Author's response to reviews

Title: The development of quality indicators for the prevention and management of postpartum haemorrhage in primary midwifery care in the Netherlands

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Author's response to reviews: see over
Dear Editor,

We thank you for giving us the opportunity to improve our manuscript and resubmit a revised version. We hope we have dealt with the reviewer’s suggestions satisfactorily and you find the revised manuscript acceptable for publication. Please find below our replies to the reviewers.

Reviewer 1

We thank the reviewer for critically reviewing the manuscript. We think the reviewer raised some important issues and we are grateful for the suggestions to improve the manuscript.

1) *Introduction* para 5, first line: *PPH over 1000ml is 5.9%, this cannot be as it is very high! Is it meant to be 5.9/1000?*

Reply: This number is, in fact, correct: 5.9 per 100 women in the Netherlands suffer from blood loss > 1000 ml. We have double checked this, and this number is (unfortunately) correct. One of the reasons that it is high is measurement of blood loss as compared to estimation, which generally gives lower rates. We do not state that it is measured in all different birth places, but it is often stressed in teachings to measure instead of just estimating blood loss.

2) *Discussion* para 2, 5-6th line down, sentence does not make sense. ‘*In midwifery, though the use of uterotonics has increased over the last decade, it is not standard procedure.*’

Reply: Thank you for pointing this out. We have modified the sentence. We have added: ‘As shown in a nationwide survey’ resulting in: As shown in a nationwide survey, most obstetricians see this as part of standard care. In midwifery, though the use of uterotonics has increased over the last decade, this is no standard practice.

3) *In quality indicators: if bleeding does not cease – is there a time limit to this eg after 30 mins*

Reply: indicator 8 states that when blood loss does not cease, a woman needs to be referred. We have not supplied panel members with a time limit and a ‘time indication’ was not added by the panel in the indicator development process. We do thank you for this suggestion, as in further guideline development, this might be of crucial value.
4) **refer to secondary care – does this mean transfer?**

Reply: we thank you for pointing out that this is unclear. In the main manuscript, we have changed the word ‘transfer’ into referral, as this is a more common used term. Secondly, we have added a sentence in the third paragraph of the introduction: ‘In a home birth setting, women are transferred to hospital by ambulance’. We hope we have clarified that indeed when a woman at home is referred, she is also transferred to hospital.

5) **For blood loss >1000ml there does not appear to be a need to transfer to higher level care – is there an assumption they will be there by then, if so why is it mentioned when over 2000ml. In the way they are described, there is not clarity on what they would actually do and when someone is transferred out of home to hospital or consultant care.**

Reply: when PPH occurs, the woman is referred to secondary care. We have assumed that this is done in all cases of PPH. To emphasize this, we have added a sentence in the third paragraph of the introduction: When PPH occurs, women are referred to secondary care and treated by obstetricians.’ Concerning indicator 19, the panel wished to emphasize the need for immediate referral, because of the severity of the bleeding. We agree, however, that this is causing some confusion. We think that adding the sentence above has resolved this issue.

6) **I think the most significant finding was the discrepancy between the midwives and the others. The routine use of uterotonics scores highly in value but had a low “consensus score”. Discuss this as a concern for implementation and agreement of any future document of quality indicators. I realize that the next piece of work may help to answer this question by getting evidence to support/refute it but is a point of contention.**

Reply: we agree with your observation. It was a ‘hotly debated’ topic in the consensus meeting. We have elaborated on this finding in the discussion. We have added a sentence: ‘In the process of guideline development and implementation, routine use of uterotonics might be an item of further discussion’.

**Reviewer 2**

We are grateful for the positive feedback on our manuscript.

1) **These guidelines are dedicated to midwives, so there aren't real limitations but only the inevitable lack of data regarding the diagnostic approach (e.g. Mnemonic: 4T’s), I recommend to specify this concept.**
Reply: we agree on your remark. In primary care midwives are unable to diagnose these causes of shock. However, PPH is mostly caused by uterine atony, and thus it is unlikely that causes as specified by the four ‘T’s’ are found. In addition, women are immediately referred to secondary care and obstetricians are able to diagnose other causes of shock.

Reviewer 3

We thank the reviewer for critically reviewing our manuscript and suggestions for improvement.

1) In terms of preventative methods, I am not sure what is meant by ‘agree on preventative strategies’ if risk for PPH is identified antenatally or intrapartum. Who is involved in this consultation?

Reply: we are grateful for your remark and we have added ‘*’ in Table 1 with a definition of preventative strategies. ‘Preventative strategies: consultation with an obstetrician to determine policy regarding PPH prevention, e.g. birth supervised by obstetrician, or birth supervised by midwife but in hospital with intravenous access prior to birth’.

2) I have a concern about Number 16 in Figure 1. I would advise the section below this to be titled “If loss > 1000 mls and persistent bleeding and/or PPH >2000mls” then quality indicators 16, 17 etc. could come after this. If a woman has a loss > 1000 lts is shocked and has persistent bleeding then 16, 17 onwards should occur. This is a grey area but you are trying to identify the woman who is deteriorating clinically and in this scenario the midwife cannot necessarily be accurate about the blood loss as she is trying to cope with the PPH. Therefore I think one needs to be careful about arbitrary estimated blood loss cut offs.

Reply: we agree on your comment. The accuracy of measuring blood loss is very subjective and therefore is not an ideal cut-off point. We therefore changed the heading in Table 1 as you suggested into: ‘In case of PPH of > 1000 mL with signs of shock and/or >2000 mL blood loss the midwife should;’ Secondly we moved indicator 16 to this category.

We carefully revised the manuscript. Herewith we would like to re-submit our article. We look forward to hearing from you.

Sincerely,

Marrit Smit and Jos van Roosmalen