



**Karolinska  
Institutet**

**Institutionen för Neurobiologi, vårdvetenskap och samhälle**

# Terminology systems for health problems and procedures in primary care

**AKADEMISK AVHANDLING**

som för avläggande av medicine doktorsexamen vid Karolinska  
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## Abstract

**Background and overall aim:** Semantic interoperability addresses issues of how to best facilitate the coding, transmission and use of meaning across seamless health services, between providers, patients, citizens and authorities, and in research and training. One requirement for electronic patient record systems and their semantic interoperability is the consistent use of modern terminology systems. The overall aim is to explore semantic interoperability in primary care using terminology systems to code, map, enrich and reuse primary care data concerning diagnoses, health problems and procedures.

**Method:** The terminology systems KSH97-P/ICD-10 and SNOMED CT were used in a mapping trial (study I), resulting in a baseline mapping that was further developed to enrich KSH97-P with SNOMED CT by adding a multiple chapter division and attributes to KSH97-P's categories (study II). The mappings and the aggregation methods from study II were used to compare and describe diagnosis distribution between KSH97-P and SNOMED CT from diagnostic data collected in 2006 (study III). A sample of 200 anonymised record entries from Skaraborg were used with the intention of retrieving GP notes. Procedure concepts were identified and coded to KVÅ and SNOMED CT and comparisons were made (study IV).

**Results:** New mapping rules had a significant impact in the mapping trial, and intercoder reliability in our study reached 83% (study I). A new and poly-hierarchical chapter division of KSH97-P's categories was created using the category and chapter mappings and SNOMED CT's generic structure. KSH97-P's categories were also extended with attributes using the category mappings and SNOMED CT's defining attribute relationships (study II). The diagnosis distribution showed differences mainly in infectious and digestive system disorders when comparing KSH97-P/ICD-10 at the chapter level with SNOMED CT. The perspectives of 'Associated morphology', 'Causative agents' and 'Finding sites' regarding primary care disorders and health problems were added (III). In 417 procedures found in the record entries, 206 procedure-concept/category pairs were assessed as a complete match compared to 10 in KVÅ (study IV).

**Conclusion:** It is possible to use mappings from KSH97-P to SNOMED CT and SNOMED CT's structure to enrich KSH97-P's mono-hierarchical structure, adding new views of significance regarding clinical data that can be of use in describing and developing primary care. There are challenges involved in using SNOMED CT and supportive tools are needed.

**Keywords:** terminology systems, terminology, primary care, electronic health records, health records, health problems, diagnosis, procedures, clinical coding, coding, mapping, semantic interoperability