Reviewer’s report

Title: Does alcohol use have a causal effect on HIV incidence and disease progression? A review of the literature and a modeling strategy for quantifying the effect

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Reviewer: Judith Hahn

Reviewer's report:

This is an interesting manuscript that aims to both review the literature on the causal association between alcohol use and HIV incidence. Using South Africa as an example, the manuscript then calculates the population attributable fraction for HIV incidence and burden of disease. The article then incorporates burden of disease due to non-adherence. I have several comments about the manuscript.

1. The manuscript in many places is not clearly written. In many places, I had to read the sentence 2-3 times to try to guess its meaning. For example, line 46. Associations between HIV prevalence, incidence, mortality, ??? There are other places and it is suggested that the authors have the manuscript read by others less familiar with the work (someone outside the burden of disease area) to add clarity.

2. While a major conclusion of the manuscript is the lower attributable risk, no description of the methodology is provided. The supplemental material provides a formula for PAF that is different from the standard formula, and although a reference is given for the formula, no explanation of this difference is provided. For excess mortality due to adherence, and the combined estimates, we are solely given references.

3. The manuscript states that the attributable fractions are substantially lower than in standard calculations, but the estimates from these are not given so there is no way to compare.

4. There is no sensitivity analysis.

5. The discussion of the causal link between alcohol and sexual risk taking does not mention event level studies.

6. The authors might want to consider that the cutoff for the biological impact of alcohol use is high. See Justice AC DAD 2016.

7. The relationship between the PAFs for incidence (shown on page 5) and the burden of disease (shown on page 6) is unclear. If the latter is calculated from the former, it should directly follow.
8. There is almost no discussion of the implications of the PAFs.

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