Reviewer’s report

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

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Reviewer: Andri Rauch

Reviewer's report:

Virlogeux and colleagues explore the impact of DAAs on HCV/HIV coinfection epidemiology in France. This modelling study suggests that DAA therapy could substantially reduce HCV prevalence in HIV-infected patients in France in the next decade. The study is based on a large and well characterized nationwide cohort in France. Major strengths of the study are the model parametrization based on comprehensive nationwide data, and the comparison between different risk groups. Overall, the study is well performed and presented and provides important new information.

I have following comments:

1. Previous studies as well as the data presented here (Supplementary Table 5) suggest an increase in the proportion of MSM with high-risk behavior. As the authors acknowledge in the limitations, the current model assumes that the proportion with high-risk behavior remains constant over time. How would the projections change if the proportion of high-risk MSM would continue to increase? Would e.g. 50% annual treatment coverage be sufficient to decrease HCV prevalence over time?

2. The model does not consider infections from the HIV-negative population for MSM as incident infections are rare in this group. Is the same assumption true for PWID? It is possible that HCV transmissions from HIV-negative to HIV-positive PWID occur more frequently. If so, how would this affect model projections?

3. The model correctly incorporates reinfections. How was reinfection defined?

4. Previous studies demonstrated international networks of HCV transmissions among MSM. I assume the model could incorporate in a sensitivity analysis the contribution of infections by high risk contacts with MSM from other countries. Would the model fit be compatible with relevant transmissions from sources outside France? Could such transmissions abrogate the effect of treatment upscale in France?
5. For international readers, it would be important to underline the role of universal treatment access which is the case in France but not in many other countries. For example, it is impossible to treat 50% of patients if reimbursement is restricted to METAVIR fibrosis ≥F3.

Minor comments:

The estimate that 170 million are chronically infected is often cited but more recent studies estimate <100 million chronically infected individuals (eg Gower et al, J Hepatol 2014;61:S45-57). This should be modified in the background section.

The legend of Figure 2A suggests that numerical estimates of the goodness of fit are provided. I could not see that this is presented in the Figure.

Methods P6L42: "Prevalence of coinfection in each risk group was extrapolated to the total number of HIV patients diagnosed each year in France"; should prevalence not be based on the total number of patients in the cohort and not only on new diagnoses?

Methods P8L30: Poisson-based likelihood is mentioned; please briefly clarify in the main text that this method also uses incidence data (as outlined in supplementary material).

Results P9L27: This paragraph refers to model fit and not to the projections as suggested in the title.

Discussion P12L45: The sentence "High rate treatment coverage…" is difficult to understand, please rephrase.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

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