Reviewer's report

Title: Rapid Diagnostics of Tuberculosis and Drug Resistance in the Industrialized World: Clinical and Public Health Benefits and Barriers to Implementation

Version: 2 Date: 2 July 2013

Reviewer: Keertan KD Dheda

Reviewer's report:

This is a comprehensive review of an important and rapidly changing subject area. The authors are well-qualified to address this topic and the lead author, including others, have done considerable original research in the field.

Comments:

1. The authors should comment on the impact of HIV infection rates on LED performance outcomes, particularly as this technology has been used widely in Africa.

2. In table 2 I suggest the positive and negative predictive values also be quoted. I realise that this is dependent on disease prevalence, but LR’s are a more esoteric measure that are not easily understandable by clinicians. PPV’s and NPV’s on the other hand gives one a good clinical sense of what one is dealing with.

3. Table 2, LAMP is not yet as far I am aware, commercially available for the detection of TB. Perhaps it is? Could the authors clarify?

4. The HAIN line probe assays, both the MDR PLUS and the SL, seems to have been omitted from table 2. The authors should also quote data for the version 1 and version 2 separately as the data suggest that version 2 performs as well as Xpert.

5. Table 2: if the authors are providing performance outcomes for Xpert M.tb RIF in smear neg TB, then they should provide these outcomes for all the other assays as well to standardise the table. This makes the table quite large, but think this information is critical to compare the various different tests. This will make the review much more comprehensive and informative and I think this should be included.

6. To make things more digestible, perhaps the authors should split the table into line probe assays and non-line probe assay.

7. A critical issue that is not covered in the tables is the suggested limited PPV for rifampicin resistance for Xpert. I am intrigued to know why the other assays also do not have the same shortcoming? Again, this needs inclusion in the table and I strongly suggest that table 2 become more comprehensive and perhaps be split up into parts.
8. In table 3, the authors seem to imply (though not directly) that TST and IGRA’s are a satisfactory or good test for LTBI. It is not entirely clear what the IGRA’s are measuring and perhaps this needs to be stressed. The PPV of both assays for active TB predictive risk is low and this needs to be made clearer (LID SR).

9. In table 3, the disadvantages do not seem to be covered and this needs to be added in. For example, the higher contamination rates with liquid culture.

10. For infectiousness of Xpert, I suggest you quote paper by Theron, et al published in CID, which is highly relevant here.

11. I would suggest that a separate short section be devoted to performance outcomes and implications of these tests in high burden versus low burden settings. The considerations are very different in both these settings.

12. A section describing the impact and special relevance in the context of HIV is also appropriate in this review.

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

No competing interests