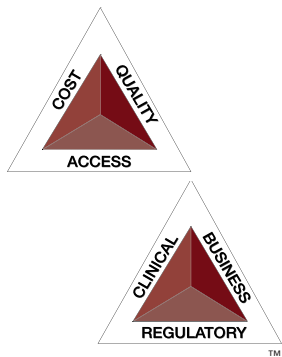


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SUPPLEMENT



Optimizing Outcomes in Asthma through a Pay-for-Quality- Performance Program

Allan T. Luskin, MD; Thomas James, III, MD; Nicole G. DeVita, RPh, MPH

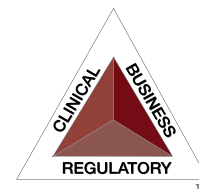
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Allan T. Luskin, MD; Thomas James, III, MD; Nicole G. DeVita, RPh, MPH

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This supplement is supported by funding from Genentech and Novartis.

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This publication provides benefit design decision makers the integrated industry information they require to devise formularies and benefit designs that stand up to today's special healthcare delivery and business needs.

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Optimizing Outcomes in Asthma through a Pay-for-Quality-Performance Program

Allan T. Luskin, MD; Thomas James, III, MD; Nicole G. DeVita, RPh, MPH

The prevalence and economic burden of asthma continue to rise, despite significant advances in understanding asthma pathophysiology and the development of therapies to help control asthma symptoms. Even with established clinical guidelines, many patients with moderate-to-severe asthma do not achieve optimal disease control. Patients with uncontrolled asthma have significantly higher rates of healthcare utilization and are at increased risk for asthma-related mortality, exacerbations, courses of oral steroids, and decreased productivity. Better overall management and treatment strategies are needed to meet the challenges of asthma control. A comprehensive coordinated care approach to asthma management, including development of a pay-for-quality-performance program, can improve the quality of patient care, particularly in patients with moderate-to-severe disease. When used as part of an overall asthma management strategy, pay-for-quality-performance programs can potentially help physicians and managed care organizations to address the challenges of patients with uncontrolled asthma. This can lead to improved quality of care, which, in turn, can improve clinical outcomes; reduce asthma-related healthcare utilization and long-term costs for health plans and patients; and increase productivity and patient satisfaction. Developing a pay-for-quality-performance program requires a coordinated approach that includes the perspectives of various stakeholders—patients, providers, and payers—to ensure long-term clinical and economic success. [AHDB. 2009;2(suppl 9):S229-S242.]

Despite significant advances in understanding asthma pathophysiology and the development of therapies that control asthma symptoms and prevent exacerbations, the prevalence and economic burden of asthma continue to rise.¹ Chronic inflammation characterizes the airways of patients with asthma and is associated with an increase in bronchial hyperresponsiveness that leads to recurrent symptomatic episodes and widespread airflow obstruction. Infiltration of the bronchial wall with inflammatory cells (ie, T_H2 cells, B cells, eosinophils, mast cells, basophils, and antigen-presenting cells) and the subsequent release of inflammatory mediators, including immunoglobulin (Ig) E, cytokines, histamines, and leukotrienes, are now believed to be involved in chronic airways inflammation.¹

During the past 20 years, the prevalence of asthma in the United States has steadily increased.² Based on responses to a 2006 national survey, more than 34 million Americans have been diagnosed with asthma, almost 23 million Americans have asthma (including 6.8 million children), and 54% of those with asthma have experi-

enced an attack in the past year.³ Annually, there are close to 16 million asthma-related outpatient visits—12.8 million visits to physician offices, 1.3 million to hospital outpatient departments, 1.8 million to emergency departments (EDs)—and 489,000 hospitalizations.³

The total annual costs of this chronic inflammatory disease are estimated to be almost \$20 billion in the United States.³ Of this, direct medical expenses for treating asthma are \$14.7 billion, including \$4.7 billion for hospitalizations, \$3.8 billion for physician services, and \$6.2 billion for prescription drugs.³ The indirect costs of asthma, including lost productivity, account for the other \$5 billion but are likely to be underestimated. This loss of productivity is reflective of adult patients with asthma and the parents of children with asthma.

Adult asthma patients lose approximately 10.1 million work days a year, and children miss 12.8 million school days.³ In addition, productivity is lost due to presenteeism when patients with asthma work or attend school despite experiencing symptoms and when parents miss work to care for a child with asthma. The total costs per patient with asthma are estimated to average \$4912—\$3180 in direct costs and \$1732 in indirect costs.⁴ The total costs per patient with severe asthma are estimated at \$12,813 (\$6354 in direct medical, \$613 in direct nonmedical, and \$5846 in indirect costs).⁴

Even though evidence-based treatment guidelines from the National Asthma Education and Prevention

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KEY POINTS

- ▶ Despite clinical guidelines, many patients with moderate-to-severe asthma do not achieve optimal disease control.
- ▶ Patients with uncontrolled asthma have significantly higher rates of healthcare utilization than patients with controlled disease.
- ▶ The Third Expert Panel Report guidelines recommend a step-care approach for the pharmacologic treatment of asthma.
- ▶ A coordinated care approach to asthma management can improve the overall quality of patient care.
- ▶ A pay-for-quality-performance program can improve patient outcomes, which in turn may reduce healthcare utilization and overall costs.

Program (NAEPP) have been in place for more than 10 years, asthma treatment goals remain difficult to achieve.⁵ Thus, optimal control of moderate and severe persistent asthma can be challenging in some patients.⁶ In the Real-World Evaluation of Asthma Control Treatment (REACT) study, more than 50% of patients with moderate-to-severe asthma were uncontrolled,

despite using standard asthma medications and receiving medical care according to evidence-based guidelines.⁷ Patients with uncontrolled asthma have significantly higher rates of healthcare utilization than those with controlled asthma (**Table 1**)⁷ and are at increased risk for asthma mortality, exacerbations, courses of oral steroids, and work absenteeism for more than 5 days.⁷⁻¹⁰ As asthma control declines, the risk for severe asthma-related events increases.¹⁰

Pay-for-quality-performance (P4QP) programs can help physicians and managed care organizations (MCOs) meet the challenges of managing patients with uncontrolled asthma. According to the American Medical Association, such programs are intended to achieve changes in physician practices and networks that improve quality and efficiency of asthma care, reduce errors and costs of care, and “put greater direct responsibility on physician practices to get it right the first time.”¹¹ An asthma P4QP program that incorporates financial incentives for improving the overall quality and delivery of care can help providers and payers develop better management strategies for patients with uncontrolled moderate-to-severe asthma. These strategies can improve patient outcomes, medication adherence, quality of life (QoL), and satisfaction with the plan, and reduce healthcare utilization costs. This supplement provides a framework for MCOs to develop an asthma P4QP program that can be incorporated into their comprehensive disease management programs and quality improvement initiatives.

