Terminology for eHR

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16 April 2014
Outline

• Introduction to Terminology
• Terminology in eHR
• Terminology in practice
eHR - Vision

DH

HA ePR

Private Hospitals

Clinics software

EHR Repository

Access Portal

CMS onramp

PPP
eHR Components

- Core Infrastructure
- Standardisation
- eHealth
- On-ramp / Adaptation
Standardisation for eHR

• Ensure accurate interpretation of health data by all parties
• Support reuse of data
• Reduce duplicated efforts in data entry
• Facilitate interoperability of systems for data captured at different platforms
• Improve efficiency of healthcare services
• Assist in protection of public health
Information Architecture

*Every medical fact has a concept*
What the data means

*Every medical fact has a context*
How data should be interpreted

*Every medical fact has a presentation*
How data are organized & presented
Areas

- Registries
  - Patient
  - Practitioner / Institute
  - Location (address)
- eHR content
- Terminology
- Messaging
- Management process
Free Text Data

• Same word, different meanings
  o COLD, MI, diabetes, fundus

• Different words, same meaning
  o Oral, per oral, by mouth, P.O, orally

• Context dependent
  o Current complaint, past medical history, family history

• Negation
  o Explicit, e.g. denied chest pain
  o Implicit, e.g. clear lung

• Uncertainty
  o Probably, suggest, possible, likely

• Lexical variant
  o Anaemia vs anemia, hepatic vs liver
Terminology

- A finite, enumerated set of terms used to convey information unambiguously (a controlled vocabulary)

- Encode medical information so that computers can process the data easily

- Reduce complexity by restraining content (what can be said) and syntax (how it is said)
Purposes of Terminology

- Encode clinical information
- Facilitate the storage of clinical information
- Support sharing and reuse of clinical information
- Support efficient query formulation
- Create a natural language output from manual structured input
- Support the application of decision support algorithms
The World of Terminology

There are so many of them:

- Diagnosis/signs and symptoms - ICD9CM, ICD10, ICD10CM, ICD10AM, ICD-O, ICPC, ICF, SNOMED CT, Read Codes, MedDRA, CTCAE, WHOART, MEDCIN, DSM
- Procedures - CPT, CDT, HCPCS, OCPS, SNOMED CT, ICD9CM, ICD10-PCS
- Nursing - NANDA, NIC, NOC, OMS, HHC
- Diagnostic tests - LOINC, UltraSTAR
- Drugs - VANDF, NDC, RXNORM, NDDF
- Medical devices - UMDNS, GMDN, SPN
- Genomics - GO, HUGO, NCBI Taxonomy
- ...
Standard Terminologies

• Numerous standards
  – Each serving a particular purpose
  – Reference for health informatics products, e.g. First DataBank
• No single terminology covers all domains
• Unavoidable mapping for various purposes / system design
  – Well management is needed
• Standard terminologies being updated regularly
  – Impact on data retrieval
    • Analysis / decision support / rules……
• Implications
  – Select a few commonly adopted terminologies – each with sufficient breadth & depth of individual / several domains
  – Management for ongoing updates
Recognised Terminologies in eHR

A set of reference terminologies that have been acknowledged to be used in eHRSS:

- Hong Kong Clinical Terminology Table (HKCTT)
- International Classification of Diseases, 10th Revision (ICD-10)
- International Classification for Primary Care, 2nd Edition (ICPC2)
- Logical Observations, Identifiers Names and Codes (LOINC)
- Systematized Nomenclature of Medicine, Clinical Terms (SNOMED CT)
- Registered Pharmaceutical Products (RPP)
HKCTT in Practice

• Support clinical documentation  
  – Alias

• Facilitate decision support
• Provide organised data in eHR Viewer
• Assist data retrieval/reporting
Tips for Terminology Management

- **Creating a terminology**
  - Meaningless identifier to allow expansion
  - Unique meaning
  - To facilitate searching
    - Synonyms
    - Common list

- **Mapping**
  - Prefer native use of recognised terminology than mapping
  - If unavoidable
    - Check rules of individual terminologies
    - What you see, what you get
    - Must be validated by professionals

- **Keep updating**
Thank You