Reviewer’s report

Title: Sample size calculation for estimating key epidemiological parameters using serological data and mathematical modelling

Version: 0 Date: 04 Aug 2018

Reviewer: Md Nazmul Karim

Reviewer's report:

Many thanks for sending me the manuscript titled "Sample size calculation for estimating key epidemiological parameters using serological data and mathematical modelling." The authors performed simulation-based sample size calculations to determine the age-based sampling structures for estimating epidemiological parameters with acceptable precision levels in a sero-prevalence survey. The paper is very well written. I congratulate the authors for such an effort to work on such an important area in sero-surveillance.

I have couple of minor comments

1. "The sera were collected between 2001 and 2003 and were obtained from residual sera submitted for routine laboratory testing (individuals aged <18 years) or from blood donors (18 years and over)" if I understand correctly in the text, sera were derived from two different sources as 'routine laboratory testing' and from blood donors. Just wondering how likely such sampling correctly captures the true population heterogeneity. Further, use of old data (2001-2003) may be concern considering the dynamic nature of the sero-prevalence. A bit of light on the issues can be shed in any relevant place of the manuscript.

2. "Samples from children aged less than 6 months or 1 year were omitted in our analyses because of distortions expected from the presence of maternal antibodies against the various pathogens." I would argue though that is the natural variation in the sample, please justify further about the removal of a specific age bracket.

3. Justification and process of selecting six age groups could be discussed in the methods section.

4. Further detail on the process of simulation could help the readership understanding the mechanism.

5. If similar results were obtained with 1000 or 1500 data set, I would see no justification of saying 500 simulation is a limitation.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

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Please indicate the quality of language in the manuscript:

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