Challenges in Asthma Management

Physicians and MCOs face 2 major challenges in providing optimal care for patients with moderate and severe persistent asthma: (1) the variability in control of symptoms over time, and (2) lack of long-term control of symptoms, despite aggressive management with conventional therapy.

Variability in Disease Control

The severity of an individual patient’s asthma and risk for exacerbations can vary substantially over time.^{12,13} Many factors can affect asthma severity and response to therapy, including suboptimal compliance with disease management, poor lung function, depression, stress, obesity, and cigarette smoking.^{14,15} Recent studies of adults and children show that patients initially diagnosed with moderate-to-severe asthma demonstrate significant variability in disease severity during a 12-week period.^{12,13} Furthermore, patients with mild asthma may have severe exacerbations. Therefore, in keeping with recent asthma

Table 1 REACT: Healthcare Utilization in the Past Year, by Patients with Controlled versus Uncontrolled Asthma

Healthcare utilization, N	Patients with controlled asthma, % ^a (n = 809)	Patients with uncontrolled asthma, % ^a (n = 1003)
<i>Unscheduled physician office visits for asthma</i>		
0 (none)	57.0	29.8
1-2	31.1	39.0
≥3	11.8	31.2
<i>ED visits for asthma</i>		
0 (none)	89.9	64.0
1	5.5	18.6
≥2	4.6	17.4
<i>Hospitalizations for asthma</i>		
0 (none)	96.7	85.6
1	2.4	8.7
≥2	0.9	5.7

^aAll P <.001. Data are presented as weighted percentages. ED indicates emergency department; REACT, Real-World Evaluation of Asthma Control Treatment study. Adapted with permission from Peters SP, et al. *J Allergy Clin Immunol.* 2007;119:1454-1461.

guidelines, it is necessary to evaluate asthma control in terms of symptoms of and risk for exacerbations.

MCOs use several methods to determine the quality of care provided to their members, including predictive modeling and administrative claims data. Since these are retrospective tools, however, they may not always be practical in determining disease severity. Some MCOs rely on HEDIS (Healthcare Effectiveness Data and Information Set) measures to identify patients with uncontrolled asthma and to assess and report the quality of care for these patients. However, there are several concerns about the benefit of this measure in identifying asthma persistence.¹⁶

A HEDIS measure uses administrative claims data to identify patients with presumed persistent asthma, but it is difficult to assess disease severity without clinical evaluation. One study investigated the effectiveness of the HEDIS asthma measure in identifying patients with persistent asthma.¹⁷ In that 4-year retrospective observational study, almost half of the 132,414 patients who were identified with persistent asthma had that classification in only 1 of the 4 study years.¹⁷ This result suggests that 2 to 3 consecutive years of HEDIS qualification is a better period to identify patients with persistent asthma.¹⁷ This HEDIS measure now requires that patients be requalified during the second measurement year,¹⁸ a change that was driven by extensive feedback from clinicians who believe that asthma is often cyclical and, thus, should be evaluated for severity in both measurement years.

Suboptimal Disease Control with Aggressive Management

Another challenge is that in many patients, aggressive management with conventional therapy often does not maintain long-term asthma control as defined by the NAEPP and Global Initiative for Asthma (GINA) guidelines.¹⁹ In a study of patients currently managed by an allergist or pulmonologist, more than half of those with severe asthma required bursts of oral corticosteroids in the 3 months before entering the study.⁶ In addition, 32% of patients with mild asthma, 40% with moderate asthma, and 50% with severe asthma had unscheduled office visits.⁶

The Gaining Optimal Asthma Control (GOAL) study was conducted to determine if total asthma control could be achieved in patients with uncontrolled asthma treated with GINA guideline-based measures: an inhaled corticosteroid or combination therapy of an inhaled corticosteroid and a long-acting beta₂-agonist (LABA).²⁰ After dose escalation, 69% of patients

receiving combined therapy and 81% receiving inhaled corticosteroid therapy did not achieve total control.²⁰ At study end (1 year), 59% of patients treated with combination therapy and 72% of patients treated with an inhaled corticosteroid did not achieve total control of asthma symptoms.²⁰ Patients who achieved complete controlled and well-controlled asthma had significantly lower exacerbation rates and significantly higher QoL scores compared with those whose asthma was not well-controlled.²⁰

About 5% to 10% of patients with severe asthma fail to respond well to therapy with high-dose inhaled corticosteroids or with supplemental therapy. However, caring for these patients may account for about 50% of total asthma healthcare costs.

The REACT study demonstrated the high rate (55%) of uncontrolled asthma in patients treated with multiple controller medications and the significantly lower rate of healthcare utilization in patients with controlled compared with uncontrolled asthma (Table 1).⁷

About 5% to 10% of patients with severe asthma fail to respond well to therapy with high-dose inhaled corticosteroids or with supplemental therapy.²¹ However, caring for these patients may account for about 50% of total asthma healthcare costs.²¹ In many patients, failure to respond to steroids is the result of incorrect diagnosis, nonadherence to therapy, or psychological problems.²¹ The pathophysiology of severe asthma is different from less severe forms, which may account for actual differences in response to corticosteroids.²¹ Data from the European Network for Understanding Mechanisms of Severe Asthma (ENFUMOSA) study suggests that severe asthma may consist of at least 2 different disease phenotypes, each with its own sensitivity to corticosteroids.²¹ Innovative therapies may need to be tailored for steroid-resistant patients to achieve control.²¹

The 2007 Expert Panel Report 3 (EPR-3) of the NAEPP included a revised set of guidelines with 2 major changes that will assist physicians in meeting the challenges of treating asthma by providing better overall treatment and management. Earlier versions of the guidelines emphasized the importance of assessing symptoms and staging asthma severity as a guide to choosing asthma therapy. EPR-3 shifts the focus from classifying asthma severity to continually “monitoring asthma con-

Table 2 Assessing Asthma Control in Patients Aged 12 Years or Older

Components of control	Classification of asthma control (≥12 yrs old)		
	Well-controlled	Not well-controlled	Very poorly controlled
Symptoms	≤2 d/wk	>2 d/wk	Throughout the day
Nighttime awakening	≤2 times/mo	1-3 times/wk	≥4 times/wk
Interference with normal activity	None	Some limitation	Extremely limited
Impairment			
Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 d/wk	>2 d/wk	Several times/d
FEV ₁ or peak flow	>80% predicted/ personal best	60%-80% predicted/ personal best	<60% predicted/ personal best
Validated questionnaires			
• ATAQ	• 0	• 1-2	• 3-4
• ACQ	• ≤0.75 ^a	• ≥1.5	• NA
• ACT	• ≥20	• 16-19	• ≤15
Exacerbations	0-1/yrs	≥2/yrs	
	Consider severity and interval since last exacerbation		
Risk			
Progressive loss of lung function	Evaluation requires long-term follow-up care		
Treatment-related adverse events	Medication side effects can vary in intensity from none to very troublesome and worrisome. The level of intensity does not correlate to specific levels of control but should be considered in the overall assessment of risk		

^aACQ values of 0.76-1.4 are indeterminate regarding well-controlled asthma.

