Reviewer's report

Title: Effect of heptavalent pneumococcal conjugate vaccination on invasive pneumococcal disease in preterm born infants

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Reviewer: Thilde Nordmann Winther

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In general:
- This is a brief, well-written manuscript in an area of topical interest. However, I find the current edition insufficient:

Background:
- In my opinion the background is sketchy. I think it would gain, by adding some more facts. (discretionary)
- “General vaccination of all infants was recommended in July 2006 in Germany”
  – I recommend the addition “with PCV7”: “General vaccination with PCV7 of all infants was recommended in July 2006 in Germany”. (discretionary)

Materials:
- No description of materials? I find this essential. Please describe the criteria for inclusion/exclusion etc.. (major)

Methods:
- Section one: “Hospitals were contacted on a monthly basis via postcards”. I do not understand this. Why did you contact the hospitals via postcards? What was the purpose? Did you exchange patient data this way, did you attempt to remind your colleagues of the study or? (major)
- Section two: You assume, that about 7% of children in Germany are born preterm. Please explain the basis of this assumption. (major)
- Section two: Why did you choose to compare IPD in children born exactly in the years 2000 and 2007? I guess you choose 2007 because PCV7 was introduced in the routine vaccination program in Germany in 2006, but why 2000? Is this year representative? (major)
- Section two: “We also compared IPD notifications from the general German birth cohort the years 2000 and 2007 using the same approach.” Please clarify this. Is IPD a notifiable disease in Germany? (major)
- How did you conduct the genotyping? (major)

Results:
- I find the result section very insufficient. It would be interesting to know the age-distribution of children with IPD. Did you find any differences between the
preterm and the full-term children? You identified 14 and 8 children with IPD born preterm in 2000 respectively 2007. How long time did the surveillance last? Any differences between the two groups? How many had a GA<32 weeks respectively GA<37 weeks? Any underlying diseases/conditions that could cause at greater risk of IPD? (major)

- Information about vaccination of the full-term children would be of great value (major).
- I think a description of the serotype distribution is necessary in a study evaluating the effect of PCV7. (major)
- According to your result section, you identified PCV7 serotypes from two patients, which had not received PCV7 prior to disease onset. However, according to table 2, you identified PCV7 serotypes from two patients of whom one had already received the first dose of PCV7 one month before disease onset – there must be an error? (major)

Discussion:

- “These data suggest, that PCV7 vaccination is similarly effective in protecting preterm born infants from IPD compared to full term children.” I am not sure if you can draw this conclusion on basis of the data. You identified 8 preterm born children with IPD only. One of them received one dose of PCV7 before disease onset (?) and one child were fully vaccinated prior to disease onset – but you do not know the serotype. Furthermore, it is known, that there are natural fluctuations in the pneumococcal disease rates over time. Therefore, the reduction in IPD cases identified in this study is not necessarily due to protection from the PCV7. Some of the decline in the IPD rate could be explained by herd immunity. According to a paper by Haber et al. (Herd immunity and pneumococcal conjugate vaccine: A quantitative model, Vaccine, 2005, 25:5390-5398) conjugate vaccines may be able to induce herd effects even in situations where vaccine coverage is far from complete.(major)

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

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