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INSIDE EDGE

Business Intelligence and Quality Reporting

EXECUTIVE SUMMARY

Combining business intelligence and quality reporting to CMS and the Joint Commission under a single Inside Edge topic admittedly stretches most hospitals' and health systems' current capabilities. If our reach exceeds our grasp, however, it's not likely to remain that way forever given the arc of healthcare reform, ARRA and eventual payment reform. BI and quality reporting are headed for the altar.

We're just at the beginning of the relationship. BI or CBI (clinical/business intelligence) is beginning to hum for internal quality purposes at a few leading health systems. A recent SI Teleconference (June 15, 2010) demonstrated awesome use of BI tools for enterprise analytics at the Cleveland Clinic. Also, under meaningful use, hospitals will have to perform electronic quality reporting; ultimately it's logical that reporting on core measures will become electronic. The problem is that most data systems are not ready yet for either.

So, the future is clear but we're still not there. To find out where we are, we talked to consultancy CSC and to health systems Lifespan, Penn Medicine and THR, organizations that are as advanced in this area as any. When it comes to BI and quality reporting, this could be a beautiful relationship

Hidden requirements

"The meaningful use requirements constitute the biggest current driver for quality reporting, but they may quickly be replaced by the incentives and penalties for quality performance under health reform," says Erica Drazen, managing partner in CSC's emerging practices unit in Boston. Meaningful use requires electronic quality reporting from the EHR; that in turn requires that all the required data elements for the quality measures be captured and stored in coded form.

One might think that if you met the Stage 1 requirements for meaningful use, all the required data would be available; that is not true. Quality reporting creates a large number of "hidden" requirements. For example, there is a Stage 1 meaningful use requirement to keep an active medication list in the EHR. This list includes all the medications that have been *ordered* for the patient. However, the quality measures all require reporting on medications *administered*. These data would be included in an electronic medication record (eMAR)—which is not a requirement for Stage 1, says Drazen.

Over a quarter of the data elements for the proposed quality measures come from physician documentation—which is not required for incentive payments in Stage 1 of meaningful use. Physician documentation is not commonly automated, and

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if it is part of the EHR, the information is often in free text rather than coded. An example are the results of an imaging scan.

Erica Drazen, managing partner, CSC

Another challenge will be to make sure all the quality activities that are performed are documented. Answering the question 'Have you given smoking-cessation counseling to cardiac and pulmonary patients?' is a case in point. Even if clinicians do this, they don't necessarily document it because staffing shortages force people to focus on what's really important for the patient—and documenting education doesn't seem as important as other aspects of care. However, it will count equally in measuring quality.

Ultimately, achieving quality outcomes will drive reimbursement to hospitals because under healthcare reform a certain percent of Medicare dollars will depend on clinical outcomes, hospital-acquired conditions and readmissions. "Starting in 2012 it's no longer really a quality reporting game—it's a quality-achieving game," Drazen says, adding that 2 percent to 6 percent of reimbursement could depend on clinical outcomes, readmissions and hospital acquired conditions. For example, all Medicare payments will be reduced by 1 percent in October of 2012, escalating to a 2 percent reduction in 2017. This money will be redistributed to hospitals who achieve certain levels of performance on quality measures. "That's huge money for a hospital," she says.

Once quality data are available electronically, the focus will change from reporting to ensuring quality—and that means moving from retrospective reporting to IT-enabled surveillance with real-time feedback. The current practice of sending quality data to a central source and getting reports back months later loses the greatest potential to use the data for improving care, Drazen adds. "If the patient has gone home before a quality issue is identified, there is no potential to improve care for that patient. If the data are months old, you will have lost a 'teachable moment' for the clinicians."

Seeking quality in Providence

Mary Cooper, MD, JD, may have found the perfect calling as SVP and chief quality officer at Lifespan, a four-hospital integrated delivery system with 12,000 employees based in Providence, R.I. With a view on quality reporting honed by her present position as well as 12 years at NewYork-Presbyterian, she views external quality reporting for CMS and Joint Commission as being stamped by two realities.

The first is the requirement to submit coded data to CMS for hospital-acquired conditions (HACs) such as DVTs, pressure ulcers and infections. "More hospitals are looking at those as quality issues and minimizing the reimbursement factor. We have all been wary of using administrative datasets, but now administrative data are supplying outside vendors, such as our payers, with data they use for quality reporting. As hospitals, we need to ensure the data are accurate from a

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- Raymond Fabius, MD, CMIO, Thomson Reuters

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quality perspective as well as a financial one," she says.

Lifespan

Mary Cooper, MD, JD, VP & chief quality officer, Lifespan

The second general factor that shapes external reporting: lack of virtually any electronic reporting of core measures whether to CMS or the Joint Commission. "Although we have robust data repositories and are at HIMSS Level 6 in our hospitals, we still collect all the Core Measure data manually for two reasons. First, the data requirements change every quarter because CMS gets feedback from users on how to improve them. In essence, the data are a continual work in progress. Second, like most health systems' EHRs, Lifespan's EHR does not yet contain the required data in coded form. It's not at field level," says Cooper.

