

Asthma Treatment Guidelines: How Do We Measure Up?

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Abstract

The use of clinical guidelines for the management of asthma can help improve patient outcomes and control costs. This article explores ways that managed care organizations can encourage physicians to follow guidelines more consistently to achieve better asthma management outcomes among their patients and reduce healthcare spending.

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Asthma is a highly prevalent and costly disease and a top concern for managed care organizations (MCOs) in terms of quality of care and cost management. However, as with many other chronic conditions, asthma can often be managed, allowing patients to live a relatively normal life. In 1991, the first Expert Panel on the Management of Asthma, under the auspices of the National Asthma Education and Prevention Program (NAEPP), published the first asthma management guidelines.¹ The clinical guidelines have been periodically updated and recently republished with the latest guidance for successful asthma management.² Nevertheless, MCOs are still confronted by challenges in managing asthma care in a cost-effective manner. The major areas of difficulty include: (1) selection of the appropriate medication(s), (2) proper administration and dosage of medication(s), and (3) long-term adherence to medication therapy.³ The NAEPP treatment guidelines clearly address these issues, which are largely the domain of prescribing clinicians; however, patients have ultimate control over adherence to therapy. Although the NAEPP guidelines have been used for more than a decade, it is somewhat surprising that clinicians themselves often do not consult the guidelines.

The low level of use of published treatment guidelines by clinicians may be partially caused by their limited understanding of them.⁴ According to Crim, this knowledge deficit spans all physician levels, from primary care physicians to recognized asthma specialists.⁴ A quiz was given to a broad array of university-based physicians representing all skill levels (from family medicine residents to asthma specialists) to assess their asthma management knowledge per the NAEPP guidelines.⁵ All facets of asthma knowledge, from diagnosis and pathology to pharmacology, and prevention of symptoms were assessed. The mean total correct score for all physicians taking the quiz was 60%, with the asthma specialists scoring slightly higher at 78%. No group scored 65% or higher in the category of estimating disease severity, with most clinicians underestimating disease activity. These data suggest the enormous challenge and opportunity for MCOs to promote the use of guidelines throughout their provider community involved in the treatment of patients with asthma.

This same study selected 206 of 3384 adult patients who had been treated for asthma. Despite recommendations from the NAEPP to do so, spirometry had been performed on only 46% of these patients in the prior 2 years, and 20% of patients with moderate or severe persistent disease were found to be receiving inadequate step therapy. Fifteen percent of the patients with low forced expiratory volume in 1 second (<60% predicted) were receiving either no medica-

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tions or short-acting beta2-agonists only; that is, they were not receiving controllers, such as inhaled corticosteroids (ICSs), to suppress inflammation. Of these, 1 of 5 patients met the NAEPP criteria for moderate-to-severe asthma. Patients who used medications inappropriately tended to use the rescue drugs more often and long-term controller medications less often—a marker of poorly controlled asthma, which can lead to life-threatening acute exacerbations and excessive and preventable utilization of healthcare resources.⁶

By identifying the weak areas of physician knowledge, better educational models, which include assessment and feedback, can be developed to more efficiently teach clinicians how to assess disease severity and, in turn, enable them to adopt appropriate measures to better care for patients.

Balancing Costs and Quality of Care

Providing a fair balance between quality of patient care and cost control is a daunting challenge for MCOs. For example, clinical guidelines focus on accurate diagnosis and successful individualized treatment. Yet, new pharmacologic options may be introduced slowly into recommended treatment guidelines or MCO formularies, after adequate clinical experience has been obtained. In the managed care arena, delays in the incorporation of new treatments or barriers to utilization may be the result of stringent new drug review processes of MCOs, high patient copayments, and prior authoriza-

tion programs, which may deny or severely curtail access to coverage.³ These measures can result in inadequate treatment of patients, a lower quality of life, and unnecessary utilization of more expensive medical resources.

Asthma-related costs are a combination of direct costs (hospitalizations, medications, outpatient medical procedures) and indirect costs (wage losses and other productivity losses associated with work disability).⁷ A pharmacoeconomic study of 401 adults with asthma derived from random samples of pulmonologists, allergist-immunologists, and family practitioners, found that the annual direct medical treatment cost of asthma for the average patient is \$2697, with medications comprising approximately 60% of this amount (\$1605) (Table).⁷ However, when patients were grouped according to asthma severity, medications for patients in the severe group were approximately 19% of the total, whereas their hospitalization costs were 10 to 20 times greater than the hospitalization costs of patients in the mild and moderate categories. Similarly, “other medical costs,” which included emergency department (ED) and outpatient medical procedures, were 5 to 8 times higher in the severe category than in the mild and moderate categories. Because patients in the severe category had a high degree of morbidity, the indirect costs were 4 to 10 times higher than in the less severe groups.

