

A review of the current guidelines for allergic rhinitis and asthma

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Allergic rhinitis and asthma are common chronic respiratory tract disorders. These disorders generate a significant burden to the patient, the patient's family, and to society because of lost productivity, impaired quality of life, healthcare costs, and even loss of life.

To improve the management of asthma, guidelines have been developed to aid clinicians in proper diagnosis and treatment.^{1,2} Although these guidelines can serve as a basis for determining how to treat patients with these disorders, the best therapy regimens are those that are individualized to meet the specific needs of the patient.

ALLERGIC RHINITIS

Rhinitis is a heterogeneous disorder that is triggered by a number of factors³ and is generally classified as atopic, idiopathic, nonallergic, or infectious. Other types include occupational, hormonal, and drug-induced rhinitis. The two main categories of allergic rhinitis are seasonal and perennial.

Allergic rhinitis is characterized by the temporal relationship of symptoms to allergen exposure.³ Allergens can include pollens, animal dander, dust mites, and mold spores, among others. Allergic rhinitis may be associated with coexisting diseases, such as viral and bacterial upper respiratory tract infections or structural abnormalities primarily related to nasal polyps. To be considered an important clinical phenomenon, two or more symptoms of allergic rhinitis must be experienced for more than 1 hour on most days.⁴ Symptoms can include nasal discharge, blockage, and sneezing, itching, or both.³ Chronic allergic rhinitis can lead to loss of smell or other complications.

Allergic rhinitis is initiated by sensitization when an airborne antigen contacts the nasal mucosa epithelium.⁵ In response to the allergen, mature B cells produce specific immunoglobulin E antibodies that bind to receptors on mast cells and basophils. Reexposure to the allergen causes the mast cells and eosinophils to release inflammatory mediators, leading to the immediate or early phase of an allergic reaction. Patients may also experience a late- or delayed-phase response characterized by a continued influx of eosinophils, basophils, neutrophils, and mononuclear cells in nasal tissues.

Diagnosis of allergic rhinitis

The diagnosis of allergic rhinitis requires a careful patient history and physical examination. Nasal smears for microscopic examination of nasal secretions, allergy testing, and sinus radiography also may yield important information about the patient's condition. Allergy testing by a board-certified allergist is generally indicated for the patient with significant recurrent symptoms and common complications (e.g., sinusitis, asthma). A skin test can confirm the presence of immunoglobulin E antibody, and the radioallergosorbent test for immunoglobulin E antibodies can also provide useful information.

Treatment of allergic rhinitis

The main treatment for allergic rhinitis is allergen avoidance to reduce or eliminate exposure. Pharmacologic therapy may be used and is directed at the inflammatory process. If allergen avoidance and pharmacologic therapy are ineffective, immunotherapy can be considered.

Allergen avoidance should be based on the specific allergens to which the patient is sensitive.⁴ Patients with pollen sensitivity should monitor pollen forecasts, avoid high-pollen areas, and stay inside the house with windows and doors closed when the pollen count is high. In addition, these patients should use high-efficiency particulate filters in cars and should consider wearing glasses when outside of the house. For those who are sensitive to dust mites, control should focus initially on the bed, because patients may spend 7 to 10 hours a day at that site. Allergen-impermeable mattress, duvet, and pillow covers should be used. The mattress, pillows, and the base of the bed should be vacuumed weekly. In addition, carpeting in the bedroom may need to be removed.

Pharmacologic therapies for allergic rhinitis include decongestants, antihistamines, intranasal cromolyn, and topical nasal corticosteroids.⁴ For patients with seasonal allergic rhinitis, therapy choices are made based on the degree of symptoms. Patients with mild disease or with occasional symptoms can benefit from a rapid-onset, oral, nonsedating H₁ antihistamine when they are symptomatic. If there is a substantial ocular component to the patient's symptomatology, a topical antihistamine or sodium cromoglycate can be applied to the eyes, nose, or both. For patients with moderate disease and prominent nasal symptoms, a topical nasal steroid can be used daily beginning early in the allergy season, in addition to a second-generation nonsedating antihistamine. In pa-

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tients with prominent eye symptoms, sodium cromoglycate or other topical antiallergic medications can be used, and an ophthalmologic evaluation may be recommended to determine if administration of topical corticosteroids to the eye would be beneficial or if there is a risk for increasing intraocular pressure. For patients with perennial allergic rhinitis, topical nasal steroids should be used if the patients are undergoing long-term exposure. Disease flares can be treated with oral, nonsedating H₁ antihistamines with or without oral decongestants. (For more information on pharmacologic therapies, see "Pharmacologic Management of Allergic Rhinitis" by Gary S. Rachelefsky, MD, in this issue.)

If allergen avoidance and pharmacotherapy are ineffective, referral to a specialist should be considered for further investigation, including examination of the nose, allergy tests, additional pharmacotherapy (e.g., systemic steroids for crisis situations), and consideration of immunotherapy.⁴ Immunotherapy involves the subcutaneous injection of incremental doses of allergenic substances.^{3,5} Patients who are to receive immunotherapy should have a history of allergic rhinitis for at least two seasons or 6 months and should have positive skin tests that correlate with their symptomatic histories. If immunotherapy is indicated, it is crucial that clinicians talk candidly with patients about potential adverse events, including death.⁶ In all cases, immunotherapy should be prescribed by an allergist and administered under the supervision of a physician who is trained to assess and treat anaphylaxis. Immunotherapy is contraindicated in patients taking oral or topical β -blockers, patients who are pregnant (although immunotherapy can be safely continued during pregnancy if it was initiated before pregnancy), or patients with uncontrolled asthma.

ASTHMA

Asthma is recognized as a serious global health problem. In addition, the incidence of asthma is increasing,⁷⁻⁹ and this trend probably reflects both a true increase and the tendency of clinicians to label all wheezing episodes as asthma. Although family history is a risk factor for the development of asthma, environmental factors are important in the onset and persistence of this disorder.¹⁰⁻¹²

In 1991, guidelines for the diagnosis and management of asthma were released by the Expert Panel for the National Asthma Education Program.¹ In addition, guidelines for the diagnosis and management of asthma have been developed by the Global Initiative for Asthma (GINA).² These international guidelines provide direction for the diagnosis and management of patients with asthma. Because the revision of the National Asthma Education Program guidelines was ongoing at the time of this writing, the GINA guidelines are described below.

Diagnosis of asthma

Epidemiologic studies suggest that asthma is underdiagnosed.¹³ This may reflect the nonspecific nature of asthma symptoms or the fact that patients tend to

tolerate these intermittent symptoms. Unfortunately, establishing an accurate diagnosis is essential for determining appropriate treatment. For example, a clinician may diagnose bronchitis rather than asthma and subsequently treat inappropriately and ineffectively with successive courses of antibiotics and cough medications.¹⁴

Information regarding the patient's history is critical for the diagnosis of asthma.³ Symptoms reported by the patient may include episodic breathlessness, wheezing, chest tightness, and cough that worsen at night and in the early hours of the morning. The patient may have a history of recurrent exacerbations that are provoked by allergens, irritants, exercise, or infectious agents. A useful clinical marker of asthma is the relief of symptoms subsequent to bronchodilator and anti-inflammatory treatments. Seasonal variability of symptoms and a positive family history of asthma and atopic disease are suggestive evidence for diagnosis.

Measurements of lung function are important parameters for appraising the characteristics of the patient's asthma.³ Two methods that are commonly used for assessing airflow limitation are FEV₁, the related forced vital capacity, and the PEF. These measurements rely on the relationship between airflow limitation and airway luminal size (airway caliber) and the elastic properties of the alveoli.² It should be noted that although measurements of airway responsiveness may be used to diagnose asthma, other disorders such as rhinitis, cystic fibrosis, bronchiectasis, and chronic obstructive pulmonary disease may invoke similar results.

Treatment of asthma

The GINA guidelines were designed with a stepwise approach to the long-term management of asthma.² The goal of treatment is to control asthma such that the patient has minimal or no chronic symptoms (including nocturnal symptoms), minimal episodes, no emergency visits, minimal need for rescue β_2 -agonist therapy, no activity limitations (including exercise), PEF circadian variation less than 20%, near normal PEF, and minimal or no adverse effects from medication. In short, the disorder should be put into remission.

The GINA guidelines categorize asthma into four different steps: step 1 is intermittent; step 2 is mild persistent; step 3 is moderate persistent; and step 4 is severe persistent (Fig. 1).² This design permits the concept of "stepping up" or "stepping down" therapy. For example, therapy may need to be stepped up in response to seasonal fluctuations in disease activity, particularly in children with regard to upper respiratory tract infection or allergen exposure. In addition, the GINA guidelines use specific terminology designed to provide meaning to the patient regarding therapy actions such that bronchodilator therapies are termed "relievers" and anti-inflammatory therapies are termed "controllers."

