Reviewer’s report

Title: Identifying Older Adults at Risk of Harm Following Elective Surgery: A Systematic Review and Meta-Analysis

Version: 0 Date: 12 Aug 2017

Reviewer: Yoon Loke

Reviewer's report:

Thank you for giving me the opportunity to comment on this interesting submission. I have a number of major methodological comments.

1. This systematic review aims to evaluate the prognostic or predictive influence of a diverse range of variables on postoperative outcomes. The data extraction and assessment of study validity should have been based on the items that are discussed in CHARMS and TRIPOD, which relate to systematic reviews, as well as primary studies of prognostic research. I don't accept that Cochrane ROB or the NOS are the most appropriate tools, and I think this systematic review should be conducted in a manner that is relevant to prognostic research.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4196729/

http://annals.org/aim/article/2088549/transparent-reporting-multivariable-prediction-model-individual-prognosis-diagnosis-tripod-tripod

2. There is huge risk of publication bias, because the primary studies often choose to selectively report Odds Ratios for variables that are statistically significant or clinically interesting. This is illustrated by the fact that of the 44 studies included in this review, only a small number are subsequently able to be included in each meta-analysis, and there is therefore lots of missing data for each prognostic variable (e.g. the ones that did not find significant influence of frailty may have decided to omit reporting it).

3. I appreciate that it is simple to pool OR, but for prognostic research, this glosses over the fact that discriminant ability in a multivariable model may be completely different. For instance, what is the influence of smoking once frailty etc. has been added to the model. It would be more realistic to look at AUC or c-statistic (but I accept that few studies ever report such items).

4. I don't understand this sentence in the Methods "The NNF was calculated as 1/pooled incidence of delirium." Please clarify the NNF and how it is calculated and interpreted. I assume it is related to the NNT in some way, except that this is follow-up prognostic study.
5. Like most prognostic research, there is a long way from identifying a few prognostic variables to actually proving that modifying the variable is feasible, and subsequently leads to improved outcomes. It would be too simple to say that tackling these few variables would be beneficial (particularly if there are multiple variables that interact).

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

No

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

Unable to assess

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

Unable to assess

**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 am able to assess the statistics

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

Acceptable

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