Reviewer's report

Title: Booster Vaccination of Adolescents Does Not Prevent Hepatitis B Infection: A Cross-sectional School-based Study

Version: 3 Date: 28 April 2014

Reviewer: Thomas Peto

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Major Compulsory Revisions
1. The Methods and Results section needs to be rewritten so that it is clearer what was done, and a table reporting data on those who did and did not receive booster doses is needed.

Minor Essential Revisions
1. The tables need to be rewritten for clarity

Discretionary Revisions
1. The title does not reflect the data - it is not that booster doses do not prevent chronic infection in teens, it is that there is no evidence that these infections are acquired by people who have not received boosters.

Further comments on the MS are in the pdf attached

1. Is the question posed by the authors well defined?
Partly. They wish to report the prevalence of antibodies to HBsAg (anti-HBs - implying immunity), and HBV surface antigen (HBsAg implying chronic infection with HBV); and also to assess the efficacy of a booster dose of the HBV vaccine, among Taiwanese high-school students born since the introduction of universal infant HBV vaccination.

2. Are the methods appropriate and well described?
The methods are okay (taking advantage of a reasonably sized sample of blood routinely collected from students), but it is difficult to follow exactly what was done and how the data was assembled. It seems that 68 people were given a booster dose (selected because they had no detectable antibodies to HBsAg), but how many doses, whether this was an appropriate group, and how the comparator group was selected is not easy to follow. If the endpoint was change in anti-HBS then was it suitable as a marker for efficacy? If the endpoint was HBsAg, then so few infections would be expected that there is no power to detect a difference (notwithstanding that a small or moderate effect against chronic infection would be worth knowing about).

3. Are the data sound?
Only anti-HBs (binary - not quantified) and HBsAg data were collected, and this was available for nearly all the students. There are no obvious inconsistencies and the tests are standard, so the data is probably sound. However, the tables and results need to be reported more clearly and numbers as well as percentages used throughout. Negative results need to be included in the tables so that the totals add up to 100%. There is no single figure or flow chart that explains what went on with the boosters.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
   Not sure.

5. Are the discussion and conclusions well balanced and adequately supported by the data?
   Yes, but with the caveat that this does need to be written more clearly. The statement that there is no need for HBV booster doses rests primarily from the strong evidence (from several studies) that the protective efficacy of infant vaccination against HBV persists, with no signs that infections among vaccinees that are acquired after childhood become chronic.

6. Are limitations of the work clearly stated?
   Partly, reflections on the small number of people who received a booster dose and any biases or are missing. There is some difficulty in interpreting whether changes in anti-HBs and HBsAg prevalence among people of different ages reflect time since vaccination, other risk factors, or differences in vaccination coverage when they were infants (as individual vaccination records were not obtained).

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?
   Yes, as far as I can comment.

8. Do the title and abstract accurately convey what has been found?
   In my opinion the title should be changed. “Booster Vaccination of Adolescents Does Not Prevent Hepatitis B Infection” the title is confusing – it somewhat implies that infections continue to occur despite booster doses, whereas, actually the article reports few new infections and, therefore, no need for booster doses.

9. Is the writing acceptable?
   Yes. This MS requires rewriting for clarity in the Methods and Results sections, but the English is fine.

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

**Quality of written English:** Acceptable
**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests