Author’s response to reviews

Title: Incremental cost and health gains of the 2016 WHO antenatal care recommendations for Rwanda: results from expert elicitation

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Title: "Incremental cost and health gains of the 2016 WHO antenatal care recommendations for Rwanda: results from expert elicitation" (HRPS-D-18-00179) 

A. Reviewer #1

1. Your methodological approach, not only innovative, responds to a crucial need in the implementation of health policies in low-income settings. As your study analyses the incremental cost-effectiveness of the 2016 WHO ANC, data from recommendations using evidence from expert elicitation, simulation of attendance patterns, and estimation of their unit cost implications, definitely helped constructing the potential big picture of the outcomes, offering additionally, a set of different scenarios. The almost metaphorical terms « optimistic », and « pessimistic », added to the transparency of the authors intentions and limitations.
I believe this article is very relevant, and the approach used should set an example for other similar contexts where cost effectiveness analysis are in urgent need.

Congratulations to the authors, no changes are recommended.

Thank you for your positive comment.

B. Reviewer #2

1. I would like to clarify that the SDG target of a global MMR of 70 is a global target and not a country target. The target for Rwanda is a 75% reduction from 2015 to 2030 or an MMR of less than 140 by 2030.

Thank you for the comment. We have added a sentence on the country specific plan. Since different sources of the SDG target on MMR for Rwanda give different estimates due to use of varied 2015 baselines, we mention specifically the country target for 2024 as written in the national strategy [1], which is 126 per 100,000 live-births. Refer to line 70-71.

2. The authors have included some discussion related to morbidity reduction in implementing 8 visits. It would be very useful if this discussion could be further elaborated.

Thank you for the suggestion. We have expanded the paragraph on morbidity reduction as follows. Please refer to lines 503-519.

“Increased use of ANC can affect maternal morbidity in two ways; first, regular exposure to some ANC interventions can reduce the risk of certain health conditions during pregnancy. For example, there is evidence suggesting that daily iron supplementation reduces the risk of maternal puerperal sepsis [2]. Secondly, screening for existing maternal health conditions such as anaemia, HIV, syphilis, malaria, etc., reduces their burden on mothers who regularly attend ANC services, through increased chances for early detection and management especially in high prevalence settings [3].”
3. The authors suggest that Rwanda adopt a phased approach related to the new ANC recommendation. I do not disagree about this approach but as all women do not currently even get the 4 visits it would be important to do some additional research why this cannot be achieved. Is the quality of care so poor that women do not want to attend ANC, are they not aware of the importance, cost etc. Why do women currently not attend in the first trimester?

Thank you for the comment. As part of the wider research project, an attempt to assess the quality was done [4]. Together with other previous research [5] on ANC quality in Rwanda, there are indications that the Rwandan health system can do more to improve ANC quality. However, we agree with you that more research should be done, especially qualitative evidence from women. We have suggested an additional recommendation in that regard on line 550-552.

4. I do not understand why the authors do not want to share the data set used for the analysis as it reads that "..... mainly previously published data are used.....". It further reads "The data can be shared upon reasonable request". How do the authors define "reasonable request" and why do the authors not want to be transparent and share the input data?

The concern you raise is valid. We should have been specific about which dataset we can share upon reasonable request. We don’t have any concern with making public all the data used from published evidence, the data collected from expert elicitation, and results of simulation. In fact, we intended to make all the data available as additional files. Now we are adding two files, one is the analysis of health outcomes (from the results of expert elicitation to discounted life-years saved presented in excel file) the second is about the results of simulation and calculation of incremental cost. However, in this study we have also used the MatHeR data, which is a cross-sectional household survey conducted in Rwanda in collaboration between University of Rwanda, Gothenburg University and Umeå University. Its main purpose was to be used by four PhD students. It is anticipated that the dataset will be made public after the closure of the project. In the statement about availability of the dataset upon reasonable request, we were referring to the latter.

Please find the revised statement of availability of the data on the lines 583-587.

5. One limitation of this study is the number of experts taken part in the Delphi process - do the authors considered 8 participants as sufficient?
Thank you for your question. The question of the adequate number of experts is a central subject of debate in expert elicitation methodology. On this question, Morgan [6] suggest that there is no right answer to the question of how many experts are required for a good elicitation. It depends on the field; in some cases, five to six experts might suffice, in fields where experts tend to adopt similar models. The author further insist on the importance of the “quality of experts”, who can make predictions about the issue at hand [6].

We believe the number of expert (8) was sufficient in relation to the objectives of the paper, and the purpose of expert elicitation as a method, which we I have already discussed in the paper. Firstly, we have set criteria (gynecologists and obstetricians with at least 5 years of experience of practice in Rwanda) that limit the number of participants to a reduced and homogeneous group. We believe using local experts was relatively an easy and inexpensive strategy, and the experience in the country was an asset to enable experts to give relatively context-relevant estimates. Therefore, the requirement of 5 years' practice reduced the number of eligible practitioners (17) of whom we managed to recruit nearly half (8/17).

Finally, we have presented estimates by experts in two scenarios (optimistic and pessimistic). We believe that there is high probability of remaining in the range that was presented, if additional experts were invited to give their estimates.

6. Please check reference 13 and 14 as duplicates.

Thank you very much. It was true, it was a duplicate and it was corrected. (line 81)

7. The definition of maternal deaths is an ICD-10 definition - please update reference.

Thank you for the suggestion. We have updated the reference as suggested. (line 241)

C. Revisions suggested by the Authors.

After submitting the manuscript, we realized that there was an error in the estimated annual numbers of maternal and perinatal deaths (Table 3) taken from DHS 2014/5 that we used in the calculation of avoided deaths and life-years saved. After consulting different sources, we have instead used the 2015 mortality estimates from the Annual Health Statistical Booklet for the
Rwandan Ministry of Health [7]. This resulted in significantly higher number of deaths avoided (371 maternal deaths and 10,076 perinatal deaths instead of 34 and 239 respectively). We have also judged important to discount life years saved (discount rate of 3%) as recommended in economic evaluations to adjust the value of future lives resulting from mortality averted in the present [8]. Apart from the above-mentioned changes (new data source and new estimated for maternal and perinatal deaths and discounting Life Years saved, ), there have been no other change in the methodology from the initial manuscript. Subsequently, we have revised the Abstract, Methods, Results, and Discussion sections. Please refer to the following lines:

- Abstract: lines 22-23; line 26-27; line 35 and line 38.
- Methods: lines 107; 275-276 and 280-282.
- Results: Lines 330-334, lines 342-346
  Tables 3 and 4
- Discussion. lines 429 and 455.