

Comparison of Administrative-only Versus Administrative Plus Chart Review Data for Reporting HEDIS Hybrid Measures

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The use of clinical performance measures for public reporting and accountability has grown rapidly in the last decade. Spurred on by the Institute of Medicine (IOM) report, *Crossing the Quality Chasm*,¹ and further accelerated by programs in public and private sectors,² use of clinical performance measurement has reached a broad audience.³ These efforts have increased attention on clinical performance measurement both in the hospital sector and with physicians through the implementation of the Physician Quality Reporting Initiative (PQRI). An executive order signed by President George W. Bush in August 2006 created an additional impetus for measurement and transparency at all levels of the healthcare system.⁴ The US Department of Health & Human Services Secretary Michael Leavitt has given his strong support to the implementation of a series of regional projects called “value exchanges” in which administrative data from private health plans in a given region will be combined with Medicare data, and potentially Medicaid data, for measurement at the individual hospital and physician level.⁵

These efforts assume that measurement of clinical performance at the medical group or physician level will be sufficiently accurate to allow ranking or tiering. At the level of physician ambulatory care practice, there are 3 main sources of data for performance measurement: patient surveys, medical charts, and electronic data commonly referred to as administrative data. (The term “administrative” should, strictly speaking, only be used to refer to data, such as claims or demographic information, which is used for administration purposes. However, current usage of the term often includes data that are clinical, such as laboratory results. We will use the term “electronic data” to include both broadly defined administrative data, as well as data flowing directly from electronic medical records.) While valuable in their own right, surveys of patient experiences of care are relatively expensive and difficult to administer and are not sufficient to address the technical quality of clinician performance.

A number of past studies^{6,9} have questioned the utility of administrative data for characterizing clinical quality. However, the studies focused on a single disease or measure, included only physician visit or hospital claims, and did not consider the inclusion of pharmacy claims, laboratory claims, or laboratory results. The future holds the promise of expanding electronic data to include not only laboratory results in an electronic format, but also data from electronic health records. Due to a variety of problems including interoperability, lack of standardized coding schemes, and the

Objective: Health plans, medical groups, and commercial vendors are using administrative data to measure clinical performance at the plan or physician level. We compared results of using administrative claims data alone versus administrative data combined with chart review for selected Healthcare Effectiveness Data and Information Set (HEDIS) measures.

Study Design: Cross-sectional comparison of health plan performance rates using different methods of data collection.

Methods: We analyzed data reported by 283 commercial managed care plans in 2004 and 2006 for 15 HEDIS hybrid measures. Hybrid specifications included the use of administrative data supplemented with medical record review and required plans to report performance rates based on administrative data only and for administrative data supplemented with chart review. We calculated differences in rates and changes in quartile rankings of health plans between the 2 reported rates.

Results: Performance rates using administrative data alone were substantially lower than rates using combined data (average difference of 20.4 percentage points). On average, more than half of the plans had different quartile rankings based on administrative-only rates versus combined data rates. Measures relying on laboratory claims or laboratory results had the largest discrepancies.

Conclusions: Currently available health plan administrative data alone do not appear to provide sufficiently complete results for ranking health plans on HEDIS quality-of-care measures with hybrid specifications. The results suggest that reporting of clinical performance measures using administrative data alone should include prior testing and reporting on the completeness of data, relative rates, and changes in rankings compared with the use of combined administrative data and chart review.

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inability to retrieve some critical data electronically, the widespread availability of data useful for measurement from electronic health records appears to be some years away.¹⁰⁻¹³ Thus, at present, measurement of health plan or physician-level clinical performance relies on either manual data abstraction from medical records or the use of administrative data or some combination of these 2 strategies.

Data abstraction from paper medical records is an expensive and time-consuming process. Thus the use of administrative data is nearly always preferable given comparable levels of accuracy. The question then arises as to whether currently available administrative data consisting of various types of claims data, and in some cases laboratory results, are sufficient to evaluate the quality of clinical care. The report that follows compares performance results from 283 health plans based on their reporting of data on Healthcare Effectiveness Data and Information Set (HEDIS) measures with hybrid specifications. Hybrid specifications allow the use of administrative data supplemented with medical record review and require plans to report performance rates based on both administrative-only data and administrative data supplemented with chart review. The specific study questions were:

1. What is the difference between the health plan performance rates for HEDIS hybrid measures based on administrative-only data collection versus administrative data supplemented by medical record review?
2. Did differences between administrative-only data and combined data diminish between 2004 and 2006?
3. For a given measure, how much do plan rankings by quartile based on that measure change with the addition of medical record data?
4. Do results from the current study and a review of data sources used for HEDIS measures specified for administrative-only data collection suggest which current data sources are not sufficiently accurate to justify administrative-only data for HEDIS and other clinical performance data sets?

