Rapid Reviews COVID-19

Review 1: "College campuses and COVID-19 mitigation: clinical and economic value"

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RR:C19 Evidence Scale rating by reviewer:

- **Potentially informative.** The main claims made are not strongly justified by the methods and data, but may yield some insight. The results and conclusions of the study may resemble those from the hypothetical ideal study, but there is substantial room for doubt. Decision-makers should consider this evidence only with a thorough understanding of its weaknesses, alongside other evidence and theory. Decision-makers should not consider this actionable, unless the weaknesses are clearly understood and there is other theory and evidence to further support it.

Review:

The authors presented a cost-effectiveness analysis built on a transmission model to compare different COVID-19 mitigation strategies on college campuses in the US. While I do think this research question is very important, especially many universities in the US are reopening in the fall 2020 semester amid the COVID-19 pandemic, the underlying assumptions of the transmission model need further validations and therefore the findings are subject to potential uncertainties.

Please see below for my main concerns, mainly about the transmission model:

1. The authors mentioned that CEACOV model was used to simulate the SARS-CoV-2 transmission in the campus. However, it was not clear whether the model assumed a close population of students, faculty and community members. How was the introduction of infections from the community (outside the cohort of 105,000 individuals) modelled? Was entry screening applied in the campus?
2. Since the force of infection of the introduction is likely to be proportional to the prevalence of the nearby communities, universities in different states in the US are under different risks of introduction. It seems to me inappropriate to assume only one transmission scenario (with parameters in Table 1) and perform the subsequent cost-effectiveness analysis.
3. The transmission of SARS-CoV-2 was simulated with the Table 1 parameters in the CEACOV model. Unlike the commonly used approach in infectious disease modeling, the simulation relies on 1) contact hours within and across transmission groups, 2) the infectivity per contact hour from a Wuhan household study, and 3) reduction of contact

hours from NPI implementations. However, the estimates from the Wuhan study might not be appropriate to use because it's from a household study during the lock-down. Moreover, there is not enough evidence that the probability of transmission is linearly proportional to the length of contact hours yet.