Reviewer's report

Title: Primary prevention of lead poisoning in children: A cross sectional study to evaluate state specific lead-based paint risk reduction laws in preventing lead poisoning in children

Version: 1  Date: 19 June 2014

Reviewer: Ann Aschengrau

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General Comments
This is an interesting and important report showing a beneficial impact of state laws on reducing the incidence of lead poisoning in young children. However, the results are difficult to evaluate without more detail and justification for selecting the three states. There are so many differences between residents of the two “exposed” states (Massachusetts, Ohio) and the “unexposed” comparison state (Mississippi) that there may be considerable residual confounding on the individual level.

Major Compulsory Revisions
1. Provide more description about the selection of the two “exposed” and one “unexposed” comparison state. For example, it would be useful to know how many and which states do not currently have lead laws and how Mississippi was selected to represent them.

2. The results section has too much emphasis on statistical significance. The magnitude of the odds ratio should be given greater emphasis.

3. Stepwise regression uses the p value to determine which variables are confounders. Unfortunately, this practice can lead to erroneous conclusions. The change in the magnitude of the odds ratio (i.e. crude OR vs. adjusted OR) when potential confounders are controlled one at a time should be used instead. About a 10% difference is typically used as a cutoff for determining which variables need to be included in the final multivariate model.

4. It seems odd to compare dust sample from the three states because they were taken at different times (post-abatement for Massachusetts, pre- and post-abatement for Ohio, and pre-abatement for Mississippi). More explanation should be given regarding the utility of these comparisons. Also, given these differences, you should explore the impact of including the dust variables in the final multivariate model.

5. More description (particularly results) should be given for the only prior study (reference 14) that examined the effectiveness of state lead laws.

6. Residual confounding by individual-level characteristics should be given more emphasis in the discussion section.

Minor Essential Revision
1. Methods/Design and Data Sources (page 6): Randomization is not the same as random selection. This sentence should read “Random selection occurred in a three-step process.”

**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.