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Title	Setting an implementation research agenda for Canadian investments in global maternal, newborn, child and adolescent health: a research prioritization exercise
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Reviewer 1	Dr. Ritu Sadana
Institution	World Health Organization
General comments (author response in bold)	Within Stage 2, please explain why only existing research priorities exercises (20 published) were used to identify "highest ranked delivery questions" e.g. implementation-related research questions. By selecting the highest ranked questions from each exercise, your study has given each exercise the same weight. What could have been other options, that might have added value or innovation, yet were discarded (this is mentioned in the Interpretation discussion, yet could be expanded). For example, in the results section, it is mentioned that no top-ranked questions explicitly mentioned adolescents. Could this reflect a bias in previous exercises that is carried forward in the current exercise? Although mentioned in the interpretation section, it is unclear where this input is within the process, noted in Figure 1 - e.g. "we made an effort to recruit adolescent health experts to propose additional research questions and provide scores." **We have revised the 'study design' section to include: "This literature review was conducted to build on the foundation of existing CHNRI studies, allowing our expert group to review and contribute to a set of research questions previously identified as priority areas." Existing exercises were not the only method of identifying priorities, but a starting point. We specifically consulted CHNRI studies, as opposed to other research prioritization exercises, due to the relative consistency of the methods between studies. Our expert group reviewed and added to this list, allowing them to contribute options that may have been missed.** Within Stage 3, please explain why the exercise deliberately invited only experts from Canada. Certainly, the 20 published exercises included experts from around the world on various topics. Else further explanation would be helpful, as on one hand, this effort is to guide Canadian research investments in global MNCAH; on the other, only use of Canadian experts (without public input, for example to weight the importance of the 5 criteria to score each question) to do so should be explained. **Added under 'technical consultation': "We specifically engaged Canadian-based voices in global health given the focus of the exercise on guiding Canadian research investments."** **On a related note, under the interpretation section, we have also mentioned that: "Seven of the fifteen top ranked questions originated from the CHNRI literature and two of these questions (#7, 12) came from CHNRIs explicitly focused on implementation, indicating strong agreement between our expert group and the existing literature[15,30]."** How were the 32 experts identified? Moreover, 24 of 32 experts responded to the invitation, 20 completing scoring sheets. What were the fields of expertise of those who did respond vs those who did not? More generally, does the study team suggest that the results are robust and could be repeated with a somewhat different set of experts (as even though AEA are calculated in stage 5, these could change if for example there is greater variation in expertise included)? **To address your first point about how experts were identified, we have mentioned under 'results': "38 experts were then formally invited by email to participate. Six experts volunteered to participate at the CanWaCH meeting, and 32 experts were identified from their affiliations or known expertise." These affiliations are mentioned under 'technical consultation' – the Coalition of Centres in Global Child Health and the SickKids Centre for Global Child Health.** **There was not great variation in the expertise of those who provided questions and those who provided scores; both groups included expertise across the continuum of care, representing all four target populations.** **On a related note about replicability, we have added the following lines to the limitations section: "Yoshida and colleagues conducted an analysis of the CHNRI methodology[38], examining the concordance among top ranking research priorities as sample size increases from 15 to 90. They found that a high degree of reproducibility of top ranking research priorities was achieved with 45-55 experts, suggesting that our relatively small sample of 20 scorers may be a limitation. However, it should be noted that they still observed an**

	appreciable degree of reproducibility with a sample size of only 15 persons." Within interpretation, more details on how these findings will guide Canadian investments will be appreciated, e.g. what institutions - parliament, academic collaborations, aid & development, research funding, etc., are targets. **RS, ZAB, and HS have written an accompanying CMAJ commentary in which we propose a more detailed action plan. However, in the present manuscript, we have added a more general statement to the concluding paragraph: "We call upon the Canadian community of donors, researchers, policy-makers and program managers to support the translation of these recommendations into appropriate and transparent funding opportunities."** **We intend, once published, to disseminate these findings and include within the Canadian members of the Coalition list serve. If available by May 2017, we will include findings in the implementation research seminar planned for the PAS meeting 2017 as well as the CanWaCH eblasts in 2017.**
Reviewer 2	Dr. Leon Bijlmakers
Institution	Radboud University Medical Centre, Health Evidence, Netherlands
