A short memo for (10)(2e) about highlights of the proposed study

(10)(2e)
16 July, 2020

Context

Eyal, Lipsitch, and Smith (2020) *JID* proposed using human challenge studies for the acceleration of vaccine development, and Britton et al. (2020) *Science* insists on the influence of heterogeneity on the herd immunity. Beside, Gomes et al. (2020) *MedRxiv* also argues that individual variation in susceptibility lowers the herd immunity threshold.

The main message of this study

With challenge studies, we can empirically infer the expected impact of preventive measures such as vaccination at the population-level. The evaluation of mitigation measures with a few healthy volunteers is much more safe, fast, and ethical than waiting until another epidemic runs its course.

Different points from our previous norovirus work

1. This paper used only hypothetical human challenge data.
2. As we have multiple (hypothetical) data points, this study discusses dose-response curves for vaccinated a bit more generally.
3. Since the space is limited, I suggest not to include Tweedie models in this study. (I thought that a proposal of using Tweedie models is novel by itself, so this point should be emphasized in a different paper, intending different target readers.)

Important references

Eyal, Lipsitch, and Smith (2020) *JID*
https://academic.oup.com/jid/article/221/11/1752/5814216
Britton et al. (2020) *Science*
https://science.sciencemag.org/content/early/2020/06/22/science.abc6810
Gomes et al. (2020) *MedRxiv*
https://www.medrxiv.org/content/10.1101/2020.04.27.20081893v3