

# Cost implications of upper respiratory allergic diseases

Kevin B. Weiss, MD *Chicago, Ill.*

Obtaining a truly independent estimate of the cost associated with a single upper respiratory atopic condition (e.g., allergic rhinitis, asthma, chronic sinusitis, otitis media, nasal polyps) is complicated by the fact that these disorders share many of the same pathophysiologic components. To advance therapeutic efficacy and get a more concrete idea of the cost implications associated with upper respiratory airway diseases, it is more useful to concentrate on cost-effectiveness and disease-state management, not cost.

Clinicians are very familiar with clinical efficacy studies, that is, randomized, controlled clinical trials with rigid protocols that are intended to provide a precise estimate of the effect of a given drug. However, in daily practice, it is the clinical effectiveness of therapy that is of real concern—how effective therapy is for all asthma patients (or sinusitis patients, or allergic rhinitis patients) in the physician's practice.

Likewise, cost-effectiveness studies are of greater interest in the everyday world than cost-efficacy studies. Cost-effectiveness studies are appearing with increasing regularity in the literature as concern over cost of care continues to mount. Rather than focusing on the cost efficacy of therapy in individual patients, these studies examine the cost-effectiveness of the therapy across all patients. This population-based management of care, or disease-state management, is becoming increasingly useful because it provides a means of approaching both care and reimbursement; in other words, it encompasses both the clinical and the cost components of patient care. Accordingly, this report will discuss cost-effectiveness in the context of disease-state management for upper respiratory allergic diseases.

## COST-OF-CARE ESTIMATES

Although cost estimates of individual upper respiratory conditions are necessarily imprecise, expenditures for these diseases are nevertheless considerable (Table I).<sup>1</sup> With so many resources at stake, population-based

cost-effectiveness studies and disease-state management strategies are clearly worth pursuing. Instead of viewing patients with a given condition such as asthma simply as individual occurrences, physicians can practice disease-state management by tabulating how many patients in their practices have asthma, assessing how well those patients are being treated as a group, and asking how they might be treated more efficiently.

## DEVELOPING INNOVATIVE DISEASE-STATE MANAGEMENT PROGRAMS

### Basic elements of disease-state management: achieving clinical cost-effectiveness

As shown in Table II, the development of disease-state management programs to improve care and cost effectiveness involves a number of components. Because it is a population-based approach, a physician practicing disease-state management will not be the only professional involved in caring for patients with a given condition. Assistance from the medical and office staff is required, as is input from other administrative offices involved in patient care. This requires a multidisciplinary approach to both the clinical and the management components. A multifaceted approach is needed as well, so that patients with asthma or another condition can be stratified as to risk (e.g., mild, moderate, severe) and treated accordingly. With these elements in place, the search can begin for optimizing efficiency and cost-effectiveness.

### Using population-based data in decision making

Fig. 1 shows the total cost associated with pediatric outpatient care in one clinic in 1994.<sup>2</sup> Although the average per capita cost of caring for the 54 patients was only \$250, the distribution of cost shows that a few outliers were very expensive, driving up the average cost considerably. This cost distribution for asthma care occurs repeatedly in the literature. For example, work done by Martin Buxton (unpublished data, 1996) in the United Kingdom showed that 80% of the patients claimed only 20% of treatment costs, whereas the remaining 20% required 80% of the total cost of care (Fig. 2).

Such information is useful because if a program is designed for patients who are averaging \$100 a year in costs, the practitioner will be able to determine how much can be spent on education or medicine for these patients without driving up the costs. The same approach can be taken for the 20% of patients who consume the majority of expenditures.

From the Center for Health Services Research, Rush Medical College, and the Center for Health Science Research, Rush Primary Care Institute, Chicago.

Reprint requests: Kevin B. Weiss, MD, Center for Health Services Research, Rush Medical College, Center for Health Science Research, Rush Primary Care Institute, 1653 West Congress Parkway, Chicago, IL 60612.

J Allergy Clin Immunol 1998;101:S383-5.

Copyright © 1998 by Mosby, Inc.

