Data Normalization: Help for Quality Measures Reporting

By Cheryl Mason, MSHI

By now, most health information management (HIM) professionals are familiar with national quality measures and the role they play in value-based care. Accuracy in reporting is paramount as the Centers for Medicare and Medicaid Services (CMS) continues to elevate the relationship between these calculations and a healthcare organization's bottom line and reputation.

Now in its third year, the Medicare Access and CHIP Reauthorization Act (MACRA) provides a framework for accountability and transparency. The goal is to drive improvement in the quality of care given to Medicare recipients, promote interoperability, drive performance improvement initiatives, and assess the cost of care. For Merit-Based Incentive Payment System (MIPS) participants, the framework is designed around four categories of reporting requirements: quality (45 percent), promoting interoperability (25 percent), process improvement (15 percent), and cost containment (15 percent). These measurement activities help stakeholders quantify processes, outcomes, and patient satisfaction as the industry strives for improved population health, better patient experiences, and lower costs. Organizations that are opting for alternative payment models (APMs) take on more risk and have a slightly different framework. In either case, having accurate data is essential to successfully reporting to CMS.

Because data for quality measures reporting is collected in a variety of ways, such as insurance claims, electronic health records (EHRs), and registries, healthcare organizations must have systems in place that ensure complete and accurate aggregation of information. Yet, the reality is that many organizations struggle with the basics of data management and find they are running up against an unseen challenge: data silos.

Information needed for accurate quality measures reporting often remains "locked" within EHRs and other disparate systems due to inconsistent technology and documentation requirements. Some of the data required for quality reporting is not codified to any standard and is documented using local vernacular or simply found only in unstructured text. Consequently, providers and payers often fail to accurately aggregate the data needed for a given quality measure and risk reimbursement losses or reputational consequences due to the appearance of lower care quality.

The solution to this conundrum is a "single source of truth" that ensures data coming from disparate systems is normalized to an industry standard for meaningful sharing. Despite broader industry efforts to address clean information sharing through technology, standards, and even incentives, barriers still exist. As industry initiatives continue to prioritize the shift to patient-centered care, it becomes more urgent that providers deploy systems that ensure data collection and sharing is accurate, timely, and consistent. Providers must leverage data normalization strategies that clean and map disparate patient information to achieve this end.

Quality Measures Basics

Patient cohorts—a group of patients sharing specific characteristics—form the basis of quality measures. For instance, a heart failure cohort may include such patient characteristics as ejection fraction values, lab tests such as B-type natriuretic peptide, or problem list entries. Healthcare organizations need a method of codifying vast volumes of patient data to accurately identify and extract patients with these characteristics.

Accurate data aggregation is no easy feat for the average healthcare organization. Consider, for example, the complexities of identifying all patients for a single and relatively straightforward measure: MIPS measure 021, "Perioperative Care: Selection of Prophyactic Antibiotic – First OR Second-Generation Cephalosporin." More specifically, this is a process measure in the domain of patient safety which measures patients aged 18 years and over that are undergoing certain procedures that have an indication for a first- or second-generation cephalosporin antibiotic, who had one ordered for antimicrobial prophylaxis.

The numerator of this metric measures the number of surgical patients that have had a first- or second-generation cephalosporin for antimicrobial prophylaxis ordered. As such, a healthcare organization must have a way to identify surgical patients by the antibiotics they are taking within the timeframe listed.

In the denominator, the metric requires all surgical patients 18 years of age and older undergoing procedures with the indications for a first- or second-generation cephalosporin prophylactic antibiotic. In addition, healthcare organizations must be able to factor in exclusions that include:

- Patients enrolled in clinical trials
- Patients with physician/advanced practice nurse/physician assistant (physician/APN/PA)–documented infection prior to surgical procedure of interest
- Patients taking antibiotics more than 24 hours prior to surgery except colon surgery patients
- Other medical reasons (G9196)

This measure can be reported through claims data or certified registries. The claims data must contain a specific G code (G9197) that indicates the patient has had an appropriate order written. In many cases, this requires a manual assignment of the G code by a certified coding professional. In order to automate this process and reduce errors from human intervention, it is important to identify the presence of the appropriate order at the appropriate time or evidence of the patient taking antibiotics more than 24 hours prior to surgery. This information must be captured in a structured way and then translated into the appropriate G code to be captured in the patient claim data.

In the medical record, medication data can be captured data using proprietary drug databases such as Medi-Span or FDB. It could also be captured using RxNorm or NDC codes. The question becomes: how do you identify the medication order, understand if it fits the description of first- or second- generation cephalosporin, and ensure that G9197 is entered on the patient claim?

Additionally, healthcare organizations often struggle to efficiently identify qualitative information such as evidence of prior infection. While much of the data found within the EHR are captured through the use of industry standards such as ICD-10 and SNOMED CT, this information is often located in free text. Note that the requirement is for a clinician to document prior infection. This information might (or might not) be included in a problem list that may or may not be codified to SNOMED.

The Free Text Challenge: What Can Be Missed

Many data governance strategies lack an effective way to extract unstructured patient data. One study found that when only structured EHR data was used to derive quality measures, practice performance was undercut when compared to a manual review of electronic charts that included unstructured patient narrative.[1]

There are many examples where providers and payers can miss patient reporting opportunities. For example, MIPS measure 005 (NQF 0081) considers the use of angiotensin converting enzyme (ACE) inhibitor or angiotensin receptor blocking (ARB) therapy for patients with documented ejection fractions of less than 40 percent. The quantified ejection fraction is rarely documented in a structured form, and the inability to find this data will skew the measure reporting.

Quality measure PQRS 116 (NQF 58) is another example, where providers risk lower performance scores when free text is not factored into the measurement. Used to measure patients who inappropriately receive antibiotics for acute bronchitis, the metric includes exclusion criteria for patients who have a secondary condition, such as cystic fibrosis or HIV. Often, documentation demonstrating the secondary diagnoses is found in free text as opposed to structured areas of the EHR.

Health insurers reporting quality measures through the Healthcare Effectiveness Data and Information Set (HEDIS) program also want to ensure they are accurately identifying all inclusion and exclusion criteria in free text to obtain the highest CMS star ratings and reimbursement. This requires access to clinical data found in EHRs as well as free text notes.

Improving the Outlook

Many reasons exist for defining patient cohorts beyond quality measures reporting. The success of any of these efforts rests with a healthcare organization's ability to accurately and completely identify all patients with the pre-defined attributes within a

cohort.

Data normalization strategies help healthcare organizations overcome these challenges. Otherwise, providers and payers have no way of identifying patients who fit pre-determined criteria without manually combing charts. Technology is an important consideration, and the right platform can address both structured and unstructured patient data, ensuring patients are not excluded from patient cohort analytics. Advanced solutions exist that automate and streamline the complexities of data normalization by addressing the following:

- Content—establish a single source of truth for all terminology-related maps, value sets, and code sets
- Applications—enable interoperability and increase the quality of analytics
- Web-based APIs—integrate reference data into existing data warehouses or analytics platforms

Note

1. Parsons, Amanda et al. "Validity of electronic health record-derived quality measurement for performance monitoring." *Journal of the American Medical Informatics Association* 19, no. 4 (July-August 2012): 601-609. www.ncbi.nlm.nih.gov/pmc/articles/PMC3384112/.

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