Reviewer's report

Title: Evaluation of Computerized Health Management Information System for Primary Health Care in rural India

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Reviewer: Adam Wright

Reviewer's report:

Overall this is an interesting evaluation of a Health Information Management System used in rural India. The system has a variety of capabilities, including demographic management, antenatal care, immunization and the registration of births and deaths. The authors evaluate the system using an eight-part model, including user perspectives and cost evaluation.

Major Compulsory Revisions

1. The background review for this paper is insufficient. There are only three references in the background section. The authors should more thoroughly review the literature on HMIS in order to place their work in a broader context. For example, Fenenga et al. reported on results of an HMIS in Uganda ("Health Management Information Systems (HMIS) as a tool for organisational development") as did Gladwin ("Implementing a new health management information system in Uganda"). Odhiambo-Otieno also reported on one in Malawi ("Evaluation criteria for the district health management information systems: lessons from the Ministry of Health, Kenya"). There are undoubtedly others which the authors should also look for.

2. The World Health Organization described methods for evaluating and monitoring HMIS in chapter 10 of their book Developing Health Management Information Systems: A Practical Guide for Developing Countries. Many of the dimensions of evaluation used by the author (and described in Box 1) have analogues in the WHO framework. The authors should compare their framework to the WHO's, and consider adding components from the WHO's framework if appropriate.

3. The authors should provide a copy of the semi-structured in-depth interview guide as an appendix so that readers can understand better what questions were asked. Such an appendix might also be useful to others wishing to evaluate an HMIS.

4. The authors should provide a more detailed discussion of how domains and themes were identified, and any theoretical basis used. Was any standard theory, framework or method used? For example, grounded theory or a card sort method? Also was any qualitative analysis software (e.g. NVivo or ATLAS.ti) employed?

5. On page 9, the authors describe three main characteristics of an MIS (database, user interface and operating system). Is this a standard framework? If
so, the authors should reference it. If not, the authors should explain more fully how it was developed – it seems that there are other components that might be included, or other ways of organizing the framework.

6. In the data security section of the manuscript, the authors mention the system's logging capabilities, specifically logging of changes to the data. Is data access also logged? If so, this should be described, as it can be an important auditing and security function, e.g. to determine if there have been unauthorized or inappropriate accesses to data.

7. The presentation of the user perspectives is good; however, the organization of Table 3 is unclear. How do the issues in the table correspond to the perspectives listed in the narrative text from pages 12-15? What do the numbers in column "S. No" mean? Are they subject numbers? If so, why aren't there 22 rows?

8. The savings from the cost evaluation come primarily from a reduction in personnel costs. The methods of calculating these savings are not reported clearly. How much time was saved by the system? What types of workers saved time? How were these time savings measured?

9. Given its success, are there plans to roll out the Ballabagh HMIS more widely? If so, this should be discussed in the future challenges section.

10. Table 4 is not referenced in the paper. It should be referenced and discussed. Is comparison data available for a region without an HMIS? This would be very powerful if it could be provided.

Minor Essential Revisions

11. On page 9, Macintosh is misspelled as McIntosh.

12. Table 2 is never referenced – it should be referenced in the Technology section on page 9.

13. The authors describe the results of a thesis on page 12 (looking at accuracy of demographic information). The thesis should be referenced.

14. In the results, the authors should provide the number of pages of transcripts generated and analyzed and/or a word count or total number of hours of audio.

15. I believe that the third paragraph on page 16 is designed to relate to the "What expectations achieved and what not" element of the evaluation framework. If this is correct, a heading should be inserted here, to match the other headings. If not, an explicit discussion of this question should be added. Also, "What expectations achieved and what not" might be better phrased "Which expectations were achieved and which were not".

Discretionary Revisions

16. It would be useful to see some screen shots of the system and reports, including sample data. I would encourage the authors to consider adding a few of these, to help readers get a better sense of the system's design and function.

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

**Quality of written English:** Needs some language corrections before being published

**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.