The objective of this research is to develop methods and tools to enable clinicians to register data of high quality that are useful for supporting clinical practice and at the same time serve as basis for management, reimbursement, quality assessment and research. Reuse of data within and across Clinical Information Systems (CIS) can be realized by use of the international standardized clinical terminology SNOMED CT. The prerequisite for reuse of data from different patient contacts is that the terms and concepts entered by clinicians are well-defined, structured and can be processed automatically by computers. SNOMED CT can support automatic terminological reasoning but it requires that the CISs are developed and configured to enter and store SNOMED CT concepts and expressions. The size and complexity of SNOMED CT challenge consistent use of concepts across organizational borders, hampering comparability and hence reuse of data. Thus, methods that support consistent concept selection is important for SNOMED CT-implementation projects, to utilize the structure of SNOMED CT to ensure comparability of clinical data. This thesis presents the theoretical foundation for comparability of data along with four studies addressing SNOMED CT implementation and reusability of clinical data. The first study presents an analysis of how concepts from two different SNOMED CT hierarchies can be used to represent clinical expressions in two data entry templates. This study shows that, besides from consistent concept selection, it is important to be aware of the definition and hierarchical composition of the concepts to select concepts with the best comparability and retrieval-properties. To support consistent and semantically coherent concept selection the second study presents the development of a set of SNOMED CT mapping guidelines. These guidelines are based on an iterative mapping process conducted on clinical content from 14 different EHR-templates from five different Danish and Swedish EHR-systems. Each mapping is assessed against overall quality criteria enabling specification and refinement of the guidelines. The third study documents the development and evaluation of a web-based visualization tool, SNOVIEW, which graphically visualize sets of SNOMED CT concepts, their hierarchical relationships and a set of terminological features. The fourth study documents the results of exploring reasons for lacking adaption of SNOMED CT in Denmark through group work and focus groups interviews with representatives from three central groups of stakeholders related to SNOMED CT implementation. The focus group discussions were focused on the participants’ experiences and expectations related to terminology management. SNOMED CT implementation that facilitates comparability and reuse of data requires knowledge about the intended use of data and understanding of the logical model of SNOMED CT. Further research should demonstrate the value of SNOMED CT in actual clinical settings, and demonstrate how to incorporate the logical representation of SNOMED CT concepts in existing CISs to enable automatic retrieval and terminological reasoning of both pre- and post-coordinated concepts.
To fulfill the requirements for the Ph.D. degree, Anne Randorff Højen has submitted the thesis: Coherent SNOMED CT Implementation Facilitating Re-use of Data, to the Faculty Council of Medicine at Aalborg University.

The Faculty Council has appointed the following adjudication committee to evaluate the thesis and the associated lecture:

Dr. N.F. de Keizer
Academic Medical Center
Netherlands

Prof. Dr. Stefan Schulz
Medical University of Graz
Austria

Chairman:
Associate Professor Johannes J. Struijk
Medical Informatics Group, Aalborg University
Denmark

Moderator:
Associate Professor Claus Graff
Medical Informatics Group, Aalborg University
Denmark

The Ph.D. lecture is public and will take place on:

Friday 14 February 2014 at 13:00
Aalborg University – Auditorium (B3-104)
Fredrik Bajers Vej 7 B
9220 Aalborg East

Program for Ph.D. Lecture on
Friday 14 February 2014
by
Anne Randorff Højen

Coherent SNOMED CT Implementation Facilitating Re-use of Data

Chairman: Associate Professor Johannes Struijk
Moderator: Associate Professor Claus Graff

13.00 Opening by the Moderator
13.05 PhD lecture by Anne Randorff Højen
13.50 Break
14.00 Questions and comments from the Committee
Questions and comments from the audience at the Moderator’s discretion
16.00 (No later than)
Conclusion of the session by the Moderator

After the session a reception will be arranged in room D2-213