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Research Article

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Population Health: Capturing Severity of Illness in Primary Care Patients

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Abstract

Objective: Capturing the true severity of illness in patients is important not only for optimal medical care, but also for fiscal success in value-based contracting.

Methodology: A multi-pronged approach was employed with the goal of improving risk scores, which are the basis for budgeted rates in Accountable Care Organizations (ACOs) accepting commercial and Medicaid risk products and Medicare Advantage plans. Personalized and directed education on coding, particularly Hierarchical Condition Codes (HCC), feedback in the form of visual displays, and anonymized benchmarking to foster a competitive spirit across practices were provided. Variable compensation was adjusted to include a portion for HCC coding success. At the same time, schedule optimization and centralized nursing support were implemented to improve access to care and identify gaps in wellness care.

Results: 63% of primary care providers (PCP) completed a coding training program. The risk adjustment factors for PCP's increased from 0.42 to 0.47, and overall, from 0.99 to 1.03. Medical Wellness Visits increased by >5% year over year for over two years. The Baycare ACO went from being in the 10th percentile on coding to the 60th in a comparison cohort of 55 other ACOs.

Conclusions: This collaborative, multifaceted approach improved capture of severity of illness/HCC scores and AWVs. Further study is needed to calculate the return on investment.

Keywords

Severity of Illness; Primary Care; Compensation incentives; ICD-10 coding; Hierarchical Condition Coding; Accountable Care Organizations

Background

Capturing the severity of illness in a patient population is important for success in value-based contracts [1]. Patients exhibit tremendous variability in their presenting condition, co-morbidities, and social determinants of health, all of which impact the cost of optimal care delivery. Hierarchical Condition Coding (HCC) is important to capturing these additional risk factors; without fair per-patient income in a capitated plan, it becomes difficult to obtain sufficient resources and staff to support high quality patient care. Accountable Care Organizations (ACOs), commercial and Medicaid risk products as well as Medicare Advantage all budget payments as a function of patient risk. A 1% increase to HCC score in an institution of our size can result in a 4 million dollar increase to the budget. Medicare Annual Wellness Visits can be a vital piece to capturing severity of illness.

Baystate Health is a not-for-profit integrated teaching health system headquartered in Massachusetts, serving over 800,000 people throughout western New England. The workforce encompasses over 12,000 team members within the system of four general hospitals and a psychiatric facility, spanning over eighty medical practices. There are over 1.8 million annual outpatient visits, including comprehensive sick and preventive care. As part of the University of Massachusetts Chan Medical School, Baystate Health provides education for nearly eight hundred medical students, residents, and fellows, twelve hundred nursing students and residents, and more than four hundred allied health students. Baycare Health Partners [2] is a Provider Hospital Organization (PHO) which serves approximately 120 medical groups across Western Massachusetts and Northern Connecticut, including Baystate Medical Practices as well as independent groups and providers, with approximately 1,300 physician and 750 Advanced Practitioners as members. Baycare participates in multiple risk contracts, including Medicare (Medicare Shared Savings Program, MSSP), Medicaid ACO, and commercial programs.

Operational Processes Prior to Intervention

Baycare, like many PHOs, and Baystate Health had been working on accurate illness burden coding for several years. Past efforts have included creating specialty-specific coding cards to provide a desktop reference for providers to learn which specialty-relevant codes have HCC value and how to code for them. Coding performance was also a topic of conversation at regular performance meetings with each of our primary care practices. We tracked and presented to each group the percentage of their eligible patients who received an Annual Wellness Visit or Comprehensive Physical Exam. [3-5] we also looked at the HCC coding of each primary care practice and showed comparison to how they had done in previous years and how they compared to Baycare's average.

Specialty engagement and coding efforts were also undertaken by the PHO and Baystate Health. Physician leaders spoke at department meetings to introduce the importance of accurate coding, and created dashboards to compare specialty groups coding, focusing on unspecified versus specified codes [3]. For example chronic kidney disease (CKD) affects almost all specialties and specificity helps improve clinical care. Obesity is another code that cuts across specialties. We also conducted chart audits to look at patients who had underlying HCC conditions relevant to the specialty practice, and looked at whether the provider notes included reference to the condition and whether the code was submitted on the encounter bill.

While these efforts increased awareness about the importance of accurate coding amongst group and department leaders, the behavior of individual providers did not show significant change [6-9].

Interventions

Baycare invested in technology with Doctus Tech (Redondo Beach, California) to teach and test individual providers about HCC topics, documentation, and coding. Because Baycare distributes any Shared Savings to the member practices in accordance to a Funds Flow, the Baycare Board included a new gate in order for practices to receive their distribution. The gate necessitated that the majority (>50%) of providers in each group complete HCC education and successfully pass a test of knowledge [10].

