Reviewer's report

Title: Development and initial evaluation of a treatment decision dashboard

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Reviewer: Jan Horsky

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This manuscript describes a small pilot study to evaluate a web-based decision-support tool for patients who want to select from a list of available options a drug therapy that best satisfies their personal preferences. The tool uses graphical representation of several attributes and risks of each drug to allow a comparison that may help patients make informed decisions. The experimenters used a commercially available software to create a series of histograms and a table and assessed their subjective ease of use in a controlled scenario followed by a questionnaire.

The ability to make informed decisions is essential for patients who want to participate in shared decision making with their clinicians and take an active role in care and are also more likely to adhere to treatment they helped to select for themselves. The complexity of such decisions, however, often precludes many patients from understanding clearly the risks and benefits of alternative treatments or comparing expected outcomes of each choice. Tools such as the one described by the authors have a tremendous potential for allowing a growing number of patients to more fully involved in their own care.

This is a well-written and organized paper clearly describes the experiment and presents results. However, the focus on self-reported ease of use measures in a small-sample study casts doubts on the relevance of the measures to the ease and clarity of decision making and the relative imbalance of the manuscripts sections – the 9 pages of Methods comprise over a half of the narrative – leaves some topics of interest only lightly covered while overwhelming the reader with details. A careful revision and some additions, especially to the Discussion section, may strengthen this work. More detailed suggestions are in the sections below.

Major Compulsory Revisions

1. The stated goal was to determine whether a dashboard format could be successfully used for healthcare decisions

There are many published reports about dashboards and visual representations of clinical data for both clinicians and patients to help them with decisions. Examples of a few recent ones are below:


Although some of those have not been rigorously evaluated, as the authors note, there should be a review of this topic in the Background section to create a proper context for the current work and its own contribution.

2. Separate Introduction from Background

As a way of rebalancing the content, a formal Introduction section should be added to create a context for the stated aims of this work and the Background extended to include a review of the current issues with clinical dashboards (also, use more current references – the existing ones are 5-10 years old).

3. Move some material from Methods to Background

The Theoretical basis subsection, for example, is thematically related to the Background. The 2 ½ page review of the Visualization theory seems too detailed and almost tangential for this work as the cognitive aspects of graphs and histograms are well known and uncontroversial – a paragraph with appropriate references would probably suffice. The Development subsection clearly explains the choices for decision criteria but the reason for choosing a drug therapy decision (the AHRQ brochure) should be explained in more details as it is important to establish generalizability and representativeness of this dashboard prototype for patient care. Decisions about the relative risks of side effects and interactions are most often made by the prescribing physician and the readers should know whether patients would receive some guidance from them in their selection (shared decision). For example, a PCP may know that the patient has tolerated well certain drug interactions in the past and may therefore have a better insight into the presented comparisons.

4. Usability and effectiveness measures

The inaccuracy of assessing usability with a questionnaire (even a validated one) should be noted as a caveat for results interpretation. There is known low correlation between perceived usability (eg, stating that “I found it easy to use”) and actual performance measures (eg, number of user errors, task completion
rate, achieving the stated goal, etc). This is especially true for small sample like this one. The questionnaire answers are mostly clustered within one scale point, between 6 and 7, which may be showing a possible bias.

5. Further evaluation and prototype refinement

One goal of the study is to outline further evaluation and refinement of the prototype. Given the substantial limitation of small sample and the choice of a subjective evaluation method, it may be useful to discuss what the results imply for further modification of the dashboard and what evaluation studies would be necessary to measure the expected increase in quality of patient decision making. For example, given the results of relatively low level of actual manipulation of the displayed data, what interactive features would have a better chance of succeeding? Would what-if scenarios be appropriate to use? What alternative visual representations would work best to support specific decisions? As the possibilities for future development are included in the study aims, I think they should be adequately discussed.

Discretionary Revisions

Table 1 – Assigning letter codes to each drug so that they can be matched to their representations in the histograms may be useful.

Table 2 – Eschew - the cohort is very small and there are many categories with very small count (1-4). A description in the text highlighting education and literacy may suffice.

Level of interest: An article of limited interest

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.