Data Quality: The Impact on Healthcare and HIM

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Executive Summary

Understanding the major elements in setting up and maintaining a vigorous data quality program across multiple hospital departments is a critical health information management skill. While accurate data is the heart of a good decision support system, consistent processes and education of key data “consumers” are also integral to success.

Key Words

Charge Description Master (CDM)
Data Quality/Integrity
Data Quality Manager (DQM)
Information Integrity Officers (IIC)
Master Patient Index (MPI)
Office of the Inspector General (OIG)
Uniform Hospital Discharge Data Set (UHDDS)

Introduction

Data quality or integrity can be defined as the assurance of the accuracy and timeliness of information. Data integrity is a critical component of any health information system. As automation continues to increase with the development and evolution of the electronic medical record (EMR), the emphasis on the role of data quality managers and the need for a rigorous data quality monitoring program increases. Processes must be put into place to encourage quality collection of data from the beginning of the patient care process, as well as to continually monitor and improve the data throughout its use until the patient is discharged.

Importance of Data Quality

Each data element collected during the patient care process becomes the building block for good information. The information that is generated in the process of patient care can be clinical, financial, or demographic. Common uses of this data include:

- Patient care,
- Tracking performance improvement and outcomes measurements,
- Negotiating managed care and other financial contracts,
- Business functions such as planning, marketing, and budgeting,
- Clinical research,
- Proof of legal compliance and reduced liability,
- Accurate billing and reimbursement (the revenue cycle), and
- Other decision support applications.

Quality data is derived directly from quality documentation. Data provided to a healthcare
facility generally begins with a physician order. At the point when the initial admitting diagnosis and orders are provided, the patient’s record begins, along with the assignment of a medical record and/or account number for each visit. According to recent information from Zimmerman and Associates, an industry consulting firm, data errors are made at the point of patient registration at a rate of between 7 and 22 percent. From that moment on, the value of the data is only as good as the continued collection and documentation of that information throughout the patient care process until final bill payment. The cost of re-billing a claim that contains errors has been estimated anywhere between $27 and $100 per claim. If the average error rate on registrations is 14.5 percent, and the average re-bill cost is $63.50, with the average volume of daily registrations (inpatient and outpatient) at about 600 daily cases, the cost of re-billing could amount to more than $5,000 a day.

Good data has value that impacts every aspect of healthcare—case management, Joint Commission accreditation (Core Measures), physician credentialling, accounts receivable collections, and much more. Since the attack on September 11, there has been a greater awareness in the healthcare industry of the impact and use of quality coded data to support public health alerts and as an early warning system of possible bioterrorism attacks.

**How Data Is Collected**

Understanding where and how data is generated is essential to establishing a true data quality program. There are six major areas within a hospital where data is created and collected. The data created by each area forms the core of a comprehensive data repository.

1. The first, and most important, is the master patient index (MPI). The MPI captures basic patient identification and demographic data and serves as an index to a patient’s entire visit history. It is considered a legal document and is usually required to be maintained permanently.

2. The second data collection point is charge line items that are generated from the charge description master (CDM). This is also referred to as the service item master (SIM) by clinicians. Charges are selected and collected as part of the patient care process and are used for billing as well as to measure critical pathway treatment variances and patterns.

3. Clinical documentation is a form of data collection. Whether handwritten or generated as part of an order, dictated and transcribed, or electronically generated from a legacy clinical system, the data collected in the documentation process provides the key information upon which statistical data is gathered in the remainder of the healthcare process.

4. Until the completion of patient care, most of the documentation and data collected is in “raw” form and exists in what is referred to as the source document, or original point of data collection. It is at this juncture that most electronic and manual records are scanned, and professional staff review and interpret the data into codified data sets and abstracted data summaries. Sometimes, there are multiple abstracting systems and data sets used to collect this information. This process is complex, time-consuming, and critical to a hospital’s ability to utilize data for any comparative or clinical research, and to process existing claims data for payment. The process of coding and abstracting generally requires very specific software designed to make this process efficient and accurate.

5. The UB-92 is generally considered “the” primary billing format for hospitals, although facilities that perform physician billing also utilize the HCFA 1500 format. The UB-92 contains most elements of the uniform hospital discharge data set (UHDDS), and it is generally considered a good summary of the basics of a patient-specific visit, minus clinical values.
6. Other decision support systems and data repositories make up the last of the critical data gathering sets. Information is generally loaded into these systems from other entry points, yet these systems are commonly the final resting and access points for much of the facility’s data, after other source documents and files are purged earlier.

