Our comments are found in line with the reviewer comments and are highlighted.

Reviewer 3

I think the article is very interesting and brings new information on mercury effects related to vaccines. Even though it is preliminary data it is important to publish this kind of data to add a better understanding to other effects of mercury, mainly when affect such an important public health matter such as respond to immunization programs.

I suggest some minors’ changes, that are specified below.

Lines 123-126
I strongly suggest mentioning the Peruvian anemia prevalent for both WCBA and children under 5. To situate the reader on the country reality how the MDD communities are in comparison with the country situation.

We agree that a comparison to Peru’s capital will highlight the levels of malnutrition observed in the study region. We have updated this sentence to read: “Chronic malnutrition and other nutritional deficiencies are common in children in MDD, with anemia prevalent 44.9% of children under 5, compared to the 26.4% in Peru’s capital, Lima [1, 2].”

Nail elements analysis. (lines: 184-197)
Is this data presented in any part of this study? I see the models used mercury in hair but not in the toenail. Is there any of the elements mentioned in this paragraph used in this article? Why is this methodology presented? I suggest removing it or use the data. It will be interested in see if there is any interaction with the essential elements and the toxic ones. Is suggested in the literature there is an antagonist relationship between Hg-Se.

We agree with this reviewer that the results from the toenail data were not highlighted in this manuscript. We have decided to remove reference to these samples as they ultimately weren’t discussed because the sample size using hair Hg data was much greater (68 vs 37 younger children and 92 vs 59 older children). We didn’t observe an interaction between Hg and Se using the toenail data, though the sample size may have been too small to draw conclusions about the interaction.

Lines (235-236)
I don’t think US population is the best option, especially when referring to weight and height conditions, where race difference could influence some of the measurements. Isn’t there any data from the Peruvian Health Ministry from the whole country? Is there any regional data that can be accessed? The Brazilian Health system has this kind of data and is more comparable with this population... I strongly suggest the author include comparison with more alike populations too.

We agree that the US comparison is not ideal; however, there does not exist (to our knowledge) a national assessment of mercury exposure to allow for a comparison of how malnutrition and toxicity might jointly influence vaccine response. The NHANES data was displayed to allow readers to compare the nutritional deficiencies in this study compared to data similar to the US study reporting an interaction with nutritional status.

Lines (261-262)
Were there any cases in which the children were more than 4 years old and did a partial vaccination? (means that didn’t apply all the doses suggested) If so, how this was taken into account in the model?

In this study, there were instances of children with partial vaccinations and those that would be classified has having a partial vaccination due to incomplete vaccination records. Obtaining complete vaccination records was difficult as there were instances of vaccinations having been lost during moves and/or from children receiving vaccinations from multiple health posts. To the
best of our extent we recorded all recorded instances of vaccinations from cards and from health posts families mentioned visiting. All antibody models (except for total IgG) were performed with children that had received at least 1 vaccination with the vaccine pertaining to that specific antibody. While we recognize that this is imperfect, if the sample size was greater we would have restricted the inclusion criteria further. We also incorporated the number of doses received into models (not shown) and only observed that dose was most important to HepB, diphtheria, and pertussis.