Reviewer's report

**Title:** Contribution of two laboratory-developed PCR methods for the diagnosis of Pulmonary Tuberculosis in Brazilian patients with and without HIV infection

**Version:** 2  **Date:** 21 December 2010

**Reviewer:** David Stivers

**Reviewer's report:**

**Major Compulsory Estimates**

(1) All estimations of proportions (such as sensitivity and specificity, NPV and PPV) should have 95% CI reported for them, ideally using Wilson score w/out continuity correction, but exact or Wald is acceptable; whatever method is used should be stated.

(2) PPV/NPV is a little problematic - PPV/NPV is extremely prevalence dependent - it’s only applicable in the population in which the test is applied; in particular, reporting PPV / NPV for artificially constructed samples (e.g., by pooling disparate groups in which the prevalence of disease is known or suspected to be different) does not result in interpretable values of PPV and NPV; in particular, the prevalence of TB in the non-treated group and past group is markedly different (p <10E-4 using Wilson score without continuity correction), and thus it is invalid to report PPV and NPV in these groups combined without a proper weighting and justification.

(3) I am concerned about reporting AUC for a dichotomous predictor - AUC is certainly a measure of the information in a test, but for a dichotomous predictor, it is is simply the average of sensitivity and specificity (simple geometry can be used to confirm this); if the authors do wish to report AUC, it should be stated that for a dichotomous predictor, AUC is simply the average of sensitivity and specificity, and the ROC curves should be considered strictly optional.

**Minor Essential Revisions**

(4) reporting sens/spec for a component of the reference standard could be construed as misleading - there should be a footnote to the 100% specificity reported for the sputum culture clarifying that, as it is a component of the gold standard and must be positive for the presence of TB to be presumed, it is tautological that specificity is 100% for this test. More interesting, perhaps, is the sensitivity of the sputum culture, which measures agreement between the clinical definition of TB and the sputum culture test.

(5) Authors may wish to consider reporting odds-ratios (with 95% CI) instead of or in addition to PPV/NPV, especially since PPV and NPV are not universally applicable.
Discretionary Revisions

(6) Why are the sample sizes for TB non-treated group == HIV-, and TB past == HIV+? Is this merely coincidental?

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests