The utility of the Health Plan Employer Data and Information Set (HEDIS) asthma measure to predict asthma-related outcomes

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Background: The Health Plan Employer Data and Information Set (HEDIS) measures are used extensively to measure quality of care.

Objective: To evaluate selected aspects of the HEDIS measure of appropriate use of asthma medications.

Methods: Claims data were analyzed for commercial health plan members who met HEDIS criteria for persistent asthma in 1999. The use of asthma medications was evaluated in the subsequent year with stratification by controller medication and a measure of adherence (days' supply). Multivariate logistic regressions were used to evaluate the association among long-term controller therapy for persistent asthma, adherence to therapy, and asthma-related hospitalizations or emergency department (ED) visits, controlling for demographic, preindex utilization, and other confounding characteristics.

Results: Of the 49,637 persistent asthma patients, approximately 35.7% were using 1 class of long-term controller medications, 18.4% were using more than 1 class, and 45.9% were not using such medication. More than 25% of the persistent asthma patients did not use any asthma medication in the subsequent year. Patients with low adherence to controller medication had a significantly higher risk (odds ratio [OR], 1.72; 95% confidence interval [CI], 1.42–2.08) of ED visit or hospitalization relative to patients not using any controllers compared with persons with moderate (OR, 0.84; 95% CI, 0.57–1.23) or high (OR, 0.70; 95% CI, 0.34–1.44) adherence. Patients receiving a high days' supply of inhaled corticosteroids had the lowest risk of ED visit or hospitalization (OR, 0.37; 95% CI, 0.05–2.69).

Conclusions: Our findings suggest that refinements to the HEDIS measure method for identifying patients with persistent asthma may be needed.


INTRODUCTION

Asthma ranks among the most common chronic conditions in the United States, affecting more than 15 million people, with an estimated total annual cost of $11 billion.1,2 Despite the publication and dissemination of the Guidelines for the Diagnosis and Management of Asthma in 1991,3 ample evidence suggests that these guidelines have not been widely adopted, resulting in a significant amount of variation in the way providers manage asthma patients.4–8

The Health Plan Employer Data and Information Set (HEDIS) is an evaluation tool developed and maintained by the National Committee for Quality Assurance (NCQA) to ascertain health plan performance across a range of criteria and to permit unbiased plan-to-plan comparisons. Today, most Fortune 100 companies will contract only with NCQA-accredited health plans, and almost three quarters of the nation’s largest employers use HEDIS information to evaluate and set performance guarantees for health plans serving their employees.9,10 HEDIS has become an important industry standard that affects health plans and employers and has also been adopted by regulators, consumers, and public purchasers of health care.11 HEDIS measures may also promote quality...
improvement activities for the conditions and treatments they evaluate and physician pay-for-performance programs.\textsuperscript{12}

For asthma, the current HEDIS measure computes the proportion of health plan members with persistent asthma who have received at least 1 dispensed prescription for a long-term control medication.\textsuperscript{13} Although the HEDIS measure for persistent asthma has been commonly used to both measure health plan performance and disseminate the rankings to the general public,\textsuperscript{14–21} there is no published research evaluating the measure’s ability to predict persistent asthma or asthma-related utilization outcomes. The objective of this study was to evaluate the current HEDIS asthma measure by examining asthma-related utilization outcomes for health plan members identified through administrative databases as having persistent asthma using the current HEDIS criteria.

