Reviewer’s report

Title: Repeat: A Framework to Assess Empirical Reproducibility in Biomedical Research

Version: 0 Date: 21 Jan 2017

Reviewer: David A. Dorr

Reviewer’s report:

The writing in this article is exemplary. It is a pleasure to read.

The introduction to the area is excellent, and the only issue I can find is why only studies with EHR data? There are a number of issues with data from other sources that may be equally important for reproducibility. Specific language about why they chose this to 'limit the scope' would be helpful.

The methods, as described, are reasonable. However, the actual implementation of the methods is a bit unclear. For instance, a synopsis of the information found in the search and the way it was winnowed down to the set is not entirely clear. This leads to the major issue with the work, which is that there appears to be no attempt to reduce the number of variables available or prioritize them in any way. Thus, the final version has more than 140 assessment variables.

A nominal process to reduce the number of variables would be helpful, either through expert review or even face validity.

The assessment using Kappa is not reported directly in the manuscript (all missing, according to the text, with a reference to supplemental materials, but in the discussion there is a reference to some kappa results. Again, an a priori attempt to determine which are the most important to produce seems a crucial part of developing any framework, and here failing to do it leads to a significant issue with the approach.

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.

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

**Declaration of competing interests**
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal