

## **Reviewer's report**

**Title:** The Association of Blood lead levels and Mortality in Older Women: The Study of Osteoporotic Fractures

**Version:** 1 **Date:** 26 November 2008

**Reviewer:** Hae-Kwan Cheong

### **Reviewer's report:**

This paper shows increased mortality in the elderly women with higher blood lead level in low level range. Although there are many reports on the effect of lead exposure and overall and cardiovascular mortality in general and occupationally exposed population, this paper has its uniqueness in the study population being community elderly and its relatively longer period of follow up over 12 years in average. I believe this paper adds another evidences in strengthening the health effects of the blood lead level below 10 ug/dL.

Description on the methods, study result, and discussions on the study results, limitations of the study, and potential biases are well written. Possible biologic mechanisms are also discussed in detail. I believe this paper deserves publication in Environmental Health after clarifications and minor essential revisions on the comments listed below.

#### **• Major Compulsory Revisions**

The author must respond to these before a decision on publication can be reached. For example, additional necessary experiments or controls, statistical mistakes, errors in interpretation.

1. Page 3 line 5: It is not clear whether the subjects were questioned on the use of hormone replacements.

2. Page 4: The basis for setting the criteria of blood lead level as 8 ug/dL is not clearly described. Because 8 ug/dL is well above the mean level (5.3 ug/dL), subjects are not symmetrically distributed, i.e., sample size for the subjects with blood level  $\geq 8$  ug/dL is small, resulting in less statistical power for the estimation of HR. Please clarify if there is some plausible reason for the use of 8 ug/dL instead of 5 or 6 ug/dl. If the authors have performed an additional statistical analysis on the different blood levels it would be helpful to comment it on the discussion.

3. It is not clear whether the 533 subjects from two centers are different with 9,704 subjects in their characteristics. Please clarify whether there were differences in the distribution of major confounders in the 533 subjects in comparison with 9,704 subjects.

#### **• Minor Essential Revisions**

The author can be trusted to make these. For example, missing labels on figures, the wrong use of a term, spelling mistakes.

1. In all the tables, capitalization is inconsistent in the titles and column heads of the tables. Proper spacing between words, and before parentheses is needed.

2. Tables 1 and 2:

o “mean (SD)” in columns from 3 (“Age”) to 6 (“Alcohol”) may be replaced with “mean $\pm$ SD”. For another “mean (SD)”s in the last four of five columns, it is not clear whether they are written in this way because they are geometric mean or just misnomers. If they do not denote the geometric mean, it is recommended to use “mean $\pm$ SD” instead. If they are geometric means and GSDs, please clarify them on the footnote.

3. Table 2:

o Decimal places for the means and SDs are not consistent.

4. Table 3: Inadequate spacing in the footnote (ICD9 Code :Deaths # ICD9 Code: Deaths)

5. Reference list do not follow the Environmental Health formats and inconsistent in the use of journal name abbreviation and other punctuations.

#### • Discretionary Revisions

These are recommendations for improvement which the author can choose to ignore. For example clarifications, data that would be useful but not essential.

1. Blood lead level in the elderly population without prominent previous exposure usually reflects the level of internal storage. Release of bone storage can also be facilitated with accelerated bone demineralization. Therefore, both bone lead level and velocity of bone mass density loss are closely related to the blood lead level. Although bone mass density was adjusted in the model, I believe that further discussion on this point will be helpful for the readers on interpreting the result of this study.

2. Needs some consideration on the sample size of the subjects. Table 3 shows that although hazard ratio of the overall mortality and cardiovascular mortality is significantly high, 95% confidence intervals are very wide. Sample size does not seem to be big enough to assess the death due to stroke and other cause of diseases.

**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.