Reviewer's report

Title: Evaluation of surveillance case definition as a screening test for diagnosis of leptospirosis

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Reviewer: stuart blacksell

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General Comments
Leptospirosis is an important disease in the tropics and the broad differential diagnosis provides difficulties for clinical diagnosis in the absence of reliable laboratory diagnostic assays. The manuscript presented for review attempts to address these difficulties however the approach taken by the authors lacks rigor and confidence.

- Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)

None

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

1. Page numbers are missing.
2. Too many sub-sections in M & M.
3. Table 2 can be omitted and the details described in the text.
4. Table 3 can be omitted and the details described in the text.
5. Clinical details of the cases are presented in a very haphazard manner. This should be improved.
6. Description of data analysis is informal and poorly presented.

- Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)

1. One of the major problems with the study is that the objective is not clear to
the reader. In the introduction, the authors state “This study was aimed at determining the validity of leptospirosis surveillance case definition as a screening test in the diagnosis of leptospirosis” – I have no idea what is the meaning of this statement! Having read the manuscript, I think the objective of the study is to validate a leptospirosis clinical case definition based on an MAT result of # 1:800. This objective needs to be clearly stated at the start of the manuscript.

2. For this study to be valid, the diagnosis of leptospirosis must be without doubt however, this is clearly not the case with the approach selected by the authors. I disagree with the use of the MAT of >1:800 on day 7 sera as a gold standard given the lack of evidence for its application. Has this titer been justified on a single sample by local diagnostic studies (i.e., is there a reference that can be included)? Surely using paired samples would be a better approach. This shortcoming is recognized and mentioned by the authors in the discussion but does not excuse the fact that this is a critical flaw in the study. At the very least a four-fold rising titer must be used or in vitro isolation to establish a local clinical case definition for leptospirosis.

3. The use of Leptospira biflexa Patoc as the ONLY MAT antigen is another major flaw in the study. Given that this a non-pathogenic environmental saphrophytic strain of Leptospira it is entirely possible that farmers may come into contact with this strain in their normal activities and hence raise an immune response. Pathogenetic serovars must be used in the MAT for an accurate diagnosis.

**Level of interest:** An article of limited interest

**Quality of written English:** Needs some language corrections before being published

**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