Author's response to reviews

Title: The association between travel time to health facilities and childhood vaccine coverage in rural Ethiopia. A community based cross sectional study.

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Author's response to reviews: see over
Dear Dr Nicole,

Thank you for your email of 21st May 2012. We have now revised the manuscript as requested. We have provided a point by point response below and have attached the revised manuscript. We look forward to your feedback.

Kind regards,

RESPONSE TO REVIEWERS’ COMMENTS

REVIEWER 1

Major compulsory revisions:

1. In the abstract, in the second paragraph of the Results section, and in Figure 2, the authors indicate that 97% (602/648) of children with complete vaccination records were vaccinated with Penta3. Results presented in Table 1 are completely different. Why? The table heading indicates that analyses pertain to children with complete vaccination records as well, but in the analysis by sex, for instance, 77.7% (584/752) of children were vaccinated with Penta3. Similar observations can be made for the other vaccinations.

We agree that this is confusing. The issue was caused by missing data for vaccination data and some covariates. We have now added additional information into Figure 2 with the numbers of children who had vaccination data for each of the vaccines and the overall coverage for each of the vaccines. We have also changed the abstract and the results section to read “Missing vaccination data ranged from 4.6% (36/775) for BCG to 16.4% (127/775) for Penta3 vaccine. In children with complete vaccination records, BCG vaccine had the highest coverage (97.3% [719/739]), Penta3 coverage was (92.9% [602/648]) and Measles vaccine had the lowest coverage (81.7% [564/690]).” We have also changed table 1 so that the denominators are children with complete (non missing) data for each of the vaccines and this denominator is also clearly written in the first row. These values have also been placed into table 2 and table 3.

2. The “Travel time” paragraph contains incorrect claims. It is not true that “Travel time appears to have a strong association with Penta3 vaccine coverage” and that “Travel time also had a marked association with BCG. I agree that both associations are highly significant, but they are not of strong magnitude (RR of 2-to-3 or higher or of 0.5-to-0.3 or lower are generally considered to indicate strong associations).

We agree with the reviewer and have changed the statement to read: “Travel time appeared to have a highly significant association with Penta3 vaccine coverage” and also: “Travel time also had a highly significant association with BCG and Measles vaccine coverage.”

3. The fourth paragraph of the Discussion section contains another partially incorrect interpretation. It is unclear whether “the marked variation in vaccination coverage by kebele suggests that there may be differences in quality of services […] in the different kebele”, because the results presented are unadjusted for travel distance and other potential confounding factors.
We agree with the reviewer and amended the statement on page 10, 4th paragraph to read: “Interestingly there was a marked association between vaccination coverage and kebele. This may be due to differences in quality of services or other barriers such as social constraints or staffing levels in the different kebeles. However, we did not adjust the results for travel time or other potential confounding factors and further analyses are needed to explore this issue.”

**Minor essential revisions:**
1. The second paragraph of the Methods section still suggests that children receive the oral polio vaccine at birth (second line) and at 6 weeks (fourth line).

   We have now corrected this error.

2. The authors should carefully proofread their document for errors. There are multiple typos, unnecessary double blank spaces and other oversights on virtually every page. Furthermore, the headings of Tables 2 and 3 have not been edited; they still refer to “Logistic regression analyses”.

   Thank you we have now edited and corrected the manuscript.

**Discretionary revision**
1. The last sentence of the “Geographical access data” paragraph is awkward. I would suggest: “(mean, 73 vs. 67 minutes; standard deviation, 46 vs. 40 minutes, respectively)”.

   This is now corrected.

**REVIEWER 3**

**Minor revision**
1. The Odds ratio for the BCG & Measles vaccines should be stated.

   We have made the correction and added the following sentence in the result section of the abstract: “Travel time also had a highly significant association with BCG (adjRR=0.95 [0.93-0.98] p value =0.002) and Measles, (adjRR= 0.88 [0.79-0.97] p value =0.027) vaccine coverage.

**Discussion**
2. Page 11. Line 13. The line where 5-17% may be better stated in words as it is the beginning of a sentence.

   Thank you. This is now corrected.