Reviewer's report

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

Version: 2 Date: 27 January 2014

Reviewer: Vincenzo Baldo

Reviewer's report:

- Major Compulsory Revisions

This cost-effectiveness study compares a strategy of reactive vaccination with a strategy of pre-emptive vaccination. The authors state that “In order to make a meaningful and relevant comparison, both strategies have been made as plausible as possible”.

Nevertheless two features of this study could not contribute to make the results really meaningful because the assumption are not really plausible or widely exported.

# First the assumption that 100% of vaccination coverage. This coverage is still improbable when a pandemic flu is in act for reactive vaccination (see for example Shuangsheng Wu “Influenza vaccination coverage rates among adults before and after the 2009 influenza pandemic and the reasons for non-vaccination in Beijing, China: A cross-sectional study” who reported a vaccination coverage rates were 16.9% in 2008/2009, 21.8% in 2009/2010, and 16.7% in 2010/2011) is not plausible for a pre-vaccination strategy. Besides the authors do not consider at all the acceptability of this strategy among population. Probably the solution quickly described in the discussion (“An alternative strategy might be to manufacture and keep a large stockpile of pre-pandemic vaccine, and to vaccinate at the appearance of a highly pathogenic pandemic. This may enable higher vaccination coverage, but would incur additional costs as vaccines would have to be stored and continually renewed due to limited shelf life. This strategy has been assessed in [31, 58], but performing this analysis in the framework of the current study would allow a pre-pandemic stockpiled strategy it to be compared to the pre-emptive and reactive strategies”) would be greatly more acceptable by population. I suggest at least a sensitivity analysis with different coverage assumption.

# Secondly the method to calculate the loss of productivity costs.

The methods to calculate cost and the limitations to generalizability of the results should be discuss. Because the costs taken into account limited the transferability of your results even if you stated that “we thus believe that the model is broadly representative of developed world cities, and the findings should be applicable to US, European or other developed world populations”. In fact for
example from the same source of data and in the same country median salary workers were $786 in the fourth quarter of 2013 instead in your simulation you adopt an average wages of $882. The average salary are not the same in the each country in EU (figure 1).

o A sensitivity analysis excluding loss of productivity costs from the analysis could be useful because for so short term absence as for flu disease, at least in part losses in production could be compensated for by the worker on their return to work or by colleagues. In addition even if a societal perspective is mandatory for health economic analysis nevertheless some Agencies deputized to inform the health policy (for example National Institute for Health and Care Excellence in England and Wales) states that the perspective on costs should be that of the National Health Service and Personal Social Services; that is, productivity costs and costs borne by patients and carers that are not reimbursed by the National Health Service and Personal Social Services should be excluded from analysis of both reference and non-reference cases.

o An estimation of confidence intervals for cost-effectiveness ratios could be applied.

- Minor Essential Revisions

Minor comments
“The number symptomatic illnesses was calculated from simulation results, which generated age-specific attack rates for a pandemic with a particular transmissibility and intervention scenario, assuming that 50% of infections resulted in symptomatic illness.”

Please provide a reference

“The transmissibility of a pandemic was defined in terms of its basic reproduction number R0 and associated illness attack rate. The severity of a pandemic was defined in terms of the case fatality rate.”

Please here define the acronym (CFR)

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

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

'I declare that I have no competing interests'