Coordinating SNOMED-CT and ICD-10: Getting the Most out of Electronic Health Record Systems

by Sue Bowman, RHIA, CCS

A standard electronic health record (EHR) and interoperable national health information infrastructure require the use of uniform health information standards, including a common medical language. Data must be collected and maintained in a standardized format, using uniform definitions, in order to link data within an EHR system or share health information between systems. The lack of standards has been a key barrier to electronic connectivity in healthcare.

Together, standard clinical terminologies and classifications represent a common medical language, allowing clinical data to be effectively utilized and shared between EHR systems. Therefore, standard clinical terminologies and classifications, with maps to link them, must be incorporated into EHR systems to achieve system interoperability and the benefits of a national health information infrastructure.

Terminologies and Classifications: Distinct Purposes

Neither a clinical terminology nor a classification can, by itself, serve all of the purposes for which health information is currently used or will be used in the future. Terminologies and classifications are designed for distinctly different purposes and satisfy diverse user data requirements. Multiple terminologies as well as classification systems are necessary to capture and effectively use the breadth and depth of clinical data in an EHR.

Classification systems such as ICD-9-CM, ICD-10-CM, and ICD-10-PCS group similar diseases and procedures and organize related entities for easy retrieval. Classification systems allow granular clinical concepts captured by a terminology to be aggregated into manageable categories for secondary data purposes. They are typically used for external reporting requirements or other uses where data aggregation is advantageous, such as measuring the quality of care, monitoring resource utilization, or processing claims for reimbursement. Classification systems are considered "output" rather than "input" systems and are not intended or designed for the primary documentation of clinical care. They are inadequate in a reference terminology role because they lack granularity and fail to define individual clinical concepts and their relationships. Yet they are the most common source of clinical data today, readily available as a byproduct of the healthcare reimbursement process.

Reference terminologies such as SNOMED-CT are "input" systems and codify the clinical information captured in an EHR during the course of patient care. SNOMED-CT is designed for use in electronic, not paper-based, health record systems. The number of terms and level of detail in a reference terminology cannot be effectively managed without automation.

Reference terminologies are inadequate for serving the secondary purposes for which classification systems are used because of their immense size, considerable granularity, complex hierarchies, and lack of reporting rules. A clinical terminology intended to support clinical care processes should not be manipulated to meet reimbursement and other external reporting requirements, as such manipulation would have an adverse effect on patient care, the development and use of decision support tools, and the practice of evidence-based medicine.

Mapping: How SNOMED and ICD Work Together

The benefits of using a reference terminology increase exponentially if the reference terminology is linked to modern, standard classification systems for the purpose of generating health information necessary for statistical analysis, reimbursement, and other secondary uses. The linkage of terms in different systems to extract information for multiple purposes is accomplished through mapping.

Mapping is the process of linking content from one terminology to another or to a classification. Maps result in an expression of the relationships between the terminologies or classification systems involved. Mapping requires deciding how concepts in different terminologies match, are similar, or differ. It provides a link between terminologies and classifications in order to:

- Use data collected for one purpose for another purpose
- Retain the value of data when migrating to newer database formats and schemas
- Avoid entering data multiple times and the associated risk of increased cost and errors[1]

Unlike coding, mapping is not specific to a particular patient encounter. Context is not available as part of the mapping process.[2] Creation of a map generally involves an automated translation software engine. Automated maps create efficiency by minimizing duplicative data entry and patient data integration across a wide variety of applications.[3]

The development of maps between terminologies and classifications will not eliminate administrative coding or the need for expertise in code selection. Fully automating the process of mapping from a reference terminology to a classification system is challenging because of the inherent differences between a terminology and a classification.[4]

Maps will standardize translation of coding systems to a certain extent and therefore improve coding accuracy simply and efficiently. But human review is still necessary before reporting a code resulting from a map to ensure accuracy with regard to the context of a specific patient encounter and compliance with applicable coding guidelines and reimbursement policies. While maps are always subject to human review, the goal is to automate as much of the mapping process as possible using a rules-based approach.[5] As rules-based maps are developed for multiple use cases and become increasingly sophisticated, the level of human review at the individual code level will diminish and workplace roles will focus on the development and maintenance (including quality control) of maps for a variety of use cases and the development of algorithmic translation and concept representation.

Next Steps for the 21st Century

The full value of the health information contained in an EHR system will only be realized if both systems involved in the map are up to date and accurately reflect the current practice of medicine. Therefore, it makes no sense to map a robust terminology such as SNOMED-CT to an outdated classification system such as ICD-9-CM. Continued use of the outdated ICD-9-CM system diminishes the value of the US investment in SNOMED-CT. The anticipated benefits of an EHR cannot be achieved if the reference terminology employed in the EHR, such as SNOMED-CT, is aggregated into a 30-year-old classification system, such as ICD-9-CM, for administrative use and indexing.

The longer ICD-10 implementation is delayed, the longer and more expensive it will be to achieve a fully functioning EHR with the interoperability necessary for the sharing of healthcare data. Continued use of ICD-9-CM as a medical code set standard threatens to jeopardize the ability of the US healthcare industry to effectively collect and use accurate, detailed healthcare data and information for the betterment of domestic and global healthcare.
AHIMA believes the following steps are essential:

- The federal government must initiate the regulatory process for the adoption of ICD-10-CM and ICD-10-PCS.
- The healthcare industry must incorporate terminology standards in its EHR development initiatives.
- Robust rules-based maps, designed for different use cases, must be developed from SNOMED-CT to ICD-10-CM and ICD-10-PCS to maximize the value of the clinical data and the benefits of an EHR system.
- Such maps should be made publicly available through the UMLS and should become a standard component of any EHR system.

These steps are among the first the industry should take toward maximizing the power of healthcare data and, in doing so, building a better healthcare system for the 21st century.

Notes

1. Imel, Margo, and James Campbell. “Mapping from a Clinical Terminology to a Classification.” In AHIMA’s 75th Anniversary National Convention and Exhibit Proceedings, October 2003.
2. Ibid.

3. Brouch, Kathy. “AHIMA Project Offers Insights into SNOMED, ICD-9-CM Mapping Process.” *Journal of AHIMA* 74, no. 7 (2003): 52–55.
4. Ibid.
5. Available at the SNOMED International Web site at www.snomed.org.

Sue Bowman *(sue.bowman@ahima.org) is director of coding policy and compliance at AHIMA.*

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