

Kaiser's Donation of its Convergent Medical Terminology Dictionary Puts the Spotlight on the Role of Clinical Terminology Services in Driving Meaningful Use of EHRs

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Last month, Kaiser Permanente announced that it will donate its proprietary clinical terminology database, the Convergent Medical Terminology dictionary (CMT), to the International Healthcare Terminology Standards Development Organization (IHTSDO). The CMT is a core part of Kaiser's popular HealthConnect EMR system. It contains more than 75,000 clinical terms and concepts, maps to other clinical vocabulary sets, including the widely-used SNOMED-CT, and can link to coding protocols like ICD-9 and ICD-10. Kaiser spent 16 years and millions of dollars to develop the CMT for use in its own clinics and says that the primary purpose for making the donation today is to allow IT vendors and other healthcare providers to more easily incorporate a medical dictionary into their existing EHR systems. The CMT will be distributed free of charge by the Department of Health and Human Services; the National Library of Medicine and the Department of Veterans Affairs will provide additional technical support.

Kaiser's contribution highlights an important issue for health IT vendors and providers - the need for a common medical vocabulary. As HHS Secretary Kathleen Sebelius noted in a recent statement "one of the key challenges to achieving a coherent (electronic) health record for every U.S. consumer is the need for consistent data across all systems and institutions." In other words, a patient diagnosed with a heart attack, myocardial infarction, or MI - three separate terms referring to the same thing - need to be mapped and linked so IT systems can share accurate information among providers, payers, and researchers and between patients and providers. The coherency and consistency that Secretary Sebelius refers to can only be achieved when EHRs are connected electronically and *semantically*. Clinical terminology databases (or reference databases) like Kaiser's CMT that map and link disparate terms to one standard terminology are a cornerstone of interoperability and meaningful use of EHRs as required by HITECH. For example, meaningful use requirements stipulate that providers must maintain problem lists, essentially a succinct view of a patient's health status, in their certified EHR using either ICD-9 or SNOMED.

The extremely complex, diverse, and dynamic processes around the language of medicine and the need to translate numerous specialized terminology and classification schemes into consistent data has been a major barrier to realizing the full potential of interoperable HIT for years before meaningful use and

HITECH incentives were on the scene. Several national and international efforts have been underway for some time to address the need to develop compatible terminology standards, e.g., the work of IHTSDO and similar organizations. Given the urgency around driving the adoption of EHRs, it is helpful to take a closer look at the changing landscape around the provision of terminology and classification systems and services as well as the government's current efforts around promoting broader access to standardized clinical terminology resources.

Basic Definitions for Terminology and Classification Systems

A clinical terminology or controlled medical vocabulary is a structured list of concepts and associated descriptions used to describe diseases, procedures, treatments, medications, etc. and to codify the clinical information captured in an EHR during the course of patient care. There are many such vocabulary lists in use today, emanating from standards organizations (SDOs), providers, and commercial IT vendors. Some of the more commonly seen systems include the Systematized Nomenclature of Medicine-Clinical Terms (SNOMED-CT), RxNorm, the Unified Medical Language System (UMLS), the Logical Observation Identifiers Names and Codes (LOINC), MEDCIN, and the aforementioned Convergent Medical Terminology (CMT) dictionary. Classification systems such as the International Classification of Diseases (ICD), Current Procedural Terminology (CPT), Healthcare Common Procedure Coding System (HCPCS), and numerous others group together similar diseases and procedures and organize related entities for easy retrieval. Unlike terminology systems, which are input systems used to document the process of care, classification systems are typically used for external reporting requirements, or output, and other uses where the need to aggregate data is important like in measuring the quality of care, monitoring resource utilization, processing claims, and so on. Together, standard clinical terminologies and classification systems represent a common medical language that allow clinical data to be effectively used and shared between systems and providers.

Linking and Managing Terminology and Classification Systems

Mapping is a process that refers to linking content from one terminology or classification scheme to another, e.g., linking a SNOMED term to an ICD code. Maps result in an expression of the relationships between the terminologies and classifications. Managing terminologies and classifications is a complex and dynamic process. Terms and concepts are constantly evolving and changing as new diseases, treatments, scientific information, regulations, and medical processes and procedures emerge. These changes require constant maintenance and updates.