METHODS

The National Committee for Quality Assurance (NCQA) has developed an extensive set of HEDIS performance measures. In 2006, 283 commercial health plans submitted HEDIS data and all but 11 of these plans' results were publicly reported in NCQA's annual "State of Health Care Quality"¹⁴ and, in collaboration with *US News & World Report*, in an annual "American's Best Health Plans" report.¹⁵

HEDIS Specifications for Administrative and Hybrid Measures

Based primarily on field tests done during measure develop-

ment, HEDIS health plan measures are specified in 1 of 2 ways: as administrative-only or hybrid data collection (Table 1). Both types of specification use administrative data to identify the eligible population. Measures for which the denominator cannot be accurately determined using administrative data are not included in HEDIS. Measures specified for "administrative-only" data collection require that both the numerator and denominator of the measure are determined using administrative data alone. NCQA currently defines administrative data as including visit, procedure, laboratory, and pharmacy claims, as well as laboratory results data, all of which must be available in an electronic format.

Generally, if in field tests performance rates based on administrative data alone vary by more than 5% from rates based on administrative plus medical record review, the measures are specified for hybrid data collection. Other field-test findings such as a high variance in means may also be considered by the NCQA measurement review panel (the Committee on Performance Measurement or CPM).

Like the administrative-only specification, the hybrid specification requires that administrative data be used to identify all members of the plan that meet the denominator requirements for the eligible population. Still using only administrative data, the plan then determines what proportion of the eligible patients meets the numerator requirements. If in comparing the rates to benchmarks, the administrative data are determined to provide an adequate rate, the plan may report the measure on the full population using administrative-only data. If it is determined that the rate is lower than anticipated, the plan can draw a random sample of 411 members from the denominator eligible population. The sample size of 411 specified by NCQA is based on a statistical estimation of providing an 85% chance of identifying a 5% difference between plans. The plans then conduct chart reviews on medical records of patients who are identified in the denominator but for whom administrative data do not indicate the numerator criteria were fulfilled. The HEDIS documentation gives specific instructions on the sampling method and conduct of chart reviews.¹⁶

The hybrid specification method allows plans that have more complete and accurate administrative data systems report using only administrative data, or at least to reduce the number of chart reviews required by achieving a higher proportion of numerator "hits" using administrative data alone. The NCQA reviews data on hybrid measures on an annual basis to determine whether measures can be moved from hybrid data collection to the administrative-only specification. For example, the breast cancer screening measure changed from hybrid to administrative-only collection in 2005 based on a review of data from prior years and subsequent action by the NCQA CPM.

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■ **Table 1.** HEDIS Effectiveness of Care and Selected Utilization Measures

| | Type of Data Required for Numerator (Claims Unless Otherwise Noted) |
|--|--|
| Administrative-Only Specification | |
| Annual monitoring for patients on persistent medications | Laboratory or procedure (office) |
| Appropriate treatment for children with upper respiratory infection | Pharmacy |
| Appropriate treatment for children with pharyngitis | Pharmacy |
| Breast cancer screening | Procedure (radiology) |
| Chlamydia screening in women | Laboratory |
| Disease-modifying antirheumatic drug therapy in rheumatoid arthritis | Pharmacy |
| Drugs to be avoided in the elderly | Pharmacy |
| Follow-up care for children prescribed attention deficit/hyperactivity disorder (ADHD) medications | Visit |
| Glaucoma screening in older adults | Diagnosis, visit, procedure (office) |
| Inappropriate antibiotic treatment for adults with acute bronchitis | Pharmacy |
| Osteoporosis management for women who had a fracture | Pharmacy, procedure (radiology) |
| Potentially harmful drug-disease interactions in the elderly | Pharmacy |
| Use of appropriate medications for people with asthma | Pharmacy |
| Use of spirometry testing in the diagnosis and management of COPD | Procedure (office) |
| Use of imaging studies in patients with low back pain | Diagnosis, procedure (radiology) |
| Hybrid Specification | |
| Childhood immunization status | Procedure (office) or diagnosis |
| Adolescent immunization status | Procedure (office) or diagnosis |
| Cervical cancer screening | Laboratory |
| Diabetes: HbA1c testing | Laboratory |
| Diabetes: HbA1c control | Laboratory result |
| Diabetes: Cholesterol screening | Laboratory |
| Diabetes: Cholesterol control | Laboratory result |
| Diabetes: Eye examination | Procedure (office) |
| Diabetes: Nephropathy screen | Laboratory result |
| Well-child visits | Visit |
| Well-adolescent visits | Visit |
| Prenatal visit timing | Visit |
| Prenatal visits | Visit |
| Data used: diagnosis, <i>International Classification of Diseases, Ninth Revision (ICD-9)</i> ; procedures, <i>Current Procedural Terminology (CPT)</i> or Healthcare Common Procedure Coding System (HCPCS); laboratory claims or results, Logical Observation Identifiers Names and Codes (LOINC). COPD indicates chronic obstructive pulmonary disease; HbA1c, glycosylated hemoglobin; HEDIS, Healthcare Effectiveness Data and Information Set. | |

