Reviewer’s report

Title: Vaccine-derived poliovirus surveillance in China during 2001-2013: the potential challenge for maintaining polio free status

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Reviewer: Radboud Duintjer Tebbens

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INFD-D-16-01187: Vaccine-derived poliovirus surveillance in China during 2001-2013: the potential challenge for maintaining polio free

General comment

1. This manuscript provides an overview of China's experience with VDPVs between 2001-2013. These data are very important to inform discussions about the polio endgame, so I encourage publication of the findings. However, I urge the authors to address my major comments to make the paper more useful. I'm also providing several minor comments to help improve the manuscript.

Major compulsory comments

2. Unfortunately, the use of English is not up to publication standards. For example, the title seems to miss a word at the end (I think it say "status" after "polio free"), which is symptomatic of the entire manuscript. The manuscript contains too many incorrect uses of articles (the, a), missing words, incorrect plurals, or inappropriate word choice for me to list. Fortunately, this should be pretty easy to address by asking input on the writing from a language editing service or a native English speaking colleague.

3. The manuscript needs more up-to-date information and should cite more relevant literature. For example, the authors should list global case numbers for 2016 instead of 2015 and
update the number of countries with indigenous wild poliovirus transmission to from 2 to 3 (i.e., add Nigeria). It's also worth mentioning the global certification of type 2 wild poliovirus eradication and the absence of type 3 since 2012. A lot of work has been done to review the global experience with VDPVs (e.g., Annual Review of Microbiology 59:587-635; Journal of Infectious Diseases 210:S283-S293) and to quantify the risks of cVDPVs, iVDPVs, and other long-term risks, including an entire series in this journal in 2015 (e.g., BMC Infectious Diseases 15:389 and references therein).

4. One important observation based on the experience in China is that serotype 1 VDPVs represented the main source of VDPVs up until 2007, but that serotype 2 dominated since 2009. Did China start to rely more on serotype 1 and 3 monovalent OPV or bivalent OPV after 2007 for SIAs? Or does this merely reflect the change in the virological definition of serotype 2 VDPVs? Please elaborate?

Minor discretionary comments

5. While I understand that this work focuses on findings from AFP surveillance, it may be worth acknowledging the detection of VDPVs in China through environmental surveillance as well (e.g., PLoS One 8:e83975).

6. Does the Chinese polio surveillance system classify AFP cases only as VDPV or wild polioviruses cases or also attempt to classify vaccine-associated paralytic poliomyelitis (VAPP)?

7. Page 7, line 36: flaccid instead of floppy?

8. Page 7, line 56: this cVDPV definition is outdated (see e.g., MMWR Morb Mortal Wkly Rep 2016;65:763-769)
9. Page 8, line 44: The idea that an AFP child with more than 15 nucleotide changes can be classified as a non-polio AFP case seems to contradict the definition of non-polio AFP case on page 7, line 38. Or was this perhaps a healthy contact of an AFP? Please clarify.

10. Page 10, line 50 and beyond: I don't understand how the serotype 1 VDPV from Myanmar was linked to Myanmar outbreak, since Myanmar only reported cVDPV cases in 2006-7 (serotype 1) and 2015 (serotype 2). Was this a VDPV that only showed up in China and never led to an outbreak in Myanmar (possible due to the swift response)? Please provide some more context about this event.

11. Page 12, line 50: I agree that poliovirus surveillance should be intensified after OPV cessation. However, the reality is that this will become more difficult as the GPEI winds down and the urgency of countries to focus on polio decreases. How do the authors think China (or other countries) will sustain a commitment to intensive poliovirus surveillance long after wild poliovirus eradication and OPV cessation?

12. Page 13, lines 21-27: The statement that there is "no current solution to interrupt poliovirus excretion from patients" cites on paper from 2006. There are several polio antiviral compounds available and being evaluated as possible ways to stop iVDPV excretion in immunodeficient patients. Please cite current literature on this topic and acknowledge the work that has been done to address this issue.

13. Page 13, line 30: Do you mean that there was only one event of VDPV importation in the history of China or the world? I assume you mean documented since there were likely many more undocumented VDPV importations. I also believe that VDPVs frequently crossed borders in West and Central Africa and that the Ireland VDPV mentioned on page 13 was imported from Zimbabwe. Please check and clarify. See also my comment number 10.

**Are the methods appropriate and well described?**

If not, please specify what is required in your comments to the authors.

Yes
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?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.
Not relevant to this manuscript

Quality of written English
Please indicate the quality of language in the manuscript:
Not suitable for publication unless extensively edited

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