The development of an international nursing documentation standard

The Nursing Perspective

E-health Summit, Bern 2012

Wolter Paans, PhD, RN.
‘The nice thing about standards is that you have so many to choose from.’

Andrew S. Tanenbaum, Professor of Computer Science, Amsterdam VU University.
General Introduction

Standardisation, what are we talking about?

- Code systems
- Classifications
- Terminology standards
- DRG (Diagnose Related Groups)
- Diagnostic thesaurus (free text, national lists, international classifications as ICD-10 or SNOMED CT).
- Software resources to combine (i.e. SNOMED CT, ICD-10 and DRG)
- DSM (Diagnostic and Statistical Manual of Mental Disorders)
- ICD (International Classification of Diseases)
- LOINC (Logical* Observation, Identifiers, Names and Codes)
- Clinical pathways based on integrated standards

* L formerly used for 'Laboratory'.

14-01-18  Titel presentatie aanpassen  3
Research and Innovation Group in Health Care and Nursing
What is common language in the world of standardisation?

- **Concepts, terms or labels** (words as ‘pain’ or ‘heart’)
- **Relationships between concepts** (‘heart’, ‘pain’ and ‘saturation’)
- **Definitions** (of what is ‘low saturation’ or ‘heart failure’)
- **Terminologies** (how do we talk about it? i.e. Codex Medicus)
- **Nomenclature** (‘accuut’ and ‘myocardial infarction’) and rules how to use different terms put together (as in SNOMED)
- **Specialisations** (subdivisions of a major concept in minor concepts)
- **Taxonomies** (knowledge of how to subdivide individuals or objects in groups)
- **Codesystems** (a term, thesaurus, vocabulair, nomenclature or classification identified by a code (number)
Are standards interrelated?

- The ICD is part of ‘the WHO Family of Classificaties’ containing:
  - ICPC International Classification of Primary care
  - ICF International Classification of Functioning
  - ICF-CY International Classification of Functioning of Disability and Health for Children and Youth
  - ICHI International Classification of Health Interventions
  - ICPS International Classification of Patient Safety
  - ICECI International Classification of External causes of Injury
Digital standardisation: questions from the nursing perspective

* How can nurses integrate their scientific developments in diagnoses, interventions and outcomes in multidisciplinary documentation systems?

* How can nurses improve accuracy and relevancy of the report in the EHR?

* How can nurses decrease adverse events by using EHR?

* How can nurses provide better understanding interdisciplinary and international for patient care and for research?
To understand nursing is to understand the nursing process.
What do nurses learn in their education programs?

Nursing documentation should contain the following key components based on the *nursing process*:

1) Patient’s personal information and accurate description of the admission data
2) Accurate nursing diagnoses
3) Accurate nursing interventions
4) Accurate report of the progress & outcomes evaluations
How does it work in the nursing profession?

**Standard setting Developments**

- International development, validation and publication of nursing diagnoses, interventions and outcomes (NANDA, NIC and NOC)

  - NANDA-I contains 220 nursing diagnoses (in PES)
  - NIC contains app. 575 nursing interventions
  - NOC contains app. 375 nursing outcomes

- Integration in i.e. SNOMED
NANDA-I stands for: International Nursing Diagnoses Classification, it was founded in 1982 in USA and is internationally based (Japan, Brazil, Netherlands, Spain, Switzerland).

Standards are: Definition of diagnoses and the PES Structure (since 1990)

- Development and validation of diagnoses (in PES)
- Support of research (i.e. prevalence / use in digital health records)
- Support digital developments
- International forum (International Journal of Nursing Knowledge)
- Development of education programs and tools for education
- Dissemination over ten languages and worldwide
Where can we find nursing diagnosis, intervention and outcome classifications?

- Pre-structured (admission) formats
- Nursing proces formats in digital systems (NNN)
- (Digital) Handbooks
- (Basic) nursing education programs
- Advanced nursing practice and nursing specialisations
- Research literature
What is standardized language from the nursing perspective? An example.

