

Optimizing Quality of Care and Cost Effectiveness in Treating Allergic Rhinitis in a Managed Care Setting

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Abstract

Allergic rhinitis is a common condition in managed care populations. The direct medical cost of rhinitis exceeded \$3 billion in 1996, and an additional cost of \$4 billion resulted from the exacerbation of other concomitant conditions, such as asthma or otitis media. Costs continued to increase in 1999; sales of prescription antihistamines and nasal steroids exceeded \$3 billion and \$1 billion, respectively. The indirect costs of allergic rhinitis include lost work productivity, reduced performance and learning, and increased workplace and traffic accidents. Rhinitis treatments include allergen avoidance, over-the-counter (OTC) sedating antihistamines, non-sedating antihistamines, nasal steroids, and immunotherapy. Allergen avoidance strategies for patients with asthma and rhinitis are ineffective or are of very limited benefit. Allergists criticize the use of OTC sedating antihistamines, which are

associated with reduced learning and performance even when sedation does not occur. Evidence-based literature reviews of clinical trials have shown that nasal steroids are more effective than non-sedating antihistamines in the treatment of rhinitis. The most commonly prescribed nasal steroid, fluticasone, has been shown to be effective in treating rhinitis and in improving patients' quality of life. It is also more cost effective than the most commonly prescribed antihistamine, loratadine. Clinical trials have indicated that immunotherapy is expensive and of limited benefit. As these evidence-based findings are used to develop managed care treatment guidelines, nasal steroids are likely to be recommended as the first-line treatment for rhinitis, which should result in lower treatment costs and improved outcomes for patients with rhinitis.

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As competition increases in the managed care arena, organizations are looking for methods of lowering treatment costs and improving outcomes for those with diseases other than asthma or diabetes. One such condition is allergic rhinitis. The chronic nature of rhinitis, its high prevalence, the

rate of provider visits, and the use of known effective treatments make this a likely target for quality improvement programs. Recently, such a quality initiative was implemented by the Lovelace Health Systems in New Mexico. The intervention team identified variations in rhinitis treatment practices and discovered that none of the primary care physicians interviewed recommended the same medical management strategy. Approximately 50% of the providers altered their practice patterns based on Lovelace's evidence-based treatment guidelines and provider education programs.¹ These changes resulted in improved patient satisfaction and in a reduction in the use of medications, such as antibiotics and oral steroids. Such managed care interventions and the following review of evidence-based research should be useful as managed care organizations strive to change rhinitis practices and improve outcomes.

The Pathologic and Epidemiologic Factors of Rhinitis

Rhinitis is a common condition treated in managed care populations. Seasonal allergic rhinitis is the most common, but other forms of rhinitis are also seen in most practices. The types of rhinitis are defined below²:

- *allergic rhinitis*: An IgE-mediated inflammation of the nasal mucosa. Symptoms may be perennial, seasonal, or perennial with seasonal exacerbations.
- *infectious rhinitis*: Inflammation of the nasal mucosa caused by a viral, bacterial, or other infection.
- *vasomotor rhinitis*: An imbalance of the parasympathetic and sympathetic nervous systems in the nasal mucosa, in which the parasympathetic system is stimulated by undue response to typical environmental factors such as smoke, fumes, dust, chlorine in pools, or cold dry air, all of which cause rhinorrhea.

- *rhinitis medicamentosa*: A syndrome of rebound nasal congestion caused by the overuse of intranasal alpha-adrenergic decongestants.

Diagnosis is complicated by the fact that multiple forms of rhinitis can occur in the same patient.

Of the forms of rhinitis, cited above, only the epidemiology of allergic rhinitis is well studied.³ The prevalence of allergic rhinitis, which varies according to the population assessed, is approximately 8% during any given year. More than 20% of patients report allergic rhinitis symptoms sometime during their lifetime.⁴ According to a recent survey, rhinitis symptoms occurred in an estimated 31.5% of 15,000 households in the United States. Of those with rhinitis symptoms, 8.2% reported physician-diagnosed hay fever (seasonal allergic rhinitis); 5.7% reported persistent "stuffy nose" or "stuffy head" (perennial allergic rhinitis); and 18.3% reported allergies of the eyes, nose, or throat.⁵ The authors concluded that the prevalence of allergic rhinitis is 14.2%. As improved construction practices lead to less air exchange in homes and as humidification increases in the winter, the opportunity for the growth of molds and infestation of dust mites increases, which in turn increases the potential for suffering from perennial rhinitis. The highest rate of allergic rhinitis occurs from the age of 18 years to 49 years, and the lowest incidence of rhinitis occurs in the youngest and oldest age groups. Allergic rhinitis also occurs in 28% to 50% of patients with asthma.⁶⁻⁸

Cost of Rhinitis

Estimates of the cost of rhinitis to patients and employers vary widely and seem to be related to the methods used to conduct the analysis. Using National Medical Expenditure Survey data from 1987, a study by Malone and associates estimated the

cost of rhinitis in that year to be \$800 million.⁹ In 1990, it was estimated that the cost of the disease was \$1.2 billion; and in 1997, it was estimated that treating rhinitis cost \$4.5 billion.^{10,11} Another \$3.4 billion was attributed to the indirect costs of rhinitis, primarily those from reduced work productivity.¹¹ The costs that result from rhinitis are high, considering that little expense is devoted to hospitalizations. The major factors that influence the cost of rhinitis are prescription medication use and the large numbers of patients who seek ambulatory care. Prescription expenditures in 1999 continued to increase in the United States: Prescription antihistamine and nasal steroid sales exceeded \$3 billion and \$1 billion, respectively.¹² In estimating a sub-component of rhinitis disease costs, a 1996 study predicted that the cost of reduced productivity secondary to the sedating effects of over-the-counter (OTC) sedating antihistamines was nearly \$4 billion annually.¹³

A study by Ray and associates modeled both the cost of rhinitis and the expenses associated with the exacerbation of concomitant illnesses. The authors estimated that rhinitis without concomitant illness cost \$1.9 billion in 1996, and that the cost of treating other diseases increased by \$4 billion in the same year because of those patients who were suffering rhinitis concomitantly. For example, it was estimated that the cost of otitis media was increased by \$1.4 billion, sinusitis by \$1 billion, asthma by \$1 billion, acute upper respiratory infection by \$0.2 billion, pharyngitis and/or tonsillitis by \$0.2 billion, and other conditions by \$0.2 billion.¹⁴

It is not clear whether this estimate includes the cost of endoscopic sinus surgery, which is often used in treating the allergic patient with nasal polyps. Although the estimates of the study cited above can be debated, the concept that one primary condition, such as rhinitis, can exacerbate or

contribute to the cost of other related diseases or sequelae should be considered in comprehensive calculations of the cost of illnesses.

Indirect Costs of Rhinitis

Accidents are mentioned as a cost of rhinitis but often are not quantified. The 1992 and 1993 data from Group Health Cooperative of Puget Sound indicate that the risk of work-related injury was elevated by 50% among users of sedating antihistamines (odds ratio, 1.5; 95% confidence interval = 1.1 to 1.9). No other medication class had a higher risk of inducing injury, not even medications that affect the central nervous system. Nonsedating antihistamines had been available, but those medications had not been approved in the formulary used during the study period. The authors concluded that some medications or the condition requiring those medications might contribute to the risk of a work-related injury. It could not be determined from the observational study design whether rhinitis, the treatment for rhinitis, or both had increased the risk of accidents.¹⁵

A variety of controlled studies have been conducted to investigate the negative impact of rhinitis or sedating antihistamines on performance, but none has quantified the economic cost of the negative impact. In a study by Marshall and Colon, it was demonstrated that rhinitis itself has a negative effect on verbal learning, decision making, psychomotor speed, and positive affect.¹⁶ Other studies have demonstrated the negative effect of sedating antihistamines on driving and on the performance of other skills.¹⁷⁻²⁰

School-age children with untreated rhinitis symptoms or those undergoing treatment with diphenhydramine (an OTC sedating antihistamine) for rhinitis had lower learning scores than did those treated with a non-sedating antihistamine.²¹ The economic

cost of this reduced learning was not estimated as an indirect cost of rhinitis.

