Author’s response to reviews

Title: Identifying risk factors for perinatal death at Tororo District Hospital, Uganda: a casecontrol study

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Version: 2 Date: 07 Dec 2019

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Note: The letter and comments below are included with helpful formatting in the supplementary materials accompanying the manuscript.

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Re: Manuscript Number: PRCH-D-19-01423

Entitled: Identifying Risk Factors for Perinatal Death at Tororo District Hospital, Uganda: a Case Control Study

We respectfully submit our revised manuscript entitled “Identifying Risk Factors for Perinatal Death at Tororo District Hospital, Uganda: a Case Control Study” to BMC Pregnancy and Childbirth.

We are very appreciative of the detailed and thoughtful editor comments recently provided to us. My co-authors and I have worked collectively to address each of them. Our responses to each comment are outlined below. Of note, line numbers referenced correlate to the Word "No Mark Up" view.
We believe that the revised manuscript is further strengthened as a result of these modifications, and we hope you will consider it suitable for publication. We thank you in advance for your consideration and look forward to your response.

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Editor: Thank you for substantial, careful revisions to your manuscript and detailed responses to reviewer comments. Due to the volume of edits, please upload a clean, unmarked version of the manuscript that can be reviewed, in addition to this one with tracked changes.

Our Response: We sincerely appreciate the acknowledge of the work we did to optimize our manuscript. We have uploaded both clean unmarked and marked versions of our current manuscript.

Editor: Further edits may follow upon review of the unmarked version, but please clarify the following:

Editor: Suggest replacing prior scar (table 1, page 7) with previous c/s to be more widely understood by readers?

Our Response: We agree that is more likely to be understood and have replaced that terminology in entirety of the manuscript as well as the table referenced.

Editor: Most numbers in Table 1 have a denominator, others do not (e.g. prior scar, breech). The current footnote does not clarify this situation.

Our Response: To help clarify, we modified the first footnote to state, "Denominators noted in cells when distinct from control and case N secondary to missing data." (Line 171)
Editor: The intro to the Discussion says that the stillbirth rate is "over 25 higher" - what stillbirth rate are you comparing with? WHO estimates? In addition to not being clear, it might not be helpful to compare referral facility record data with national population based estimates.

Our Response: We believe it is valuable to provide situational awareness of how our study site's perinatal death figures compared to national figures. We modified language to clarify the sources of the rates to which we are comparing by rewriting the sentence as follows: "We found a stillbirth rate of 26.3 per 1,000 total deliveries, which was over 25% higher than the WHO-estimated national average of 21.0 at the time and greater than 2.5-fold higher than the Every Newborn Action Plan target of 10." (Lines 198-201)

Editor: In the limitations, lack of reliable gestational age data is given as a reason that subsets of early neonatal deaths cannot be analyzed.

Editor: Does this mean neonatal deaths by preterm categories, e.g. early / moderate / late? It's not clear what the relevance is to the first 7 days of life.

Our Response: We had included reference to the lack of granularity in the exact gestational ages at time of stillbirth and delivery as a limitation of additional analysis. However given we knew this a priori and the editor's point about the questionable utility of such breakdown, we have elected to remove reference to this in our limitations' section.

Editor: More importantly, lack of accurate GA data would impact the prematurity variable in the model, and the 24 week cut off for the stillbirth definition.

Our Response: Our reference to "the lack of nuanced data of the exact gestational age at time of death" was not a comment on the reliability of the data on gestational age but rather granularity. The staff documenting in the birth register are using the definitions noted in the Methods section, and we have confidence that they are doing so consistently with the data available to them.

Editor: Provide justification for why pre-eclampsia and antepartum haemorrhage were the causes thought to be potentially unreported.

Our Response: We had referenced preeclampsia and antepartum hemorrhage as potentially underreported solely because the frequency of those conditions were low in our study population. Given that any of the factors could have been underreported, we removed reference to these specific ones.
Editor: What about outcomes that may be indicative of poor quality of care, e.g. intrapartum stillbirth.

Our Response: We appreciate the value of being able to identify stillbirths that occurred during patients' hospitalization and had attempted to ascertain if we could collect data on the presence of a fetal heart rate at time of admission. Unfortunately we are unable to retrospectively collect this data. We have thus included the following line to capture this in our limitations' discussion: "Additionally, the lack of data on fetal heart rate at the time of admission limited the ability to stratify stillbirths that occurred during engagement in care and those that occurred prior, which would afford a greater appreciation for the impact inpatient care could have had." (Lines 247-250)

Editor: Is there a potential limitation related to provider-filled records in a setting where healthcare workers can be blamed for individual deaths?

Our Response: Fortunately at the study site, providers are not penalized for tracking poor outcomes. That said, having more independent data collectors would likely enhance the quality of data, so we added acknowledgement that "the numerous other responsibilities held by those completing the registers" (Lines 242-243) could have contributed to variable reporting and that "independent data abstractors" (Lines 251-252) as an opportunity to strength data collection.

Editor: In the conclusion, "Our study found significant associations between routinely collected clinical data and perinatal deaths" - this is unclear. Consider "our study using routinely collected data found significant associations regarding ..."

Our Response: We appreciate the recommendation for rewording this section and have changed to, "Our study used routinely collected clinical data to identify important associations with perinatal deaths, which is an approach that can be used to guide health systems strengthening interventions to optimize the care for patients with relevant factors." (Lines 265-268)