"Like other hospitals, we submit our data to an outside vendor," she says, which combs through it and among other things identifies a list of medical charts to extract for the reporting.

Let the reporting begin

"Meaningful use will drive this," says Cooper in reference to hospitals adopting electronic reporting, because meaningful use requires electronic data feeds. Many meaningful use indicators are not identical but very similar to CMS data definitions. As they become more congruent, she says, "We'll see a movement toward electronic reporting."

In the meantime, hospitals and health systems like Lifespan do not want to risk the likely conflicts within the electronic data arising from ill-defined, non-standardized data fields. The data contradictions inherent in most EHRs today could sink core-measure reporting and deny precious federal reimbursement.

"Just by reporting the data all hospitals get an over-2-percent uptick on our market-basket reimbursement," says Cooper. "So the federal government doesn't want to have conflict in the reporting data. That's one reason people haven't switched over to electronic reporting. We don't want to trigger any federal audits. A second reason is the question of value. It's currently more cost-effective to hire people to manually capture the data than it is to make an investment in the systems for quality informatics, which at the moment, are still significant and require frequent updates." Lifespan, she notes, employs fewer than 10 FTEs to collect all the data elements for federal reporting across all its facilities, a comparatively small investment for the return.

Lifespan belongs to a half-dozen organizations to which it submits quality data and in return receives benchmarking information, including UHC and the Maryland Indicator Project. The federal government's new MONAHRQ program "is going to be huge," say Cooper. It will allow hospitals to use their data to improve shortly after the data are collected, a tremendous benefit, and one that has not been available for federal data. She also notes that in addition to outside BI models there exist a number of other databases offered by professional associations of cardiologists, cardiothoracic surgeons and surgeons, among others,

continued

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- Susan Severson, director, Health Information Technology Services, Stratis Health, REACH—Regional Extension Assistance Center for HIT

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- Linda Ricca, RN, CLNC, CSC

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- Todd Manion, manager, Strategy & Operations, Deloitte Consulting, LLP

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that provide another source for quality data from literally millions of patient records that can be drilled down into for analysis. For now at least, they face the same issues of data definitions, changing requirements and manual collection.

Dashboards made in Philadelphia

Talk about an IT "project." Two-and-a-half years ago, Penn Medicine launched a clinical data repository, known as Penn Data Store, that has since grown to contain 1.4 billion rows of data coming from ambulatory, inpatient CPOE, demographic, laboratory and cardiology sources. It's certain to expand. Philadelphia-based Penn Medicine is a $3.6-billion integrated health system serving eastern Pennsylvania through the University of Pennsylvania School of Medicine and the four-hospital University of Pennsylvania Health System.

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"We're uniquely 100 percent CPOE at four hospitals and have 1,500 out of 1,800 physicians on an ambulatory EMR," says Brian Wells, associate CIO of health technology and research computing at Penn Medicine. "It's a great source of data and getting better every day."

Penn Medicine has developed a dozen specialized dashboards including ones for medication administration, anti-coagulation management, incidence of various alerts, infection control and patient mortality. These BI dashboards allow managers and clinicians to analyze trends and identify sources of practice variation. They also offer researchers the ability to create data marts with extracts from Penn Data Store for specific research purposes, including clinical trials. The CDR reinforces Penn Medicine's tightly linked organizational structure that encompasses the health system and medical school by providing an information link accessible to all.

"We're building dashboards for our CEQI [Clinical Effectiveness and Quality Improvement] department and they handle all external reporting," he says. Currently the department uses other tools and external vendors like Quantros for such reporting.

Brian Wells, associate CIO, Health Technology and Research Computing, Penn Medicine

Penn Medicine

"Now comes the hard part," says Wells. "We're building consistent codes mapped to national standards to feed additional dashboards and research efforts." Penn Data Store data is only two days behind real-time, and the data store currently contains longitudinal data more than 10 years old. He estimates that Penn Medicine has invested about $3 million in Penn Data Store and BI including a team of six FTEs over the last two years. Health-system users make up two-thirds of users; researchers the other third.

Reporting from Texas

Ferdinand Velasco, MD, wears three hats that directly relate to quality reporting. He is CMIO at Texas Health Resources (THR), an Arlington, Texas-based integrated delivery system with 13 hospitals serving north central Texas. He is also co-chair for the quality work group for the Certification Commission for Health Information Technology (CCHIT), which is advising CCHIT on developing an EHR

certification program around quality reporting, and Velasco has just donned a third hat, chair for the National Quality Forum's eMeasure Review Panel.

eMeasures

The National Quality Forum (NQF) is a non-governmental, not-for-profit entity that does a lot of work with federal agencies such as the Agency for Healthcare Research and Quality (AHRQ) and the Centers for Medicare and Medicaid Services (CMS). NQF has been contracted by CMS to work with quality-measure developers to create electronic specifications of existing quality measures. Since the HITECH Act requires that hospitals and eligible professionals electronically submit quality-indicator data from their electronic health records to CMS as part of demonstrating meaningful use, these measures must be configured to be compatible with EHR systems while preserving the original intent of those measures. The NQF eMeasure Review Panel is the committee that has been formed to lead this effort.