Efficacy of Treatments

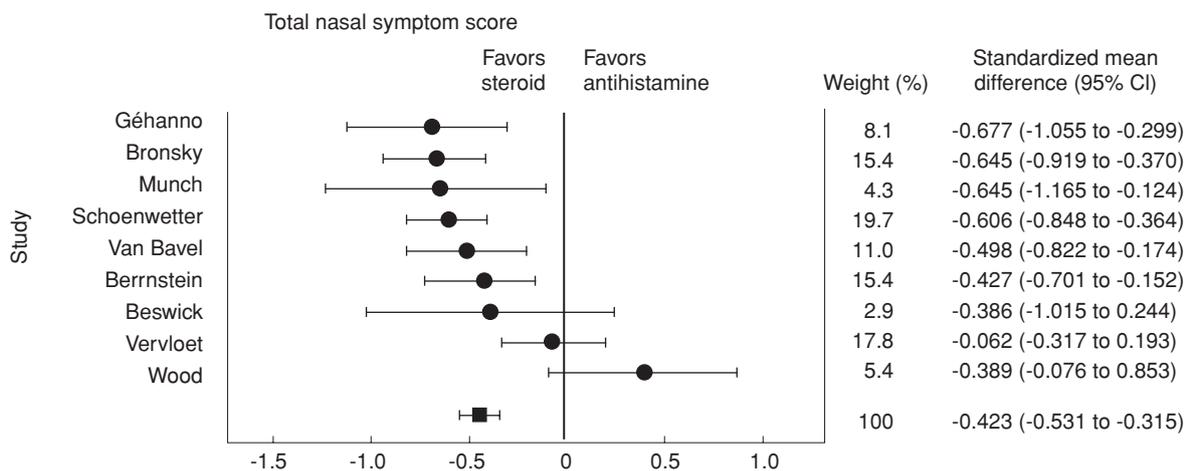
Three general categories of medications are commonly used for the treatment of allergic rhinitis: sedating antihistamines (usually nonprescription), nonsedating antihistamines, and nasal steroids. In part because sedating antihistamines were approved years before the other treatments, they have not been compared in clinical trials with nonsedating antihistamines and nasal steroids.

In a recent report, the Joint Task Force of the American College of Asthma, Allergy and Immunology and American Academy of Asthma, Allergy and Immunology reviewed the literature on sedating antihistamines and stated, "In the majority of states, patients taking sedating antihistamines are legally considered 'under the influence of drugs.'" The report

also questioned the logic of bedtime use of sedating antihistamines given the extended elimination half-life of those medications. It further stated that, "Consequently an 'AM/PM' dosing regimen combining a second-generation agent in the AM with a first-generation agent in the PM is an ineffective strategy for avoiding daytime sedation and performance impairment from antihistamine."²²

The Joint Task Force report also stated the role of the nonsedating antihistamine and nasal steroid categories. The authors noted that oral antihistamines are effective as a first-line treatment in reducing many of the symptoms of rhinitis except for congestion. In the same report, they conclude that nasal steroids are the most effective medication class for the treatment of rhinitis, and that they do not produce significant systemic side effects in adults. The message appears to give approval for both

Figure 1. Comparison of the Effects of Intranasal Corticosteroids and Oral H₁ Receptor Antagonists (Antihistamines) on Total Nasal Symptom Scores



$\chi^2 = 26.82; df = 8; P < 0.001.$

Source: Weiner JM, Abramson MJ, Puy RM. Intranasal corticosteroids versus oral H₁ receptor antagonists in allergic rhinitis: Systematic review of randomised controlled trials. *BMJ* 1998;1624-1629. Reprinted with permission.