\section*{METHODS}
\subsection*{Data Sources}
Pharmacy and medical claims, including outpatient, hospitalization, and emergency department (ED) visits, were obtained from 3 health plans in 3 major US geographic regions, including West Coast, Northeast, and statewide regional managed care plans, from January 1999 through June 2001. The overall enrolled membership during the study period consisted of more than 4 million members. The database contains membership information, pharmacy claims, and line-item inpatient, ED, and outpatient service claims. Specifically, the following data elements are generally available in these databases; member demographics, such as age, sex, enrollment history, and geographic region; inpatient UB-92 data, including principal and secondary International Classification of Diseases, Ninth Revision, Clinical Modification\textsuperscript{22} (ICD-9-CM) diagnosis and procedure codes, hospital charges, admission and discharge dates, discharge destination (home, nursing home or rehabilitation facilities, other); outpatient data, including Centers for Medicare and Medicaid Services 1500 data, principal and secondary ICD-9-CM diagnosis codes, Current Procedural Terminology, Fourth Edition\textsuperscript{23} codes, and date of service; and pharmacy data, including generic name, brand name, therapeutic class or generic product identifier, National Drug Code, prescription fill date, refill number, and days’ supply.

\subsection*{Identification of Plan Members with Persistent Asthma}
Patients with persistent asthma were identified based on the denominator criteria for the measure specified in the 2001 HEDIS technical specifications manual.\textsuperscript{13} The eligible population with persistent asthma was identified using 1999 (identification year) data, and their medication use and outcomes were tracked in 2000 (measurement year). Eligible patients who had a dispensed prescription for asthma in 2000 were followed up for 6 months for the presence of an ED visit or hospitalization claim.

The HEDIS criteria for health plan members with persistent asthma include any of the following: (1) at least 4 asthma medication-dispensing events, (2) at least 1 ED visit with asthma (ICD-9-CM code 493) as the primary diagnosis, (3) at least 1 hospitalization with asthma (ICD-9-CM code 493) as the primary diagnosis, or (4) at least 4 outpatient asthma visits with asthma (ICD-9-CM code 493) as 1 of the listed diagnoses and at least 2 asthma medication dispensing events.\textsuperscript{13} The list of asthma medications used in this study was obtained from the NCQA Web site (www.ncqa.org). According to the HEDIS definition, a dispensing event is defined as 1 prescription of an amount lasting 30 days or fewer.\textsuperscript{13} For prescriptions longer than 30 days, the days’ supply was divided by 30 and rounded up.\textsuperscript{13} Health plan members between the ages of 5 and 56 years as of December 31, 1999, and continuously enrolled for the entire study period were identified according to the HEDIS denominator criteria. Only one gap in enrollment of up to 45 days during each year of continuous enrollment was allowed, which is consistent with the HEDIS criteria.

\subsection*{Controller Use among Eligible Members}
The eligible population was classified into 2 cohorts, single controller cohort and no controller cohort, based on their medication use in 2000 (measurement year). Single controllers included inhaled corticosteroids only, mast cell stabilizers only, leukotriene inhibitors only, or methylxanthines only. Patients using long-acting β-agonists were excluded from the single controller cohort, because long-acting β-agonists are recommended in addition to inhaled corticosteroids and are not included in the numerator for the HEDIS asthma measure. Cohort classification was not restricted by use of a short-acting β-agonist. Eligible patients in this group, in addition to prescriptions for inhaled corticosteroids, may have had prescriptions for a short-acting β-agonist.

Most of the misclassification of persistent asthma was considered to be with the patients with the mildest persistent disease by National Asthma Education and Prevention Program (NAEPP) criteria. Therefore, to operationalize mild persistent asthma for this study, potential participants were limited to patients who took only 1 class of long-term control medications. Also, in an attempt to further avoid including persons with moderate or severe persistent asthma, patients taking a particular controller medication and switching to or augmenting their therapy with another controller medication were also excluded from this study. The members in the no-controller cohort did not receive any of these long-term controller medications for asthma.

\subsection*{Index Date Assignment}
For patients in the single controller cohort, the date corresponding to the first prescription claim for a long-term asthma control medication in 2000 was assigned as the index date. For patients in the no-controller cohort, the claim date of the first asthma-related noncontroller or short-term relief medication was assigned as the index date. If patients did not have any asthma-related prescriptions dispensed in 2000, then July 1, 2000, was assigned as the index date. A sensitivity analysis was performed and found no differences in
study results when patients without any dispensed asthma-related prescriptions were assigned various alternative index dates, including April 1, 2000, and October 1, 2000.