How Data Is Monitored

Since data originates in so many different places within a healthcare facility, monitoring it to ensure its accurate collection is often a challenge. Implementation of policies and procedures can support this process and should include guidelines for collection of the data as well as procedures for the correction or revision of data. A data dictionary that provides a glossary of key data elements is essential and should be standardized throughout the organization. A multidisciplinary team consisting of members from HIM, patient registration, nursing, finance, patient financial services, the medical staff, and information services should be granted the oversight authority to maintain this dictionary.

Forms control is also essential. Whether manual or electronic, standardization of forms, including number control, format, design, and content, should be tightly monitored. This not only ensures better data, but also can result in large cost savings for the facility. Improving forms control also helps prepare those facilities for implementation of document imaging and workflow, which is essential to the foundation of an electronic medical record.

Edits and audits are an important part of any data monitoring system. Healthcare facilities can implement systems that provide automated checks, or institute data quality review programs such as a routine and random check on collected data against a set of standard accuracy criteria. This is also helpful for providing performance feedback to employees and can serve a dual purpose by meeting continuous quality improvement initiatives of accrediting agencies. The key is accountability among all staff for the collection of accurate and timely data.

Improving the Data

After monitoring the quality of the data, the next step is to improve the data collection process. This is often a difficult step, as behavioral change in the process of data collection is often resisted. Providing empirical data through the use of run charts and statistics that clearly note the denominator and numerator of what is being studied is a sure way to initiate action. At the same time, care must be taken not to overreact to numbers without analyzing the data. For example, a physician may claim that 20 radiology reports in a single month contained significant errors. However, upon investigation, the reports containing errors were 16 percent of the total reports transcribed that month, and the “significant” errors were primarily grammatical in nature. If a single report contained a potentially problematic clinical error, it could be argued that it may have been correctly transcribed based on the actual dictation. In-depth analysis of the data can uncover the root causes of a specific problem.

When analyzing situations that produce faulty data, attention should focus on the five Ws:

- **WHO** gathers the data is important. Someone with a lack of understanding of how a system works or the terminology used might create a problem due to ignorance. Often there is a lack of resources to manage the data properly—one only needs to listen to a nurse complain that she is there to “take care of patients,” not to “worry about the census being accurate” to understand the difficulty facilities face when healthcare professionals not necessarily suited to the task of data collection are required to
assume multiple roles.

- The WHAT is important. If there is not a clear understanding of the limits of what data is being collected, contamination of data can occur. A common example is collecting free-form narrative diagnosis information when a codified entry is desirable.
- WHERE data is collected is essential, as a noisy environment can lead to distraction and data entry errors.
- WHEN the data is collected is also a key issue. Concurrency is always the best policy to promote timeliness and accuracy. What good does it do for the front desk to know a patient was transferred into observation services this morning, if the location of the patient wasn’t updated until after the patient was admitted as an inpatient and the family had spent a half hour roaming the halls looking for their loved one?
- Finally, WHY data is needed is also important to understand. Countless hours of wasted productivity can occur because of over-collection, over-documentation, and over-reporting. Medical record “size” has doubled and in some cases the paper chart has quadrupled in thickness with duplicative information being collected manually and electronically. The problem is magnified by poorly designed computerized output of many clinical documentation systems. With good forms control, streamlining of essential data elements saves time and dollars and produces better codified data sets in the end.

The final tip in improving data quality is to focus on one improvement effort at a time. If the goal is to reduce the incidence of duplicate medical record numbers assigned to less than 1 percent, don’t stop monitoring this process until that improvement goal is met. Without reinforcement, buy in, and accountability, the problem may return.