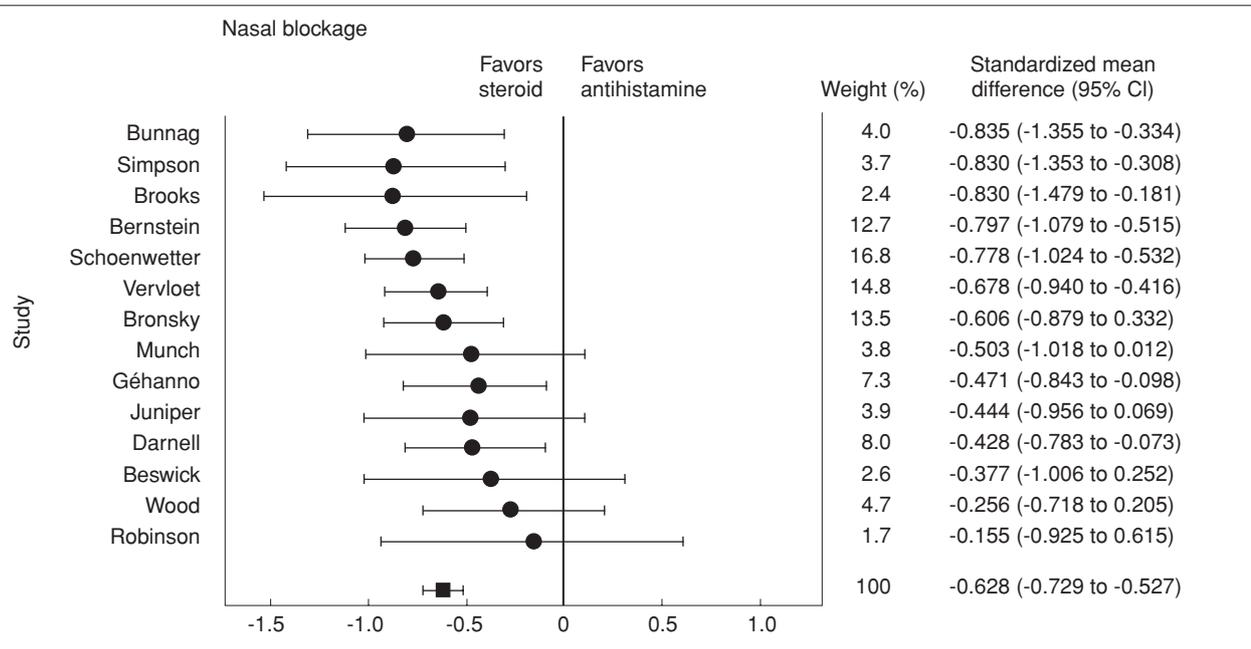
categories to be first-line treatment. However, it would be logical that the most effective medication should be used first line unless safety or cost factors or other significant issues prevent first-line use. No significant issues preventing the first-line use of nasal steroids were mentioned in the report.²²

Older nasal steroids, such as dexamethasone, have high bioavailability and are capable of producing minor systemic steroid side effects.²³ However, studies of new steroid preparations in adults demonstrate safety with no systemic steroid effect, even in relatively high doses, on the hypothalamic-pituitary-adrenal axis as assessed by the measurement of morning cortisol concentrations, cosyntropin stimulation and 24-hour urinary-free cortisol excretion.²⁴ Newer steroids,

such as fluticasone, have a low bioavailability of 0.51%.²⁵

A meta-analysis of studies published in the *British Medical Journal*,²⁶ which compared the effectiveness of nasal steroids to that of oral antihistamines, concluded that nasal steroids should be used instead of nonsedating antihistamines as the first-line treatment for allergic rhinitis. The authors reviewed published trials involving 2267 patients. The total nasal symptom scores presented in 9 of the 16 studies show a clear advantage of using nasal steroids (Figure 1). Several of the studies compared the efficacy of these 2 categories in reducing specific symptoms. For example, 14 of the 16 studies evaluated how well these 2 treatments reduced nasal blockage (Figure 2). Nasal steroids were found to be more effective.

Figure 2. Comparison of the Effectiveness of Intranasal Corticosteroids and Oral H₁ Receptor Antagonists (Antihistamines) on Total Nasal Blockage



$\chi^2 = 11.76$; $df = 13$; NS.

Source: Weiner JM, Abramson MJ, Puy RM. Intranasal corticosteroids versus oral H₁ receptor antagonists in allergic rhinitis: Systematic review of randomised controlled trials. *BMJ* 1998;1624-1629. Reprinted with permission.

Another article that reviewed studies comparing nasal steroids with nonsedating antihistamines was published by Stempel and Thomas.²⁷ Eight of the 13 studies that the authors reviewed compared the effectiveness of the 2 categories according to a total symptom score. In all 8 studies, the nasal steroid produced superior results. The number of patients in those 8 studies totaled 1745 patients and were divided almost equally between those taking nasal steroids and those taking nonsedating antihistamines.

Each of the 13 randomized trials reviewed compared 1 nasal steroid with 1 second-generation antihistamine. All possible comparisons have not been studied. Beclomethasone, budesonide, fluticasone, mometasone, or triamcinolone (nasal steroids) have been compared to astemizole, loratadine, or terfenadine (antihistamines) in various head-to-

head comparator trials. Forty-six percent of the nasal steroid data were collected from patients who were using fluticasone. Patients using budesonide provided only 6% of the nasal steroid data. Studies with flunisolide and dexamethasone were not reported. With regard to the antihistamines, loratadine was the most commonly selected comparator; it was being used by 57% of the 2104 patients. Cetirizine and fexofenadine were not reported in any of the studies.

