Reviewer’s report

Title: Validity of the CR-POSSUM model in surgery for colorectal cancer in Spain (CCR-CARESS Study) and comparison with other models to predict operative mortality

Version: 0 Date: 23 Aug 2016

Reviewer: Wonsuk Yoo

Reviewer's report:

This is a well-written research paper to estimate the operative mortality in surgery for colorectal cancer in Spain, to validate/recalibrate the CR-POSSUM model, and to compare its discriminatory capacity with other models. The overall evaluation in methods and approach seems to be appropriate but shows shortage and limitation in describing methods section and in providing sufficient and persuasive information for the readers.

Background:

* Page 6 Line 113-114: Elaborate or give example of the over/underestimation of risk. I think some of the models overestimate the risk of mortality in low-risk patients. When does underestimation occur?

* Page 6 Line 115: Is this model used by AFC a validated scoring system? What was the rationale for including this model?

* Page 6 Line 125-126: What interventions - postoperative or preoperative? Is this to say that presence/absence of interventions may affect patient outcome? Or is the surgery the intervention? Please elaborate.

Methods & Results:

* Page 7 Line 135-140: What was the composition of the type of hospitals - rural/urban, small/large etc.?

* Page 9 lines 182-192 Models for predicting the risk of death: what about the P-POSSUM model? Authors need to explain how to construct a physiological score and a operative severity score for three models of POSSUM, P-POSSUM, and CR-POSSUM as well as general information about those scores such as range, how many questions, interpretation based on scores, etc.
* Page 11 Lines 233-234: There is no enough information about how each predictor variables to be recalibrated (authors need to provide a table about this information for readers)

* Overall comments in methods: IRCS model is different from the other three models of POSSUM, P-POSSUM, and CR-POSSUM on constructing prediction models. Do you think that we can compare IRCS model compares to the other three? What are common variables among four models? What variable was used as a base variable to construct weight system? How did you control multicollinearity issue among similar variables?

Discussion:

* Page 12 Line 258: Why do you think the operative mortality in your sample of patients was also lower compared to other studies? As mentioned above, perhaps looking at the type of hospitals urban/rural or available technologies/skilled staff would be of interest to see if any of your results may be explained by these factors?

* Page 12 Line 264: please give examples for "… due to various factors"

* Page 13 Line 280: Please explain further what the nature of the missing data was (not collected, incomplete record, etc.) and how the analysis was conducted (listwise deletion or pairwise deletion)

* Page 16 Line 361: In-hospital mortality AUS were similar for POSSUM, P-POSSUM, CR-POSSUM, and IRCS. Can you really say that IRCS had the greatest discriminatory power when the difference is less than 1 with wide confidence intervals?

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.

No

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:

Acceptable

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