Reviewer's report

Title: Cost-effectiveness of Rotavirus Vaccination in Vietnam

Version: 1 Date: 27 August 2008

Reviewer: Mark Jit

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Kim and colleagues present a Markov model of routine childhood rotavirus vaccination in Vietnam in order to evaluate the cost-effectiveness of vaccination. They find that vaccination is likely to be very cost-effective under WHO criteria under both health care provider and societal perspectives. This is to my knowledge the first time a study has been submitted for peer review publication that uses a Markov model in order to track partial immunity due to prior infections. There are some limitations to the work, but these are adequately discussed and are unlikely to affect the broad conclusions. Overall, the work appears to be a methodological advance from previous models of rotavirus vaccination.

Major compulsory revisions

1. Footnote c (page 24) does not really explain how disease incidences (page 7-8) were converted into transmission probabilities for the Markov model. Since previous infections reduce the probability of severe disease, the probabilities for various rotavirus-linked health care outcomes would depend on the state. So it doesn’t appear that the incidences can be converted to probabilities without some sort of fitting technique. The paper should either clarify the technique or explain why it was not necessary.

2. Page 23 – 24: What are the distributions marked “--“? Were these parameters varied in the multivariate analysis? In particular, I would imagine that many of the ratios used to calculate less severe disease outcomes are extremely uncertain yet very important (since they determine the incidence of many outcomes). Were these varied in the multivariate analysis?

3. Shouldn’t waning vaccine immunity be considered, seeing that clinical trials show a decrease in vaccine efficacy between first and second follow-up periods? (See for example Vesikari et al. Lancet 370:1757)

4. Line 116-117: “Vaccinated infants received the second dose at the age of 4 months but the period between the first and second doses provides the same level of immunity as a full-dose course” [30]. I’m not sure you can be so confident about this. The paper referred to (Salinas et al, 2005) does find a difference in rotavirus incidence between first and second doses, and after the second dose (3% compared to 1%). Ruiz Palacios et al (2006 NEJM 354:11) also found slightly lower efficacy between first and second dose. It does seem that the difference may be small and it may be difficult to interpret since there may be age and other confounding factors involved. But it would be safer to say that the
model assumed efficacy after first dose is the same as after the second dose because the evidence is difficult to interpret.

Minor essential revisions

1. Line 30-38: Could the authors cite particular papers for each assertion about previous models to indicate what they have in mind?
2. Line 132: Was the disability weight of 0.119 from GBD study for diarrhoeal diseases in general or for rotavirus gastroenteritis?
3. Line 272: Does human papilloma virus have multiple transmission routes?
4. Line 274: Isn’t this model also a static model? (as mentioned on line 340)
5. Could Figure 2A compare model results to those from the Velazquez et al. cohort study (as it is mentioned on line 234 that they have the same pattern)?

Discretionary revisions

1. Line 365: I agree that value of information analysis would be very useful. It doesn’t look like it would be very difficult to add on to the existing analysis that the authors have already done, and would definitely provide invaluable information to policy makers.

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

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests.