Reviewer's report

Title: Building a house on shifting sand: methodological considerations when evaluating the implementation and adoption of national electronic health record systems

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Reviewer: Hardeep Singh

Reviewer's report:

Thank you for the opportunity to review this paper on evaluation of implementation and adoption of UK NHS’s national EHR system. The paper discusses several challenges in this type of evaluation, which must take into account sociotechnical and sociopolitical contexts, and suggests that such assessments should move away from essentially an “outcome-centered” approach to that of “interpretative” and “performative” approaches.

The paper is overall well written and provides several useful lessons for others. My suggestions are mostly minor considerations for improvement, and should help streamline the paper.

Minor Essential Revisions

1) General comment: While the paper tells a pretty good story, I think parts of the paper could be modified to make the message stronger and the paper could deliver the message more succinctly. For e.g., the paper currently has several sections that would be more meaningful to health services research audience (including informaticians and other stakeholders) if they are simplified. My general advice is to reduce redundancies, make the messages stand out a bit more, organize the paper as lessons learned and minimize complex language. For e.g., while the term “interpretative approach” might be well understood, “performative approach” might mean different things to different people. The paper has numerous jargon terms such as “positivist ontology” and “sociotechnical performativity” etc. that need to be clarified for this audience.

2) I agree with the authors about evaluation-related complexities of such an endeavor, but it appears from page 8 that the authors set out to evaluate implementation/adopter rather than outcomes (not sure if both). As the authors likely also realize, evaluation issues of implementation/adopter versus effectiveness/outcomes from EHR use are quite different, although in the long run are likely related due to the common underlying sociotechnical context. Thus, the paper’s discussion of holistic evaluation including outcomes of quality/safety/effectiveness etc. might not necessarily be as much of a major issue in this paper that largely discusses implementation/adopter evaluation. This distinction is important and the paper should try to clarify which aspect their perspectives focus upon. But at times, it appears that the authors were
conducting both types of evaluation. Readers would wonder why a short term time period of 30 months would also include an outcome evaluation of a national scale when the EHRs had not even been fully implemented. Nevertheless, as long as the authors clarify their focus, whatever that may be, that should work; they can then readjust other parts of the paper according to this focus.

3) Page 4 para 3, line 4. I think this para should specify the basis of the authors’ argument, i.e. lessons learned from their overall project and their post-hoc analysis. This appears to be a viewpoint paper with several lessons outlined for EHR implementation/adoPTION improvement for other countries.

4) Page 5 para 2: the authors might want to highlight that the sociotechnical model/approaches was taken up recently by the US Institute of Medicine’s report on health IT and patient safety. This includes a focus on health IT use in the “complex adaptive” health care system. This could further strengthen their arguments. Perhaps the authors could also better ground some of these implementation challenges into these sociotechnical models for future work?

5) Again, on page 8 it appears that this was an implementation focused evaluation, which makes the later discussion on outcomes a bit out of context.

6) Page 11 onwards, I was able to discern the key challenges or lesson nicely except for the last on political dimension where I was not sure how the political context directly affected the researchers. Could the authors please clarify that? Also, the first ½ of this section could be shortened.

7) 14 page 22, question 1, the discussion of “desired ends”; not sure if the authors actually set out to do just that. If they did, this needs to be clarified upfront (see earlier point on this). Page 22-23 material could also be shortened. I think point # 2 is touching upon an implementation “continuum” and if so this could be clarified.

8) The paper should try to highlight succinctly specific methodologies and specific generalizable lessons for others, and also try to strengthen the conclusions with this material. Currently, much of this material is buried in the text. Could they reorganize some the sections (such as through new subtitles etc.) in order to make this information stand out? Many health services researchers might not be as familiar with the EHR-speak or with some of the research methods related to this type of an evaluation so this would make this contribution a significant one. Also, try to minimize abbreviations.

Discretionary Revisions

9) Introduction: Page 4 para 1 sentence “Evaluation studies often aim....” Not clear what there is referring to and outputs of what?

10) Most of the information on page 7 and timelines can be summarized/integrated with the tables/figures and a few lines could sufficiently summarize this complexity.

11) The paper makes several references to “our study”, which gives the
impression that some data will be presented. Could switch to something like “our project” or “our evaluation”

12) Page 9—not clear on what the four and the six work packages were.

13) Page 17, the way references 59,60 are used, it gives the impression that the authors are citing their studies (such as about researchers getting immersed in the research sites etc.).

14) Page 18, sentence needs to be clarified “Thus the meaning of the NHS CRS (i.e. what was understood as ‘inside’ it) could not be captured without understanding it as conveying (translating or embodying) multiple institutional contexts (i.e. what is ‘outside it’)

15) Page 19 Para 2 could be significantly shortened

Level of interest: An article of importance in its field

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’