As we looked at the age and socio-demographics of our patient population we noticed that we were not fully capturing the severity of illness of those we serve. We worked together as in integrated system to identify multiple tactics to improve this capture. These included live virtual "Lunch and Learn" sessions during the break between morning and afternoon sessions (Table 1) that were recorded for later viewing if necessary. In conjunction with Information Technology, providers were encouraged to add relevant HCC codes to their "favorites" within the billing software (Patient Keeper, Waltham, MA).

Lunch & Learn Topics
Office/Outpatient Coding & Billing
Preventive Medicine vs. Problem Visit
Time Based Services
Missed Opportunities
EM and Procedure Same Day
Diagnosis Coding/ Billing
Telemedicine
Comparison Level 3 vs Level 4
Care Management Services
Annual Wellness Visits
April Coding News
Documentation Tips/Opportunities
Evaluation and Management Benchmarks
Smoking Cessation / Screening for Lung Cancer
Routine Preventive Exam and Problem Visit Same Day
EM Changes and Documentation
HCC Updates Cardiology

Table 1: Lunch and Learn Curriculum

For physicians employed in the Primary Care Service Line (PCSL) by Baystate Medical Practices, the compensation plan (base salary plus 5.5 to 11% variable compensation) was revised to include goals to close quality gaps and capture/annually recapture severity

of illness. Incentive compensation opportunities were developed for increasing Annual Medicare Wellness visits, improved cancer screening, and hypertension control. Additional goals included improving same-day access, recapture, and accurate diagnosis of complex chronic diseases such as major depression. Schedule templates were adjusted to facilitate annual wellness visits. Templates were reviewed to make sure enough wellness visits were available to be booked for each providers' panel size. Baystate Medical Practices employed two nurses to identify primary care patients in need of wellness visits, update their records, close quality gaps in recommended screening, educate providers, and improve provider efficiency through site and visit preparation.

Results

A primary metric for measuring success was improvement in the Risk Adjustment Factor (RAF) scores used by CMS to estimate the associated cost of care to Medicare Advantage beneficiaries . RAF scores consider both demographics (age, gender, residence, disability status) and a disease risk score based on codes reported during patient encounters, and their corresponding Hierarchical Condition Category (HCC) scores. Figure 1 demonstrates the improvement in PCP RAF scores between 2019 and 2022.

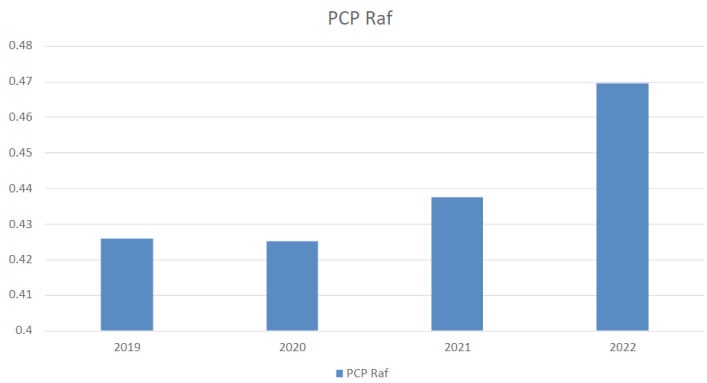

Figure 1: Primary Care Provider Alone (without Specialty/Hospital Contribution) Contribution to Risk Adjustment Factor (RAF) Scores, 2019-2020.

Figure 2: Baycare's HCC performance over time for ten practice groups; the BMP group where educational efforts were concentrated is highlighted and demonstrates a 5.38% increase to 1.06; above the Baycare group average of 1.03. Nine non-BMP groups have values ranging from 0.92 to 1.10. The data transparency among the groups created moderate competitive pressure that drove improvement. The shaded areas represent trend lines for the current and prior two years.

BMP PRIMARY CARE	2020	2021	2022	2023 JAN - MAY YTD	TREND	2022 BAYCARE YTD	2023 BAYCARE YTD	BAYCARE GOAL
AWV HCC CODING	0.193	0.216	0.296	0.311 (n/a / 2294)		0.299	0.329	0.403
PRIMARY CARE HCC CODING	0.400	0.409	0.458	0.358 (n/a / 10254)				
UNSP. DEPRESSION USAGE(%) (LOWER IS BETTER)	43.7%	18.5%	9.3%	8.2% (84 / 1025)		11.2%	11.0%	10.0%

Figure 3: Visual Aid for supplied to individual practices demonstrating percentage of ICD-10 coding for annual wellness visits (AWV), primary care HCC coding, and use of unspecified coding for depression. The trend line is negative for the latter, since lower is better, and implies the use of more specific coding.