The clinical features of step 1, or intermittent asthma, include symptoms less than once per week, brief exacerbations, nighttime asthma symptoms less than two

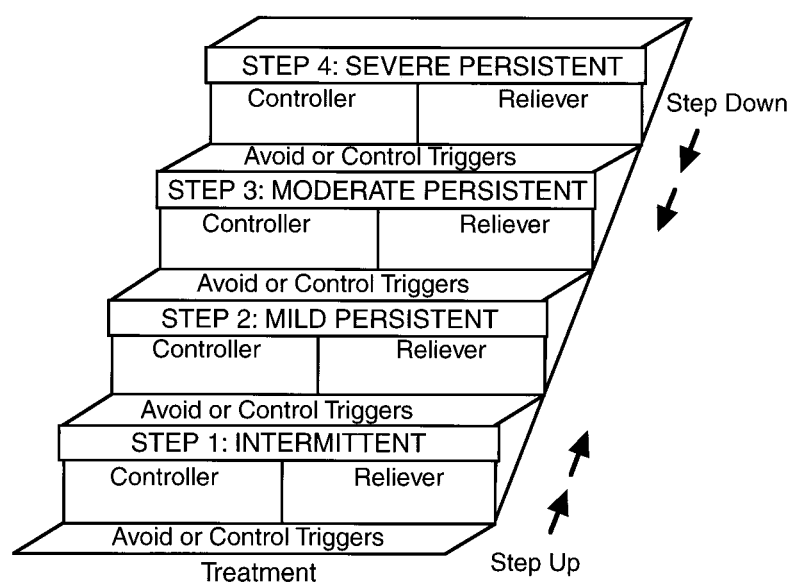


FIG. 1. Long-term management of asthma: a stepwise approach. From Global Initiative for Asthma. National Institutes of Health; 1995. NHLBI Publication No. 95-3659.

times per month, asymptomatic and normal lung function between exacerbations, and PEF or FEV₁ at least 80% of predicted with variability less than 20%.² The recommended therapy regimen for this group of patients is an intermittent reliever medication (i.e., short-acting inhaled β_2 -agonist) taken as needed. The intensity of this treatment will reflect the severity of the exacerbation. In addition, a prophylactic reliever, such as an inhaled β_2 -agonist or cromolyn, before exercise or exposure may be beneficial.

For patients at step 2, or mild persistent, symptoms occur more than one time per week but less than one time per day.² Exacerbations may affect activity and sleep, and nighttime asthma symptoms occur more than two times per month. The PEF or FEV₁ is greater than 80% of predicted, and the variability is between 20% and 30%. In addition to a quick reliever medication (i.e., inhaled β_2 -agonist), these patients benefit from one daily controller medication, such as an inhaled corticosteroid, cromoglycate, nedocromil, or sustained-release theophylline.

The clinical features of step 3, or moderate persistent, include daily symptoms, exacerbations that affect activity and sleep, nighttime asthma symptoms that occur more than once per week, daily use of a short-acting inhaled β_2 -agonist, and PEF or FEV₁ between 60% and 80% of predicted with variability greater than 30%.² These patients should receive a daily controller medication of inhaled corticosteroid and a long-acting bronchodilator (i.e., long-acting inhaled β_2 -agonist, sustained-release theophylline, long-acting oral β_2 -agonist), particularly for nighttime symptoms. The reliever medication should be a short-acting inhaled β_2 -agonist.

