Reviewer's report

Title: A systematic review of the economic impact of rapid diagnostic tests for dengue

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Reviewer: Annelies Wilder-Smith

It is important to investigate and report on the economic impact of Rapid diagnostic assays for dengue surveillance, control and clinical management. I hence commend this paper. However, the research question is not clearly spelled out, and the introduction is convoluted with text not directly relevant to the economic impact of diagnostics, such as describing the Phase 3 vaccine trial. It is also unclear whether the authors only want to study RDT's or all dengue diagnostic assays (because in the introduction they describe all diagnostic assays). The conclusions hence do not add much novelty to the current knowledge, eg the conclusions basically just state there are no studies showing an economic impact. How do the authors define "an economic impact"? The first sentence in the discussion says: "The hypothesis behind this review was that prompt detection of dengue in the early phase of illness using RDT leading to economic benefit in terms of patients' cost of illness." - this hypothesis needs to be better introduced in the introduction to allow for a better logical flow of the manuscript. The value of a systematic review is driven by the research question, which is currently unclear in the manuscript. The authors need to rewrite the paper by giving it more structure, focus and clarity. The current interpretation of the paper is too nonspecific, diffuse and does not add novelty. Eg the paper could be structured into:

Introduction: First paragraph: Current burden of disease and shortcomings in dengue diagnostics. Second paragraph: RDTs - what are they? List the NS1 and duo assays. How sensitive and specific? What is known about the cost of RDTs? Third paragraph: Why are RDTs important? Eg separate the importance in the context of surveillance and control (a more public health perspective) and clinical management (an individual perspective). Why could early information on the diagnosis have an economic impact? (eg refer to the hypothesis in the first sentence of the discussion, which should be part of the introduction, and then discussed in the discussion) Fourth paragraph: the objective of the systematic review Methods: The authors emphasize the 'economic impact' of RDTs, both in their introduction as well as in the discussion. However, they limit their search terms to "cost" only. "Cost" is usually related to cost of illness, cost of the diagnostic assay, out of pocket costs, etc - but may not refer to economic impact. I am hence not surprised that the authors did not find anything on economic impact. I would suggest to add "economic" to "cost" as a search term. If the research question is on RDTs only, the authors can then narrow their search and omit the general term 'dengue' to 'rapid diagnostic assays for dengue'. If the research question is on "diagnostic assays for dengue" (rather than RDTs only), it needs to be stated clearly in the introduction and followed through in the methods, and discussion of the results. In summary, the readers need to get a better picture on why this systematic review was conducted. Would early diagnosis reduce hospitalizations? Not really… Would early diagnosis simplify triage? Yes. Would early diagnosis at point of care enhance surveillance? Probably… Would early diagnosis reduce mortality (case management)? Maybe… at least it would enhance monitoring the patient to identify those who develop more severe disease. The authors need to carefully think through what kind of
economic impact they are expecting in their literature search because it would narrow down the search, sharpen the focus and research question, and make the discussion more valuable.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**
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Unable to assess

**Are the conclusions drawn adequately supported by the data shown?**
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Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
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Not relevant to this manuscript

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