Author's response to reviews

Title: Epidemiology of nasopharyngeal carriage of respiratory bacterial pathogens in older children and adults: cross-sectional surveys in a population with high rates of pneumococcal disease

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Author's response to reviews: see over
Dear Editor,

Re: MS 1669003740409353, ‘Nasopharyngeal carriage of respiratory pathogens in older children and adults: cross-sectional surveys in a population with high rates of pneumococcal disease’

Thank you for considering this manuscript. I am grateful for the valuable peer review which the manuscript has received. I will address the comments of the reviewers’ point-by-point and highlight the alterations that have been made in the revised manuscript and abstract. The changes that have been made are indicated in tracked changes and background shading.

Reviewer 1:

I thank the reviewer for their time and consideration given to the manuscript.

1. In reference to the type of Haemophilus influenzae isolated in this study, all isolates were unencapsulated, or ‘non-typeable’. I have indicated this in the abstract and the first paragraph of the introduction.

2. Immunisation with conjugated Haemophilus influenzae type b vaccine (PRP-OMP conjugated) has been ongoing in the Northern Territory of Australia since 1993{National Health and Medical Research Council (Australia), 2008 116 /id}. The schedule is two doses at two and four months of age and a booster dose at 12 months of age. I have not included a description of this in the text.

3. Data on Staphylococcus aureus was not collected. The microbiological protocols that were used in the study did not confirm the identity of Staphylococcus.

Reviewer 2:

Many thanks to the reviewer for their observations and suggestions on the manuscript. I will now address the reviewer’s comments one-by-one.

Abstract

1. Administration of a booster dose of 23PPV as part of the childhood immunisation schedule has been included in the abstract.

2. The duration of the persistence of carriage of serotypes 19F and 6B is now highlighted in the abstract as three years after initiation of childhood pneumococcal vaccination.

3. The conclusion of the abstract now excludes reference to transmission of viral and bacterial respiratory pathogens.

4. I agree that the data do not show an effect of adult 23PPV on adult pneumococcal carriage. However, we did not expect an effect of 23PPV and inclusion in the abstract of all variables which were not associated with pneumococcal carriage may detract from the more important information. Therefore, I have omitted reference to the effect of 23PPV in the abstract.
5. Reference to vaccination coverage is now included in the abstract. The coverage of the catch-up campaign is cited as the early impact of vaccination is most dependent on the coverage of the catch-up campaign.

Introduction

1. I have now included a general statement about high levels of vaccination coverage in reference to the 2007 paper concerning VT carriage in older children and adults in 2002 and 2004. The details of vaccination coverage are described in the results section.

Methods

1. Details of the childhood pneumococcal vaccine schedule have now been included in the ‘study population section’.
2. I agree that data in between 2004 and 2010 would be very valuable. However, similar carriage surveys were not conducted in this population during that period. I have added a comment at the end of the conclusion such that interpretation of the data should be limited to effects of vaccination until three years after introduction of the vaccination program.

Results

1. The third paragraph of the results section now specifies carriage of *H. influenzae*, and *M. catarrhalis* in adults and children in 2002 and 2004 respectively. As the difference in carriage prevalence in 2002 and 2004 of any of the pathogens studied was not statistically significant, and there were similar carriage rates of *M. catarrhalis*, I have chosen not to highlight any of the differences between 2002 and 2004.
2. The figures relating to univariate association of pneumococcal carriage with 1-2 household occupants <5 years of age are in 4th row of Table 2 (i.e. 4th listed variable); figures relating to a young child as the closest personal contact are in 8th row of Table 2 (i.e. 8th listed variable).
3. The determination of serotype 6A and 6C was established and all isolates were confirmed to be 6C. The relevant changes have been made to the manuscript.
4. The conclusion section has been modified highlighting interpretation of data for only three years after introduction of 7PCV. An addition has been made to the penultimate paragraph of the discussion section which notes that carriage of serotypes 6B and 19F may have fallen in subsequent years following 2004. A carriage study from across the NT (Leach et al. BMC Infect Dis 2009) which reported a reduction in 6B carriage between 2003 and 2005 without a reduction in 19F and 23F carriage has been cited.

I have included a title page at the beginning of the manuscript file. I hereby resubmit this manuscript for review.

Yours sincerely,