Reviewer’s report

Title: Varicella and weather factors in Jinan, eastern China, 2012-2014

Version: 4 Date: 9 October 2015

Reviewer: Ajay K Sethi

Reviewer’s report:

Major Compulsory Revisions

There are no major compulsory revisions as defined by the journal.

Minor Essential Revisions:

This manuscript describes important and interesting findings; however, numerous grammatical errors and imprecise language throughout the manuscript render the paper difficult to follow and read. The authors are advised to identify someone to carefully edit the manuscript to improve its readability.

Abstract:

Line 41: please define hPa upon first use.

Lines 45-47: the results of two models are given, but the abstract methods fails to describe that two models were utilized. This leaves the readers confused as to what the authors are reporting. I suggest that the authors rewrite the abstract methods to include the two modeling strategies.

Line 50-51: The authors state that weather factors affected occurrence and transmission of varicella, but transmission was not explicitly studied in this paper. It would be more prudent to say that weather factors influenced the incidence of varicella.

Background:

Lines 58-61. The sentence sounds very anecdotal. Please provide data and a reference on varicella incidence in Jinan.

Lines 73-83: This content seems more appropriate for the discussion section.

Lines 113-115: Symptoms that describe varicella were already included in the background. This should be replaced with the case definition as used by the local reportable disease system.

Lines 143-144: The results of the authors’ tests of collinearity should not be in the methods section. In fact, they already report these findings in the results section and rationalize how it led them to create two separate models.

Line 153: Spell out ln as natural log.
Line 156: The authors state that $p<0.05$ was considered statistically significant in two places (Line 156 and Line 151). Please resolve the redundancy.

Results:

Line 172: Please move the reference to figure 3 to the beginning of the paragraph (this is the first time when figure 3 results are referred to).

Line 185: Please move the references to table 2 from line 193 to the beginning of the paragraph (this is the first time when table 2 results are referred to).

Line 193: The last sentence should explicitly state that “the models appeared to have good fit (Pearson chi-sq<0.05).”

Table 2 would be clearer if the differences between A and C, and B and D were explained. Are these preliminary and final models?

Discussion:

Line 200: It would be better to mention that “vaccination uptake would be better if there were a universal vaccination program.” The point of this sentence seems to want to establish that vaccination uptake was poor.

Line 203: Replace “dead cases were reported” with “mortalities occurred”.

The discussion section might benefit from a conceptual model describing how these meteorological variables are interaction with one another and influencing varicella incidence, using a visual such as a directed acyclic graph. It is difficult for the reader to have a sense of the meaning behind these findings if there is no overall idea on how these variables (together) are influencing varicella incidence.

The authors mention an interesting idea regarding the use of meteorological variables and the prediction of future varicella incidence. It seems that this could have been done with their existing data. Did the authors consider creating models based on the 2012-2013 data and use those estimates to predict the observed data in 2014? It seems that the analysis would be strengthened by this approach.

Discretionary Revisions:

Lines 63-64: It does not seem necessary to explain reportable diseases.

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

**Quality of written English:** Not suitable for publication unless extensively edited

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

**Declaration of competing interests:**
None.