirometry Results."

What's the Severity of Disease?

Components of Spirometry: What Do They Mean?

FVC – forced vital capacity. A measurement of lung volume, FVC is the maximum volume of air that can be forcibly exhaled after a maximum deep inspiration. Normal values are determined based on the patient's age, sex and height. Both obstructive and restrictive processes affect this value.

FEV₁ – forced expiratory volume in 1 second. An assessment of the degree of obstruction, the FEV₁ represents the volume of air that is forcibly exhaled during the first second of the forced expiratory maneuver.

FEV₁/FVC – the ratio of FEV₁ to FVC, also called the timed vital capacity. Another assessment of the degree of obstruction, FEV₁/FVC is a percentage of the total inspiration that can be expelled in the first second of a forced expiration. The obstruction associated with asthma reduces the timed vital capacity.

FEV₁/FEV₆ – the ratio of FEV₁ to FEV₆ (forced expiratory volume in 6 seconds). Another measurement used to define obstruction, this ratio is sometimes used as a surrogate for FEV₁/FVC because it is more easily reproduced in office practice.¹⁰

PEFR – peak expiratory flow rate (as measured with a peak flow meter). Experts usually recommend spirometry over measurement with a peak flow meter. That said, peak flow meters are useful monitoring tools, especially for mild disease, and can help establish variability of obstruction when it is present.

Choosing a Spirometer

The following factors may be helpful to consider when purchasing a spirometer:

- Does it meet American Thoracic Society guidelines? What about other compliance guidelines (e.g., Social Security Administration Disability Guidelines) important to your practice?
- Is it calibrated for use with both children and adults? Does the software automatically correct for age, sex and race?
- Does your practice have enough space to accommodate an extra piece of equipment? Is it worth it to invest in a smaller, lighter and/or more portable model?
- Will a stand-alone unit be more useful for your practice, or should you spend a little more on a computer-based unit? If your practice uses an electronic health record or computerized patient database, is the spirometer compatible with your hardware and software?
- Is the display easily readable for you and your technicians? If an additional language is used in your practice, can the data be displayed in this language?
- Who will be trained to do spirometry testing? Who will train this person?
- Who will interpret spirometry results? Who can you call for consultation on confusing results?
- Does the instrument display the graph during the maneuver? Is the predicted graph displayed for reference against the patient's graph?
- Do you want to be able to do pre/post testing? Does the pre/post option calculate the percent change?
- How often will calibration and other maintenance (e.g., battery replacement) need to be performed? Should you purchase the 3-liter calibration syringe?

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10 The Role of Triggers

The Role of Triggers

A key element of asthma care is identifying the things that cause flare-ups or trigger coughing or wheezing. These may be obvious to you and the patient, or they may require some detective work (Table 1). It is important to realize that there can be complex interactions between triggers and that more than one trigger may be setting off a patient’s exacerbation or preventing successful treatment.

Reactions to triggers are different for each person and vary from time to time. Some people have no identifiable triggers; others may have many. Certain triggers may be harmless to some people but contribute to inflammation in others. Recognizing and avoiding these triggers, when possible, is an important way to control asthma.

Physicians and patients tend to focus on a single trigger event in exacerbations of asthma. However, more than one trigger may be needed to create a clinical exacerbation. One possible explanation for this is that some patients may experience ongoing underlying inflammation without clinical symptoms and can tolerate exposure to one trigger, thus maintaining function for certain periods of time. The

TABLE 1

Common Asthma Triggers

Upper respiratory infections (URIs), including rhinitis and sinusitis

Consider specific evaluation and treatment of these conditions with antihistamines, nasal steroids and/or cromolyn. If URIs are known to trigger asthma in a certain patient, increasing asthma medications at the onset of the infection may be helpful.

Allergens

Outdoor allergens – tree, grass and weed pollens; mold spores

Indoor allergens – molds, animal dander or hair, dust mites, cockroaches

Food – rare, but can cause asthma symptoms; most common in children under age 5

Aerobic exercise

Patients should be able to participate in aerobic exercise; in fact, if aerobic exercise triggers an acute attack, the patient probably needs a change in his or her asthma care.

Irritants

Cigarette smoke, including secondhand smoke

Smoke from wood-burning stoves or fireplaces

Strong odors from perfumes, cleaning agents, etc.

Air pollution

Occupational dust and vapors

Weather

Cold air, changes in temperature and humidity

Strong emotions

Anxiety, crying, yelling or even laughing hard

Medications

Aspirin and nonsteroidal anti-inflammatory drugs: Remind patients that many over-the-counter medications, including anti-inflammatory eye drops, contain these drugs. Consider acetaminophen or salicylate as alternatives.

Beta blockers*: Frequently overlooked in the older patient using ophthalmologic preparations (e.g., timolol [Betimol, Timoptic], metipranolol [Optipranalol], carteolol [Ocupress] and levobunolol [Akbeta, Betagan Liquifilm] for glaucoma). Selective agents (betaxolol [Betoptic] and levobetaxolol [Betaxon]) cause less difficulty, but should be used cautiously.

Gastroesophageal reflux disease¹¹⁻¹⁵

Ask if the adult patient has symptoms related to certain foods, or has frequent heartburn or sour eructations, especially with night waking. If an adult or child patient does not complain of these symptoms, but does complain of chronic cough or postprandial or nighttime worsening of asthma, consider empiric treatment with H₂ blockers or proton pump inhibitors, or pursue gastrointestinal evaluation. Reflux can also cause symptoms in infants.

Sulfites

Frequently found in beer, dried fruits, preserved foods, wine and shellfish

Occupational compounds

See www.aafp.org/asthmaallergyguide.xml for a list of common occupational allergens and irritants.

*Beta blockers are not technically a trigger because they have a direct biochemical effect that may cause bronchospasm. We’ve included beta blockers on this list to remind physicians that the effect of these medications needs to be considered in patients who have asthma.

Note: New triggers may become evident or known triggers may change over time. Assess and review triggers and potential triggers regularly or when asthma severity changes.

cumulative effect of exposure to additional triggers may push the symptoms over the threshold of clinical illness (Figure 1). Family physicians are in an ideal position to consider the full spectrum of potential allergic and nonallergic triggers in their evaluation of patients who have asthma.

Identifying Triggers

Taking a detailed patient history is crucial not only in identifying potential triggers, but also in distinguishing between allergic and nonallergic triggers (see *Asthma's Allergic Component*, page 12). In a busy practice, patients or parents can answer these questions in the waiting room. (For those unable to read English, consider translating these questions or asking a staff member to assist the patient or parent.) The physician can then focus on the important answers and decide whether consultation with an allergist or involvement of other providers and/or community resources is necessary.

Patients may not recognize the word "trigger." It may be useful to refer to "things that make your asthma worse."

Querying patients about potential allergic and nonallergic triggers

These questions can be included in your trigger survey or history:

1. Do you have an indoor pet?

All warm-blooded pets (i.e., cats, dogs, small birds and rodents) have dander (skin cells shed by an animal), urine and stool that can cause an allergic reaction and/or asthma attack.

2. Do you have moisture or dampness in any room of your home, including the basement?

Indoor molds (fungi) and house dust mites often are found in homes in which conditions are damp. Children living in homes that have damp areas have more respiratory illnesses than children living in drier homes.

3. Have you ever seen cockroaches in your home?

Cockroaches are common in inner-city areas and the southern part of the United States. One study noted an increase in asthma symptoms among children whose homes were infested with cockroaches.¹⁶

4. When are your symptoms worse?

- Early spring? (may indicate tree allergy)
 - Late spring? (may indicate grass allergy)
 - Late summer or autumn? (may indicate weed allergy)
- Note: These allergens vary by climate and geography.

5. Do you smoke? Does anyone at home or work smoke? If your child who has asthma goes to a day care, does anyone at the day care smoke?

6. Do you burn wood to heat your home or do you use a fireplace?

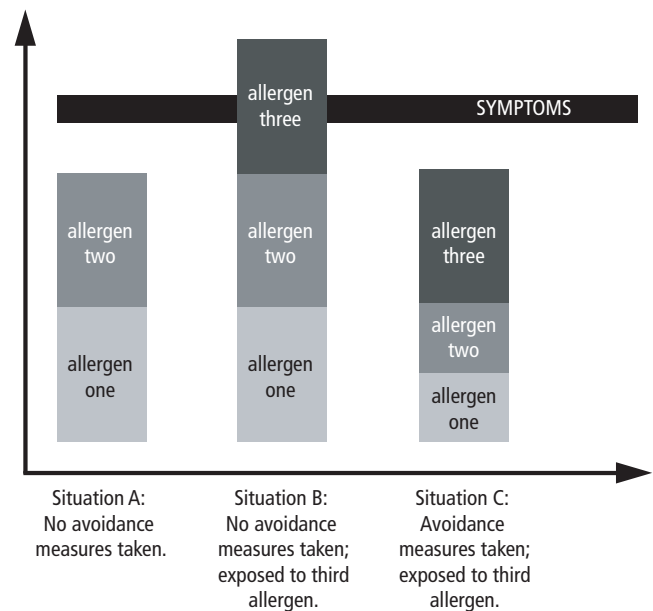
7. Do you or does someone in your home wear perfumes?

8. Are you often in contact with cleaning substances or other chemicals as a part of your job?

Occupational asthma and allergies are an important consideration if the patient's symptoms are better when he or she is away from work.

9. What do you do for a living? Have you noticed a difference in your symptoms when you're at home versus when you're at work? Are they better or worse depending on where you are?

FIGURE 1
Allergen Avoidance and the Symptom Threshold



Adapted with permission from PharmaciaDiagnostics. Evidence-based decision making. Retrieved May 27, 2004, from the World Wide Web: <http://www.isitallergy.com/physician/evidence.asp>.

12 The Role of Triggers

You might ask your patient to keep a peak flow diary. Also consider measurement of PEF_R or FEV₁ at your office, at home and at their place of work.

10. Are there certain events that seem to be associated with your asthma attacks? Do certain times of the year (e.g., tax season, holidays, family events) spark emotional stress? Do your asthma symptoms seem to increase during these times? Can you think of any situations at work or in personal relationships that have set off an asthma attack, or made one worse?

Ask your patient to think back on the last few times his or her asthma flared. Have the patient identify every possible trigger—not just the one that appeared to set off the attack. For each exacerbation, review which trigger or triggers were present and talk about how these might be avoided. If time constraints prevent you from having this conversation with patients, this may be a good thing to hand off to a nurse or an asthma educator. In some cases, a patient may require a consultation with an allergy colleague who has a system for allergy and trigger identification.



A useful patient education handout on reducing exposure to triggers can be found on the Web at www.rampasthma.org/trigger8.pdf.

Avoiding Triggers

Reducing a patient's exposure to allergens and irritants is the least invasive, most cost-effective and, often, best way to alleviate asthma symptoms. Taking the proper avoidance measures may also help keep your patient below his or her "symptom threshold" (Figure 1). Table 2 lists things patients can do to avoid triggers. These standard recommendations may be very helpful; however, keep in mind that many require a significant modification of lifestyle for patients and their families. It's a good idea to first assess which triggers are encountered most commonly—and which produce the most severe exacerbations—and help your patient prioritize the modifications on the basis of this assessment.

Asthma's Allergic Component

Determining whether and how allergies play a role in a patient's asthma is an important part of the clinical picture. Asthma is associated with allergic rhinitis. Hypotheses about the pathophysiologic connection between these two conditions include a reduction in natural bronchodilators (resulting from decreased nasal function), up-regulation of nasobronchial neuronal interactions and direct propagation of upper airway inflammation to the lower airways or systemic pathways.¹⁷

The difference between allergic triggers (allergens) and nonallergic triggers (irritants) may not seem significant to the patient. It is important, however, to make this distinction when talking to the patient about avoidance and treatment. Avoidance, when it's possible, is the first line of defense against most allergens, after which pharmacotherapy begins to play a role. When it comes to irritants, on the other hand, reducing exposure is the only true way to directly alter the clinical response.

Taking a detailed history is the first step in identifying a patient's potential allergies. Finding out when and where the patient experiences symptoms can often help signal a diagnosis of allergies. If a patient experiences seasonal symptoms, it is reasonable to assume that he or she has at least one allergic trigger—and where there's one allergy, there may be others. In addition, it is important to look at the symptoms themselves. Suspect allergy in patients who report rhinorrhea and itchy eyes, nose, throat and/or ear canals. It may also be useful to look for infraorbital venous dilation (dark circles under the eyes, also called the "allergic shiner"); in children, the "allergic crease" (a line across the bridge of the nose) resulting from the "allergic salute" (rubbing the nose upward to alleviate itching) may also point to a diagnosis of allergic rhinitis.

An initial diagnosis of allergic rhinitis is often based on the history, timing and nature of a patient's symptoms. Nevertheless, diagnostic testing may be necessary in

some cases. Laboratory testing for reactivity to specific allergens may be important if the diagnosis is unclear, when avoidance measures and first-line pharmacotherapy have proved inadequate or when there is a need to “get the patient’s attention” by presenting objective data to him or her (e.g., when a patient insists that she is not allergic to her cat).

Skin testing is the most common type of diagnostic test, and there are two basic forms: intradermal injection and prick testing. Usually, skin prick testing adequately identifies a patient’s sensitivity to specific allergens; intradermal testing, on the other hand, can add discomfort, cost and risk, and often provides little additional information. Intradermal testing should be done only when the prick test is negative to allergens that are strongly suggested by the patient’s history. Skin testing is time-consuming, requires stocking large numbers of perishable antigen solutions, demands careful and consistent technique, and carries an unavoidable risk of potentially lethal anaphylactic reactions. It can be performed by interested and informed family physicians, but many refer patients to an allergist or pulmonologist. Results of skin testing may be skewed if the patient has recently been taking one of the second-generation antihistamines in a time-release formulation. Such medications should be discontinued at least three—and preferably five to seven—days prior to testing.

Skin testing is not appropriate for some patients, including:

- those who have severe dermatographism, ichthyosis or generalized eczema;
- those who use long-acting antihistamines or tricyclic antidepressants (TCAs);
- those who are at undue risk if their medications are discontinued;
- those who refuse or cannot cooperate with skin testing (e.g., children who cannot sit still for an extended period of time); or
- those whose clinical history suggests a high risk of anaphylaxis with skin testing using a specific antigen (e.g., a history of previous anaphylaxis).

For these patients, blood testing is a useful alternative. Radioallergosorbent testing (RAST) is available through commercial laboratories. It requires a minimum of 100 mcg of serum per allergen tested. The blood assay is technically difficult. The results are usually reproducible when performed by a reliable laboratory. The reported findings must be interpreted in light of the individual patient’s clinical history.

The Immunocap serum-specific immunoglobulin E (IgE) assay may also be appropriate for patients for whom skin testing is not an option. The test is available in region-specific batteries, which typically screen for the most common 13 to 18 inhaled allergens in your region. The less expensive qualitative test determines whether the patient reacts to one or more of the allergens. Quantitative testing is more expensive, but may be more useful because it identifies a patient’s specific causative allergens. Immunocap testing is often less expensive than RAST and is a fairly simple way for family physicians to screen patients before referral to an allergist.

TABLE 2

Strategies for Reducing Exposure to Allergens

- Remove upholstered furniture from the bedroom.
- Wash bedding and nightclothes in hot water (at least 130°F) at least once a week. (Water over 120°F can burn skin. Patients who live with small children may prefer to wash these items at a commercial laundry rather than set the water heater thermostat to 130°F.)
- Decrease household humidity to less than 50 percent.
- Remove humidifiers and check air conditioning units regularly for mold contamination.
- Encase mattress, box spring and pillow in mite-proof covers.*
- Minimize dust- and pollen-collecting surfaces (e.g., shelving, stuffed animals, books).
- Minimize use of indoor ceiling fans.
- Use blinds or washable curtains with shades and clean them often.
- Apply an acaricide, such as benzyl benzoate, or denaturing agent, such as tannic acid (3%), to carpet, especially in the bedroom.†
- If possible, remove carpet from the bedroom.
- Avoid vacuuming when dust-sensitive persons are home.‡
- Keep pets outside or at least out of bedrooms and off of upholstered furniture.
- Give pets their own washable beds and wash the beds often.
- Use the air conditioner, rather than opening windows, in the automobile and home.
- Bathe or shower before bedtime to remove pollen from hair and body.
- Remove visible mold from walls and floors using a solution of water and chlorine bleach, or a product that contains chlorine bleach or other fungicides.
- To control insects, particularly cockroaches, wash dishes promptly, keep garbage in tightly closed containers outside of the home, remove or repair sources of water (e.g., leaking faucets, standing water in basements), wipe up food spills and keep food in tightly sealed containers.

* Recent evidence suggests that these measures may be of little benefit in patients who have allergic rhinitis¹⁸ and asthma.¹⁹ However, some patients report significant improvement, and it seems reasonable to try these measures if a patient’s sensitivity to dust mites is severe.

† Data supporting use of these agents is inconclusive.

‡ High Efficiency Particulate Air (HEPA)-filtering devices remove particulate matter from the air, presumably clearing it of antigenic pollen. Rigorous evidence supporting the benefit of these products is lacking.

Adaptation of table 3 pp 108 reproduced from Engler DB, Grant JA: Allergic rhinitis; a practical approach. *Hosp Pract* 1991;26(1):105-112 ©The McGraw-Hill Companies, Inc.

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Treatment of Asthma and Allergies

The Stepwise Approach

Where to begin

Once a diagnosis is established by showing reversibility of recurrent airway obstruction either by spirometry, peak flow or reversal of symptoms after two puffs of a short-acting bronchodilator (or nebulizer treatment in young children), it is time to begin therapy.

The NAEPP suggests a step-up or step-down approach based on the person's asthma severity at the time of the visit. The NAEPP guidelines are evidence-based and include many recommendations for which the highest level of evidence available is the expert opinion of the NAEPP science committee. Two of the areas that are empirically based are the severity classification and the "stepwise" approach to management. Unfortunately, we do not have good data, and especially not good primary care information, to determine what the severity classifications should be or exactly what symptoms are best addressed by what type and frequency of medications. The current system is at least a reasonable and clinically meaningful place to begin.

The NAEPP guidelines in practice

Using the system suggested by the NAEPP, the first step in treatment is to determine the severity classification using NAEPP guidelines. In the stepwise treatment approach, treatment is aligned with either the patient's current severity classification or with the step above the current classification. Seeing the patient again in a few days or weeks to determine how his or her symptoms have changed and how able the patient, or his or her family, is to manage the condition is key. At the follow-up visit you can use the current level of the patient's symptoms and restrictions to determine whether the therapy is adequate or whether it should be stepped up or down. Some physicians like to begin one step above where they think chronic therapy will be to achieve rapid control and then try stepping down in one to two weeks' time. This follow-up visit can help assure the patient or family that the physician is working on achieving control at the lowest possible levels of medication. Some patients, on the other hand, will accept only the minimal level of medication and will need to be followed closely to ensure adequate control (i.e., the physician will need to ask about the frequency of daytime and nighttime symptoms and whether the patient is restricting his or her activities).

As with any chronic condition, and especially one that requires changes in ongoing pharmacologic therapy, maintaining a schedule of follow-up visits is crucial (see *Planned Visits*, page 20) for your patients who have asthma.

Quality of Life Issues and the Stepwise Approach

Quality indicator H (see page 5) asks whether your charts include information about absenteeism. Unless you know how your patient's symptoms affect his or her life, you can't know whether his or her treatment should be stepped up or down. Is a child missing school because of his or her asthma symptoms? Is a parent or an adult patient missing work? Documenting this information in the patient's chart can help identify trends in his or her disease and can help you remember your rationale for past decisions.

Practical Thinking About Medications

Asthma

Quick-relief medications

Every patient who has asthma should have a prescription for a quick-relief medication that allows him or her to gain rapid control of symptoms (including shortness of breath, chest tightness, wheezing and cough) during an acute attack. Short-acting beta₂-agonists are used for most patients. Patients who have mild intermittent asthma can be managed using a short-acting beta₂-agonist on an as-needed basis as their only medication. A short course of oral steroids may also be used, especially when aggressive treatment is initiated to gain rapid control (i.e., when employing the step-down method).

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Long-term control medications

All patients who have mild, moderate or severe persistent asthma require a long-term, daily controller medication. A brief discussion of these medications follows.

Inhaled corticosteroids

The preferred treatment for every patient who has persistent asthma is inhaled corticosteroids.⁹ The most common formulations, with their dosage ranges, are listed in Table 3. Because their efficacy is generally similar, deciding which inhaled corticosteroid to prescribe often comes down to the patient's preferred delivery method. Thus, it is reasonable to become familiar with one or two formulations that use each of the delivery methods. Recent evidence suggests that inhaled corticosteroids are less effective in controlling inflammation and symptoms for smokers.²⁰ This is an important reason to recommend and support smoking cessation.

Patients, and especially parents of children who have asthma, may be concerned with inhaled corticosteroids' long-term effect on vertical growth and bone mineral density. Physicians can assure patients and parents that while low-to-medium doses of a corticosteroid may have the potential to decrease growth velocity, the overall effectiveness of the drug is a benefit that outweighs this risk. That is, the risk of uncontrolled asthma, which may unnecessarily limit the patient's mobility and activities, must be weighed against the very limited risks of using low- or medium-dose inhaled corticosteroids. In fact, the effect on growth velocity is not sustained in subsequent years of treatment, is not progressive and may be reversible.

Measuring a child's or adolescent's height at least once or twice a year can reassure parents and give you an early warning sign of a potential problem. In addition, multiple studies have indicated that low-to-medium doses of inhaled corticosteroids have no significant effect on bone mineral density.²¹ Concurrent treatment with calcium supplements and vitamin D is reasonable when beginning long-term corticosteroid therapy.

Some studies suggest that a very small number of patients who have asthma may not respond to asthma treatment with inhaled corticosteroids.^{22,23} In this rare occurrence, it may be appropriate to consult with an asthma specialist for alternative therapeutic options.²³⁻²⁵

Long-acting beta₂-agonists

Adding a long-acting beta₂-agonist such as formoterol (Foradil) or salmeterol (Serevent) to a patient's inhaled corticosteroid regimen can reduce the need for quick-relief medication.²¹ For patients who have moderate persistent asthma, the addition of a long-acting bronchodilator may also eliminate the need to step up to a higher dose of corticosteroids.⁹ An agent combining the inhaled steroid fluticasone with the long-acting beta₂-agonist salmeterol (Advair Diskus) is available. It is approved for patients 12 years and older. Patients who are not currently on an inhaled corticosteroid and whose asthma is classified as moderate persistent or higher should begin therapy at the lowest available dose (100 mcg fluticasone/50 mcg salmeterol) twice a day. Patients who are currently taking another inhaled corticosteroid and are switching to this combination agent must follow a recommended starting dosage based on their current inhaled corticosteroid regimen. The combination therapy is not indicated for mild persistent asthma and may represent overtreatment.

Leukotriene modifiers

Leukotriene modifiers are a newer class of medications used for the treatment of asthma. Montelukast (Singulair) and zafirlukast (Accolate) inhibit a particular

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TABLE 3

Estimated Comparative Daily Dosages for Inhaled Corticosteroids*

Drug	Low Daily Dose		Medium Daily Dose		High Daily Dose	
	Adult	Child	Adult	Child	Adult	Child
Beclomethasone (Qvar) 40 mcg/puff or 80 mcg/puff Approved for patients ≥5 years	160 to 480 mcg 4 to 12 puffs (40 mcg) 2 to 6 puffs (80 mcg)	80 to 320 mcg 2 to 8 puffs (40 mcg) 1 to 4 puffs (80 mcg)	480 to 800 mcg 12 to 20 puffs (40 mcg) 6 to 10 puffs (80 mcg)	320 to 640 mcg 8 to 16 puffs (40 mcg) 4 to 8 puffs (80 mcg)	>800 mcg >20 puffs (40 mcg) >10 puffs (80 mcg)	>640 mcg >16 puffs (40 mcg) >8 puffs (80 mcg)
Budesonide inhalation powder (Pulmicort Turbuhaler) 200 mcg/inhalation Approved for patients ≥6 years	200 to 600 mcg 1 to 3 inhalations	200 to 400 mcg 1 to 2 inhalations	600 to 1,200 mcg 3 to 6 inhalations	400 to 800 mcg 2 to 4 inhalations	>1,200 mcg >6 inhalations	>800 mcg >4 inhalations
Budesonide inhalation suspension for nebulization (Pulmicort Respules) Approved for children 12 months to 8 years	0.5 mg administer once or twice daily	0.5 mg administer once or twice daily	1.0 mg administer once or twice daily	1.0 mg administer once or twice daily	2.0 mg administer once or twice daily	2.0 mg administer once or twice daily
Flunisolide (Aerobid) 250 mcg/puff Approved for patients ≥6 years (Doses listed are for children 6 to 15 years)	500 to 1,000 mcg 2 to 4 puffs	500 to 750 mcg 2 to 3 puffs	1,000 to 2,000 mcg 4 to 8 puffs	1,000 to 1,250 mcg 4 to 5 puffs	>2,000 mcg >8 puffs	>1,250 mcg >5 puffs
Fluticasone MDI (Flovent) 44, 110 or 220 mcg/puff Approved for patients ≥12 years	88 to 264 mcg 2 to 6 puffs (44 mcg) or 2 puffs (110 mcg)	88 to 176 mcg 2 to 4 puffs (44 mcg)	264 to 660 mcg 2 to 6 puffs (110 mcg) or 1 to 3 puffs (220 mcg)	176 to 440 mcg 4 to 10 puffs (44 mcg)	>660 mcg >6 puffs (110 mcg) or >3 puffs (220 mcg)	>440 mcg >4 puffs (110 mcg)
Fluticasone DPI (Flovent Rotadisk/ Flovent Diskus) 50, 100 or 250 mcg/inhalation Approved for patients ≥4 years	100 to 300 mcg 2 to 6 inhalations (50 mcg)	100 to 200 mcg 2 to 4 inhalations (50 mcg)	300 to 600 mcg 3 to 6 inhalations (100 mcg)	200 to 400 mcg 2 to 4 inhalations (100 mcg)	>600 mcg >6 inhalations (100 mcg) or >2 inhalations (250 mcg)	>400 mcg >4 inhalations (100 mcg) or >2 inhalations (250 mcg)
Triamcinolone acetonide (Azmacort) 100 mcg/puff Approved for patients ≥6 years (Doses listed are for children 6 to 12 years)	400 to 1,000 mcg 4 to 10 puffs	400 to 800 mcg 4 to 8 puffs	1,000 to 2,000 mcg 10 to 20 puffs	800 to 1,200 mcg 8 to 12 puffs	>2,000 mcg >20 puffs	>1,200 mcg >12 puffs

* The medications listed in this table include products containing a single active agent. A product that contains the inhaled corticosteroid fluticasone and the long-acting beta₂-agonist salmeterol (Advair Diskus) is also available. It is approved for patients ≥12 years of age. Patients who are not currently on an inhaled corticosteroid and whose asthma is classified moderate persistent or higher should begin therapy at the lowest available dose (100 mcg fluticasone/50 mcg salmeterol) twice a day. Patients who are currently taking another inhaled corticosteroid and are switching to this combination agent must follow a recommended starting dosage based on their current inhaled corticosteroid regimen.

Adapted from National Asthma Education and Prevention Program (National Heart, Lung, and Blood Institute) Second Expert Panel on the Management of Asthma. Guidelines for the diagnosis and management of asthma—update on selected topics 2002. Bethesda, Md.: National Institutes of Health; 2002; publication no. 02-5075.

Treatment of Asthma and Allergies

enzyme in the leukotriene synthetic pathway; zileuton (Zyflo) inhibits another enzyme in this same pathway. Leukotriene modifiers have a limited role in mild persistent asthma; however, as add-on medications for patients who have moderate persistent asthma, they may prove useful. Like the long-acting beta₂-agonists, leukotriene modifiers may reduce the need for higher-dose inhaled corticosteroids. Due to concerns about liver dysfunction, patients taking long-term zileuton therapy must undergo liver function testing every six months.

Theophylline

The addition of theophylline to an inhaled corticosteroid regimen can be helpful for patients who have moderate persistent asthma.^{9,26,27} Theophylline has fallen out of favor during the past few years due to safety concerns and its side effect profile. Nevertheless, theophylline has a role in asthma care in certain circumstances, including use as an additive therapy in patients whose asthma is not adequately controlled with inhaled corticosteroids. In addition, hospitalized patients who fail to respond to beta₂-agonists and systemic corticosteroids may benefit from the addition of theophylline. Rarely, physicians may choose to prescribe theophylline to a patient who is more likely to adhere to an oral, rather than inhaled, medication regimen.²⁶

Prescribing low-dose theophylline therapy is safe and appropriate for family physicians. When treating with high-dose theophylline, monthly to bimonthly serum concentration monitoring should be performed (concentration must be kept below 15 mcg per mL, though patients may experience side effects at levels considered to be within the normal range). Adhering to frequent monitoring may be difficult for some patients. Thus, some family physicians prefer to leave high-dose theophylline treatment to asthma specialists.

Cromolyn and nedocromil

The mast cell stabilizers cromolyn sodium and nedocromil sodium (Tilade) have a good safety profile and, thus, are commonly prescribed in children who have mild or moderate persistent asthma, especially when there is concern about the side effects associated with inhaled corticosteroids. These drugs are not as effective as inhaled corticosteroids and do not provide adequate control for patients who have severe persistent asthma, nor for some who have moderate persistent disease.⁹ Mast cell stabilizers are effective for managing exercise-induced bronchospasm; these are typically taken before exercise and have a duration of one to two hours.²⁸

Omalizumab

The subcutaneous injection omalizumab (Xolair) was recently approved by the U.S. Food and Drug Administration (FDA) for use in patients 12 years and older who have moderate to severe persistent asthma.

Omalizumab mediates the allergic response by inhibiting the binding of immunoglobulin E (IgE) to mast cells and basophils. It is indicated for patients who have had a positive skin test or in vitro reactivity to a perennial allergen (i.e., patients who have “allergic asthma”) and whose symptoms are not controlled by inhaled corticosteroids. Omalizumab injections are given every two or four weeks, and dosage depends upon total serum IgE before treatment and body weight.

Primary care experience with omalizumab is limited, and a patient’s insurance coverage may require referral to an allergist before the drug is prescribed. Side effects include injection site reaction, viral infection, respiratory tract infection, sinusitis, headache and pharyngitis.

A Note About Combination Therapy

Combination therapy (the addition of another long-term control agent to the inhaled corticosteroid regimen) is effective for many patients who have moderate persistent asthma. However, some patients may prefer to use a higher dosage of a single medication. For these patients, it may be most useful to start with a low-dose inhaled corticosteroid as monotherapy, checking back with the patient to make sure the dosage is working. If, during the follow-up visit, the patient reports that his or her symptoms are not in good control, adjust the inhaled corticosteroid to the medium dosage. Again, a check-back visit should be scheduled. If control is still not achieved by the second follow-up appointment, it may be time to try combination therapy.⁹

18 Treatment of Asthma and Allergies

Allergic Rhinitis

As mentioned, many patients who have asthma also have allergic rhinitis. Diagnosing and controlling allergic rhinitis—through avoidance measures, pharmacotherapy or a combination of these—is an important part of an overall asthma management plan.

Pharmacologic treatment

Intranasal corticosteroids and antihistamines are the most commonly prescribed medications for the treatment of allergic rhinitis. A recent evidence report from the Agency for Healthcare Research and Quality (AHRQ) looked at various studies comparing these classes of medications and concluded that intranasal corticosteroids are somewhat more effective than antihistamines in the treatment of allergic rhinitis.²⁹

Intranasal corticosteroids

Corticosteroids applied directly to the nasal passages inhibit the processes that drive the immediate- and late-phase hypersensitivity reactions. These drugs reduce nasal congestion, sneezing, nasal itching and rhinorrhea. Intranasal corticosteroids may be less expensive than antihistamines, especially second-generation antihistamines. An intranasal corticosteroid may also be a safer choice than an antihistamine in some patients, such as the elderly, who may already be taking several medications.³⁰ These medications vary in dosing schedule, smell, and formulation or delivery system, but generally do not vary in efficacy. Patient preference is key in determining which agent to prescribe. As with inhalers, patients should be taught proper technique to use the intranasal medication.

Antihistamines

Antihistamines have been used since the mid-1940s to relieve allergy symptoms. First-generation drugs are generally inexpensive, especially in generic formulations, but are associated with dizziness, sedation and fatigue in many people. Patients who experience mainly nighttime symptoms may find the sedating effect of the first-generation antihistamines acceptable or even helpful. Second-generation drugs are considerably less sedating, but have been reported to cause headaches and dry mouth, nose and throat in some patients. These drugs tend to affect different patients in different ways, so experimenting with different formulations and/or dosages may be useful. The second-generation drugs can also be considerably more expensive, especially now that some are available without a prescription and, because of this, some insurance companies are excluding these medications from their formularies.

Though the evidence points to intranasal corticosteroids as the most effective treatment for allergic rhinitis, some patients prefer antihistamines because they can be taken orally. Additionally, a patient who is already taking an inhaled corticosteroid for asthma may be concerned about adding another corticosteroid to the mix. If an antihistamine is going to relieve a patient's symptoms, it usually does so within two to three days. Thus, for patients who have both asthma and allergic rhinitis, starting with an antihistamine and moving to an intranasal corticosteroid if the antihistamine doesn't work is one way to meet the patient's needs and limit use of corticosteroids when that is a concern. (Keep in mind, of course, that patients who have persistent asthma should already be taking an inhaled corticosteroid.) Second-generation antihistamines have no demonstrated impact on the congestion associated with allergic rhinitis, so the addition of an oral decongestant medication may be needed to manage patients who have congestion as a prominent symptom.³¹⁻³⁴

Treatment of Asthma and Allergies

Leukotriene modifiers

Recent studies have found that leukotrienes contribute to both airway inflammation and the pathogenesis of allergic rhinitis. Because treating the pathophysiologic pathways of allergic rhinitis is one of the keys to treatment—and because leukotriene modifiers were found to improve the symptoms of allergic rhinitis—antileukotriene therapy is now an accepted therapeutic option for patients who have allergic rhinitis.³⁵ Montelukast was recently approved by the FDA for treatment of allergic rhinitis. Leukotriene modifiers may provide dual benefit for patients who have concomitant asthma and allergic rhinitis and help reduce the need for additional medication.

