Author’s response to reviews

Title: Modeling HIV-HCV coinfection epidemiology in the DAA era: the road to elimination

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Responses to Reviewer's Comments

We first would like to thank the editor and the reviewers for their comments and for giving us the opportunity to re-revise and improve our manuscript. Please find below a point-by-point answer to the comments.

Reviewer reports:

Reviewer #2: I thank the authors for dealing with my concerns.

R2.1 However, I need more detail on their sensitivity analysis for considering the effect of an external force of infection from HIV negative IVDU. Principally, did the force of infection from HIV-negative IVDU remain constant irrespective of the decrease in HCV prevalence in HIV-positive IVDU - this should be the case because their treatment should not effect the transmission from HIV-IVDU. This is my only important concern. I would suggest that they add the adapted model equations in the supplementary materials and a little more detail on what they did in a separate section of the supplementary material.

Response to R2.1: In our sensitivity analysis, we considered a constant external force of HCV infection for IVDU (i.e. independent from HCV prevalence in the HIV-positive IVDU population). We agree with the reviewer's comment that this was not mentioned and we added this information in the Manuscript and in the Supplementary Material. Moreover as suggested by the reviewer, we added more details regarding the sensitivity analysis (i.e. details on the methods and equations) in the Supplementary Material.

Reviewer #3: The authors have responded to the reviewer comments by adding additional sensitivity analyses, which have strengthened the manuscript.

R3.1 I am still unsure whether utilizing primary HCV incidence data among HIV+ infected PWID is useful for estimating reinfection, given that many HIV+ PWID will have been infected with HCV prior to their HIV infection. In this sense I still believe they may be underestimating the true risk of reinfection among HIV+ PWID who are cured. Having said that I think it is very interesting the reinfection data among HIV+ PWID in the cohort was lower than other risk groups. What is the average age of those treated and monitored for reinfection- are these likely at ongoing risk of transmission? It would help if the authors could comment on this in the discussion.
Response to R3.1: We agree with the reviewer's comment that the reinfection rate among HIV-positive IVDU in the cohort was lower than the reinfection rate observed in other risk groups. Most of HIV-positive IVDU included in the cohort were former drug users (90%) which could explain why observed reinfection rate in this risk group was relatively low. Indeed, mean age of IVDU in the cohort in 2015 was 54.9 years (55.3 years for patients with undetectable HCV-RNA and 54.6 years for patients with detectable HCV-RNA). It is potentially likely that HCV reinfection rate in HIV-positive IVDU could be higher more particularly in younger active intravenous drug users, who may not be well represented in the Dat'AIDs cohort compared with other epidemiological context such as in the US. We added this point in the Discussion section.