**Author’s response to reviews**

**Title:** High prevalence of HIV, HBsAg and anti-HCV positivity among people who injected drugs: Results of the first bio-behavioral survey using respondent-driven sampling in two urban areas in Mozambique

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**Author’s response to reviews:**

November 10th, 2019

Rachel Sacks-Davis, PhD
BMC Infectious Diseases

Dear Dr Sacks-Davis,

We are submitting the 2nd revision of the original research manuscript titled, “High prevalence of HIV, HBsAg and anti-HCV positivity among people who injected drugs: Results of the first bio-behavioral
survey using respondent-driven sampling in two urban areas in Mozambique” (INFD-D-19-01370R2). Please find below our responses to each comment and the description of the changes to the manuscript.

All contributing authors have reviewed the revision and agree with this updated submission.

Sincerely,
Cynthia Semá Baltazar

1. Please provide a completed version of the RDS strobe checklist as I requested in the previous revision (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4669303/). This checklist was developed to improve reporting of RDS designed studies. In particular, the following items on the checklist may not currently be described or may lack clarity or detail: 5b, 61, 6b, 7b, 12f, 12g, 13g, 16a, 16c.

We are attaching at the end of this document the strobe guidelines and information on where the information can be found in the article. For any information that was unclear we added text to clarify. See table below.

2. Reviewer 1 comment 5 on definition of HIV positivity. This should be clarified in the text given it is the main aim of the study.

See line 233 to 238 (Clean version). All individuals testing positive for HIV using point-of-care testing and those who self-reported HIV positive status (and as thus per national HIV testing policy would not have received a point-of-care test).

3. Reviewer 2, comment 4 on the results of the formative assessment. Although detailed findings are outside the scope of this report, the strobe checklist for RDS studies item 5b is “Describe formative research findings used to inform RDS study.” Therefore, some key points that informed the study should be reported.

We added lines 110 to 115 (Clean version) and a citation to the main report that includes findings from formative as it is more detail than is necessary for the manuscript.

4. Reviewer 2, comment 11. The reviewer’s questions about pre-testing the questionnaire tool, and interviewer/field researcher training don’t seem to have been addressed or answered.

We added lines 192-193. Tools were pre-tested with PWID.

We added line 128-130. Survey teams received two weeks of training on PWID, human subjects research, and RDS. The training comprises theoretical presentations as well as survey simulations, facilitated by the survey investigators.

5. Reviewer 2, comment 13. The response states that potential bias due to self-report was explored in the limitations section but I cannot find anything in the limitations section about this. Please provide line number and quotation.

We added line 474-476. HIV prevalence based on self-report likely underestimates the true estimate as people are more likely to conceal HIV positive status due to stigma.

6. A number of crude results were removed from Tables 2-4 as suggested by Reviewer 2; however, the RDS strobe guideline suggests including unadjusted and design-adjusted results (see item 16a). The authors may want to consider whether they would like to include the crude estimates or not based on these guidelines.

We have added them back.
7. Similar to the comment above, one of the key aims is to determine prevalence of HIV, HCV and HBV. These results are described in the text. It is not clear whether the estimates are design-adjusted or not.
All estimates are design adjusted. We specify this in the footnotes of all tables.

8. Reviewer 3, last comment in Methods section on variables with large proportion missing. Which variables could not be considered due to missing data? If these are key variables of interest, please add a line to the limitations section – this could be an area for future study.
We reworded to specify (lines 250-251). We did not include in the model questions related to last sexual partner as these questions were only asked of persons who were sexually active in the last 12 months (Last three variables of table 3).

RDS strobe checklist
1) Title and abstract
   (a) Indicate “respondent-driven sampling” in the title or abstract - Line 2
   (b) Provide in the abstract an informative and balanced summary of what was done and what was found - Line 48 to 64

Introduction
2) Background/rationale. Explain the scientific background and rationale for the investigation being reported - Line 74 to 89
3) Objectives. State-specific objectives, including any prespecified hypotheses - Line 93 to 94

Methods
4) Study design
   (a) Present key elements of study design early in the article - Line 144 to 159
   (b) State why RDS was chosen as the sampling method - Line 101 to 109

5) Setting
   (a) Describe the setting, locations, and relevant dates, including periods of recruitment and data collection - Line 112 to 123
   (b) Describe formative research findings used to inform RDS study - Added lines 110 to 115