When the comparison of nasal steroids with antihistamines focused on the 4 major nasal symptoms of rhinitis—stuffy nose, itchy nose, runny nose, or sneezing—the nasal steroid was superior in the majority of comparisons (Table 1). Nonsedating antihistamines were not found to be superior to nasal steroids in any of the studies for any nasal parameters investigated.

Table 1. Results From Several Studies Comparing the Efficacy of Nasal Steroids Versus Antihistamines

# of Studies Reviewed	Sample Size	Treatment	Symptoms Evaluated	Change From Baseline	# of Studies With Efficacy Results ($P < 0.05$) Favoring Nasal Steroids
11	598	Nasal steroid	Sneezing	-1.1	8
	598	Antihistamine		-0.7	
11	598	Nasal steroid	Runny nose	-1.2	8
	598	Antihistamine		-0.6	
9	568	Nasal steroid	Itchy nose	-1.4	6
	568	Antihistamine		-0.8	
12	598	Nasal steroid	Stuffy nose	-1.1	12
	598	Antihistamine		-0.6	
8	741	Nasal steroid	Total symptoms	-5.4	8
	752	Antihistamine		-3.3	

Source: Stempel DA, Thomas M. Treatment of allergic rhinitis: An evidence-based evaluation of nasal corticosteroids versus nonsedating antihistamines. *Am J Manag Care* 1998;4:89-96. Adapted with permission.

Ocular symptoms were reported in 10 of the 13 studies.²⁷ Only 1 of the 10 studies—astemizole versus beclomethasone²⁸—showed statistically improved eye symptoms favoring the antihistamine. The other 9 showed no statistical difference in the relief of this symptom between the 2 treatment categories. Eye symptoms were measured in this study by a summary score of responses to questions about eye redness, itching, and tearing. The actual mechanism by which nasal steroids improve eye symptoms is not known, however the improvement is not due to systemic absorption.²⁵ Relief of ocular symptoms is often proposed as an advantage of taking oral antihistamines, which are absorbed systemically, but the evidence of a clinical advantage has not been shown in the literature.

Four of the studies in the review compared the effectiveness of using nasal steroids alone with that of using a combination of nasal steroids and nonsedating antihistamines, but none showed a significant difference between the 2 treatments on the total symptom score. The combination treatment resulted in significantly better scores in only 1²⁹ of the 4 studies when sneezing was measured.

A potential criticism of these trials is that patients who fail on a particular drug in one class were not reassigned to another drug within the same class. However, there are trials that address the variations in efficacy of different drugs within the nonsedating antihistamine class. In a 4-way crossover study of 14 patients who were taking either terfenadine, loratadine, chlorpheniramine, or astemizole, no clinically significant differences in efficacy were reported.³⁰ Same-patient variation of response to the drugs was not evaluated. A similar comparison of nasal steroids has not been conducted.

With regard to the differing effects of drugs in the same class, the Joint Task Force report recognizes that

there is a great interpatient variability associated with the sedation, performance impairment, and other adverse events of antihistamines. However, some studies have shown that overall clinical efficacy and patient acceptance appear similar among the different nonsedating or less sedating preparations.²³ Therefore, trying several drugs from this class in the same patient does not seem to be supported by the literature, even though some physicians continue the practice.

Results of the Ratner and Associates Study

A study by Ratner and associates details a fluticasone versus loratadine comparator trial.³¹ The double-blind trial compared 4 arms: patients using fluticasone, 2 sprays in each nostril once daily; those taking loratadine 10 mg, 1 tablet daily; those using the combination of fluticasone and loratadine; and those taking placebo. The report includes both patient-rated and clinician-rated total nasal symptom scores and disease-specific quality-of-life results, and it provides information on treatment failures and successes.

Quality of Life. Although other placebo-controlled trials have assessed the quality-of-life impact of using a nasal steroid or a nonsedating antihistamine to treat rhinitis, no other head-to-head active comparator trial reporting quality-of-life differences beside the Ratner and associates study has been identified. The study used the Rhinoconjunctivitis Quality of Life Questionnaire (RQLQ), which measures quality of life globally and across different parameters often affected by rhinoconjunctivitis, such as nasal and eye symptoms, fatigue, irritability, and tiredness.^{32,33}

Quality of life was measured at baseline and at the end of the trial. The patients taking fluticasone and

those who took the combination had superior quality-of-life scores when compared with the patients taking placebo and loratadine. The combination drug regimen was not superior to nasal steroids in any RQLQ category, nor was loratadine superior to placebo in any of the RQLQ categories.