• An actual nursing diagnosis:
  - is based on patients’ individual physical, social and psychosocial response to an illness or health problem that have an impact on activities of daily living;

  - describe a patient’s problem
  - include related factors (etiology of the problem)
  - include defining characteristics (signs and symptoms)
  - is related to nurses’ (potential) interventions
An accurate actual nursing diagnosis is documented in the ‘PES-Structure’ and related to an (potential) nursing interventions (I).

- (P) = Problem label
- (E) = Etiology (related factors)
- (S) = Signs / Symptoms
- (I) = Intervention

*NANDA-I is the only research based classification with this standard format*
Can we measure accuracy and quality in nursing diagnoses in the EHR?

Example of quantity measurement: accuracy of nursing diagnoses from the D-Catch instrument (Paans et al, 2010, 2011)

4 points: 
(P+E+S)→(I) Complete

3 points: 
(P)+(E)+(S)→(?) or 
(P)+(E)+(?)→(I) or 
(P)+(?)+(S)→(I) Incomplete on 1 aspect

2 points: 
(P)+(?)+(?)→(I) or 
(P)+(E)+(?)→(?) or 
(P)+(?)+(S)→(?) Incomplete on 2 aspects

1 point: 
(P)+(?)+(?)→(?) Incomplete on 3 aspects
Example: Accuracy of nursing process: Measurement instrument Q-DIO

Key-components of the Q-DIO

• Nursing Diagnoses as Process: Comprehensive/holistic nursing assessment

• Nursing Diagnoses as Product: PES-format

• Nursing Interventions: Planned, implemented and correlation with nursing diagnoses

• Nursing Sensitive Patient Outcomes: Effectiveness of nursing interventions, attained outcomes, and correlation among outcomes, interventions and diagnoses

EHR nursing standard requirements

• Include concept oriented (research based) classifications
• Standardized language representing the unique function of nursing
• Standardized codes and of concepts
• Include full NNN into EHRs, PES-Format and Indicators
• Apply nursing process based on classifications: link diagnoses, interventions and outcomes
• Intelligent expert systems: Decision Support
Swiss example: WiCareDoc, internationally acknowledged nursing documentation system, fulfilling the above requirements

WiCare Doc

- is an expert system
- is a clinical decision support tool
- contains the full nursing process
- automatically generates hypothetical nursing diagnoses
- includes outcome measurements/evaluation
- includes over 6000 theory-based, clinical synonyms of ndx
Benefits of standardized nursing languages in the EHR?

Nursing Related Groups (NRG) explain overall care needs in concordance with DRGs

(Fischer, 2002)
DRGs & Nursing diagnoses

Variables explained by Nursing Diagnoses

• Lenght of stay (LOS)
• ICU length of stay
• Probably of death
• Discharge to nursing home
• Total charges (costs)

(Welton & Halloran, 2005)
Patient example: DRG & Nursing Diagnoses
57 year old male