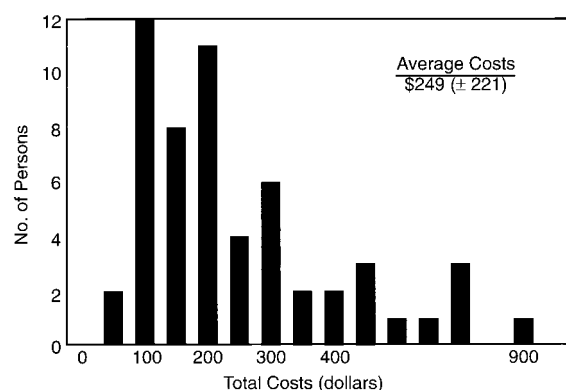
0091-6749/98 \$5.00 + 0 1/0/86488

**TABLE I.** Estimated costs for treatment of diseases associated with allergic rhinitis (in billions of U.S. dollars)\*

|                   | Direct costs | Indirect costs | Total single disease costs |
|-------------------|--------------|----------------|----------------------------|
| Allergic rhinitis | \$1.2        | \$1.2          | \$2.4                      |
| Asthma            | 3.6          | 2.6            | 6.2                        |
| Chronic sinusitis | 2.1          | 0.1            | 2.2                        |
| Otitis media      | 3.5          | 0.2            | 3.7                        |
| Nasal polyps      | 3.1          | 0.5            | 3.6                        |

\*Estimates vary between 1990 and 1995.

Adapted with permission from McMenamin P. The economic toll of allergic rhinitis and associated airway diseases. In: Spector SL, editor. The chronic airways disease connection: redefining rhinitis. Little Falls, NJ: Health Learning Systems; 1995. p. 26-8.

**FIG. 1.** Frequency distribution of costs for pediatric outpatient asthma care in one clinic ( $n = 54$ ). Adapted with permission from Headrick L, et al. *Jt Comm J Qual Improv* 1994;20:562-8.<sup>2</sup>

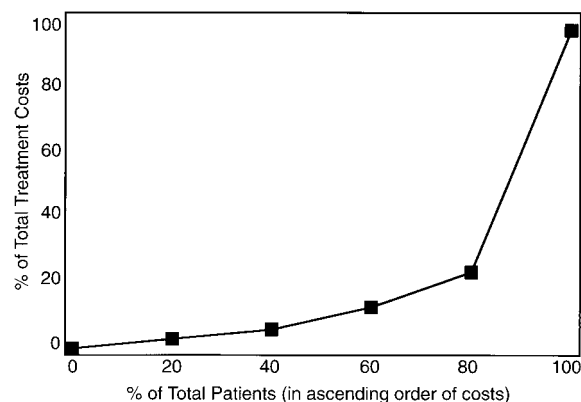
The disease-state management strategy will vary, depending on the nature of the population base being examined. An assessment of the distribution of direct medical expenditures for asthma treatment in the United States reveals that most of the cost is absorbed by inpatients. However, in some parts of the United States, costs related to asthma inpatient care appear to be less. Accordingly, disease-state management strategies, being population based, will vary with the characteristics of the population under observation.

#### Basic elements of disease-state management: achieving administrative cost-effectiveness

To improve cost-effectiveness in patient care, the reimbursement side of the equation must be addressed as well as the clinical side. A knowledge of managed care incentives for changing both business and clinical behaviors is crucial. As shown in Table III, quality incentives can effectively bring about improvement in clinical procedures, and financial, risk management, and regulatory incentives can motivate administrators to reexamine and improve their business practices.

**TABLE II.** Developing innovative disease-state management programs

- Population-based versus individual patient-based approach
- Systematic organization intervention versus individual provider
- Multidisciplinary in both clinical and management input
- Multifaceted approach to "population at risk"
- Search for optimal efficiency, cost-effectiveness

**FIG. 2.** Distribution of direct medical costs for asthma in the United Kingdom. From M. Buxton, unpublished data, 1996.

#### Building a case for improvement on the clinical side

To successfully begin and carry out a disease-state management program, managed care administrators will want to know that a substantial number of patients are affected by the disease in question and that significant documentable morbidity is attached to the condition. Certainly asthma and allergic rhinitis meet those criteria. In addition, reimbursers will be very interested in reviewing cost-effectiveness studies to determine whether or not there is support in the literature for making the changes under consideration. Finally, clinical guidelines will be of value to help chart a safe and effective disease-state management program.

#### Building a case for improvement on the business side

On the business side of the equation, incentives along the lines of financial, risk management, and regulatory concerns need to be in place to achieve a viable, population-based disease-state management program. Financial incentives should be worked into an overall business plan, one that is oriented toward the concerns of managed care administrators.

