Reviewer’s report

Title: Modelling the impact of chest X-ray and alternative triage approaches prior to seeking a tuberculosis diagnosis

Version: 0 Date: 31 Jul 2018

Reviewer: Nabila Shaikh

Reviewer's report:

This is a very interesting paper and certainly shows the potential uses for mathematical modelling in TB control and treatment.

Overall, this paper requires some clarifications and improvements to make it more suitable as an academic paper.

My two main concerns would be as follows:

- The introduction requires essential strengthening to show the contextual importance of this paper e.g. it is well understood that SSM has limitations as a diagnostic method and that GeneXpert has a better sensitivity but is expensive. Some connection between these facts and the local context in further detail would make this paper more relevant to the current field. Similarly, the relevance of the triage methods and diagnostic methods used in the model would benefit from further justification.

- The method is not very clear and requires multiple read throughs to understand the process. I would suggest reconsidering the order and making the methodology succinct with sufficient justifications.

- There is no consistency in the way the results are presented in the body of writing. An effort is needed to make it more academically sound i.e. include the case detection rate for all of the interventions mentioned.

- Further detail of the model should be outlined in the written text (introduction or methods) rather than relying on the reader to look to the appendices. It will then also attract readers who may not have a background in mathematical modelling.

- The discussion requires some further analysis of the results and links into the detailed context of the study location.
Some minor amendments are suggested as follows:

Abstract - Reconsider the objective statement, not consistent with the rest of the paper and conclusions

Background - Suggest defining triage.

- Page 3, line 29 suggest rephrasing to "if a diagnosis of TB could be excluded using a triage approach" or "some of the non-TB cases could be excluded"

Methods

- In paragraph 1 I suggest removing phrase "which potentially could be performed.....allocated to individual or combination of characteristics."

- It may be helpful to clarify the flow of TB cases through the system at a hospital i.e. hospital attendees with symptoms > triage > presumptive TB > diagnostic test > case and started on treatment

- State how many different triage and diagnostic algorithms were tested in total

- Suggest moving information regarding data from PROVE-IT study to earlier in the section on Operational Model so the section is outlined as such: type of model, the data required to set up model, the various interventions tested

Results

- Consider rephrasing sentence on page 6, line 6-9

- Suggest moving phrase on page 7, line 4/5 for further investigation to the discussion

Discussion

- Page 8, line 44/45, suggest rephrasing to "add-on test for all with positive SSM"

- Page 8, line 50/51/52, it would be interesting if the author included a clarification as to why the number of TB patients starting treatment would be reduced rather than just stating the fact.
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?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

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