Reviewer's report

Title: Vitamin A status between 6 months and 2 years of age in Guinea-Bissau

Version: 2 Date: 10 October 2012

Reviewer: Andrew L Thorne-Lyman

Reviewer's report:

This is an interesting manuscript, of importance to Guinea-Bissau, as there is no national survey of prevalence of vitamin A status, but also of general interest because few large surveys of vitamin A status from this part of the world have been published. The manuscript is generally well written. I do think that more analysis could be done to increase the policy relevance of the paper (especially related to vitamin A capsule supplementation) and have suggested several analyses that might be possible.

Major Compulsory Revisions:

Given the objective of assessing vitamin A status (and the lack of a nationally representative vitamin A survey) it would be useful to have a more explicit discussion of the population that the survey does and does not represent, and the potential biases that might exist if one were to try to generalize the results to the entire country. Specifically it would be useful to address: (1) Was the study designed to be statistically representative of this age group on a national level or not? Were all areas of the country eligible for inclusion in the HDDS prior to sampling? (2) Were any geographic areas or population groups not represented that might lead to bias when trying to generalize results to the country? (3) Given seasonal patterns in VAD shown in Figure 3 (and the fact that the sample size contributing to the overall sample varied by month) what are the potential implications for the estimate of prevalence?

Discussion: “Vitamin A status might have been slightly better in older children”? This statement seems to expand the implications of these findings to a group that was not included in the study and I wonder whether there is data available to support such a statement. Is there any data on age (especially for over vs. under 2 year olds) as a risk factor related to vitamin A status in Guinea Bissau or other relevant settings that might be brought into this discussion? What is known about coverage rates of the biannual VAS program in Guinea Bissau by age and how might this affect such a statement? (as a side-note it would be good to also bring the latter point into the background/discussion as I don’t see any mention of coverage of this program.)

Results/Discussion: For the vitamin A supplementation, what approach and recall period was used to get information about receipt of vitamin A capsules? There is suggestion in some of the literature that biannual supplementation might not be frequent enough in some settings for children to reach sufficient vitamin A status and that more frequent dosage (every 4 months) may be needed. For this reason I think that it might also be useful to explore potential associations between VAS
in the past 4 months in addition to 6.

Given importance of season as a variable, what was the timing of vitamin A supplementation campaigns relative to season in the years covered in this study? Were there any interactions between VAS and season?

I am also not clear on the description of the subgroup analysis of “timely vaccinated” children in light of the statement that “only children who had missed at least one routine vaccination” were included. Perhaps I missed something but it would help to clarify whether this sub-group was or was not included in the multivariate analysis for risk factors of VAD and to provide the sample size of this group. I am also wondering whether timely vaccination was considered as a variable for inclusion in the models?

P.7 “Reception” (receipt?) of VAS within the previous 6 months had no effect on VAD”. I would be cautious not to make conclusions about effects given that this is an observational study. Also, this statement appears to be made based only on the simple model as I don’t see VAS in the larger (multivariate) model. I think it would be useful to undertake a sensitivity analysis including VAS in the multivariate adjusted (large) model to be able to make a more conclusive statement here about associations between VAS and VAD in this study. Also, it is important to note that children who had received VAS within the previous month were excluded from the study—is it possible that excluding these children might have led to an attenuation of the effect of VAS on vitamin A status? Presumably this point could also be addressed through a sensitivity analysis and/or could be brought into the discussion.

Table 1. Could you please clarify in the table what statistical tests were used for each analysis? What does the p-value for categorical variables (with more than one category, such as birth facility) represent?

Minor Essential Revisions.

p.6. Results: how many people had missing covariates <2% and were therefore not included in the analysis?

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.

Abstract: It’s not clear what ‘indicator variables’ are: rephrasing for clarity would be useful.

Description of backward selection: it would be useful to mention the rationale for removing variables from the final multivariate model as well as the order/method used to remove variables from the model…presumably it was stepwise with removal by descending p value?

Methods: For discussion of approaches to missing data it sounds like you used the complete case approach where covariates were missing for <2% of data and the missing indicator approach where covariates were missing for >2%. You might state this directly.

p. 5 Statistical analysis: Do the +- 10% cutoffs refer to a change in threshold used for RBP analyses? (you might just mention the values actually used to
make this clear.)

P. 8 Sensitivity analysis: “retaining only the most deficient children”: I think I know what you mean by this, but you might clarify this point to make it more clear in the text.

P. 9 “We found surprisingly few studies investigating the effect of VAS on vitamin A status” Could you cite those that you found here? Do you mean observational studies only or are you talking about trials as well?

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I have received reimbursements for travel from Statens Serum Institute (as part of an ongoing collaboration with a different research group) and from Sight & Life in the past five years. I do not believe these reimbursements represent competing interests.