Comparing representation abilities of semantic standards in the field of Emergency Room Treatment

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Introduction

The research project "AKTIN" that is funded by the German Ministry for Education and Research (BMBF) tries to improve information transfer concerning emergency room treatment of patients.

Therefore, standardized electronic exchange formats like particular types of HL7 CDA shall be created from the consented emergency room protocol (ERP). This document needs to pass a process of sematic coding for the display of medical content.

In this context, it is possible to compare representation abilities of semantic standards with main focus on coding quality.

1. Methods

The module "trauma" of the ERP is once exclusively coded in SNOMED CT and second via other established semantic standards (ICD-10-GM, OPS, LOINC, Alpha-ID and ATC/DDD). Both applications provide a semantic coding of 189 different concepts.

Afterwards, the coding quality of each single concept is determined by a rating score provided in ISO/DTR 12300, where rating "1" means "exact lexical match", up to "5" that means "no map is possible". The rating score results of the two different applications are compared to find out the qualitatively superior option.

2. Results & Discussion

78% of the concepts show a better semantic coding quality in the display via SNOMED CT. In 7% the coding quality in other standards outweighs the SNOMED CT display. In 15% the semantic coding quality in both applications is equally well.

SNOMED CT seems comparably advantageous in the precise semantic representation of emergency room treatment details for the use in HL7 CDA documents.

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