Reviewer’s report

Title: Developing an Adapted Charlson Comorbidity Index for Ischemic Stroke Outcome Studies

Version: 0 Date: 21 Jun 2019

Reviewer: Joosup Kim

Reviewer's report:

The results presented in the manuscript will assist with appropriate case-mix adjustment in studies of stroke that utilise hospital administrative datasets. In general, the manuscript is easy to follow, but there are typographical errors throughout that need correction and there are several sentences that need to be revised in order to be comprehensible.

Please find my comments below:

- NRI has not been defined in the abstract
- Remove space in the first sentence of the results in the abstract
- Line 72 typographical error
- The authors also examined the impact of including atrial fibrillation into the CCI given it is a highly prevalent comorbid condition for patients with ischemic stroke and its association with mortality. What about other stroke-related comorbidities such as obesity, smoking and hypertension? According to INTERSTROKE, these comorbidities have a higher population attributable risk of stroke and in other studies these have been shown to be associated with mortality. Some further clarity around the selection of atrial fibrillation only appears to be warranted.
- What is ICES? (line 108)
- Line 110 and 111 - remove "rd"
- Line 114 - incomplete sentence and typographical error
- Remove space line 116
- Why was a cut-off of 1.2 for hazard ratios chosen?
- Line 127 why was a logistic regression model used to test the weights instead of Cox PH?
- Line 129 typographical error
- Line 131 typographical error
- Line 143 typographical error
- Line 147 capitalise "table"
- Line 155 typographical error
- Line 158 typographical error
- Line 162 suggest change "0 and 5 and higher scores (~38% and ~6%, respectively)" to "scores of 0 (~38%) and 5+ (~6%)"
- Line 164 typographical error
- Line 168 significant figures for percentages are inconsistent
- Line 174 typographical error
- Line 175 inconsistent presentation of data
- First paragraph of discussion has several typographical errors throughout, including use of 'didn't' and an abbreviation previously defined in line 200
- Line 203 typographical error
- Lines 209 and 210 spacing
- Lines 217 and 218 typographical error
- Line 220 typographical error
- Expression for sentence lines 224-226
- Review sentence starting line 226
- Line 246 has "We did not use the stroke registry" do you mean that OSR dataset was not used to ascertain comorbidities?

- There is discussion about adjustment for stroke severity. While I understand that the goal is to be able to risk adjust using administrative data only, and that stroke severity would not be recorded in administrative datasets, readers may be wondering if stroke severity should be included in the risk adjustment models if available. Stroke severity is strongly associated with outcome. This warrants a discussion point.

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.

Yes

**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:

Needs some language corrections before being published

**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 co-authored manuscripts with one of the authors.

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.

Do you want to get recognition for reviewing this manuscript? Add a record of this review to Publons to track and showcase your reviewing expertise across the world’s journals. Signing up is quick, easy and free!

Yes