Author's response to reviews

Title: Active and latent tuberculosis in Brazilian correctional facilities: a cross-sectional study

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Author's response to reviews: see over
Dear Editor:

Thank you for considering our manuscript entitled “Mass screening for tuberculosis infection and disease in a network of 12 Brazilian prisons” for BMC Infectious Diseases. We appreciate the thoughtful comments of the referees and have revised our manuscript in light of their comments. Included are our detailed responses to the comments and the changes we have incorporated in the manuscript. We believe the manuscript has been strengthened with these revisions, and we hope that it will be suitable for publication in your journal.

Reviewers’ Critiques:

Reviewer: 1

1. Title: The title suggests that this the manuscript is about implementation of mass screening in correctional facilities. The manuscript actually describes a population-based sampling study of Tb screening, culture for those with a cough and PPD testing with less than half of inmates actually reached in the study. A more description title should be used.

Author’s reply: We have revised the title as suggested; the new title is: “Active and latent tuberculosis in Brazilian correctional facilities: a cross-sectional study”. (Line 1)

2. Background

1. Is rambling and discusses issues not addressed in the study. For example: there is a description of the need for screening algorithms and improved screening tools for correctional settings. The actual study does not assess screening algorithms or test tools. This discussion is out of place.

The question is relatively clear, but comes after a sentence about “an evidence base for TB screening and control strategies” Since this manuscript deals neither with improved approaches to screening nor control, the following description of the study comes as a non-sequitur.

Author’s reply: We agree with the reviewer and have revised the introduction, removing the references to screening algorithms and improved screening tools (Lines 77-81 and 83-84).

3. Methods:

1. Actual target sample size not stated

Author’s Reply: We have added the following to provide the sample size: “The study population is 7,221 prisoners, and the sample size was 3,159 prisoners. We added 20% more individuals (total, 3,771 prisoners) to account for anticipated loss due to refusal to participate.” (lines: 107-110)

2. Recruitment methods unclear. Inmates line-up by inmate number, and then what?
Author’s reply: We have clarified this now as follows:

“Proportional stratified sampling was performed using each prison as a unit of randomization. On the data collection day, the prisoners were ordered numerically in ascending order from the lists provided by the prison and a list of random numbers was generated using the Epi-Info 6.04 software (Atlanta, GA, USA).” (lines 112-115)

3. Results:

1. Several studies have suggested that cough is not very sensitive for TB in correctional facilities (60% sensitive). The failure to diagnose this potentially large group with asymptomatic TB appears to be a large limitation.

Author’s reply: We acknowledge this important limitation and have expanded the limitations section to discuss this:

“We screened all individuals who reported cough of any duration, which while a more liberal screening definition than the WHO symptom criteria (cough > 2 weeks), may nevertheless fail to identify a substantial proportion of tuberculosis cases in this population….For all of these reasons, our estimate of tuberculosis prevalence is likely low.” (Lines 296-299, 305).

2. Solid media is less sensitive than liquid media. More is needed in the discussion around this and the potential increased TB diagnosis with liquid culture.

Author’s reply: We agree and have added the following to the discussion to explain the use of solid media:

“We used solid (Ogawa) media for culture, due to low costs and lower laboratory safety risks; this procedure may be less sensitive than liquid media culture, but is more widely available in resource-limited settings and therefore more generalizable.” (Lines 299-302)

3. The number of refusals (10%) should be noted in the results, not just the figure. It also appears high. Were those who refused similar in characteristic compared to those who screened?

Author’s reply: As suggested, we have added this to the first line of the results section:

“Among the 3,771 prisoners recruited for the study, 391 (10%) refused to participate, and 3,380 were enrolled. Inmates refusing to participate had similar characteristics compared to those who screened.” (lines 182-184) The refusal rate was similar to a previous study in this State (Estevean et al, 2013; ref 3).

4. What was the annual turnover of inmates from the 12 correctional facilities. The daily census was stated at 7,221; the annual census would be expected to be much higher given turnover in facilities (new incarcerations, transfers to other facilities, and releases).

Author’s reply: We do not have data on the annual turnover of inmates; we calculated the sample based on the number of prisoners who were in the prison at the first day of collection, and took a cross sectional sample at each prison.

5. What was the duration of the screening study?

Author’s reply: We now clarify this in the methods:
“Data collection for all twelve prisons was carried out over a period of one year (01/07/2013 to 10/22/2013), with each prison being sequentially enrolled over a course of 1 to 3 weeks.” (Lines 117-118).

6. The results jump around. They need to be better organized. For example: TST status results are described, followed by a paragraph on participant demographics, followed by more paragraphs on TST results.

Author’s reply: We have re-organized the results as suggested, and now present the results in the following order:

1. Study Enrollment, description of study population
2. Active TB Screening
3. Description of Active TB cases
4. TST Screening and prevalence
5. Risk factors for TST positivity

7. Time to TB diagnosis is not described in the Methods. A thorough description is needed including the average duration of incarceration at these 12 facilities. (of note, it is unclear how it is related to the thrust of the manuscript and could just be removed).

Author’s reply: As suggested, we have added a definition for time to culture positivity in the methods:

“Time to culture positivity was defined as the days from sputum collection to identification and confirmation of mycobacterial growth.” (Lines 142-143)

Regarding duration of incarceration, we do not have data on mean duration of entire incarceration but provide data on the duration of incarceration at the time of study enrollment (Lines 197-198, 228-229, 233-234 and Table 1).

4. Discussion

1. TB incidence calculation methods are not described in the Methods and the incidence is not presented in the Results. I am skeptical that you can generate an accurate TB incidence with cross-sectional data and would remove (unless your computation methods are well defended in the Methods).

Author’s reply: We now clarify that tuberculosis incidence data was obtained by review of tuberculosis cases notified to the National Notifiable Diseases Information System (SINAN):

“Tuberculosis incidence was estimated from notification data obtained from the National Notifiable Diseases Information System (SINAN), from which we identified all new cases of active TB reported in the 12 prisons during the study period” (Lines 161-165)
Major compulsory revisions
None.

Minor compulsory revisions
1. line 114- sample size was calculated using a prevalence of 2% for "HIV" it's not TB?

Author's reply: We acknowledge the need to clarify the sample size calculation. This study of infectious diseases in prisons involved other diseases including HIV, syphilis, hepatitis B and hepatitis C, in addition to tuberculosis. The prevalence of active TB was not used because then the sample would be the entire study population and too large to be accomplished within local resource constraints. We therefore utilized the disease with the second lowest expected prevalence (HIV) to derive the requisite sample size. We now clarify this in the methods:

“Screening for tuberculosis (reported here) was performed alongside parallel screening studies for HIV, Hepatitis B, Hepatitis C, and syphilis. The sample size was calculated based on the expected prevalence of HIV, assuming 2% for HIV with a variation of 1%, power of 80% and alpha-type error of 5%.” (Lines 107-110)

2. table 1a - PTL Less than 4 years of schooling- percentage- must be correct 44 and not 445
Author's reply: We regret this typographical error and appreciate the reviewer identifying this; we have revised as suggested (Supplementary Table 1a).

Sincerely,

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