Reviewer’s report

Title: Healthcare Information Systems: The Cognitive Challenge

Version: 1 Date: 07 Aug 2017

Reviewer: Karen Dunn Lopez

Reviewer’s report:

The authors have substantially improved this submission. I am pleased to see that the inclusion of user center design strategies and the contrast they propose. There are still important opportunities to further strengthen and I continue to believe that efforts to be more concise would improve the overall clarity of the article.

Background

* The authors improved by adding added more citations.

* Should provide context about discussing use of HIT worldwide or in Britain, Australia and Canada. For example, some of the statements do not apply to the U.S. See below.

"Furthermore, usage by clinicians of these systems is disappointingly low [9]:

* Citation is from 2010. In the U.S. EHR usage is now quite high. https://dashboard.healthit.gov/quickstats/pages/FIG-Hospital-Progress-to-Meaningful-Use-by-size-practice-setting-area-type.php

"Policymakers have promoted the development and use of computerized information systems under the assumption that they will improve quality, efficiency, and safety of healthcare"-

* Suggest citing primary sources/the policies or laws.

* Limitations of user center design methods and differentiation from decision centered design add strength to the argument.

* The background is missing a strong and clear definition or explanation of macro cognitive processes that can be threaded through the case studies to improve clarity. For example, sense making is frequently mentioned in the case studies, but is not included in the explanation of macro cognitive processes.

Purpose
The purpose section improves the overall clarity, however the argument for cognitive capabilities is not clearly threaded in the case studies. This is similar to my earlier comment about macro cognitive processes.

I do not agree with the authors' assertion: "In our review of the research into healthcare information systems as summarized above, we found little mention of cognitive issues." There is quite a bit of research on numeracy, graph literacy, risk literacy, and cognitive workload for example. Perhaps describing or defining what the authors mean by cognitive issues would clarify.

Paragraph 3 should be supported with citations

Case Study- Patient Evacuation
* I am surprised that the authors could not identify a more common scenario especially since scheduling is a common occurrence in healthcare. This is not my area, but I could locate several articles about dynamic changes and technology for scheduling in healthcare.

Case Study- Anesthesiology
* Consider clarifying by making more concise, especially paragraphs 2 and 3. The last paragraph is quite clear.

Case Study: UK NHS
* Does not have nearly the amount of detail and explanation as first two case studies. In particular does not note which cognitive processes are interrupted.
* Cite first sentence
* Check citation for unquestioning belief that healthcare needs to take advantage of new technological developments [11]
* Second paragraph needs citations.

Facing the Challenge
* Section would be stronger with more citations. For example, what evidence supports this statement: "...in developing cognitive support systems, information technologists are guided by an outmoded and constraining usability paradigm, and by a distorted view of
how healthcare professionals handle competing and interacting cognitive demands and goals." There are several other unsupported assertions.

* There is also a large volume of literature about decision support in healthcare that could be cited for the following statement:” Notably, the healthcare community tends to rely on rule-based strategies (e.g., written procedures, alarms, algorithms, lists) for clinical decision support.”

Case Study Cancer Screening

* This section is strong and grounded in evidence.

Case Study Diabetes

* I disagree with the authors that there are no definitions of cognitive interviews. Willis GB, Knafl, K are just two authors that have published in this area.

Conclusion

* Suggest make it clear which 2 cases studies referring to in "Two of our case studies illustrate…”

* Some of the statements in the conclusion are related to the topic but not specifically supported by the case studies, such as 1) forces working against...2)select committee of professionals...., 3)...technology acquisition process.

T* The last paragraph is supported by the body of the manuscript.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Unable to assess

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No
Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript

Quality of written English
Please indicate the quality of language in the manuscript:
Acceptable

Declaration of competing interests
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I have no competing interests.

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal