Reviewer's report

Title: Age-appropriate Vaccination Against Measles and DPT-3 in India - Closing the Gaps

Version: 2 Date: 12 March 2013

Reviewer: Steven Mitchell

Reviewer's report:

This paper is well written overall, and concerns an important topic which is of interest globally. However, the manuscript could be improved in several ways:

Major compulsory revisions

1. The authors chose to include in the study only children for whom vaccination cards are available. I think it is important for the authors, at least in their discussion, to address what possible biases this might introduce to their findings. For example, I think it is very possible that parents who have retained vaccination cards (or services who provided them) would be more likely to be aware of the proper ages for vaccination than those who do not. Therefore, it is possible the reported rates of age-appropriate vaccination in the paper are higher than the true rates. Whether or not the authors agree with this, they should at least discuss the possible bias(es) of choosing to analyze only children with vaccination cards and what this means for validity. Other potential limitations to the study should also be discussed.

2. The paper is largely descriptive and has little information about what non-service provider determinants might be at play. The analysis would be strengthened by further investigating some socio-economic or other equity factors that might be associated with either lack of vaccination, or a lack of age-appropriate vaccination. If risk analysis is not possible given the data, even providing a table with some characteristics comparing those children who were vaccinated at 9 months with those who were not might shed some further insight. As it stands, the authors imply that only the type/quality of service provider is associated with age-appropriate vaccination, and this could be overstated without having looked at other possible determinants.

Minor essential revisions

3. I believe the authors' point about the MDG indicator for measles to be an interesting one and should be highlighted more. The authors should include in their discussion what other authors (if any) have said about the value of this MDG indicator (as there have been other criticisms of the MDGs).

4. Related to above, what the authors refer to as MDG indicator 15 for measles has been updated to now be MDG indicator 4.3 (and I suggest the authors find an updated source for reference 18).
5. The inclusion of the DPT-3 data in the paper is distracting. Judging by the introduction and discussion, the paper is clearly concerned with measles vaccination primarily. I take the point that the authors chose a second vaccination for comparison, but then a large amount of data is given for DPT-3 without it ever really being fleshed out in the discussion. I also don’t know if a vaccine administered at 14 weeks is the greatest comparable for one given at 9 months. I think the authors could include one statement/finding on the comparable age-inappropriate trends for DPT-3 (or another one) and be done with it, keeping the focus of the article on measles (and removing table 2). Either way, if the authors choose to compare with DPT3, the importance of this should be discussed more.

6. The authors make the point that no ethics review is necessary. I would tend to agree (even though there may be some grey are on this) however, I think they could expand more on how individual confidentiality etc. in the dataset and analysis was maintained.

7. The link to the data given on page 6 only links to the questionnaires used to collect the data and not the data itself. This link should be fixed, or this section should be reworded.

Discretionary revisions

8. In the results section, the confidence intervals around the proportions are unnecessary. Rather, it would be preferable to see the numerators and denominators that the proportions are based on.

9. Table 3 would be easier to interpret if it was ordered based on the proportion vaccinated early. Also, ICDS should be given the label "Anganwadi" in brackets to correspond to the text.

10. There is some passive voice in the document, and this should be removed where possible (for example, bottom of page 5 "The 2008 DLHS-3 was collected by..."; bottom of page 6 "Similar trends were noted...").

11. There is inconsistent referencing styles used (some use numbers in brackets, while others use superscript).

12. There is inconsistent use of commas in some numbers (ie: page 6 has both 18,670 and 18670).

13. There is inconsistent use of decimals. I think for this paper, rounding to the nearest full number (ie: 72% rather than 72.4%) is perfectly adequate for this type of data.

14. There are some statements in the results section that would be better suited to the discussion section. For example, on page 6, the results should include only what was found in this study, then the comparisons to other studies and what this might mean should be moved to the discussion.
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.