Assessing and Improving EHR Data Quality

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Quality healthcare depends on the availability of quality data. Poor documentation, inaccurate data, and insufficient communication can result in errors and adverse incidents.[1] Inaccurate data threaten patient safety and can lead to increased costs, inefficiencies, and poor provider financial performance. Bad data inhibit health information exchange and hinder clinical research, performance improvement, and quality measurement initiatives.

A high-quality electronic health record (EHR) should be an evidence-based decision-making tool. EHRs can have a positive impact on quality of care, patient safety, and efficiencies; however, without accurate and appropriate content in a usable and accessible form, these benefits will not be realized. As stated in Connecting for Health's Common Framework, "data problems represent the dark side of the tremendous potential offered by the adoption of health IT systems."[2]

New Focus on Data Capture Required

The ability to share electronic health information within and among healthcare organizations has been generally accepted as a way to improve the quality and delivery of care and help control rising healthcare costs.[3] Data quality is critical to meeting these expectations. A single error in an electronic environment is at risk of being magnified as the data pass to various data sets, systems, and warehouses.[4] The availability of high-quality data provides consistent information for decision making to support the provision of quality patient care.

Improving the quality of electronic data requires a greater focus on standardized documentation procedures. With an EHR, the need to evaluate and improve healthcare data quality requires a shift from the more traditional retrospective method of auditing data. EHR quality and integrity depend on front-end acquisition of quality data and subsequent successful transfer of that data throughout the continuum of care. Standardized data definitions, content, structure, and the establishment of quality checkpoints throughout the data capture process are needed to enhance the interoperability of healthcare systems. (The sidebar [below] describes the HIM role in ensuring EHR data quality.)

A Model for EHR Document Improvement

To help move the industry toward assessing and improving healthcare data quality at the front-end, AHIMA's e-HIM® work group developed a model for implementing an EHR documentation improvement process. This model adopts the four key elements-application, collection, warehousing, and analysis-outlined in AHIMA's position statement "Quality Healthcare Data and Information." As a complement to the model, this article identifies and recommends best practices for assessing and auditing the health record for data quality in EHR systems. The model and a case study are available online in the FORE Library: HIM Body of Knowledge.

Documentation Guidelines and Data Standards

The medical record is a compilation of clinical and clinically related information and is the primary communication tool for planning and delivering patient care. Quality care and safety improvement goals can be enhanced through the application of documentation guidelines and data standards. The quality of the documentation in the patient record is contingent upon the information entered into the record by all parties involved in the patient's care.

Documentation and data content within an EHR must be accurate, complete, concise, and universally understood by data users. It is critical that both structured and unstructured data meet a standard of quality if they are to be meaningful for internal and external use such as continuum of care and secondary purposes. Even factors such as good screen design can facilitate adherence to documentation guidelines and standards.[5]

Documentation guidelines must be established by the organization in compliance with governmental, regulatory, and industry standards, including those for accuracy and timeliness. The documentation within the record must be comprehensive enough to serve at least the following purposes:

Quality patient care. Documentation must ensure continuity between those caring for the patient today and those who will care for the patient in the weeks or years to come. Effective health information exchange can reduce or eliminate duplication of diagnostic tests, redundancy of processes to obtain information, and the risk of treatment errors. As a core function of an EHR, clinical decision support relies on accurate and complete data content to enable providers to plan for health services and administration of such activities as drug or device recalls.

Reimbursement. Documentation must support accurate billing for patient care and payment of claims. The payment process requires documentation that a visit has occurred or that a test or procedure is medically necessary, has been ordered, or has been performed.

Legal. Documentation serves to protect the legal interests of the patient, the physician, and the organization. In malpractice cases, the content and quality of medical record documentation can be the most important factor. The medical record can assist in determining whether a case has merit and can serve as a memory trigger for the provider. Juries will usually rely on the medical record as the authoritative account of what transpired.

Research. Documentation provides the information necessary for medical research studies. A standard of data quality is necessary for clinical trials and other research to identify epidemiological causes for disease and to advance cures. Medical records are used, for example, by cancer and other disease registries to identify the most effective treatment modalities. Medical record information is used by public health and biosurveillance agencies to help identify threats to public health and safety.