General comments (author response in bold)	In the introduction you need to include a phrase to explain the inclusion of adolescents as a separate target group, as the Muskoka initiative seemed to have targeted maternal, newborn and child health, not adolescents. **Now included in the intro: "These renewed commitments towards improving MNCH present an opportunity to address the unfinished agenda of the MDGs, bridge the gap in implementation research, and expand efforts to address the neglected area of adolescent health."** The article would gain in strength by referring to research prioritisation processes in other health domains (e.g. COHRED, Viergever). Now only reference is made (in the subsection Study design) to the CHNRI method, as if that is the only one. It would be appropriate to explain which criteria are being used by others. **Many thanks for this suggestion. We have now updated the study design section to mention other research prioritization processes: "This systematic and transparent approach is the most frequently used method of health research prioritization since 2001, followed by the Delphi, James Lind Alliance, and the Combined Approach Matrix methods[10]. It has now been applied to a wide range of relevant MNCAH topics, including but not limited to: birth asphyxia, childhood pneumonia and diarrhea, and adolescent sexual and reproductive health[11-13]."** (page 7) Subsection Stage 1: "we modified the CHNRI criteria". You would need to explain what precisely was modified, and why. I'm not convinced that the 5 criteria that were used are actually the best ones. For instance, what about topics/research questions that have received relatively little attention in the past, or that have so far not resulted in sufficient conclusive evidence. It would be appropriate to refer to recent systematic reviews and mappings of maternal health intervention research, by Chersich, Footman et al, published in Global Health : they identified gaps in research. **Thank you; this point is well taken. Our criteria were very similar to the conventional CHNRI criteria; however, similar to past studies and supported by the CHNRI guidelines, the steering committee chose to modify the criteria to better reflect the context of implementation. Kindly note, modifying the criteria is not uncommon among CHNRI papers. While readers are welcomed to compare our criteria with previous papers, the nature of the criteria as predetermined is what makes the CHNRI method systematic and transparent, and that is what we have chosen to emphasize in the present paper.** Stage 2: : "using a more specific definition for 'implementation' " sounds quite vague. You need to explain. **Agreed. We have revised this section: "Through an initial literature search, a team member screened published CHNRI studies, identifying all research questions potentially relevant to implementation. Two researchers then screened this list for research questions explicitly pertaining to implementation, defined as the delivery of interventions (i.e., policies, programs, or individual practices), and the translation of research evidence into improved health policy and practice[16,17]."** (page 10) Stage 3: be more precise in indicating how many experts were invited (6+32+some additional "known Canadian experts in the field of MNCAH"), and how many actually responded (why the difference between 24 experts who submitted research questions and 20 who returned completed scoring sheets?). **The number of participants has been moved to the 'results' section: "38 experts were then formally invited by email to participate. Six experts volunteered to participate at the CanWaCH meeting, and 32 experts were identified from their affiliations or known expertise. Participants' expertise**

	ranged across the continuum of care, representing knowledge of all four target populations. **Experts individually reviewed the 45 questions from the literature, with 24 experts proposing 71 additional questions. The steering committee then thematically organized the 116 questions by position on the continuum of care, removing overlapping options. 97 remaining questions were organized into a marking tool, and twenty experts returned completed scoring sheets."** Stage 4: "stakeholders" come out of the blue. If it is relevant to know the background and interests of various categories of experts, then that needs to be explained in the introduction. **We have added 'stakeholders' to the first sentence under 'setting' to define this term: "This study aimed to inform various stakeholders, including the CanWaCH community and key Canadian donors and researchers, about research investment options that are expected to improve implementation of MNCAH interventions in LMICs."** Results: two decimals for the RPS scores suggest too high a level of precision. **In CHNRI studies, the RPS score is typically reported to two decimal places. We would suggest maintaining the number of decimal places in order to remain consistent with other studies, as well as to maintain the ranking of the questions.** "AEA tended to show a positive association with RPSs, indicating that there was more agreement ..." : more than what? **Revised: "Similar to past CHNRI exercises, AEA showed a strong positive association with RPS, as evidenced by a Pearson's correlation coefficient of 0.783 (p <.0001). This finding indicates that there was strong agreement among experts about what were considered priority research questions."** (page 14) Interpretation: What makes you say that "the modified CHNRI approach used offered greater transparency and replicability than Delphi or other consultative processes". This is too strong a statement. There is literature on deliberative processes (not necessarily to set research prioirities) based on criteria that are made explicit as part of the process (rather than predetermined). That is an important difference with the method described in this paper! **This statement is consistent with the conclusions from reference 10, in which Yoshida conducted a review of the approaches, tools and methods used to prioritize health research. While the point is well taken, we would argue that the CHNRI method does offer greater transparency and replicability specifically because the predetermined CHNRI criteria ensure that questions are scored against a transparent and standardized set of values.** **On a related note, in the limitations section, we have added a few sentences to discuss the replicability of the findings: "Yoshida and colleagues conducted an analysis of the CHNRI methodology[38], examining the concordance among top ranking research priorities as sample size increases from 15 to 90. They found that a high degree of reproducibility of top ranking research priorities was achieved with 45-55 experts, suggesting that our relatively small sample of 20 scorers may be a limitation. However, it should be noted that they still observed an appreciable degree of reproducibility with a sample size of only 15 persons."** (page 15, half-way the page) "set of values". Inappropriate use of the term 'values'. It's the criteria that were predetermined and standardised. Whether they can be considered 'fair' has not been evaluated in the study. **'Fair' has been removed; however, the term 'values' is consistent with the CHNRI literature. The criteria are considered 'values' that the Child Health and Nutrition Research Initiative, and our steering committee, would consider most important when evaluating different research options.**