Reviewer's report

Title: Effect of ambient temperature on emergency department visits in Shanghai, China: a time series study

Version: 3  Date: 29 August 2014

Reviewer: Jeremy Hess

Reviewer's report:

Thank you for the opportunity to review this revised submission. The authors have addressed many of my comments but several key points remain unaddressed. As requested, my comments are divided into categories below:

Major Compulsory Revisions:

1. The convention in epidemiological analyses such as this is to present the demographic characteristics of the sample in Table 1. I suggested this to the authors in my initial review but they did not make this change. The current Table 1 should become Table 2, and the current Table 2 should become Table 3.

2. While the authors did provide more information about their sample, they did not provide information regarding how the sample compares with the other residents of Shanghai. While their sample is large, it is only roughly a quarter of the total population. How do the other residents, registered and otherwise, compare to this sample? Comparisons between their sample and the demographics of the entire population of Shanghai, if available, could be added as one or more columns to the new Table 1.

3. The authors provided more information about the source of exposure data but it would be helpful for them to elaborate further. What kind of area is the weather station located in? How representative of conditions in the rest of Shanghai are the exposure data? They might consider including a map of Shanghai indicating the weather station location and highlighting the population centers from which the sample were taken. Further, they should include information about the exposure data (e.g., that there were no missing data) in either the Methods or Results. All of this information is important to help the reader determine how generalizable the results are.

4. The authors now include mention of ozone in their paper but incorrectly state that including ozone is "not likely to attenuate risk estimates." Ozone is a potential confounded in the relationship between temperature, particularly warm temperature, and all-cause ED visits, and not controlling for ozone in the analysis is likely to have resulted in overestimates of the observed association at high temperatures. This needs to be stated in the Discussion section.

5. The authors need to include the definition of a case in their Methods section. This should include the inclusion and exclusion criteria. Moreover, they need to
distinguish between ED visits and hospital admissions (in several places they seem to use them interchangeably, but these are different outcomes). They need to state something along the lines of: "We defined a case as any ED visit by an individual with social insurance on a given day, i.e., from one midnight to the next. Patients were not assigned unique identifiers, so any ED visit during the study period was considered a separate case. Any ED visit, regardless of whether the patient was treated and released, admitted to the hospital, or died in the ED, was included in the analysis."

6. While the authors do now include more information about other estimates of associations between temperature and ED visits, they need to elaborate further on the estimates in the literature and how these prior estimates compare with their own. Specifically, they need to state the nature of observed associations (i.e., linear relationships, threshold relationships, etc.), the magnitude of effect (in terms of both thresholds and slope of the line/curve), and to compare these prior findings with their own. Are the relationships along the lines of those others have observed? Are they weaker or stronger? If so, what may account for the differences observed? This synthesis should occur in the Discussion section and is lacking from the paper currently.

7. In the Abstract, the Conclusion continues to overreach the analysis. The Conclusion of the study should relate directly to the data analysis and results. In this case, all the authors can state is that there are observed relationships between temperature and ED visits in Shanghai, whether these relationships are consistent with others in the literature, and that this knowledge has the potential to advance prevention efforts targeting weather-sensitive conditions. The Abstract and Conclusion sections should be congruent and both should be edited to reflect conclusions consistent with the study results.

Minor Essential Revisions:

1. The authors should include a statement of whether the study underwent institutional ethics review. If it was exempt from review then they should state this. Either way, the paper needs to include a statement regarding institutional ethics review.

2. In regards to the choice of exposure metrics, the authors provide a nice explanation in their response to the reviewer comments but this text is not included in the paper. They should include their reasoning about choosing mean temperature in the paper text and cite the studies they relied on for making this analytic choice.

3. The authors provide a justification for choosing all-cause ED visits in their response to reviewers but this should be included in the paper text as well.

4. There are several points in the revised version of the paper that need copy editing. In the Background section on p. 4, for instance, the sentence "Even determining the predictors of vulnerability to heat effects would help improve health education and interventions target those who are most
susceptible" needs to be revised. There are multiple other locations (pp. 6, 7, and elsewhere) where the language needs to be copy edited.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
I declare that I have no competing interests.