Reviewer’s report

Title: The effects of ambient temperature on cerebrovascular mortality: an epidemiologic study in four climatic zones in China

Version: 1 Date: 13 November 2013

Reviewer: Yasushi Honda

Reviewer’s report:

Major compulsory revisions

1. Threshold

Table 1 clearly shows that Shanghai and Wuhan have quite similar climate conditions. This similarity made the overall relation for Shanghai and for Wuhan similar, as shown in Figure 3.

Although the method the authors used is usually considered valid, this method yielded quite different threshold temperature values, i.e., 9.9 for Shanghai and 25 for Wuhan. Nine point nine lies in the middle of apparent straight line, and it is counter-intuitive from the figure; the figure suggests that the threshold would be between 25 and 30, like Wuhan.

Because the slope is very sensitive to the threshold, the results would be quite different if the threshold for Shanghai were set different. I would recommend to use 25 for example to see how this affects other analyses.

2. Untold confounding

Considering the small number of deaths per day for cerebrovascular diseases in the five cities, it should be very sensitive to season specific confounding factors such as influenza epidemic. The relation when the epidemic occurred in January would be quite different from the relation when the epidemic occurred in February; intensity of the epidemic can also affect the apparent risk level.

I understand that it is not easy (or impossible) to control for influenza epidemic, but the authors can at least mention about this weakness, or describe the epidemic periods for each city in each year.

Minor essential revisions

1. In describing the graph, the authors used the word "mean relative risk," but it is not mean risk. It is "point estimate."

2. p.12, the first line under the heading "Sensitivity analysis": 6 degrees is what the authors did in the main analyses.

Discretionary revisions

1. Lag effect or seasonal confounding

Seasonal outbreak which is unrelated to temperature can result in long lag effect (See Honda et al. "Cold Counts, but How Cold May Not." Epidemiology 20.6)
(2009): S117.). In this regard, including too long lag may not be the best choice, and treating 0-20 lag analyses the best would not be recommended.

2. Cen value
The package dlnm requires to set the cen value. It would be informative for readers to show which values were used for the five cities.

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

**Quality of written English:** Acceptable

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

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