**Reviewer’s report**

**Title:** HIV/AIDS length of stay in Portugal under financial constraints: a longitudinal study for Public hospitals, 2009-2014

**Version:** 2 **Date:** 17 Dec 2018

**Reviewer:** Julian Perelman

**Reviewer's report:**

The paper has substantially improved, but there are still some problems how the aim of the paper is presented, and in the interpretation of results.

Some sentences are grammatically incorrect; the paper should be reviewed by an English native speaker.

**Abstract**

The LOS acronym should be defined at first appearance.

The sentence: "The impact of austerity on health and health care has been the focus of recent research, but findings are still unclear" is not clearly related to the topic of interest. It should be said, instead, why examining the impact on LOS is of relevance.

The Methods section does not mention the key issue of the paper, presented in the Introduction, which is the impact of austerity measures. The Methods must be coherent with the aim of the paper.

**Background**

The reduction of hospital operational cost was a consequence of the measures, not a measure itself. It is because the prices paid to hospitals were cut (measure) that hospitals had to reduce their operational costs (consequence).

Among the measures, you may mention also the creation and implementation of clinical guidelines, and the severe cuts in professionals' wages.
The Background still refers several aspects related to the disease, which are not really connected to the aim of the paper (e.g., how the crisis might have affected HIV incidence, HIV burden of disease, epidemiology of HIV in Portugal). This could be summarized in one paragraph.

The aim of the paper cannot be "explore the effect of a number of variables". All the Introduction has been constructed around the crisis impact, hence the aim of the paper should be coherent with this background.

You don't need to give so many methodological details when formulating the aim of the paper.

Methods

Clarify if, in case of transfer, the LOS was the total one, i.e., the sum of LOS in first and second hospital.

Results

Considering that year changes are a key issue of the paper, I suggest testing whether differences between years are statistically significant, in Table 3. That is, test differences between joint years, and not only with respect to 2009.

Discussion

The discussion of the efficiency versus quality hypothesis is questionable.

1. The current ratio is used to explain the decline in LOS, but this is not tested in the methods/results. To test that, authors should check if year dummies vary whether the current ratio is included or not (a mediation analysis). This would allow measure if part of the year dummies is explained by the deterioration of hospitals' financing condition.

2. Greater financial margins may be related to lower LOS because these are the most efficient hospitals: they manage to reduce LOS and have a better financial situation. It is not necessary because they cut the quality. The results for the "current ratio" do not help disentangle whether findings are due to better efficiency or lower quality.

3. Also, if the decrease in LOS was purely due to the worse financial condition, this would be captured by the current ratio variable, and year dummies would be non-significant when the current ratio is included as covariate. Hence, there is more than that.
4. Note finally that the negative estimate for the current ratio means that, the better the financial situation, the lower the LOS. Hence, it would be expected a higher LOS, since the financial situation of hospitals deteriorated over the period.

Conclusions

Again, it is unclear how the association with the current ratio indicates that quality might have been reduced, and not efficiency.

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.

No

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

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One of the authors is a colleague and good friend, but we never discussed the paper, neither topics related to this paper.

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