Data Quality Management: Oft-Overlooked Key to Affordable, High Quality Patient Care

In response to today's highly competitive, cost-constrained environment, payers and providers have initiated programs that help achieve cost and quality goals. The key to successful implementation of all of the initiatives is rapid and secure access to reliable data.

Darryl McDonald, Teradata, a division of NCR

Health care organizations are under pressure to improve the quality of patient care without increasing costs. Both payers and providers have initiated a number of promising programs to achieve those goals.

On the payer side (and to some degree on the provider side), sophisticated new forms of disease and case management and a renewed emphasis on preventive care for healthy, but high-risk members have become important priorities. The Medicare Modernization Act has spurred even greater interest in these programs.

On the provider side (and to some degree on the payer side), initiatives include: electronic prescribing; improved inventory management; greater reliance on evidence-based medicine; and, care collaboration centered on easily accessible patient medical records.

Because these initiatives are complicated, the data that support them are not always top of mind. Besides, most companies have only a vague sense of how to ensure data quality.

But organizations overlook data quality management at their own peril. Cost savings aside, properly managed data provide essential support information for quality care programs, create a more complete and reliable vision of how these programs are performing, and reliably target areas for improvement.

A Significant Problem

According to the Healthcare Information and Management Systems Society (HIMSS), quality problems are connected to missed drug interactions, inadequate access to medical records, poor communication, and equipment failure. All of these contribute to medical errors that kill as many as 98,000 people in U.S. hospitals each year, according to a famous 1999 report by the Institute of Medicine.

As for costs, The Data Warehousing Institute estimates that data quality problems cost U.S. businesses more than $600 billion per year; health insurers (and providers) are not immune. Practice variation, medical errors, out-of-control emergency room visits, and fraudulent claims are only a few of the significant cost drivers where poor data quality plays a role. In turn, providers increase prices, payers increase premiums, and it becomes much more difficult for all patients to access quality care.

Where Do the Errors Come From?

It's not as though the sources of data quality problems are unknown.

Data entry accounts for the overwhelming majority (76 percent) of all data errors, regardless of setting according to The Data Warehousing Institute. In health care, high stakes data entry points include claim filing, procedure coding, and medical records.

In addition, many health care payers and providers have completed, are in the midst of, or are about to begin a significant technological overhaul. This means bringing together disparate systems that must integrate data from multiple sources from both within and outside their organizations. Repetitive or incompatible data from these systems can be a significant source of data quality problems.

A third area that can cause data quality concerns is how companies have responded to HIPAA. On the one hand, HIPAA standards and transactions enable data management opportunities by dictating a standard format and standard set of values for transaction data.

But organizations may find themselves unable to take advantage of those opportunities if they try to wrap HIPAA standards around a legacy system. For example, consider that many organizations translate standard data (such as ICD-9 or CPT-4 codes)

Darryl McDonald *is vice president of Global Consulting Services & Strategic Partnerships for Teradata, a division of NCR. He leads a team responsible for the innovation and development of consulting capabilities and service offerings. Additionally, his team provides thought leadership for industry strategy and solution portfolio management for several industries, including health care, insurance, and financial services.*

into homegrown code to fit the requirements of their legacy systems. Now, as they try to analyze data across different systems or to share data with external partners, the homegrown code can generate numerous data inconsistencies. This undermines potentially useful information, complicates new system development, and adds costs.

Finally, almost all data quality problems are rooted in a lack of organizational awareness. If people don't know about the implications of bad data, how can they improve the way they manage it?

What Do Bad Data Problems Look Like?

Regardless of cause, data quality problems play themselves out in a variety of ways. Consider the example of a diabetes disease management program desperately trying to flag events that will capture patients when they are most likely to change how they manage their disease. Research indicates that the most opportune time to engage these patients is immediately following an acute diabetic episode – often characterized by a visit to the emergency room (ER).

But if the ER visit never arrives on the nurse case manager's computer – or if it is incomplete, wrong, or arrives too slowly – the case manager misses the opportunity for critical patient contact. The program's results, both in terms of quality and cost savings, suffer.

Assessing the efficacy of patient care programs also relies on quality data and efficient data integration. Suppose that while a payer or hospital administrator is studying a report that will inform an important strategic decision, he or she finds an inconsistency. The administrator must go into the system to understand why that inconsistency has occurred. But without quality data, the search is likely to be time-consuming, expensive, and either fruitless or misleading.

Organizations that have not consolidated their data into a single, integrated source are not likely to have agreed-upon data definitions and therefore are especially susceptible to misleading reports. What, for example, does average length of stay mean in the clinical versus the financial data mart? Without an agreed upon set of definitions that helps organize system data, decision-making becomes a much riskier undertaking.

A Data Quality Management Program Overview

The first and most important piece of creating a data quality management program is engaging senior management. Without senior management's belief in and visible support for data quality management, initiatives are likely to fail.

As a corollary to senior management support, organizations should remember that all business units have a stake in data quality – not just IT. Therefore, an interdisciplinary team comprised of representatives from business units throughout the organization should spearhead the data quality management program.

