Author’s response to reviews

Title: Identifying relevant concepts and factors for the sustainability of evidence-based practices within acute care contexts: A systematic review and theory analysis of selected sustainability frameworks.

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IMPS-D-19-00250 – ‘A systematic review and theory analysis of frameworks for sustainability of evidence-based practices for acute care contexts’, has been re-titled “Identifying relevant concepts and factors for the sustainability of evidence-based practices within acute care contexts: A systematic review and theory analysis of selected sustainability frameworks”
Letitia Nadalin Penno, PhD (c); Barbara Davies, PhD; Ian Graham, PhD; Chantal Backman, PhD; Ibo MacDonald; Julie Bain, PhD; Alekhya Mascarenhas Johnson, PhD; Julia Moore, PhD; Janet Squires, PhD
Dear Bryan Weiner:

Thank you for the opportunity to revise and resubmit our manuscript, IMPS-D-19-00250 – re-titled “Identifying relevant concepts and factors for the sustainability of evidence-based practices within acute care contexts: A systematic review and theory analysis of selected sustainability frameworks.” We have addressed all of the reviewer’s comments. Each comment, along with our response and reference to where the issue is addressed in the revised manuscript is itemized on the pages that follow this letter. We used track changes and colour highlighting in the revised manuscript for easy identification of our changes as requested.

If you require any further clarifications, please do not hesitate to contact me.

Yours Sincerely,

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Response to Reviewers
REVIEWER 1 (Rachel Tabak)
Reviewers Comments Response
1. This paper describes a review of frameworks, models, and theories (F/M/T) to guide sustainability, particularly in healthcare. While this could be a nice contribution, the paper would benefit from a clear definition of and justification for the objective. The title now better reflects the objective of this review and analysis (Line 1-3) – “Identifying relevant concepts and factors for the sustainability of evidence-based practices within acute care contexts: A systematic review and theory analysis of selected sustainability frameworks”. The objective and justification of this study is stated on line 95-98.
Additionally, the gap in the literature (e.g. to date a review to examine how to improve the sustainability of EBPS in acute care has not been done), the rationale (e.g. hospital expenditures are highest) and the need for this study (e.g. to identify which existing Sustainability F/M/Ts are applicable and what factors to consider when trying to sustain the use of EBPs primarily in acute care) are stated (Line 116-123)
2. The addition of methodological details, which articulate what is included and excluded from the review and why, could help explain how the methods addresses the stated objective.
Specific notes follow. * It might help to clarify what this paper adds beyond the Moore et al. 2017 (ref #7) and the Lennox et al. 2018 (ref #8) reviews (e.g., why are models designed for general healthcare settings inadequate for acute care?), particularly given "identify existing F/M/Ts recommended for use within acute care settings or unspecified healthcare organization/setting" is in the aims for the current review.....It might help to bring more of the responses to the editor comments (e.g., "The authors signal that they are going to focus on theories, models, and frameworks that pertain to acute care, yet they include theories, models, and frameworks that pertain to healthcare settings generally.") into the manuscript, so this distinction and individual contribution and the justification for including "unspecified healthcare organizational/clinical setting" are clear. *

The aims of the study have been adjusted to clarify how the methods are used to achieve each aim/goal (Line 124-131)

(i) systematically identify existing sustainability F/M/Ts that explicitly address the process of sustained use of research (evidence-based practices/guidelines/innovations/clinical protocols/programs/interventions) and are recommended for use within acute care contexts or an unspecified similar healthcare organization/setting; (ii) using a modified theory analysis approach compare F/M/Ts to identify key concepts and factors that influence/predict the likelihood of successful sustainability of EBPs in acute care; and (iii) provide a list of relevant sustainability F/M/Ts for use in acute care, and a set of concepts and core factors to act as a guide to facilitate and provide direction for practice and future research (Line 124-131).

Eligibility for F/M/Ts’ derived from the 2 data sources, used in this review is made explicit.

- Eligibility criteria was designed to examine sustainability as a distinct concept (as per Moore et al. 2017 definition) and to identify concepts and factors related solely to the sustained use of EBPS in complex healthcare environments such as acute care. (Line 152-155)

- Search strategy and data sources:

(i) A full text review, abstraction and appraisal of all F/M/Ts included in two existing knowledge syntheses of sustainability in healthcare (Lennox et al., 2018; Moore, 2017) was conducted to determine overall alignment with the aims of this study and eligibility criteria established for this study given their original purposes, scope and related methodologies differed (Line 135-139)

(ii) we conducted a new systematic search of the literature using the same eligibility criteria guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) (Line 140-142)

3. It is not clear from the methods what type of papers were searched for. If the manuscript relies so heavily on the references in the reviews cited as #’s 7 and 8, some summary of the methods in those reviews is needed. It is not possible to tell from the current paper if any citation of a F/M/T would be included, only a F/M/T development paper, or some other method.

