

## Reviewer's report

**Title:** Use of and attitudes to a hospital information system by medical secretaries, nurses and physicians deprived of the paper-based medical record. A case report.

**Version:** 1 **Date:** 12 October 2003

**Reviewer:** Shaun Treweek

### Reviewer's report:

#### General

This is an interesting paper that shows that it is by no means simple to make the switch from a paper-based to an electronic health information system. The different perceptions of the system by the three professional groups made for interesting reading. In a time when IT is often considered to be a universally good thing it was sobering to read that many clinical staff considered it easier to use a paper-based medical record. The authors have done a good job of presenting a large amount of data in an easily comprehensible way.

The paper is well written but the current draft contains a number of small typos that make some parts of the paper hard to figure out. I've listed these typos under minor compulsory revisions. I also missed reading the authors' thoughts on a number of issues that occurred to me while reading the paper. These are listed under discretionary revisions. The paper makes a solid contribution as it is but I think it would improved if the authors could make at least some of these revisions.

#### Discretionary revisions (which the authors can choose to ignore)

1. Abstract, p2. The authors could consider replacing 'paper-deprived HIS' with 'electronic HIS'.
2. Methods, p3. The inpatient and outpatient data for Aust-Agder hospital are five years old. Is it possible to get more recent data?
3. Methods, p3. The authors point out in the Introduction that the introduction of an all electronic HIS will have a big effect on work routines. The training that was provided as part of the described work could be expected to have an important effect on the use of the new system. Although the authors provide some details of the training, I wonder if they would consider providing a little more. For example, did discussion of the new HIS start well before the HIS was introduced? Did all potential users attend classes, especially clinical staff? Were the classes didactic, or interactive? How often did they occur?
4. Methods, p4/Figure 1. I'm not sure I understand some bits of this figure. Is it true that all 'Critical information' in the Summaries, for example, were Scanned multiple documents until early 2001, when they became electronic text and data? The authors might want to explain the Year data in the figure somewhere in the text.
5. Figure 3, caption. I think that the text is a bit confusing. 'The definitions of the tasks for each profession are given in Appendix A' would be better and I would drop the last sentence about the physician data.
6. Results, p7. I found the text between 'The medical secretaries were equally..' and '..p=0.07 for accuracy' difficult to read. The authors could try and find a clearer way of saying that the medical secretaries were equally satisfied with both types of document, and that physicians were less satisfied than nurses, particularly for scanned documents.
7. Discussion, p8. Mobile technology such as PDAs can be used to support clinical staff as they provide care around a hospital. Do the authors think that linking such devices to a HIS would improve the use of the system by clinical staff?
8. Discussion, p9. One of the great potential advantages of electronic data is that they can be quickly

searched. Documents scanned and saved as TIFF files can not be searched and I was surprised that the authors do not consider this as one reason why both nurses and physicians may be less satisfied than medical secretaries. The authors say that the medical secretaries do not use the scanned images, while I would guess that clinicians found it frustrating to only have part of the patient's medical record available in a searchable format. I would be interested to read the authors' thoughts on this.

9. Appendix A/Discussion/Figure 4. Although the authors say it is impossible to do a task-by-task comparison, I found it very interesting that nurses and physicians had different experiences of using the system for tasks that seemed to be the same. For example, why did nurses find it so much easier to order biochemical laboratory analyses than physicians? And nurses seem to have found it easier than physicians to seek out specific patient information. Do the authors have any ideas as to why this was the case? Were there differences in the training offered to these groups, or in the uptake of training by them?

10. Discussion, p10/Appendix. The authors say that they do not know how often tasks are done but the appendix says that the tasks shown in figures 3 and 4 are ranked according to reported frequency of use. This sounds like a contradiction. Is it?

11. Discussion, p10. I am not an expert in hospital-based electronic medical record systems (EMRs) so it may be true that in hospitals such systems primarily benefit medical secretaries. But in primary care there is a growing body of evidence that EMRs can help clinicians to provide higher quality care in several areas (see for example the review by Mitchell and Sullivan: <http://bmj.bmjournals.com/cgi/content/full/322/7281/279?maxtoshow=?eaf>) Maybe it is optimistic in an organisation as large as a hospital to think that a single system and user-interface can solve the problems of staff with such different roles as medical secretaries, nurses and physicians. Do the authors believe that their results would have been different if the system was more tailored to the information needs of the person using it?

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. Methods, p4. The term 'hospitalists' is new to me. It may be that 'specialists' or 'hospital physicians' is the correct term: the authors should check.
2. Methods, p4. 'Orthopedy' should be 'orthopaedics' and 'ENT' should be written out in full as 'ear, nose and throat'.
3. Methods, p4. I'm not clear what is meant by 'a separate project organization'. Maybe 'a group', or 'a training group' would be better.
4. Figure 1. The contrast between the colours used for 'scanned single documents' and 'electronic text and data' is not very high. Could the authors see if they can improve this?
5. Figure 3. This way of presenting a lot of data works well but the error bars are almost invisible. Can they be made to look like the ones in figure 4?
6. Figure 4, caption. Figure 4's caption is given as Figure 3 (and Figure 5's is Figure 4 etc.) in the list of captions.
7. Figure 5. The figure is fine but the line representing the mean for physicians needs to be thicker.
8. Results, p7. The reference to 'Question 2' in the second should be, I think, 'Question B' since the questions are given as A - E in figure 6.
9. Figure 6. For Question A the blue end of the key should be 'Significantly easier'. There is something wrong with the key/graph for the last two questions. The pinky colour appears in the graph but not the key.
10. Appendix A. The reference to figures 1 and 2 should be to figures 3 and 4. The headings 'Task number' and 'Task' should be used above the list of tasks. This would make it easier for the reader the first time he or she tries to link a figure to the tasks given in the appendix.

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

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

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No

**Declaration of competing interests:**

None