The next step is to evaluate the quality of existing data. Begin with a gap analysis that identifies and prioritizes critical data elements and metrics. Then compare your list with what successful data quality programs value.

Similarly, look at best practices for managing data and compare that to your own processes. Document the organizational structures (formal or informal) you have used in data-driven projects, and evaluate the effectiveness. What's worked? What hasn't?

From that evaluation, the cross-functional leadership team can identify areas for improvement and, ultimately, prepare a set of replicable templates for handling data. Any employee who touches data – which in health care is virtually everyone – should be able to understand the templates.

Organizations that have not consolidated their data into a single, integrated source are not likely to have agreed upon data definitions and therefore are especially susceptible to misleading reports.

Once templates are completed, the leadership group can begin a concerted internal marketing effort to ensure recognition, awareness, and buy-in. Central to that process is a fleshed out communication plan that senior management clearly endorses.

Some Best Practices

A number of specific practices have emerged that are common to all strong data quality management programs in health care.

Ensure Actionable Data Integration. For health care organizations to execute and fully understand the impact of patient care initiatives, the system architecture must accommodate integration of disparate data from all of the organization's legacy systems and data marts. This creates an up-to-date, single source of information for all organizational decisions – from large

strategic decisions about quality care initiatives to individual patient or member care decisions.

There are a number of options for achieving this goal, but an enterprise data warehouse has some unique advantages. If everything is centralized, data integration and management are considerably less cumbersome and, typically, considerably less expensive than dozens of data marts. Moreover, a data warehouse can hold massive volumes of information and accommodate huge volumes of concurrent inquiries (thus ensuring timely access). It also can interact efficiently with essential analytical and data mining software, reducing the chance for errors or inconsistencies throughout the organization.

Create a Patient/Member Master Index. Because individual members or patients often appear in the system in a variety of ways (different insurers, divorce, different identifiers for different business units), providers and payers struggle to confidently identify individuals and pull together all relevant information when they need it. A patient (or member) master index corrects this problem by ensuring each individual has a unique identification number that hospitals or payer organizations can use to ensure they have all the information they need. By making sure critical pieces of information are available, i.e., a patient's entire medical history, such an index contributes significantly to improved patient care.

Understand Data Quality Tools and Where to Use Them. To cleanse current data – and then continue to do so on an ongoing process – there are existing software tools of which health care organizations should be aware. For example, data is typically cleansed after the extract transformation load (ETL) process into a data warehouse or data mart, but one tool has emerged that can cleanse data automatically as it is being loaded. In addition, data mining tools – typically used to support decision-making – can help to ensure historical data has the expected values. Health care decision-makers need to be able to confidently evaluate the quality of these tools and the cost/benefit tradeoff for their organization.

Develop Common Metrics Across All Separate Business Units. While it would seem obvious, many organizations – and business units within organizations – never establish a common set of metrics upon which to measure themselves. So for a health care payer organization, what do the terms "written premium" and "member months" mean? By creating common metrics, organizations better understand what their reports are communicating and, in turn, make decisions based on a single version of the truth that runs through the entire organization.

Establish Security Procedures and Processes for Regulatory Compliance and Patient/Member Protection. All health care data initiatives must be acutely conscious of regulatory compliance, especially around patient privacy concerns. It is critical, therefore, that any data quality management program consider who will need access to what data – and then ensure there are appropriate safeguards in place for limiting data access at various levels to the appropriate people. One common way to do this is to set levels of authority. For example, the person responsible for creating the data (often known as the owner) has one level of access. The steward – the person who looks after enterprise data – needs another type of access. The IT department needs still another type of access. Often considered the custodian of data, it is IT's job to ensure the data is properly accessible by setting access levels and overseeing encryption.They also must consider file recovery and disaster recovery procedures.

The Benefits

The general principles and best practices outlined above are a starting point for a complete data quality management program. Organizations must flesh out the details and tailor a basic framework to their unique needs, so their data can lend the type of support that is essential to the success of quality care improvement programs. The overarching benefit of this approach will be that all organizational decisions – including those having to do with patient or member care – are rooted in the most complete and up-to-date information available.

More specifically, on the payer side, quality data lends a deeper knowledge of member behavior – and of triggers for improving health behaviors. This will lead to more effective disease management and wellness programs. In addition, by using data to better understand provider behavior, payers can encourage more widespread provider adoption of evidence-based protocols. This should reduce practice variation that leads to medical errors and unnecessary costs.

On the provider side, improved access to and more secure and reliable exchange of electronic medical records should generate improvements in care collaboration. This should help reduce medical errors and improve care. In addition, providers can expect to see improved inventory management with supplies available when and where they are needed, more confident transitions to electronic prescribing, and greater insight into the cost-effectiveness of hospital processes and procedures.

Both payers and providers subscribe to the notion that the quality of medical care must improve, even as it becomes more affordable. On first glance, those two goals might seem incompatible. Data quality management can serve as the bridge that brings them together. ■