Reviewer's report

Title: Comparative Effectiveness and Cost-Effectiveness of Antiretroviral Therapy and Pre-exposure Prophylaxis for HIV Prevention in South Africa

Version: 1 Date: 14 September 2013

Reviewer: Brian G Williams

Reviewer's report:


General comment

This is a good paper that reaches important conclusions. In general the paper is well written but there are two important revisions that need to be considered and some questions of detail.

Major compulsory revisions

The WHO Guidelines have now been changed (reluctantly on the part of WHO) from starting ART at CD4 cell counts below 350/micro-litre to all those with a CD4 cell count below 500/micro-litre, all those with TB, Hep B, Hep C, under five, pregnant women and anyone in a "discordant relationship". My own calculations suggest that this would cover at least 90% of all HIV positive people in South African which therefore corresponds to immediate treatment in all but name. In spite of this South Africa is still sticking to 350/micro-litre although I understand that South Africa has agree to adopt the new WHO guidelines in April 2014. I think that the comparison with what the authors call "Universal" is still valid as it will give added impetus for adopting the new guidelines as soon as possible. However, they need to reword their manuscript to reflect this.

Second, the authors assume that PreP reduces transmission by 60% while treatment reduces transmission by 95%. Yet, in their Figure 2b, for example, PreP scale up to 100% averts almost as many infections as (about 3.8 million) as does ART (about 4.0 million). This seems unlikely or at least in need of an explanation.

Minor essential revisions

The authors talk about "five new modalities". I am not sure what the word "modality" means in this context but one of them is "vaccines" which have not yet been developed so this should be omitted.

While I like the paper some of the figures are hard to interpret, the figure captions do not make it easy for the reader to interpret the information and the discussion of the figures in the text is not at all clear. While the text mentions that what is
plotted is "infections averted over 20 years" this needs to be said in the figure caption. In Figure 3 the colours and outlines of the various dots are not mentioned in the figure caption. The reader then has to go to Figure 1 to work out what they are and even in Figure 1 it is not immediately clear.

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

I declare that I have no competing interests