White Paper on a Data Model for Health Records in Primary Care

(excerpt)

Data Model for Primary Care

- Just like health records
- it must support
- both
  - primary (clinical)
  - and secondary uses

  of personal health data

Primary purposes of Health Records

- Clinical uses

Secondary uses of Health records

- All others

Data Set

- named collection of logically interrelated data items, arranged in a prescribed manner, usually presented in tabular form

Data Model

- Graphical or lexical representation of data, specifying their properties, structure and inter-relationships
  - [ISO/IEC 11179-3:2003, 3.2.11]
    - NOTE A data model, also called 'conceptual scheme' is a description of data structures, that is the logical relationship among data items, including operations and constraints, designed to support specific data handling functions to be provided by a database management system for effective database processing.
- The data set used for data collection may be organised based on this same data model

Examples of existing data sets

- Uniform hospital discharge summaries
- Health insurance billing forms
- Repeated attempts to provide 'Minimum Basic Data Sets' (MBDS) for non-inpatient care (i.e. outpatient or ambulatory)
- etc.

In pratice

- data sets should be based
- on and express a robust data model

Confusion should be avoided between (1)

- Data Model
- Data Structure
- Data Sets

Two commonly (?) used data models

- SOAP
- Episodes of care

SOAP, episodes of care and ICPC

- Neither the SOAP model
- nor the episode of care concept
- are intrinsic parts of ICPC
- and of its classification structure

The 'episode of care' notion

- It is not specific to Primary Care
- It underpins the problem-orientated medical record (POMR) structure

Correct interpretation of health data

- ==>captured together with some meaningful contextual data
  - *Computerised systems further facilitate data handling and consistent interpretation*

Confusion should be avoided between (2)

- health record structure and data model on the one hand
- and terminology structure
- in classifications, thesauri and nomenclatures on the other one

Carefully delineate the domain

- of Primary care
- before designing a specific data model

A Data Model for Primary Care

- must capture meaningful data about
  - the *persons*
  - the *problems* that affect their health now
  - the problems that they are *at risk* to develop
  - how *time* affects the health care delivered
  - and the *social context* in which that care takes place
- It must also allow for collecting and reporting out data about
  - the *quality of care* provided

The model covers several clinical 'concerns'

- Symptoms
- Social Problems
- Process
- Time
- Risk Factors
- Function
- Severity

Acknowledge Patient's perspective

- Reason For Encounter (RFE)
- Goals & Preferences
- Patient's Personal Health Record (PHR)

Links to other health data sources

- and related requirements:
  - Communication and Data Exchange
  - Interoperability (as a consequence)
  - Mapping (possibly) to several terminological systems

A Primary Care Data Model

Data categories of a primary care data model	Tentative mapping to current terminological systems that can supply terms & code values to describe the data
Person:	
demographics	
social structure	***ICNP***
goals, preferences	
functional status (?)	***ICF***
Problem(s):	
RFE as starting point	***ICPC***
current/active	***ICPC, ICD***
severity	
Clinical Modifiers:	
prevention	***ICPC, ICD (limited)***
risk factors	
significant events	
Actions ("Process"):	
Decisions	***ICPC (process)***
Interventions	***ATC, (ICHI), ICNP, ICPC (limited)***
Plans	***National coding systems, ICPC (limited)***
Time:	

Simple building blocks to capture a complex reality.
ICPC provides structure and some (basic) content.

Improvements to the Data Model / Clinical model suggested in Barcelona

- RFE also in the ‘persons’ part
- Multi-morbidity is an item by itself
- Outcome (but how do you measure it?)
- Professional involved
- Location of care

- Links between its items is part of the data model

- Relation between actual teamwork and decision process

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severity	
Multi-morbidity	
Clinical Modifiers:	***ICPC, ICD (limited)***
prevention	
risk factors	***ICPC (process)***
significant events	***ATC, (ICHI), ICNP, ICPC (limited)***
Actions ("Process"):	***National coding systems, ICPC (limited)***
Decisions	
Interventions	***ICPC (?)***
Plans	
Outcome:	*How to measure (and code) it? By referring to initial patient's goals?*
Time:	
Episode structure	
Data import/export:	
Exchange protocols	

Simple building blocks to capture a complex reality.
ICPC provides structure and some (basic) content.

Core clinical headings

REASON FOR CONTACT	text
***PRESENTING ISSUE**	**Text or code (and/or mapped code for CDS)**
***DIAGNOSES**	**Text or code (and/or mapped code for CDS)**
CURRENT PROBLEMS AND ISSUES	Text or code
***OPERATIONS AND PROCEDURES**	**Text or code (and/or mapped code for CDS)**
FAMILY HISTORY	Text or code
INVESTIGATIONS AND RESULTS	Text or code (PBCL or NLMC)
MEDICATIONS	Text or code (DM+D archetype)
ALLERGIES AND ADVERSE REACTIONS	Text or code (archetype)
RISKS AND WARNINGS	Text...needs more professional input
STRUCTURED SCALES	Needs further development of outcomes
MANAGEMENT PLAN	text
PATIENT AND CARERS CONCERNS	text
INFORMATION GIVEN TO PATIENT	text
RELEVANT LEGAL INFORMATION	Text and (pointers?)