The types of papers included in the new systematic review are now identified in the manuscript. (E.g. all published articles and dissertations/theses, systematic and scoping reviews, concept analyses) (Line 140-141)

4. Why restrict to models specific to sustainability? What about models that encompass more phases, but include sustainability (e.g., RE-AIM, EPIS).
This might avoid bogging studies down with too many F/M/Ts…. That being said, looking at the exclusion criteria section and Table 1, a model which includes additional phases would not need to be excluded, as long as it explicitly addressed sustainability. This may just be a matter of clarifying this inclusivity. However, in looking at Figure 1 and Appendix 3, 113 exclusions for "Implementation and sustainability or implementation model"; does this mean a F/M/T that was inclusive of both implementation and sustainability would be excluded? While this comes up in the response to editor comments, clarification and justification do not seem to be included in the manuscript.

Inclusion and exclusion criteria have been made more explicit in the manuscript to enhance clarity.

Inclusion criteria for Sustainability F/M/Ts is clarified. (Line 156 -160)

Exclusions related to F/M/Ts with both Implementation and Sustainability components is clarified (e.g. must explicitly provide a detailed breakdown of related sustainability factors and concepts to be included in the study) (Line 161-166).

Notably, most F/M/Ts that contain both initial implementation and sustainability did not explicitly provide a detailed breakdown of related sustainability concepts and factors. We found that those that did provide factors related to sustained use of EBPs, were recommended for use in community or public health settings (but did not specify they could be applied to an acute care setting) and were therefore excluded. (Line 190-193). This finding is congruent with the current literature (Lennox et al 2018 & Shelton et al 2018) (Line 390-392).

5. Additional clarification in the methods could be helpful, particularly as it relates to inclusion. It is not clear if a model that was designed in one setting (e.g., community), but has been used and tested in another setting might become eligible.

If not, a justification for why only an index description of a model would be included, rather than application of a model developed for public health but applied to acute care settings, would be helpful. If a F/M/T was designed in one setting (e.g., community), but had been recommended for use in and/or tested in an acute care setting it would be considered eligible. However, originators of the public health and community F/M/Ts, with sustainability components, were not recommended for acute care. (Line 162-164)

In this study, we were interested in examining the most up to date/current or refined version of the F/M/T, as per the originators’ recommendation (Line 159-160)

6. It is interesting to see the comparison with the Moore et al review at the top of page 9 (lines 223-225) included in the results section, rather than the discussion. Typically, the results section would include the findings of the current paper, with the discussion section comparing these with other studies in the literature. Might the authors present a justification for the alternate presentation in this review? The justification for the alternative presentation stems from using the theory analysis approach. The recently published comprehensive definition for sustainability (Moore et al,2017) was used to examine the ‘conceptual meaning’ for sustainability provided by originators of the F/M/Ts included in this review. Thus, as part of the critical analysis, our findings are reported in the results section, revealing the differences and similarities (Line 214-235).
Thank you for your comment related to comparing the findings to other studies and the positioning of this information in this review. The implications of the findings are now part of the discussion section (Line 405-409).

7. The section on Schematics is a nice addition to the results. Thank you for your comment.

8. This paper could use a round of proofreading, as there are grammatical errors that are a bit distracting. The manuscript was reviewed by a non-author language professor prior to submission.

Reviewers Comment (Clayton Shuman)

9. Major: What is the authors' definition of sustainability? Although the Moore et al. is used in the analysis, it is not entirely clear why the authors chose the Moore et al. definition of sustainability to guide their analysis and if this represents their own definition of sustainability.

Moore et al's (2017) comprehensive definition of sustainability has recently been derived from a review of definitions found in the literature. Thus, this definition was used in the critical analysis of the ‘meaning of sustainability’ as presented by the originators for each of the included F/M/Ts in this review (Line 83-87).

As indicted, the results of this review add further insight into sustainability as a process or ongoing continuous/phase, adding to the definition (Moore et al 2017) and supporting findings from recent reviews: shifting the perspective of sustainability to that of an ongoing/continuous process or stage/phase overtime rather than an end point (Shelton et al 2018; Lennox et al 2018)(Line 409-414)

10. The authors contend that sustainability should be investigated as a "distinct concept." Although sustainability may be conceptually distinct from implementation, it is highly related to implementation. Implementation interventions guided by published f/m/t/s can also contribute to sustainability. Thus, failure to include implementation F/M/Ts eliminates potentially valuable sources of information to guide/explain sustainability in acute care. The potential impact of implementation on sustainability is a valid point. However, the focus of this review was not to examine the relationship between implementation and sustainability but rather to identify concepts and factors related specifically to sustained use of EBPs, within an acute care environment, post the implementation phase (beyond at least 2 years). We agree future research should examine F/M/Ts that contain both Implementation and sustainability components to determine the relationship between the concepts using a theory analysis approach. This could potentially provide new insight that would impact both phases of the translation research process and/or more importantly the impact of implementation on the sustainability phase. (Line 503-506)

11. Although presence of themes varies across the include FMTs, the core factors in table 5 look identical to implementation factors included in most implementation FMTs. Thus, it is unclear how strategies for sustainment differ from strategies for implementation and why different FMTs are needed. This needs to be addressed. The 7 themes/concepts in Table 5 are derived from the terms used by the originators of the F/M/Ts. (Line 419). Interestingly, as you have pointed out, it is possible the core factors within the themes/concepts identified in this review align with those in Implementation Frameworks but it was not part of this analysis.
Notably, strategies for sustainment may differ based on the contextual factors impacting/influencing sustained use of EBP (Line 435-438).

