Author's response to reviews

Title: A big temperature decrease between two neighbouring days may increase the risk of childhood pneumonia

Authors:

Zhiwei Xu (xu.zhiwei@student.qut.edu.au)
Wenbiao Hu (w2.hu@qut.edu.au)
Shilu Tong (s.tong@qut.edu.au)

Version: 3
Date: 20 May 2014

Author's response to reviews: see over
Comments from the Editor:

1. The significant decrease in the RR with TCN when excluding the 2009 data is not adequately addressed in the revised manuscript. Figure 8 now suggests the association is barely significant, suggesting the results are over-interpreted. The weakness of the pattern in Figure 8 could be due to ordinary influenza outbreaks. Re-running the RRs in Figure 5 without the 2009 data would give readers a better sense of whether the results justify any action based on a drop in TCN.

Response: Thanks for the comment. As suggested, we have re-ran the RRs in Figure 5 without the 2009 data (Figure 9 in the revision), and we have also compared the TCN effect on childhood pneumonia between 2001-2005 and 2006-2010 (excluding 2009) in the revision (Page 6, Lines 5-9).

2. The writing needs to be improved. Children are not "attacked" by temperature. Sentences such as "Every year, children were at the risk of big TCNs for more than 50 days, and big TCNs mainly occurred in the second half of each year, especially in winter." are hard to understand.

Response: We have checked and revised the writing carefully.

Reviewer's report:

I have some further comments and suggestions.

Major Compulsory Revisions:

(1) Authors need to compare the two data sets: 2001-2006 vs. 2006-2010 EXCLUDING 2009, rather than as shown Figure 7 right panel, which still includes the confounding 2009 spike. Authors stated they did a sensitivity test on this, yet they did not present results in the manuscript, other than showing the analysis on 2001-2010 excluding 2009 (Figure 8). Whether the impact of TCN during
2006-2010 indeed increased significantly compared to 2001-2005 is not shown.

Based on Figures 8 and Figure 7 left panel, I don’t think there is an increase if the 2009 spike is removed. Authors should modify their statements accordingly.

Response: In the revision, we have compared the two datasets: 2001-2005 vs 2006-2010 (without 2009) (Figure 10). After removing 2009 data, the effect of TCN on pneumonia in 2006-2010 was still greater than it was in 2001-2005 (Page 6, Lines 7-9).

(2) Further, authors argued that big TCN might contribute to the 2009 pneumonia spike. They did not show any evidence for this statement; if this was true, authors should at least show that days with big TCN increased during the 2009 pneumonia spike.

Response: We have removed this statement.

(3) In Figure 6, authors showed that, in summer, the relative risk of pediatric pneumonia increased dramatically as TCN>0°C. What leads to such increased relative risk?

Response: We did not find evidence explaining the dramatically increased relative risk of pediatric pneumonia as TCN>0°C in summer, and we speculated this may be because the temperature in Brisbane during summer is normally quite high, and a temperature increase from one day to the next (TCN>0°C) may pressure children’s thermoregulation system, and trigger their existing respiratory disorders. We have mentioned the increased relative risk of pediatric pneumonia when TCN>0°C in summer (Page 5, Lines 27-28), but to we did not discuss it avoid over-interpretation.

(4) Correlation does not imply causation. Authors need to tone down their statements in places. For instance, page 6, lines 3-4 and page 7 lines 17-19 (see comment 2). Another one is on page 6 lines 16-18. I don’t think this is true.

Pneumonia has a seasonality with a peak in winter, many factors contribute to
that seasonality—better survival of viruses/bacteria, crowding in winter facilitating transmission, seasonal fluctuation in immune strength, etc.

Response: We have revised or removed these statements as suggested (the original “page 6, lines 3-4; page 7 lines 17-19; page 6 lines 16-18”).

(5) The manuscript is still very rough; it needs further editing. For example, in the method section, ‘Data analysis’, after explaining the principle of DLNM, authors could state why DLNM is suitable for this study. They could move the text in page 4 lines 13-16 to right after page 3 lines 25-27. Similar for other parts of the manuscript.

Response: We have moved the text in page 4 lines 13-16 to right after page 3 lines 25-27, as suggested (Page 3, Lines 28-30; Page 4, Line 1). Additionally, we have also modified other relevant parts of the manuscript.

The results and discussion sections need more work. The results section could be more organized; it should tell a story, not just list the findings. The discussion section could be more succinct and analytical. Some parts read like hand-waving speculations. For example, page 6, lines 21-32. More importantly, do not overstate your findings (see comment 4).

Response: We have revised the Results and Discussion accordingly (Page 5, Lines 1-30; Page 6, Lines 1-9; Page 6, Lines 15-16; Page 7, Lines 1-8; Page 7, Lines 23-24). In the results, firstly, we presented the summary statistics and correlation values. Secondly, based on the descriptive results, we presented the modelling outcomes, including the overall effects and lagged effects of TCN on childhood pneumonia, and also identified the subgroups vulnerable to this TCN effect. Thirdly, we separately quantified the TCN effect on childhood pneumonia in summer and winter. Finally, we explored whether TCN effect changed over time and presented the sensitivity analysis results. We have removed Page 6, Lines 23-32 from the
revision. Further, we have softened the tone throughout the manuscript to avoid overinterpretation of the results.

I understand the urge to report exciting findings; however, it is always worthwhile to revise your manuscript critically at least a dozen times. It will be helpful to put it aside for a few days and then look at it with fresh eyes.

Response: We have revised the manuscript critically for more times in the second revision.

Minor Essential Revisions:

(1) The equation on page 4, line 1-2 is still confusing. Write the equation for DTR and TCN separately, or use a dummy variable for the two metrics then state that dummy variable is either DTR or TCN.

Response: We have written the equations for DTR and TCN separately (Page 4, Lines 4-11).