Annual Medicare Wellness visits can help reduce the need for urgent intervention by addressing health maintenance in a systematic manner [7]. We considered the number of Medical Wellness Visits as a proxy for providing health maintenance and noticed year-over-year increases of 6% (FY21 to FY22) and 5% (FY22 to FY23) in the number of visits within the Primary Care Service Line (Figure 4).

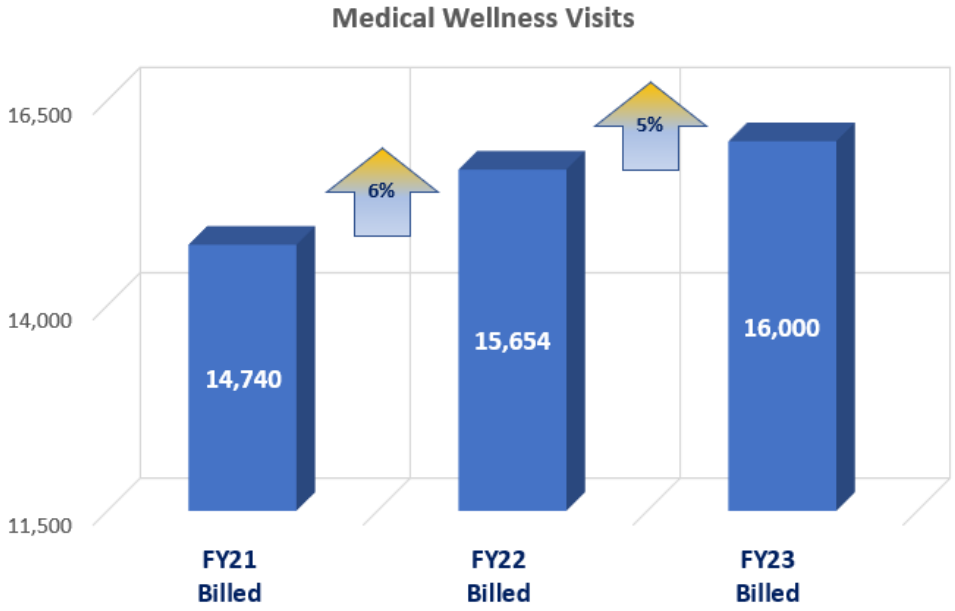

Figure 4: Medical Wellness Visits during the Intervention.

Further metrics of success included changes in the utilization of ICD-10 codes associated with Hierarchical Condition Coding. (Figure 5) 63% of primary care providers in our pilot program completed the Doctus training in HCC coding, which provided the opportunity to examine coding changes in the trained group (n=105) versus those who had not completed Doctus training (Control Group, n=62) [12,13].