Adherence-Based Group Classification
For the single controller cohort, the patients were further classified into 3 subgroups based on their total days’ supply of an asthma controller during the 6-month postindex period (data available through June 2001): (1) single controllers with less than 120 days’ supply (low adherence), (2) single controllers with 120 or more and less than 180 days’ supply (medium adherence), and (3) single controllers with 180 or more days’ supply (high adherence). Days’ supply of individual controllers was derived from the claims data. The days’ supply field is completed by the pharmacy and represents the estimated number of days it should take the patient to complete the course of treatment dispensed, adjusting for drug potency, prescriber’s directions, and quantity of the medication dispensed. Because most patients were prescribed an inhaled corticosteroid, these patients were compared with patients in the no-controller cohort in a separate analysis using the same adherence classification described herein.

Outcomes
The primary outcome of interest was the proportion of patients with mild persistent asthma who had 1 or more asthma-related ED visits or hospitalizations in the 6 months following the index date. Asthma-related hospitalizations or ED visits were identified by an ICD-9-CM diagnosis of 493.xx as the principal diagnosis.

Statistical Analysis
To ensure accuracy of the data, the medical and pharmacy claims were reviewed for internal consistency and checked for influential outliers. Descriptive statistics were used to evaluate the distribution of study variables and the associations between independent and dependent variables. Analyses included univariate and bivariate summary statistics and frequency tables, as well as multivariate logistic regression analysis, controlling for specific covariates. Multivariate logistic regressions (using the SAS statistical software, version 8.2, PROC LOGISTIC procedure; SAS Inc, Cary, NC) were used to evaluate the association between long-term controller therapy for persistent asthma and asthma-related hospitalizations or ED visits. The covariates or observed independent variables controlled for in the analysis included the following: demographic characteristics, such as age, sex, and health plan; preindex utilization, including whether or not the patient had an ED or inpatient visit; and dispensed prescription counts for the following medications: short-acting β-agonists, inhaled corticosteroids, methylxanthines, mast cell stabilizers, and oral steroids. In the absence of relevant clinical data, these covariates acted as markers, or proxies, for asthma severity. Furthermore, 2 sets of analyses were conducted: one including and another excluding patients without any asthma medications in 2000, because it was hypothesized that these patients may not truly have persistent asthma in the measurement year.

RESULTS
Medication Use by Patients Identified as Having Persistent Asthma
Table 1 provides asthma medication utilization data for the year 2000 for patients identified as having persistent asthma in 1999 using the HEDIS criteria. There were 31,287 patients on the West Coast, 9,938 in the Northeast, and 8,412 in the regional plan who met the HEDIS criteria for persistent asthma. Across all 3 plans there was a high percentage of patients who were identified as having persistent asthma in 1999 but who received no asthma medications during the measurement year (2000). In the West Coast plan, more than 30% of patients who met the HEDIS criteria for persistent asthma in 1999 had no asthma medications (relievers or controllers) in 2000; these numbers are smaller but still

