Author's response to reviews

Title: Recommended practices for computerized clinical decision support and knowledge management in community settings: A qualitative study

Authors:

   Joan S Ash (ash@ohsu.edu)
   Dean F Sittig (dean.f.sittig@uth.tmc.edu)
   Kenneth Guappone (kenneth.guappone@providence.org)
   Richard Dykstra (dykstrar@ohsu.edu)
   Joshua Richardson (jor2032@med.cornell.edu)
   Adam Wright (awright5@partners.org)
   James Carpenter (james.carpenter@providence.org)
   Carmit McMullen (carmit.mcmullen@kpchr.org)
   Michael Shapiro (shapirom@ohsu.edu)
   Arwen Bunce (buncea@ohsu.edu)
   Blackford Middleton (bmiddleton1@partners.org)

Version: 2 Date: 18 October 2011

Author's response to reviews: see over
October 17, 2011

Dear Editor:

We are resubmitting our manuscript which is now titled “Recommended Practices for Clinical Decision Support and Knowledge Management in Community Settings: A Qualitative Study” for consideration for publication as a Research Article in BMC Informatics and Decision Making. Our responses to suggestions from the editor and reviewers are outlined below.

**Editorial requests**

The editor asked us to include some context information in the Background section of the Abstract and we have done that by adding “ambulatory clinics and community hospitals using commercial or locally developed systems in the U.S.” We were also asked to be sure to conform to the style guidelines and we have carefully tried to do this. If the files are still not correctly formatted, we would appreciate learning what we need to change.

**Dawn Dowding’s requests**

The reviewer asked us to modify the title and we have done this. We have also annotated Table 2 as requested.

**Andrew Georgiou’s requests**

**Compulsory requested revisions**

1. Include more discussion of international references in the Introduction: We have now cited the series of systematic review papers recently published by Canadian researchers. We have also noted in the limitations section of the Discussion that individual readers, including those outside of the U.S. healthcare system, will need to determine whether our results are applicable to their situations.

2. Describe challenges specific to community settings: We have added this to the second paragraph of the Introduction.

3. Provide more information and discussion about the theoretical framework: We have added much more information about the framework in the
Introduction and throughout the paper. We have now included a second figure and description of an enhanced framework that resulted from our work. We hesitated to include this in the first version of the paper because we were concerned about paper length, so we are delighted this reviewer requested this additional information.

4. Provide more information about methods: Again, we were pleased that this reviewer wanted more detail about our methodology. We have greatly expanded the description of how we arrived at the themes and exactly how we used the framework.

5. Do not cite prior findings in the Results section: We have removed these references from this section and incorporated them into the Discussion section as requested.

6. Link the recommendations offered in the Discussion to the findings: We have clarified in the Methods section how we arrived at the recommendations. In the interest of brevity, in the prior manuscript we had not described the expert conference held to discuss recommendations in detail. We are pleased this reviewer has asked for more detail and have provided it.

7. Clarify the reference to previous work at the beginning of the Discussion section: We have added several sentences describing how our results enhance work published in the past by other researchers.

8. Describe the usefulness of the framework and whether or not your findings could extend or modify it: Again, we are grateful this reviewer has asked us to do this and we have described in detail the Translational Interaction construct which extends the Multiple Perspectives model. We have included an additional figure as well.

Minor revision: Elaborate on the Clinical Decision Support Consortium’s selection process for members. We have done this in the section in Methods about Selection of Sites.

Niels Peek’s requests

1. The study purpose was too broad and the study design should have included failures: This paper describes results of two studies that spanned a three year period conducted by a large team of researchers. The studies were exploratory in nature and grounded-theory based. Because this kind of research has not been done before, two U.S. government agencies funded the work. It was designed to be high level and broad so that it could inform research and policy at a national level. As for studying failures, all organizations, even those that are successful in many respects, have had failures with respect to CDS. It is the lessons they have learned that they shared with us that are so valuable. We found that staff members in these
exemplar organizations have reflected on past CDS problems and on how CDS should be done well and are willing to tell others what they have learned.