Proprietary and Public Resources to Access Terminology and Classification Resources

A variety of proprietary and public domain resources are available to help healthcare providers and IT vendors enable semantic interoperability. Managing bodies include the American Medical Association for CPT codes, the World Health Organization for ICD codes, IHTSDO for SNOMED, and the National Library of Medicine for RxNorm and UMLS, in addition to many other organizations that open access or fee-based resources and services. An example of a free resource is the National Library of Medicine's UMLS metathesaurus which integrates and distributes key terminology, classification and coding standards, and associated resources including software tools for use by system developers. The UMLS is not software; it is basically a system that was designed for information retrieval. The ULMS does not provide plug and play functionality; in the real world, end-users need to integrate information and knowledge (not merely data points) into their workflow in an efficient manner and this requires a more sophisticated level of programming.

The commercial terminology services market is served by a handful of specialized IT vendors. These companies sell a variety of products and services to health IT vendors and providers across the healthcare spectrum from hospitals and ambulatory providers to ancillary service providers, HIEs, RHIOs, and other organizations. There currently are less than 10 major companies in this market, and all have been around for several years. The main players include Health Language and 3M, considered to be the market leaders, in addition to Apelon, bMotion, IMO, and CAP STS. These vendors have some overlapping products and services but they all do things differently. Each company has a primary focus on a different type of client or market segment, e.g., some companies might be focused on services while others might be focused on the terminology tools.

Current Efforts by ONC to Promote Terminology Standards

The Health IT Standards Committee (HITSC) is one of two committees driving the work of the Office of the National Coordinator for Health Information Technology (ONC) under Dr. David Blumenthal. The HITSC is charged with making recommendations on standards, implementation specifications, and certification criteria for the electronic exchange and use of health information. The Vocabulary Task Force, part of HITSC, holds monthly meetings and is focused on addressing a range of issues around vocabulary resources as related to meaningful use. In April 2010, HITSC sent two recommendations to ONC. The first recommendation calls for a single, federal office or agency to be responsible for ensuring the creation, maintenance, dissemination, and accessibility of standard clinical vocabulary resources and to coordinate with various stakeholders. The second recommendation calls for establishing an "authoritative infrastructure" for development, maintenance and dissemination of vocabulary resources. The ultimate goal is a "one-stop shopping" location for vocabulary resources as needed by vendors and providers in order to meet meaningful use. The required resources would be licensed by the federal government and distributed freely, much like the existing resources provided by the National Library and like the newly announced CMT resources donated to IHTSDO by

Kaiser. It is unclear at this point how this “one-stop shopping” resource would work or what would be included. What is clear is that the technical and logistical infrastructure needed to create and sustain national meaningful use vocabulary resources will be a complex undertaking.

More Government Involvement Will Require Changes in Established Practices

Clinical terminology and classification systems form the foundation of information content in EHRs. In addition to facilitating interoperability, terminology standardization can facilitate the adoption of best practices, drive evidence-based medicine, and promote cost efficiencies by reducing redundant tests and procedures. Standardized medical language can also advance medical research by making clinical data more amenable to automated data mining and analysis. Creating, distributing, and updating clinical terminology content is a complicated process. Even if various vocabulary resources and their related tools become more easily accessible through the efforts of the ONC and organizations like Kaiser, full implementation and appropriate use often still requires careful business process planning, subject and/or technology experts, and manual mapping processes for successful deployment. Maintenance issues are particularly challenging given the dynamic and changing language of medicine.

Kaiser’s generous donation to IHTSDO, the efforts of the Vocabulary Task Force, and ongoing innovation in services and products provided by the commercial marketplace are all examples of efforts to move the needle forward on the meaningful use of EHRs by enabling semantic interoperability. The impact of expected changes around terminology standards on the market for commercial terminology vendors is unclear at this point. Key stakeholders appear to be aligned for needed change to take place and this should improve business prospects for some existing market participants but may threaten others. Companies will likely need to adapt some established practices to adjust to a new market reality where the federal government may take a more prominent role.

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