

Clinical Care Classification (CCC) Usability in EHR using the Healthcare Data Dictionary (HDD)

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Abstract

Introduction/Aims: The Clinical Care Classification (CCC) is a standardized nursing terminology recognized by the American Nurses Association (ANA) for representing nursing practice concepts in Electronic Health Records (EHRs). There are two interrelated terminologies within the CCC - Nursing Diagnoses & Outcomes, and Nursing Interventions & Actions. All of these are mapped to SNOMED CT and Logical Observations Names and Codes (LOINC). SNOMED CT is a collection of healthcare concepts used in clinical documentation and reporting. LOINC is a collection of laboratory and clinical observations used to facilitate information exchange. The Healthcare Data Dictionary (HDD) can be used to utilize the CCC terminology and mappings to standard terminologies and facilitate interoperable exchange of health information between EHRs programmatically. The HDD is a terminology server containing standard terminologies required to document clinical care, including SNOMED CT, LOINC and CCC. **Methods/Process/Procedures:** The CCC is integrated in SNOMED CT and LOINC, with terms and codes from those terminologies unmapped to the correlating CCC concepts. These mappings were evaluated for accuracy by subject matter experts. Then the structure of the terminology itself was analyzed. A design was created to implement the CCC structure and mappings into the HDD. The design was then implemented and tested using real CCC data and use cases. **Results:** To implement the CCC into the HDD so that it could be used programmatically, the terminology had to be split into four sub-terminologies. The CCC terminology has its own OID, and the following four terminologies were created: Clinical Care Classification (CCC) of Diagnoses, CCC of Nursing Interventions/Actions, Clinical Care Classification (CCC) of Actual Outcomes, and Clinical Care Classification (CCC) of Expected Outcomes, each with their own OIDs. Within CCC, outcome codes are used either as expected outcomes (goals) or actual outcomes (evaluation) and they are represented by the same code. For example, 'Stabilize Activity Intolerance' (A.01.1.2 - Expected outcome) and 'Activity Intolerance Stabilized' (A.01.1.2 - Actual outcome) have the same code but mean two different things. This makes it difficult to represent the context of a specific code within a database and requires splitting the two into different sub-terminologies for the database to programmatically provide the correct context for the concept. In addition to this, specific CCC mapsets were created between the CCC concept and SNOMED CT and LOINC. This way end users can easily determine the correct SNOMED CT or LOINC term for the CCC concept. **Discussion/Outcomes:** Standardized clinical terminologies require a plan for managing their relationships to other terminologies. Mapping to standard terminologies within one robust terminology server is a key aspect in achieving interoperability. Continued use and support of standardized nursing terminologies maintains nursing knowledge and supports the documentation of nursing care. Future work is needed to provide custom APIs for specific end user use cases. These are the next steps in supporting the CCC as a nursing terminology and providing a simple solution for implementation.