Cost-Effectiveness Analysis Performed Using Trial Results

Using the data from the Ratner and associates comparator trial, we were able to make treatment success/failure assumptions to be used in a cost-effectiveness analysis model (Table 2). The comparison was performed on an intent-to-treat basis. Each arm consisted of 150 patients. The placebo arm of the trial, however, was not included; it is not a relevant comparator because such treatment is not used in general practice.

Cost in the model was defined as the expense of 14 days of drug treatment, and average wholesale prices

were used to determine costs. Because there was no difference in the cost of physician visits and in sequelae or adverse events reported in the trial between the different treatments, these factors were not included in the analysis. [The length of the trial was probably not sufficient for these sequelae to develop.] Treatment success in the model was defined as either a significant or a moderate improvement in rhinitis symptoms at the end of the trial as reported by the study patients. A mild improvement, no change, or any level of worsening was treated as a treatment failure.

As shown in the model, fluticasone proved to be the most cost effective of the 3 treatment options. The combination arm has the highest cost of treatment, yet the number of treatment successes is not significantly greater than those obtained with fluticasone monotherapy. Consequently, a health plan will be paying \$4704 more for combination therapy than

Table 2. A Cost-Effectiveness Analysis Model Comparing the 3 Arms of the Ratner and Associates Trial³¹

Model:		
$\frac{(\text{treatment cost per day}) \times (14 \text{ days}) \times (150 \text{ patients per arm})}{\# \text{ of treatment successes}}$		= cost per treatment success
Fluticasone Arm		
$\frac{(\$1.66 / \text{day}) \times (14 \text{ days}) \times (150 \text{ patients})}{72 \text{ successes}}$	$\frac{\$3486}{72}$	= \$48.42
Loratadine Arm		
$\frac{(\$2.24 / \text{day}) \times (14 \text{ days}) \times (150 \text{ patients})}{43 \text{ successes}}$	$\frac{\$4704}{43}$	= \$109.40
Combination (fluticasone plus loratadine) Arm		
$\frac{(\$3.90 / \text{day}) \times (14 \text{ days}) \times (150 \text{ patients})}{75 \text{ successes}}$	$\frac{\$8190}{75}$	= \$109.20

for fluticasone monotherapy (\$2.24 per day per patient more) without significant improvement in outcomes.

In a comprehensive economic analysis, sensitivity analyses would be performed using these calculations.

Quality Improvement Initiatives

Implications for Treatment Guidelines. A number of treatment guidelines have been distributed by managed care plans to their prescribers. The Lovelace guidelines, mentioned earlier, are an example of a comprehensive undertaking in managed care.¹ Guidelines for managed care are often thoroughly reviewed by the organization's internal staff and by an external pharmacy and therapeutics committee of experts. Publication is usually not sought.

The first element in a rhinitis treatment guideline is usually allergen avoidance. Although prevention is always logical, the evidence pertaining to that strategy is very limited. In a study by Reisman and associates,³⁴ it was reported that High-Efficiency Particulate Air (HEPA) filters reduce particulate matter but do not significantly improve symptoms of rhinitis. The National Cooperative Inner-City Asthma Study³⁵ showed that after extensive cockroach allergen avoidance, there was no clinical difference in asthma symptoms between the intervention and control groups. In a study of cat allergen, the combination of a HEPA room air cleaner, mattress and pillow covers, and cat exclusion from the bedroom did reduce airborne cat-allergen levels but had no effect on asthma or rhinitis disease activity for any parameter studied.³⁶ In a study of asthma patients allergic to house dust mites, an extensive dust mite intervention program had no significant effect on symptom scores, peak flow, or lung function.³⁷ It is not known whether the lack of effectiveness of allergen reduction in asthma patients would also be observed in rhinitis

patients. The results of the above-mentioned studies indicate that a reduction in allergen load does not result in a clinical reduction of symptoms. Total allergen elimination may be necessary to achieve a clinical improvement. Thus, the utility of allergen reduction as a strategy for rhinitis treatment must be questioned.

The next line of therapy in the treatment guideline is often the use of OTC sedating antihistamines. Although those medications may cost managed care plans less than non-sedating antihistamines, reductions in productivity, performance, and learning caused by sedating antihistamines as demonstrated in research studies must be considered. The recent Joint Task Force report is the most strongly worded document to date that warns against sedating antihistamine use. It also states that reductions in performance, productivity, and learning can occur with antihistamine therapy, even when sedation does not occur. This report reflects a summary of the best evidence for changing the standard of care to exclude the use of sedating antihistamines in patients who must maintain their functional status while their allergic rhinitis symptoms are being treated.