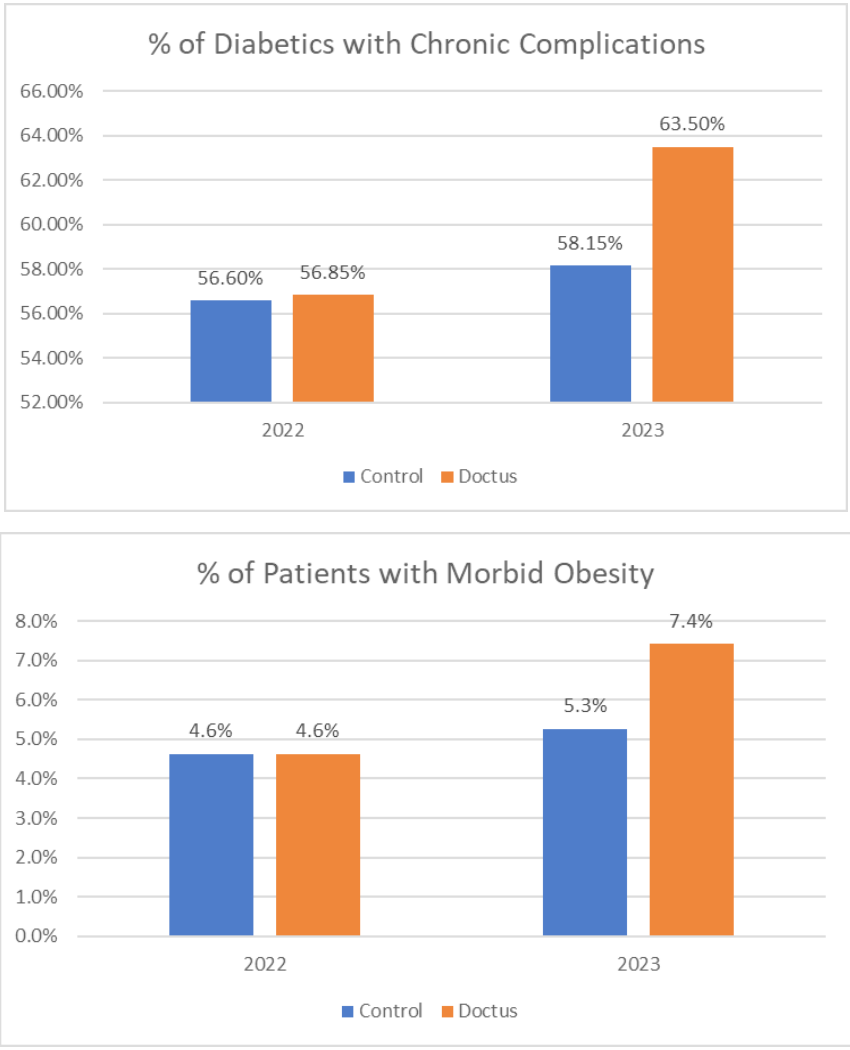

Figure 5: ICD-10 coding changes by fiscal year in the control and Doctus-training groups. Doctus training was associated with an increase in use of HCC codes. Coding for Diabetes with Complications increased in the control group, but more dramatically in the training group. Similar improvements were noted for coding of morbid obesity.

Effects of Interventions on Risk Score

The risk score increases with more accurate coding, and Doctus participation appears to have increased percentage of ICD-10 codes associated with HCC, and specifically coding for diabetes with chronic complications and for morbid obesity. Overall, we were able to document improvement in Baycare provider coding over the past 2 years, including an increase in the risk score from 1.08 to 1.19 (ACO collaborative comparison group increased from 1.14 to 1.18) and a rise from the 10th to the 60th percentile among our comparison cohort. Changes in HCC scores are difficult to draw a direct line to a budget or final performance because Medicare normalizes the HCC scores yearly, and a rising tide lifts all boats. Given the national comparison, a system of PHO is likely to see a drop in their percentile ranking even if maintaining the status quo. The financial impact can be roughly estimated by looking at improvements in select diagnoses. For example, if a provider appropriately documents and submits a code for a patient with Morbid Obesity, it is estimated to increase the budget for that patient by approximately $1,800 per year. The appropriate submission of a code of Opioid abuse, in remission increases the budget by approximately $4,230 per year.

Discussion

Simple interventions such as increasing awareness of the importance of HCC and distributing coding cards had not effectively improved Baycare provider performance above the median in a comparison cohort of over fifty ACOs leading to inappropriately low budgets amongst risk contracts. Multiple tactics were needed to improve the capture of severity of illness. These included repeated and highly specific educational events (Lunch and Learn Events) for both primary care and specialists. For specialists, education at departmental meetings to engage division chiefs and department chairs in the process improved engagement. Specific financial examples from the PHO and regular chart audits gave regular feedback to maintain engagement. For both specialists and primary care providers, investing in education technology (Doctus software) had each provider take individual education on capturing severity of illness and allowed for the tracking of performance and results. The hiring of nurses facilitated the process to prioritize patients with high illness burden for Annual Wellness visits and follow up. Making participation in the HCC coding curriculum trainings a gate to unlocking incentive/variable compensation was impactful in driving provider engagement in the educational activities. For primary care, adding multiple distinct quality and access goals such as performance of Annual Wellness visits to variable compensation also improved alignment with our system goals. Even though provider participation was less than 100%, a critical mass was achieved, resulting in improvement of risk scores from 1.08 (tenth percentile) to 1.19 (60th percentile). Our efforts will continue with a goal to become "best in class". Resources are required to support ongoing education and multiple venues are needed to reinforce the education. Education also needs to filter down to trainees who will be expected to incorporate accurate HCC coding as they become independent practitioners. We see this intervention as improving the system's financial status and, more importantly, our population's health. Annual Medicare wellness exams are good opportunities to ensure wellness and capture severity of illness. Nurses dedicated to identifying patients in need of wellness visits and helping to close quality gaps (for example, in cancer and other screenings) are another important investment. Improving capture of severity of illness are expected to produce longer term returns as they affect the attributed budget for care of these patients 18-24 months later.

Conclusions

Many hospital systems, especially those like Baystate that serve a heavily urban and economically disadvantaged population, are not fully accounting for the severity of illness in their populations. The downstream effects are inadequate reimbursement for patients in ACO or other capitated plans. Handing out coding cards and mentioning the importance of coding at staff meetings was not enough to "move the needle" on HCC capture. A multi-pronged educational approach with live, remote, and technology- driven education was an improvement over any single modality alone. Engaging and getting "buy-in" from clinical leaders in specialty as well as primary care was important. Providing numeric feedback to clinicians and leaders, investing in nurses and technology leads to providers with "skin in the game" and can improve coding capture, resulting in substantial financial benefits to the hospital system. Future improvements to the program could include expansion of the nursing program, and increased training and integration of new and existing IT tools.

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