

Possible design for selection of Clinical Findings and Medical Procedures in SNOMED CT

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Abstract

Introduction: The decision has been taken to use Snomed CT for the coding of the EHR in Belgium. In 2010 the development of a Belgian SNOMED CT subset has been started with physicians and terminologists.

Objective: Selection of SNOMED CT concepts on Clinical Findings and Medical Procedures, which are considered relevant for the coding of the medical record.

Design: At monthly teleconferences a group of ten physicians agreed on rules for selection or elimination of SNOMED CT concepts. Selected concepts should be 'meaningful', 'specific', 'distinct' (not ambiguous). Different codes should be easy to differentiate: synonyms should be excluded. Concepts which constitute time indications, axis modification and negative expressions should be post-coordinated.

Results: The selection versus elimination in Dutch versus French was concordant for 90 % of the concepts evaluated and kappa value=0,80 (n=51.706). The selection in Dutch versus French was concordant for 73%, kappa value=0,34. At this stage, 79% of the 25.249 concepts were treated by both Dutch and French terminologists (n=20.007). The level of concordance is poor.

Conclusion: The Belgian SNOMED CT subset is not final, a first evaluation has to be planned in order to prepare further steps with regards to a consistent methodology and improving concordance between physicians.

Methods

The strategy is to start off with a limited corpus (n=30.000) of agreed terms and to extend this vocabulary with new terms based on the real life use of care takers who will be able to request new terms if they feel they don't find the proper concept.

Selected concepts needed to be clinical, distinct, specific, actual. Synonyms and homonyms were excluded. Concepts containing "or" and "other" are excluded. The granularity of the chosen concepts should satisfy the needs of all health care professionals. Different levels of specificity are accepted. When a concept is selected, one preferred term in Dutch and French is selected.

Reasons for elimination are documented in free text by the physician.

Elimination and replacement by linkage concept is done when two different concepts should be registered apart and the relationship between both concepts can be expressed with a linkage concept "due to", "caused by", "associated with".

Pre-coordinated concepts with attributes are accepted if they comply with the rules above. Elimination and replacement by post-coordinated attributes is done when the pre-coordinated concept is considered extremely pre-coordinated and thus rare and/or too specific.

Because the terminology interfaces of most of the electronic patient records (EPR) don't provide post-coordination at this moment, it was decided to keep the major pre-coordinated concepts when they are Fully Defined.

Results

Clinical Findings

For the subset Clinical findings Dutch, 92,7% of the 79.287 SNOMED CT concepts have been selected/eliminated, 3,3% 'to be reviewed' and 4,0% 'not done'.

For the subset Clinical findings French 69,5% of the 79.287 SNOMED CT concepts have been selected/eliminated, 2,1% 'to be reviewed' and 28,3% 'not done'.

The following table presents the main reasons for elimination of concepts from the SNOMED CT Core by Dutch and French Physicians.

The selection versus elimination in Dutch versus French was concordant for 90 % of the concepts evaluated and kappa value=0,80 (n=51.706).

Reason for elimination of concept	Number of concepts done in both languages	% Concordance
Advise IHTSDO requested	87	78,2%
Ambiguous	3.258	93,0%
Concept combination	4.621	90,2%
Irrelevant	366	89,9%
Negative expression	3.081	95,1%
Concept to be replaced by post-coordination	26.116	92,5%
Synonym	1.120	78,5%
Time indication	1.212	85,4%
Too vague	1.401	84,5%
No reason given	10.421	86,2%
Total	51.706	90,5%

Procedures

The first working package only covered therapeutic procedures, mainly surgical and therapeutic interventions. The initial working package contained 25.249 concepts.

No diagnostic procedures, 'treatment / regimen' were covered in this working package.

Results

For the subset Procedures Dutch 88,0% of the 25.249 SNOMED CT concepts have been selected/eliminated, 5,0% 'to be reviewed' and 7,0% was 'not done'.

For the subset Procedures French 89.6% of the 25.249 SNOMED CT concepts have been selected/eliminated, 1,4% 'to be reviewed' and 9,0% was not done.

The selection in Dutch versus French was concordant for 73%, kappa value=0,34. At this stage, 79% of the 25.249 concepts were treated by both Dutch and French terminologists (n=20.007). The level of concordance is poor.

Conclusion

The constitution of the Belgian SNOMED CT subset was done by a selection or elimination of concepts by a French speaking and a Dutch speaking physician in an independent way. Because new rules were accepted during this process, parts of the terminology were covered in a different way. A consistent methodology needs to be developed.

In order to come to a single Belgian subset, the discordances between physicians should be solved.

The coverage of the Belgian SNOMED CT subset for concepts used in the Patient Summary in hospitals, should be studied. The results of such a study should offer specifications for the finalization of the subset.

The Belgian SNOMED CT subset is yet not final, a first evaluation has to be planned in order to prepare further steps. Concepts which were not treated by physician are classified as "Not done". The concepts "to be reviewed" are the concepts for which the physician didn't want to make a choice because of uncertainty.

References

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