| Table 1. 2000 Medication Utilization of Patients Identified as Having Persistent Asthma in 1999 |
|---------------------------------|-----------------|-----------------|-----------------|
|                                | West Coast | Northeast | Regional plan | Overall |
| Patients meeting HEDIS criteria for persistent asthma in 1999, continuously enrolled in 1999 and 2000 | 31,287 | 9,938 | 8,412 | 49,637 |
| Single controller cohort | 10,619 (33.9) | 4,071 (41.0) | 3,026 (36.0) | 17,716 (35.7) |
| Inhaled corticosteroid group | 7,817 (25.0) | 2,742 (27.6) | 1,607 (19.1) | 12,166 (24.5) |
| Leukotriene modified group | 1,377 (4.4) | 783 (7.9) | 719 (8.5) | 2879 (5.8) |
| Mast cell stabilizer group | 888 (2.8) | 383 (3.9) | 296 (3.5) | 1,567 (3.2) |
| Methylxanthines group | 537 (1.7) | 163 (1.6) | 404 (4.8) | 1,104 (2.2) |
| No-controller cohort | 15,853 (50.7) | 3,602 (36.2) | 3,341 (39.7) | 22,796 (45.9) |
| No asthma medications | 9,405 (30.1) | 1,827 (18.4) | 1,447 (17.2) | 12,679 (25.5) |
| No-controller asthma medication | 6,448 (20.6) | 1,775 (17.9) | 1,894 (22.5) | 10,117 (20.4) |
| Patients using dual controllers and others excluded from study cohorts | 4,815 (15.4) | 2,265 (22.8) | 2,045 (24.3) | 9,125 (18.4) |

Abbreviation: HEDIS, Health Plan Employer Data and Information Set.
considerable for the Northeast and regional plans (18.4% and 17.2%, respectively).

Of the West Coast patients, 10,619 (33.9%) were in the single controller cohort and 15,853 (50.7%) were in the no-controller cohort. In the Northeast plan, 4,071 (41.0%) were in the single controller cohort and 3,602 (36.2%) were in the no-controller cohort. In the regional plan, 3,026 (36.0%) were in the single controller cohort and 3,341 (39.7%) were in the no-controller cohort. The remainder of patients (15.4%, 22.8%, and 24.3% in the West Coast, Northeast, and regional plans, respectively) did not fit the criteria for either cohort and were not included in the analysis.

Of those patients in the single controller group, most were dispensed an inhaled corticosteroid. Nearly 74% of the West Coast patients and approximately 67% of the patients in the Northeast received an inhaled corticosteroid, whereas only 13% in the West Coast plan and 19% in the Northeast plan were prescribed leukotriene modifiers. Compared with the West Coast (5.1%) and Northeast (4.0%) plans, the regional plan had the highest percentage of single controller patients who were prescribed methylxanthines (13.3%).

Of the single controller cohort patients, 12.9% were moderately adherent (≥120 days’ and <180 days’ supply) and 3.9% were very adherent (≥180 days’ supply) to their controller medication. Among single controller patients receiving an inhaled corticosteroid, these percentages were much lower: 6.7% were moderately adherent and only 1.6% were very adherent.

Asthma-Related Adverse Events
The average ED visit–hospitalization rate was lowest for the no controller cohort (1.1%) compared with the ED visit–hospitalization rates for the single controller cohort (2.5%, P < .001) and the inhaled corticosteroid subcohort (2.5%, P < .001). The percentage of patients with an asthma-related postindex ED visit or hospitalization decreased with increasing adherence to controller medication. For the single controller cohort, asthma-related postindex ED visits or hospitalizations occurred in 2.7% of nonadherent (<120 days’ supply) patients, 1.6% of moderately adherent (≥120 days’ and <180 days’ supply) patients, and 1.3% of very adherent (≥180 days’ supply) patients (P < .001). For the inhaled corticosteroids subgroup of the single controller cohort, adverse event rates were even lower as adherence improved, with the high adherence subgroup having the lowest percentage of members who had a postindex ED visit or hospitalization (0.5%). The ED visit–hospitalization rate for patients using inhaled corticosteroids was 1.3% for moderately adherent members and 2.6% for nonadherent members (P = .02, across the 3 adherence categories). Figure 1 presents the rates of ED visit or hospitalization for patient subgroups defined by the minimum days’ supply of long-term controller medication, plotted for single controller cohort and inhaled corticosteroids subgroup, together with the ED visit–hospitalization rate for no controller cohort presented for comparison.