6) Participants
   (a) Give the eligibility criteria and the sources and methods of selection of participants. Describe how participants were trained/instructed to recruit others, number of coupons issued per person, any time limits for referral - Line 152 to 158 (added lines 157 to 158)
   (b) Describe methods of seed selection and state number at start of study and number added later - Added Line 147 to 150
   (c) State if there was any variation in study procedures during data collection (e.g., changing numbers of coupons per recruiter, interruptions in sampling, or stopping recruitment chains) - Line 137 to 139
   (d) Report wording of personal network size question(s) - Line 189 to 191
   (e) Describe incentives for participation and recruitment - Line 178 to 182

7) Variables
   (a) If applicable, clearly define all outcomes, correlates, predictors, potential confounders, effect modifiers, and diagnostic criteria
(b) State how recruiter–recruit relationship was tracked - Added line 157 to 158

8) Data sources/measurement
(a) For each variable of interest, give sources of data and details of methods of measurement. Describe comparability of measurement methods if there is more than one group - Line 228 to 236
(b) Describe methods to assess eligibility and reduce repeat enrollment (e.g., coupon manager software, biometrics) - Line 160 to 165

9) Bias
Describe any efforts to address potential sources of bias - Line 452 to 479

10) Study size
Explain how the study size was arrived at - Line 164 to 168

11) Quantitative variables
Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why - Line 238 to 249

12) Statistical methods
(a) Describe all statistical methods, including those to account for sampling strategy (e.g., the estimator used) and, if applicable, those used to control for confounding - Line 225 – 230
(b) State data analysis software, version number, and specific analysis settings used - Line 224 - 228 and 238 to 241
(c) Describe any methods used to examine subgroups and interactions - Line 246 and 249
(d) Explain how missing data were addressed - Footnote of each table
(e) Describe any sensitivity analyses - Line 236
(f) Report any criteria used to support statements on whether estimator conditions or assumptions were appropriate - Line 169 to 171 and line 223
(g) Explain how seeds were handled in analysis - Footnote of each table. Added line 228

Results
13) Participants
(a) Report the numbers of individuals at each stage of the study—for example, numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, and analyzed - Line 260 to 270
(b) Give reasons for nonparticipation at each stage (e.g., not eligible, does not consent, decline to recruit others) - Line 293
(c) Consider use of a flow diagram - Figure 1
(d) Report number of coupons issued and returned - Line 288
(e) Report number of recruits by seed and number of RDS recruitment waves for each seed. Consider showing graph of entire recruitment network - Figure 1
(f) Report recruitment challenges (e.g., commercial exchange of coupons, imposters, duplicate recruits) and how addressed - No challenges to report
(g) Consider reporting estimated design effect for outcomes of interest - This is optional, but we added line 230-240

14) Descriptive data
(a) Give characteristics of study participants (e.g., demographic, clinical, social) and, if applicable, information on correlates and potential confounders. Report unweighted sample size and percentages,
estimated population proportions or means with estimated precision (e.g., 95% confidence interval) - Table 1

(b) Indicate the number of participants with missing data for each variable of interest - Table 1

15) Outcome data
If applicable, report number of outcome events or summary measures - Table 4

16) Main results
(a) Give unadjusted and study design–adjusted estimates and, if applicable, confounder-adjusted estimates and their precision (e.g., 95% confidence intervals). Make clear which confounders were adjusted for and why they were included - Table 1 – 4
(b) Report category boundaries when continuous variables were categorized - Table 1 and 2
(c) If adjustment of primary outcome leads to marked changes, report information on factors influencing the adjustments (e.g., personal network sizes, recruitment patterns by group, key confounders) - There was no marked change between crude and RDS-adjusted variables. Neither in multivariable modeling between unadjusted OR and adjusted OR (e.g. all confidence intervals overlap between estimates).

17) Other analyses
Report other analyses done—for example, analyses of subgroups and interactions, sensitivity analyses, different RDS estimators and definitions of personal network size - Methods section

Discussion
18) Key results
Summarize key results with reference to study objectives - Line 396 to 450

19) Limitations
Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias - Line 457 to 480

20) Interpretation
Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence - Line 396 to 456

21) Generalizability
Discuss the generalizability (external validity) of the study results - Line 451 to 479

22) Other information
Funding
Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based - Line 517-521