Health Care Provider Quality Improvement Organization Medicare Data-Sharing: A Diabetes Quality Improvement Initiative.

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Abstract

Background: *This paper describes a collaborative Medicare claims data linkage and sharing effort between the Baylor Health Care System (BHCS) and Texas Medical Foundation (TMF, the Texas Quality Improvement Organization) designed to assess the effect of three quality improvement interventions on care delivered to elderly patients with diabetes. The randomized controlled trial is being conducted among a network of primary care physician practices owned by BHCS and focuses on measures of care process and outcome.*

Methods: *Cohort definition and baseline measurement took place between January 1 and December 31, 2000. BHCS administrative data and TMF-supplied Medicare enrollment data were used to define the January 1, 2001 prevalence cohort of Medicare diabetic beneficiaries meeting study inclusion criteria. A total of 22 practices (with 92 physicians and 2,158 patients) were randomized to one of three interventions, each of which involved performance measurement feedback on three claims-based measures of care process. Physician profiles, generated by TMF using Medicare utilization files, were reported to study physicians via academic detailing sessions with a BHCS physician educator.*

Results: *The January 1 – December 31, 2000 baseline Medicare claims for the January 1, 2001 prevalence cohort were provided to HTPN by TMF in October 2001, representing a ten-month lag in the ability of Quality Improvement Organizations to provide Part B data relative to a specific episode of care time frame. Overall baseline rates for the claims-based process measures were: annual HbA_{1c} testing (86.1%), annual eye examination (60.8%), and annual lipid profile (72.5%). As anticipated, medical-record based rates of annual eye examination were significantly underrepresented. Agreement between claims-based and medical record-based measures was very close for annual HbA_{1c} and annual lipid profile.*

Conclusions: *The use of Medicare claims data, through collaboration with a QIO, can help health care providers overcome a significant barrier associated with quality improvement initiatives. Limitations associated with the use of Medicare claims can impact implementation of intervention strategies, but do not prevent them from being a practical tool for improving care.*

Background

Performance measurement feedback is an important component of quality improvement initiatives targeting diabetes care. Interventions that include feedback on process of care measures can have a positive effect on the quality of care delivered to diabetic patients [1, 2]. A significant barrier for health care providers in implementing such interventions is easy access to a reliable and complete data source. Studies have demonstrated the effectiveness of using Medicare enrollment and utilization files to accurately identify elderly patients with diabetes, as well as profile their care [3, 4]. Access to Medicare claims-based summary reports is available to health care providers through partnerships with their state's Quality Improvement Organizations (QIOs).

The Baylor Health Care System (BHCS) has partnered with the QIO in Texas - Texas Medical Foundation (TMF) - in a cooperative project designed to measure the effect of three quality improvement interventions on care delivered to elderly patients with diabetes. The randomized controlled trial (RCT) is being conducted among a network of primary care physician practices – the Health Texas Provider Network (HTPN) - owned by BHCS and focuses on measures of care process and outcome. Project interventions include: 1) Medicare claims-based performance measurement feedback, 2) Claims and medical record-based feedback, and 3) Both types of measurement feedback in conjunction with diabetes resource nurse (DRN) care coordination. The aim of the project is to estimate the value of these three interventions by evaluating the process and outcome of care effects, in relation to their costs. This paper describes the BHCS-TMF partnership as it pertains to the access and use of QIO-supplied Medicare claims in both defining the project cohort and providing intervention feedback.

Methods

Provider/Patient Identification

Study cohort definition and baseline measurement took place between January 1 and December 31, 2000. To be included in the study, HTPN practices had to be part of the BHCS for one

year, have at least ten diabetic patients with Medicare coverage, and have no previous intervention exposure. Within each participating practice, physicians were included if their specialties were internal medicine or family practice, were employed by the practice for the entire measurement period, and had at least one diabetic patient meeting study criteria. A total of 22 practices and 92 physicians were identified to participate in the study. Using an algorithm, developed by Hebert et al [3] and used by the Health Care Financing Administration (HCFA, now CMS) in defining the national diabetic cohort for the Sixth Scope of Work [5], BHCS worked with TMF in defining the study cohort of Medicare diabetics. First, HTPN administrative data was used to identify patients who were 65 as of January 1, 2000, had a visit related to diabetes in the year 2000, and who were covered by Medicare (n=2378). Additional study criteria could not be determined using HTPN data only. These included length of Part B enrollment, date of death, and length of state residency. Using Texas Medicare enrollment files, TMF applied the remaining inclusion criteria to the preliminary list of patients provided by HTPN to specify the final diabetic cohort (n=2158).

Interventions

Claims-based process of care profiles were reported to study physicians as part of each intervention strategy and included three process of care measures: 1) proportion of patients with annual HbA_{1c} testing, 2) proportion of patients with an annual eye examination, and 3) proportion of patients with an annual lipid profile. CMS' policy regarding patient confidentiality only allowed for the provision of physician level profiles.