Multivariate logistic regression analysis comparing patients within the single controller cohort, stratified by adherence levels, to the no controller cohort demonstrated that patients in the single controller cohort had a steadily decreasing likelihood of having a postindex asthma-related ED visit or hospitalization as adherence increased (Table 2). The single controller cohort low adherence subgroup had a statistically significant higher odds ratio (OR) of a postindex asthma-related ED visit or hospitalization (OR, 1.72; 95% confidence interval [1.42–2.08]). For the inhaled corticosteroid subcohort (2.5%, P < .001), the odds ratio of postindex asthma-related ED visit or hospitalization was 1.3% (95% confidence interval [1.05–1.62]).

Table 2. Likelihood of a Postindex Emergency Department–Inpatient Visit Comparing Single and No-Controller Groups

<table>
<thead>
<tr>
<th>Odds ratio (95% confidence interval)</th>
<th>Use and adherence of single controller†</th>
<th>Demographic characteristics</th>
<th>Preindex utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low adherence (yes = 1, no = 0)</td>
<td>1.72 (1.42–2.08)</td>
<td>Age</td>
<td>1.00 (0.99–1.00)</td>
</tr>
<tr>
<td>Moderate adherence (yes/no)</td>
<td>0.84 (0.57–1.23)</td>
<td>Male</td>
<td>1.02 (0.87–1.20)</td>
</tr>
<tr>
<td>High adherence (yes/no)</td>
<td>0.70 (0.34–1.44)</td>
<td>West Coast plan</td>
<td>1.08 (0.89–1.32)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Regional plan</td>
<td>0.97 (0.74–1.27)</td>
</tr>
<tr>
<td>ED-inpatient visits (yes/no)</td>
<td>6.90 (5.84–8.15)</td>
<td>Inhaled corticosteroid</td>
<td>0.90 (0.86–0.95)</td>
</tr>
<tr>
<td>SABA prescriptions</td>
<td>1.03 (0.99–1.07)</td>
<td>LTM prescriptions</td>
<td>1.00 (0.94–1.06)</td>
</tr>
<tr>
<td>Inhaled corticosteroid prescriptions</td>
<td>0.90 (0.86–0.95)</td>
<td>Oral steroids prescriptions</td>
<td>1.18 (1.14–1.22)</td>
</tr>
<tr>
<td>LTM prescriptions</td>
<td>1.00 (0.94–1.06)</td>
<td>Methyloxanthine prescriptions</td>
<td>1.05 (1.00–1.11)</td>
</tr>
<tr>
<td>Oral steroids prescriptions</td>
<td>1.18 (1.14–1.22)</td>
<td>Mast cell stabilizers</td>
<td>0.95 (0.86–1.05)</td>
</tr>
<tr>
<td>Methyloxanthine prescriptions</td>
<td>1.05 (1.00–1.11)</td>
<td>No medications in 2000 (yes/no)</td>
<td>0.33 (0.26–0.41)</td>
</tr>
</tbody>
</table>

Abbreviations: ED, emergency department; LTM, leukotriene modifier; SABA, short-acting β-agonist.
* Sample sizes for the patient groups are as follows: single controllers: low adherence, n = 14,733; moderate adherence, n = 2,284; high adherence, N = 699; and no controllers, n = 22,796.
† Low adherence is defined as days’ supply of 120 days or fewer, moderate adherence as days’ supply of 120 or more to 179 or fewer days, and high adherence as days’ supply of 180 days or more.
DISCUSSION

This study evaluated the HEDIS Use of Appropriate Medications for People with Asthma measure. We examined the positive predictive value of HEDIS criteria designed to define a cohort of health plan enrollees with persistent asthma by NAEPP criteria and evaluated the likelihood of experiencing an asthma-related adverse outcome (1 or more asthma-related ED visits or hospitalizations) among patients receiving different types of controller therapy and with different adherence to therapy. We found that more than 25% of patients identified as persistent asthmatic patients by the HEDIS criteria in 1999 (identification year) did not receive any asthma medication (neither control nor relief) in the following year (measurement year), suggesting that these patients might not have persistent asthma. This hypothesis is further supported by the finding that persons identified as having persistent asthma using the current HEDIS definition who received at least 1 type of long-term controller medication had a statistically significant higher proportion of asthma-related adverse events compared with those not receiving appropriate therapy. (This analysis controlled for demographic characteristics and baseline medication use.) These findings suggest that the Use of Appropriate Medications for People with Asthma HEDIS indicator, as currently written, probably identifies both persons with mild persistent and those with intermittent disease.