Current prescribing patterns for the treatment of allergic rhinitis indicate nonsedating antihistamines are often used before nasal steroids.²⁷ Evidence from clinical trials indicates that this is not the most effective or the most efficient treatment for rhinitis.^{26,27} As this type of evidence increases as well as the move to evidence-based medicine grows, managed care plans may begin recommending the use of nasal steroids as a first-line therapy to be used before a trial of a nonsedating antihistamine. The use of cost-ineffective combination therapy may be safely avoided by means of appropriate pharmacy benefit edits.

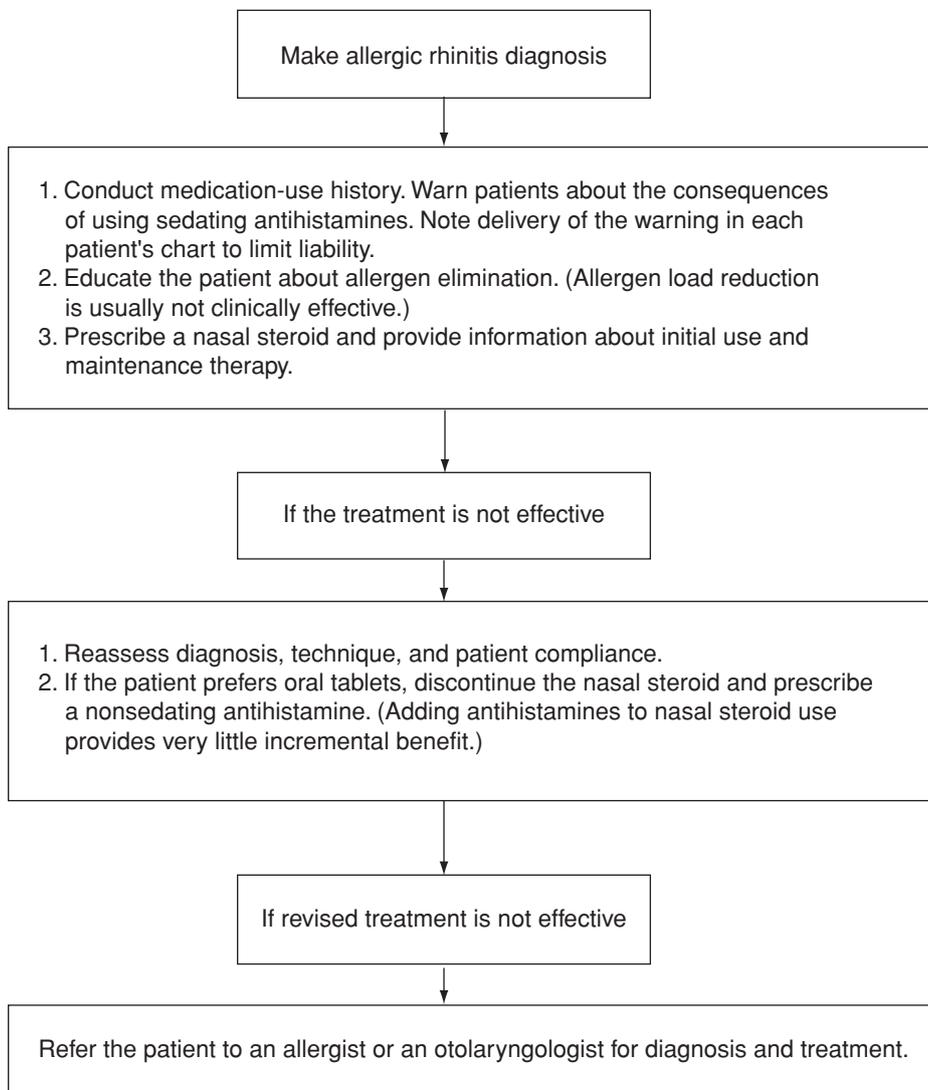
Treatment guidelines recommend the use of immunotherapy or allergy

shots to treat rhinitis after pharmacologic treatment has failed.³⁸ In a randomized, open-label trial in Japan of patients who suffered from perennial rhinitis and were allergic to *dermatophagoides farinae*, the group treated with pharmacotherapy had superior outcomes to those of the group treated with immunotherapy for the first 2 years.³⁹ During years 3

and 4 of the trial, the 2 groups had similar outcomes. At 5 years, the immunotherapy group demonstrated better outcomes. In a 2-year US-based blinded study of children with asthma, no incremental advantage of immunotherapy was seen at any time.⁴⁰

