The Composite Clinical Data Dictionary as a solution to health data interchange

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Health data interchange & interoperability

- Only universal standard is the bit (0,1)
- Transformation of health data to information is affected by context, language, culture and environment
  - eg. Diabetes mellitus = ?
  - Definition of fever (low-grade fever)
  - Chest pain vs. mal au cœur
- Semantic persistence is elusive
Computerized patient health record

Should:
- Store clean reliable data
- Facilitate generation of precise clinical information
- Assist in individual clinical decision making
- Allow access to longitudinal data across jurisdictions
- (decrease error)
Key components for a robust CDR

- Composite Clinical Data Dictionary (C²D²)
- Clinical Vocabulary and Terminology Issues (SNOMED, UMLS)
- Nosology and Coding (e.g. ICD, CPT, Read Codes)
- Clinical Data in the (CDR) Repository
Composite Clinical Data Dictionary (C²D²)

- Data element definitions, or metadata, about the CDR
- Specified at the atomic level (canonical)
- Missing component in current commercial Clinical Information Systems
- Accepts inputs from feeder systems and breaks the data stream into data elements to be inserted into the correct data elements in the CDR
Vocabulary & terminology

- clinical terms and content of the data stored in the fields described by the C²D² which are used to store data in the CDR
- mapping of most clinical concepts and terms to achieve consistency for the clinical vocabulary across all records in the CDR
- eg. allows search across CDR of the clinical concept ‘hypertension’
Nosology & coding

- Codes are a shorthand notation for recording observations, diagnoses, procedures, and other aspects of care.
- Generates non-degradeable data
- Limited by granularity issues
Clinical data repository

- Physical storage of digital data
- Contains the data model - how the data is organized, mechanisms for stipulating attributes, and relationships among the various data elements.
- Structured to support the full range of diverse individuals who use the data as well as all other applications/uses of the data
C²D² as a bridge between different systems to maintain semantic persistence

Composite Clinical Data Dictionary – C²D²
(Canonical form at the “atomic-level”)

Cerner, Epic, OACIS...

McKesson

Medisolutions

Interoperable CDR
The Core of $C^2D^2$ is the Universe of Data Elements for CPR Systems but others may require yet additional Fields that are Unique to them.

Note that “The Core $C^2D^2$” has a growing Number of Appendages (“petals on the flower”).
C²D² development

- Fields
  - Indicators
  - Modifiers

- Sub-field Codes (SFC)
  - Indicators
  - Modifiers

- Global functions
  - Indicators
  - Sub-field codes

- Groups

- XML technology