Expanding Roles: HIM's Terminology Management Opportunity

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Data and documentation in healthcare have become increasingly more complex. The healthcare industry's push toward greater value means healthcare organizations must have systems in place to support high-level data governance and information sharing. Simply put, there is a lot riding on a healthcare organization's ability to engage in business intelligence, analytics, quality measurement, population health, and risk sharing.

Over the past decade, progress has been made on the interoperability front to support greater information sharing through the incorporation of terminology standards within clinical information systems. These terminologies help lay the needed foundation for more precise and complete data aggregation to support a complete and accurate longitudinal patient record.

As stewards of the patient's health record, health information management (HIM) departments play a critical role in understanding and overseeing management of terminology standards. Specifically, HIM ensures the full patient story remains intact as data electronically moves in and out of systems with increased frequency. Consider that in 2015, 78 percent of physicians and 96 percent of hospitals had adopted an electronic health record (EHR) system.[1] As the electronic age in healthcare continues to evolve, a great opportunity exists for HIM professionals to take a lead role in data governance. The first step is understanding the role of clinical terminologies and how they interact.

While most HIM professionals are familiar with ICD-10, CPT, and other billing codes, they must now understand the industry standards and codes that support complete and accurate data exchange—namely SNOMED CT, LOINC, and RxNorm. As the move towards quality care and population health initiatives gains momentum, the ability to accurately define a patient population becomes more important than ever. A 2013 study done at Duke University Health System found that only 70 percent of diabetic patients could be identified through ICD-9 diagnosis codes (claims data) alone.[2] Alternatively, use of claims data in tandem with medication information and laboratory data codified using industry terminology standards brings that percentage to 99 percent.

Bird's Eye View of Industry Terminology Standards

Codes that are familiar to HIM, such as ICD-10, CPT, and the Healthcare Common Procedure Coding System (HCPCS), are typically considered classification systems that can answer limited questions, such as: "What is a patient's diagnosis" or "What procedure was performed?" In contrast, more complex clinical terminologies provide richer information regarding a patient's condition and therefore answer more complex questions.

SNOMED CT

The Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT) is the most comprehensive, multilingual clinical terminology in the world. Use of SNOMED CT was prioritized in the US when the federal government's Stage 2 "meaningful use" EHR Incentive Program required it for the capture of information from problem lists. Going forward, it is a critical component of any strategy that supports improving patient care.

SNOMED CT clinical concepts are organized in a multi-axial hierarchy, thus capturing multiple levels of granularity. Some of the top-level hierarchies include:

- Body Structure
- Clinical Finding
- Event

- Procedure
- Social Context
- Substance

SNOMED CT has more than 310,000 clinical concepts, 794,000 descriptions, 19 hierarchies, and 920,000 relationships. Using the common cold as an example of a clinical concept, the associated code (82272006) is linked to such descriptions as "common cold," "acute coryza," "acute infective rhinitis," and "cold" or "head cold." Its relationships tell us that it is an "infectious process" and it has a finding site of "structure of the respiratory system."

Today, SNOMED CT is essential for recording and sharing clinical data such as patient problem lists and family, medical, and social histories in EHRs. It can be mapped to other international standards, such as ICD-9 and ICD-10, to better facilitate semantic interoperability.

LOINC

Logical Observation Identifiers Names and Codes (LOINC) encompasses a set of identifiers, names, and codes and is the largest and most widely adopted global standard for identifying tests and observations. Owned and maintained by the nonprofit Regenstrief Institute, more than 170 countries use the standard today—including large-scale health information exchanges in Hong Kong, Italy, the Philippines, Spain, Singapore, and Korea.

LOINC is most often associated with laboratory terminology, but it also contains a robust dictionary of radiologic terms, a limited number of clinical observations, and codes for various assessments and surveys. It is a HIPAA-required standard for the transmission of laboratory data and required for "meaningful use" as well as quality reporting measures.

LOINC codes represent either a discrete measurement (i.e., a single lab test) or a "collection" of measurements (i.e., a panel of lab tests). They distinguish a given observation (test ordered/reported, survey question, clinical document) across six dimensions, called parts:

1. Component: The substance or entity being measured or observed.
2. Property: The characteristic or attribute of the component.
3. Time: The interval of time over which an observation was made.
4. System (Specimen): The specimen or thing upon which the observation was made.
5. Scale: How the observation value is quantified or expressed: quantitative, ordinal, nominal.
6. Method: [OPTIONAL] A high-level classification of how the observation was made, which is only necessary when the technique affects the clinical interpretation of the results.

