Reviewer's report

Title: Network meta-analysis of survival data with fractional polynomials

Version: 1 Date: 31 January 2011

Reviewer: Georgia Salanti

Reviewer's report:

Major comments
• Please show in the methods section the implications in the models when you have multi-arm trials.

• Several models are fitted according to different assumptions about the random and fixed effects for the (at most) three parameters. However little is offered about the clinical meaning of these choices. Intuitive interpretation of even two parameters is difficult it would be very useful if the author could make a connection with the clinical context. For instance how sensible is the choice of a FE model and what external information would be needed to choose between the four different random effects models described between equations 8 and 9? As the options are too many (maximum of 3 parameters and various combinations of fixed and random effects) it doesn’t seem sensible to choose the model based on DIC alone (e.g. why you didn’t fit models with heterogeneity on two out of the three parameters?)

• In the application, DIC offers an indication about which (p1,p2) shall be fitted, although the choice of (-2,1) is equivalent to at least four other pairs considering rounded DICs (difference in DIC shall be at least 3 units to distinguish models). However, I wouldn’t claim the RE model is better than the FE models for second order polynomials - for the best pair the DIC difference is 0.1! Similarly you can’t claim that RE fits the data better with Dbar dropping just 1 unit!

• From the coefficients in table 4 and the graphs it seems that time-dependence is probably an issue for BSC only. It would be interesting to compare your analysis where only the effect of BSC is allowed to vary over time.

Minor comments
• Six lines after equation 6: The left part of the distribution should be for #s not for ds.

• Nine lines after equation 6: the heterogeneity in the matrix # shall be better described as the variation in #m

• Tables 4 and 5 do not have headings and no reference in the text (unless Table 3 is a gigantic common table!).

• Table 3 (or its first part) is overloaded with information, which, to my appreciation, is not very interesting. Please consider deletion.

• Tables 4 and 5 need better headings - avoid for example repeating the words
‘Expected survival’ in six consecutive lines. You also need to discuss the results better in the text.

**Level of interest:** An article of importance in its field

**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