Collaborating With Allergists and Pulmonologists

Family physicians should consider referring a patient to an asthma/allergy subspecialist when:

- the diagnosis is severe persistent asthma;
- the diagnosis is unclear;
- a more complete allergy evaluation is desired (e.g., to guide avoidance measures);
- the asthma is not under control, even after appropriate avoidance measures are taken and medications have been adjusted and readjusted;
- the patient has had a life-threatening exacerbation;
- allergen immunotherapy is being considered;
- spirometry is desired but is unavailable from other sources;
- insufficient time is available for adequate asthma education for the patient or his or her family; or
- the family physician is uncomfortable managing the patient's asthma.

Establishing relationships with subspecialist consultants can be very helpful to the family physician and his or her patients. When referring a patient to an allergist or pulmonologist, it's important to be very specific about what you, as the family physician, and the patient think is needed—what questions need to be answered, what tests need to be done, whether immunotherapy has been discussed and what role you would like to have in future asthma management. As a family physician, you can and should create the type of collaboration that fits your practice style and the needs of your patients.

The Role of Asthma Educators

Many asthma subspecialists, especially ones associated with large hospital programs, employ an asthma educator. This staff member is trained to offer in-depth education to patients who have asthma and their families. Talking with an asthma educator can be a valuable part of your patient's subspecialist visit, but beware: Some insurers may not reimburse the asthma educator for his or her time, leaving the patient to pay the bill. You may want to advise patients to check with their insurance provider regarding this issue before scheduling their subspecialist visit.

The National Asthma Education Certification Board (NAECB) offers asthma educator certification to physicians, nurses, technicians and other qualified health care professionals. Candidates for certification must take an exam and pay a \$275 fee; recertification is required every five years. You may want to ask if your hospital or subspecialist colleague hires only certified asthma educators.

For more information on asthma educators, go to www.naecb.org.

20 Routine Asthma Care

Routine Asthma Care: Making the right thing to do the easy thing to do

Patients and physicians tend to rely on acute care when it comes to asthma management. Routine care is often scheduled for patients who have hypertension or diabetes, while patients who have asthma are sometimes “lost to follow-up.” Quality indicator F in the Asthma Quality Challenge (see page 5) asks you to identify whether your patients who have asthma have visited your office for one nonurgent visit within the last year. Patients whose asthma has been classified as persistent should be seen at least once every six months—more often if their asthma has been recently diagnosed, if they’ve had a recent exacerbation or if a medication has been recently added, discontinued or adjusted. Planned visits can also be very helpful when scheduled just prior to a patient’s known allergy season.

Planned Visits

A planned visit is an encounter, initiated by the practice or the patient, that focuses on overall patient goals and other aspects of care that are not usually delivered during an acute-care visit. The basic objective of a planned asthma care visit is to provide the patient with clinical management tools based on both the NAEPP guidelines and the patient’s individual needs. Each planned asthma care visit should include the following:

- Patient self-assessment.
- Review of symptoms and symptom frequency.
- Direct observation of patient’s inhaler technique. Objective clinical reassessment by peak flow meter or spirometry may also be indicated.
- Physical assessment and exam.
- Discussion of goal setting and self-management (page 27) that includes a review of the patient’s Asthma Action Plan.
- Office procedures to schedule a follow-up appointment at the time of checkout.

Consider tying planned asthma care visits to simple routine events such as flu shots or sports physicals.

Planned visits: Getting started

You may want to experiment with planned visits one patient at a time until you have an idea of what system works best in your practice. To get started, identify one patient who is due for an office visit. Contact him or her with a reminder to schedule an appointment and bring in all of his or her medications (including inhalers and spacers) and peak flow meter. It may help to develop a standardized letter that gives patients clear advance instructions. For patients who do not already have an appointment scheduled, provide the phone number for scheduling. Remember to keep your scheduling staff in the loop when you send out planned visit letters so that patients don’t encounter obstacles to following your instructions.

After this first planned visit, evaluate what worked in the system and what didn’t, and then make improvements accordingly. It may be helpful to ask the patient for feedback on the process. For example, you may find that patients have a hard time remembering to bring in their medications; a simple phone call reminder on the day before the planned visit may do the trick. (If you don’t have enough personnel to do the calling, try sending out a postcard or an e-mail a few days before the appointment. Remember that the postcard should be folded over and sealed to protect patient confidentiality.) You may also discover that you need to set aside a bit more time than usual to review the patient’s chart prior to the office visit.

Following Up After an Acute Attack: Planned care at its best

Quality indicator G (see page 5) asks whether your office scheduled a follow-up visit with any patient who visited the ED or was hospitalized with an acute attack. A patient whose asthma flare-up landed him or her in the ED—or, worse, in a hospital bed—probably received some asthma education along the way. And while an acute attack may be a “teachable moment,” the information the patient heard during this frightening time may be forgotten. The follow-up visit presents you with an invaluable opportunity to work with your patient on self-management issues (see page 27) and identification of triggers, and to review and adjust the medication regimen.

If you have a computer-based patient database, you can generate a list of patients due for a visit each week or month. Practices with a paper-based database may find it useful to keep a “tickler file” to remind staff when it’s time for a patient to schedule an appointment. (A tickler file is an expandable file sorter with 31 pockets for the days of the month, as well as a pocket for each month of the year. Each pocket is filled with the names and contact information of patients who should schedule an appointment for a planned care visit. This file can include patients who have other chronic diseases [e.g., diabetes and hypertension] as well.)

Group visits: An alternative to 1:1 care

It’s easy to feel overwhelmed at the thought of squeezing the multiple demands of managing a patient who has asthma into the time allotted for an office visit. Group visits are one option for maximizing your efforts without running you ragged. Instead of giving the same explanation or counseling 20 times in separate office visits, why not give it once in front of 20 patients? By incorporating group visits into your practice’s asthma management system, you can free up valuable appointment slots and reduce repetition in your work. By contrast to a typical 15-minute office visit, a two-hour group visit with 10 to 20 patients allows more time for education. Group visits also provide a forum for patients to share their experiences with each other. Another advantage is the outcome:

Research has shown that patients like group visits and that participation in group visits seems to improve adherence.³⁶

Group visits do require an investment of preparation time; however, research has shown that such visits are ultimately a cost-effective use of a physician’s time.^{37,38} A rule of thumb is that a two-hour group visit will require two hours of work in advance. You’ll need to decide on appropriate educational content, keeping in mind that this is a chance to move beyond the areas you cover in a typical office visit.

Currently, there is no universally recognized billing code for group visits, a fact that complicates their use by practices that contract with fee-for-service insurers and some managed care plans. However, with appropriate data and documentation, it may be possible to be reimbursed for group visits. You may wish to contact the insurers with which you contract to identify any potential billing issues and to discuss reimbursement possibilities. For Medicare and Medicaid patients, contact your local Medicare carrier and your state’s Medicaid agency to determine whether group visits for patients who have asthma are reimbursed in your area, and, if so, how you should bill for this service.

Visit Records and Flow Sheets

You’ve identified your patients who have asthma and have even called a few in for planned care visits. So what’s next? When you walk into an exam room to find a patient who has asthma—whether the visit is planned or not—you shouldn’t have to rely on your own memory to make sure everything that needs to happen does and does so at the right time.

Online Resources: Group Visits

“Planning Group Visits for High-Risk Patients” (*Family Practice Management*, June 2000): www.aafp.org/fpm/20000600/33plan.html

“Shared Medical Appointments”
www.aafp.org/x14713.xml

Asthma Days

With some advance planning, you can focus and strengthen your asthma care by seeing several asthma patients in the same day. This is an extension of the “planned visit” idea and may be one of the best ways of actually implementing it.

1. Set aside one or two days for asthma visits several months in advance. Set aside another two days six months ahead, another two days nine months ahead, and so on. These can be half-days or full days, depending on the size of your patient population.
2. Use your patient database or billing records to identify all the patients who have asthma in your practice.
3. Have your practice manager or scheduler determine which patients have not been seen in the past several months. Have him or her call these patients and ask them to come in on one of your asthma days.
4. When patients call in for asthma medication refills, have your phone nurse route them to the scheduler for an appointment on the next asthma day.
5. For each asthma patient you see, have your scheduler set up a follow-up visit on one of the asthma days.
6. When you are within three weeks of the asthma days, open the days up for other visits to ensure a full schedule, if necessary.
7. Spend time preparing your nurses and other team members for the asthma days (see the *Office Design* section, page 23).
8. On the asthma days, your nurse will essentially be doing the same thing for most of your patients and can focus primarily on the protocols you have developed for asthma care. This will improve your practice’s efficiency and consistency.
9. After each asthma day, review what worked well and what did not. Adjust your clinical care protocols and office systems as needed.

22 Routine Asthma Care

A visit record—also commonly known as a progress note—is a tool used to facilitate the delivery of expected services during the typical chronic care visit. It is typically a list of items that should occur and be recorded during each visit. The record also reminds physicians, nurses and other staff members to discuss key management issues (e.g., peak flow/inhaler technique, environmental controls) with the patient at each visit. Visit records are especially useful in the management of chronic disease because they prompt care team members to address issues during every office visit, even if the patient is there because of an unrelated sore throat or an ingrown toenail. Additionally, the standardized nature of a visit record ensures uniform entry of data on each patient.

A flow sheet, on the other hand, should display aggregated data (e.g., peak flow) over time so the physician and patient can see whether treatment efforts are resulting in improvement. When used in this way, the flow sheet becomes a tool for interpreting historical data gathered using visit records. Thus, it's as important to document the occurrence of an unexpected event (e.g., admission to the ED for an acute asthma attack) as it is to document the absence of an expected event (e.g., the patient didn't fill his prescription for his controller medication last month).

A flow sheet can be as simple as a paper-based grid in which test results and other data are filled in over time, giving physicians and patients a “snapshot” of clinical progress. At the other end of the spectrum is the database-generated flow sheet. A computerized patient database allows for key information to be pulled from the patient's record and displayed on the flow sheet for use during the visit. In some practices that use an EHR, the functions of the visit record and the flow sheet are combined in the same workflow. Thus, the physician can see trends in symptoms and interventions over time, and can also document the present encounter and be reminded of what services are pending (e.g., flu shot in six months) and what might need to happen next (e.g., renew prescription for controller medication). In practices that don't have an EHR, aggregating and displaying data in this way is cumbersome but possible. In any case, access to targeted data enhances the physician's ability to see the “big picture” of what's going on with a particular patient's chronic illness.

You'll need a system for reviewing patient flow sheets so you can schedule planned visits for patients who may have missed needed services. If you have a computerized patient database, you can accomplish this audit quite easily. With the needed information distilled to a single page, your “chart reviews” become more manageable “one-page flow sheet reviews.”

Tips for making visit records and flow sheets work

1. Make them pertinent to treatment goals and asthma care guidelines. Your visit record should list all services or measures relevant to asthma, based on clinical care guidelines and your personal preferences. If your flow sheet doesn't display critical data in a way that helps you make informed decisions about treatment, it isn't functioning as it should.

2. Consider these tools a work in progress. Use your visit record and flow sheet for a specific trial period and make note of what works and what's missing. Revise accordingly. If either tool is missing key elements, or if using either one is a hassle, they can't help you.

3. Make abnormalities easy to spot. The patient data you note on the visit record and flow sheet will be more useful if target measures or expectations are also listed. Then you'll know at a glance whether a patient is progressing toward his or her goals.

4. Make the data entry—and retrieval—as easy as possible. If you're filling the visit record or flow sheet out and notice that a certain part of it doesn't fit with your workflow, make a note of that and change it as soon as possible. Remember: No improvement is too small.

