SNOMED at the Point of Service: The Challenges and Opportunities of SNOMED-Encoded Data

By Robert H. Dolin

SNOMED CT is a comprehensive clinical healthcare terminology developed in part for use within electronic health records (EHRs) to enable a more complete record of care. According to the International Health Terminology Standards Development Organisation (IHTSDO), the organization responsible for SNOMED CT, "When implemented in software applications, SNOMED CT can be used to represent clinically relevant information consistently, reliably and comprehensively as an integral part of producing electronic health records."[1]

SNOMED CT is part of a major shift in the way clinical data are generated. In the past, clinicians dictated or wrote on paper, and coding (primarily conditions and procedures) was done after the fact by certified coders.

Today, clinicians are increasingly using EHRs, and clinical data are captured directly at the point of service, where large portions of the EHR are amenable to clinically relevant standardization.

This paradigm shift opens up new opportunities and challenges, where point-of-service data encoded in SNOMED CT are becoming increasingly available.

The Benefits of SNOMED CT

SNOMED CT has emerged as a coding system of choice for EHRs because of its clinical specificity, domain coverage, and technical underpinnings.

SNOMED CT is preferred for disease management, better understanding of health conditions and healthcare outcomes, quality assessments, biosurveillance, and chronic care management "because it is a knowledge-based ontology capable of inferences and subsumptive queries whereas ICD is not, which among other reasons make SNOMED CT the coding system of choice for clinical documentation," according to Jamie Ferguson, executive director of health IT strategy and policy at Kaiser Permanente.[2]

SNOMED CT has been repeatedly identified as the best choice for an EHR terminology standard, particularly given its broad and encompassing content coverage.

A recent pan-Canadian evaluation showed SNOMED CT to have the best coverage for 27 priority clinical subdomains, thereby representing the best target for consistency in clinical terminology.[3] Clinical subdomains are SNOMED CT partitions specific to a particular area of medicine, disease type, or activity (e.g., family history or genetic conditions).

As an interoperability standard, SNOMED CT is a foundational component of "meaningful use" in that it enables data reuse and quality measurement scenarios such as public health aggregation of infectious pathogens, bioterrorism syndromic surveillance monitoring of signs and symptoms, and evaluation of the care provided to patients with acute stroke. Interoperability standards, including standardized terminology, play a critical role in enabling such functionality.

Standards facilitate the capture of richly expressive clinical data. Interoperability aside, the standards development process has led to the development of Health Level Seven's Reference Information Model (RIM), a large data model of the healthcare domain that serves as the basis for all HL7 version 3 specifications, such as HL7 Clinical Document Architecture. (See "Easing e-Discovery" in the January 2010 issue for more on RIM.)

The combination of SNOMED CT and the RIM provides a powerfully expressive means of representing healthcare information that will drive innovative data capture techniques and enable greater sophistication in clinical decision support.

SNOMED Challenges

Of course, this shift toward direct use of SNOMED-encoded, point-of-service data is not without challenges. Issues related to quality, ambiguities around the different terminologies recommended for use in the United States, and reporting bias must be overcome.

IHTSDO is continuing to refine and execute its comprehensive SNOMED CT Quality Plan. Through this and related efforts, the healthcare industry can expect to see continuing quality improvement in such areas as content domain coverage and consistency.

Education and further clarity around the relationship between SNOMED CT and ICD-9 and ICD-10 will be necessary. The current IHTSDO project to develop a one-way authoritative mapping from SNOMED CT to ICD will enable both rich data capture at the point of service, while providing for ongoing support for billing and administrative requirements.

Finally, it is important to note that analysis of data captured by clinicians at the point of service, SNOMED-encoded or not, can be subject to various forms of reporting bias.

Imagine, for instance, trying to compare disease prevalence across different groups, each using a different subset of SNOMED CT, or trying to measure quality when different groups capture different data elements on patients with similar conditions.

Variation in implementations can result in suboptimal capacity to exchange information in a manner that supports safe, equivalent interpretation between providers and analysts. The Healthcare Information Technology Standards Panel has addressed this potential for variability through the development of interoperability specifications (e.g., HITSP/C83 CDA Content Modules Component; HITSP/C80 Clinical Document and Message Terminology Component).

Adherence to these specifications helps ensure that SNOMED CT is used, or "meaningfully used," consistently across the country, since in the end, interoperability standards such as SNOMED CT are a prerequisite to meaningful use.

Notes

1. International Health Terminology Standards Development Organisation. "About SNOMED CT." Available online at www.ihtsdo.org/snomed-ct/snomed-ct0.
2. Halamka, John. "ICD9, ICD10 and SNOMED, a Guest Blog." Available online at http://geekdoctor.blogspot.com/2008/10/icd9-icd10-and-snomed-guest-blog.html.
3. BC Ministry of Health Services, et al. "Toward the Implementation of Health Terminologies in Canada: SNOMED CT." May 22, 2008.

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