Driving the dashboard

"Now that our EHR is in place, we're in the process of really putting a lot of emphasis on business intelligence at THR," in a BI initiative that will ultimately cost between $4 million and $8 million, says Velasco. The initial phase, which will cost just under $1 million, will involve implementation of a Quality Dashboard on top of THR's existing analytics infrastructure. "Our intent is to shift from sharing information with a typical time lag of one quarter to near real-time availability of performance data. The Quality Dashboard will serve as the primary portal for monitoring clinical quality, providing drill-down capability and the ability to correlate multiple variables to develop a better understanding of our gaps."

Ferdinand Velasco, MD, VP & CMIO, Texas Health Resources

Texas Health Resources

Phase one entails deployment of core measures and key performance indicators like mortality rates and patient-safety indicators. Dashboard users will be able to drill down from high-level views to a breakdown of quality data by specific providers or departments and trend it over time. Phase two will allow THR to monitor its progress implementing high-impact performance-improvement initiatives such as VTE prevention, reduction in falls, lowering readmission rates for heart failure patients, pressure-ulcer prevention, and improved blood-product management. Both phases are expected to be completed in 2010.

Authorized users—quality improvement professionals, board members, hospital leaders, physicians, and nurse executives—will be able to access the dashboard via the THR intranet as well as remotely via a secure VPN connection. Regardless of their location, they'll still get the same rich analytics functionality including trending and graphical analysis. "The increased emphasis on transparency and accountability will push us to revisit the issue of access to quality information," says Velasco. "In the past, access to these data was very limited. But if we really want our staff and managers

"Now that our EHR is in place, we're in the process of really putting a lot of emphasis on business intelligence at THR," in a BI initiative that will ultimately cost between $4 million and $8 million, says Velasco.

engaged in improving quality, they'll need access to the tools that will help them manage their performance."

Governance for the quality dashboards at THR rests on a foundation based on collaboration between the quality and ITS departments. As CMIO, Velasco is part of ITS and has a dotted-line reporting relationship to the system chief quality officer, Mike Deegan, MD, and sits on the THR chief officer quality officer council, a committee comprised of the hospitals leaders responsible for quality and patient safety at THR. In addition, the leadership of quality and ITS (which includes CIO Ed Marx), meet regularly to discuss progress with the quality dashboard and other related joint efforts. This helps ensure alignment between information technology and the direction of THR's quality program.

Strategic alignment

"The joint leadership meetings strengthen the linkage between IT and quality and help ensure alignment between our technology strategy and the direction of THR's quality program. It's been an excellent venue for collaborating and advancing BI at THR," says Velasco.

"Our next step in advancing BI is to look comprehensively at the concept of value, represented by the formula of the product of quality, safety and satisfaction divided by cost." Accordingly, THR is expanding its BI governance to include clinical, operations and finance representatives, in addition to ITS and quality. The new group will be chaired by THR's new executive VP for Strategy, John Scholl. "Clearly, CBI is a very strategic focus for us," he says. [THR hosted SI's 2009 Fall Forum "Healthcare Reform and Achieving Meaningful Use: The Pivotal Role of Clinical Business Intelligence." Audio presentations are available to SI members on the SI website.]

Challenges

Historically, quality measures were derived either by relying on administrative data—for examples, charges from the billing software—or manual chart abstraction. Both methods have lots of limitations. The problem with manually-extracted data is that it's labor-intensive and hospitals need dedicated employees to carry out this extremely tedious work. The challenge with administrative data is that this represents secondary information and may not accurately reflect actual clinical performance.

"This is where the effort of getting quality metrics directly out of the electronic health record comes in," says Velasco. By extracting quality indicators from EHRs, providers will be able to overcome the limitations of both administrative data and manual chart abstraction. This is one of the foundations of the HITECH Act and ultimately ties meaningful use to health reform.

"Our goal is to satisfy meaningful use by the end of this year. It's an involved process as we take each quality measure in the proposed rule for meaningful use and map it to the original measure definition, identifying the relevant patient population and determining whether or not the expected clinical process took place."

Conclusion

Perhaps nothing illustrates the gap between the capabilities of CBI and the reality of external quality reporting

APPOINTMENT

Gov. Rick Perry has named Edward Marx, VP & CIO, Texas Health Resources, chair of the Texas Health Services Authority Corporation. The authority is a public-private corporation chartered by the Legislature to improve patient safety and quality of care by coordinating the development of a voluntary and secure electronic health information infrastructure for the state health care system.

than this mapping process. "It's mind-boggling," says Velasco. "You have to know the clinical workflow, where the documentation is occurring, and how to extract the relevant information from the EHR database. What makes all of this particularly challenging is that for six months now we've only had the preliminary rule from CMS to work with and we only have a few weeks left before the beginning of the first reporting period for meaningful use."

The relationship between CBI and quality reporting is likely to flourish if Velasco's work with NQF bears out in the long term. "The goal," he says, "is to have a national library of electronic quality measures available to be downloaded and imported directly into the EHR, eliminating the need for the intense process of mapping data from the EHR to quality indicators. The goal is for the measures to be 'plug-and-play' but it will take a few years for this vision to be realized."

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