ACQ indicates Asthma Control Questionnaire; ACT, asthma control test; ATAQ, Asthma Therapy Assessment Questionnaire; EIB, exercise-induced bronchospasm; FEV₁, forced expiratory volume in 1 second.

National Heart, Lung, and Blood Institute. National Asthma Education and Prevention Program. Expert Panel Report 3. *Guidelines for the Diagnosis and Management of Asthma*. Full Report 2007. August 28, 2007.

rol.”¹⁵ Assessing asthma severity is the basis for initiating therapy, whereas assessing and monitoring asthma control is the basis for assessing therapeutic success and adjusting or adding therapy.¹⁵

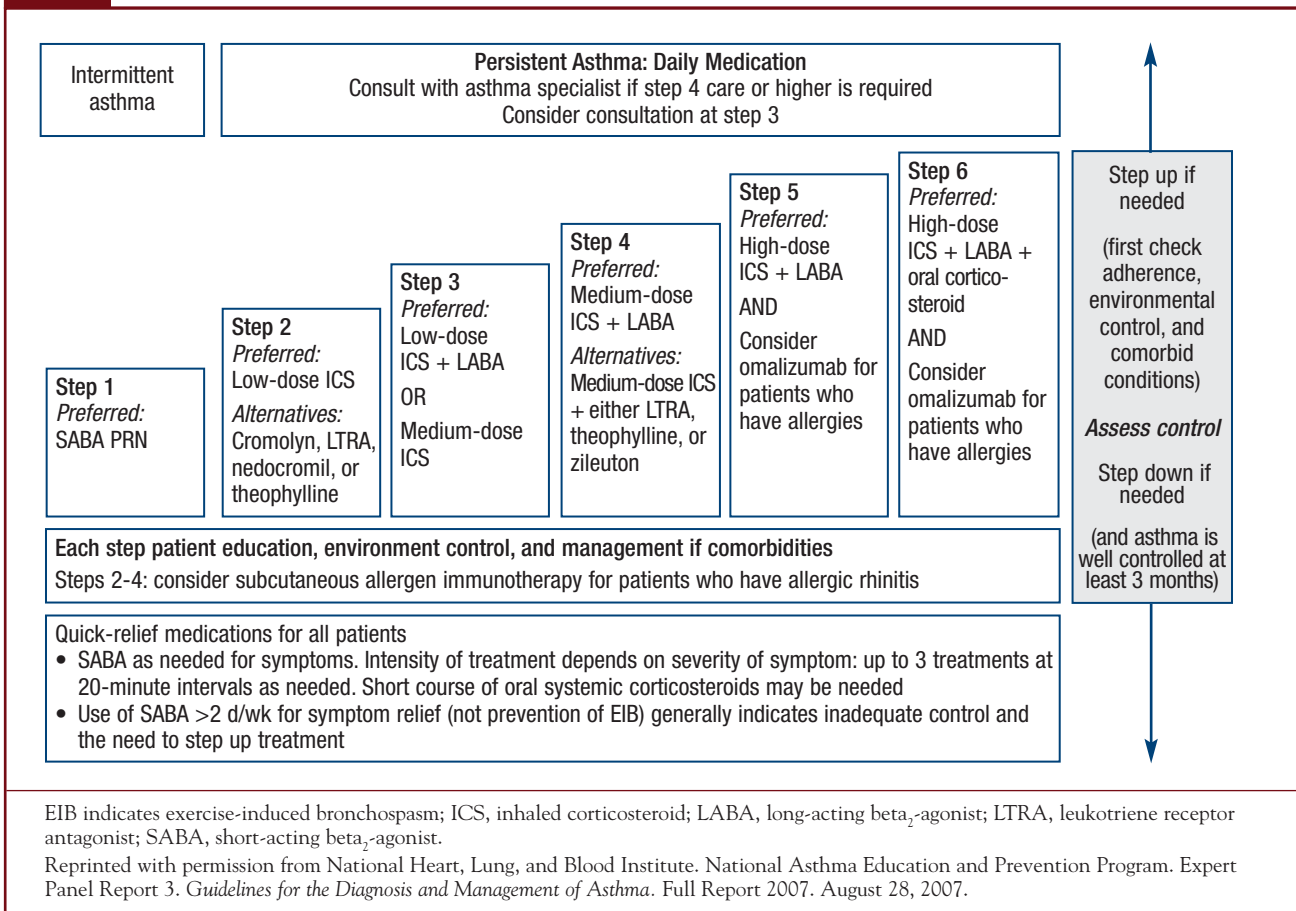
According to EPR-3, the goal of asthma therapy is control: achieving and maintaining asthma control by reducing current impairment (symptoms) and reducing the risk of future exacerbations.¹⁵ The domains of impairment and risk are considered to be 2 different manifestations of asthma and may require different approaches to treatment.¹⁵ EPR-3 also recommends using multiple measures to assess impairment and risk.¹⁵

Impairment is defined as the frequency and intensity of asthma symptoms and the functional limitations that a patient is currently experiencing or has recently experienced.¹⁴ Physicians can determine impairment by (1)

conducting a thorough medical history; (2) measuring lung function; and (3) using validated questionnaires, such as the Asthma Control Test (ACT), Asthma Control Questionnaire, or Asthma Therapy Assessment Questionnaire control index.¹⁴ Impairment is described in terms of nighttime awakenings, use of rescue beta₂-agonists, pulmonary function, functional impairment (activity levels and attendance at work or school), and reduced QoL.¹⁴

Risk is defined as an estimate of the likelihood of exacerbations, progressive loss of lung function, or adverse effects of medications.¹⁵ Spirometry is the most often used method for assessing risk, but risk can also be inferred from a patient’s history of exacerbations requiring ED visits, hospitalization, or admission to an intensive care unit, especially in the previous year.¹⁴ Because

Figure 1 Stepwise Approach to Asthma Management in Patients ≥12 Years or Adults



asthma severity is extremely variable over time, EPR-3 emphasizes the importance of frequent monitoring and assessment of impairment and risk to determine the effectiveness of asthma therapy, whether the goals of therapy are being met, and if adjustments to therapy are needed.¹⁵ The new guidelines suggest that patients be assessed at 2- to 6-week intervals until control is gained, and then at 1- to 6-month intervals to monitor control.¹⁵ A patient's level of control is based on the impairment or risk category (**Table 2**).¹⁴

The revised EPR-3 guidelines continue to recommend that physicians use a stepwise approach in prescribing pharmacologic therapy to gain and maintain control of impairment and risk (**Figure 1**).¹⁴ In addition, the stepwise approach has been expanded to 6 steps, which simplifies the recommended actions to take in each step. There are 2 major changes in EPR-3 with regard to pharmacologic therapy in patients with severe, uncontrolled asthma.