Measures

For the present analysis, we included 15 HEDIS measures that were reported using hybrid specifications in HEDIS reporting years 2004 and 2006 and that had consistent specifications across the years of interest. The hybrid measures used in this analysis as well as the set of HEDIS measures currently specified for administrative-only data collection are noted in Table 1.

Study Group

The analyses reported in this paper are limited to 283 commercial health plans. A similar analysis was done for Medicare and Medicaid health plans, but because the results were similar, with somewhat lower overall means and slightly larger increases with use of chart review in Medicaid plans, only the results for commercial plans are included.

Analysis

For each of the selected measures with hybrid reporting specifications, we examined the number and percentage of plans that reported the selected HEDIS hybrid performance measures in 2004 and 2006 data using administrative-only data. For plans reporting rates based on both administrative data alone and administrative data combined with medical chart review for a given measure, we compared mean performance rates based on the 2 data collection approaches. We calculated the mean and standard deviation of the difference between administrative-only performance rate and the rate based on the combined data and ranked plans in quartiles on each of the measures, first with administrative-only and then with combined data. We calculated the number of plans that had a difference in their quartile ranking based on the 2 data

collection methods. Finally, we reviewed the sources of administrative data required for each of the measures with administrative-only and hybrid specifications to determine if a clear pattern developed as to which plan administrative data sources were more or less likely to be complete and accurate.

RESULTS

The proportion of commercial plans that chose to report the hybrid measures using only administrative data was generally small, with less than 5% of plans using administrative-only reporting on 11 of the 15 HEDIS measures. About one fifth of plans reported cervical cancer screening (22.3%) rates based on administrative-only data, while a majority of plans reported the 3 use-of-service measures (*Well-Child Visits 0-15 Months*, *Well-Child Visits 15-34 Months*, and *Adolescent Well Care*) with administrative-only data (69.8%, 70.5%, and 69.7%, respectively). There was little change in the rate of administrative-only data reporting between 2004 and 2006 ([Appendix Table A](#), available at www.ajmc.com). Plans that reported hybrid measures using only administrative data were not included in the subsequent analysis of administrative versus combined data collection.

Comparison of Health Plan Performance Rates Based on 2 Reporting Methods

Table 2 displays the means of performance rates based on administrative-only versus combined data reporting. On all the measures across both years, the administrative mean rates were lower than the combined rates. The average magnitude of the differences between the combined and administrative-only rates was 20.4 percentage points in 2004 and 20.6 in 2006. Considering 2006 rates, only 4 measures—*Cervical Cancer Screening*, the 2 *Well-Child Visits* measures, and *Adolescent Well Care*—showed differences between administrative-only and combined data rates of less than 9 percentage points.

Converting the percentage point differences to percentage difference (ie, percentage [rather than percentage point] increase in rate afforded on average by using combined data) indicates that in 2006, only the 3 visit utilization measures (the 2 *Well-Child Visits* measures and *Adolescent Well Care*) were close to the 5% threshold used when changing from hybrid to administrative-only data specification ([Appendix Table B](#), available at www.ajmc.com). Given that most plans already chose to report these 3 hybrid measures using administrative data alone ([Appendix Table A](#)), the differences in rates if all plans used and reported combined data would be expected to be even smaller.

Impact on Plan Rankings

Even where the gaps between mean performance rates

based on administrative and combined data are large, ranking plans based on administrative-only performance rates might be accurate if differences in the means using the 2 methods were consistent between plans. The standard deviation of the differences ([Table 2](#)) suggests that this is not the case. Our examination of changes in quartile ranking of plans ([Appendix Table B](#)) confirms this inference. For most hybrid measures, a large proportion of plans change their quartile rank when one moves from rates using only administrative data to combined data. For measures such as glycosylated hemoglobin (HbA1c) testing or screening for cholesterol, the proportion of plans that changed quartiles exceeded 60%, indicating a highly unstable classification when moving from administrative data to combined data.

