Author's response to reviews

Title: Coding of procedures documented by general practitioners in Swedish primary care - an explorative study using two procedure coding systems

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Author's response to reviews: see over
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Thank you for the additional opportunity to revise and resubmit our manuscript “Coding of procedures documented by general practitioners in Swedish primary care – an explorative study using two procedure coding systems”. Below we have addressed each of the questions raised by the reviewers. Based on the reviewers’ comments, we have revised the manuscript as indicated below:

In this cover letter:

- The headings of the reviewers’ comments are in **bold type**.
- The headings of the authors’ comments and revisions are in *italic type*.
- Revised text appears as *underlined*.

We now include an acknowledgement section in the manuscript.

Please contact me if further explanation is required. We look forward to hearing from you.

Sincerely,

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Reviewer 2
Minor Essential Revisions

(1) Abstract/Conclusions – line 2: SNOMED CT covered almost all of the procedures’ content.
Does this mean – Almost all procedures could be coded using SNOMED-CT?
(1) Authors’ comment:
Yes, in part. The sentence refers to the aim “to describe and compare how the content in the different terminology systems KVÅ and SNOMED CT covers the procedures content as they are documented by GPs”. “How” also includes a description of the coding with SNOMED CT. But we have no problem with changing the abstract sentence if wanted by the reviewer.
(1) Authors’ revision:
SNOMED CT covered almost all of the procedures’ content. Almost all procedures could be coded using SNOMED-CT

(2) Abstract/Conclusions – To support clinical procedure coding, a number of prerequisites need to be fulfilled. (...such as. At least give one prerequisite)
(2) Authors’ revision:
We have removed this sentence (see revision 9)

(3) Page 4, Line 7. “...and a knowledge base of dissections”
What is “dissections” referred to?
(3) Authors’ comment:
The term is used in a reference by Rossi Mori [12] and further described in reference no. [19]. Further explanation from this reference regarding the meaning of “dissections” is considered too long. Therefore the sentence is reformulated in a way that the word “dissections” is removed.
(3) Authors’ revision:
Second generation terminology systems are compositional systems [12] with a knowledge base to define and extend the concepts, have a categorical structure, a cross-thesaurus, a structured list of phrases and a knowledge base of dissections. A reference is added [12].

(4) Page 4, Line 9. “In secondary generations of terminology systems, reorganisation of concepts is supported, whereas in first generation systems reorganisation has to be done manually.”
Should it be second generation terminology systems? And, what is the meaning of reorganisation of concepts? Are you trying to refer to how relationships among concepts are represented?
(4) Authors’ comment:
The sentence is revised (see below). A sentence on page 16 is also revised (see below). Reorganisation of concepts means that concepts in the second generation can be reorganised according to the information in the knowledge base that defines and extends the concepts. In the third generation, formal rules can be used for reorganisation. The relationships between concepts and their attributes correspond to what Rossi Mori calls a knowledge base of dissection in the reference [12].
(4) Authors’ revision:
Page 4. In second and third generations of terminology systems, reorganisation of concepts is supported by the knowledge base that defines and extends the concepts and/or formal rules, whereas in first generation systems reorganisation has to be done manually [12].
A reference is added [12].

Page 16. The structure of a secondary generation terminology system such as SNOMED CT,

Please check if this is correct. ICD-10 Chapter XXI is Factors influencing health status and contact with health services. In US, ICD-10 PCS is used.
(5)Authors’ comment:
This is correct, and a surprising finding that has been described in our studies in reference [8] and to some extent in reference [19].

(6) Page 6, Para 1, Line 3. I am not sure if terminology binding is correctly explained.
See:
http://www.openehr.org/wiki/display/healthmod/Archetypes+and+Terminology
“terminology binding usually refers to the association between a data point (node) of an information or data model and the set of terms that can be used to populate that data point's value.”
(6)Authors’ comment:
We believe that our explanation from reference 21 and the explanation above are not contradictory. Our reference [21] contains an informative Figure (13-3) on the subject and some references that can be further studied.

(7) Page 6, Para 2, Line 1. “The use of a PCS involves coding, which involves the structured use of clinician documentation and other clinical data contained in an individual EPR as the source for determining the appropriate code assignment within a terminology or classification.”
This sentence needs rephrasing.
(7)Authors’ comment:
We have rephrased the sentence.
Authors’ revision:
The use of a PCS involves the structured use of clinical data as the source for determining the appropriate code assignment within a terminology or classification.

(8) Page 19, Para 1: “Thus procedures documented by different health care professionals in primary care, such as nurses and physiotherapists, need to be explored in relation to KVÅ and SNOMED CT SNOMED CT could be of benefit in the aggregation and interpretation of epidemiological statistics when analysing data from patient records in PC, as well as in following up clinical data and in quality assurance.”
This is a long sentence. Is full stop (period) needed between SNOMED-CT SNOMED-CT? What is “PC” referred to?
(8)Authors’ revision:
A period is added in the sentence.
PC is deleted and replaced with primary care.

(9) Page 19, Para 2, Line 6: “However, to support clinical procedure coding, a number of prerequisites such as terminology binding, shortlists of procedures and coding support in the EPR need to be fulfilled.”
Does this statement derive from the findings of the study?
(9) Authors’ comment:
Our findings imply that the process of coding procedures in an EPR, with the possibility of using post-coordination to express different procedure status, requires rules for terminology binding related to the patient record. The time required and the difficulty in finding matching procedures at the appropriate level of detail in SNOMED CT that we have described also indicate the need for shortlists of procedures and coding support in the EPR.

Authors’ revision:
A new revised sentence: Our findings imply that to support clinical procedure coding, a number of prerequisites such as terminology binding, shortlists of procedures and coding support in the EPR need to be fulfilled.

This sentence is removed from the abstract: To support clinical procedure coding, a number of prerequisites need to be fulfilled.

Discretionary Revisions
In the abstract: “We aimed to describe procedures documented by Swedish general practitioners in electronic patient records and to compare them to the Swedish Classification of Health Interventions (KVÅ) and SNOMED CT.” Should this be?
“We aimed to compare the content coverage of Swedish Classification of Health Interventions (KVÅ) and SNOMED CT to code procedures documented by Swedish general practitioners in electronic patient records”

Authors’ comment:
Our sentence in the abstract also includes a description of the procedures, as well as a comparison.

A general note: SNOMED-CT and KVÅ are described as PCS (Procedure Coding Systems). Both could be used to code procedures but they are not designed for procedure coding only.

Authors’ comment:
KVÅ is a PCS and used in Swedish health care for reporting procedures. SNOMED CT has a broad coverage of topics and this could be emphasized.

Authors’ revision:
Page 5, para 2, line 5: A new sentence is added: SNOMED CT has a broad coverage of topics including procedures/interventions.

Reviewer 3
Discretionary revisions
I was pleased to see that the authors have tried to address the international dimensions of this debate as suggested. However, only mentioning the UK’s endorsement of SNOMED comes across as a little limited and it would have been interesting to have a sentence or two more on this for clarity/ expansion on the importance of this.

Authors’ comment:
We are interested in these issues but unfortunately have not found references that describe this in more detail.