Benefits of Using SNOMED CT and LOINC in Assessment Instruments

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Using More than One Standard Terminology for Data Sets Provides More Detail

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The fundamental purpose of keeping health records is to track changes in health status and the resulting impact of diseases or disorders. Assessment forms and instruments are commonly used in electronic health records to express clinical concepts, with or without the use of standard terminologies.

Evidence-based assessments have been used for many years to measure the health status of individuals periodically to identify improvements or decline over time. In some cases, the data items within assessments become the basis for quality of care measurement or inform the payment process for reimbursement or qualification for disability benefits.

Fortunately, standards development work is under way to enable sharing of this important data between healthcare providers for ongoing patient care use. In order to accomplish this, two standard terminologies—Clinical LOINC and SNOMED CT—have been tapped to play a role in providing coded data structure to ensure interoperability and reuse for more than one purpose.

The Benefits of Using Two Terminologies

Any forms-based assessment using questions and answers has the potential to be standardized using a combination of standard terminologies. The National Center for Vital and Health Statistics endorses the Consolidated Health Informatics (CHI) recommendations within the functioning and disability domains, which includes using Clinical LOINC in patient assessment instruments, questions, and answers. CHI standards also include use of SNOMED CT to enable semantic matching of terms available in electronic health record environments.

Why does a standardization effort employ two different terminologies in combination for survey instruments or assessment forms? The short answer is that no single standard terminology can capture full meaning of assessment or survey questions and all possible responses in complete context. Using Clinical LOINC and SNOMED CT in combination provides broad coverage for expression of both requirements.

In addition, the use of SNOMED CT provides the added bonus of identifying concepts that are semantic matches or usefully related enough to the question-answer pairs in the instrument to be valuable in electronic environments.

LOINC in Use

The utility of this approach is best illustrated through an example of an assessment instrument familiar to HIM professionals who work in long-term care skilled nursing facilities: the Minimum Data Set for Nursing Home Resident Assessment and Care Screening Basics Assessment Tracking Form.

The question asked in this part of the assessment is “Does the patient hear?” (The paper form abbreviates the question to one word—see “MDS Form Excerpt,” below.)

LOINC code 45498-3 expresses the concept “hearing.” In addition, the LOINC terminology provides specific codes for the answers to the question in LOINC answer (LA) strings. In this case:

- LA67 hears adequately—normal talk, TV, phone
- LA68 minimal difficulty when not in quiet setting
- LA69 hears in special situations only—speaker has to adjust tonal quality and speak distinctly
- LA70 highly impaired/absence of useful hearing

The LA "answers" are associated with the "question" of hearing. In electronic environments, the question–and-answer pairs are linked to preserve context. The LOINC terminology uses panels to represent entire survey instruments, so there is a special section of the LOINC database that includes MDS-related codes.

Use of panels makes it possible to reuse items across instruments, as well as uniquely identify the version and contents of a survey by the LOINC record for the panel. In this way, as more assessments and survey instruments are LOINC encoded, the long-term goal of data sharing is achievable. In the future, more instruments (with the inclusion of question-and-answer pairs) will be included within the LOINC terminology, building a repository of reusable electronic health record components.

MDS Form Excerpt

SECTION C. COMMUNICATION/HEARING PATTERNS

1. Hearing

(With hearing appliance, if used)

0. *HEARS ADEQUATELY*-normal talk, TV, phone
1. *MINIMAL DIFFICULTY* when not in quiet setting
2. *HEARS IN SPECIAL SITUATIONS ONLY*-speaker has to adjust tonal quality and speak distinctly
3. *HIGHLY IMPAIRED*/absence of useful hearing

A forms-based assessment such as the MDS has the potential to benefit from the application of standardized terminologies to its question-and-answer format.

Combining LOINC and SNOMED CT

Using SNOMED CT combined with LOINC permits additional analysis and semantic matching with other available clinical content systems. An illustration of a semantic match involving the MDS example on the preceding page is the SNOMED CT concept "Normal hearing" (139622002), which has the same meaning as "hears adequately." Using SNOMED CT to standardize assessment instruments to bring in "usefully related concepts" is helpful for clinicians in completing assessments or consideration for treatment.

An example of a "usefully related" concept in SNOMED CT for the first answer choice (#0) is "Able to hear" (300199007), because it is related to the first answer response in a useful way. The third answer choice (#2) is SNOMED CT code 306971007, "Unable to hear conversational voice," when captured in electronic health record documentation, which helps inform the completion of the minimum data set or provide continuing care.

Health Level Seven's Patient Care Technical Committee, Vocabulary Technical Committee, and the Terminfo project provide guidance about the use of SNOMED CT in version 3 of its communication standards.

Many organizations and volunteers continue to advance health information exchange standards involving assessment scales and related data forms. The use of two terminologies in combination leverages expression in electronic environments not possible with either terminology used alone for standardizing assessments.

Two Nations, One Goal

Canada Health Infoway, the Canadian Healthcare Information Technology Trade Association, and the Association of Health Technology Industry have formed a task force to promote a new set of pan-Canadian health information technology standards. In the United States, the Health Information Technology Standards Panel continues to develop interoperability specifications that include standard terminologies.

The goal for both nations is an interoperable electronic health records, including components that can be shared when a patient transfers care from one provider or care setting to another.

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References

Bakken, S., et al. "Evaluation of the Clinical LOINC Semantic Structure as a Terminology Model for Standardized Assessment Measures." *Journal of the American Medical Informatics Association* 7, no. 3 (2000): 529–38.

Canada Health Infoway. "Industry Leaders Form Task Force to Align on Electronic Health Record Standards." Available online at www.infoway-inforoute.ca/en/News-Events/InTheNews_long.aspx?UID=315.

Centers for Medicare and Medicaid Services. "Nursing Home Quality Initiatives." Available online at www.cms.hhs.gov/NursingHomeQualityInits/25_NHQIMDS30.asp.

Giokas, Dennis. "Canada's Interoperable EHR: Infoway Chooses the More Challenging Path, the Greater Benefits." *Journal of AHIMA* 79, no. 5 (May 2008): 56–57, 60.

Health Information Technology Standards Panel. Available online at www.hitsp.org.

Health Level Seven. "HL7 Terminfo." Available online at www.hl7.org/Special/committees/terminfo/index.cfm.

International Health Terminology Standards Organisation. "Technical Documents." Available online at www.ihtsdo.org/our-standards/technical-documents.

National Center for Vital and Health Statistics. "Consolidated Health Informatics Standards Adoption Recommendation Functioning and Disability." Available online at www.ncvhs.hhs.gov/061128lt.pdf.

Office of the National Coordinator for Health Information Technology. "Presidential Initiatives." Available online at www.hhs.gov/healthit/chiinitiative.html.

Rode, Dan. "Connecting the Dots: Outlining the Organizations Involved with EHRs and HIE." *Journal of AHIMA* 78, no. 4 (Apr. 2007): 18–20.

Tuttle, Mark, et al. "Making the Minimum Data Set Compliant with Health Information Technology Standards." Department of Health and Human Services. July 5, 2006. Available online at http://aspe.hhs.gov/daltcp/reports/2006/MDS-HIT.htm.

Walker, Jane, et al. "The Value of Health Care Information Exchange and Interoperability" *Health Affairs,* January 2005. Available online at www.healthaffairs.org.

White, Thomas M., and Michael J. Hauan. "Extending the LOINC Conceptual Schema to Support Standardized Assessment Instruments." *Journal of the American Medical Informatics Association* 10, no. 9 (2002):586–99.

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