**Challenges and Opportunities**

There are several significant areas in healthcare that tend to be traps for creating repetitive problems in data quality. Four of the most common areas are described below:

- Improving Your Master Patient Index Data: Pre-registering patients and creating an active account number before they arrive for admission can lead to extra census entries and “zero charge” false cases in the master patient index. Proper pre-registration and collection of data is fine, but the activation of the account/visit should not occur until a patient is physically present in a facility or an actual specimen (in the case of a reference lab) is received. Entering inaccurate dates (admission, transfer, and discharge) can lead to a variety of problems, including wrong charge calculation, errors in length-of-stay calculations, and other potential issues. Do you really know your MPI? How do you register patients who are solely filling a prescription? Do you allow alias names, and how do you reconcile this with the real patient information?
- A, B, C, D, E Audits: The audit I recommend the most is an audit that is actually a validity check verifying the consistency between the data at various points in the patient care process cycle. A represents the order, B represents the results (documentation in the medical record) that the order was carried out, C the charges that should match the test/process/treatment that was completed, D the coding that should capture the data, and E the data generated on the bill. All of these elements should match in content, yet surprisingly, 3M consultants conducting these audits have found that 60 percent of cases have at least one problem. Try this at your own facility and you may be amazed by what you find.
- Data Interpretation: It’s surprising how different people interpret data definitions. Unfortunately, most facilities operate without a data dictionary to help standardize terms. Those organizations that have a data dictionary are still often plagued by the fact that different information systems may define the same term in a variety of ways.
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Try administering a quiz to the leadership in your facility: ask staff to define who the “admitting” physician is in the emergency department, what their definition of an observation patient is, when they consider the official time of surgery start to be, and what the official day of admission is for a patient who is converted to inpatient status after midnight following treatment the previous evening in the emergency department.

- Data Comparisons: For data to be used for comparative purposes, it must be normalized as much as possible, and severity-adjusted as well. Most facilities, however, don’t get to that point because they still haven’t addressed the basic issues of data collection. This includes deciding which database or system will be used for what purpose. It also includes deciding who is the owner of that data, from both an accurate collection and a final maintenance perspective. Certain systems are designed for more accurate reporting for specific types of abstracted data than others. While eliminating redundant and stand-alone databases is the best approach whenever possible, in some cases a financial decision support system may not be designed to adequately meet the needs of a clinical outcomes and quality management reporting system. It may be necessary to implement a system expressly designed for quality purposes. Finally, every data element in every system should have its own history and owner.

Data Quality and Compliance

The Centers for Medicare and Medicaid Services (CMS), through the Office of the Inspector General (OIG), intensified efforts to study data integrity through their fraud and abuse monitoring system established in 1996. Under the general heading of “Compliance,” OIG efforts targeted correct coding, classification, documentation, and billing issues in healthcare. Noncompliance can result in extensive penalty fines for a facility and a nightmare for the organization’s public relations department. The key focus in the compliance area has been looking at the relationship between documentation, coded data, and bill submission.

Recent advances in automated software help eliminate inconsistencies in these three areas. Automation has begun to redefine how systems can evaluate the data that is being captured, and allows for a greater percentage of auditing of records than ever before. Advances in the use of clinical and resource edits, combined with artificial intelligence tools and natural language processing, will expand the new technologies available to the healthcare market. The use of internal and external consultants to provide process improvement guidelines for documentation, coded data, and bill submission has also proliferated.

A Final Lesson

Data quality is a complex issue and takes dedicated tracking and resources to ensure its accuracy. The data quality cycle is very similar to the quality improvement cycle. The first step is to detect or identify where problems exist. The second step is the correction of identified problems by improving the process of collection. The third step is to prevent future problems by increasing accountability of individuals involved with data collection. It is essential that these individuals be educated as to the importance of improved data accuracy. The final step is to verify that a valid audit process for data quality is in place. Trended data is the key to documenting the quality of the data in an organization’s system.

Looking to the future, the AHIMA Vision 2006 role of data quality manager is now becoming a reality. In the September 2002 issue of Medical Records Briefing, an HIM industry newsletter, the position of a data integrity specialist is described as a critical role in one hospital’s operations. In the November/December 2002 issue of the Journal of AHIMA, Linda Kloss, AHIMA executive vice president and CEO, refers to this new role for HIM
professionals as an “information integrity officer” and states, “Information integrity has the potential for becoming a new discipline, a new science, even a new industry, very much like environmental science and industry, which emerged as a result of society’s concerns...”

Whether it is as a leader in the implementation of a data monitoring system, a database “clean up” specialist, a coding or transcription “edits” analyst, or a full-fledged data quality manager, HIM professionals can look to the future as a time to be involved, engaged, and contributing to the quality of the healthcare system and its information. Let us all champion the cause of quality healthcare data.

Endnotes


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Source: AHIMA’s 75th Anniversary National Convention and Exhibit Proceedings, October 2003

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