Reviewer's report

Title: Dengue NS1 antigen as a marker of severe clinical disease

Version: 2  Date: 6 July 2014

Reviewer: Trung Dinh The

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Shiran A. Paranavitane and et al studied whether NS1 levels on admissions could predict disease severity in 186 adult patients with dengue. This is a very interesting study question. However, I have concerns about some issues in the manuscript, and I think if these can be addressed the manuscript would be much improved.

Major compulsory revisions:

1. NS1 levels were measured on admissions for all patients recruited, corresponding with the days of illness between day 3 and 8. However, the analysis for the association between NS1 levels and disease severity only included patients admitted on day 5 and 6 of illness. I wonder how well the associations were in other days, especially in day 3 to 4 of illness. I think days 5 and 6 are late for predicting disease severity since complications of dengue usually occur on these days. In addition, it is better if authors could give the number of patients in each day of illness in Figure 1.

2. Definition for disease severity: authors didn't use the WHO dengue disease severity classification and defined their own classification. I think the classification is not thorough and clear enough. For example, other organ dysfunction rather than liver dysfunction such as encephalopathy, myocarditis was not included in the severe dengue. Authors should also give more details about what was the baseline of haematocrit for patients. In addition, criteria such as presence of bleeding manifestations or liver enzyme > 500 IU/mL are not really severe and the group “severe dengue group” should be defined as “more severe dengue group”.

3. At the beginning of the second and fourth paragraphs of the results section, authors wrote “Dengue NS1 and clinical parameters” or “Dengue NS1 positivity and laboratory parameters”. It was not clear whether this is NS1 ELISA or NS rapid tests. About NS1 antigen rapid test, authors didn’t show whether this test was done at the same time (on admission) with NS1 ELISA test in the methods section. In the results section, authors showed “NS1 rapid antigen detection test had a comparable sensitivity and specificity as the Panbio commercial capture NS1 antigen detection ELISA”. It was not shown in details and it seems to me that authors showed comparison of the sensitivity and specificity of these two tests in terms of dengue diagnosis (not in terms of comparison of predicting severe dengue), but authors concluded that NS1 rapid test could be used to predict more severe disease group at the end of the manuscript.
4. Since data were not normally distributed, they should be presented as median (range) rather than mean and SD.

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

**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