In an electronic transmission of laboratory results, LOINC records the question and SNOMED records the answer. The transmission includes the LOINC code for the performed test and a SNOMED code to report the test's finding. For example, the LOINC code 4548-4 Hemoglobin A1c/Hemoglobin total in Blood might be reported together with SNOMED code 444751005 | Hemoglobin A1c above reference range (finding).

RxNorm

RxNorm is the standard of choice for medication terminology due to its straightforward design and comprehensive framework that supports various levels of granularity. Created and owned by the National Library of Medicine, RxNorm encompasses all prescription medication available in the US and supports the granular representation of drugs needed for clinical practice. As such, its use is mandated by regulatory initiatives such as "meaningful use" for quality reporting and interoperability. It is also a HIPAA standard for the transmission of pharmaceutical information.

RxNorm is powerful because it contains information at various levels of detail and is used for many purposes. For instance, information is obtained at such levels of granularity as medication ingredients, strength, and dose. The standard accomplishes this by assigning term types to each of the terminologies that help organize the data. For instance, "IN" would be the term type indicating the ingredient level.

The Problem of Disparate Data

Patient information is stored in a variety of locations—clinical notes, insurance claims, and problem lists, for example. All this data is needed to create a complete, longitudinal patient record. When standard terminologies are not used, local vernacular can and does vary across information systems. For instance, hemoglobin A1c values may be referred to as "HbA1c" by one institution, "A1c" at a second and "glycosylated hemoglobin" at a third. All of these terminologies must be normalized to an industry standard—in this case LOINC—to ensure semantic interoperability and support accurate data analytics.

Ongoing Management of Industry Standards

Industry standards are updated regularly as new evidence is introduced. To ensure ongoing accuracy and completeness of patient information, healthcare organizations must make sure that all systems are using the most up-to-date versions of standards to fully represent clinical concepts.

Ongoing management and maintenance of standards is no easy feat for the average resource-strapped healthcare organization, especially since updates occur at different times, on different schedules, in different formats, and from different sources. For instance, updates are made annually to ICD-10. The 2018 ICD-10 update included 500 diagnosis code changes and 4,000 procedure code changes, 3,500 of which encompass the introduction of new codes. Updates are conducted twice annually to SNOMED CT and LOINC, and RxNorm is updated weekly due to the rapid introduction of new medications and evidence.

As a best practice, healthcare organizations are increasingly turning to reference data management (RDM) as a strategy for managing the terminologies needed to succeed within an evolving regulatory environment. A function of master data management, RDM provides the framework for organizing data around a central service and is called out as an important component of analytics maturity by the Healthcare Information and Management Systems Society.[3] RDM helps align clinical terminology with industry standards, enabling the industry's wide array of disparate healthcare terminologies and codes to be represented via a single source of truth.

Due to the complexities of ongoing maintenance, many hospitals and health systems find that the business case for investing in automation is an easy one to make. Infrastructures exist that can help streamline RDM initiatives as well as ongoing maintenance and updating of data assets.

Strategies Needed for Ongoing Management of Data

As HIM departments consider how to effectively address oversight and management of industry terminology standards, the following questions should be considered:

- What standards does my organization use?
- Who owns the distribution of those standards?
- How many systems consume that data?
- What process is followed to keep the standards up to date?
- How are the standards distributed throughout the organization to ensure consistent data?

Once fully assessed, HIM departments can devise appropriate strategies for ongoing management of these important data assets, equipping professionals for a greater role in data governance.

Notes

1. Office of the National Coordinator for Health IT. Health IT Dashboard. https://dashboard.healthit.gov/apps/health-information-technology-data-summaries.php?state=National&cat9=all+data&cat1=ehr+adoption.
2. Richesson, Rachel L. et al. "A comparison of phenotype definitions for diabetes mellitus." *Journal of the American Medical Informatics Association* (September 11, 2013). www.ncbi.nlm.nih.gov/pmc/articles/PMC3861928/.
3. Healthcare Information and Management Systems Society. "HIMSS Analytics Adoption Model for Analytics Maturation." March 22, 2016. www.slideshare.net/JamesEGastonFHIMSS/himss-analytics-adoption-model-for-analytics-maturity-march-2016.

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