The guidelines now recommend that equal weight be

given to the options of increasing the dose of inhaled corticosteroid monotherapy or adding a LABA to inhaled corticosteroid therapy in patients with moderate persistent asthma or asthma that is not adequately controlled with low-dose inhaled corticosteroid therapy.¹⁴ It is currently recommended that LABA not be used to treat acute asthma symptoms or exacerbations or as monotherapy for long-term control.¹⁴

The second change is the recommendation that physicians consider the use of omalizumab as adjunctive therapy at steps 5 and 6 in patients with severe persistent allergic asthma that is not controlled on a combination of moderate- to high-dose inhaled corticosteroid and LABA.¹⁴ The EPR-3 advises reserving the use of long-term oral corticosteroid therapy for severe, uncontrolled asthma.¹⁴

Omalizumab is indicated for adults and adolescents (aged >12 years) with moderate-to-severe persistent asthma who have a positive skin test or in-vitro reactivity to a perennial aeroallergen and whose symptoms

are inadequately controlled with inhaled corticosteroid therapy.²² Clinicians who administer omalizumab should be prepared to identify and treat anaphylaxis, should it occur.¹⁵ Since EPR-3 recommends a consultation with an asthma specialist if step 4 or higher is required (Figure 1), patients treated with omalizumab therapy should be referred to a specialist.¹⁴

P4QP Program for Improved Asthma Management P4P Programs

Pay-for-performance (P4P) programs emerged in the 1990s as a strategy for improving the quality and cost-effectiveness of healthcare services. Most programs have been sponsored by health plans; however, large employer groups and coalitions are starting to offer incentives to physicians who care for their employees, and state Medicaid agencies are beginning to negotiate for P4P programs with their managed care providers. The Centers for Medicare & Medicaid Services has also initiated P4P within its Physician Quality Reporting Initiative incentive program.²³ Currently, most P4P programs only incentivize primary care providers (PCPs), but many payers are expanding their initiatives to cover specialists and have extended quality incentives beyond their health maintenance organizations (HMOs) to cover preferred provider organizations (PPOs) and other products.²⁴

A P4QP program that incentivizes clinicians to improve asthma care may help MCOs meet the challenges of providing quality, cost-efficient care for patients with moderate-to-severe asthma.

Primary components of P4P programs include targeted performance measures in specific clinical areas, quality benchmarks, data collection, and physician financial rewards. P4P measures include process measures, such as prescribing controller medications; outcome measures, such as asthma hospitalizations; structural measures, such as the use of information technology; and patient satisfaction with provider communications.

There has been conflicting evidence regarding whether P4P programs provide meaningful changes in quality improvement, as well as their impact on continuity of care.²⁵⁻²⁷ Rosenthal and colleagues compared improvements in clinical quality scores among physician groups in California that adopted a P4P program versus a comparator physician group over a 3-year period.²⁵ They assessed improvement in quality control for

3 indicators: cervical cancer screening, mammography, and hemoglobin A_{1c} measurement.²⁵ A P4P intervention only resulted in a significant improvement in cervical cancer screening, and although performance improved the most in groups with the lowest baseline scores, 75% of bonus payments were given to physician groups whose performance was already above the bonus threshold at baseline.²⁵

In a study analyzing quality of care in 42 family practices in England, short-term gains were seen for asthma and coronary heart disease with the initiation of a P4P program.²⁶ However, there were declines in the patient's perceived ability to access care, which included seeing a particular physician or any physician within 48 hours.²⁶ In addition, the continuity of care declined after a P4P program was introduced, with 70.7% of patients satisfied with the quality of care they received before the P4P program versus 66% of patients 2 years after its initiation.²⁶

In a study that looked at quality improvements in hospital care, investigators assessed 207 hospitals that combined a P4P program with public reporting of quality of care versus 406 hospitals that did public reporting only.²⁷ This P4P program provided a 2% bonus payment in addition to the usual Medicare payment for performing in the top decile on a composite quality measure, and a 1% bonus for hospitals in the second decile. In looking at 10 individual and 4 composite measures, the authors noted that P4P hospitals showed significantly greater improvements in 7 of 10 individual measures and all 4 composite measures than the control group.²⁷ When adjusted for differences in baseline performance and other characteristics, the incremental benefit from a P4P program was 2.6% to 4.1% over the 2 years.²⁷ Despite this modest improvement, the results of this analysis demonstrated that financial incentives offered by a P4P program assist quality improvement initiatives. These findings demonstrate the need to offer meaningful incentives, particularly for those who may be underperforming, to achieve sustainable quality-of-care improvements.

Value of an Asthma P4QP Program to Health Plans

A P4QP program that incentivizes clinicians to improve asthma care may help MCOs meet the challenges of providing quality, cost-efficient care for patients with moderate-to-severe asthma. A program based on the EPR-3 guidelines will accomplish these goals by driving enhanced impairment and risk assessment, patient adherence to medication regimens, and asthma control as the target of asthma management.

Such a program can also ensure that patients receive asthma care from the appropriate providers. Research on the return on investment (ROI) for asthma quality improvement is emerging and suggests that investments in asthma prevention and control initiatives can improve health outcomes and reduce healthcare costs.²⁸ A systematic review of ROI in 12 asthma disease management programs reported that the average cost-saving was \$729 per participant in 1.3 years.²⁹

Independent Health Association, based in New York state, covers 280,000 members in traditional HMO and PPO models served by approximately 1000 PCPs and 1800 specialists.²⁴ Independent Health has had its P4P program, Practice Excellence, in place since 1996. In 2003, the plan added a chronic disease measure for asthma in children aged 6 to 17 years after successfully piloting the program with subsets of its PCP community.²⁴ During the first 6-month cycle of the program, physicians and staff retrieved baseline data on asthma patients from patient medical records, which were used to compare individual physician asthma management to treatment recommended by evidence-based guidelines. These procedures were repeated on a semi-annual basis.