Medical Diagn/DRGs
• Oesophagitis,
• Gastroenteritis

NANDA-I Nursing Diagnoses
• Risk for falls
• Acute confusion
• Nausea
• Fluid deficit
• Acute pain
<table>
<thead>
<tr>
<th>DRG</th>
<th>Partition</th>
<th>Bezeichnung</th>
<th>Pflegediagnosen</th>
</tr>
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<tbody>
<tr>
<td>067D</td>
<td>M</td>
<td>Ösophagitis, Gastroenteritis u. verschiedene Erkrankungen d. Verdauungsgorgan</td>
<td>00015 Sturzgefahr: Erhöhte Anfälligkeit für Stürze, die zu körperlichen Schäden führen kann</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ohne komplexe od. kompliz. Diagn., ohne Dialyse, Alter &gt; 2 J., ohne äuß. schw. CC od. gastrointestinale Blutung od. Ulkuserkrankung, ohne äuß. schw. od. schw. CC, Alter &lt; 75 J.</td>
<td></td>
</tr>
<tr>
<td>Kostengewicht</td>
<td>Mittlere Verweildauer</td>
<td>Akute Verwirrtheit: Das plötzliche Auftreten von umfassenden, wechselnden Veränderungen und Störungen der Aufmerksamkeit, im Denkvermögen, in der psychomotorischen Aktivität, im Bewusstseinsgrad und/oder Schlaf/Wachzyklus</td>
<td></td>
</tr>
<tr>
<td>0.495</td>
<td>4.3</td>
<td>Übelkeit: Unangenehme, wellenartige Empfindung im Rachen, Epigastrium oder gesamten Abdomen, das zu Erbrechen führen kann</td>
<td></td>
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<tr>
<td></td>
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<td>Akute Schmerzen: Eine unangenehme sensorische und emotioale Erfahrung, die von aktuellen oder potenziellen Gewebeschädigungen herrührt oder mit Begriffen solcher Schäden beschrieben werden kann (Int. Assoc. on the Study of Pain); plötzlicher oder allmählicher Beginn mit</td>
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Can we expect simple solutions in nursing?
Influencing factors on ND in the EHR

Hospital policy and diagnostic environment
- Number of patients per nurse
- Workload level
- Information structure
- Medical model

Patients’ complexity
- Cultural differences in patients’ expressing severe diagnoses
- Severe medical diagnoses
- Patients’ way of expressing diagnoses
- Patients’ personal reflections on standardized language

Education & Resources
- Clinical reasoning education
  - Educational background
    - Structured forms
  - Classification structure usability
    - Language tools in software
    - Diagnostic linkages

Diagnosticians
- Disposition toward diagnoses
  - Disposition toward digital developments (age)
    - Experience
  - Diagnostic knowledge
    - Reasoning skills
Figure 1. UHN Framework for Advanced Nursing Practice

- **Input**
  - individual
  - organizational
  - professional
  - societal

- **Environment**
  - Autonomy
  - Empowerment
  - Innovation

- **Scholarship**
  - Leadership
  - Experience

- **Compassion**
  - Research
  - Collaboration

- **Communication**
  - Inquiry
  - Change agent

- **Outcomes**
  - Patient
  - Organizational
  - Professional
  - Societal
What can we do in nursing?

• Supporting developments towards a uniform use of language;
• Supporting recordkeeping close to the main source (patient and healthcare professional);
• Supporting recordings of data collection once, and easy to find;
• Supporting multiple use of data (input and output data use);
• Connecting national and international standard development in (research) projects;
• Making choices in standardisation related to specific goal setting;
• Showing patients and Health care workers the benefits (i.e. by translating research outcomes)
• Using inter-connectible search terms per domain related to codes for continuity and efficiency of care (input and output related)
Structure and communication standards

- **CCR** (Continuity of Care Record) *American Society of Testing and Materials.*

- **CCD** (Continuity of Care Document)

- **CDA** (Clinical Document Architecture)

- **HL7v3** (Health Level Seven) *an organisation involved in the development of international healthcare informatics*

- *I.e. in the United States each registration system for medical use needs to be CCD standardized.*
What do we need to find our way practically?

- Make an overview of all standards you need in your own health care situation based on a multi-professional discussion and internal research.

- Make an overview of what is the aim of each standard you want to use in your organisation, e.g. a diagnoses standard as NANDA-I, or ICF as a framework. Be aware they serve different purposes!

- Make a clear view of distinctions in standards you want to use.

- Make a clear overview of standards already integrated.

- Make a ‘quick reference card’ to be able to understand in a few words what the key issues are of each standard, and to be able to explain it to healthcare professionals in a well organized discussion.
What developments are needed?

• Research toward user preferences by means of standards in the electronic patient record.

• Setting international, user-specific preference standards for the electronic patient record.
‘The important thing is not to stop questioning’
Thank you for your attention!