Metadata for HIM: ISO Standards for Global Interoperability

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Metadata are often characterized as "data about data." They are a unique type of data stored and managed in a database commonly referred to as a registry or repository.

The National Information Standards Organization defines metadata as "structured information that describes, explains, locates, or otherwise makes it easier to retrieve, use or manage an information resource."[1] Metadata employ specific data types in the collection, formatting, storage, and retrieval of information.

Metadata support discovery and use of information related to specific tasks and enable the organization of electronic resources, digital identification, archiving, and/or preservation of information. In many situations, metadata use is comparable to traditional library cataloging, allowing content to be indexed in multiple places. HIM metadata records describe a clinical report, the version of the report, or a particular copy of a specific edition of the report.

Since healthcare has matured in its use of technologies in the development of electronic health records, data warehouses and a multitude of data-related registries have emerged. Continued growth in interoperability and improvements in healthcare safety and quality and other areas require more than just collecting and dumping data into reporting systems. The most effective data collection process provides relevant and actionable information and begins with identifying logical categories and top-level descriptive, structural, and administrative metadata.

As a result, it is important for HIM professionals to become familiar with the International Organization for Standardization's (ISO) metadata standards. HIM professionals play an important role in adopting ISO's metadata standards to boost efficiency and data sharing.

For example, the Office of the National Coordinator for Health IT proposed metadata standards to support nationwide electronic health information exchange.

Learning about and understanding how these standards affect the management of data and the results in electronic health records and other health information systems is essential. Fortunately, there are existing standards readily available as resources.

About ISO

ISO is an acronym seen often in the healthcare space and across many other industries worldwide. ISO is the world's largest developer and publisher of international standards. It is a nongovernmental organization working in partnership with the national standards institutes of more than 160 nations.

ISO works with stakeholders representing public and private partnerships to serve as a connector between multiple sectors. Most global industries, including agriculture and food technology, construction, electronics, IT, telecommunications, and healthcare, are involved in the ISO standards development process. As such, ISO provides an important framework for multiple levels of data and informatics standards.

Frequently Used ISO Metadata Standards

ISO standards appear throughout the healthcare industry, including in data models and registries. There are many ISO healthcare data-related standards; a few of the most common are outlined below.

ISO/IEC 11179 specifies the "kind and quality of metadata necessary to describe data, and it specifies the management and administration of that metadata in a metadata registry (MDR). It applies to the formulation of data representations, concepts, meanings, and relationships between them to be shared among people and machines, independent of the organization that produces the data."[2]

The phrase "independent of the organization that produces the data" is important because it reflects metadata developed with an eye toward electronic data interchange.

Generally speaking, in the past healthcare entities were not required to think about resulting use of data generated outside the walls of its creation. Increasing mandates for interoperability-the ability to freely share information and to take action or make decisions based on data exchanges-make use of standards for application of metadata a critical factor in data integrity and patient safety.

This standard supplies a description of the metadata and activities needed to manage data elements in a registry. (More information on data registries is outlined below under "Data Registries and Metadata Registries.")

ISO 15000-3 provides an information model that supports healthcare data capture and exchange on the type of metadata that are stored in a specific type of registry (e.g., an ebXML registry) as well as the relationships among different metadata types or classes, including important core data components such as a unique ID for the message, indicating message sender, and a method for linking related messages. These capabilities are required for the development, support, and effective use of data registries and repositories.

The data standard ebXML enables business to be conducted by any enterprise anywhere in the world via the Internet.

AHRQ's Meaningful Use Metadata Portal

The Agency for Healthcare Research and Quality offers a metadata portal that enables users to find details and data elements related to the meaningful use requirements. The use of metadata in this tool creates an easy-to-access and easy-to-use reference for meaningful use requirements. This resource is part of the USHIK metadata registry and facilitates access to the meaningful use final rule, including the tables, measure sets, and measures in the final rule.

Visit http://ushik.ahrq.gov/dr.ui.drMeasureListing_Page?system=mum to access the different meaningful use requirements.

Data Registries and Metadata Registries

HIM professionals are familiar with data dictionaries, which are associated with single data sets. However, they may not be as informed about data and metadata registries.

In brief, data registries are collections of multiple data elements collected for specific purposes. These registries provide a model or framework for managing data from multiple sources in order for the data to be used for research and reporting. An example familiar to HIM professionals is disease or injury registries such as cancer registry, traumatic head injuries, and birth defects.

There are an unknown number of public, private, and hybrid registries across the globe used in a wide variety of settings, including public health, research, and administration.

Metadata registries provide a central location for accessing and managing metadata tags using a controlled methodology. They organize information about data elements, facilitate access to information, enable standardization, and support data sharing in multiple organizations and settings.

Examples of some of the well-known healthcare metadata registries include:

- Agency for Healthcare Research and Quality's United States Healthcare Information Knowledgebase (USHIK)
- Centers for Disease Control and Prevention's Public Health Information Network Vocabulary Services (PHIN VADS) and Cancer Data Standards Registry and Repository (CaDSR)

Metadata registries play a key role in data management and support for electronic information exchange in many industries including healthcare. Since this is a key factor for future information management, it is an important concept to understand as it applies to electronic health data exchange and management of patient information.

Notes

1. National Information Standards Organization. "Understanding Metadata." 2004. www.niso.org/publications/press/UnderstandingMetadata.pdf.
2. International Organization for Standardization. "ISO/IEC 11179-1: 2004." www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=35343.

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