Reviewer’s report

Title: Using electronic medication monitoring to guide differential management of tuberculosis patients at the community level in China

Version: 0 Date: 18 May 2019

Reviewer: Richard Garfein

Reviewer's report:

This paper describes the results of an evaluation of the initial rollout of an electronic medication monitor (EMM) device for monitoring TB treatment adherence in one province in China. Data from implementation studies such as this are valuable for informing further scale-up of EMM use in China and beyond. However, the following weaknesses dampen enthusiasm for the paper and should be addressed to strengthen the paper.

Line 106 - Was age considered in the eligibility criteria? No lower age limit was mentioned in the Methods.

Line 111 - The abstract states that patients who refuse to use EMM were offered DOT, but that is not described in the Methods section; only that the physician would record the reason for refusing EMM.

Line 138 - It would be helpful to define "basic management unit" for readers who are not familiar with the Chinese healthcare system.

Line 153 - Logistic regression models produce "odds" ratios, not "rate" ratios.

Line 155-156 - This type of analysis would ordinarily exclude variables from the multivariable analysis that were not statistically significant on univariate analysis. Therefore, justification should be given for including all variables in the multivariable analysis.

Provide justification for the strata used to analyze age. Also, would age have been statistically significant if treated as a continuous measure?

The Methods section does not describe how the health care work assessments were performed or analyzed. Also, it is important to specify whether the health care worker questionnaires were self-administered or interviewer-administered, and if the latter, who conducted the interviews (i.e., potential for socially desirable responding).

Line 77 - Include the min/max age of participants. Inclusion of children is not adequately addressed in the paper.

Line 185 - It is important to know whether adherence differed while using the EMM between patients who were withdrawn and patients who completed treatment.

Figure 1 - To be consistent with the narrative of the paper, "Offered Consent" could be changed to "Offered EMM", and "Did not consent" cold be changed to "Refused EMM".

Line 225 - Can the authors provide further insight into the 15 patients who were switched to DOT for poor adherence? Simply stating that "the results need to be studied further" is inadequate.

Line 253 - Unclear what the authors are referring to by "…increased by 1.2%.

Discussion - Another limitation that should be considered is the fact that this study did not collect data
from patients about their perceptions of EMM use—only refusal at the start and during treatment. Such data would be important to collect in future studies.

Discussion - There is a substantial body of literature on electronic pillboxes similar to the EMM described in this paper (https://www.wisepill.com/research-news), yet this paper seems to ignore those other studies.

A thorough editorial review is needed to fix typographical errors and clarify confusing wording. Below are some examples noted while reviewing the paper.

Paragraph beginning on line 100 - This paragraph is awkwardly written and difficult to follow. Consider rewording.
Line 106 - insert "who" after "participants".
Line 139 - typo: "newt" should be "new".
Line 149-150 - the sentence starting, "The proportion of eligible…" is confusing. Consider rewording. Also, in the next sentence, the comma should be moved in front of the word "patients".
Line 187 - Insert "were" after "Patients".
Table 1 - "RR" is used in the column headings, which should be "OR".
Table 2 - Should also use OR, not RR.
Line 234 - Replace "could" with "were".
Line 240-242 - this sentence is awkward and difficult to understand. Also, "medium" should be "median". Consider rewording for clarity.

References are not formatted consistently (see #25).

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

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.
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