To further examine this effect, we stratified the study population into subgroups with low, medium, and high adherence of controller medication use based on the total days’ supply during the 6-month follow-up period. The results show that low adherence is associated with a significantly higher likelihood of having an asthma-related ED visit or hospitalization. These findings indicate possible value in developing HEDIS asthma measures that incorporate the construct of controller adherence as a way to measure health plan performance.

The HEDIS definition for appropriate long-term therapy, which currently includes several classes of medications, was further examined by stratifying the patients by the type of controller medication. When the subgroup of patients taking inhaled corticosteroids was compared with the patients not taking any long-term control medications for asthma, the compliant inhaled corticosteroid patients (≥180 days’ supply) had the lowest risk of having an asthma-related ED visit or hospitalization in the follow-up period, even after controlling for preindex ED and hospitalization events. Although this finding was not statistically significant at the P < .05 level, it is consistent with the evidence from prior studies that demonstrate the superior efficacy of inhaled corticosteroids. Additional evaluation of inhaled steroids vs other controllers by directly comparing outcomes in those 2 groups is required, the evidence presented in this study indicates the need to reevaluate the equal weighting of inhaled corticosteroids and other alternative long-term control therapies in the current HEDIS definition for appropriate therapy.

The HEDIS definition for persistent asthma used to define the denominator for this measure was also examined. More than 25% of plan members identified as having persistent asthma in 1999 were not dispensed any asthma medication, neither control nor relief, in 2000. Inclusion of these patients in the no-controller cohort lessened the ability of this study to
detect the protective effect of single controllers, including inhaled corticosteroids, since none of these patients without any asthma medications in 2000 had an asthma-related ED visit or hospitalization in the follow-up period. Unfortunately, our data did not allow us to evaluate whether these members were truly asymptomatic or atypical in other ways. The misclassification of these enrollees as having persistent asthma may have contributed to the unexpected results obtained in this study, where patients receiving long-term controller medication were more likely to have an asthma-related adverse outcome than patients not taking any long-term controller medication. Under the HEDIS criteria, any patient with an asthma prescription supply for 120 days or more is classified as having persistent asthma. (However, the HEDIS calculation of dispensing events for prescriptions longer than 30 days includes rounding that may reduce even further the asthma medication supply requirement used to identify patients with persistent asthma.) Such broad criteria allow for the inclusion of many one-time users of asthma medication who may not have persistent asthma. It is also possible that some patients were incorrectly diagnosed as having asthma in 1999 and, thus, were incorrectly classified as having persistent asthma. Furthermore, since several asthma medications are also prescribed for other respiratory conditions, such as chronic obstructive pulmonary disease, the eligible population identified by the HEDIS criteria in this study may include many patients who do not truly have asthma. Although it is important to note that most of the chronic obstructive pulmonary disease patients are excluded by the age criteria (<56 years of age).

This study, along with other recent literature, suggests ways to improve the HEDIS asthma measure. First, with increasing evidence demonstrating that inhaled corticosteroids are the preferred primary therapy for patients with persistent asthma, it may be reasonable to consider limiting the HEDIS criteria to this class of drugs. The use of a single inhaler that contained both an inhaled corticosteroid and a long-acting bronchodilator has been shown to result in high patient adherence and positive clinical outcomes. Although the documentation accompanying the HEDIS measure acknowledges that inhaled corticosteroids are “preferred” therapy, the current HEDIS asthma measure, keeping in line with the NAEPP asthma guidelines, gives equal weight to inhaled corticosteroids, mast cell stabilizers, leukotriene inhibitors, and methylxanthines.