Baseline performance data demonstrated that less than 5% of asthmatic children received all necessary services and were optimally managed.²⁴ At the end of 7 cycles, results of the P4P program demonstrated improvements in each of Independent Health's asthma clinical performance measures: patients receiving the right medication for the right disease severity improved by 36% relative to baseline, written asthma patient action plans improved by 145%, and asthma office-based pulmonary function testing improved 130%.²⁴ During this program, ED visits in this population decreased significantly, from 3.7 to 2.92 per year ($P < .01$), and hospitalizations decreased from 0.83 to 0.81 per year (not significant).³⁰

Components of a P4QP Program

EPR-3 recommends that the following components be implemented as part of an asthma improvement program. Any of these components can be used as measures of physician performance in a P4QP program.

Physician responsibilities

1. *Provide each patient with a written action plan.* EPR-3 places strong emphasis on 2 aspects of the written asthma action plan: daily pharmacologic management and how to recognize and handle worsening asthma, including adjustment of medication doses.¹⁴ Physicians should provide all asthma patients or their caregivers an indi-

vidualized written action plan, especially patients with moderate or severe persistent asthma, a history of severe exacerbations, or poorly controlled asthma.¹⁵ The action plan should include instructions on daily management with long-term control and quick relief medications and how to respond to uncontrolled asthma.¹⁵ The written action plan encourages patients to routinely assess whether their asthma is controlled and assists them in adjusting their medications based on current level of symptom severity. The guidelines also emphasize the importance of involving patients and caregivers in developing treatment goals and an action plan.

Physicians should provide all asthma patients or their caregivers an individualized written action plan, especially patients with moderate or severe persistent asthma, a history of severe exacerbations, or poorly controlled asthma.

Medication recommendations in the action plan should adhere to the step-care approach presented in the EPR-3 guidelines. According to these guidelines¹⁴:

- A LABA should not be prescribed without an inhaled corticosteroid (steps 3-6)
- Combination therapy with a low-dose inhaled corticosteroid and LABA is not recommended in steroid-naïve patients with mild disease, because of insufficient evidence regarding efficacy (step 2)
- Combination low-dose inhaled corticosteroid and LABA therapy, or medium-dose inhaled corticosteroid monotherapy, is recommended in patients with asthma that is insufficiently controlled with low-dose inhaled corticosteroid alone (step 3)
- Omalizumab should be considered at steps 5 and 6 in patients who have allergies
- Chronic oral corticosteroid therapy should be reserved for patients with severe, uncontrolled asthma (step 6).

The action plan should be reassessed at each patient encounter, after an ED visit or hospitalization, or if patients require more than 3 courses of oral corticosteroids annually.¹⁴ At those encounters, the action plan can be adjusted, as needed, to ensure that control is maintained or regained and to prevent future exacerbations. In a large study of patients with uncontrolled asthma, a large proportion (65%) had never received an asthma action plan.⁷ The National Quality Forum has suggested that a management plan measure be included

in assessing quality.³¹ Physicians can encourage adherence to asthma therapy by reviewing the success of the treatment plan with the patient/caregiver at each visit.

2. *Educate patients about self-management and adherence.* All patients should be provided with the necessary knowledge and skills to control their asthma and improve clinical outcomes, including basic facts about asthma; what defines well-controlled asthma and the patient's current level of control; actions of medications; appropriate skills (eg, inhaler technique); when and how to handle signs and symptoms of worsening asthma; and when and where to seek care.¹⁵ Asthma self-management education should begin at the time of diagnosis and be integrated into all aspects of continuing care.¹⁵ In a review of 36 randomized controlled trials involving more than 6000 adults with asthma, self-management (a written action plan accompanied by regular review of medications and asthma control by a medical practitioner) improved health outcomes (by decreasing the risks of hospitalizations, ED and urgent care visits, and days off from work and school) significantly more than usual care, which included various medical interventions but not an action plan.³²

Asthma is a chronic disease, and patients with asthma are especially susceptible to adherence problems.

Adherence to medication regimens is an integral part of initial patient education and should be evaluated at every patient encounter.¹⁵ Rates of nonadherence to asthma therapy in adults and children range from 30% to 70%.³³⁻³⁵ Asthma is a chronic disease, and patients with asthma are especially susceptible to adherence problems for several reasons, including prolonged medication regimens; multiple medications; complex regimens requiring changes in medications as symptoms flare up; expensive medications with large out-of-pocket payments or copays; concerns about the potential adverse effects of some medications, especially inhaled corticosteroids; and inadequate follow-up.³⁵⁻³⁷

Poor adherence to asthma therapeutic regimens results in suboptimal disease control and is a major cause of poor clinical outcomes,³⁵ including treatment failures, unnecessary and possibly dangerous escalations of therapy, and costly diagnostic procedures, complications, and hospitalizations.³⁴ Low rates of adherence to prophylactic medications in particular have been associated with higher rates of hospitalization and death.³⁷ Healthcare providers can promote adherence by ensuring that

patients understand the rationale for therapy, especially the role of long-term controller medications, the importance of adherence, and the potential consequences of nonadherence.

3. *Assess control at every clinical encounter.* Asthma severity varies over time and patients differ in terms of their responses to and outcomes of therapy and their risks for adverse reactions to medications. Consequently, periodic assessment of symptoms is necessary to determine if the initial pharmacologic regimen is maintaining control of asthma, or if adjustments or additive therapy are needed. A structured patient self-assessment questionnaire, such as the ACT, should be administered during every clinical encounter to monitor current asthma control.¹⁵ The advantages of such questionnaires are that they do not require the use of a spirometer by healthcare providers, they can be used by physicians to assess severity in patients using controller medications, and they provide information on symptom control over an extended period.¹⁹ Self-assessment questionnaires help patients understand exactly what control means and help physicians identify disease severity and suboptimal asthma control, so they can make appropriate referrals to specialists. A large study of adult patients with asthma demonstrated that patient questionnaires can prospectively predict routine and emergency healthcare use for asthma.³⁸ The ACT is of increased value when assessment includes lung function measurement.

