Reviewer's report

Title: Marked spatio-temporal heterogeneities in human antibody responses to malaria in western Kenyan highlands

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Reviewer: Robert William Snow

Reviewer's report:

The paper describes a series of cross-sectional estimates of anti-Pf MSP119 in age-structured samples in communities living at different altitudes in western Kenya. The paper is a good descriptive piece of work but was left wanting far more discussion around some of the propositions made in the introduction. The authors claim that sero-prevalence will be valuable in areas of low EIR and parasite prevalence to guide control and resource allocation. What the authors eventually show is that measures of EIR, PR and seroprevalance rank the communities in pretty much the same order. There is no discussion on the true value in this context of serology. The authors have failed to describe the use of serology in historical elimination campaigns in Tunisia, Mauritius and their early use in similar ecological settings of Pare Taveta. There have been more recent examples of using serology in low transmission settings, for example in Djibouti. I did feel that as a simple descriptive paper it would have been strengthened enormously but contextualizing the use and findings across a wider range of examples and why this method of transmission estimation has a place in specific contexts. Another approach to ramping up the message within the paper would have been a more detailed analysis of parasite positive-negative PCR/slide individuals and their antibody responses OR a more detailed micro-heterogeneity examination at household level – see paper by Bouesma et al from Somaliland.

The paper itself is technically sound, although I would have liked to see some more comment on adding in AMA1 to increase sensitivity, but it is a description of sero-prevalence and doesn’t have any specifically innovative angle.

Level of interest: An article of limited interest

Quality of written English: Acceptable

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

Declaration of competing interests:

I declare that I have no competing interests