US Health Information Knowledgebase: A Metadata Registry that Makes Sense of the Myriad Standards

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Current health information exchange (HIE) initiatives continue to develop data exchange models and adopt standards required to support them. Their progress is complicated by the independent nature of the initiatives and a lack of common agreement for data content.

Metadata registries like the United States Health Information Knowledgebase (USHIK) are important tools for projects such as these. HIEs can search USHIK to identify existing data content standards rather than create their own data sets.

USHIK—Harmonizing Data Formats

Interoperability and HIE continue to be complicated by the lack of consensus on standardization, in spite of the existing messaging and indexing standards provided by standards organization Health Level Seven and the terminology system Systemized Nomenclature of Medicine Clinical Terms. Existing systems still depend all too frequently on software interfacing or mapping between incongruent codes and data elements rather than use of common code sets and data elements.

Funded and directed by the Agency for Healthcare Research and Quality (AHRQ), USHIK is an easy-to-use metadata registry that identifies existing standards important for health information exchange. It lists data elements and information models from standards development organizations and other healthcare organizations, allowing public and private organizations to harmonize information formats with existing and emerging healthcare standards.

Take for example a regional health information organization looking to design a format for data collection. It needs to know if a standard exists for common data elements such as discharge disposition or patient gender. A simple search in USHIK indicates that some standards use more than two different choices for designation of the patient's gender or that the definitions and values used for discharge disposition are slightly different depending on the source.

The metadata repository supports data element mapping analysis against selected standards. It is also helpful for conducting a gap analysis comparing required data elements. Identified gaps and omissions in the standards should be provided as feedback to the standards development organizations. This promotes refinement and enhanced interoperability among standards.

AHRQ will update USHIK, and it may be used by individuals and groups without charge at www.ushik.ahrq.gov.

USHIK Excerpt

Name	Sex/Gender	A quick USHIK search for sex/gender data elements brought up a data element from Consolidated Health Informatics, excerpted at left. The definition outlines the specifics of the standard, including the definition, the context, the registration
Definition	This field contains the sex identifier. M for Males, F for Females, O for Other, U for Unknown, A for Ambiguous, N for Not Applicable	

Context	CHI Standards	authority, and the data element ID.
Registration Authority	CMS	
Data Element ID	74312.v1	
Status	Recorded as of 2004-07-19	
Type	Data Element	
Example	No example available for this data element	

USHIK in Use

The Healthcare Information Technology Standards Panel (HITSP) is looking to develop and use USHIK in its work to harmonize differing data standards.

HITSP intends to use USHIK as a tool to screen HIE standards for possible existing data elements. Knowing where data standards exist enables use case and interoperability specification development by pointing to existing data elements with similar definitions and use.

For example, a quick USHIK check for "gender" returns 12 sources with source data and essential attributes about the data elements. The tool facilitates creation of a matrix to evaluate each source. A search of "sex" provides 18 additional sources for data elements that include the term in the item label. More information is listed behind each data element, including permissible values.

In one of the standards found in USHIK, the World Health Organization differentiates between "sex" and "gender," where "sex" refers to the biological and physiological characteristics that define men and women, and "gender" refers to the socially constructed roles, behaviors, activities, and attributes that a given society considers appropriate for men and women.[1] What seems simple to humans is more challenging to computers and health information exchange networks.

In the case of Male = 1 and Female = 2 or Male = M and Female = F, the numbers 1 and 2 or M and F require context to convey the intended meaning between sender and receiver(s). Adopting a standard facilitates assurance of data accuracy so Jamie Jones or Mackenzie Smith can be assured the appropriate value sent is received and correctly represented.

AHRQ supports HITSP's data element refinement efforts and is providing USHIK specialists for technical committee use case development. The USHIK users' guide, available on the USHIK site, is helping the committee with data element comparisons across selected standards by displaying compatible choices in a useable format.

HITSP's work will be available through a portal on the USHIK site and is nearing public availability.

At the same time, a collaborative effort is under way this year between HITSP, the NHIN Cooperative, the Certification Commission for Healthcare Information Technology, and the standards development organizations to improve clarity and understanding of all their HIE initiatives. The groups will:

- Provide glossaries of terminologies

- Isolate and centralize resources
- Simplify or eliminate confusing technical jargon
- Develop agreed upon-data elements and value sets

This information will be posted to USHIK once the work is complete.

USHIK offers a reliable and central resource for up-to-date sources of standard data element attributes and access points. It is a step in the right direction toward safe exchange of data.

Note

1. World Health Organization. "What do we mean by 'sex' and 'gender'?" Available online at www.who.int/gender/whatisgender/en/index.html.

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More Metadata Repositories

USHIK isn't the only metadata registry available. Additional metadata repositories include:

- National Library of Medicine's UMLS Metathesaurus at www.nlm.nih.gov/research/umls
- National Cancer Institute's Cancer Data Standards Registry and Repository (caDSR) at http://ncicb.nci.nih.gov/NCICB/infrastructure/cacore_overview/cadsr
- National Information Exchange Model at http://niem.gtri.gatech.edu/niemtools/home.iepd
- Public Health Data Standards Consortium found at www.phdsc.org/standards/fse.asp

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