Author’s response to reviews

Title: Absence of yellow fever vaccine coverage in Chinese workers during the yellow fever outbreak in Angola

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Responses to Reviewers:

Moritz Kraemer (Reviewer 1): Wilder-Smith and Massad back calculated the lack of vaccination of Chinese workers in Angola based on the 11 Chinese nationals working in Angola that imported YF to China.

This is a short but important piece of work with some innovative modelling techniques.

Response: thank you.

Minor comments: "for the first time in known history", this may be true but I would rephrase or delete. There may have been other cases imported that were not tested/reported.

Response: rephrased to "documented history".
I have one suggestion for a sensitivity analysis that could help make the interpretation as currently presented in the paper more robust: could you introduce a parameter that allows for spatial heterogeneity and mixing that is different between Chinese workers and the Angolan population? I wonder if your results will hold once that is done. It is quite a strong statement to say that none of the workers have been vaccinated and some more modelling should be done to solidify these statements.

Response: We did a sensitivity analysis, expanded the text to discuss the spatial heterogeneity and mixing, updated our model, and added an appendix.

Also the model suggests that 10 symptomatic infections occurred which were all picked up in China (i.e. all symptomatic workers travelling back?). This for me is not plausible as many of the workers are probably in Angola and do not go back.

Response: Indeed, there could have been more infections that were `buried` in the Angola outbreak because they were not picked up in China. If more cases occurred than these 11 documented cases, then the force of infection would have been even higher, which means that even more than the 100% could have been infected. However, as one cannot go beyond 100%, our calculations show that even if only 11 Chinese acquired the infection one can back-calculate that 100% of the workers were unvaccinated.

Otherwise I find this a convincing piece of work.

Response: thank you
Nina Marano (Reviewer 2): Dear Authors -

I commend you for bringing these important gaps and YF risks to light, but given the sensitivity of the topic, I suggest that authors do more research on the existing literature, and make sure that data are cited from their original source to the extent possible. Also please look closely at varying estimates in the literature of the number of Chinese in Angola at the time of the outbreak and decide how these could affect your model.

Some suggestions:

Vector prevalence in China to substantiate your statement about number of people in China at risk for YF


Response: We added this reference plus some other references that report on the distribution of Aedes mosquitoes in China.

Writeup by Chinese authors about one of the imported cases that would not have been eligible to receive YF due to medical complications, authors should mention the possibility that at least some workers may not have been medically eligible to receive the vaccine

https://wwwnc.cdc.gov/eid/article/22/7/16-0469_article

Response: We amended the text and added this reference.
Concerned about the statement of '259,000 Chinese foreign workers in Angola' - https://en.wikipedia.org/wiki/Chinese_people_in_Angola states 'that number may have been that high in 2012, but the number has since dropped to 50,000'. This dataset says '44106 Chinese workers in Angola in 2015' http://www.sais-cari.org/data-chinese-workers-in-africa

Response: The number 50,000 in this link refers to 2017, and not 2016 when the outbreak occurred. We sourced for some additional websites that substantiates the estimate of around 200,000 Chinese workers/residents in Angola in 2016:

http://www.china-invests.net/20160614/40671.aspx
(date: 14-06-2016)

(date: 16-06-2016)

Statement about cases in 11 Chinese workers imported to China - the reference used should be WHO CSR

Response: amended accordingly.

Second to last paragraph, you say 'outbound annual travel volume from China is rapidly increasing' but you don't give trend data, it appears you are citing one year (which year?) - can you include a statement like 'travel from China has increased x% in the last y years'.
Response: China has been dominating global outbound travel for the past decade, especially after achieving double-digit growth in tourism expenditures every year since 2004. The total number of outbound travellers from China rose by 11 million from 2014 to reach 128 million in 2015. We added the reference.

Please cite reference for the statement that China has its own vaccine manufacturing capacity.