Classifications in health care

**Health interventions**
- What has been done with the patient
- Collected everywhere but non-standard

**Health Problem**
- Reason and main features of the contact
- Routine collection
  - Causes of death
  - Hospital data

**Functioning and disability**
- Effects of disease and therapy
- Scientific developmental projects

**Laboratory investigations**
- Necessary for exchange of information
- Routinely used but non-standard

**WHO-FIC**

**Equipment**
- Equipment to deliver care
- Technical aids

**Pharmacological substances**
- Key element in treatment
- Records on sales exist, but not on usage

**Terminological Systems**
Diagnostic Classifications

ICD
- Developed and maintained by WHO
  - ICD-10 / ICD-9
- National versions
  - ICD-9-CM, ICD-10-CM
    - USA, many other countries
  - ICD-10-AM
    - Australia
  - ICD-10-CA
    - Canada
- German version
- Nordic versions

ICPC - International Classification of primary care
- WONCA
- WHO-FIC related classification

- Not too many standards
- Mappings are available or fairly easy to establish
Goal of diagnosis information collection

- Reason of the health problem
- Main features of resulting condition
  - Disease / Disorder
  - Trauma
  - Intoxication
- External causes
  - ICD-10 / ICECI / NCECI

- Disease spectrum of the population
  - Statistical analysis of causes of death
  - Hospital statistics
- Correct diagnosis => Correct therapy
  - Evidence based medicine guidelines

- International comparisons
  - short lists necessary
- Existing common structure
Functioning and disability

• ICF - International Classification of Functioning Disability and Health
  – WHO Classification
  – Very complex, needs further development for the user interface

• Other classifications
  – Bartel, GAF, RUG/RAI, FIM .....
Diagnoses do not indicate severity of illness – more information is needed

- Effects of disease
- Need of care
- Effects of therapeutic interventions
- Economical compensation
  - Currently evaluation is not based on facts

- Black hole of information systems
- International standard badly needed
Laboratory investigations

• Different systems in different countries
  – IUPAC
    • INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY
  – LOINC (Logical Observation Identifiers Names and Codes)
    • Produced for US Federal Government by Regestrief Institute
    • Public, may be used unchanged both in commercial and non-commercial applications
  – Snomed
    • College of American Pathologists (CAP)
    • Early versions – not Snomed-CT
  – ICD-O version 3
    • WHO – loose connection with WHO-FIC work
    • Close relation to early versions of Snomed
  – CEN-TC251?
    • Local and national systems
Exchange of information between clinical units and laboratories

- Ordering information
- Results
  - No modern health care system can work without basic laboratory data-system

- Measurements
  - All measurements should be covered
    - length, weight, blood pressure
- Investigations with written reports
  - borders with diagnostic radiology

- No international standard available
- No standard mapping
- National standards?
Procedures performed to the patient

- **CPM**
  - Classification of Procedures in Medicine
  - WHO Classification
  - Never updated
  - Holland and Germany

- **ACHI**
  - Australian Classification of Health Interventions

- **CCAM**
  - Classification commune des actes médicaux
  - Based on CEN-TC251 standard

- **NCSP**
  - Nomesco: Classification of Surgical procedures

- **ICD-9-CM CSP**

- **ICD-10-PCS**
  - USA
  - Base of 3M DRG systems

- **CCI**
  - Canadian Classification of Health Interventions

- **ICH**
  - International Classification of Health Intervention
    - WHO-FIC related classification
    - Developed from the Australian ACHI
    - Not in use yet

- **No standard**
- **No mapping**
What is done to the patients

- Procedures performed to patients
- Surgical procedures
  - What is surgery?
  - Endoscopy?
- Therapeutic and/or diagnostic procedures
  - Laparotomy – diagnostic or therapeutic
- Radiological procedures
  - Intravascular catheterisation with injection of contrast?

- Performed by
  - medical doctors
  - nurses
  - physioterapists
  - Etc
- provider is registered separately

- Obvious need
- Coverage of the different systems varies
- Definite need for international standardisation
Pharmacological substances

• No de facto standard
• ATC (Anatomical-Therapeutic Classification)
  – Used in Nordic countries, some other European countries, but not for example in the USA
  – Does not code each preparation and package
• Commercial coding systems
  – For prising and and storage
Equipment to deliver care

• Hospital equipment
  – Patient specific use is currently not registered
    • Problems in use are not systematically available

• Tools for clinical laboratory and diagnostic radiology are registered through the procedures
  • No need for further registration?

• There is no standard registration for materials used during surgery
  • Complications related to materials cannot be systematically analysed
Technical aids

- ISO-9999 Technical aids for persons with disabilities
  - WHO-FIC related classification
  - Classification and terminology
  - ISO-standard sold by standardisation bodies in each country
WHO-FIC Classifications

- Reference classifications
  - Health problems – ICD-10
    - International Classification of diseases ...
  - Functioning and Health – ICF
    - International Classification of Functioning, Disability and Health
  - Health interventions – ICHI
    - International Classification of Health Interventions

- Derived Classifications
  - Derived from reference classifications
    - Psychiatric ICD
    - ICD-10 NA (Neurological application)
    - ICD-10 DA (Dental application)
    - ICPC – Primary care
    - ICECI – External causes classification

- Related classification
  - Related areas classified with independent classifications
    - Medical substances – ATC – Anatomical Therapeutic Classification
    - ICD-O-3 – Oncological histology
    - ISO-9999 – Technical aid for persons with disability

- Missing area
  - Laboratory investigations – LOINC??
ICPC within WHO-FIC
Casemix

• Secondary patient classification
• DRG
  – Clinically relevant, resource homogenic groups
  – Based on existing information

• Based on primary classifications
  – Diagnoses (ICD-10)
  – Procedures (NCSP)
  – Functioning (ICF?)
Semantic structure

- Classifications are (or should be) based on semantic structure
- Aggregation of information for collection and exchange
- They should create natural links to Knowledge systems
- User-interphases for classification systems should be based on intellectual semantic vocabulary systems
  - Easy search and selection of correct term resulting in correct classification

- "Terminological systems"
  - Terminology consisting of terms is language specific
  - Terms cannot be translated
  - Detailed classification of concepts
    - Term(s) defines the concept
    - Translation of concepts is possible
    - Increase in details increases problems in translation

- Semantic links creating a network

- Possible systems
  - Read – past
  - Snomed – CT – commercial?
  - MESH / UMLS??
  - GALEN based systems??
Terminological systems in relation to classifications

**Classification use**
- Search for correct code
- Multiaxiality greatered through mapping to terminological system and semantic links in it
- Increased possibilities to reporting

**Classification development**
- Classifications may remain in their original purpose
  - Statistical reporting
  - Casemix tool component
- Less complex classifications that are easier to implement
  - Developing countries
Nordic Centre for Classifications in Health Care

Uppsala University
Martti Virtanen
Head of Center