Reviewer's report

Title: Deaths among TB cases in Shanghai, China: Who is at risk?

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Reviewer: Christie Jeon

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I have had the pleasure of reviewing the article by Shen et al. titled “Deaths among TB cases in Shanghai, China: Who is at risk?” submitted to BMC Infectious Diseases.

TB remains a major source of morbidity and mortality in the world and China ranks second in the burden of TB in the world. As little is known about causes of mortality among TB patients in China, this article takes a valuable step forward in elucidating the relationship between major risk factors and TB mortality in Shanghai, China. The study was well-powered to be able to detect weaker associations that smaller studies wouldn’t be able to capture.

The study however was limited in that several specific risk factors of interest were missing or otherwise combined into a larger category. For example, HIV/AIDS, malnutrition, diabetes have all previously been considered to be predictors of poor treatment outcome but to different degree. Further, MDR TB status was missing in a high proportion of the cases. Furthermore, the study could have employed a method of analysis that take person-time into account by either proportional hazards analysis or Poisson regression. The discussion could have explained the results and the apparent discrepancies with existing literature more thoroughly.

Major compulsory revisions :

Introduction:
1. It is interesting to read that TB mortality in Shanghai is markedly higher than in the rest of China. Does your finding agree with this figure? What would be the reason for the difference and how does it compare to other countries? Perhaps you could comment on this in the discussion.

Methods
2. If possible, it would be very informative to the reader to have a finer group of comorbidity, such as: HIV/AIDS, diabetes, cardiovascular diseases, cancer, COPD, other infectious diseases.

3. What was the treatment regimen for the MDR TB patients? Were these then followed-up for a longer period of time (as their regimen would have been longer)?

4. Were the retreatment cases followed up for a longer period of time? If so, I think it’s important to state average time of follow-up by previous treatment, as
with longer follow-up you may find more non-TB-associated deaths.

5. You could also do a stratified analysis and investigate if the predictors of TB-associated deaths are different from that of non-TB associated deaths.

Discussion

6. Perhaps you could include a discussion of why cavitation was inversely associated with mortality, while smear positivity was positively associated with mortality.

Minor essential revision :

Abstract :

7. I think “case fatality” or “case fatality proportion” is a more appropriate term than “case fatality ratio”. It would be helpful to know the time frame, during anti-TB treatment? For how many months?

Discretionary revisions :

Introduction

8. It is helpful to know how densely populated Shanghai is, perhaps you could give a comparison, say New York, Paris, or Hong Kong.

Methods

9. It’s great that you’ve looked into interactions. Which two-way or three-way interactions did you investigate?

10. I think age categorization could be finer than <=52 and >52. It would also be interesting to know if further increase in age is associated with mortality among the elderly (>60). It may be helpful to describe the relationship between age and mortality with spline regression and try to see if there is a non-linear relationship.

11. In addition to logistic regression, I think it may also be useful to do Poisson regression or Cox regression which takes person-time into account. This makes more optimum use of the data, as time to death (or censoring) matters and follow-up time may not have been even between the individuals. With this method you could also incorporate the individuals who defaulted or transferred, because at least until they became lost to follow-up you know that they were alive.

**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