Reviewer's report

Title: Estimating the costs of school closure for mitigating an influenza pandemic

Version: 1 Date: 9 September 2007

Reviewer: Osman Mansoor

Reviewer's report:

General

This paper aims to inform one of the proposed policy options for responding to an influenza pandemic: suspension of school classes (which is a preferable term to school closure, as there are should be alternative methods for education to continue).

The paper is well written with a clear description of methods. While I have major concerns about some of the explicit and implicit assumptions, I find the paper helpful in demonstrating the scale and main impacts of school closure. To my knowledge, this has not been documented in the published literature.

The study does not attempt to compare the cost of class suspension with the benefits in preventing disease transmission and the consequent impacts of that on the economy. Therefore, it is hard to interpret the economic assessment – which should be to help inform difficult policy choices, such as the issue of class suspension.

Obviously, extended class suspensions have considerable social as well as economic costs. The method leads to a point estimate, which might be better as range (using a range of assumptions). I am not an economist, but it strikes me that there may be some issues with using the average wage as the basis to calculate the economic cost of the parental absenteeism caused by class suspension. This is highlighted from one of the main losses due to health sector absenteeism, which would likely not affect overall economic output, especially in the context of a health service with no user-fees.

More generally, in the context of a pandemic there are likely be major changes in behaviour, including an increase in ‘work from home’, that would lead to very different impacts than their analysis suggests.

Furthermore, the analysis assumes that no alternative caregivers could be found for the children – this is especially unlikely to be true with the additional workforce ‘liberated’ by school closure. Obviously, part of the challenge of a policy of class suspension is the need to make alternative arrangements for children to limit physical contact (and continue education).

The assumption that children under 16-years-old and under would require the primary caregiver to stay home is questionable. Changing the age threshold to 10 or 12 years would substantially reduce the implications of class suspension.
Older children are not only capable of staying home without parental care, they are also able to care for younger children.

Furthermore, it is conceivable that reducing physical contact between older school could be more effectively undertaken without suspending classes. The latter notion is partly based on the idea that these children would likely maintain high contact rates between each other even if classes were suspended; and that they could be made to practise physical distancing that could be better reinforced in the school setting than during class suspension.

INTRODUCTION
The paper refers to six papers published on the epidemiological impact of class suspension, including one by one of the authors that suggest fairly limited impact. However, the paper does not make clear that there is still uncertainty about the potential impact of class suspension; but that it is clear that multiple non-pharmaceutical interventions would be needed. In other words, it cannot be considered on its own, and therefore there needs some justification on why its costs need to be considered independently.

DISCUSSION
The value of class suspension is again mentioned here but with only three references showing its value. But my reading is that in all cases it has been shown to be at least of some value, especially if the kids can be kept home – as implied by the parental absenteeism.

An interesting point that should be brought out here in relation to impact on health sector is that there is now clear consensus that class suspension must be applied very soon after the virus appears in a community in order to be effective. At this stage there should be very little strain on the health sector. By the time the health sector is stretched, there is unlikely to be any point in maintaining (or even more initiating) class suspension. At present the paper implies that health sector would be stretched during class suspension.

TABLE 1. Spurious accuracy of two decimal places; no adjustment for contribution to output; no range given uncertainties of assumptions – including capacity to work from home.

TABLE 2: The acronyms need to be explained. Figure 2 also, which would be best placed in the table.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

As noted above, this paper would need a major rewrite.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
Discretionary Revisions (which the author can choose to ignore)

**What next?:** Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

**Level of interest:** An article whose findings are important to those with closely related research interests

**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