

Response to: Development of a preoperative scorecard for prediction of acute kidney injury following cardiac surgery

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Abstract

The following is a response to the Letter to the Editor by Cong et al.

Response to Letter to the Editor: Development of a preoperative scorecard for prediction of acute kidney injury following cardiac surgery

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Key Words:

Cardiac Surgery

Dialysis

Glomerular Filtration Rate

Acute Kidney Injury

Cardiopulmonary Bypass

AbbreviationsCABG – Coronary artery bypass grafting

ACS – Acute coronary syndrome

AKI – Acute Kidney Injury

eGFR – Estimated Glomerular Filtration Rate

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Conflicts of Interest

None to report

We thank Cong and colleagues for their interest in reading our study and the comments they have brought to our attention. It is important to note that the study was focused on a population of non-emergent patients. We do agree that prior risk scores for predicting cardiac surgery associated acute kidney injury (CSA-AKI) all have merit, but our study is unique in the population being assessed (1, 2). We also agree that mild AKI is a significant complication and is likely predictive of poor post-operative outcomes, hence we did present data regarding the outcome of any AKI, and it is important to appreciate that the scorecard was derived using the outcome of any AKI. We primarily provided an example of application of the scorecard to generate a risk prediction for severe AKI acknowledging that it may have even more immediate clinical importance due to the subsequent morbidity, mortality and healthcare burden.

With regards to the scorecard, both B-coefficients and odds ratios (ORs) are interchangeable in this situation. Each integer of the score was based on 0.5 increments of the B-coefficients. In addition, we have added the B-coefficients scores in the supplementary materials for reference. We acknowledge that age, male sex and complexity of procedure while associated with AKI were not statistically significantly associated with severe AKI. We suspect this relates to the smaller numbers of outcomes for severe AKI and that had there been a similar number of events, the results may have more closely aligned with any AKI. Ultimately, it was the outcome of any AKI that was used to derive the model, but the provided example scorecard was that of severe AKI.

We do agree that there is value in using intraoperative and postoperative variables to predict CSA-AKI. We certainly acknowledge that the use of only preoperative variables may have limited discrimination for post-operative events. This emphasizes the need for validation of our risk score in a different CSA population. We still do feel that there is value in preoperative scorecards to help facilitate shared decision making about surgery itself, most importantly for this sub-population of individuals who are non-emergent. Future work that is planned will be to evaluate and compare the performance of this predictive model to existing risk scores and dynamic models as highlighted, most importantly in this non-emergent population.

References:

1. Callejas R, Panadero A, Vives M, et al. Preoperative predictive model for acute kidney injury after elective cardiac surgery: A prospective multicenter cohort study. *Minerva Anesthesiol.* 2019;85:34–44.
2. Palomba H, de Castro I, Neto AL, Lage S, Yu L. Acute kidney injury prediction following elective cardiac surgery: AKICS score. *Kidney Int* 2007;72.

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Table 1.docx available at <https://authorea.com/users/367025/articles/522906-response-to-development-of-a-preoperative-scorecard-for-prediction-of-acute-kidney-injury-following-cardiac-surgery>