Reviewer's report

Title: Would school closure for the 2009 H1N1 influenza epidemic have been worth the cost?: a computational simulation of Pennsylvania

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Reviewer: Kathryn Glass

Reviewer's report:

This paper analyses the economic cost of school closure for reducing transmission of influenza. It can be difficult to assess the overall benefit of disease interventions relative to the impact on the community, and an economic analysis provides a valuable assessment of this impact. The investigators demonstrate that for a mild strain of influenza such as that seen in 2009, the costs of school closure far outweigh the benefits. They also explore the relative costs of different school closure durations and triggers. I have some queries about the model assumptions concerning age-specific susceptibility as outlined below, and would appreciate more detail on some other points.

Discretionary Revisions:

1) One of the reasons school closure was seen to have an impact in some circumstances during 2009 (e.g. in the early Japanese outbreak – see Nishiura et al Eurosurveillance 14(22):19227 ) was that children seem to have been disproportionately affected by the H1N109 strain. A strong age-specific impact can be seen in most pre-vaccination serosurveys (e.g. Wu et al. Clin. Infect. Dis 51:1184, Miller et al, Lancet 375: 1100). Following up some of the references in the paper, it appears that this model also incorporates higher transmission from children, however this point is not discussed. If the investigators simulate an outbreak without school closure, how does the attack rate compare across age groups? Could they comment on the extent to which this model has been calibrated to the 2009 pandemic strain?

2) A strong finding from this study is that school closure is too costly for a relatively mild influenza strain. However, it would be valuable to be able to apply these results to possible future pandemic strains. Could the authors provide a bit more detail on how severity might change these results? The case fatality percentage assumed here is between 0.002% and 0.01%; would a much higher severity change these results considerably?

3) The results presented in Table 2 concerning the impact of closure length on cost demonstrate that the most cost effective solution – for all values of R0 – is the 8 week closure. This also seems to me to be a valuable finding for informing potential future pandemics, and I feel the authors could stress it further.

Minor issues not for publication
There are a few typos to be corrected:
abstract, line 1: “duing”
abstract, line 1: “influnza”
p13 first paragraph, line 1: “incured”
p13 first paragraph, line 2: “infleunza”
p13 second paragraph, line 6: “benfit”
p13 third paragraph, line 1: “man” should be “may”
p13 second paragraph, line 6: “rationals”
p14 second paragraph, line 8: “vunerable”

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**
I declare that I have no competing interests.