Reviewer's report

Title: Proxy markers of serum retinol concentration, used alone and in combination, to assess population vitamin A status in Kenyan children: a cross-sectional study

Version: 1 Date: 30 October 2014

Reviewer: Bradley Woodruff

Reviewer's report:

Major compulsory revisions - NONE

Minor essential revisions

1) Figure 5 represents the most important and potentially revolutionary principle in this manuscript. In order for this principle to be understood by readers, there needs to be more explanation than is currently provided in the body of the text or in the figure's legend. The explanation given in "Online supplemental material 2" needs to be adapted and moved to the main body of this manuscript. This reviewer understands journal-imposed constraints on manuscript length, but for such an important idea, surely the editors can be flexible on this issue.

2) The prevalence of inflammation in the study sample is quite low. Although this reviewer was initially not familiar with other studies measuring inflammatory markers in school-age children, a quick on-line search reveals several articles demonstrating much higher prevalence rates of inflammation in this age group as measured by several different markers. Perhaps the authors wish to offer some explanation for the low prevalence of inflammation found in their study and discuss the possible implications of this on generalizing their results to other populations.

3) For those readers less familiar with Bland-Altman plots, the authors may wish to explain what the dotted lines in figure 3 indicate. This could be done either in the title or a label on the graph itself. The text calls these lines "limits of agreement", but many readers will not know what this means.

4) In line 212, the authors should substitute the word "diverged" for "diverted". To divert means to be turned aside or turn from one course or from one usage to another. To diverge means to grow farther apart.

Discretionary revisions

1) I am not a laboratorian, but is 10.5% interplate CV and 6.0% intra-assay CV for RBP measurement excessive? Compared to the CVs for transthyretin, CRP, and AGP, the RBP CVs seem quite high. In addition, several publications report lower CVs for RPB analyzed by ELISA. Does this warrant some explanation in the manuscript or is this normal for the assay used in this study? The authors
may also wish to address the impact of these apparently elevated CVs on their analysis.

2) In the table, the authors may wish to explain what the digits in (parentheses) and [brackets] are.

3) Many of the specific results presented in table 1 are repeated in the first paragraph of the Results section. This may not be necessary.

4) Perhaps the authors could give some more detail of their use of logistic regression modeling and the results thereof presented in figure 4 for less statistically sophisticated readers.

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.