Reviewer’s report

**Title:** Modeling the impact of tuberculosis interventions on epidemiologic outcomes and health system costs

**Version:** 2  **Date:** 24 November 2014

**Reviewer:** Gonzalo G. Alvarez

**Reviewer’s report:**

BMC paper Oxlade et al

This is a decision analysis modelling study looking at different interventions to quantify the impact on epi outcomes and cost outcomes. This is an important topic and the question is interesting and potentially useful to national TB program policy advisors.

**Comments**

1. Why was the modelling from 2001 to 2020, especially if we are already 2014, would it not make more sense to model until 2034, would this make a difference?

2. In regard to the populations chosen for this study: are these countries very different in their respective incidence rates and HIV rates, I think it is that Mozambique has high HIV rates, Kazakhstan likely has high DR cases and Indonesia has high rates and perhaps a more prominent private sector but this is not explicit in the article... not enough if said as to why you chose the countries that were chosen

3. Not clear what was the rational for picking these interventions versus others? Why were other interventions excluded? General reasons are given but not any specifics – are these part of a WHO plan of interventions as part of the post 2015 plan?

4. Of the interventions proposed, it is difficult to understand what the interventions actually entail, for example, expansion of tb diagnostic network (DOTS expansion for diagnosis), does this mean introduction of Xpert, IGRA etc or does this mean training health care workers on how to improve smear diagnosis or perhaps strengthening operational pathways to ensure rapid diagnosis. Private sector interventions – what does this mean? If, as the conclusion states, this information will provide a guide to scale up interventions, readers will want to know what these interventions are so that they can be applied to achieve the predicted results from the study?

5. It is not clear to this reviewer in Table 1 - how the reduction in TB with the interventions was calculated, specifically, community education went from 0.11 to 0.06, I could not find the evidence that suggests that community awareness could decrease the number of days in seeking care by the patient by 50%, is this realistic? But again as the above comment states it is not clear what community education would be required to achieve such a large effect.
6. Justification of the patient delays seen in Table 1 – a delay of 41 days seems low compared to the WHO report referenced where the range was from 46 to 127 days, the other systematic review has a range of total days 50-136 days for comparable countries

7. Given that one of the objectives in this study was to look at private versus public delivery, are the findings weakened by the fact that all of the variable for DOTS diagnostic expansion for the public versus the private used in the model are almost the same except for the diagnostic delay which I think is based on an assumption not a value obtained in a study?

8. Is it realistic to think that 2/3 of cases die in Indonesia at baseline program levels? Where does this data come from? Even if no treatment were available in the pre-antibiotic era about 1/3 of people would die, 1/3 would have sequelae and the last 1/3 would survive without sequelae, this number seems high to me and I would ask that it be better justified

9. Not sure if the title applies given that the team was not able to perform the cost effectiveness study that they had envisioned given that the reported studies did not report this data and no overall modelling was done on this piece.

10. The conclusion states that the greatest benefit will come from early diagnosis however this was not the message in the results/discussion section it was suggested that both early diagnosis and treatment of DS TB – there is a gap here, which is it?

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests