Reviewer’s report

Title: Multiple Score Comparison: A network meta-analysis approach to comparison and external validation of prognostic scores

Version: 0  Date: 21 Aug 2017

Reviewer: Solange Whegang Youdom

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Multiple Score Comparison: A network meta-analysis approach to comparison and external validation of prognostic scores

This study presents a network analysis approach of assessing the individual risk of adverse outcomes by comparing multiple prognostic scores using individual patient data. While the study is interesting and the work plan, well described, the data used in the analysis is not satisfactorily described; the modeling approach is not presented in the main text and finally the authors did not point out the best prognostic score according to ranking measures.

1. Abstract: In the background section, the difficulty in choosing a prognostic score was established. Finally which score do authors recommend to guide decision making. At this stage the abstract does not match with what is expected from it. The authors could gain in improving the method, result and conclusion sections.

2. Backgroung: lines 133-137 is part of data description; section 2, 3 and 4 are not mentioned in the following text. Lines 130 to 132 can simply be considered as the last paragraph of the background section.

3. Methods:

This section should include a brief description of the data in terms of population characteristics including study design, age, outcomes, and mean duration of follow-up... I feel that in the current form, without this crucial information, we are unable to make any conclusions from the analysis and we are unable to assess if the assumptions of the network analysis are valid.

- I suggest the inclusion in this section Figures representing the different networks in the cohort.

- As the author performed a network meta-analysis approach using individual patient data, how is the within-study heterogeneity taken into consideration here? The authors performed multiple analysis steps, how is this information incorporated?
The analysis plan is presented but the modeling approach not; why choosing in presenting it in a table; I think this is not appropriate. What is the main outcome here?

Line 152: provide a full definition of AUC and ROC;

Line 168: I suggest that the authors add the reference of Lu et al.2011;

Line 241: I fell that this sentence belongs to the next paragraph i.e. "Examination of network structure";

- They author said they compared prognostic scores using IPD. But I found that aggregate summary statistics were calculated (from each cohort) before performing multiple comparison of the scores. Table 2 also presents group characteristics of the "network". Finally does this study use IPD or summary statistics?

- I think the statistical modeling should be described in the main text instead of keeping it in the Appendix

4. Results

- Line 278 reported the best prediction score. I suggest that the authors included this results in the abstract.

5. Discussion

- Expand the discussion on the heterogeneous results;

- Review results based on suggested methodological changes.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No
Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

Quality of written English
Please indicate the quality of language in the manuscript:

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