Author’s response to reviews

Title: Retention in care and virological failure among adult HIV+ patients on second-line ART in Rwanda: A national representative study

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Author’s response to reviews:

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Attn: Editor, BMC Infectious Diseases

Re: Manuscript Re-submission #3: Retention in care and virological failure among adult HIV+ patients on second-line ART in Rwanda: A national representative study.
Dear Editor,

We would like to thank you and the reviewers for the opportunity to resubmit the revised manuscript and have addressed all remaining points from reviewer no3 in the enclosed documents.

We are grateful for all of your assistance in moving this manuscript forward within your journal and hope you will find these changes satisfactory.

We look forward to your response.

Yours sincerely,

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Manuscript title: Retention in care and virological failure among adult HIV+ patients on second-line ART in Rwanda: A national representative study

Responses to reviewers’ comments:

Reviewer #1: The comments and amendments are satisfactory
We thank you for your time

Reviewer #2: The authors addressed all the points in the revised version of the manuscript. I am happy with the modifications.

Thank you for the feedback and appreciation of this work

Reviewer #3: Thank you for the edits that you have made; they are totally consistent with the original reviewer's suggestions.

We thank you

On my review of the edited manuscript, however, I have noted several issues -- largely arithmetic errors, -- that need to be corrected. See below:

<table>
<thead>
<tr>
<th>Page</th>
<th>Line</th>
<th>Comment</th>
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<tbody>
<tr>
<td>1</td>
<td>29</td>
<td>&quot;… in the off chance of treatment failure…” seems unnecessary at best. Treatment failure is all too common. I'd suggest removing this phrase.</td>
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</tbody>
</table>

We appreciate your comment; This section has been rephrased to addressed this observation

See line 29 under “introduction section”

| 2    | 19   | The paragraph below in the Methods (line 36) says that 7,390 patients were on second-line ART in Rwanda. The authors should use the same number (presumably 7,390 instead of 7,200 on line 19). |
Thank you for the great observation, we have aligned the number of patients on ART by December 2016, which is correctly 7,625. This is captured under line 19 under introduction section and line 1 results – see below

3 33-39 No need for quotation marks. Same thing for lines 50-56.

Thank you, we have removed the quotation marks as suggested

4 32 "reverse" should probably be "converse", since 1 - retention = loss to care

We appreciate your thoughtful comment: Indeed, we remove the sentence “the reverse of retention” under line 32 to capture your comment and make it clearer.

4 44 I would suggest adding a sentence that says that patients who had changed to third-line therapy were excluded.

We welcome your suggestion and we decided to include the proposed sentence as follow “We excluded from our analysis all patients who had switched to third line ART”.

5 4 Is "loss to follow up" the same as "loss to care"? I assume it is, but I suggest avoiding changing the wording of variables.

Thank you, lost to follow up is the same as lost to care. In the new version of the manuscript, we maintained the same wording throughout the manuscript as” loss to care”

6 7 To what does the 82.7% refer?
The 181,921 individuals (82.7% of estimated total HIV+) were on ART in Rwanda


To avoid any further confusion, we removed the 82.7% in the sentence under Results Line 7.

6 7-9 174,252 + 7,625 = 181,877. Who are the other 44 patients (to get to 181,921)? Are they on third-line therapy or are data just missing?

Thank you for the observation, yes indeed the remaining 44 patients were receiving third line ART, the section has been updated accordingly… “while 44 patients were on third line ART”

6 38-41 1562 + 126 + 37 = 1725, so there's something wrong with the numbers. This, and the percentages, which by the way add to 102.2%, all need to be recalculated.

Thank you. We understand your assumption; however, the numbers are correct, we just need to clarify that: 1562 (retained), 89 (LTFU) and 37 died; thus LTFU +DIED=126. The 126 include 37 who died. We rephrased the sentence accordingly “In total, 1562/1688 (92.5%) individuals were retained in care, 126 (7.5%) were loss to follow-up (5.2%) or had died (2.2%)”

7 4 Why has the denominator now changed to 1,689? It's been 1,688 up until now.

Thank you for the observation: The denominator has changed as the outcomes are also different for retention (1688) and VL (1689). The difference of one is an individual in age category of 40-59 has been highlighted under on table 1.
7 31: Re: >500 cells/mm³ and <500 cells/mm³, one of these needs to include 500. There's the same issue with viral load of <1000 or >1000 on line 36-38.

Thank you for the comment: we have considered the edits in the table 1 and in the text under results discussion sections.

Table 1: The total for several variables in the viral suppression column is 1,689 (age category, sex, marital status, TB screening, BMI, median CD4, WHO stage, second-line therapy). These should be totalling to 1,688.

Thank you for the observation: As explained above one patient data were missing in the retention outcome therefore any covariate cross tabulated with retention outcome, has total N of 1688. On other hand any cross tabulation with VL has N of 1689 patients.