Patients who use ICSs appear less likely to be hospitalized or to experience exacer-

Table. Direct and Indirect Annual Costs of Adults With Asthma According to Severity

Severity	Direct medical costs*				Direct nonmedical cost	Indirect cost	Total cost
	Medications	Ambulatory care	Hospitalizations	Other [†]			
Mild	\$1252	\$198	\$102	\$129	\$382	\$582	\$2645
Moderate	\$1746	\$324	\$215	\$215	\$570	\$1488	\$4531
Severe	\$2404	\$833	\$2122	\$995	\$613	\$5846	\$12 813
Total	\$1605	\$342	\$463	\$287	\$483	\$1732	\$4912

*Total mean costs per person.

[†]Emergency department visits and outpatient procedures.

Source: Reference 7.

bations leading to ED treatment. These patients also experience less time out of school and work.⁸

A cost-effectiveness analysis of patients who were in the 3-year Inhaled Steroid Treatment As Regular Therapy in Early Asthma (START) study found that ICSs were the most cost-effective treatment for patients with persistent asthma.⁹ These patients experienced an average of 14.1 symptom-free days per year ($P < .001$), 69% fewer hospital days ($P < .001$), and 67% fewer ED visits ($P < .05$), compared with patients who used other types of treatments (eg, beta2-agonists, leukotriene modifiers, xanthines, cromolyn, etc). The loss of workdays and schooldays was reduced by 37% ($P < .001$), and 25% fewer workdays were lost by caregivers of asthma patients ($P = .07$).

ICS use on a regular basis is associated with a decreased risk of death from asthma.¹⁰ In a population cohort analysis of more than 30 000 patients, the mortality rate from asthma among patients using 6 or more ICS canisters per year was reduced by 50% compared with the mortality rate of nonusers (Figure). A regression analysis of

the same data determined that the reduction in mortality associated with the use of ICS was 21% per canister. The association between ICS use and asthma mortality is a finding that has important economic implications for the healthcare services delivered to people with uncontrolled asthma. People who are well controlled with an ICS lead healthier lives and consume fewer expensive medical resources in the long term.

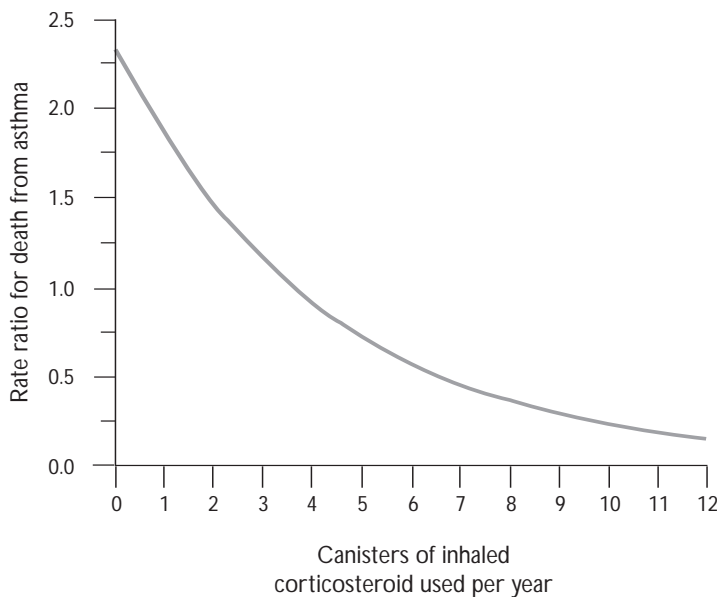
What Can MCOs Do to Improve Asthma Care?

Asthma management tactics must evolve to reduce morbidity and mortality. Management tactics include adopting formulary review measures that focus on evidence-based guidelines, setting up asthma management programs, and providing preventive care measures.³

To help MCOs focus on better care for asthma patients, the National Committee for Quality Assurance developed a set of standardized measures, called the Health Plan Employer Data and Information Set (HEDIS), to benchmark plan performance measures in asthma therapy management.^{3,11} HEDIS is a set of minimally acceptable quality and performance standards for MCOs to follow to assist in their efforts to monitor the quality of care for their patients. It is important to emphasize that HEDIS measures provide only minimally acceptable therapeutic benchmarks to assess specific treatment practices for asthma patients and should not be viewed as optimum treatment or a therapy guide.

