Reviewer’s report

Title: Elucidating the impact of the pneumococcal conjugate vaccine programme on pneumonia, sepsis and otitis media hospital admissions in England using a composite control

Version: 1 Date: 04 Oct 2017

Reviewer: Anne Von Gottberg

Reviewer's report:

The authors have spent some time in responding to the reviewers, but have not addressed the comments "within" the manuscript.

Explanations are given, but no changes/improvements to the manuscript. Please will the authors assume that for many if not all the queries, not only the reviewers but also other readers will want to know how/why they did things…what they found if additional analyses were done.

Say if the reviewer missed it and the detail is there, or add detail to make the manuscript better.

For example:

1. The criteria for selection of the control conditions remain unclear.
   a. Were these selected a priori and on what specific criteria?
   b. Related to another reviewer's comments: The use of 5 control variables is a major strength of the work. However, it would further strengthen the findings if the authors could show/discuss how the control variables were related to the main diseases of interest in the pre-vaccine years through plotting or modeling. Ideally, the 5 controls would have similar pre-vaccine behavior to the main diseases (in addition to being unaffected by the vaccine) but then differ post-vaccine if there was an actual PCV effect. If the controls never showed much association with the main diseases then it may suggest that they are less informative about the potential PCV impact, and additional controls should be obtained.

2. Was any control condition similarly seasonal compared to the outcome diseases? Related to comment below.
   a. Financial years (also mentioned earlier) are ok related to the winter seasonal disease in the northern hemisphere? And are almost like the epidemiological years often used (end of June to beginning of July) - it would be good to make the case that using the years in this
manner makes sense for this disease (and then just to consider if any summer seasonal
diseases were used in the control that may have affected the year-on-year comparisons)

3. Non-specific sepsis increased in all age groups. This should be analysed more (by risk
group strata) and discussed in detail

4. Methods: Identification of cases. Pls describe first the data collection. Now starts with
"Our analysis…” See previous comment on all pneumonia codes.

5. Risk groups: Pls clarify how identified. Any prior admission within a specified time
range or the admission with the outcome diagnosis? If latter, will probably result in low
sensitivity of risk group identification?

6. Table 2: Ratio IRR disease endpoint not given for IPD?

7. Line 128: related to comment for line 125 above, what I then do not understand is why 1
Sept 2004 to 31 August 2006 is compared to an April March period for post vaccine?

8. Line 274: why are these data know presented from 2007 vs 2015? I may have missed
this, but this result has no method in methods?

9. comment on whether the authors examined separately the impact of PCV 7 using relevant
time periods prior to PCV 13 reduction viz a viz post PCV 13 and if not some rationale as
to why this was thought unnecessary. Most of the other studies the authors reference (and
the attribution is by no means comprehensive) were evaluating PCV7 impact and this
difference would be worthwhile to highlight
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.

Not relevant to this manuscript

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

Declaration of competing interests
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?
If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests.

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal