Reviewer's report

Title: Meta-regression models to address heterogeneity and inconsistency in network meta-analysis of survival outcomes

Version: 4 Date: 3 August 2012

Reviewer: Nicky Welton

Reviewer's report:

The authors have responded to most of my comments, and the use of the new covariate has greatly improved the manuscript. There are two issues that I'm not entirely happy with however:

1. Intro 1st paragraph. I'm afraid I still disagree with the authors NMA/MTC terminology. It may be that "recent descussions" have defined it in this way, but that is not how the terminology has been used in the literature in the past. There should be an explanation/clarification of this differential use of the terminology. Otherwise there is a risk that previous work will in some way be "de-valued" or missed (eg in future systematic reviews of methodology), which would be sad.

2. The choice between a fixed and random effect model. I agree that there is often cause to suspect heterogeneity, and you may therefore have non-statistical reasons for preferring a random effects model. However, from a statistical point of view when you are comparing DIC’s or posterior mean deviances you are essentially performing something akin to a likelihood ratio test, and therefore considering the fixed effect model as the simpler special case of the more complex random effects model. The “null hypothesis” is therefore the fixed effect model, and you are looking for evidence against the choice of the fixed effect model in favour of the random effects model. I think we agree, but your wording puts this the other way around, which is, I think, is “statistically” incorrect. Of course there may be no reason “statistically” to choose the random effects model over the fixed effect model (eg if small number of studies), but clinical understanding may lead you still to prefer the random effects model. That seems perfectly reasonable to me.

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