Reviewer's report

Title: Age-adjusted Plasmodium falciparum antibody levels in school-aged children are a stable marker of microgeographical variations in exposure to Plasmodium infection

Version: 1  Date: 26 March 2007

Reviewer: Robert William Snow

Reviewer's report:

General
This is a rich manuscript packed with a lot of interesting data covering a number of important aspects of malaria epidemiology under moderate intensity transmission conditions. The paper, however, would benefit enormously from shortening or better still dividing into two papers.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
1. The analysis of small area variation has used a series of sophisticated techniques available within SPSS but the choice of outcome measure I am less convinced by – clearly there is a measurement error in microscopy – the authors argue that a serological marker is better but PCR would be a more definitive measure of present exposure. This said I also wonder whether the household samples would be of sufficient size to define “prevalence” – the statistical error in this measure must be high. Wouldn’t a more robust measure be presence/absence of infection in an age group that explained most of the non-immune modulated history of infection – i.e. those aged 2-14 years? For those individuals in this age-range seen twice would it be possible to look at binary “conversion” rates from household negative to household positive in the analysis of spatial correlates with water body distance.

2. It would be useful to have some indication of the dominant malaria vector species to understand the context of the work – i.e. is it A funestus or A gambiae or mixtures?

3. The MS would also probably benefit by a description of how the water body sources were classified. I realise this is difficult but seasonal streams and rivers are precisely what this – seasonal and experience quite large between year variability – whether November 2003 and February 2004 were typical or atypical of time-of-year rainfall and swelling of rivers would again be a useful context and how these were coincidentally mapped and quantified during the field work.

4. The paper I thik would be stronger without the Pf-IgG3 subsets - this is intersting an is a valuable set of independent, but more elaborate, series of epidemiological descriptions to valaidate the marker - then present possibly as a supporting series of data on spatial exposure.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

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Discretionary Revisions (which the author can choose to ignore)

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What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

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

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

No competing interests