HEDIS 2000 introduced 2 new measurement tools for asthma. The first, Emergency Room Visits for People With Asthma, assesses whether people with asthma receive care in an ED, a high-cost and usually avoidable treatment setting that is nevertheless used almost 2 million times per year by asthma sufferers. This initiative will help to promote preventive care and patient education, looking to reduce unnecessary ED visits by encouraging prompt communication between patient and clinician at the onset of an exacerbation. The second measure, Use of Appropriate Medications for People With Asthma, suggests the use of long-term controller therapy, including

Figure. Rate Ratio for Death From Asthma as a Function of the Number of Canisters of Inhaled Corticosteroid Used Per Year



Source: Adapted with permission from Suissa S, et al. *N Engl J Med.* 2000; 343:332-336.

ICSs, to help manage asthma, because research shows ICS use significantly lowers the frequency and severity of subsequent asthma attacks.¹² HEDIS measures are used by more than 90% of the health plans in the United States as a mechanism to assess the impact of asthma management on their membership.

Formulary Review Measures. Clinical guidelines direct prescribers to appropriate treatments. However, managed care formularies play a role in determining which medication a patient is prescribed. Many MCOs have adopted formularies that focus on evidence-based clinical guidelines. However, data comparing clinical and economic outcomes of alternative therapies are lacking.

Cost-effectiveness models are often used in an attempt to compare outcomes of drug therapies. In one model, the therapy cost of the salmeterol/fluticasone combination (SFC) 50/100 µg vs that of fluticasone 100 µg was evaluated.¹³ The study concluded that although SFC cost approximately \$3 more per canister, it more effectively controlled asthma 80% of the time and, therefore, was the more cost-effective therapy. Other pharmacoeconomic and analytic models need to be developed to compare new therapies with existing ones and to aid in the decision-making processes.

Asthma Management Programs. Asthma management programs may be initially more costly because of program costs, and increased drug use, and expenditures in sub-optimally controlled patients.³ Yet, patient education is perhaps the most important asthma management tactic, because it helps patients become involved in their treatment program. This involvement translates into overall long-term cost savings.

Risk modeling can successfully predict future patient outcomes in asthma and must take into account risk factors for disease progression. Risk modeling is based on patient demographics, symptom severity, comorbid conditions, and concurrent medication usage and is usually patient questionnaire-based. Yurk and colleagues devised a set of questionnaire-based screening tools to identify risk for 1-year adverse

outcomes in adults with moderate-to-severe asthma.¹⁴ Adverse outcomes included hospitalizations and ED visits during the following 12 months and days of lost activity during the preceding month. Risk models were constructed for each of the outcomes. In the Yurk et al study, the strongest predictors for healthcare use and symptomology were comorbid illnesses and prior ED visits.

Adherence programs can also be valuable in identifying patients at risk.¹⁵ Such programs monitor patient medication adherence rates and engage in refill reminder programs. For example, a pharmacy benefit management (PBM)-based education program can serve a broad population, and access to recent prescription claims data allows the program to selectively focus its educational messaging. Thus, a PBM-based asthma program can improve asthma therapy by increasing ICS usage and reducing dependence on quick-relief bronchodilators. Although the PBM, due to size and resources, may be able to reach a very large asthmatic population, comprehensive asthma management must involve the patient's physician and take advantage of MCO resources. The aim of such programs should be to minimize costs and maximize quality of care, the perennial long-term challenge for MCOs.

Preventive Care Measures. Prevention of triggering events and other factors may also provide opportunities for MCOs to make an impact on asthma. Pneumococcal and influenza vaccine programs are recommended by the Centers for Disease Control and Prevention for people with asthma.¹⁶ Smoking cessation is also vital in controlling asthma and involves elements such as behavior modification techniques, group sessions, and nicotine replacement therapy.

Often, the short-term benefits of smoking cessation programs are not as apparent as the long-term investments. In a study of blue-collar workers, the costs associated with a smoking cessation program were \$1025.28 per smoker who quit or \$11.78 per full-time equivalent employee per year.¹⁷ The overall savings in healthcare resource utilization was expected to be 15 times the

cost of the program, yielding an annual return on investment of 27.6%.

Conclusion

MCOs and payers face challenges in asthma management in terms of clinical guidelines acceptance, clinical and economical therapy decisions, and outcomes measurement and assessment. The focus of asthma care needs to shift to early detection, disease trigger prevention, patient education, therapy adherence, and the use of evidence-based clinical guidelines. Clinicians and MCOs can benefit from continuing medical education focused on current asthma guidelines. Clinicians, regardless of their training background, as well as patients should become educated with respect to managing asthma over the long term. All clinicians can gain from additional training in the use of the NAEPP guidelines, which define disease severity and how to apply treatment paradigms in accordance with asthma severity.

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