Author’s response to reviews

Title: Measuring Research Impact in Medical Research Institutes: A qualitative study of the attitudes and opinions of Australian medical research institutes towards research impact assessment frameworks

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Author’s response to reviews:

Thank you to the reviewers for their considered feedback. Comments with respect to the changes made are provided in bullet points following each question/suggestion. Changes to the revised manuscript text are identified with highlights. The line numbers according with the response to the reviewer’s comments correspond to the updated submission.

Reviewer reports:

Reviewer #1: Thank you for the opportunity to complete a review for the manuscript HRPS-D-17-00191 titled,

"Measuring Research Impact in Medical Research Institutes: A qualitative study of the attitudes and opinions of Australian medical research institutes towards research impact assessment frameworks". I would suggest the following revisions:

In the introduction

1. Line 106-109 "For disciplines outside of HMR and different institutional environments, the focus upon MRIs provides a clearer focus upon research translation and impact by excluding the teaching responsibilities of universities and/or the challenges facing research fields for which
translation outcomes may carry less relevance”. This is a loaded sentence, please consider splitting into two.

• Addressed

2. Line 119-121 and Line 1069 "Subsequent research will draw the implications from the results of this qualitative research and the prior study to inform upon guiding principles for a RIAF tailored to Australia's MRI sector" - "to inform upon guiding principles for a RIAF tailored to Australia's MRI sector" - check this sentence, as above.

• Reviewer suggestion is unclear. Sentence (L119-121) has been reviewed, but is considered appropriate.

• We have assumed note re L1069 refers to the similarity in the sentences. The sentences in L119-121 and L1069 are similar, but deemed relevant for the respective stage of the manuscript.

In the methods

3. Abbreviations such as e.g. and i.e. are suitable for technical reports, bit not peer-reviewed articles

• The paper follows the recommendations of the ICMJE International Committee of Medical Journal Editors, which recommends avoidance of ‘nonstandard abbreviations’ only (http://www.icmje.org/icmje-recommendations.pdf).

• Examples within quotes reflect the interview responses.

4. Sample selection requires clarification. Perhaps consider adding a sentence "As a result of the purposeful sampling, 15 institutes out of 46 were approached to participate"

• The reviewer’s suggestion expands an area that reviews by fellow authors had requested text reduction. I have sought to clarify with the insertion of ‘(n=15)’ to address the reviewer’s concern (L139). I note that the critical elements, being the target population (MRIs), the sample frame (AAMRI membership), the process of sample selection, re potential bias, the percentage sample and the response rate are all transparent in the text.

5. Table 1: sum of % by state does not add up to 100.

• Note inserted in L152 that ‘***May exceed 100% due to rounding)’
6. Line 165-170. Can you clarify who are these "five participating stakeholders", and "other stakeholders" identified via network sampling? Is this an extra sample with different sampling process (network sampling)?

• The participating stakeholders are detailed to the extent their consent allowed, in Appendix A.

• The authors believe that the reasons for their selection and the method to identify the other stakeholders (network sampling) is sufficiently transparent in the existing text.

7. Can you add the number of participants from ARC and NHMRC in brackets (n=…)

• The number of individuals attending from the respective funding bodies was not provided to minimise the potential attribution of quotes regarding research funding, correctly or incorrectly, to individuals.

• In this context, the authors believe that the data collection method outlined from L185-L190 is sufficiently detailed.

8. Line 176 "All interviews were conducted by teleconference, which provided for the collection of supporting field notes". Did you imply if interviews were to be conducted face-to-face, they won't allow collection of supporting field notes?

• The teleconference implied hands-free, which provided for simultaneous field notation.

• Clarity provided within the text (L177)

9. Line 207. Can you describe how the "the framework method" was applied in this research?

• How the ‘framework method’ was applied is explained from L209 – L222. The main objective was to ‘provide a clear audit trail to participants’ verbatim comments’, which can sometimes be lost in thematic analysis.

• The method section in the draft text has already been refined substantially by the authors to reduce the volume. Consequently, we are reticent to extend unnecessarily. This position is taken in consideration of the second reviewer’s comment that the ‘Methods section is strong’.

• The reference provided in the text provides additional information regarding the framework method and the contrast to alternative approaches, such as grounded theory.
10. Line 211 "thematic framework corresponding to this a priori comprehension was utilised" – repetition

- The authors do not understand how this comprises repetition, particularly in light of the preceding request to describe how the method was applied.

- This sentence explains one step in the adopted framework method. That is, the researchers started with a structure for the themes based on significant prior research. The text has been adjusted to assist comprehension of this step (L210-L214).

In the discussion

11. Line 1033 "A second overarching issue relates to the fundamental purpose of RIA, given the objective holds implications for the form and method of assessment" - consider giving more details on the implications for the form and method of assessment

- The text provides some details on the implications for the form and method of assessment (L1060-1063; L1089-1091). However, the current paper is expansive and the authors believe that the implications merit elaboration in a separate paper, particularly in collaboration with the implications from the supporting literature review and analysis (Deeming et al 2017, published in HRPS). The direction to the subsequent paper is provided in L1068.

12. Line 1056-1057 "The research found that participants did not initially comprehend the idea with impact assessment implicitly assumed to be retrospective" Can you make it a positive statement, by simply saying impact assessment was typically regarded as retrospective

- The text has been adjusted to clarify. (L1079)

13. Line 1047 define RAND - an American non-profit global policy think tank "Research ANd Development"

- RAND represents their common name in this field. The authors believe that elaboration of the acronym would confuse within the text. However, the concern is addressed through expansion of the acronym and description of their role in the new List of Abbreviations.

• Included in L1084

15. Line 1066-1067 It is not appropriate to have one sentence as a paragraph, consider merging with the above or below paragraphs.

• Addressed (L1089-1091)

16. Can you provide a few sentences, whether the framework (RIAF) can be used by individual researchers/teams working in medical field but not affiliated with MRIs? How versatile this framework?

• As per Question 11, this paper focusses upon the views of the participating MRIs and the key stakeholders. While the discussion and conclusions highlight some potential implications from the results, the authors believe a fuller elaboration of potential implications is required, including the question raised, being the implications for impact assessment for individual researchers/teams working in HMR, but outside MRIs. The reviewer's question is appreciated and will be addressed in the subsequent paper.

Despite all of this, I think this is a good research report and adds important knowledge. Should authors complete suggestions listed above, the manuscript findings will offer greater meaning.

Reviewer #2: HRPS-D-17-00191

Measuring Research Impact in Medical Research Institutes: A qualitative study of the attitudes and opinions of Australian medical research institutes towards research impact assessment frameworks Simon Denning et al I enjoyed reading this highly interesting and well-conducted study. The Methods section is strong, and I particularly liked parts such as how the reflexivity resulted in a shift in the weight of time given to different topics. The Results were generally comprehensively presented, and relevant to the issues being considered. They were often insightfully illuminated by the supporting quotes. I noticed a couple of technical points that should be addressed please, and have three suggestions for the authors to consider.

• The reviewer misspelled my surname (Simon Deeming is the correct version). I note, not in precious way, but just in case it affects any relevant databases outside Editorial Manager.

1. The journal style is to have references in square brackets. The reasons for this are illustrated on lines 113/4 where a quick read of the text could potentially lead to some confusion.

• Changed to correct journal style
2. It would be useful to add a list of abbreviations please. While they are generally spelt out on first use, it can still helpful to have a separate list. For example, I was unclear whether 'REA' on line 790 was a typo and should have read ERA, or was something for which I'd missed the full name.

- The text is correct. REA refers to Research Engagement Australia, in contrast to ERA – Excellence in Research Australia
- A list of abbreviations has been added as requested.

3. There are just a few sub-sections of the Results that are probably too brief, and it would be helpful if they were either extended a little, or merged.

- The reviewer’s point is acknowledged. However, to a large extent, the brevity or contrasting expansiveness of the result sub-sections reflect the outcomes of the thematic analysis. Consequently, the volume of content for any given theme/sub-themes is dictated by the content provided by the respondents. On occasions, only one participant may have introduced a discrete issue with limited expansion. The authors have reviewed the thematic analysis, but do not believe a basis exists for merging themes further without undermining the methods.
- The presentation of the results could be altered to remove the sub-headers for sparsely populated sub-themes, but this would change the hierarchical structure of all the results. The authors believe this would risk confusing the reader.

4. ERA is referred to several times, and I think it might be helpful for the non-Australian reader for this approach to be described a little more fully.

- New introduction paragraph and text provided in the Discussion (L1013 – L1030)

5. Finally, especially in the light of all the rich data in the Results, it would be appropriate for the Discussion section to go a little bit further in interpreting or commenting on the data. For example:

* First, and linking with the above point, it might be useful to comment on the results in relation to some of the recent developments in impact assessment within the Australian system - even if this is just to set things up for a subsequent fuller analysis.
  - Addressed in L1013 – L1030; L1047 – L1062

* Second, there is a most interesting quote on lines 509-11 about the importance of having a clinical or therapeutic end point informing the work of the cell biologist. Then the Conclusions emphasise that if impact assessment is to contribute to optimisation of the
health gains then further inquiry into how the assessment process may re-align research behaviour must be prioritised. Some previous studies of impact, and factors associated with it, have already explored some of the issues raised by these findings. They could be used to help interpret the findings and show how they might feed into the Conclusions. For example, a RAND-led study conducted impact case studies in Australia (including one on research at Hunter), Canada and the UK and concluded that: 'Basic biomedical research with a clear clinical motivation is associated with high academic impacts and high wider impacts.' (p.7) Wooding et al, (2014) Understanding factors associated with the translation of cardiovascular research: a multinational case study approach. Implementation Science. 2014.9:47. https://implementationscience.biomedcentral.com/articles/10.1186/1748-5908-9-47

- The authors agree that there are numerous potential linkages with the results of other studies e.g. Retrosight, and numerous potential implications. We are grateful re the reminder of this example. The early drafts of this paper elaborated extensively on the implications arising from each sub-theme resulting in an extremely lengthy paper. Consequently, a decision was made by the authors to reduce its length and make it more accessible to more readers by keeping the discussion and conclusions focussed upon the initial results of the analysis and the over-arching themes, without detailing the myriad potential implications.

- The authors have written a subsequent paper, as noted in the text, which draws the insights from the scoping literature review of objectives for RIAFs, insights from the analysis of capabilities of different RIAFs, the results of this qualitative analysis, places these ideas within a policy context and draws numerous implications as requested by both reviewers. One example, already included in the next paper, details the supporting evidence (these results, Retrosight and others) for targeting a medical or health outcome even for early stage basic science.

- If this paper is successful with the submission, the authors anticipate submitting the subsequent ‘implications’ paper promptly. The authors note that the common structure of the paper headings is designed to assist interested readers in connecting the results and the wider discussions across the wider research project.

- This stated, the Discussion has been augmented to draw some additional linkages between the results and the implications/evolution of research impact assessment policy in Australia (see highlighted text).