Author's response to reviews

Title: Use and Satisfaction with Key Functions of a Common Commercial Electronic Health Record: a Survey of Primary Care Providers

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Author's response to reviews: see over
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BMC Medical Informatics & Decision Making

Dear Editor(s),

Re: MS: 9417634639065545

Title: Use and satisfaction with key functions of a common commercial electronic health record: a survey of primary care providers


We greatly appreciate the opportunity to resubmit our re-revised manuscript for consideration as an original research article. Attached please find an amended version of the manuscript with changes highlighted in yellow and a point-by-point response to the referee’s comments below.

Please let us know if there are any further questions or clarifications about this paper. Thank you for your willingness to consider our manuscript for your journal.

Sincerely,

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**Major Concerns**

**Comment 1:** The contribution of the paper to the literature is still not clear. In response to my comment about the introduction, the authors mention on p. 5 that we know little about provider satisfaction with specific EHR functions and that knowing more would help better "realize the intended benefits of the EHR." Though this certainly makes the gap in the literature more clear, I guess fundamentally for me the so what? of this research question is still missing. Why should we care if providers are dissatisfied with EHR functions? What is the consequence of providers being dissatisfied?

The introduction section has been further expanded (p. 5-6). The use of EHRs has the potential to improve quality and safety in healthcare, but these improvements will only occur if providers understand and use key functions regularly and effectively. The EHR is a tool to support health care delivery and cannot in and of itself affect health outcomes directly. Therefore, the only way to realize the benefits of the EHR is if providers regularly use its potentially beneficial functions. Providers' dissatisfaction with the EHR's functionality may lead to suboptimal use of these key functions, therefore, mitigating the intended benefits of the EHR.

**Comment 2:** Please provide the survey in an appendix.

*We have included the survey instrument as an electronic appendix.*

**Comment 3:** Why the focus on structured documenters? On p. 8 the authors discuss their analyses about structured documenters. My question here is, were structured documenters the use pattern the authors were aiming to study in the first place? If so, then the paper's introduction should look different, with more emphasis on the value or problems with this type of documentation, and again, a big focus on the so what?. If this is not the case, and the claim in the intro that the aim is to describe various use patterns is accurate, then why is there little if any discussion about other patterns of use? Why not give equal airtime to the various use patterns found, instead of focusing so much on structured documenters?

The Reviewer is correct that the aim of our study was to describe providers' use and satisfaction with a variety of key functions embedded in the EHR. The Introduction has been revised to highlight the aims of our study more clearly as to avoid this type of confusion (p. 5-6). Furthermore, we added an overview in the Results section to help guide readers to the various findings discussed in the paper (p. 9). Providers’ variability in documentation methods, including use of structured documentation, was one of our hypotheses and most striking findings, and as such, appropriately highlighted in the paper. To provide more context and interpretation of our findings, we highlight this in the study aims (p. 6) and added
a more thorough discussion of the importance of structured documentation (p. 13).

Comment 4: After reading the revised manuscript and its findings I am left with the question of who other than Epic designers would want to know the findings reported here. Again, because the so what? is not really addressed in the intro, it makes the generalizability of these findings questionable. I guess I am asking for a little more interpretation on the part of the authors.

The introduction has been revised to provide more context and clarity of our findings and expand interest to the general EHR community. While it is true that our findings are most relevant to an Epic audience: 1) this Epic audience is enormous and growing, 2) it is considered to be the best in class, so suboptimal use and enthusiasm has important implications, and 3) many of its features are similar to other commercial and home-grown EHRs. In recognition of these concerns we have expanded the limitations section (p. 16) including the following:

“First, though our sample was large and diverse, we surveyed PCPs using a single commercial EHR, so the generalizability to other systems besides Epic is unknown. We intentionally surveyed providers using a single system to better understand the use of key functions independent of differences in EHR design. In addition, Epic is considered to be a ‘best-of-breed’ comprehensive system with a dominant market share, accounting for one-quarter of providers practicing in medium to large-sized clinics that currently use an EHR system.[11] Therefore, lessons learned from this study may thus be readily applicable to a large proportion of primary care providers. In addition, many of the Epic features we asked about are similar to those in most commercial and home-grown EHRs, so our findings may have implications for the larger EHR community.”

While we believe our findings are applicable to users of other commercial EHR systems, further empiric investigation is required.

Minor Concerns

Comment 1: p. 7 "Guided by literature review, the survey was designed and refined by research team members with expertise in ...[4-6, 10, 11]" Do these references refer to the studies they used in the lit review? Or are these meant to highlight the team’s expertise? Please clarify.

As suggested, this was clarified in the Methods (p. 7). The references refer to the studies from the literature review that helped guide our survey development. We have added:

“The survey was designed and refined by research team members with expertise in medical informatics, diffusion of innovation, and health services research. The
questions included in the survey were guided by literature review of previous studies about providers’ use and satisfaction of the EHR. [5-7, 12, 13]”

Comment 2: Make sure subject verb agreement is correct throughout when using the word "data", which is a plural noun (e.g., p. 8, "descriptive data is expressed" should read "descriptive data are expressed")

The verb agreement for the noun, “data,” has been corrected.

Other Comments:

Comment 1: Consider citing Hysong et al. 2010 (PMCID: PMC2995633) and/or 2011 (PMCID: PMC3100236) in your introduction paragraph about suboptimal use of specific functions of the EHR. It might help bolster this argument.

We thank the Reviewer for calling our attention to these papers. We read these two references with interest. The focus of these two papers is on alert notifications of critical test results, a feature of the EHR we did not address in the current study. Furthermore, the first paper shows great heterogeneity and variability in providers’ knowledge and use of alert management features and the second paper identifies facilitators and barriers in interventions designed to reduce missed test results in the EHR. While interesting, we ultimately did not feel that these two studies were directly related to the aims and findings of our current study. Therefore, to keep the paper more focused and streamlined, we thought it was best not to add these references to the Introduction. If the Editor sees this differently, we would be happy to reconsider this.

Comment 2: This is not a revision request, it's actually just a question out of curiosity -- p. 14 "Our study suggests that using an EHR can be considerably time-consuming... providers are spending greater than 9 extra hours a week... completing documentation in the EHR." How are people on paper doing it? Are they really that much faster than EHR? Is there value in that the paper people aren't getting, that makes the extra time worthwhile? When this gets published (in the comments section on the website or perhaps in the next response to reviewers), would you mind commenting on this?

The Reviewer raises a question about time spent documenting in the EHR versus paper-based medical records. It is certainly possible that providers who spend a considerable amount of time documenting in the EHR would also spend an equal amount of time documenting in paper-based medical records. Unfortunately, we have no information about what our study providers prior ‘paper documentation practices’ may have been. Most were using the Epic EHR for several years at the time we surveyed them. We feel that in the absence of any data any commentary about this would be speculative. Furthermore, from a policy and reality perspective, the paper-based medical record system in the U.S. is becomingly less and less relevant, since EHRs are being adopted in an exponential fashion.
and are likely here to stay. Therefore, our findings that providers are spending considerable amounts of time completing documentation in the EHR are a fact of life for a growing majority of U.S. physicians. Further research will be needed to explore why this is the case and how to potentially optimize documentation efficiency to mitigate this burden.