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Using SNOMED CT in Detailed Clinical Modeling

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Audience

The target audience includes clinical modelers, standards developers and implementers of Detailed Clinical Models, who want to apply SNOMED CT properly in EHR systems and Health Level 7 version 3 (HL7 v3).

Objectives

Attendees will be able to describe the interaction between SNOMED CT and Detailed Clinical Models, and appreciate the potential for implementation of SNOMED CT based data models in electronic health record (EHR) systems and HL7 v3 messages and documents and subsequent data use.

Abstract

Introduction: Despite the wide use of clinical terminologies, with SNOMED CT[1] as the richest and widest used example, terminology is not enough for management of data in EHR, HL7 v3 data exchange methods, and the use of data for purposes as continuity of care, decision support, quality indicators, clinical research, and health management[2]. One approach to combine terminology and information models for EHR and HL7 v3 is Detailed Clinical Models (DCM)[3]. The purpose of this paper is to illustrate how SNOMED CT and the DCM modeling approach together supports the various data management requirements.

Methods: Careful analysis of EHR requirements, HL7 v3 'terminfo' requirements[4], and various clinical modeling approaches[2,5] led to a set of requirements that informed the creation and balloting of the technical specification ISO TS 13972 Characteristics and Processes for DCM[3].

Results: The DCM TS consists of several criteria. First, criteria include governance processes, such as involvement of clinical, modeling and terminology experts to create DCM[3]. Second, requirements for proper clinical terminology based data management are specified. Requirements include specification of data elements, each with code bindings to unique codes from a clinical terminology[3]. DCM examples show a preference for SNOMED CT codes[2]. Data elements that have a Concept Descriptor (CD) data type should have their value sets expressed using unique codes from clinical terminology[3], also with SNOMED CT as the most used example[2]. Ruling of issues such as conflicting statements in the terminology or the information model, is solved using the experience of the HL7 terminfo project guiding SNOMED CT use in HL7 v3[4]. Hence, data management for various purposes follows rules for information modeling and for terminology use, offers the option of a single documentation and multiple use of the same data. An example of use of DCMs with SNOMED CT is the nursing EHR of the Onze Lieve Vrouwe Gasthuis in Amsterdam[5].

Conclusion: The Detailed Clinical Modeling approach combined with SNOMED CT codes, which follows the ISO TS 13972 requirements, offers a proper and rich way to collect, store and use terminology based clinical data for multiple purposes, as exemplified by experienced by real world projects.

References

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