Reviewer’s report

Title: A systematic review of the diagnostic accuracy of Loop-mediated-isothermal AMPlification (LAMP) in diagnosis of invasive meningococcal disease in children.

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Reviewer: Xin Wang

Reviewer's report:

This article provided a systematic review and meta-analysis of Loop-mediated-isothermal AMPlification (LAMP), a PCR-based, rapid test for the detection of meningococcal diseases. Through the review and meta-analysis, the authors concluded that LAMP is a highly accurate test for invasive meningococcal infection that can be performed on a range of clinical specimens and offers potential to improve the rapid diagnosis of invasive meningococcal diseases. The paper is well organized and scientifically important for meningitis community. Given the severity of this disease, early detection is critical for case management. LAMP test may serve as the next generation rapid diagnosis test for meningococcal diseases. My comments and questions are listed below.

1. Pg 4 Lines 11-18. Were patient age and gene target (ctrA) the only criteria for inclusion/exclusion selection? If so, I wonder why the analysis was limited to less than 18 yrs. Young adults such as college students are also at high risk for meningococcal diseases. It would be interesting to know LAMP performance for that population. Among the published literatures you have screened and reviewed, were there any other gene targets used? ctrA is a good target for encapsulated meningococci but not for nongroupables.

2. Pg 6 Lines 3-5, of the 36 studies screened, most were excluded in the analysis. Were the findings from the excluded studies consistent with your conclusion? If not, suggest including some comments to rule out biased selection.

3. Table 1. What was the age range in the original study and the proportion of cases excluded? Suggest including columns for these information. Did the reference qPCR use the same gene target ie ctrA?

4. Table 2. Most of meningococcal strains in oropharynx do not produce capsule and are negative for ctrA. It is surprising to see that LAMP targeting ctrA showed high sensitivity and specificity unless the reference test used the same target. The concern is that ctrA LAMP may have missed meningococcal strains that were negative for ctrA. Would suggest discussing this limitation in the paper.
5. Pg 11 Lines 8-10. If the purpose was to determine the accuracy of LAMP tests for invasive MD, can you explain why NP and OP swabs were included in the analysis? They are not good specimen types for invasive diseases.

6. To better understand the context of the review and meta-analysis, it would be extremely helpful to include a table describing study characteristics for the 31 studies excluded, similar to table 1.

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.

Unable to assess

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

Quality of written English
Please indicate the quality of language in the manuscript:

Not suitable for publication unless extensively edited

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