5. Share the responsibility. You may find it difficult to use the new tools consistently, especially at first. Adding visit records and flow sheets to existing office processes works best when:

- filling them out is a team effort that includes the physician and other staff members;
- completing a visit record for each visit is office policy; and
- you follow a consistent procedure (for example, “The receptionist locates the visit record and attaches it to the chart, the nurse fills in the clinical data and makes sure the relevant information is transferred to the flow sheet [if it doesn’t happen automatically by way of an EHR], and the physician reviews the asthma patient database with appropriate staff regularly [monthly or quarterly, depending on your practice’s needs].”) Divide responsibilities in a way that streamlines the process rather than creating redundancies. For example, a nurse or patient care assistant can transfer the clinical data from the visit record to the flow sheet while reviewing it with the patient and observing inhaler technique. Once you have identified who will be responsible for what, it may be necessary to hold training sessions to make sure everyone understands the visit record/flow sheet process.

6. Make the sheets stand out and easy to get to. Both tools can be in the front of the chart (inside or out) and serve as a helpful visual reminder that the patient has asthma.

7. Computerize it (when possible). Even paper visit records and flow sheets can be useful tools, but if your practice has the capability to combine these tools with data stored in an electronic system, it can make your job much easier. For example, many patient databases can give automatic reminders when patients need a particular service.

8. Hold yourself accountable. Set incremental goals for introducing visit records and flow sheets into your practice’s system of care, and then meet them.

Sample Visit Record and Flow Sheet

You may prefer to customize your practice’s visit record and/or flow sheet according to your patient care preferences and qualities unique to your patient population. A sample visit record and flow sheet are available as part of Asthma & Allergy Resources for Family Physicians, online at www.aafp.org/asthmaallergyguide.xml.

Office Design

Improving asthma care by making changes to your office systems—whether you do it by implementing a new patient database, scheduling planned visits or adding visit records and flow sheets to every patient’s chart—is a study in delayed gratification. Developing a set of routines, protocols and reminders is the key to making meaningful improvements that last, but it takes time and energy.

One of the keys to success is first to take a look at how things are actually getting done. This will help you see what needs to be changed—and what doesn’t. Don’t expect for things to run smoothly at first. The important thing is to see how implementing the principles of improvement actually works (or doesn’t) and how small changes can correct the problems. Executing short PDSA cycles—**p**lanning the change, **d**oing it, **s**tudying its effects and **a**cting on these effects—is one of the keys to success.

Building your team

- Arrange a staff meeting during which the goals for high-quality asthma care are reviewed and the importance of good care is emphasized. Highlight the importance of each individual staff member in providing quality asthma care.

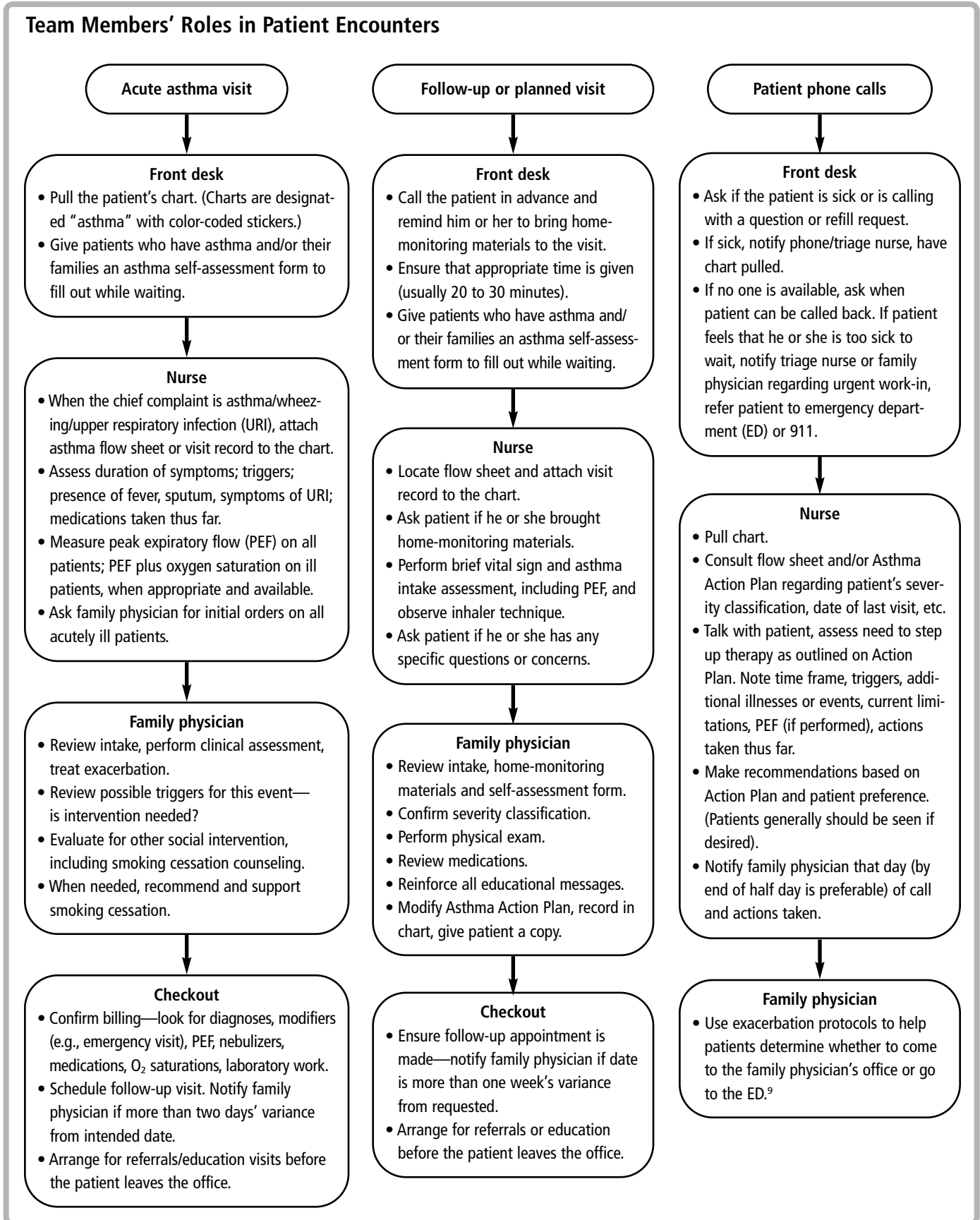
- Identify key personnel (e.g., specific nurses, front office staff members) and their essential roles in making the changes happen; review goals and desired outcomes.

- Define each team member’s role in different types of patient encounters—acute care visits, follow-up or planned care visits and patient phone calls. (See Figure 2 for suggested tasks; obviously, you will have to customize these roles to fit your staff and practice.) Delegate responsibility for making clinical decisions, when appropriate. Hold every staff member accountable for living up to his or her roles and responsibilities.

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FIGURE 2

Team Members' Roles in Patient Encounters



The Business Case for Quality Care

The Business Case for Quality Care

Asthma is a chronic disease that needs ongoing management. Billing for appropriate, quality care allows you to cover the expense of providing that care.

Make quality care pay by remembering two simple keys: For every asthma patient you see, you must (a) document what happened during the visit, and (b) bill for what was done.

Documentation must reflect the clinical severity of illness and what was done. This is the tremendous advantage to having a good flow sheet and visit record. These tools can remind you of the key elements of care and help ensure appropriate reimbursement for the high-quality care you are providing.

In many areas of the country, there seems to be a trend away from capitation and toward negotiated fee-for-service. At the same time, insurers are looking more closely at the quality of care provided and attempting to link performance on national guidelines with reimbursements. On the bright side, you can get paid for providing the appropriate level of care for patients who have asthma without worrying as much about cost/charge overruns in your capitation accounts.

Acute-care visits:

- disrupt your schedule.
- take additional staff time and equipment that is poorly reimbursed.
- do not allow time to teach.
- may not occur in the family physician's office at all, resulting in charges lost to the ED or urgent care.

On the other hand, planned visits:

- ensure at least two preventive, billable care opportunities.
- allow for a team approach of physician or physician assistant/nurse practitioner care and registered nurse visits.
- allow for self-management education for the patient and/or the patient's family.
- keep income in your practice. If your office is set up for it, patients should be told to call the office during flare-ups and attacks instead of going directly to the ED or urgent care clinic.
- allow for good follow-up.
- may be incorporated into preschool exams or sports exams (perhaps even making them relevant to actual participation—what a concept!).

Counseling

Time may be considered the key determinant for a particular level of service when counseling or coordination of care dominate the encounter (i.e., consume more than half the face-to-face time that the physician spends with the patient in the office), but reimbursement for this time is also frequently denied or delayed by insurers. Be prepared to provide your notes, and consider making a space on the flow sheet/visit record to document total time and time spent counseling.

According to Current Procedural Terminology (CPT) codes, when you spend more than 50 percent of your face-to-face time counseling or coordinating care with your patient, "time may be considered the key or controlling factor to qualify for a particular level of E/M service," regardless of history and physical findings. In other words, if you spend more than half of a 25-minute office visit providing counseling to an established patient, the visit qualifies for a 99214. It is usually a good idea, however, to perform some physical assessment on which to base your counseling and guidance (that is, how do you know the person is doing well at that visit?).

Planned Care:

A look at the numbers

- If you have 20 asthma patients who are in a persistent class, two planned care visits per patient per year at \$65 per visit would generate more than \$2,600 of additional income. In some cases, the clinical care and counseling may support a level 4 office visit and pulmonary function testing.
- If you perform 50 spirometry tests per year, at \$40 to \$60 per test, you could add \$2,000 to \$3,000 to the bottom line.
- Nurse asthma education, other diagnoses or laboratory fees can provide additional income.

26 The Business Case for Quality Care

Prolonged services (99354 through 99357)

Office/outpatient care	Inpatient care
Less than 30 minutes: not reported separately	Less than 30 minutes: not reported separately
30 to 74 minutes: 99354	30 to 74 minutes: 99356
Each additional 30 minutes: 99355	Each additional 30 minutes: 99357

- Report in addition to the E/M code. When calculating the number of minutes spent in prolonged service, do not include the average time allotted by CPT for that E/M code; count only the minutes spent beyond the typical service.
- Requires direct (face-to-face) clinical contact.
- Can be used for noncontinuous time, such as second visits in the hospital or repeat clinic visits on the same day.

Modifiers

Modifier 25 is the most common; it's often used with the preventive visit or well-child check during which other problems are addressed. For example, modifier 25 would be used for an 8-year-old's check-up with asthma follow-up care. (Note: the modifier should be appended to the office visit code, not the preventive medicine code.)

Modifier 76 applies to the situation in which the same physician gives a patient more than one nebulizer treatment at different times during the same day.

Watch out! Some insurers will not pay for a well check and an asthma visit provided to the same patient at the same encounter, even with the use of modifier 25. The visit must be coded either as a well check or with a normal E/M code, not both. This can be very inconvenient for your patients, since they may be asked to return for a separate visit to talk about their asthma care. Have someone on your staff clarify this, and consider these issues in your contract negotiations.

Getting Paid for Quality Care

Example A

In a routine asthma visit (a.k.a., a planned visit), you perform an interval history and review of the patient's environmental triggers and other allergens or precipitants. You may repeat a spirometry. You perform oximetry only as indicated. You review the patient's Action Plan and suggest modifications for the summer or winter.

HPI – severity (daytime and nighttime symptom frequency, current medications as actually taken and missed activity days), timing, context, modifying factors for symptoms

ROS – constitutional, ear, nose and throat, respiratory, allergic

Past/Social/Family History – at least one item (family history of asthma or effect of asthma on social life)

Peak flow review, or spirometry, with planning based on results

Documentation of risk level (one or more chronic illnesses with exacerbation, or evaluation for progression, OR two or more stable chronic conditions [e.g., asthma and allergies])

Charges:

- Office visit: 99213 or 99214
- Spirometry: 94010

Alternatively, if some of the above don't apply but changes in the plan and overall length of counseling take up more than half of a 25-minute visit, you can reasonably consider a level 4 office visit.

Document the time the counseling took!

Example B

A patient presents in acute asthmatic distress; you perform an initial clinical exam including peak flow, spirometry and oximetry. She receives an albuterol nebulizer and oral steroids. You see other patients while she is there and intermittently check on her to be sure things are going well. She remains in the office a total of 1.5 hours and, after further testing, she leaves improved, with a management plan and an appointment to follow up in two weeks for reassessment.

Charges:

- Level 4 office visit: 99214
- Spirometry: 94010 (If you perform spirometry during *and* after treating the patient's exacerbation, it is appropriate to charge for both tests.)
- Prolonged services: 99354 (assuming the physician spent at least 30 minutes face-to-face with the patient beyond the 25 minutes typically associated with 99214)
- Supplies: Charge for any supplies used
- Nebulizer treatment: 94640
- Medication: Albuterol, prednisone (with IM injection 90782 if parenteral medication is chosen)
- Oximetry: 94760 (Note: Many payers now consider oximetry to be just another vital sign and are beginning to deny payment for this service.)

Other situations might involve additional charges:

- An emergent visit code: 99058
- After hours code: 99050

HPI = history of present illness; ROS = review of symptoms; IM = intramuscular

Supporting Patient Self-management

Supporting Patient Self-management

Do patients leave your office with knowledge and information or just with pieces of paper? The principles of self-management support can help you send your patients away with more than a couple of pieces of paper—they'll leave your office armed with the knowledge, confidence and motivation to manage their chronic illness.

Self-management support calls on you to share your clinical knowledge about the patient's asthma with him or her, listen to what your patient knows about what's going on and collaboratively decide upon the best course of action to take. Acknowledge up front that the patient "owns" his or her asthma; in other words, it's the actions that he or she takes—not the prescriptions that you write or the behaviors that you recommend—that make the most difference in how well his or her asthma is controlled.

The clinical information you can share with your patient who has asthma includes the basics of what asthma is; information about his or her severity classification; tips for avoiding triggers and making other important changes (e.g., quitting smoking); and instruction on when and how to use appropriate medications. You'll probably need to have several conversations with your patient in which you explain and reinforce this information. Take time during each of these conversations to educate yourself about your patient's level of understanding and motivation, his or her thoughts and feelings, and his or her goals and priorities. You are the expert on asthma as a disease; your patients are experts on how the disease affects their everyday lives, as well as what they are willing and able to do to care for their asthma.

Patients who take an active role in their severity assessment and regularly self-assess and reassess their disease are more likely to notice changes and correctly evaluate what needs to be done to keep their asthma in good control.

The Asthma Action Plan

Every patient who has asthma should have a written Asthma Action Plan (AAP). When they are used as part of a comprehensive education program, AAPs have been associated with improved outcomes³⁹ and are recommended by the NAEPP guidelines.⁹ Asthma Action Plans for adult and child patients accompany this guide and are available online as part of Asthma & Allergy Resources for Family Physicians (www.aafp.org/asthmaallergyguide.xml).

Before you or your staff members are able to fill out an AAP with a patient, you must know his or her severity classification and frequency of daytime and nighttime symptoms, his or her ability to use inhalers correctly and, unless the patient is a small child, his or her "personal best" peak flow. The best way to calculate a patient's personal best is to have him or her keep a peak flow diary for at least five days while his or her asthma is under good control. The highest reading the patient is able to get during these five days is his or her personal best. If you suspect that the patient will not keep a peak flow diary for at least five days—or if you're not sure that the patient can use the peak flow meter properly without your supervision—record the patient's peak flow several times in your office. Take the average of the patient's three best tries and record this personal best on the AAP.

Your office procedures and protocols should ensure that an AAP is filled out (or reviewed, if changes are not necessary) with the patient or parents during every office visit. While the AAP may be developed with a nurse or another clinician, the family physician should personally review the final plan with the patient or parents. Some practices have found that with the addition of signature lines for the physician and parent(s), AAPs can double as school management plans. Preprinted, customized



School Asthma Management Plan

The American Academy of Allergy, Asthma and Immunology's Web site offers an Asthma Action Plan for use in schools. This two-page AAP is available at the following Web addresses: www.aaaai.org/patients/topicofthemoth/0901/managementplan_pt1.html (page 1) and www.aaaai.org/patients/topicofthemoth/0901/managementplan_pt2.html (page 2).

28 Supporting Patient Self-management

TABLE 4

Example of Self-Management Support by Family Physicians and Their Staff During Patient Care Visits

Recommendations for Initial Visit		
Assessment Questions Focus on: • concerns • goals of therapy • quality of life • expectations	Teach information in simple language	Teach and demonstrate skills
<p>"What worries you most about your asthma?"</p> <p>"What do you want to accomplish at this visit?"</p> <p>"What do you want to be able to do that you can't do now because of your asthma?"</p> <p>"What do you expect from treatment?"</p> <p>"What medicines have you tried?"</p> <p>"Do you have any concerns about any medications that you take?"</p> <p>"What other questions do you have for me today?"</p> <p>"Do any of your family members or friends have any questions or recommendations about your asthma care?"</p>	<p>"What is asthma?" A chronic lung disease. The airways are very sensitive. They become inflamed and narrow; breathing becomes difficult.</p> <p>Two types of medicines are needed:</p> <ul style="list-style-type: none"> • Long-term control: Medications that prevent symptoms, often by reducing inflammation. These medications often take days to work, but are important because they help keep the lungs from becoming "bothered" by triggers and irritations. • Quick relief: Short-acting bronchodilators relax muscles around airways. These medicines work quickly but don't help reduce inflammation; their effects don't last more than four to six hours. <p>Bring all medications to every appointment.</p> <p>When to seek medical advice. Provide appropriate telephone number.</p>	<p>Inhaler and spacer/holding chamber use. Check performance.</p> <p>Self-monitoring skills tied to Action Plan:</p> <ul style="list-style-type: none"> • Recognize intensity and frequency of asthma symptoms. • Review the signs of deterioration and the need to reevaluate therapy: <ul style="list-style-type: none"> — Waking at night with asthma — Increased medication use — Decreased activity tolerance • Use of an Action Plan.
Recommendations for First Follow-up Visit (2 to 4 weeks or sooner as needed)		
Assessment Questions Focus on: • concerns • goals of therapy • quality of life • expectations	Teach information in simple language	Teach and demonstrate skills
<p>Ask relevant questions from previous visit and also ask:</p> <p>"What medications are you taking?"</p> <p>"How and when are you taking them?"</p> <p>"What problems have you had using your medications?"</p> <p>"How do you use your inhaled medications? Please show me."</p>	<p>Use of two types of medications. Remind patient to bring all medications and the peak flow meter to every appointment for review.</p> <p>Self-evaluation of progress in asthma control using symptoms and peak flow as a guide.</p>	<p>Use of Action Plan. Review and adjust as needed.</p> <p>Peak flow monitoring and daily diary recording.</p> <p>Correct inhaler and spacer/holding chamber technique.</p>

forms can be filled out in triplicate so that the parent can take two copies—one for home and one for school. The third copy should remain in the patient's chart.

Table 4 contains examples of questions and talking and teaching points for different types of visits. You may want to add this information to your personalized flow sheets or visit records to make sure you're passing along the most useful information at each visit.

Negotiated Goal-setting

Negotiated goal-setting calls on the patient and the physician to collaborate on a shared goal that accommodates the priorities of both. If the goal isn't meaningful to the physician *and* the patient, it simply isn't going to work.

Asking the patient open-ended questions about his or her asthma can help you understand what kinds of goals will be meaningful to him or her. Don't assume that all patients have the same goals and motivations. For example, one patient may say that her goal is to run a 5K without having to stop to take medication; another may

TABLE 4 continued

Example of Self-Management Support by Family Physicians and Their Staff During Patient Care Visits

Recommendations for Second Follow-up Visit		
Assessment Questions Focus on: • concerns • goals of therapy • quality of life • expectations	Teach information in simple language	Teach and demonstrate skills
Ask relevant questions from previous visit and also ask: "Have you noticed anything in your home, work or school that makes your asthma worse?" "How do you know when to call your doctor or go to the hospital for asthma care?" "What questions do you have about the Action Plan? Can we make it easier?" "Are your medications causing you any problems?"	Relevant environmental control/avoidance strategies: <ul style="list-style-type: none"> • How to identify and control home, work or school exposures that can cause or worsen asthma. • How to avoid cigarette smoke (active and passive). 	Review all medications and review and interpret peak flow and symptom scores from daily diary. Inhaler and spacer/holding chamber technique. Peak flow monitoring technique. Review use of Action Plan. Confirm that patient knows what to do if asthma gets worse.
Recommendations for All Subsequent Visits		
Assessment Questions Focus on: • concerns • goals of therapy • quality of life • expectations	Teach information in simple language	Teach and demonstrate skills
Ask relevant questions from previous visit and also ask: "How have you tried to control things that make your asthma worse?" "How do you use your inhaled medication? Please show me."	Review and reinforce all: <ul style="list-style-type: none"> • Educational messages. • Environmental control strategies at home, work or school. • Medications. Review and interpret peak flow and symptom scores from daily diary.	Inhaler and spacer/holding chamber technique. Peak flow monitoring technique. Review use of Action Plan. Confirm that patient knows what to do if asthma gets worse. Periodically review and adjust written Action Plan.

Adapted from National Asthma Education and Prevention Program (National Heart, Lung, and Blood Institute) Second Expert Panel on the Management of Asthma. Practical guide for the diagnosis and management of asthma. Bethesda, Md.: National Institutes of Health; 1997; publication no. 97-4053.

be satisfied if he's able to sleep through the night without an exacerbation. Whatever the patient's goal, try taking the following steps to help him or her achieve it:

1. Have the patient state the goal in his or her own words. It may be necessary to help the patient break the goal down into specific, measurable "baby steps." For example, if the patient's goal is to control his nighttime exacerbations, the first step might be to keep the cat out of the bedroom.
2. Ask the patient how certain—on a scale of 1 to 10—he or she is that this goal can and will be achieved. Aim for a confidence level of 6 to 9 (if the confidence level is 10, the goal may be too easy; if it's 5 or lower, the patient may be setting himself or herself up for failure).
3. Identify potential barriers to accomplishing the goal and have the patient come up with a strategy to solve these problems before they start. If, during this conversation, you sense that the patient's confidence level is dropping, you may need to renegotiate the goal and start with an even smaller step.
4. Write down the planned goal and the strategies for overcoming potential obstacles, preferably on the visit record or flow sheet. Give a copy to the patient.
5. Set a specific date for the patient to check in with you and report on his or her progress. This can be as simple as a phone call to your office, though some patients may need a follow-up visit. The important thing is that the patient knows you will be expecting him or her to report back.

Some patients—especially ones who need some extra motivation—may benefit from looking at the NAEPP criteria and classifying their own severity. Make sure these patients are considering coughing, wheezing, tightness in the chest and avoiding activities when they count up their symptom frequency.