One preeminent concern is the per-member, per-month (PMPM) figure, the amount of money spent on each patient each month. Comparison of this number with the monthly income from premium payments gives administrators an index of cost and profit they

**TABLE III.** Managed care incentives for improving care and cost-effectiveness

|                                                             |
|-------------------------------------------------------------|
| Clinical setting                                            |
| • Quality incentives                                        |
| — Relatively high prevalence                                |
| — Measurable associated morbidity                           |
| — Effective, if not cost-effective, intervention strategies |
| — Useful clinical guidelines                                |
| Business setting                                            |
| • Financial incentives                                      |
| — Impact on PMPM                                            |
| — Impact on cost centers (cost-effectiveness studies)       |
| • Risk management incentives                                |
| — Impact on utilization                                     |
| — Legal liability                                           |
| • Achieving regulatory needs                                |
| — Clinical performance measures (e.g., HEDIS)               |

HEDIS, Health Employer Data Information Set.

can use to make decisions about how to manage different diseases. Managed care administrators also examine expenditures across cost centers (e.g., pharmaceutical costs versus costs for office visits) to get a reading on which areas are most costly and where efficiency might be improved.

Fig. 3 provides an example of PMPM and cost center expenditures for asthma in 25,614 patients using asthma-related services in four health management organizations associated with one pharmaceutical benefits manufacturer.<sup>3</sup> Not surprisingly, the greatest expenses are incurred by inpatients, a fact that argues for more intensive efforts at education and prophylaxis. In addition, the largest fraction of the PMPM is going to the hospital for the 0- to 2-year-old group, while for the 18-year-old-and-over group, drugs claim the larger portion. Factors such as these are important for determining the specifics of a disease-state management program.

Another issue of concern to managed care personnel is improving risk management for use of drugs and services and for legal liability. Any proposed disease-state management program will need to ensure against under use or inappropriate use of drugs while improving the legal profile of care providers.

Finally, a disease-management program is likely to be adopted if, in conjunction with the incentives listed earlier, it will provide a better likelihood of achieving regulatory approvals from entities such as Health Employer Data Information Set, a volunteer agency that awards practices that meet its standards. To improve performance and more readily obtain regulatory approvals and awards, some practices engage in benchmarking;

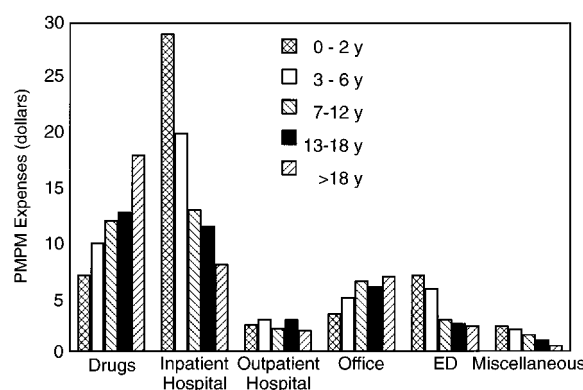


**FIG. 3.** Average PMPM for asthma direct medical expenditures for 25,614 patients using asthma-related services in four health management organizations and their associated pharmaceutical benefits manufacturer. ED, emergency department. Adapted with permission from Stempel DA, et al. Arch Fam Med 1996;5:36-40.<sup>3</sup>

that is, the participating practices compare themselves with each other, looking for areas in which they might improve performance.

## CONCLUSIONS

Disease-state management will become increasingly important as managed care models continue to evolve from the current proliferation of networks, staff plans, foundation plans, and group plans, into more homogeneous forms driven by achieving greater cost-effectiveness. Much of the disease management performed to date for upper respiratory allergic conditions has been limited to asthma. However, learning to manage allergic rhinitis or nasal polyps in a population-based context is equally important and will become more so as time progresses. Perhaps the key point to remember for all these conditions is that the first step will be to stratify the disease population in terms of severity. From then on, disease-management programs depend on the disease-specific variables of clinical and business incentives.

## REFERENCES

- McMenamin P. The economic toll of allergic rhinitis and associated airway diseases. In: Spector SL, editor. The chronic airways disease connection: redefining rhinitis. Little Falls, NJ: Health Learning Systems; 1995. p. 26-8.
- Headrick L, Katcher W, Neuhauser D, McEachern E. Continuous quality improvement and knowledge for improvement applied to asthma care. Jt Comm J Qual Improv 1994;20:562-8.
- Stempel DA, Hedblom EC, Durcanin-Robbins JF, Sturm LL. Use of a pharmacy and medical claims database to document cost centers for 1993 annual asthma expenditures. Arch Fam Med 1996;5:36-40.