Reviewer’s report

Title: Effects on preventing mother-to-child transmission of syphilis and associated adverse pregnant outcomes: a longitudinal study from 2001 to 2015 in Shanghai, China

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Reviewer: Xiang-Sheng Chen

Reviewer's report:

1. The background information of syphilis in China is not well organized or well evident. For example, the citation of reference 8 is not relevant to seroprevalence of maternal syphilis and not relevant to increase of syphilis prevalence among pregnant women. Moreover, the reference seems too out-of-date to present the current trend. Also, it seems the figure-related statements of "15,884 pregnant women infected with syphilis" and "406,772 reported cases of syphilis" are not relevant each other.

2. It seems not quite appropriate that the return of syphilis in China in 1980s was especially driven by the rural to urban domestic migrants at reproductive ages although the authors cite references 15 and 16.

3. It is known from the paper that the nation-wide PMTCT programs of HIV was initiated in China while pilot PMTCT programme of syphilis was implemented in some cities including Shanghai in early 2000s. however, the author cited the reference 23 to indicate that for the prevention of maternal-to-child transmission of syphilis, the Shanghai PMTCT program of HIV, syphilis and HBV was launched in 2001. What is the relationship between the pilot study of syphilis and the municipality initiative to include the three infections?

4. The methods used for screening and confirmation algorithms ad diagnosis criteria of syphilis among pregnant women should be clearly described. What does "Diagnosis of maternal syphilis is confirmed by double-seropositive" mean? As performance of syphilis tests (including test kits) and quality assurance of the testing are critical for determination of seroprevalence, more information on these aspects are needed.

5. Was the diagnosis of maternal syphilis or determination of seropositivity made by the screening health facilities or the "designated hospital"?

6. What is the definition of seroprevalence used in the study?

7. Regarding "Data Collection", it is needed for the authors to indicate the procedure of data collection of the PMTCT programme or the specific data collection for the current study.
8. There seems no specific data analysis except the application of the WHO developed website-based model for estimation of disease burden of maternal syphilis and adverse pregnancy outcomes. In addition to brief introduction of the estimation model, the authors need to provide the sources of population data used for the estimation, including live-births and stillbirths in Shanghai and out-of-Shanghai and other specific assumptions.

9. In Figure 1, an indication to determine the seropositivity or seroprevalence is needed in the flowchart.

10. In each of Figure 2, there is too much information. For example, in Figure 2a of Number and proportion of women screened for syphilis by residency, to present resident %, non-resident % and total % is enough to indicate the trend. Same are for others.

11. It is not quite clear from the title of "Effects on preventing mother-to-child transmission of syphilis and syphilis associated adverse pregnant outcomes: a longitudinal study from 2001 to 2015 in Shanghai, China", is this study aimed to describe the EFFECTs of the programme or ESTIMATIONS of adverse pregnancy outcomes in two specific years. In regard to effects, there were increase of screening coverage but decreases of treatment coverage and increase of maternal seroprevalence. Actually, the EFFECTs and ESTIMATIONS are linked each other. The authors intend to use the ESTIMATIONS to explain the EFFECTs or use the EFFECTs to support the ESTIMATIONS? It is confused to have them together for the study questions.

12. What are implications of the findings from the study? For example, APOs happened among non-resident maternal syphilis cases accounted for the majority of the APOs in Shanghai varied from 61.4% to 84.8%. Or the proportion of adequate treatment among detected maternal syphilis cases was 96.8% in 2001, reduced to 69.8% in 2011 and rebounded to 83.6% in 2015.

**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.

Unable to assess

**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?
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I am able to assess the statistics

Quality of written English
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