Reviewer's report

Title: Multiple Imputation of Missing Covariates with Non-Linear Effects and Interactions: an Evaluation of Statistical Methods

Version: 2 Date: 7 February 2012

Reviewer: Katherine Jane Lee

Reviewer's report:

I would like to thank the author for their responses to my previous set of comments, all of which have been addressed adequately. I have a couple of very minor comments on this updated version of the paper:

1. When describing the various methods of imputation applied to the EPIC study on page 12, it is not clear whether vitamin C-squared was included as a covariate in the imputation of the other variables with missing data or not.

2. Again on page 12, when describing the JAV approach applied to the EPIC study, it would be useful to state that this involves imputation under a multivariate normal model.

3. I wonder whether the last sentence in the section “Properties of JAV under MCAR and MAR” on page 15-16 would fit better in the methods section.

4. On page 17, it would be useful to mention the bias of PMM from the log-normally distributed example prior commenting on the changes to the bias when the sample size is increased.

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