The first intervention integrated claims-based reporting only. The second intervention utilized both claims-based and medical-record based feedback. The medical record-based reports were at the patient level and built around the Diabetes Quality Improvement Project (DQIP) measurement set [6]. The DQIP set includes the same measures reported in the claims base profile in addition to other measures of process and outcome not available in claims data. Table 1 compares the claims and DQIP-based measurement sets. TMF supported the DQIP intervention by providing the DQIP electronic tool as well as training and support for BHCS-contracted auditors. Using the DQIP abstraction tool, auditors abstracted outcome and process of care information for patients randomized to the appropriate intervention types. Patient level profiles were created from the abstracted data sets and incorporated into the relevant intervention groups. Both claims and medical record-based profiles were reported to study physicians via HTPN physician-to-physician academic detailing sessions. In the third intervention group, in conjunction with both types of measurement feedback, practices were assigned a diabetes resource nurse. DRNs were required to have three to five years' experience as a certified diabetes educator and were responsible for monitoring the care of the practice's diabetic patients. Aubert et al. [7] demonstrated significant clinical benefits using the DRN model in a managed care setting. The current trial will estimate the effectiveness of this model in a large geographically distributed fee-for-service primary care setting.

Table 1 - Performance Measures

Medicare Claims-based Process Measures (aggregated at the physician level)	DQIP Process and Outcome Measures (patient level)
Percent of Patients with Billed Annual HbA_{1c} Testing	Annual HbA_{1c} Test Documented
Percent of Patients with Billed Annual Eye Exam	Annual Eye Exam Documented
Percent of Patients with Billed Annual Lipid Profile	Annual Lipid Profile Documented
	Annual Foot Exam Documented
	Monitoring for Diabetic Nephropathy Documented
	HbA_{1c} Value
	LDL Cholesterol
	Blood Pressure

Implementation

To generate claims-based reports, TMF, through their contract with CMS, requested Medicare utilization data for all patients in the study cohort. The resulting claim files were used to create the physician-level reports. Due to time lags in processing Medicare claims and the need to implement feedback strategies in a timely manner, it became necessary to request data from two one-year baseline measurement periods. Feedback sessions, for all interventions, first took place in March of

2001. At that time, calendar year 2000 Medicare claim files were not yet complete. As a result, the measurement period used for the first set of feedback sessions was July 1, 1999 to June 30, 2000. A ten-month lag in the receipt of Medicare claims from January 1 to December 31, 2000 delayed reporting measures from these data until October of 2001. For consistency, DQIP-based information was abstracted and reported from the two baseline measurement periods as well. The lack of patient level detail was problematic for physicians in the claims only intervention group. Not being able to identify the patients that received procedures related to the process of care measures made targeting quality improvement difficult. Physicians randomized to the DQIP-based intervention groups were able to see the status of every measure for each of their patients making feedback more informative. DQIP measures were somewhat limited in that they were built on what was contained within the medical record and not necessarily representative of all Medicare utilization. As a result, DQIP measures can underestimate process of care.

Analysis

Each of the three claims-based measures was calculated by intervention type. Differences across intervention type, for each measure, were tested using a chi-square test that adjusts for cluster randomization[8].

Results

Overall baseline process rates were calculated for both the claims and DQIP-based measures (Table 2). Baseline claims-based measures were: billed annual HbA_{1c} (86.1%), billed annual eye examination (60.8%), and billed annual lipid profile (72.5%). Results for the DQIP measures: documented annual HbA_{1c} (90.7%), documented annual eye examination (16.0%), and documented annual lipid profile (72.1%). These measures are not directly comparable as one is a measure of billed services while the other is a measure of documented services. This difference accounts for the higher HbA_{1c} in the DQIP set. Although the measures are different, the DQIP-based eye examination rate is clearly an underestimation.

To evaluate the baseline distribution in the claims-based process measures, rates were calculated by intervention type (Table 3). Based on a cluster-adjusted analysis, the groups appear to be balanced with respect to all process measures. In evaluation of intervention effectiveness, we will focus on testing hypotheses pertaining to changes from baseline to re-measurement within intervention arm at 6, 12 and 18-month follow-up.

Table 2 – Comparison of Claims-based and DQIP Process Measures

Process Measure	Claims-based % (n=2158)	DQIP-based % (n=2009)
Annual HbA_{1c} Testing	86.1	90.7
Annual Eye Examination	60.8	16.0
Annual Lipid Profile	72.5	72.1

Table 3 – Claims-based Process Measures by Intervention Type

Process Measure	Claims (n=655) %	Claims+DQIP (n=849) %	Claims+DQIP+DRN (n=654) %	Chi-Square
HbA_{1c}	84.7	84.8	89.3	1.05 (p=0.59)
Eye Exam	59.7	62.0	60.2	0.17 (p=0.92)
Lipid Profile	69.2	71.9	76.6	0.61 (p=0.74)

Conclusions

Health care providers implementing Medicare quality improvement initiatives need access to a complete and reliable data source. Quality measures used for performance feedback can be derived internally using abstracted medical record data. Medical record data, however, is costly, resource-intensive and can often times underestimate process of care delivered to Medicare beneficiaries. By partnering with their state's Quality Improvement Organization, health care providers can obtain Medicare claims-based aggregate level data to facilitate accurate estimation of care process. Limitations related to time lags, patient confidentiality, and lack of visit detail, prevent the use of Medicare claims from being the only method. The decision on which data source to use, or whether to use both, will be a function of the resources available to the health care provider. As part of this

project, we plan on testing hypotheses regarding the added benefits of DQIP medical record data as it relates to improvement in care.

References

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