Accreditation and licensing. Documentation must substantiate quality of care assessments provided against specific standards of care to external accreditation organizations and licensing agencies by integrating them into a healthcare provider's documentation guidelines. Meeting accreditation and licensing standards demonstrates to the public an organization's attention to oversight in the delivery of high quality care.

Healthcare administration and quality reporting. Documentation must support decision making by employers and state and federal governments in regard to providing the most cost-efficient healthcare benefits. Health data are used to make decisions about budgets, purchases, the need for new services, and marketing strategies. Medical record documentation is valuable to clinicians when making informed decisions about medical staff reappointment and levels of privileging. Analysis of trustworthy data can also identify problems and suggest performance improvement solutions to ultimately improve the quality of patient care.

Some of the factors that influence quality documentation guidelines and data standards include:

Privacy and security obligation. "Minimum necessary" is a regulatory provision that defines perimeters for accessing protected health information on a need-to-know basis. Patient trust and willingness to give information to their caregivers, levels of security, access limits, and audit trails are integral to maintaining the confidentiality of the electronic medical record.

E-discovery. Discovery of data created or maintained in electronic media is becoming a critical part of gathering and using evidence in legal proceedings, complementing traditional methods such as photocopies, printouts, and digital images of patient medical records.[6]

Provider recognition. Providers meeting or exceeding target industry benchmarks are benefiting from reporting quality and performance measures to a variety of government and private organizations sponsoring quality initiatives.

Legislative and regulatory. It is essential to understand and address regulatory and government-influenced standards related to the development and sharing of health information, including technical standards to enable different healthcare network computer systems to communicate and transfer information, when developing a data and documentation quality plan.

Industry. It is essential to understand and address healthcare industry standards related to the development and sharing of healthcare information, including technical and interoperability standards. Healthcare standards organizations provide

documentation that should help guide the development of facility data standards.

Data Quality Best Practices

To further assist the industry in the combined goals of improving quality of care and ensuring the financial integrity of the organization, the following best practices for ensuring quality healthcare data are recommended:

1. **Access permissions** to the data, sometimes referred to as create, read, update, and delete (CRUD) authority, must be defined and enforced. Clear policies on who can document and update information in the EHR enable a smooth workflow and contribute to the quality and timeliness of the data. This is perhaps a change from the paper-based record where, for instance, the demographics function belonged to the registration department, and only that department was allowed to update demographic data in the record.
2. A **data dictionary** exists with standard data field definitions for each data element, and these definitions are clearly communicated to all staff accessing the record. For example, the distinction between ethnicity and race should be understood and consistently applied during the registration process. Once policies, standards, and procedures are in place, a well-developed data dictionary maintenance process should be implemented. The consistent capture of key data, whether demographic or statistical, is crucial.
3. A **standardized format** is used to ensure consistency. For example, the history and physical is recorded using ASTM E1284-02 (“Standard Specification for Healthcare Document Formats”).
4. **State and federal laws** and regulations; accreditation standards; medical staff bylaws, rules, and regulations; and organizational policies and procedures mirror standardization decisions and are followed by designated staff. For example, attention is paid to, among others, the Joint Commission’s medical record completion standard, HIPAA standards, the Centers for Medicare and Medicaid Services Conditions of Participation, and the Federal Rules of Civil Procedure related to electronic discovery.
5. **Data integrity** policies and procedures are followed. It is important to implement policies and procedures to maintain the integrity of the data throughout the patient encounter for all information entered into the EHR, whether by people or machines. Individuals dedicated to the auditing process who are trained to monitor the system and correct errors as they are identified play an important role in the process.

