Reviewer's report

Title: Variations in hospital standardised mortality ratios (HSMR) as a result of frequent readmissions

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Reviewer: Mette Nørgaard

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Title: Variations in hospital standardised mortality ratios (HSMR) as a result of frequent admissions

The paper has improved considerably by the review process. I find that the authors have addressed most of the previous comments.

Still, I have a few major comments to the response:

1) It is unclear whether the outcome is in-hospital mortality or 30-day mortality. This is of importance because Drye et al quite recently in Annals of Internal Medicine have shown that in-hospital mortality measures may be biased in favour of hospitals with shorter LOS. Therefore the impact of readmissions may differ between these two mortality measures.

2) On page 12, last three lines, van den Bosch et al. state that “A more fundamental issue ...... is the fact that two comparable models, such as model 1 and model 2, may deliver such divergent outcomes. Since there is no ‘gold standard’ one cannot state that the one is false and the other true”

Yet, on page 13, middle part, the authors recommend using a model that adjusts for readmissions.

These two statements seem to be contradictories and the reasons for recommending model 2 should be specified.

3) It seems that a five year look-back period results in the best prediction of mortality. Can van den Bosch et al. comment on this finding?

4) I do not understand the two columns in Table 1 describing mortality significant high. If 1 equals no, and 2 equals yes, how should 0 and all the numbers above 2 then be interpreted? And what is the difference between the two columns?

I could recommend to study Table 2 in the paper by Drye et al (Annals of Internal Medicine, 2012;156: 19-27) for inspiration, since they have a nice way of presenting a comparison between two hospital classifications.

Discretionary Revisions:

The use of past and present tense is a little inconsistent.
Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests