

## CME ARTICLE

# Diagnosis and Treatment of Allergic Rhinitis: Primary Care in an Integrated Health System Setting

Michael H. Keslin, MD; Catherine M. Jarrell, MA; Cindy Gregory, PhD

### ***Abstract***

**The first point of contact for many patients presenting with allergy symptoms is the primary care physician. And in the managed care system, this initial primary care visit is essential. Guidelines for the primary care physician in diagnosing and treating rhinitis as well as referring patients to allergy specialists are described. In addition, optimal medication usage for treating mild, moderate, and severe rhinitis is detailed.**

*(Am J Managed Care 1999;5(suppl):S249-S256)*

and standardizing diagnosis and treatment practices within the system to improve patient outcomes.

This CME article describes the process used in the Lovelace system for identifying, diagnosing, and treating rhinitis patients. In addition, use of specific pharmacological agents is discussed, as well as guidelines for referral to allergy specialists and the importance of patient education. It should be noted that these guidelines were developed for the treatment of adults.

Lovelace Health Systems of Albuquerque, New Mexico established practice guidelines for the diagnosis and treatment of rhinitis in its primary care clinics. Objectives in using guidelines included improving system-wide efficiency

---

From the Internal Medicine Department, Allergy Division, Lovelace Health Systems, Albuquerque, NM (M.H.K.); Cited in Print, Leawood, KS (C.M.J.); Lovelace Clinic Foundation, Albuquerque, NM (C.G.)

Address correspondence to: Michael H. Keslin, MD, Internal Medicine Department, Allergy Division, Lovelace Health Systems, 5150 Journal Center Blvd, NE, Albuquerque, NM 87109.

---

### ... PRACTICE GUIDELINES ...

Lovelace Health Systems is an integrated healthcare system that promotes primary care practices as the first point of contact for the patient. The procedure used to diagnose and treat rhinitis in the primary care clinics includes establishing the severity and timing of symptoms, prescribing appropriate pharmacotherapy, educating patients, and, if necessary, referring patients to allergy specialists. Additional guidelines addressing differential diagnosis, optimal medication usage, and related illnesses

are used to supplement the basic diagnostic and treatment decision algorithm.

### Identifying Symptoms

The first step in diagnosing a patient is taking a complete history to understand symptoms and underlying conditions. The patient history should include asking the patient about a family history of atopic illness, cataloging symptoms and physical signs, and determining the duration and severity of symptoms.<sup>1</sup>

Using a differential diagnosis approach, the primary care physician can catalog symptoms, such as congestion, sneezing, rhinorrhea, etc., to see which combinations of symptoms are associated with diseases such as upper respiratory tract infections, sinusitis, or rhinitis. The differential diagnosis process can assist the physician in ruling out illnesses that have symptoms similar to rhinitis or in identifying concomitant illnesses, such as upper respiratory tract infection or rhinitis sicca.

Local symptoms generally associated with allergic rhinitis include congestion; obstructed air flow; sneezing; nasal, palatal, or inner ear itching; clear discharge; postnasal drip; and turbinate hypertrophy. Systemic symptoms can include fatigue, irritability, fever, sore throat, anosmia, or facial pain. In addition, seasonal patterns of symptoms or family history of atopic diseases also suggest allergic rhinitis. Particular weight is given to the presence of nasal or ocular pruritus as a feature of allergic rhinitis.<sup>1-5</sup>

Physical signs of rhinitis include "allergic shiners," or discoloration under the eye; extra folds of skin under the eyes; and sometimes "allergic salute," a horizontal crease across the nose caused by pushing the tip of the nose up with the hand in response to rhinorrhea or itching. Reddish, pale, or slightly violet-colored mucous membranes may also indicate allergic rhinitis. Chronic nasal obstruction

and associated mouth breathing has been linked to elongation of the face—another physical sign often associated with rhinitis.<sup>6,7</sup> Allergic conjunctivitis can also be present with allergic rhinitis.<sup>1,2</sup>

### Timing of Events

Establishing the severity and timing of symptoms is the next step in making a diagnosis. In the Lovelace guidelines, events defined as "mild intermittent" generally last 7 days or less, while events defined as "moderate persistent" often last more than 7 days. Moderate events can include both nasal and eye symptoms. Finally, severe events include those in which the patient may be experiencing exacerbated symptoms, such as airway obstruction, inflammation, and hyperresponsiveness.

In addition to reviewing the duration of symptoms, physicians should also consider the timing of regional pollen patterns. For example, physicians should be aware of common allergen patterns such as the onset of ragweed season, which in many regions of the United States begins in mid-August and ends after the first freeze in November. Knowledge of more subtle or region-specific allergy patterns, such as regional spring grass and tree pollination patterns, can be very helpful to the physician in determining whether a patient's symptoms correlate with common seasonal allergens, indicating possible seasonal allergic rhinitis. In addition, knowing the specific allergen(s) that trigger an event can help the patient anticipate the need for preventive behavior or medication. Patient education will be discussed later in this article.

If there is no clear correlation between the onset of rhinitis symptoms and a known seasonal allergen pattern, the patient may be experiencing perennial allergic rhinitis due to exposure to allergens that can be present throughout the year, such as dust mites, cockroaches, molds (eg,

aspergillus), or cat or dog dander.<sup>5</sup> It is possible for a patient to have allergic reactions to both seasonal and perennial allergens.<sup>1</sup>

Once a presumptive diagnosis of rhinitis has been established, the primary care physician can determine a treatment plan based on the duration and severity of symptoms.

... PHARMACOTHERAPY ...

Pharmacologic treatment choices depend on the patient's symptoms and whether they are categorized as mild, moderate, or severe. The timing of symptoms and their associated diagnosis are also important in determining whether medications can be used prophylactically. This section describes the pharmacologic therapies recommended in Lovelace Health Systems guidelines.

**Antihistamines**

Antihistamines are considered first-line medication to relieve the symptoms of mild, intermittent rhinitis. However, antihistamines can be used as adjunct therapy for patients with moderate and severe rhinitis. Antihistamines control rhinorrhea, nasal and ocular pruritus, and sneezing. For patients with seasonal allergic rhinitis, or those who can anticipate exposure to an allergen, antihistamines are most effective when used prophylactically, and because of their short acting time are preferred for brief intermittent exposures. Non-sedating antihistamines are preferred over first-generation or other sedating antihistamines to minimize side effects that can impair cognition and negatively affect quality of life. Nonsedating antihistamines generally have very few side effects.

Congestion, another frequent symptom of rhinitis, is not controlled by antihistamines. However, combination products containing a nonsedating antihistamine and a

decongestant are available and should be considered for patients with both rhinorrhea and congestion.

*The timing of symptoms and their associated diagnosis are also important in determining whether medications can be used prophylactically.*

**Intranasal Antihistamines**

The intranasal antihistamines are another treatment option. The intranasal formulation is absorbed systemically, causing sedation, and may not provide as fast an onset of action as oral antihistamines. Azelastine hydrochloride, an antihistamine, was recently approved for intranasal use.

**Decongestants**

Decongestants are designed to relieve nasal congestion and can be used to treat mild, moderate, or severe symptoms. However, they do not relieve any other symptoms of rhinitis. Oral and nasal formulations are available, although nasal decongestants should be used no longer than 3 to 5 days to prevent rebound congestion and decongestant abuse. Nasal decongestants, such as oxymetazalone, act as vasoconstrictors on the nasal mucosa. Pseudoephedrine, a commonly used oral decongestant, is a sympathomimetic amine providing decongestant effects on the nasal mucosa. Phenylephrine hydrochloride and phenylpropanolamine hydrochloride are used in combination in some oral decongestants to provide vasoconstrictive and decongestive action.

While oral decongestants are effective in relieving blockage, they do have side effects, including dry mouth, insomnia, nervousness, irritability, palpitations, and urinary retention. Decongestants should be used with caution in patients with diabetes mellitus, hypertension, prostatic hypertrophy, or cardiovascular disease because they may affect blood pressure levels. For patients with concomitant illnesses, such as atypical face pain, oral decongestants can be used with nonsteroidal anti-inflammatory agents (NSAIDs) and saline nasal spray.