Potential Technical Challenges for EHR Data Quality

It is important to determine whether the functionality in a given EHR system allows for gathering, accessing, and transferring quality data. A successful transition to an EHR requires data strategies and an effective data quality program that incorporate data integrity processes. Some of the areas to consider include the following:

Master patient index (MPI). Healthcare organizations should ensure the system chosen will identify and reconcile errors that may interfere with establishing the identity of each individual patient. It is important to catch errors as soon as possible after they are made. Robust systems will include technological reporting mechanisms to reverse data integrity problems caused by human intervention. Healthcare organizations should also ensure patient identification systems go beyond exact match in search technologies and include advanced options such as probabilistic matching algorithms to return information that will allow the user to identify the correct patient record.[7]

Current systems analysis. It is important to analyze current systems. Many organizations use legacy systems to feed patient data into an EHR. Some of the decisions to be made include what data to clean up, how far back to go, and how long the cleanup will take. It is important to note, if data are being maintained in more than one system, they must be cleaned up in all systems, including paper charts if applicable, so that bad data do not re-enter the system.[8] As organizational policies are set to optimize standardization toward assurance of data quality, an important consideration is whether current systems allow or support an optimal level of quality for the organization. Maintenance of true quality data may call for replacement of nonsupportive technologies with more modern functionalities.

Conclusion

The technology exists to support healthcare’s transition from paper to electronic health records. Many elements of the national agenda, including the development of functionality standards and product certification by the Certification Commission for

Healthcare Information Technology, the creation of electronic transmitting standards by Health Level Seven, the licensing of SNOMED CT by the National Library of Medicine, and the harmonization of standards by the Healthcare Information Technology Standards Panel, will require quality data from the outset. As pointed out by Connecting for Health, the design of any networked health information exchange system should address data quality from inception.[9]

Strategies for handling data in the electronic environment will necessitate front-end and ongoing monitoring, including point-of-care data quality assessment. While new processes are needed, the traditional, retrospective auditing and quality assurance activities traditionally associated with the paper-based record will continue to be an approach of choice for some data quality checkpoints and continue to exist as a parallel set of assessment functions within the EHR environment.

The HIM Professional's Role in Ensuring EHR Data Quality

The healthcare industry is made up of diverse professions that look at the issue of data quality from different perspectives, and all agree that quality data are critical for patient care and safety, reimbursement, accreditation, quality initiatives, and research. However, there has been little discussion about who is responsible for ensuring data quality in the electronic environment.

In the past the data quality role has fallen largely on HIM professionals as the custodians of the paper record. In the electronic environment, everyone from administrative and support staff responsible for specialty applications to direct caregivers who document in patient records will be tasked with ensuring data quality. It is a break in tradition-that each individual in the array of caregivers who treat, touch, evaluate, and assess a patient has a role in creating and maintaining quality data in the patient's record.

The Ripple Effect

In a networked environment medical record data affect a myriad of internal data sets, systems, and repositories, as well as external databases, networks, and even personal health records. Ensuring the quality and integrity of the data moving through multiple systems has never been more important. EHR technology enables HIM professionals to improve the quality of patient care through influence over quality design and quality improvement functions.

The medical record is evolving from paper to electronic at a time when attention to quality of care is intense. Various quality assessment methods such as total quality management and continuous quality improvement have helped healthcare professionals focus on process and workflow. Changes in the Joint Commission's survey approach have supplemented this focus on quality, with attention to record completeness, timeliness, authenticity, and point-of-care observation and documentation. Other healthcare professionals are beginning to understand what HIM professionals have known all along-that the quality and integrity of the medical record depend on the front-end collection of quality data.

An Evolving Role

The role of the HIM professional is evolving from managing the content of the medical record to contributing to EHR data standardization and harmonization, both within and outside their organizations. The future role of the HIM professional will include helping develop EHR quality models within the organization, using auditing and monitoring checkpoints. Audit programs will help identify points throughout the data collection process that are at risk, along with recommendations for resolution, which may involve people, processes, or systems. EHR audits at the organizational level will provide valuable information for inter- and intra-organization data harmonization efforts that affect health information exchange. HIM professionals can contribute positively to all these efforts through their understanding of the processes underlying the clinical and financial data streams that comprise the EHR.

HIM professionals have always worked to ensure that data in the medical record meet quality standards such as those for accuracy, timeliness, consistency, and completeness. The ability to use these skills in the electronic environment elevates the importance of HIM knowledge within the organization. HIM professionals can now put into practice their knowledge of EHR data quality factors and help their organizations understand the front-end and throughput processes and systems that create and use EHR data. The migration of healthcare records from paper to electronic puts HIM professionals in a unique position to lead the efforts to ensure EHRs contain quality data, which, along with guaranteeing the privacy and security of the data, will be central to acceptance of the EHR.

Notes

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