4. *Refer appropriate patients to specialists.* Referral to a specialist by the PCP is critical in treating moderate-to-severe asthma patients who are not controlled with combination therapy and are at risk for exacerbations that require oral corticosteroid therapy. PCPs should refer patients to a specialist for asthma care consultation in the following situations¹⁴:

- Life-threatening asthma exacerbations
- Goals of asthma therapy are unmet after 3 to 6 months of treatment
- Lack of response to therapy
- Diagnosis is difficult or complicated by other conditions (eg, sinusitis, chronic obstructive pulmonary disease)
- Additional diagnostic testing is indicated
- Complications of therapy or problems with adherence or allergen avoidance
- Persistent asthma that should be evaluated with allergy skin testing to determine the presence of specific IgE antibodies to indoor allergens
- Patient requires step 4 care or higher (step 3 for children 0-4 years old). The guidelines advise that physicians consider patient referral for patients in step 3 care (step 2 for children 0-4 years old)

- Patient has required more than 2 bursts of oral corticosteroid therapy in 1 year or has an exacerbation requiring hospitalization.

MCOs' responsibilities

The successful implementation of a P4QP asthma initiative depends on MCOs assuming the following responsibilities:

1. *Provide timely information to clinicians about patients.* Physicians need information from MCOs about ED visits for asthma exacerbations and prescription refill rates at each clinical encounter to adequately assess control and counsel patients about adherence. They also need specific lists or registries of health plan members who need asthma care rather than being expected to access population-based data from written records and using them to track the provision of services.³⁹ Some MCOs are rewarding physician practices for adopting electronic medical records (EMRs), which can help facilitate physician access to patient information, as well as medical and prescription claims. EMRs can also help MCOs coordinate asthma care among network PCPs and specialists.

2. *Review plan benefit to ensure that patients have access to appropriate drugs.* The high cost of asthma treatment and the availability of innovative but expensive biologic therapies have led many health plans to implement policies to control drug costs, including raising beneficiary copayments and establishing prior authorization criteria for the use of these therapies.¹⁹ These changes in drug benefits create barriers to medication adherence for patients with chronic diseases and raise concerns about adverse health consequences.⁴⁰ A study conducted by RAND in 2004 reported that chronically ill patients reduce their medication use by 8% to 23% when copays are doubled.⁴¹ A retrospective 4-year study examined the effects of increasing copayments for the drug classes most frequently used by chronically ill patients.⁴⁰ Doubling copayments was associated with reductions in 8 therapeutic drug classes, and overall days supplied of antiasthmatics decreased by 32%.⁴⁰

Currently, many health plans require prior authorization before reimbursing for prescribed omalizumab, as well as recertification for prescription refills after a defined period of time. Prior authorization is a tool for preventing inappropriate use of medications, but it should not be used in a way that leads to suboptimal outcomes or increases treatment costs.¹⁹ Patients who are not controlled with a high-dose inhaled corticosteroid and LABA therapy or who are unable to tolerate these therapies should have access to omalizumab as recom-

mended in the step-care approach in EPR-3.¹⁵ That guideline recommends considering omalizumab therapy at steps 5 and 6 as an option in patients with severe, persistent allergic asthma who have not responded to combination therapy. For some candidates, however, earlier consideration of the use of omalizumab therapy at step 4 may be warranted.

Prior authorization is a tool for preventing inappropriate use of medications, but it should not be used in a way that leads to suboptimal outcomes or increases treatment costs.

3. *Provide sufficient financial incentives for improving performance.* Primarily, 3 categories of incentives are typically used in P4QP: (1) threshold bonus payments, which are based on physicians demonstrating they have delivered the required level of processes or outcomes; (2) tiered bonuses, in which the top tier of physicians receives the highest reward, the second tier receives less, and so on; and (3) quality infrastructure grants (eg, for information technology support).⁴² Health plans may pay for network performance, which is designed to increase network participation in quality initiatives, to promote communication and collaboration among practices in the network, and/or pay for individual physician practice performance.⁴³ Initially, health plans may pay physicians for participation rather than for performance, which allows physicians to be involved in improvement initiatives before the plan establishes specific performance benchmarks and a formal P4QP program.

Because physicians incur increased administrative and staff costs in implementing P4P initiatives, financial incentives must adequately compensate for these expenses and be substantial enough to modify physician behavior. Although some sources suggest a bonus of up to 20% of a practice's total annual revenue,⁴² one report suggests that 60% of P4P plans pay less than a 5% bonus.¹⁸ Transparency is a significant factor in driving quality improvement, which means that providers should be fully aware of the amount of rewards available in the incentive program.

4. *Develop a recognition program.* At present, most plans report the results of P4P programs internally, but some programs make performance "report cards" available to health plan members or to the public at large. Provider report cards make it easy for health plan members to compare providers on the basis of quality performance and provide health plans with an addi-

Table 3 Online Resources for Performance Measures and Pay for Performance

Agency for Healthcare Research and Quality	www.ahrq.gov
Asthma care quality improvement: a resource guide for state action	www.ahrq.gov/qual/asthmacare/asthmaappd.htm
Pay for performance: a decision guide for purchasers	www.ahrq.gov/qual/p4pguide.pdf
Ambulatory Care Quality Alliance (AQA) pilot projects	www.aqaalliance.org/ www.aqaalliance.org/pilot.htm
American Medical Association Participation tools: Medicare Physician Quality Reporting Initiative	www.ama-assn.org www.ama-assn.org/ama/pub/category/17432.html
Physician Consortium for Performance Improvement Asthma measurement set	www.ama-assn.org/ama/pub/category/2946.html www.ama-assn.org/ama1/pub/upload/mm/370/asthma-12-5.pdf
Centers for Medicare & Medicaid Services	www.cms.hhs.gov
Pay for performance	www.cms.hhs.gov/MedicaidSCHIPQualPrac/04_P4P.asp
Child Health Corporation of America	www.chca.com/index_flash.html
Performance excellence in pediatrics	www.chca.com/company_profile/index.html
National Quality Forum	www.qualityforum.org/
National voluntary standards for ambulatory care 2007	www.qualityforum.org/pdf/ambulatory/tbAMBALLMeasuresendorsed%2012-10-07.pdf

tional strategy for motivating providers to improve their performance.¹⁸ HealthPartners places providers in its P4P programs in 1 of 2 tiers, based on quality and cost-effectiveness, and plan members pay less when they use top-tier providers. HealthPartners also publicly recognizes providers who meet target measures during an annual ceremony, in a press release, and on the health plan's website.²⁴

Individualized patient education letters signed by their PCPs are more effective than those sent on behalf of the health plan.

