Reviewer's report

Title: Cost Effectiveness of Option B Plus for Prevention of Mother-to-Child Transmission of HIV in Resource-Limited Countries: Evidence from Kumasi, Ghana

Version: 2

Date: 16 December 2014

Reviewer: Sophie Desmonde

Reviewer's report:

This paper presents results from a Cost Effectiveness analysis comparing Option B and Option B+ in Ghana. The model features a "future pregnancy" component, often neglected by other studies, and this is the main strength of the paper. However, the results reported by the authors are difficult to adapt to context since most model inputs are from other settings, where the HIV epidemic differs in both the HIV prevalence among pregnant women and the PMTCT uptake.

Major compulsory revisions:

Introduction, §3: authors must specify the current recommendations in Ghana and the uptake of antenatal care in Ghana. Furthermore, the strategy currently implemented in Ghana, if different from Option B or B+ must be added to the model for comparison and ICERs.

Methods, §1: some of the input data for the model is derived from medical charts. Can authors precise the dates of these charts and the PMTCT strategy in place at that time. Would the uptake be different if the strategy different? Authors must discuss this point.

line7: Model inputs are not specific to Ghana or the West African context. This may not affect all the transition probabilities however some inputs are arguably different in West Africa compared to South Africa. Authors should discuss how this bias or not the model.

Page 7, §2: Authors make the assumption that 100% of women breastfeed. Please state a reference supporting this. Furthermore, duration of BF may differ. It is unclear in figure 2 how this is accounted for, or even if the model allows for BF > 6 months. If BF is limited to 2 cycles (6 months) then how is BF duration (often until 18 months in West Africa) accounted for in the cumulative risk for MTCT of HIV and consequently the number of new infections averted in both strategies?

Page 8, §3, line 14: Please define antenatal care. Is ART initiated at first visit? It is unclear if the timing of antenatal care is first visit and HIV diagnosis or ART initiation.

Page 9, §1, line 9: Please justify the scale used here and state references and
assumptions for these estimations.

Results
Some results are presented in the methods section which is confusing. Other results, announced in the methods section are not presented at all. This section is overall incomplete. Calculations of transition probabilities are an important component of this work and should be presented at least in an additional file, or be subject to a second paper referenced here.

Page 11, §3, line 18-19: Where and how were the estimations of 68% and 10.19% derived? It is understandable that the main objective of this paper is the results of the simulation, but please provide more details regarding the model and the calculation of the probability transitions.

Page 12, §1, line 10-11: How exactly are costs estimated? One can assume that mothers on Option B+ and continuous ART are less likely to present severe morbidity when in the none pregnant and none BF states. Are the averted costs accounted for? If not, authors should discuss if the ICER is underestimated or not.

Page 12, §2, line 14: Please present a table with the sensitivity analyses results and the variation of the inputs and their sources/assumptions made.

Discussion: the discussion is overall poor and needs revising.

 Minor essential revisions
Please update statistics in introduction (currently 2007).

**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:**

No competing interests