30 Family Physicians as Community Leaders

Family Physicians as Community Leaders and Agents of Change

Patients who have asthma and their families often feel overwhelmed by a new diagnosis of asthma or by the daily attention that managing this condition requires. These patients often look to their family physicians for guidance and support, and, in many communities, family physicians are recognized as leaders and information resources. As such, there are ways in which family physicians can have an immediate impact and in which they can contribute to more gradual but broader social change.

The two most important things a family physician can do to help his or her patients who have asthma are to:

- 1) provide the highest quality asthma care, and
- 2) refine the office systems that support delivery of such care.

As you might imagine, the second of these is likely to be the most challenging. Changing a system from the inside out while it's running is, admittedly, a more daunting task than selecting an inhaled corticosteroid or antihistamine. Use this resource

guide as a portal to the many resources—in print, online and real-time venues—that can help you take on these tasks. A list of these is provided with the Asthma & Allergy Resources for Family Physicians, online at www.aafp.org/asthmaallergyguide.xml.



Patient Assistance Programs

Many patients who have asthma and allergies require more than one medication, and these medications can be quite costly. The Pharmaceutical Research and Manufacturers of America (PhRMA) has created a Web site — www.helpingpatients.org — that helps physicians and patients determine whether a patient is eligible for assistance from one of many patient assistance programs (PAPs). This Web site contains information about PAPs sponsored by PhRMA members, non-PhRMA-member pharmaceutical companies, and local and government agencies. Note: Patients may use this Web site to find programs for which they may qualify, but many PAPs require that the prescribing physician initiate the process.

Partnering With Schools

Family physicians may find it useful to work with local schools to provide asthma education and support to their patients and the community. As mentioned in the Asthma Action Plan section (page 27), physicians and parents should give school nurses written action plans for each student who has asthma. Not every school has a nurse; therefore, the instructions for assessment and therapy must be written in lay language. These AAPs must include emergency protocols and instructions for peak flow monitoring.

Several resources for managing asthma in schools are available on the Internet. Useful Web sites include the following:

- The National Heart, Lung, and Blood Institute's "Managing Asthma: A Guide for Schools":

www.nhlbi.nih.gov/health/prof/lung/asthma/asth_sch.htm.

- The U.S. Environmental Protection Agency's "Managing Asthma in the School Environment": www.epa.gov/iaq/schools/asthma/ame-ame.htm

- The Centers for Disease Control and Prevention's "Strategies for Addressing Asthma Within a Coordinated School Health Program": www.cdc.gov/HealthyYouth/asthma. This Web site also provides links to information about communities that are currently involved in this program.

Asthma Camps

Asthma summer camps allow children who have asthma to spend time learning about asthma while having some fun. Asthma camps offer kids a friendly environment where their condition is not considered unusual or “weird,” and give them an opportunity to meet other kids who are living with asthma. Kids participate in regular camping activities (e.g., hiking, swimming, fishing) in a medically supervised environment and attend hands-on classes that help them learn to manage their condition. Options range from day camps to week-long outdoor camps.

For more information and a directory of asthma camps around the United States, visit www.asthmacamps.org.

Community Leader: Qualifications and Responsibilities

Questions to Ask

... yourself:

- Am I able to creatively adapt to a rapidly changing environment? Do I enjoy asking imaginative questions and “thinking outside the box”?
- Do I enjoy communicating in a variety of settings; for example, am I comfortable with public speaking?
- Am I prepared to spend time negotiating relationships and helping others realize their potential?

If you answered “yes” to one or more of these questions, you may be a “natural” community leader. For more on the topic of leadership, see the *Family Practice Management* article “Becoming an Effective Physician Leader,” by Michael Magill, M.D. (May 1999; available on the Web at www.aafp.org/fpm/990500fm/35.html).

If you are not a “natural,” are there ways that you can help others lead? Can you get involved with a local asthma coalition? This “ally against asthma” approach is especially appropriate for busy family physicians and can help you learn your best role in advancing community partnerships. Attend—or ask one of your nurses or administrators to attend—local asthma meetings and bring back ideas about how you can help. It will serve your patients during the time when they’re not in your office. (The Allies Against Asthma Web site provides a list of community-based coalitions around the United States: www.asthma.umich.edu/coalition_connections/map.html.)

... your patients:

- What are they currently using for resources?
- What does the nature of their needs seem to be (e.g., education, medication, how to manage asthma during the school day)?

- Are there some patients and/or parents who are willing to educate others about asthma and promote change in the community?
- If so, can they help you by sending out a newsletter? Other ideas for getting the word out include inserts in your billing envelopes, posters in your waiting and/or exam rooms and advertisements in the newspaper.

... your community health organizations:

- What resources are available?
- Who sponsors them?
- Who is eligible to participate?
- Does the local hospital respiratory therapy department offer any education and/or assistance?
- Is there an active chapter of the American Lung Association (ALA) or Mothers of Asthmatics?
- Would the school board be willing to devote one or more school nurses to help you improve asthma care for school-aged children?

Essentials for an effective community partnership:

- Clear vision and shared objectives
- Decisive but flexible leadership
- Inclusive participation of key representatives
- Trusting relationships
- Clear roles and responsibilities
- Time commitment of partners
- Funds for capacity building
- Shared benefits

32 References

1. National Center for Health Statistics. Asthma prevalence, health care use and mortality, 2000-2001. Centers for Disease Control and Prevention. Retrieved June 7, 2004, from the World Wide Web: <http://www.cdc.gov/nchs/products/pubs/pubd/hestats/asthma/asthma.htm>.
2. Nayak AS. The asthma and allergic rhinitis link. *Allergy Asthma Proc* 2003;24:395-402.
3. American Academy of Allergy, Asthma and Immunology (AAAAI). The allergy report. Milwaukee, Wis.: AAAAI; 2000.
4. Spector S. The linkage between rhinitis, sinusitis, and asthma. *Clin Appl Immunol Rev* 2001;1:229-34.
5. Upton MN, McConnachie A, McSharry C, Hart CL, Smith GD, Gillis CR, et al. Intergenerational 20 year trends in the prevalence of asthma and hay fever in adults: the Midspan family study surveys of parents and offspring. *BMJ* 2000; 321:88-92.
6. Solberg LI. Guideline implementation: what the literature doesn't tell us. *Jt Comm J Qual Improv* 2000;26:525-37.
7. Yawn BP. Developing new asthma quality indicators to improve translation of guidelines into practice. *Mayo Clin Proc (In press)*.
8. National Asthma Education and Prevention Program (National Heart, Lung, and Blood Institute) Second Expert Panel on the Management of Asthma. Practical guide for the diagnosis and management of asthma. Bethesda, Md.: National Institutes of Health; 1997; publication no. 97-4053.
9. National Asthma Education and Prevention Program (National Heart, Lung, and Blood Institute) Second Expert Panel on the Management of Asthma. Expert panel report 2: guidelines for the diagnosis and management of asthma. Bethesda, Md.: National Institutes of Health; 1997; publication no. 97-4051.
10. Swanney MP, Jensen RL, Crichton DA, Beckert LE, Cardno LA, Crapo RO. FEV₆ is an acceptable surrogate for FVC in the spirometric diagnosis of airway obstruction and restriction. *Am J Respir Crit Care Med* 2000;162:917-9.
11. Nelson, HS. Gastroesophageal reflux and pulmonary disease. *J Allergy Clin Immunol* 1984;73:547-56.
12. Irwin RS, Zawacki JK, Curley FJ, French CL, Hoffman PJ. Chronic cough as the sole presenting manifestation of gastroesophageal reflux. *Am Rev Respir Dis* 1989;140:1294-1300.
13. Martin ME, Grunstein MM, Larsen GL. The relationship of gastroesophageal reflux to nocturnal wheezing in children with asthma. *Ann Allergy* 1982; 49:318-22.
14. Davis RS, Larsen GL, Grunstein MM. Respiratory response to intraesophageal acid infusion in asthmatic children during sleep. *J Allergy Clin Immunol* 1983;72:393-8.
15. Ekström T, Lindgren BR, Tibbling L. Effects of ranitidine treatment on patients with asthma and a history of gastro-oesophageal reflux: a double-blind crossover study. *Thorax* 1989;44:19-23.
16. Rosenstreich DL, Eggleston P, Kattan M, Baker D, Slavin RG, Gergen P, et al. The role of cockroach allergy and exposure to cockroach allergen in causing morbidity among inner-city children with asthma. *N Engl J Med* 1997;336: 1356-63.
17. Togias A. Unique mechanistic features of allergic rhinitis. *J Allergy Clin Immunol* 2000;105:S599-604.
18. Terreehorst I, Hak E, Oosting AJ, Tempels-Pavlica Z, de Monchy JGR, Bruijnzeel-Koomen CAFM, et al. Evaluation of impermeable covers for bedding in patients with allergic rhinitis. *N Engl J Med* 2003;349:237-46.
19. Woodcock A, Forster L, Matthews E, Martin J, Letley L, Vickers M, et al. Control of exposure to mite allergen and allergen-impermeable bed covers for adults with asthma. *N Engl J Med* 2003;349:225-36.
20. Chalmers GW, Macleod KJ, Little SA, Thomson LJ, McSharry CP, Thomson NC. Influence of cigarette smoking on inhaled corticosteroid treatment in mild asthma. *Thorax* 2002;57:226-30.
21. National Asthma Education and Prevention Program (National Heart, Lung, and Blood Institute) Second Expert Panel on the Management of Asthma. Guidelines for the diagnosis and management of asthma—update on selected topics 2002. Bethesda, Md.: National Institutes of Health; 2002; publication no. 02-5075.
22. Leung DYM, Bloom JW. Update on glucocorticoid action and resistance. *J Allergy Clin Immunol* 2003;111:3-22.
23. Verberne AAPH, Frost C, Duiverman EJ, Grol MH, Kerrebijn KF and the Dutch Paediatric Asthma Study Group. Addition of salmeterol versus doubling the dose of beclomethasone in children with asthma. *Am J Respir Crit Care Med* 1998;158:213-19.
24. Nassif EG, Weinberger M, Thompson R, Huntley W. The value of maintenance theophylline in steroid-dependent asthma. *N Engl J Med* 1981;304:71-5.
25. Simons FER, Villa JR, Lee BW, Teper AM, Lyttle B, Aristizabal G, et al. Montelukast added to budesonide in children with persistent asthma: a randomized, double-blind, crossover study. *J Pediatr* 2001;138:694-8.
26. Markham A, Faulds D. Theophylline: a review of its potential steroid sparing effects in asthma. *Drugs* 1998;56:1081-91.
27. Horiguchi T, Tachikawa S, Kasahara J, Doi M, Shiga M, Miyazaki J, et al. Suppression of airway inflammation by theophylline in adult bronchial asthma. *Respiration* 1999;66:124-7.
28. de Benedictis FM, Tuteri G, Pazzelli P, Bertotto A, Bruni L, Vaccaro R. Cromolyn versus nedocromil: duration of action in exercise-induced asthma in children. *J Allergy Clin Immunol* 1995;96:510-4.
29. Long A, McFadden C, DeVine D, Chew P, Kupelnick B, Lau J. Management of allergic and nonallergic rhinitis. (Evidence Report/Technology Assessment No. 54.) Rockville, Md.: Agency for Healthcare Research and Quality; 2002; publication no. 02-E024.
30. Day J. Pros and cons of the use of antihistamines in managing allergic rhinitis. *J Allergy Clin Immunol* 1999;103:S395-9.
31. Sussman GL, Mason J, Compton D, Stewart J, Ricard N. The efficacy and safety of fexofenadine HCl and pseudoephedrine, alone and in combination, in seasonal allergic rhinitis. *J Allergy Clin Immunol* 1999;104:100-6.
32. Dockhorn RJ, Williams BO, Sanders RL. Efficacy of acrivastine with pseudoephedrine in treatment of allergic rhinitis due to ragweed. *Ann Allergy Asthma Immunol* 1996;76:204-8.
33. Grosclaude M, Mees K, Pinelli ME, Lucas M, Van de Venne H. Cetirizine and pseudoephedrine retard, given alone or in combination, in patients with seasonal allergic rhinitis. *Rhinology* 1997;35:67-73.
34. Bronsky E, Boggs P, Findlay S, Gawchik S, Georgitis J, Mansmann H, et al. Comparative efficacy and safety of a once-daily loratadine-pseudoephedrine combination versus its components alone and placebo in the management of seasonal allergic rhinitis. *J Allergy Clin Immunol* 1995;96:139-47.
35. Meltzer EO. Clinical evidence for antileukotriene therapy in the management of allergic rhinitis. *Ann Allergy Asthma Immunol* 2002;88(4 suppl 1):23-9.
36. Masley S, Phillips S, Copeland JR. Group office visits change dietary habits of patients with coronary artery disease: the dietary intervention and evaluation trial (D.I.E.T.). *J Fam Pract* 2001;50:235-9.
37. Masley S, Sokoloff J, Hawes C. Planning group visits for high-risk patients. *Fam Pract Manag* 2000;7:33-7.
38. Sadur CN, Moline N, Costa M, Michalik D, Mendlowitz D, Roller S, et al. Diabetes management in a health maintenance organization. *Diabetes Care* 1999;22:2011-7.
39. Gibson PG, Powell H, Coughlan J, Wilson AJ, Abramson M, Haywood P, et al. Self-management education and regular practitioner review for adults with asthma (Cochrane Review). In: *The Cochrane Library, Issue 1, 2004*. Oxford: Update Software.

