Clinical Care Classification Usability in EHRs using the Healthcare Data Dictionary

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Objectives

- Gain a basic overview of the Clinical Care Classification (CCC) System
- Understand how CCC is mapped to SNOMED CT and LOINC to support interoperability between EHRs
- Understand how CCC is designed in the HDD (a terminology server)
- Gain a basic overview of mapsets

Project Goals

- Evaluate the CCC
- Evaluate mappings to SNOMED CT and LOINC
- Determine if it could be loaded into a terminology server

Clinical Care Classification System (CCC)

- Clinical Care Classification (CCC) recognized by ANA
- Two inter-related terminologies
  - Nursing Dx and Outcomes
  - Nursing Interventions and Actions
- Used to facilitate the capture of standard nursing data
- Evaluate and measure outcomes
- Improve practice
- Determine nursing care cost

Clinical Care Classification System (CCC)

- 4 Healthcare patterns
  - Physiological, Psychological, Functional, Health Behavioral
- 21 Care components (i.e. Activity, Cardiac, Respiratory)
- 176 CCC Nursing diagnosis/problem concepts
- 804 Nursing intervention and action concepts
- 528 Nursing outcome concepts
- Mapped to SNOMED CT and LOINC

Clinical Care Classification System (CCC)

- Coding structure (five alpha-numeric concepts)
  - 1st - Alpha character (Care component: Activity: A)
  - 2nd-4th - Two or three digits (nursing Dx or Nursing Intervention)
    - Activity Intolerance - 01.1
  - 5th - Represents outcome or intervention action type
    - Expected Outcome "Improve" - 1
- Full code for Activity Intolerance with an expected outcome of Improve is A01.1.1
- Full code for Activity Intolerance with the outcome has improved is the same A01.1.1
Terminology Server
- Contains a collection of concepts
- Maps multiple standards to same concept
  - Synonyms
  - Interface codes
  - Relationships add meaning
- One central location

Evaluation
- Evaluated CCC model
- Evaluated mappings to SNOMED CT
- Evaluated mappings to LOINC

CCC Model Evaluation
- Terminology server requires a unique code for a code system
- CCC has unique codes per use but not per code system
  - A01.2.1 (Diagnosis/problem/expected outcome) - CCC Expected Outcome Activity Intolerance Risk Improved
  - A01.2.1 (Diagnosis/problem/expected outcome) - CCC Actual Outcome Activity Intolerance Risk Improved
  - A01.2.1 (Intervention) - CCC Energy Conservation Assess/Monitor/Evaluate/Observe

Evaluation of Mappings to CCC
- CCC concepts map to SNOMED CT concepts
- CCC concepts are in LOINC

Design Phase
- Designed model for loading into terminology server
- Create 4 sub code systems under CCC
  - Created local OIDs and related sub-code system to the CCC code system:
    - CCC of Nursing Diagnoses
    - CCC of Nursing Interventions/Actions
    - Clinical Care Classification (CCC) Actual Outcomes
    - Clinical Care Classification (CCC) Expected Outcomes
- Created relationships for hierarchy
  - Example - CCC Diagnoses to Actual Outcomes Map Relationship
- Created relationships for mapsets
  - Example - CCC to SNOMED CT Map Relationship
Conclusion

- When implementing any terminology you must evaluate and understand its use and meaning
- Mapsets are useful between terminologies
- A terminology server can aid in implementation
- Future steps to create specific APIs for end user needs