Reviewer’s report

Title: Six underlying health conditions strongly influence mortality based on pneumonia severity in an ageing population of Japan: A prospective cohort study

Version: 1 Date: 06 Mar 2018

Reviewer: Henri Van Werkhoven

Reviewer's report:

I would like to thank the authors for their response to the first review and improvements made to the manuscript. I agree with the majority of the changes and responses. I have a few remaining questions:

1. Line 269 to 271: I am not sure what bootstrapping analysis the authors performed, but the idea of internal validation is NOT to see if the model stays the same but whether and to which extend the ORs and the AUC are overestimated.

The bootstrapping procedure is as follows:

a. draw with replacement a random sample of equal size from the original data;

b. fit a model using the bootstrapped data, following the same selection process as in the original analysis;

c. calculate the difference in AUC of the new model between the bootstrapped data and the original data;

d. calculate the slope of the calibration curve of the new model in the original data.

Repeat these steps 2000 times. The average difference in AUC is the overestimation of AUC. The average slope is the correction factor for the ORs. There is software for this, e.g. the R package rms.

2. Line 338: "unchangeable valuables" do you mean unchangeable values?

3. Line 367: "compared to externally derived model." For clarity I would propose to rephrase to "compared to the externally derived CURB and PSI scores."

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.

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?
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I am able to assess the statistics

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