Type of Data Required and Validity of Administrative Data

Based on analysis of hybrid measures and a review of the measures that are currently specified for administrative data collection only ([Table 1](#)), it appears that measures relying on administrative data from visits, diagnostic tests, pharmacy claims, and in some cases laboratory or major procedure claims, may be sufficient at the health-plan level. In the present study we found no accurate administrative-only data results that required laboratory values and only 2 of 6 using laboratory claims (annual monitoring of persistent medications and chlamydia screening). The reasons for incompleteness of claims data for laboratory tests is not immediately apparent. Informal interviews with several health plan medical directors who reviewed a prior version of this report indicated that contracts with smaller laboratories are often capitated or bundled, and thus claims do not indicate which individual tests are done.

DISCUSSION

For most HEDIS hybrid measures, we found substantial underestimation and instability of plan rankings when comparing mean performance rates and rankings based on administrative-only data versus administrative data supplemented with medical record review. For 12 of the 15 measures examined, the means were substantially lower using rates based on administrative data alone.

Only 3 visit-based measures, *Well-Child Visits at 0-15 Months*, *Well-Child Visits at 15-34 Months*, and *Adolescent Well Care*, were close to or in the range of HEDIS conventions for moving from hybrid to administrative-only specification.

These findings raise questions about the accuracy of administrative data alone for a number of clinical performance measures. The problems with administrative data may be even

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Table 2. Health Plan Performance Rates for HEDIS Measures With Hybrid Specifications Based on Combined Administrative and Chart Review Data Versus Administrative-only Data, Commercial HMOs, 2004 and 2006

| Measure | Commercial 2004 | | | | | Commercial 2006 | | | | |
|---|-----------------------------|--------------------------|--------------------------------|------------------------|-------------------------|-----------------------------|--------------------------|--------------------------|------------------|-------------------------|
| | Mean Admin + Chart Rate (%) | Mean Admin Only Rate (%) | Difference of Mean Rates (Pts) | SD of Difference (Pts) | No. Plans >10 Pt Change | Mean Admin + Chart Rate (%) | Mean Admin Only Rate (%) | Difference of Mean Rates | SD of Difference | No. Plans >10 Pt Change |
| 1. Childhood immunization status (combo 2) | 69.73 | 24.42 | -45.32 | 19.80 | 258 | 77.77 | 34.32 | -43.46 | 21.68 | 240 |
| 2. Adolescent Immunization status (combo 2) | 41.52 | 4.49 | -37.03 | 20.49 | 246 | 53.71 | 7.35 | -46.36 | 22.51 | 246 |
| 3. Cervical cancer screening | 81.78 | 74.61 | -7.17 | 9.18 | 57 | 81.83 | 75.68 | -6.15 | 8.60 | 42 |
| 4. Beta-blocker after heart attack | 94.3 | 67.02 | -27.28 | 16.26 | 190 | 96.62 | 72.32 | -24.30 | 13.31 | 178 |
| 5. Diabetes: HbA1c testing | 84.57 | 71.88 | -12.68 | 12.80 | 148 | 87.55 | 77.04 | -10.51 | 13.74 | 78 |
| 6. Diabetes: Poor HbA1c control | 31.89 | 57.25 | 25.35 | 32.10 | 245 | 29.66 | 61.34 | 31.69 | 29.69 | 234 |
| 7. Diabetes: Eye examinations | 48.78 | 36.33 | -12.45 | 9.51 | 145 | 54.82 | 40.60 | -14.22 | 10.28 | 189 |
| 8. Diabetes: Cholesterol screening | 88.42 | 77.43 | -10.98 | 12.84 | 97 | 92.27 | 83.23 | -9.04 | 13.96 | 49 |
| 9. Diabetes: Cholesterol control (LDL <130 mg/dL) | 60.48 | 25.03 | -35.45 | 22.28 | 239 | 67.51 | 29.84 | -37.67 | 23.55 | 234 |
| 10. Diabetes: Screening for nephropathy | 48.27 | 36.98 | -11.29 | 9.34 | 131 | 55.13 | 45.31 | -9.82 | 10.06 | 71 |
| 11. Well-child visits for age 0-15 months | 66.56 | 63.11 | -3.45 | 8.32 | 35 | 71.04 | 67.79 | -3.25 | 6.71 | 31 |
| 12. Well-child visits for age 15-34 months | 62.69 | 60.68 | -2.01 | 5.49 | 21 | 65.54 | 63.84 | -1.70 | 4.56 | 12 |
| 13. Adolescent well care | 37.07 | 34.76 | -2.31 | 5.79 | 19 | 38.71 | 36.66 | -2.06 | 4.43 | 15 |
| 14. Timeliness of prenatal care | 89.34 | 49.61 | -39.73 | 21.72 | 252 | 91.85 | 55.33 | -36.52 | 20.49 | 235 |
| 15. Postpartum care | 80.2 | 47.30 | -32.91 | 17.81 | 249 | 81.51 | 48.82 | -32.70 | 17.44 | 231 |

