Reviewer’s report

Title: Allostatic load modifies the effect of blood lead levels on elevated blood pressure among middle-aged U.S. adults: a cross-sectional study

Version: 1 Date: 11 November 2012

Reviewer: Ellen Wells

Reviewer’s report:

This is a well thought out and well-written paper. The issue of stress as a modifier of environmental exposures is important, particularly for policy implications, and this paper helps to further our knowledge in this area.

MAJOR COMPULSORY REVISIONS

None.

MINOR ESSENTIAL REVISIONS

1. Please clarify the sample size discussion. The authors state they use a sample size of 6,511; however, the full model in Table 3 only has n=6069, which is a sizeable decrease. Similarly, were there any differences between the participants not included in the study due to lack of lead and/or blood pressure measurements compared to those who were included in analyses?
2. Please include some measure of variability for the percentages presented in Tables 1 & 2, such as the standard errors you present for the means/geometric means.

DISCRETIONARY REVISIONS

1. Is there a reason why you chose these particular years of NHANES (as data from 2007-2010 are now available)? Also, as noted by the prior reviewer, was there a reason why this specific age group was selected?
2. Out of curiosity, did you notice any effect of different NHANES cycles on any of these parameters? Blood lead measurements decrease over this period, for example; there may be other differences as well.
3. Out of curiosity, did you also assess potential effects with prehypertension status?
4. Consider including the numeric concentrations of lead instead of/in addition to the “quintile 1”, etc. headings within Tables 3 & 4. This would help the reader orient themselves to the concentrations without having to go back to the prior tables.
5. I agree with the previous reviewer that some discussion of the potential for reverse association would be useful here, given the relationships between lead exposure and particularly allostatic load and blood pressure.
6. In the discussion, page 15, paragraph 1, last sentence: given that this directly follows discussion of temporality, it seems that the last sentence implies that the sensitivity analysis addresses all of the study limitations; this could be made clearer.

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

**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.