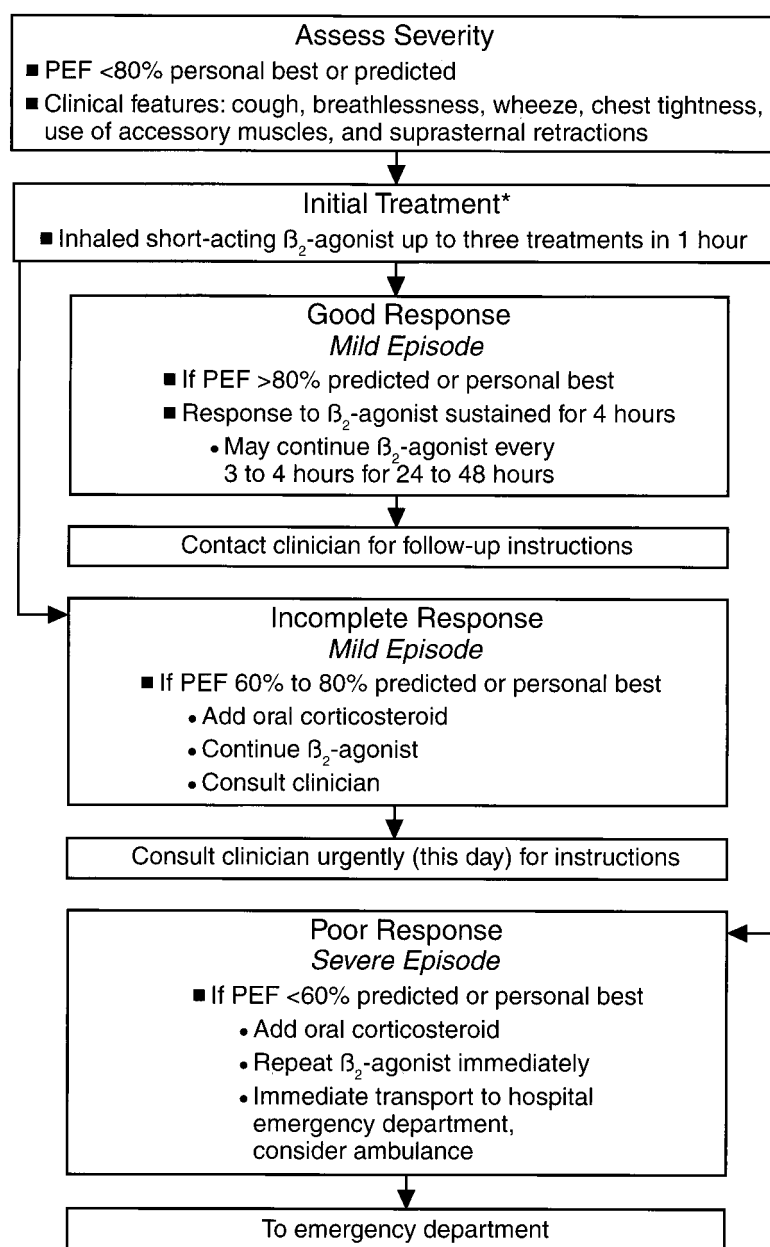
For severe persistent asthmatics, or patients at step 4,

symptoms are continuous with frequent exacerbations.² Patients experience frequent nighttime asthma symptoms, physical activities are limited by symptoms, and PEF or FEV₁ is less than or equal to 60% of predicted with variability more than 30%. The daily controller medication should be high doses of inhaled corticosteroid, a long-acting bronchodilator, and at times long-term, alternate-day oral corticosteroids. The quick reliever is a short-acting β_2 -agonist.

Management of exacerbations of asthma

Exacerbations of asthma do occur, and several steps need to be taken to manage these events (Fig. 2).² First, the severity of the episode must be determined by measuring the PEF and assessing clinical features. Initial treatment should consist of a short-acting inhaled β_2 -agonist that can be given up to three times per hour either by a power-driven nebulizer or a metered-dose inhaler with holding chamber. After this initial treatment, the patient's response should be assessed and defined as either good, intermediate, or poor to determine the next steps that can range from continuing β_2 -agonist therapy to immediate transportation to the hospital emergency department.

If the patient does need hospital-based care, history and physical examination are the first steps.² Initial treatment should include a short-acting inhaled β_2 -agonist, usually by nebulization, given every 20 minutes for 1 hour. Oxygen is provided to achieve greater than 90% saturation. Systemic corticosteroids are used if there is no immediate response, if the patient recently took oral steroids, or if the episode is severe. The patient is subsequently reassessed, and a specific treatment regimen is selected depending on whether the patient



*Patients at high risk of asthma-related death should contact clinician promptly after initial treatment. Additional therapy may be required.

FIG. 2. Management of exacerbation of asthma: home treatment. Patients at high risk of asthma-related death should contact a clinician promptly after initial treatment. Additional therapy may be required. From Global Initiative for Asthma. National Institutes of Health; 1995. NHLBI Publication No. 95-3659.

experienced a moderate or severe episode. Patients who respond to the treatment regimen can be discharged, but patients who have an incomplete response within 1 to 2 hours should be admitted to the hospital or kept in the emergency room, and those who have a poor response within 1 hour should be admitted to intensive care.

CONCLUSIONS

Guidelines have been developed that are useful for determining the appropriate treatment regimens for patients with allergic rhinitis or asthma. These guidelines provide information regarding how to evaluate and treat these patients with chronic therapy and how to

manage acute exacerbations. Nevertheless, bear in mind that the best therapy regimens for these patients are individualized to maximize both efficacy and tolerability.

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