



Retrieval of Clinical Information using the SNOMED CT Relationship Network - Possibilities and Pitfalls

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Audience

Clinical staff, researchers, epidemiologists, administrative/quality staff and others with interested in the information flow from clinical documents to reports, research papers etc.

Objectives

To enhance the awareness of the mentioned audience to the possibilities and pitfalls of the use of SNOMED CT in conjunction with data retrieval for so called secondary use of clinical information.

Abstract

SNOMED CT possesses two major important features: The *terms* that represent the lexical description of each concept and the *relationship network* that represent the logical characteristics of each of the concepts. The underlying architecture of the relationship network is a unidirectional graph and although it would be expected, that this construct could readily be used as a tool for data analysis, it was decided to investigate and test this feature in depth. The rationale behind this decision was amongst others, that SNOMED CT has become so large an entity, that it is not longer transparent for one or a few persons.

In connection with development of maps from SNOMED CT to Danish medical classifications, both maps from SNOMED CT to the classifications and reverse maps from the classifications to SNOMED CT were manufactured¹. In this study the reverse maps were used to link coded information from the Danish National Patient Register (DNPR), to SNOMED CT codes. The DNPR covers all 5 to 6 million inpatient and outpatient contacts per year in Denmark. The classifications used in the DNPR are primarily the Danish translation of ICD10 and the Nordic procedure classification (NCSP). NCSP are used in the Scandinavian countries and are comparable to e.g. the English procedure classification OPCS. Although this study takes offset in a national register the results might be of interest in other countries using the similar coding systems.

As expected it was technical possible to use SNOMED CT's relationship network as a tool for analysis of register data. Results from the mapped data were evaluated to be reliable, when the "is a" relationship in the "clinical finding" axis and "procedure" axis were used directly in queries for analysis (including aggregation, exclusions etc.). The results were compared to corresponding results generated from the original register data. However, an attempt to directly use the SNOMED CT supporting axes for data analysis turned out less successful and depended on the level of details of the modeling of the concepts, which vary in different areas of SNOMED CT.

In order to get reliable results, it was found to be imperative to select the concepts used as basis or starting points in the queries very carefully and in strict conformation with the clinical meanings and be aware of gaps and overlaps between the registered and afterwards mapped codes. Moreover, it was important to pay attention to the underlying information model of the register, whether this was clearly documented or inferred.

References

1. Terkelsen O. (2007) Method for creation of map tables from SNOMED CT to NCSP. SHI Proceedings, 63-68, ISBN 978-91-633-1111-6.