2. The study only considers CDS in the context of CPOE: While we only studied sites that have CPOE, we include in our definition of CDS many types of CDS that could be available without CPOE and our data include references to reminders, to knowledge resources, and to other modules that do not require CPOE. We have greatly expanded our descriptions of the themes and subthemes and have amplified them with numerous quotes in this version of the paper so that the nature of the CDS under discussion is clear.

3. Theory, framework, and methods are not well described: We have greatly expanded these descriptions.
   a. Number of subjects who declined: As far as we know, people declined because we were only on site for a week and their schedules did not match ours. If they declined for other reasons, they did not tell us.
   b. How were skeptics and champions identified? We describe this in greater detail now in the Selection of Subjects section of Methods. It was basically a snowball method. We asked subjects to point us to other subjects who were particularly skeptical. Our sponsors generally identified the champions for us.
   c. How were conflicting statements, recommendations, or observations handled? The multidisciplinary team met to debrief twice a day when we were on site so that further investigation of such conflicts could be done while we were still there. When they did not arise until the analysis phase, we decided as a team how to manage them. We also used member checking as a way to confirm results.
   d. How were the themes identified? We have extensively revised the Methods section to include much more detail.
   e. How were people selected for the expert panel? We have described this in much more detail in the Methods section.
   f. The Multiple Perspectives model is not well described. We have added a great deal more detail about this in this revised paper.

4. The underlying sources for what is described in the Results section are often unclear.
   a. Who decided what the model sites and more mature sites are? We have revised the wording because basically all of the sites were model sites. For more mature sites, we note when we are referring to a site with a locally developed older system vs. a commercial newer system.
b. How was it determined that CDS presentation was of the utmost importance? We have clarified such statements so that the reader knows we were told this by subjects.

c. Patient specific data are needed and metrics must be established—are these findings or derived from the literature? We have now separated the recommendations into themes so that the Results only include what we were told and observed and the Discussion and Recommendations section includes comments on the themes and recommendations made by the expert panel.

d. Explain how the study confirmed that roles of special essential people are really essential. We have greatly expanded our description of the roles of special people and divided it by roles we identified in our prior CPOE study vs. new essential roles specific to CDS.

5. Minor revisions

a. Theme 3, data as a foundation for CDS, clarify why complete data were not available. We have clarified that it is because patients seek care outside of the organization and the data from elsewhere do not enter the internal organizational record.

b. Theme 4, user computer interaction, clarify how the systems are customized. We have described in great detail how the systems, especially the commercial systems, can be customized and individualized to some extent but that the vendors do not allow certain types of customization.

c. Theme 5, measurement and metrics, how does it relate to the purpose of this study? It is one of the themes that arose out of the data. When asked about CDS and managing CDS knowledge, many interviewees spontaneously described measurement efforts.

d. Theme 10, communication, training, and support, clarify what is meant by communication about CDS. We have done this at length in this expanded version of the paper. We mean that users are communicated with when new CDS or revised CDS is implemented.

e. Elaborate on how places with commercial systems depend a good deal on the vendor for decisions about CDS. We have done this in the Results section under Theme 6, subtheme Governance Structure.

f. Theme 7, translation for collaboration, provide more detail. We have included much more detail in this revised manuscript and in fact have provided a new enhanced model and description based on the work of Agar.
g. Theme 8, the meaning of CDS, is especially interesting and needs more detail. We have greatly expanded the description of this theme and the subthemes related to it.

h. Comment on how small sites might take advantage of what we have learned from sites with locally developed systems. The new sections in the Discussion section that describe recommendations about each theme offer help that is applicable to organizations of any size. As noted in the Limitations section, however, readers need to decide for themselves what is most relevant to their situations.

In summary, we have doubled the length of the paper to provide the rich details the reviewers requested. We have incorporated quotes into the text to add further depth, description, and illustration.

Sincerely,

Joan S. Ash, Ph.D., M.B.A., M.L.S.

Professor and Vice-Chair