Reviewer's report

Title: Factors associated with DELAY in diagnosis among Tuberculosis patients in Hohoe Municipality, Ghana

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Reviewer: Chih-Hsin Lee

Reviewer's report:

The authors investigated the delay in making diagnosis of tuberculosis in Hohoe Municipality in Ghana. The cross sectional surveillance study enrolled 73 patients newly diagnosed of tuberculosis during Jul 2013-May 2014. The median total delay was 104 days. The median patient delay was 59 days, and the median healthcare services delay was 45 days. Not medically insured and perceived stigma were risk factors associated with prolonged patient delay. Multiple healthcare contacts following signs and symptoms was the only risk factor associated with prolonged healthcare service delay.

For the patient delay, the findings of the present study added little to current knowledge on this issue. Those not medically insured is likely to be associated with a poverty status. Perceived stigma was also a well-known risk factor for patient delay. For the healthcare associated delay, the study failed to probe into the causes of delay to provide useful information to optimize the tuberculosis control program.

In the discussion section, the authors compared their results with many previous reports. However, the delay of these studies was calculated according to questionnaire without consistent definition for symptoms, medical visits, and diagnosis, such comparison could be misleading and should be interpreted cautiously. For example, the authors stated in the discussion that "The median healthcare services delay in this study is shorter than the previous report from Ghana (Lawn et al., 1998)." However, the background tuberculosis incidence, the status of sputum smear positivity and the definition of healthcare services delay for these two studies are quite different. It is difficult to contribute the difference in the two report to any specific reason.

Major Compulsory Revisions:

1. Healthcare services delay was defined as the time interval between the first medical consultation and the time taken to diagnose TB. Instead of calculating the delay by the time anti-tuberculosis was initiated, it is not clear how the timing of TB diagnosis was defined. The TB diagnosis is usually comprised of symptoms, radiological findings and microbiological studies. Is the time to diagnose TB defined as suspecting TB and arranging referral or accepting confirmed diagnosis according a typical radiological chest x ray or positive
acid-fast smear of sputum?

2. Since TB diagnostic services are available only at the Municipal hospital located in Hohoe Township, how is multiple healthcare service contact defined for those first visiting public health centers, clinic, and community-based Health planning services? Is chest x ray and sputum acid-fast smear available in these public health facilities? It is unclear how physicians in these public health facilities make diagnosis of TB without TB diagnostic tools? Was consulting drug store or traditional healers also considered a healthcare contact?

3. The initial radiological findings such as presence of cavitation or zones of involvement, if available, should be reported to illustrate the disease severity of pulmonary TB. It is more challenging for patients presented early to medical consultation with minimal disease activity than those with full-blown manifestation of TB disease.

Minor Essential Revision:

1. The proportion of unemployed patients was surprisingly high (61.6%) in this report. According to the background information reported by the authors, most of the inhabitants in Hohoe Municipality live on subsistence farming. How is the status of employment defined for those living on farming?

2. The authors stated in the background information that sputum smear microscopy to be the most common diagnostic tool for diagnosing patients suspected of having pulmonary TB. However, the proportion of smear-positivity in this series is very low. Are sputum acid-fast smear performed in all patients enrolled? For patients diagnosed of TB without positive sputum smear, how many of them were having positive mycobacterial tuberculosis complex culture result.

3. The Table following Table 5 are mislabeled as Table 1.

4. The Table 2, 4, 5 are not referenced in the manuscript.

Discretionary Revisions:

1. The conclusion that "Multiple healthcare contacts following signs and symptoms was the only risk factor associated with prolonged healthcare service delay." is less useful. the cause for multiple healthcare contacts Although the number of patients enrolled in the present series is small, there is opportunity to further investigate the causes of multiple healthcare contacts required and to provide useful information to optimize the current tuberculosis control program. Was the multiple healthcare contact due to unawareness of the clinical presentation of TB or due to unavailability of diagnosis facilities for TB?

Level of interest: An article of limited interest

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.