Author’s response to reviews

Title: Improving KT tools and products: Development and evaluation of a framework for creating optimized, Knowledge-activated Tools (KaT)

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Reviewer 1
This is a clearly written paper reporting an immense amount of work to bring together a range of KT tools and perspectives to form a conceptually coherent, useable framework. Some minor comments below.

ABSTRACT
1. Background: The opening line is a broad statement - can the authors narrow this down to positive impacts of what - presumably quality improvement initiatives? - Thank you, we added this into the abstract
2. Last line - grammar needs correcting 'their variable needs or to[delete] deliver recommendations that is[are] most relevant and useful for them.' - Thank you, we corrected this error
3. Methods: Last line - suggest refer to the online tool evaluated as a 'prototype' rather than 'mock-up.' - Thank you for your suggestion. However, this really wasn’t considered a prototype as it had no functional capabilities, so we don’t feel comfortable using the term “prototype”

BACKGROUND
4. p5 L14 - can the authors provide some examples of quality improvement initiatives referred to here? - Thank you for this suggestion. It’s a bit tricky to include an example since there is such a wide variability in QI initiatives that if we provide an example, the readers may associate the low average improvement with that particular initiative.

5. p6 L8 - can the authors provide a definition of 'integrated KT' for readers who may not be familiar? - Thank you for this suggestion, we included a definition for integrated KT (Page 6 of the manuscript)

METHODS
6. p6 L56 - typo 'ddynamic' - Thank you, we corrected this error (Page 6)

RESULTS
7. p13 L40 - can the authors define 'impact drivers' and provide more information on how the domains of the impact drivers were arrived at and the evidence drawn on to judge their importance over other aspects of KT?

- We have edited this section to reflect this expanded clarification of the phrase "Impact drivers” (Page 13)
- These impact drivers have been identified in the literature as important aspects of KT tool development, implementation, and dissemination. We have provided evidence-based tables for each of the impact drivers, which are part of Appendix H. These tables were created using a systematic review of multimorbidity interventions, the KTA and MRC frameworks, and our team members. All of this is described in the Methods section of the manuscript (Pages 6-8) under Phase 1: Development of the conceptual framework. Here is an excerpt from that section:
- Additionally, our Delphi study results (Phase 2) confirmed that these impact factor domains (Integrated KT, Evaluation, Sustainability and Scalability) were in fact indicated by our panel of KT experts as the most important aspects that drive impact of KT tool development, implementation and evaluation; so our Delphi study results validated this organization

8. p13 L44 - if the impact drivers are potentially important to all domains for KT strategies suggest say this rather than 'any or all three' as this sounds a little vague. - Thank you for this comment. We edited this sentence to clarify (Page 13 of the manuscript)

DISCUSSION
9. Can the authors comment on how they see this framework being developed, how it will cater for users with a range of experience in implementation, using theory etc?
Thank you for this comment. We clarified this section, and added a few sentences to how we see this framework to be developed in the future (Page 18)

Reviewer 2

A well written and well conducted multiphase project on the development of a new tool for use by KT specialists. It is an ambitious undertaking to develop a "one-stop-shop" to guide knowledge users on all aspects of their desired KT practice activities, and although I am not convinced the authors have achieved this yet, they have used appropriate and rigorous methods to begin this process.

10. The main limitation of the project is the narrow representativeness of the Delphi panel. Despite the authors claiming that they recruited an "internationally representative panel..." (p8) only three members of the Round 1 panel were from countries other than Canada, and in Round 3 only one member was not from Canada; however, this is not discussed in the limitations section. This is an important limitation that needs discussion. What do you think are the potential impacts on the final form of KaT of this?, eg Canadian-based KT researchers/clinicians/knowledge users will have their own biases, like the pervasive presence of the KTA cycle.

- Thank you for bringing up this point. Although we did acknowledge in our limitations section (last paragraph on page 17) that “we may not have captured all relevant KT experts for our Delphi panel”, we elaborated on this limitation further, to acknowledge that we were unable to assemble an internationally representative panel of KT experts (Page 17)

11. The final version of the framework is simple and clean, but it is not self-explanatory. What supporting material (e.g definitions) will be available to users?

- Thank you for pointing this out. In fact, the KaT framework is not meant to be used in isolation, and we have created evidence tables describing each domain and impact driver, which are available in Appendices F-I. However, we provided a bit more explanation on Page 16 of the manuscript to clarify this

12. P10, 1st paragraph: "The decision to make a change to the KaT framework after each round was iterative, and based on the consensus score to include/exclude as well as the consistency of data between quantitative ratings and supporting qualitative." A little more information is needed here - Who did this, and what were the criteria for the data being consistent? - Thank you for this suggestion. We added a bit more explanation as to how we arrived at decisions on the iterative process of altering the KaT framework (Page 10)

13. P18, "...our goal was to achieve representativeness rather than a large sample size". Did you achieve your goal, and if yes, how do you know that you achieved representativeness? Please expand on this. - Thank you for this comment. We achieved our goal for the knowledge user survey (i.e., to include different knowledge users such as researchers, clinicians, and decision makers). We elaborated on this a bit more on page 17 of the manuscript (and please also see our response to question 15 below.)
14. It is not clear to me how the abbreviation "iKT" ended up in the final version of the tool, nor how useful this will be for users without explanation. Please clarify. - Thank you for this comment. iKT or IKT are commonly used to refer to integrated KT, and it’s defined in Appendix H. Additionally, the KaT framework is not meant to be used in isolation. There are evidence tables describing each domain and impact driver (Appendices F-I). See our response to Question 11 above.

15. Table 5 indicates that only 5% of your sample self-identified as a "knowledge user" as their primary role. Do you think this has an impact on your results? - Thank you for this comment. There are many different types of knowledge users, so all 201 respondents were knowledge users. The roles listed in our table (researcher, clinician scientist, decision maker, knowledge user, graduate student) all represent a knowledge user type. Most respondents had indicted multiple roles, but we used the participant’s first entry to identify their primary role (i.e., primary knowledge user type). The 5% of respondents who identified themselves as “knowledge users” had no other roles identified, so that was their primary role.

16. P10, sub-title incomplete: "Phase 3: Survey of KT knowledge users of a potential" - Thank you for catching this error. We have corrected the sub-title of Phase 3 (Page 10).

17. References: many references, other than journal articles, are incomplete - We have corrected all our references (Pages 21-25).

18. The next challenge is to more rigorously evaluate this tool in real world settings. Other than developing the online platform, please add in some discussion about what your recommendations are for this tool for future use and evaluation. - Thank you for this comment. We expanded a bit on this point at the end of the discussion (Page 18).