12. Since "sustainability is a relatively new concept" why did the authors exclude all FMTs outside of acute care? Of the 8 included FMTs, only 3 were specific to acute care. It is unclear how sustainability as a concept differs across settings. Thus, I question the rationale for restricting study selection by setting. Yes, we agree it is unclear how sustainability differs across settings and this is a good suggestion for future research particularly across settings studying the same EBP. The vague concept of Outcomes could also be better articulated as indicated in the discussion section (Line 446-448) and conclusion section (Line 500 - 503).

Further clarification related to why we included the 8 F/M/Ts in this review is provided in response 1&4 above...All F/M/Ts that were included in this review had to have been recommended for use in an acute care or similar clinical organizational setting by their Originator(s). Response 1 outlines the objective and justification of this study. Response 4 - inclusion and exclusion criteria are made explicit to enhance clarity
13. The rationale for a theory analysis is unclear, especially considering that the concept itself is new and under researched. This was not clearly explained in the methods section and has been corrected. (Line 176-181)

The theory analysis approach/method is recommended when concepts require further clarification or development (Walker & Avant 2005). We used this as a method to systematically analyze the concept of sustainability, clarify and define concepts and factors known to influence the sustained use of evidenced-based practices in acute care from the 8 identified F/M/T derived from the systematic review of two syntheses and a systematic review. Modifications to the criteria were outlined with rationale (e.g. Given the subjective nature of the criteria).

14. Other concerns: Pg 4, line 115ff: Nilsen citation is specific to implementation F/M/Ts, but the authors use it to support sustainability FMTs. We agree and thank you for this comment. This sentence has been removed ... “Nilsen (2015) contends F/M/Ts can provide a guide to understanding “how and why implementation succeeds or fails”.

15. Inner context vs. inner process vs. leadership and management. These three themes are presented as being distinct but the differences between them is unclear. For example why is leadership and management not included in the inner context? To enhance clarity on the differences between the themes minor changes have been added to the ‘Results Section’ which provide findings from the synthesis of factors and themes identified in this review… (e.g. (3) leadership and management influences/factors; (4) inner context (practice setting/ organization) factors where EBPs are delivered; (5) inner processes/infrastructure factors that support the EBPs (e.g. processes, methods, systems, structures or strategies) (see Line 239-242). Furthermore, minor changes to all 7 theme descriptions have been made to provide clarity to help differentiate what constitutes inclusion within each grouping (or theme) (Lines 254-267)

16. Pg 16, line 405ff: It is unclear how "process" and "ongoing" differs from "continued use" and "evolution/adaptation." ...I am not convinced the authors have identified anything new
to add to the definition of sustainability. Evolution and continued use do not reflect an endpoint but suggest an ongoing process.

Further, at some point, an organization will consider the EBP sustained and move attention elsewhere. Thank you for this comment. The implications for the findings of this review related to the definition of sustainability (constructs) are now in the Discussion vs the Results section. Further clarification and interpretation of findings as it relates to the current literature are in Line 405-409 and 400-414).

Notably, we agree the sustained use of an EBP is viewed as an ‘ongoing process or continuous phase’ from initial implementation to sustained use. This is different than the ‘change or evolution or adaption’ the EBP may actual undergo in the context overtime. Minor changes to clarify this point have been included herein.

17. It is unclear how this analysis contributes to practice and research. How are clinicians and healthcare leaders to use and apply these results?

What are your recommendations for implementation research in light of your review?... Should there be 1) implementation scientists and 2) sustainability scientists or is there considerable crossover?

Should we expand implementation FMTs to include sustainability or should we foster development of two different FMTs to guide The Strength section includes implications for practice and research...

By identifying factors and themes/constructs relevant to acute care settings, this work has the potential to aid sustainability planning for those planning or currently implementing EBPs (Line 470-472); behaviour change mechanisms (factors) influencing sustainability specific to acute care are identified for practice and research (Line 474-475);

The modified theory analysis criteria can be used as a tool to appraise emerging or other existing F/M/Ts (Line 476-477).

The conclusion section provides recommendations for future inquiry…

Recommendations for future inquiry are to examine the factors related to Outcomes concept using mixed methods approach; and the relationship between implementation and sustainability factors overtime (e.g. early factors, mid process factors and long-term factors) and the potential impact of implementation on sustainability (Line 500-506).