MCOs can also recognize physicians who have demonstrated continuous professional development or competency, such as maintenance of certification, on their lists of providers. This is consistent with an initiative announced by former President Bush and HHS Michael Leavitt in August 2006 to improve the overall quality of care provided by programs sponsored by the federal government. This initiative included 4 key cornerstones^{44,45}:

- Interoperable health information technology (HIT), to create greater efficiency in healthcare delivery
- Measure and publish quality information, to provide consumers with quality-of-care information to make informed decisions regarding their healthcare providers and treatment options

- Measure and publish price information, to provide pricing information so consumers could make confident decisions relative to their healthcare providers and treatment options
- Promote quality and efficiency of care, to offer rewards to providers, patients, insurance plans, and payers for providing or purchasing high-quality, competitively priced healthcare.

5. *Provide patient and physician education.* MCOs need to focus on providing asthma patients with the necessary educational tools (print and electronic) for monitoring control of their asthma symptoms, and with information that will prepare them to partner with their healthcare providers. These may include regular newsletters, management tips (eg, how to use inhaler medications), pollen count updates, and materials geared to specific subpopulations (eg, pregnant patients).

Individualized patient education letters signed by their PCPs are more effective than those sent on behalf of the health plan. MCOs can assist healthcare providers in delivering optimal asthma care by developing provider education (eg, issuing newsletters that address best-practice topics and available resources),²⁴ including practice improvement suggestions in their performance report cards and finding innovative ways to encourage participation in continuing medical education (CME).

Independent Health established a CME accreditation program with the State University of New York at Buffalo's Medical School for PCPs in its asthma P4P pro-

gram. The program awarded CME credits to physicians for performing certain procedures in the P4P program (eg, chart reviews), formulating a written plan for reaching improvement goals, and meeting certain performance goals.²⁴ The American Academy of Allergy, Asthma, and Immunology (AAAAI) has developed a web-based educational and assessment tool, the Asthma Specialists Tool to Help Managed Asthma and Improve Quality (ASTHMA IQ), to help physicians use the EPR-3 guidelines in making treatment decisions, reporting patients' asthma status, analyzing statistics for patients, and reporting quality improvement measures for maintenance of certification or P4QP.⁴⁶ This tool is an excellent model that MCOs can use to develop physician education resources.

Implementing P4QP Program

Although a P4QP is not universally accepted as a method for improving the quality of clinical care, these quality incentive programs are widespread, and a number of large health plans have demonstrated the benefits of an asthma P4QP program in improving clinical outcomes and reducing costs. **Table 3** lists public and private organizations that are involved in developing and evaluating P4P programs and measures. Because no consensus exists about how to design a cost-effective P4QP program that provides optimal patient care, and because MCOs have different patient populations, provider models, and administrative capabilities, each MCO must tailor a quality incentive program to meet the needs of its physicians and members.

Finally MCOs should carefully monitor their P4QP program to (1) ensure that quality goals are being achieved; (2) ensure that physicians and the health plan are fulfilling their responsibilities; and (3) recognize and correct unintended consequences (eg, providing incentives for inappropriate patient treatment, physician distraction from treating nontargeted diseases).⁴⁷

Other Strategies for Improving Asthma Care

A P4QP program alone is not the solution for achieving optimal asthma care and containing treatment costs; it needs to be part of a comprehensive program that is intended to change physician and patient behavior.³⁹ The Asheville Project, developed by 2 employer-insured health plans in North Carolina, offered a comprehensive pharmacist-driven medication therapy management program to their employees with asthma.⁴⁸ The components of the program included patient self-care education provided by a certified asthma educator, regular long-term monitoring by pharmacists, reduced copays

for asthma medications, and pharmacist training in asthma. This program resulted in significant improvements; the percentage of patients classified as having severe or persistent asthma decreased from 82% to 49%, the proportion of patients with asthma action plans increased from 63% to 99%, and patients were less likely (from 13.9% to 3.2%) to have an ED visit or hospitalization after participating in the program.⁴⁸ These improvements were sustained for up to 5 years.

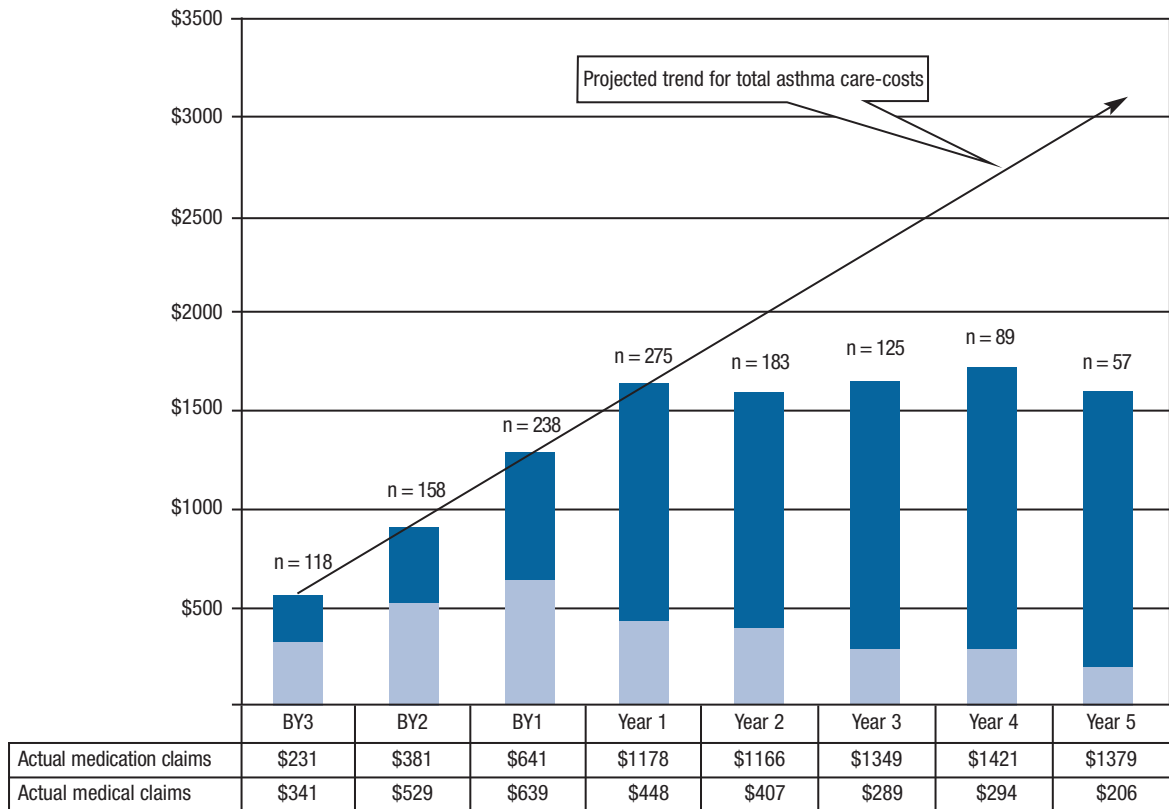
Because MCOs have different patient populations, provider models, and administrative capabilities, each MCO must tailor a quality incentive program to meet the needs of its physicians and members.

