Reviewer’s report

Title: A model-based economic analysis of pre-pandemic vaccination cost-effectiveness

Version: 2 Date: 27 February 2014

Reviewer: Sara Boccalini

Reviewer’s report:

The manuscript shows the results of a cost-effectiveness analysis performed with a mathematical simulation model on two different vaccination strategies (pre-emptive vaccine versus reactive vaccine, with or without social distancing and antiviral interventions) in order to reduce the impact of a possible influenza pandemic.

The 2009 H1N1 influenza pandemic highlighted the possible organization problems incurring in pandemic period. So the results of this study could be useful to decision makers and stakeholder in order to individuate the most favorable strategies to approach the possible future pandemic in time.

The question posed by the authors is well defined. However, the assumptions of manuscript are partially overlapping with the previous published manuscripts by the same authors (reference 15 and 24).

- Major Compulsory Revisions

1. The authors should stress more clearly what is original in their analysis and the added values of article compared to the previous articles.

2. The manuscript is too long and redundant in many parts. The extensive accuracy in the description of assumptions hides the relevance of the results and their potential impact. Therefore, the manuscript should be reduced. Particularly, the methods used in the study is appropriated and well described. However, the description is too long and detailed. Therefore, I suggest a revision of the manuscript to reduce the length, thus allowing the reader to quickly identify the peculiarities of this article with respect to those already published.

3. The mathematical model was already largely described in the previous manuscripts, so I suggest to reduce that description in the manuscript, entering the bibliographic references to previous articles. The rational of already published assumptions should be reduced or eliminated in the Methods while a bigger emphasis should be performed to the specific aspects of this analysis.

4. The input data could be summarized in a table: Table A1.1 in Appendix could be included in the manuscript as summarizing table of input data. This table allows to reduce chapter Methods in manuscript.

5. In the manuscript there are many repetitions: for example the definition of moderate and severe pandemic are repeated in Methods, Results, Discussion and in Table 1. I suggest to review the manuscript in order to eliminate the
repetition of this technical aspects.

6. The chapters Methods in manuscript and Simulation Model Simulation in Appendix are greatly overlapping. If Appendix is considered essential by authors (even if methods and rationale of many assumptions are already largely described in the previous articles), all specific technical aspects should be described here while the chapter Methods should be reduced.

7. The implication of results for Public Health aspects should be incremented in the manuscript.

8. The authors should indicate more clearly the time horizon of the analysis.

9. The authors did not included/cited the possible extension of influenza pandemic period in the analysis. Could a different extension of the pandemic period influenced the results of the analysis?

10. Please, indicate in the chapter Method the software used to create the mathematical model.

11. Methods, Simulation model: Figure 1 could be eliminate.

12. Methods, Pre-emptive vaccination: the authors should indicate more clearly that the administration of pre-emptive vaccine is annual for all vaccination scenarios.

13. Methods, Reactive vaccination: the authors assumed that population is vaccinated at a rate of 1% of population per day. Is this assumption also applied to pre-emptive vaccination?

14. Methods, Health outcomes: please indicate reference for the following assumption: “50% of infections resulted in symptomatic illness”.

15. A chapter Sensitivity Analysis, including indications on type of analysis, parameters and rationales evaluated, should be included in Methods while the results of sensibility analysis show in chapter Results.

- Minor Essential Revisions

Methods, Scenarios, paragraph 4: eliminate “and that”.

Please, in Tables use thousands separators.

The reference 15 and 38 are identical. Please, eliminate reference 38 and update the bibliography in the manuscript.

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'm currently involved in an HTA valuation on a new quadrivalent influenza vaccine funded by GSK.