HbA1c indicates glycosylated hemoglobin; HEDIS, Healthcare Effectiveness Data and Information Set; HMO, health maintenance organization; LDL, low-density lipoprotein; Pt, patient; SD, standard deviation.

greater with physician-level measurements, which have smaller sample sizes and greater heterogeneity of patient populations than at the plan level. It is important, in this regard, to note that health plans vary substantially in the sophistication and completeness of their data systems. Some plans may be able to derive accurate data using administrative-only data measures beyond those requiring only visit, pharmacy, and major procedure claims. It may also be the case that administrative data, or broader electronic data collected by some physician groups, could be more complete than that collected by plans. However, our analysis suggests that plans or others who use administrative-only data in clinical performance measurement should undertake and make public information documenting the accuracy of using administrative-only data in relationship to combined (administrative plus chart review) data.

Limitations of the Study

Although the proportion of plans doing so is small for most

measures, and therefore unlikely to have substantially changed the results, we point out (Appendix Table A) that some plans chose to report HEDIS hybrid measures with administrative-only data. The effect of this is unknown, but the plans that reported administrative-only data for hybrid measures score, on average, below those that reported combined data. There is also an assumption that health plan databases reflect the same range and availability of data as other potential data sources. As noted, some large medical group databases may have much fuller capture of laboratory claims or results. Conversely, other databases, such as the current CMS Medicare database, do not yet include any laboratory results, and the accuracy and completeness of pharmacy claims in Medicare is as yet unknown.

This study was done with data from plans that report HEDIS data to NCQA on their commercial populations. Our analysis was limited to a subset of HEDIS measures. In addition, the parameters for determining which measures are

Take-away Points

For HEDIS measures that are specified for reporting using a combination of administrative data and chart review data, using administrative data alone does not appear to be sufficient to estimate performance

- Currently available health plan administrative data sets, whether from individual plans or pooled across plans, are unlikely to support accurate comparisons of plans or physicians on many quality measures, most notably those measures that rely on laboratory claims or laboratory results.
- The completeness and accuracy of measures relying exclusively on administrative data should be evaluated carefully prior to implementation.

specified as hybrid are set by the NCQA CPM. While the CPM includes among others, practicing physicians, physician organizations, health plan medical directors, and technical experts in measurement, the parameters may not reflect full consensus related to this issue. Finally, we are aware of plans and some medical groups in which either data are widely available from interoperable electronic medical records or where there is nearly complete electronic data on laboratory results. It is possible that these plans or groups could use these electronic data as the sole basis for a much broader array of clinical performance measures.

CONCLUSIONS

These results should only be on a starting point for determination of which measures may be reported using administrative-only data from a specific data source. Clearly, there is enough uncertainty for each measure that the source of data for that measure should be tested and, where possible, published before use for accountability at any level of the healthcare system. The growing effort to try to include all physician practices and achieve an adequate sample size of patients by combining administrative data from multiple plans does not address the problem of data accuracy raised in this study. Indeed, such pooling of data may actually reduce the accuracy of the administrative data by including data sources that are less complete. Likewise, addressing the inherent reliability and validity of measures themselves, or issues such as attribution, while important, do not mitigate the need to explore the completeness and accuracy of using a specific source of administrative data.

Attempts are being made to expand the range of administrative data through the use of new claims-related codes (termed CPT-II or "G" codes). However, we are unaware of studies of the accuracy, reliability, and validity of using CPT-II or G codes in clinical quality measures. Finally, a relatively small but increasing proportion of physician practices have the ability to augment existing electronic claims data with data abstracted from electronic medical records. However, due to a variety of problems including compatibility and lack of standardization,

the widespread availability of data from electronic medical records that could be used in measurement appears some years away. Thus, there is a critical and urgent need to both identify and carefully evaluate new data approaches and methods to improve the availability, completeness, and accuracy of data for quality monitoring and reporting.

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