Reviewer's report

Title: Diagnostic omission errors in acute paediatric practice: impact of a reminder system on decision-making

Version: 1 Date: 11 August 2006

Reviewer: James Cimino

Reviewer's report:

General

Over all, this is a very nice study. It is a tricky task to evaluate diagnostic decision support systems in a real-world environment. The authors were lucky to have such cooperative users. I make several suggestions below that I believe will improve the readability of the paper and also some editorial asides that the authors may wish to address in their discussion.

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

None.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

"Data...are/were", not "data...is/was"

Results - paragraph 2, you say "majority", but you really mean "largest subgroup, since 34.5% is not a majority.

Figures 3 and 4 are mislabeled - both as "Figure 1"

The caption for Table 3 should be more complete. Why are there ?'s in the "DDSS log in" row, yet the total is known? What is the difference between a log in and incomplete usage? The "Incomplete" row is really "step 1 completion", right? Otherwise, one migth conclude that incomplete+complete=total.

The caption for Table 4 is messed up.

Figure 4 would benefit from a bit of a caption (the captions/legends for tables and figures should allow them to "stand on their own", without requiring the reader to flip back and forth to the text).

Discretionary Revisions (which the author can choose to ignore)

You might say a word or two about how ISABEL works. To really understand the algorithm, I had to track down the Medinfo 2004 paper, which may not be accessible to many readers. If you do so, you might want to make reference to M.S. (Scott) Blois's "RECONSIDER" program - it appears that the approach (for knowledge base construction and generation of suggestions from free text input) taken with ISABEL is remarkably similar.

You might way a word about what a registrar is - in the US, this could be a clerk or a university official. Is it above or below a junior-doctor-senior-house-officer?

In the discussion, you migth point out that ISABEL was not given the full case, so it was at a disadvantage when compared to the expert reviewers.

You might comment on the variability of the lists generated by ISABEL. To take an extreme example,
consider how your evaluation would have faired if ISABEL simply produced the same list of "common but infrequently considered" diagnoses each time. Such a list might perform pretty well. Would ISABEL do better? Of course, you can't tell from the study, but if ISABEL’s lists are very variable - that is, very case-specific - then it would at least be doing something *different* from a simple static list and could attribute some or all of its success to its dynamic abilities.

When discussing barriers to use, you allude to, but don't say explicitly, that real use of the system is likely to be better accepted than the experience of the study subjects, since the study protocol required additional, onerous steps.

You might consider mentioning the findings of the evaluation of DXplain, in the 2002 AMIA Proceedings.

You might comment that, although the mean quality scores improved, (judging from the standard deviations provided in Table 7), the scores worsened in some cases. Examples of how cases improved, worsened, or failed to identify the final diagnosis (before or after DSS use) would add some color to the paper.

**What next?:** Accept after minor essential revisions

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No

**Declaration of competing interests:**

My only possible *perceived* competing interest is that I worked on the original DXplain system, which is now a competitor, in a sense, to ISABEL. However, I have not worked on it in over 18 years (although I have used it in regular patient care and as a resource for my clinical information system users). I have no interest in it, financial or otherwise, except to enjoy vicariously whatever popularity it might have and to see it perpetuate the glory of my mentor, Octo Barnett. :-)