### Corticosteroids

Corticosteroids are available in nasal and oral formulations. Nasal corticosteroids are preventive, first-line treatment for patients with moderate nasal symptoms including itching, sneezing, rhinorrhea, blockage, or congestion. These agents are not indicated for ocular symptoms but have been shown to reduce ocular inflammation. They can be used with antihistamines or ophthalmic preparations.<sup>8</sup> As with antihistamines, nasal corticosteroids are most effective when used prophylactically. They may take as long as 2 weeks to reach maximum effectiveness; therefore, patients should be taught how to anticipate exposure. Once a regimen has been started, nasal corticosteroids should be taken daily according to a prescribed schedule. Side effects of nasal corticosteroids include local irritation, nasal drying, pharyngitis, epistaxis, headache, and rarely nasal septal perforation. There are no systemic side effects in adults, although recent studies indicate that these agents can affect linear growth in children.<sup>9,10</sup>

There are various formulations of intranasal steroids, but there are no available studies demonstrating the superiority of one formulation over another. Therefore, the choice of which preparation to use is based on

factors such as cost, convenience, and compliance. In general, compliance improves with once-daily or twice-daily dosing regimens. Patient preference can also affect compliance. Some patients tolerate aqueous preparations better than aerosols. Nasal dryness associated with aerosol sprays can be improved by using nasal saline before using an aerosol nasal steroid.

For patients with severe, exacerbated symptoms, oral corticosteroids may be used as rescue medication to rapidly decrease inflammation of the nasal airway and relieve less severe symptoms including itching, sneezing, rhinorrhea, and congestion. In Lovelace Health Systems, prednisone is given in 20-mg tablet form either once daily for 7 days or twice daily for 2 days, followed by once daily for 5 days. Oral corticosteroids have significant side effects and therefore should not be used for long periods of time without consulting an allergy specialist. Caution should be used in prescribing oral corticosteroids for patients with peptic ulcer disease, or patients with diabetes or hypertension due to this agent's effects on blood pressure. In addition, prolonged use of steroids may contribute to glaucoma, so caution should be taken when considering prescribing corticosteroids for patients who already have glaucoma.

### Intranasal Cromolyn Sodium

Intranasal cromolyn sodium inhibits bronchoconstriction and is indicated for the management of bronchial asthma. It is sometimes used as preventive treatment for rhinitis because it inhibits mast cell degranulation, which leads to the symptoms of rhinitis. This agent is somewhat effective in controlling itching, sneezing, and rhinorrhea, but it does not improve congestion or obstruction and is less effective for the treatment of rhinitis than antihistamines or nasal corticosteroids.

Frequent dosing from 4 to 6 times a day can lead to poor compliance, which also makes it less attractive than other pharmacotherapeutic options. However, it is available over the counter and is considered a very safe agent with a good side-effect profile. To be most effective, intranasal cromolyn sodium should be used prior to allergen exposure.

### **Ipratropium Bromide**

Intranasal ipratropium bromide is an anticholinergic bronchodilator used to control rhinorrhea and reduce glandular secretions associated with the common cold. This agent is especially effective in the treatment of vasomotor rhinitis, but it is not as effective in treating seasonal allergic rhinitis as other agents, such as antihistamines and nasal corticosteroids. Ipratropium bromide produces no known systemic side effects.

### **Ophthalmic Preparations**

Patients with ocular symptoms, such as allergic conjunctivitis, can be treated with non-sedating antihistamines. Alternatively, nasal corticosteroids can be partnered with an ophthalmic preparation for local control. Ophthalmic preparations of antihistamines, corticosteroids, mast cell stabilizers (eg, cromolyn), and NSAIDs are available and can be used as preventive medication. A disadvantage of many ophthalmic preparations is the frequent dosing schedule required. Many of these preparations must be used 4 times a day, making patient compliance a problem. Side effects of some preparations should be considered before prescribing. Topical corticosteroids used chronically in the eye can increase intraocular pressure, while topical NSAIDs have the potential to increase bleeding time. Preparations containing vasoconstrictors should not be used due to the risk of rebound symptoms after prolonged use.<sup>2</sup> Instructions for most ophthalmic agents warn patients against

wearing contact lenses while using these preparations. In general, ocular symptoms of allergic rhinitis can be minimized by following the same guidelines for control of nasal symptoms, such as allergen avoidance and use of preventive medication.

### **Appropriate Use of Antibiotics**

There has been much concern recently about patient demand for antibiotics to treat illnesses that do not respond to antibiotic therapy. The differential diagnosis guideline used in the Lovelace system to establish a diagnosis is shared with patients in a simpler format to educate them about

*The differential diagnosis guideline used in the Lovelace system to establish a diagnosis is shared with patients in a simpler format to educate them about which illnesses do not respond to antibiotic therapy.*

which illnesses do not respond to antibiotic therapy. Patients and providers can review diagnoses listed in the guideline, including upper respiratory tract infections, bacterial sinusitis, atypical facial pain, rhinitis medicamentosa, structural abnormality, rhinitis sicca, allergic rhinitis, and other rhinitis, which can include vasomotor, idiopathic, occupational, etc. While most of these illnesses produce symptoms similar to those of rhinitis, only bacterial sinusitis responds to antibiotic therapy. By identifying the remaining illnesses as unresponsive to antibiotic therapy, optimal use of antibiotics is reinforced.

### Immunotherapy

For patients who do not improve after correctly using the pharmacological options described, the primary care physician must next determine whether to consider allergy evaluation for desensitization immunotherapy. Immunotherapy involves injecting patients with small amounts of an allergen on a regular basis to stimulate their immune systems. If immunotherapy is successful, the patient gradually develops tolerance to an allergen and has fewer or no symptoms of rhinitis. About 80% of patients have a 70% or greater reduction in symptoms after treatment with immunotherapy for 6 to 12 months. Immunotherapy does pose some risk of anaphylactic reaction to the allergen injection; therefore, this treatment should be administered under the direction of an allergy specialist. Immunotherapy is a long-term treatment; most patients will continue treatment for 3 to 5 years.<sup>11</sup>

The Lovelace practice guidelines establish criteria for determining which patients are viable candidates for immunotherapy. To be considered for immunotherapy treatment in Lovelace Health Systems, a patient must have lived in New Mexico for at least 1 year, must have failed standard pharmacotherapy, and would likely benefit from identification of allergens through skin testing. If patients meet these criteria, the primary care physician discusses the duration of treatment, risks, and costs with them. Skin tests are performed as part of the allergy consultation. Antihistamines and beta-blockers are discontinued in preparation for a skin test to determine which allergens affect the patient. Beta-blocking medications potentially increase the severity of an anaphylactic response due to their effect on the autonomic nervous system, increasing the release of chemical mediators from cells and decreasing response to epinephrine, which is used to treat anaphylactic reactions.

Therefore, beta-blocking medication must be stopped prior to skin testing and cannot be used by patients on immunotherapy.<sup>2-5</sup>

Skin testing involves exposing the skin to very small amounts of allergen extracts by skin prick, puncture, scratch, or intradermally. Wheal and flare reactions are evaluated after approximately 20 minutes to determine the response to an allergen extract. Histamine is generally used as a positive control. If a patient has a skin disease that would mask the results of a skin test, or a patient who is taking beta-blockers cannot discontinue medication, a RAST (radioallergosorbent test) can be used to measure serum levels of allergen-specific IgE antibodies. However, the RAST test may not be as sensitive as skin testing and is generally more expensive. Also, results from a RAST test may not be available for several days. Skin testing is therefore the preferred method of testing for allergen sensitivity.<sup>2,5</sup>

### ... REFERRALS TO ALLERGY SPECIALISTS ...

In addition to referring immunotherapy patients to specialists, there are other conditions that should be referred to allergy or ear, nose, and throat (ENT) specialists. Conditions for which a referral should be considered include atypical facial pain and structural abnormality. These conditions can mimic or occur with the symptoms of allergic rhinitis. Before referring a patient to a specialist, the primary care physician should see if screening computed tomography (CT) scans have been taken or order them. CT scans are preferred over X rays because CT images more accurately detect sinus obstruction and structural complications, while costing about the same as X rays. Having or ordering screening CT images prior to the patient's first visit to the specialist can

promote efficiency and perhaps prevent an extra visit to the physician.