The cost of and patient adherence to immunotherapy was studied in a

Figure 3. Evidence-Based Allergic Rhinitis Treatment Guideline for the Primary Care Physician



population of 122,196 Harvard Pilgrim Health Maintenance Organization asthma and rhinitis patients, of whom 2667 were treated with immunotherapy.⁴¹ Only 33% of patients completed therapy. The cost of immunotherapy from 1988 to 1992 was \$416 per year for the treatment of those with rhinitis and \$496 per year for those with rhinitis and asthma. The intended duration of therapy was 3.5 years. The actual treatment duration on average was 2.7 years, for a mean total cost of \$1123 to \$1339 per patient. Clinical trial data lead us to question the value of that investment.

As a result of the evidence favoring the use of nasal steroids over other rhinitis treatments, managed care organizations might begin proposing guidelines for the treatment of rhinitis that demonstrate an evidence-based protocol, similar to that shown in Figure 3.

Implications for Cost Savings. The daily cost of loratadine therapy (1 tablet b.i.d.) is 35% higher than initial fluticasone therapy (2 sprays b.i.d.). If the patient can be managed with the approved maintenance dose of fluticasone (1 spray b.i.d.), the cost savings could be significantly greater. Converting patients from loratadine to fluticasone results in cost savings if each drug were to be used for the same duration. More important to a healthcare provider is improved patient outcomes at a lower cost. Because fluticasone has been shown to be more clinically effective than loratadine in the treatment of rhinitis, the 35% cost difference cited above could become increased to a 126% difference in cost effectiveness between the 2 drugs. It should be noted that inputting different non-sedating antihistamines and nasal steroids into the analysis may alter the results because of differences in drug prices and effectiveness. Without similar definitions of treatment success and failure as noted in

the Ratner and associates trial, the extrapolation of these results to other applications of nasal steroids and antihistamines cannot be made.

Methods of Influencing Prescribing Patterns. A wide variety of methods have been used by managed care organizations to influence change in prescribing patterns. These methods are not compared in a scientific manner to determine which techniques work best in different situations. Methods can range from low-level or soft interventions to high-level or hard interventions (Table 3). Internet-based interventions have not yet been fully explored. The intervention must be appropriate to the disease and to the organizational culture and must be matched to the magnitude of the change required without instigating a negative counteraction.

Implications of Improving Rhinitis Outcomes. The cost of the rhinitis

Table 3. Health Plan Interventions Used to Influence Prescribing Behavior

<ul style="list-style-type: none"> ■ National Drug Code lockout ■ Shifting drug cost risk to prescribers ■ Tiered co-pay structure ■ Prescription coupons ■ Physician prescribing report cards with penalties, with rewards, not confidential, confidential ■ Internet-based interventions ■ Academic detailing ■ HMO direct-to-patient communications (patient specific) ■ Required attendance at meetings ■ Required attendance at continuing education meetings ■ Managed care organization coordination of industry representatives ■ Generalized direct-to-patient communications ■ Preprinted prescription pads ■ Voluntary continuing education meetings ■ Written general communications

treatment strategy proposed by Ray and associates¹⁴ indicates that there could be additional long-term cost savings because of reduced expenses and improved outcomes in the treatment of otitis media, asthma, sinusitis, and other diseases that occur with rhinitis. This theory has not been demonstrated in long-term clinical trials but can be evaluated by examining claims databases from managed care organizations. Improved patient satisfaction follows more effective treatment, which results in improved outcomes.⁴²

Conclusion

Health plans can take an active role in improving outcomes in diseases by taking steps to improve prescribing practices, in particular for allergic rhinitis, which is a ubiquitous disease and a likely target for managed care intervention. Comprehensive literature reviews have demonstrated that treatment of allergic rhinitis with nasal steroids produces outcomes superior to those in which nonsedating antihistamines are used. The cost-effectiveness analysis model described earlier comparing 2 rhinitis treatments showed that the nasal steroid fluticasone had a lower cost per treatment success than did the nonsedating antihistamine loratadine. Given this dominance (an economic term for this type of cost-effectiveness relationship with both lower cost and improved effectiveness), managed care organizations and clinicians may begin to approve nasal steroids as first-line treatment for allergic rhinitis.

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