Second, although previous research shows that asthma is a chronic disease with a variable course over time, the HEDIS measure classifies patients as having persistent asthma based on medical services and pharmaceutical use in the year before the measurement year. The HEDIS measure thereby encompasses 2 different periods for the denominator and numerator for each patient and assumes that patients identified as having persistent asthma in the identification year will still be persistent asthmatic patients during the measurement year. Clinically, however, asthma is a dynamic process, and patients seldom stay in their initial category. In this study more than 25% of patients identified as having persistent asthma in 1999 (identification year) filled no prescriptions for asthma medication in the following year (measurement year). A possible refinement to the definition of persistent asthma is to use the same criteria in both the identification and the measurement periods to eliminate any possible false-positive results from the denominator in the measurement year. Also, to further reduce the false-positive rate in the identification of persistent asthmatic patients, it may be prudent to exclude patients using methylxanthines from the denominator for the HEDIS measure. Another alternative would be to require that 1 or more diagnoses of asthma are associated with the identified asthma medication-dispensing events for the patients.

Third, although evidence supports the importance of sustained and regular use of long-term control medications for patients with persistent asthma, the HEDIS measure numerator requires only 1 dispensed controller prescription for inclusion. Thus, the HEDIS measure does not distinguish between the management of patients who received only 1 dispensed prescription for a controller and those who received asthma controller medication regularly over time. Refining the HEDIS measure to include a measure of adherence may improve its predictive utility.

Potential limitations of this study are important to note. First, the HEDIS measures are primarily designed to allow plan-to-plan comparisons. The misclassification of intermittent and mild persistent asthma patients is suboptimal for precise performance measurement; however, it is most problematic only if such misclassification varies across health plans. We were not able to meaningfully evaluate the extent of interplan variation in such misclassification across plans. Second, as others have done, this study used the days’ supply of controller medication as a proxy for medication adherence. Days’ supply is an approximation of actual medication use, which would require such data as obtained from patient reporting or chronometer monitoring. A related limitation of this study is a lack of certain asthma-associated clinical information not typically available from claims data, such as smoking. Third, asthma-related adverse events limited to ED visits or hospitalizations were used as the outcome measure in this study. Although these asthma-related events evaluate only the acute exacerbation rate, these data are commonly used outcome indicators, because they are readily available from administrative claims data. Fourth, patients who switched between different classes of long-term controllers during the measurement period were excluded from this study but are included in the HEDIS measure. These patients, together with the patients who use more than one controller, are likely to have more severe asthma and should be analyzed separately. Fourth, the population studied consisted of mainly commercially insured patients from 3 regions in the United States and had a relatively low asthma event rate. Further analysis of the predictive utility of the HEDIS measure for persistent asthma in populations from other parts of the country and in noncommercially insured or uninsured popu-
lations (for instance, Medicaid) may help evaluate the generalizability of this study’s findings to other asthmatic populations.

CONCLUSION

Our study suggests that the HEDIS measure Use of Appropriate Medications for People with Asthma, as it is currently specified, may mislabel a substantial number of patients as having persistent asthma when they actually have intermittent asthma. However, the effect of this misclassification in plan-to-plan comparisons is as yet unknown. We also noted opportunities to improve the numerator specification by adding a measure of adherence, thereby making it more consistent with optimal patient outcomes. To the extent that payers use the HEDIS asthma measures in provider contracting and reimbursement policies, they need to be cautious about interpreting absolute rates of performance. In addition, health plans are trickling down the HEDIS measurement to the physician level not only for quality evaluation purposes but also in pay-for-performance reimbursement models. Since the HEDIS measurement set provides the basis for so many of these activities, there is a great need to continually and systematically evaluate the scientific characteristics of the individual HEDIS metrics to ensure that they are valid and reliable and can be used to promote the highest possible quality of care.

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