... PATIENT EDUCATION ...

A primary objective in establishing an effective treatment plan for rhinitis includes educating patients about allergen avoidance and preventive measures. The Lovelace practice guidelines include teaching patients to anticipate when to take medications and avoid allergens. The patient's history of past rhinitis episodes can help the physician estimate which allergens may be causing rhinitis, especially if episodes seem to follow a seasonal pattern. Using a pollen calendar, patients can learn how to identify potential plant allergens, control or eliminate their presence, and estimate their onset and peak outbreaks. Local pollen calendars showing regional allergens are most effective and are often available from agricultural extensions or city monitoring stations. Using the pollen calendar to estimate when to pre-medicate prior to the onset of pollen season can lead to more effective control of symptoms.

For short-interval exposure to an allergen, nonsedating antihistamines should be taken 1 hour prior to exposure. For exposure that will last for an extended period, such as exposure to ragweed, which begins in August in most areas of the United States and ends after the first freeze, nasal corticosteroids should be started 14 days prior to the beginning of allergen exposure to allow the medication to reach peak effectiveness. For patients whose rhinitis occurs after exposure to an irritant, such as cigarette smoke, avoidance is the most effective way to control symptoms.<sup>2</sup>

Finally, patient compliance with allergen avoidance and pharmacotherapy is extremely important to the success of a treatment regimen. The patient should be told that pre-

medication and adherence to dosing schedules significantly improve the effectiveness of medications. Patient compliance can eliminate the need for rescue medications and unnecessary doctor visits.<sup>5</sup>

... CONCLUSION ...

Since the introduction of diagnostic and treatment guidelines into the primary care clinics in the Lovelace system, patient outcomes for allergic rhinitis have improved. Specifically, this consistent, systematic approach to diagnosing rhinitis and related illnesses—along with determining opti-

*Patient compliance with allergen avoidance and pharmacotherapy is extremely important to the success of a treatment regimen.*

mal use of the many pharmacological agents available for treatment—has resulted in more use of preventive behavior by patients and less reliance on rescue medications for treatment of rhinitis symptoms. An important component to improved outcomes is patient education to help patients anticipate and manage their own symptoms more effectively and to reinforce adherence to medication regimens.

... REFERENCES ...

1. Kaliner M, Lemanske R. Rhinitis and asthma. *JAMA* 1992;268(20):2807-2829.
2. Gern JE, Busse WW. Allergic rhinitis. In: *Contemporary Diagnosis and Management of Allergic Diseases and Asthma*, 1st ed. Newtown, PA: Handbooks in Healthcare; 1996:67-97, 208-209.

3. Dold S, Wjst M, von Mutius E, et al. Genetic risk for asthma, allergic rhinitis, and atopic dermatitis. *Arch Dis Child* 1992;67:1018-1022.
4. Postma DS, Bleecker ER, Amelung PJ, et al. Genetic susceptibility to asthma. Bronchial hyperresponsiveness coinherited with a major gene for atopy. *N Engl J Med* 1995;333:894-900.
5. International Rhinitis Management Working Group. International consensus report on the diagnosis and management of rhinitis. *Allergy* 1994;49(suppl 19):1-31.
6. Meredith GM. Airway and dentofacial development. In: Setticone A, ed. *Rhinitis* Providence, RI: OceanSide Publications, Inc; 1991:85-93.
7. Hannuksela A. The effect of moderate and severe atopy on the facial skeleton. *Eur J Orthod* 1981;87:187-193.
8. Jeal W, Faulds D. Triamcinolone acetonide: A review of its pharmacological properties and therapeutic efficacy in the management of allergic rhinitis. *Drugs* 1997;53(2):257-280.
9. Konig P. The risks and benefits of inhaled corticosteroids. *Eur J Respir Dis* 1993;14:501-510.
10. Simons FE. A comparison of beclomethasone, salmeterol, and placebo in children with asthma. Canadian Beclomethasone Dipropionate-Salmeterol Xinafoate Study Group. *N Engl J Med* 1997;337(23):1659-1665.
11. Norman PS. Immunotherapy: Past and present. *J Allergy Clin Immunol* 1998;102(1):1-10.