Quiz

This Monograph Quiz may be used by physicians seeking AAFP and/or AMA credit hours. Answers to the Monograph Quiz appear on the last page of this insert.

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The American Academy of Family Physicians is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

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Instructions

1. Read the monograph, answer all the questions on the Monograph Quiz pages and mark your answers on the Monograph Quiz card.
2. Print all required information, including your member number and the name of your state chapter, on the Monograph Quiz card. (Nonmember physicians must provide name and medical education number. Nonmember health care professionals must provide name and Social Security number.)
3. Mail the Monograph Quiz card (within one year) on or before June 15, 2005. Please make sure to affix a 23-cent stamp. Cards without sufficient postage will not be delivered.

Before beginning the test, please note that the Monograph Quiz includes two types of questions: Type A and Type X.

Type A Questions

Type A questions have only one correct answer. Here is a typical Type A question:

Q1. The leading cause of cancer deaths in men is:

- A. Prostate cancer.
- B. Colon cancer.
- C. Lung cancer.
- D. Bone cancer.
- E. Bladder cancer.

Answer: C

Type X Questions

Type X questions have one or more correct answers. They are multiple choice questions, with four options. Here is a typical Type X question:

Q2. A functioning thyroid nodule:

- A. Accumulates iodine.
- B. Synthesizes thyroid hormone.
- C. Is probably benign.
- D. Is under thyroid-stimulating hormone control.

Answer: A,B,C,D

Quiz

Unless otherwise specified, all of the questions below refer to information presented in this monograph.

Type A Questions

Each question has only one correct answer.

- Which one of the following is considered the first step in identifying a patient's asthma triggers?
 - A. Applying a standard panel of skin tests.
 - B. Taking a detailed history by querying the patient and/or the patient's family.
 - C. Radioallergosorbent testing (RAST).
 - D. Referral to an allergist.
 - E. Prescribing a short course of oral corticosteroids.
- Which one of the following statements about radioallergosorbent testing (RAST) is true?
 - A. RAST is a skin test that identifies specific allergens.
 - B. RAST results are easily reproduced in the family physician's office.
 - C. RAST is less expensive than Immunocap testing.
 - D. RAST requires a minimum of 10 mcg of serum for each allergen tested.
 - E. RAST results must be interpreted in light of an individual patient's clinical history.
- Which one of the following is true of planned visits?
 - A. They are not necessary if asthma is under control.
 - B. They are only important for young children, pregnant women and the elderly.
 - C. They can be easily combined with an acute-care visit.
 - D. They provide an opportunity for mutual, negotiated goal-setting.
 - E. A family physician's office must have an asthma database in order to conduct one.
- Which one of the following statements about asthma triggers is true?
 - A. A patient will always react to a trigger in the same way.
 - B. The cumulative effect of exposure to more than one trigger may push a patient's symptoms over the threshold of clinical illness.
 - C. It is not important for a patient to understand the difference between allergic triggers (allergens) and nonallergic triggers (irritants).
 - D. Pharmacotherapy is the only true way to directly alter a patient's clinical response to an irritant.
 - E. Clinical exacerbations of a patient's asthma are almost always caused by a single trigger event.
- Which one of the following statements about Asthma Action Plans (AAPs) is true?
 - A. Only patients who have severe persistent asthma need an AAP.
 - B. With the addition of physician and parent signatures, an AAP can sometimes double as a school management plan.
 - C. It is not necessary to know a patient's severity classification in order to fill out an AAP.
 - D. There is no evidence suggesting that AAPs improve outcomes, but many patients appreciate having them anyway.
 - E. AAPs should only be reviewed at acute-care visits.
- Which one of the following statements about pulmonary function testing is true?
 - A. Spirometry is often the most practical testing option available to family physicians.
 - B. The National Asthma Education and Prevention Program (NAEPP) recommends performing spirometry once a year on all patients who have asthma.
 - C. The peak expiratory flow rate (PEFR) is an acceptable surrogate for spirometry.
 - D. Children younger than 7 years of age rarely have trouble performing the procedure necessary to achieve good spirometry results.
 - E. Patients should never use their short-acting bronchodilator before spirometry testing.
- Which one of the following statements about pharmacologic treatment of allergic rhinitis is true?
 - A. An evidence report from the Agency for Healthcare Research and Quality (AHRQ) has shown that antihistamines are more effective than intranasal corticosteroids for treatment of allergic rhinitis.
 - B. Second-generation antihistamines alleviate congestion for most patients who have allergic rhinitis.
 - C. Treatment with a leukotriene modifier is now an accepted therapeutic option for patients who have allergic rhinitis.
 - D. The cost of second-generation antihistamines is now on par with the first-generation formulations.
 - E. First-generation antihistamines are not associated with sedation, but may cause headaches and dry mouth.
- Which one of the following is true of visit records and flow sheets?
 - A. The family physician should be the only staff member using these tools.
 - B. Once a practice's visit record and flow sheet are implemented, changes should not be made to their format.
 - C. It is not necessary to list target measures for clinical data on the visit record or flow sheet.
 - D. Visit records should only be used during planned visits.
 - E. Dividing up process and protocol responsibilities among different staff members can help ensure that visit records and flow sheets are kept up-to-date.
- Which one of the following statements does not describe a step for the family physician to take as part of effective negotiated goal-setting?
 - A. Prior to the office visit, create a list of suggested goals from which the patient can choose.
 - B. Write down the patient's goal and strategies for overcoming obstacles, preferably on the visit record or flow sheet.
 - C. Agree on a specific date for the patient to check in and report on his or her progress.
 - D. Ask the patient to rate how confident he or she is that his or her goal can and will be achieved.
 - E. Help the patient break his or her goal down into specific, measurable "baby steps."

Quiz

Type X Questions

Each question has one or more correct answers.

10. Which of the following medications is/are used in long-term control of asthma?

- A. Theophylline.
- B. Short-acting beta₂-agonists.
- C. Leukotriene modifiers.
- D. Mast cell stabilizers.

11. Asthma exacerbations can be triggered by which of the following?

- A. Air pollution.
- B. Gastroesophageal reflux disease.
- C. Anxiety.
- D. Cigarette smoke.

12. Which of the following is/are true of group visits?

- A. They require little preparation on the part of the physician.
- B. They can be a cost-effective use of physician and staff time.
- C. They are always reimbursable.
- D. They provide a forum for patients to share their experiences with each other.

13. Asthma severity is determined by which of the following?

- A. The frequency of daytime symptoms.
- B. The frequency of nighttime symptoms.
- C. Whether and when the patient avoids rigorous activity.
- D. Objective lung function testing.

14. Skin testing should not be performed in which of the following situations?

- A. When the patient cannot safely discontinue medications before testing.
- B. In a patient who has generalized eczema.
- C. In the family physician's office.
- D. In a patient who has a history of previous anaphylaxis.

15. Which of the following statements about long-term control medications is/are true?

- A. Low-dose theophylline therapy should only be initiated by an allergy specialist.
- B. The good safety profile of mast cell stabilizers makes them an appropriate option for children who have mild or moderate asthma.
- C. Current insurance coverage may require referral to an allergist before omalizumab (Xolair) can be prescribed.
- D. Use of an agent combining fluticasone with salmeterol (Advair Diskus) is indicated for patients who have mild, moderate or severe persistent asthma.

16. Which of the following statements regarding the connection between asthma and allergies is/are true?

- A. Only 10 percent to 20 percent of patients who have asthma also suffer from allergies.
- B. It is reasonable to suspect allergy in patients who have asthma who also complain of rhinorrhea and itchy eyes, nose, throat and/or ear canals.

- C. Controlling a patient's allergic rhinitis symptoms has no bearing on his or her asthma symptoms.
- D. Reducing a patient's exposure to allergens often helps alleviate asthma symptoms.

17. Which of the following could be considered an asthma patient database?

- A. A Microsoft Excel worksheet containing the names of and clinical information about patients who have asthma within the practice.
- B. A portion of an electronic health record (EHR) that is dedicated to tracking the care of patients who have asthma.
- C. A handwritten list of asthma patients and the date of their most recent appointment.
- D. A shoe box of index cards that provide the names of your asthma patients and list the medications that each is taking.

18. Which of the following statements is/are true of inhaled corticosteroids?

- A. Children under 10 should not use inhaled corticosteroids because of a potential decrease in growth velocity.
- B. The preferred treatment for every patient who has persistent asthma is inhaled corticosteroids.
- C. Multiple studies have indicated that low-to-medium doses of inhaled corticosteroids have no significant effect on bone mineral density.
- D. Evidence suggests that inhaled corticosteroids are less effective in controlling inflammation and symptoms in patients who smoke.

19. A family physician might consider referring a patient to an asthma/allergy subspecialist under which of the following circumstances?

- A. When the patient's diagnosis is severe persistent asthma.
- B. When spirometry is needed but is unavailable to the family physician.
- C. When the patient's asthma is not under control, even after medications have been adjusted and readjusted, and avoidance measures have been taken.
- D. When the family physician is uncomfortable managing the patient's asthma.

20. Which of the following statements about reimbursement for asthma care is/are true?

- A. Used properly, a good flow sheet and visit record can help ensure appropriate reimbursement for the asthma care you provide.
- B. To calculate the number of minutes spent in prolonged service, the entire duration of the visit is counted.
- C. Planned visits ensure at least two preventive, billable care opportunities.
- D. Some insurers will not pay for a well check and an asthma visit provided to the same patient at the same encounter.

Quiz Answers

Answers to the Quiz

Q1. B	Q6. A	Q11. A, B, C, D	Q16. B, D
Q2. E	Q7. C	Q12. B, D	Q17. A, B, C, D
Q3. D	Q8. E	Q13. A, B, C, D	Q18. B, C, D
Q4. B	Q9. A	Q14. A, B, D	Q19. A, B, C, D
Q5. B	Q10. A, C, D	Q15. B, C	Q20. A, C, D