Although spending on asthma medications increased, asthma-related medical claims decreased. Direct cost-savings averaged \$725 per patient annually, and indirect cost-savings, resulting from decreased absenteeism and presenteeism and increased productivity, were estimated to be \$1230 per patient annually (**Figure 2**).⁴⁸

Reduced copay programs have been shown to be an effective component of comprehensive asthma care. In 2002, as part of its disease management program, Pitney Bowes reduced copayments for 5 chronic medication classes, including asthma. This program demonstrated an increase in adherence, from 1.86% for inhaled corticosteroid use to 4.0% for diabetes treatments, to recommended treatment regimens and, therefore, improved management of the targeted chronic conditions.^{49,50} For example, fluticasone propionate, which had previously been in the third tier of the formulary with a copay of 50% (\$62.50), was reduced to first-tier level with a copay of 10% (\$12.50).⁵⁰ As a result, more people filled and refilled prescriptions for this inhaled corticosteroid and adhered to their drug regimens.⁵⁰ The plan cost Pitney Bowes \$1 million a year, and utilization for maintenance medications increased. However, the utilization of asthma rescue medications was lower and, within the first year of the plan, ED visits and hospitalization rates decreased. Within 3 years, the median medical cost for employees with asthma fell 15%, and the plan had paid for itself.⁵⁰

Health plans have been incorporating other strategies for improving healthcare into their P4P programs. The medical home model attempts to bring disease management closer to the point of care of patients and,

Figure 2 Average Direct Asthma Care Costs (Medical and Medication) per Patient per Year versus Projected Totals



BY3 is the baseline year, 3 years before the patient's enrollment. BY2 is baseline year 2. BY1 is the year before enrollment. Year 1 is the first year of the program intervention, and so forth.

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thus, ensure that healthcare is more effectively managed and coordinated, especially for patients with chronic diseases. Although there is a variety of “medical home” or “patient-centered primary care” models, they generally begin with the assumption that if a PCP can establish a strong relationship with a patient and assume the role of care coordination,⁵¹ then costs can be reduced while the patient receives appropriate care services. To create positive incentives for developing these models, commercial and government payers must increase overall payments to PCPs, and in return receive documentation of additional administrative services related to care coordination.

HealthSpring of Tennessee (an HMO with operations in 5 states and a population primarily of Medicare enrollees) implemented a P4P pilot project that included a full-time onsite licensed practical nurse who coordinates the flow of information among the patient, plan,

and physician.⁵² Physician costs, specialty services, and generic drug costs all increased, but institutional costs, such as hospitalizations, decreased significantly.⁵²

The implementation of HIT, such as EMRs, by physician practices will become tools to support the comprehensive management of patient medical information and its secure exchange among all healthcare providers, as well as between patients and healthcare providers.⁵³ Physician groups can use HIT to manage patient populations (eg, build patient asthma registries) and also implement decision support systems at the point of care (which can include e-prescribing, drug interaction checks, and preventive and chronic care reminders).⁵⁴ The expanded use of HIT will improve healthcare quality, reduce medical errors, reduce healthcare costs, and increase administrative efficiencies.⁵³ However, widespread implementation of HIT has been limited by the high upfront costs and administrative burden for physi-

cian practices.⁵⁵ Widespread implementation has also been hampered by a lack of knowledge about what types of HIT and implementation methods will improve care and manage costs for specific healthcare organizations.⁵⁶

The use of HIT is one of the performance measures used in the P4P program of the Integrated Healthcare Association (IHA). In its fourth year of reporting program results, IHA stated that the “more its physician groups use information technology to support patient management and care, the better they score, on average, on a range of important clinical quality measures....In 2006, the physician groups meeting all P4P criteria information technology had clinical scores 18% higher than those groups that did not meet any of the information technology criteria.”⁵⁷

A successful asthma P4QP must adhere to standard processes of care, individualize treatment to meet the outcome goals of each patient, and provide overall population management incentives.

Conclusion

Implementing an asthma P4QP program is especially crucial and timely, because the prevalence of this disease continues to increase, especially among children and adolescents; the costs of treating severe, uncontrolled asthma are high; and a range of treatments are now available that can successfully control the disease and prevent exacerbations. A comprehensive, coordinated-care approach to managing and treating asthma that includes a P4QP program can potentially improve the quality of care for patients with moderate-to-severe asthma who take commonly used controller medications. Improving the quality of care for asthma patients can improve clinical outcomes and QoL for patients, and decrease absenteeism and increase employee productivity for employers. An asthma P4QP program can also reduce asthma healthcare utilization, reduce long-term costs for health plans, and increase patient satisfaction with their health plans.

A successful asthma P4QP must adhere to standard processes of care, individualize treatment to meet the outcome goals of each patient, and provide overall population management incentives, such as direct financial rewards, social recognition, and favored positioning or tiering.

The components of the P4QP program presented in this supplement incorporate the recommendations presented in the revised NAEPP guidelines and are validated by the evidence in that document. As stated in EPR-3, the goal of any asthma program must be to continually assess and monitor control of asthma symptoms and risks to decrease current impairment and prevent future, potentially life-threatening, and costly exacerbations. Implementing even part of this program will improve asthma management and reduce the financial burden of treating this increasingly prevalent chronic disease. ■

Acknowledgments

The authors wish to acknowledge Peggy Seeger, medical writer, and Dennis Bloshuk, editor, Strategic Healthcare Alliance, for their assistance with the literature search, writing, and revision of this manuscript.

The meeting was sponsored by Genentech and Novartis and third-party writing assistance for this supplement was provided by Genentech and Novartis, and the authors served as consultants to the sponsors.

Disclosure Statement

Dr Luskin is consultant/advisor to Abbott Laboratories, Aerocrine, Alcon, AstraZeneca, Genentech, MEDA, Merck, Novartis, sanofi-aventis, Schering-Plough, and TEVA; is on the Speaker's Bureau of AstraZeneca, Merck, and Schering-Plough; has received research support from Genentech and Novartis and has stocks/other direct financial holdings with Amgen, Applera, Bristol-Myers Squibb, Forest, GlaxoSmithKline, Lilly, McKesson, Medtronics, Merck, Mylan, Pfizer, Procter & Gamble, and Walgreens. Dr James is employed by Edgewater Medical Consulting, Humana, and Norto.

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