Reviewer's report

**Title:** Underutilization of Information and Knowledge in Everyday Medical Practice: Computer-based Solutions

**Version:** 2 **Date:** 22 August 2008

**Reviewer:** Padmanabhan Ramnarayan

**Reviewer's report:**

General points

The main aim of the paper is to establish the value of computer-taken histories in internal medicine. The authors have reviewed the area well, and have generally tried to make the point that computer-based approaches are more reliable than human histories. However there are a number of weaknesses in the study methodology that limit the value of this article.

Specific points

1. The aim of the study was to compare histories taken by doctors and compare them to histories obtained by a computer program. However, the authors report that the doctors' histories were used as the gold standard, yet conclude that the computer-based histories are more detailed. An external gold standard (as suggested by the authors in the discussion) would have avoided this inconsistency.

2. If the purpose was to compare doctors and computers, then the histories should be obtained at the same time in both groups. The fact that computer histories are obtained up to 48 hours after an interview by the physicians means that patients are very prone to providing good quality information purely due to recall. Also, if the future intended use of the system is to provide doctors a summary of the computer history before they see the patient, then the study design should have asked the patients to first provide a computer history and then ask the doctors to obtain a history.

3. In the analysis, excluding the patient data that was obtained by computer after 48 hours following the doctors' histories, is in effect a significant bias to obtain positive results - it means that histories in which the computer performs well are included, and ones in which the computer does badly are excluded. The data should have been treated in an 'intention to treat' analysis whereby all data should have been included.

4. The study design does not seem to indicate how soon after the doctors' history the authors intended to obtain a computer history. This seems not to have been established a priori, leading to the problem in point 3 above.
5. There is no attempt to compare the times it took humans and computers to obtain the history - if the computer based history takes twice as long as the doctors' then it explains why the results are so different between the two.

6. Comparison to histories recorded as part of the medical charts is a limitation by itself - the authors cannot establish that the doctors did not ask the questions that were "missed", it may be that the doctors did ask but did not record it.

7. The authors seem to have ignored the fact that some of the information that was "missing" from doctors' histories may have been recorded by other healthcare staff elsewhere - e.g. allergy information recorded by a nurse or pharmacist elsewhere on the chart, which may have predisposed the doctor to not record the relevant information.

8. In essence, since the computer takes a structured history under specific headings, and the doctor does not, the authors cannot guarantee that the effect they saw was due to the computer system. If a structured pro forma had been used by the doctors to take the history, it is possible that no difference might have been seen (checklist bias).

Minor essential revisions

The title of the article does not provide any idea of the underlying study question - it would be better to retitle the article to provide more specific detail.

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

**Quality of written English**: Acceptable

**Statistical review**: No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests**:

'I declare that I have no competing interests'