Reviewer’s report

Title: Disparities in access to diagnosis and care in Blantyre, Malawi identified through enhanced tuberculosis surveillance and spatial analysis

Version: 1 Date: 23 Oct 2018

Reviewer: Kingsley Ukwaja

Reviewer's report:

I thank the authors for revising the paper. I have had the opportunity to read the revised paper (which I believe is now clearer) than the earlier version. I feel the authors have fairly addressed the issues raised in my previous review. However, there are three more points that deserve further clarification.

1. The authors makes the case for an "enhanced surveillance of TB" using high-quality spatially-resolved surveillance data...to identify the most important and modifiable barriers to TB diagnosis and treatment. The "enhanced surveillance of TB" constituted three components:

   a) enhanced surveillance form that recorded registration centre, age, sex, any sputum smear results taken as part of routine care (positive, negative, or not done),TB treatment category (using standard Ministry of Health/WHO categories), TB classification (pulmonary or extrapulmonary TB) and HIV status (positive, negative or unknown).

   b) Geolocation the physical location of each TB case's dwelling using satellite maps

   c) Microbiological surveillance using a single sputum sample for smear and culture collected from registered TB patients

Comment: The information collected using the enhanced surveillance form are routine information collected from all TB patients and recorded in the TB registers. Thus, what constituted the enhanced surveillance mainly are geolocation of cases and additional microbiological screening. Please, did the authors attempt to differentiate between the smear/culture status (registered for each patient) through the NTP processes and the smear/culture status obtained using the additional microbiological screening. Which of these was the numerator in the smear positive:negative ratio and other analysis performed?

2. I understand the authors planned to identify the most important and modifiable barriers to TB diagnosis and treatment. However, from the study results, I struggle to understand or identify
these "modifiable barriers to TB diagnosis and treatment". Also, it appears that a priori the potential modifiable barriers were not considered in the design of the study.

Also, the authors stated that "Where notified TB cases were resident within a study-mapped CWH catchment area, we classified them as CHW-catchment area residents; where TB cases were resident in an area of the city not mapped by study activities, or in another part of the country, we classified them as non-CHW catchment area resident."

I find the fact that the authors assumed that: "TB cases that are resident in an area of the city not mapped by study activities, or in another part of the country" to have the same characteristics and therefore grouped together concerning. I feel it will be good to consider these (TB cases resident in an area of the city not mapped by study activities, and those in another part of the country) as two independent population in their analysis.

Also, I also find that the authors excluded TB patients from business and industrial areas and the most affluent areas of Blantyre concerning. Considering that almost 39% of the patients in this study were from non-CHW catchment area resident, I feel there is a need to further clarify the two groups (TB cases were resident in an area of the city not mapped by study activities, and those in another part of the country).

In addition, given that the study demonstrated "inverse care law" whereby poorer neighbourhoods and those furthest from TB clinics have lower relative CNR, there is a need to truly demonstrate the existence of this law considering that a substantial proportion of patients residing in business and industrial areas were excluded and these areas are likely to attract the poorest (including accommodate them in shanties and informal crowded setting) as they will most likely migrate to these areas for better economic survival coupled with the fact that areas in the more peripheral and semirural areas were sparsely populated. These might confound the relationships between poverty, distance and TB CNRs.

3. The authors recommend: "If a high burden of undiagnosed TB is confirmed, then, policy-makers should strongly consider prioritising the implementation of pro-poor interventions to improve access to TB services in these underserved urban neighbourhoods".

Unless I am missing something, I thought the challenge of poverty and notifications was for catchment areas in the poorer, and less-densely populated outer suburbs/semi-rural areas. Why are the authors recommending TB services in underserved urban neighbourhoods?

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

Yes
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Not applicable

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