Reviewer's report

Title: Task-oriented evaluation of electronic medical records systems: development and validation of a questionnaire for physicians

Version: 2 Date: 16 September 2003

Reviewer: T Burkle

Reviewer's report:

1. Is the question posed by the authors new and well defined?

--------- ANSWER ------------------
Yes. This is sound scientific work, combining known methods in a new fashion in order to derive a questionnaire design and validate it

2. Are the methods appropriate and well described, and are sufficient details provided to replicate the work?

--------- ANSWER ------------------
The description is sufficiently detailed and enough material is given to understand and potentially replicate the work

3. Are the data sound and well controlled?

--------- ANSWER ------------------
The numbers of subjects included in some of the study parts are low, however this is to be expected since higher numbers may impose an unbearable burden in terms of time and effort. Study design and results seem sound, however the methods applied should be more thoroughly discussed in comparison with published literature

5. Are the discussion and conclusions well balanced and adequately supported by the data?

--------- ANSWER ------------------
3 main conclusions regarding the results present in the discussion are adequately supported. I would expect another part of the discussion to derive which concentrates on the methods used in comparison to other literature, so that the discussion can be divided in a part of methodical discussion and the largely existing part of results discussion

6. Do the title and abstract accurately convey what has been found?

--------- ANSWER ------------------
Yes

7. Is the writing acceptable?

--------- ANSWER ------------------
Yes

b) Minor Compulsory Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
1. there are multiple orthographic respectively semantic errors in the paper. 
   e.g.
   Abstract 3rd line "should be include ...."
   Abstract results 1st line "thatthe....."
   Results section line 21 "maximallyless...."
   Criterion validity line 4 " the12 ...."
   Criterion validity line 5 " of all24 task s"

   Besides of thorough review the use of a spell checker is strongly recommended

   For the figures and tables:
   In the reviewed version it was somewhat difficult to figure out how the final layout would look like,
   since captions, tables and paper have been given at three different locations. However I would urge
   to make sure that figure plus caption, respectively table plus caption make exactly clear what the
   respective figure or table means.

   Figure 1 is readable only when full colour and even then it is difficult to figure out the meaning. I
   would recommend thinking of a different layout of this key figure. The caption figure 1 prints out
   somewhere between the lines.

   In black and white similar problems exist with figure 2 which may be just acceptable in colour
   printout.

   The results shown in figure 5 should be described more in depth inside the paper

   c) Major Compulsory Revisions (that the author must respond to before a decision on publication can
   be reached)

   ------------ ANSWER ---------------
   Your study is indeed interesting and may be able to illustrate several new aspects in clinical
   information system evaluation using questionnaires. The most essential literature on evaluation is
   mentioned.

   However I would appreciate if you would give a little more attention to previously published work on
   design and evaluation of questionnaires, e.g.

   Chin, Diehl and Norman "Development of a Tool Measuring User Satisfaction of the
   Human-Computer Interface" in CHI'88 Conference Proceedings Human factors in Computing
   Systems, NY Association for Computing Machinery 213-218

   or
   Joshi "An Investigation of Equity as a Determinant of User Information Satisfaction" Decision
   Sciences, Vol 21, 1990, 786-807

   or
   Doll, Xia, Torkzadeh "A Confirmatory Factor Analysis of the End-User Computing Satisfaction
Although those paper (and some other you mention in your literature) concentrate more on measurement of end user satisfaction I feel that methods used by those authors to build and evaluate questionnaires should be discussed and compared to the methods you propose in order to give the methodical part of your paper more weight.

This is a paper important for those who work in the area of evaluation of clinical information systems. Evaluation of clinical information systems is still a demanding task which requires high effort and expenditure. However evaluation is deemed increasingly essential in order not only to find out which of the systems and methods proposed in the medical informatics area are of value to the respective users and institutions but also to improve existing systems by formative evaluation studies. Good evaluation studies are often time intensive and costly, because multi-method approaches must be used.

The paper concentrates on the development of questionnaires as one method which can be used to examine some aspects information systems and their use. Questionnaires are an important tool for evaluation because they can be used with very limited effort. Obviously there are limitations for questionnaire studies, the most important one being the rate of returned questionnaires which should be more than 60% in order to draw conclusions valid for all questioned persons.

Other limitations of questionnaires include missing comparability to other questionnaires, and potentially low reliability for subjective items.

The study presented here strives to demonstrate methods to develop questionnaires, and to validate their design and reliability. Generally spoken the authors present the methods they used to develop and test the questionnaire they used in a previously published evaluation study in BMJ (source 8). Validation is done by interview, reliability is assessed in a test - retest study.

I would like to see a revised version of this paper which is enhanced by a more thorough discussion of the methods presented for questionnaire development and questionnaire validation in comparison to other published literature.

I do however think that this study is definitely worth to be published once it has been somewhat improved.

I cannot finally assess this point [quality of English] since English is a second language for me. For me the paper seems acceptable in terms of use of English language. For necessary orthographic corrections see above. Native language review of the final version might be sensible.

**Declaration of competing interests:**

I cannot think of any competing interests
I have definitely no competing financial interests