

Unexpected infection spikes in a model of Respiratory Syncytial Virus vaccination

Dear Dr. Yang,

We thank the Editor and the first Reviewer for their time and consideration of our manuscript on RSV vaccination. We have done everything the reviewer requested. Here is a point-by-point response to the reviewer.

Reviewer 1

General This reviewer notes that the modified manuscript is improved and had five minor comments.

Response: We have done everything this reviewer suggested. Changes due to this reviewer are in [blue](#).

Comment (1) Why is Smith followed by a “?” in the author list?

Response: It is part of my name. See, for example:

<http://mysite.science.uottawa.ca/rsmith43/MDRHIV.pdf>

Comment (2) p.1, next to the last line mentions 33.8 million episodes of RSV. Does this mean infections, or RSV disease that is severe enough to require medical attention? There is a 10-fold difference between these two possibilities.

Response: The former. We admit that the cited paper is less than clear on this in its abstract, but it is definitely infections. We’ve added a clarification. (Page 1)

Comment (3) Fig. 8 legend, 4 lines from the bottom Vaccine-induced spikes. Does the vaccine really cause this amount of disease? It sounds like the vaccine is spreading the virus. I don’t think that you mean that. Is there a better way to say this that does not lead to this false impression? Maybe disease spikes in the vaccinated population.

Response: Done. This is a good point and we thank the reviewer for the suggestion. (Pages 15, 16)

Comment (4) p.17, first blue paragraph: some (poorly understood) existing antibodies What do you mean by poorly understood? These are well understood antibodies. They come from the mother, cross the placenta by a receptor-mediated, specific

transport mechanism for IgG only, and they represent the mothers serum antibodies during the third trimester.

Response: What we wanted to say is that the role of maternal antibodies in helping newborn infants develop protective immunity to RSV is not well understood (as in, the level of antibodies required, and how protective they are). However, the reviewer is correct in that maternal antibodies themselves are relatively well understood. Since this was misleading, we have decided to simply delete the words “(poorly understood)” to avoid any confusion. (Page 17)

Comment (5) The results in Fig. 6 suggest that a 75% vaccination rate would lead to eradication. Why not say that in the Abstract? But 50% vaccination could lead to spikes in virus infection (Fig. 7). Say that next.

Response: Done. We thank the reviewer for the suggestion, as it improves the abstract significantly. (Page 1)

In summary, we feel that these revisions have addressed all the points raised by the reviewers and hope that the manuscript is now acceptable.

Yours sincerely,

Alexandra Hogan, Geoffry Mercer and Robert Smith?