Reviewer’s report

Title: A cost-effectiveness analysis of three components of a syndromic surveillance system for the early warning of epidemics in rural China

Version: 0 Date: 09 Sep 2015

Reviewer: Robert Fryatt

Reviewer's report:

Main comments

1. Study importance: The study provides some very useful insights on how to expand the disease surveillance and response system in China and would add usefully to the literature in this area. The paper needs some amendments before it is ready for publication.

2. Study objectives: These need to be clearer. The paper suggests that this is a cost-effectiveness study of an additional ISSC intervention, in which case there should be some attempt to compare this with other approaches or existing approaches to show whether this additional intervention is a cost-effective addition. However, the paper seems to be more focused on comparing the cost-effectiveness of different components of ISSC, with comparisons of ISSC using health facilities, schools and pharmacies.

3. Effectiveness measures: These are not adequate, as the study only uses "reported events" as the effectiveness measure which weakens the study, given that the study shows clearly that "reported events" are not necessarily linked to actual outbreaks. For example there is a very high number of "reported events" in pharmacies that or not linked to any outbreaks. The paper should:

   a. Better define "outbreak" or "disease cluster" and "true outbreak" as mentioned in the background section, and then use these in the results section in addition to using "reported events".

   b. The 'Data Sources' section should be split into costing data and effectiveness data, with more description of how the data on "reported events" from health facilities, schools and pharmacies was collected

   c. The discussion states that the study "evaluated the effectiveness of the syndromic approach" which is not strictly true, as numbers were very small and "reported events" is not a reliable proxy measure of outcome; wording should be amended. The section should also reflect on whether an increase in "reported events" is a sufficiently favorable measure for future studies, and what may be unintended consequences - for
example an increase in reporting of false outbreaks (as seems to happen in pharmacies.

Minor comments

4. Background literature on cost-effectiveness of disease surveillance and response. Whilst this area may only have "little" literature, what exists (preferably from China, but if not available then internationally) should be summarized in the background section to be provide more context to the study.

5. ISSC interventions: A little more detail should be given on ISSC and how this was introduced into the two provinces, and how the staff in health facilities, schools and pharmacies were trained or inducted into the new approach. If this was different in the two provinces (given the very different results) then this should be clarified or referenced if written elsewhere. The case for ISSC should be stronger - have previous effectiveness studies or evaluations been undertaken that could be referenced?

6. Study sites: Suggest tabulating the data comparing the demographics of the two provinces.

7. Paragraph on sampling strategy: This is currently under study sites and settings and should be moved to the methodology section.

8. Routine disease surveillance data: It would also be useful to know how many disease outbreaks are routinely reported in these areas, if this is available. A comparison of reported outbreaks before the interventions would be ideal, but if not possible national / provincial data on trends to outbreaks would provide useful background information if available.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

No

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an
**additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript

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Please indicate the quality of language in the manuscript:

Acceptable

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