Reviewer's report

Title: Economic Evaluation of Pneumococcal Conjugate Vaccination in The Gambia

Version: 1 Date: 8 March 2010

Reviewer: Anushua Sinha

Reviewer's report:

Major Compulsory Revisions

As the authors note, one of the key drivers of their analysis is the model-estimated, vaccine-avertable disease burden integrated into their economic model of pneumococcal conjugate vaccine introduction. Within overall disease burden, the model-estimated, vaccine-avertable pneumonia deaths will be the most influential component. Several of my comments are directed towards these aspects of the economic model presented.

1. The vaccine efficacy estimate used for invasive pneumococcal disease (IPD) excludes bacteremic pneumonia and pertains to meningitis and sepsis. It is appropriate to the model structure. However, in what portion of the model is bacteremic pneumonia, the most common form of invasive pneumococcal disease, considered? Please clarify.

2. The cost-effectiveness ratios have been calculated compared to a common baseline of “no vaccination,” rather than in a competing choice analysis, where each vaccine product’s costs and health consequences are compared, one incremental to the next. This point could be missed by the general reader. Therefore, could the authors clarify this in the Abstract, Methods and Results? A sentence or two providing the reader with the reasoning for the analytic decision to present average versus incremental cost-effectiveness ratios in the Discussion would also be helpful.

3. Regarding cross-checks of model results, can the authors compare their model results of all-cause pneumonia deaths to estimates of pneumococcal pneumonia deaths from the World Health Organization’s Global Burden of Hib and Pneumococcal Disease study (O’Brien et al, Lancet 2009)? For pneumococcal pneumonia, the WHO estimates that, for under-five children in one calendar year (2000), there were 370 pneumococcal pneumonia deaths in The Gambia and slightly fewer than 400 total pneumococcal deaths due to all syndromes. To compare results, some manipulation would be necessary (e.g. transpose birth cohort estimates to calendar year estimates), but this cross-comparison seems an important check of model results.

4. In the Discussion, can the authors compare their predicted hospitalizations, cases and deaths averted to the Gambian PCV9 trial results (Cutts et al, Lancet
2005)? How did the model-predicted proportions of hospitalizations and deaths averted compare with trial results, and how do the authors account for differences between this disease-specific model and the findings of the trial?

Minor Essential Revisions

1. Could the authors please clarify where ‘proportion of bacterial pneumonia caused by S. pneumoniae’ and ‘proportion of bacterial meningitis caused by S. pneumoniae’ are used in their model? This was not obvious from Figure 1 or the text.

Discretionary Revisions

1. For a general audience, the model schematic provided, with labels and information pertinent to the software package used, may be difficult to understand. The authors could consider redrawing the model schematic to eliminate this technical information and show transitions between health states more clearly.

2. An additional sentence in the Figure 4 legend, explaining the interpretation of cost-effectiveness acceptability curves (CEACs), would be helpful for the journal’s general readership. Alternatively, a citation to one of the published review articles might serve the same purpose.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

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

Declaration of competing interests:

- Have you in the past five years received reimbursements, fees, funding, or salary from an organization that may in any way gain or lose financially from the publication of this paper, either now or in the future?
  Yes, I have a research grant from Wyeth Corporation.

- Do you hold any stocks or shares in an organization that may in any way gain or lose financially from the publication of this paper, either now or in the future?
  No.

- Do you hold or are you currently applying for any patents relating to the content of the manuscript? 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?
No.

- Do you have any other financial competing interests?
No.

- Do you have any non-financial competing interests in relation to this paper?
No.