Review of: "Measuring the efficacy of a vaccine during an epidemic"

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Potential competing interests: No potential competing interests to declare.

Article name: Measuring the efficacy of a vaccine during an epidemic

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Comments:

The topic of the manuscript is interesting and a practical issue to concern. Authors have used theoretical modelling to estimate the efficacy of a vaccine under the rush during any pandemic outburst. They have taken the example from the Covid-19 cases, which is well portrayed through the theoretical model with the stochasticity approach. Authors used a classical epidemiological model with realistic parameters to understand the order of magnitude of the systematic error in the vaccine efficacy estimates. However, the justification of the methods would be more realistic if the theoretical outputs are verified with a real dataset. Hope, this will be a future scope for your research work. Overall, the manuscript is well written, with few modifications are needed. Please find the comments below:

1. There is a duplication of the phrase "……we show that" in the 3rd line of the Abstract.
2. Please correct the open inverted comma (‘’) wherever you used throughout the manuscript.
3. Page 2 Line no. 37-40 "A key metric…… e infectious state as R0 = τ β [9]" can be divided into two sentences from the large one.
4. Page 3 line no. 108-111 "…….particular, we will assume …….[11],however…….employed" – the sentence must be divided into two sentences to avoid the complexity of the large sentence.
5. Page 6 line no 146-151 "……..contacts, however……individuals" – please make the sentences small for clear understanding.
6. Why the "Method" section is at the end of the manuscript?
7. Please specify the significance of the Poisson random distribution of the parameters you have got in the vaccine's efficiency and pandemic's situation.
8. Have you any opinion about the difference between the disease and an infection outbreak from your study—as you have mentioned in your Conclusion. It is not clear from your side. Whether your study can do this?

Thanks,

Sayani