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Impact of Choice of Risk Model in Perioperative Guidelines: Reply

In Reply:

We thank Drs. Cohn and Fernandez Ros for their careful review of our study examining the "Impact of the Choice of Risk Model for Identifying Low-risk Patients Using the 2014 American College of Cardiology/American Heart Association Perioperative Guidelines."[1] The goal of our article was to determine the extent to which the three risk calculators recommended by the 2014 American College of Cardiology/American Heart Association Perioperative Guidelines agreed on the classification of patients at low risk (less than 1%) of major adverse cardiac event. Because we found wide variability in the proportion of patients assigned to the low-risk category depending on the choice of risk calculator, we recommended that future guidelines should select a best-in-class risk calculator to avoid the situation in which clinical care decisions would differ depending on the choice of one of several risk calculators recommended in the same guideline. However, our goal was not to "perform an independent validation of these three risk-prediction models"[1] or to define whether one calculator is better than the others (as mentioned by Drs. Cohn and Fernandez Ros), and our article did not recommend one risk calculator over the others. Although we present the results of a secondary analysis comparing the discrimination and calibration of these risk models, we did not discuss these findings in our article because we recognized the limitations of such a comparison. We read with interest the single-center retrospective study based on 663 patients[2] by the authors and their comment in their letter to the editor stating that "all three calculators were similar in their classification of low *versus* elevated risk."[2] Although they do not quantify the level of agreement using kappa analysis, we note that in their study, the Revised Cardiac Risk Index identified more than three times the number of elevated risk patients as the Myocardial Infarction or Cardiac Arrest risk calculator. We also note that the findings of their single-center study may not be broadly generalizable. We again thank Drs. Cohn and Fernandez Ros for their thoughtful letter.

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Competing Interests

The authors declare no competing interests.

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Nomenclature for Perioperative Cognitive Disorders: Comment

To the Editor:

Recently, Evered *et al.*[1] published recommendations for a common nomenclature to describe cognitive change after anesthesia and surgery. We wholeheartedly applaud this effort, which is long overdue, and congratulate Evered *et al.* on the successful completion of this challenging project that tried to achieve consensus among the numerous groups that seek to understand and improve brain health after surgery. While we are in agreement with the vast majority of the recommendations, we believe that use of the term "delayed neurocognitive recovery" to describe cognitive decline in the first 30 days after surgery is not supported by scientific data and is inappropriate.

First, even though we fully agree that cognition is difficult to assess before hospital discharge, as it is often confounded by pain and medication, the assumption in the recommendations that recovery is complete in all patients only at 30 days and perhaps even definitively complete at 30 days is altogether arbitrary. The time required for complete recovery is highly dependent on the surgical procedure as well as the individual patient, and no studies have established that 30 days is the point at which recovery is universally complete. The fact that 30-day outcomes are commonly used as quality metrics for clinical performance is also irrelevant, as medical diagnoses are evidence-based and are not tethered to timelines for quality assessment. Second, the term "delayed neurocognitive recovery" is not logically coherent. It asserts that all patients will recover, which is certainly not true for postoperative cognitive decline (or neurocognitive disorders), and thus creates false hope for patients, a concern that is as great as the fear of mislabeling patients. Further, there is no such parallel in diagnostic medicine. To our knowledge, nothing in medicine is diagnosed as "delayed recovery." For example, in cases of reduced kidney function after critical illness, recovery of kidney function is expected and occurs in a significant percentage of the patients[2]; however, the diagnostic term for these patients is "acute kidney injury" and never "delayed kidney recovery." Finally, we note that while they sought to align with *Diagnostic and Statistical Manual for Mental Disorders, Fifth Edition* (DSM-5) criteria, the authors acknowledged that use of the term "delayed neurocognitive recovery" was the "one departure from DSM-5 nomenclature."

Without a doubt, additional research is needed to delineate the significance of the cognitive changes seen early after anesthesia and surgery. However, existing data would suggest that the earlier changes seen in a neurocognitive testing battery do correlate with more sensitive markers of brain function. For example, Default Mode Network functional connectivity assessed by magnetic resonance imaging appears to be altered postoperatively in cardiac surgery patients both at rest and during task performance when compared to nonsurgical subjects, and these alterations in brain network connectivity correlate with cognitive change measured by the test battery.[3,4] Further, the change in cognitive score at 6 weeks after surgery is significantly associated with 1-yr activities of daily living and self-reported cognitive difficulties.[5] Thus, we believe it is inappropriate to refer to the early changes detected by a neurocognitive testing battery as simply part of the recovery process.

Once again, we are grateful to the Nomenclature Consensus Working Group for the enormous effort that has gone into creating these recommendations. We wish to reinforce that we are in complete agreement with the group that neurocognitive testing should be conducted with a comprehensive neurocognitive testing battery as opposed to a screening test, and only after the patient has been discharged from the hospital. Nonetheless, we believe that the term "delayed neurocognitive recovery" is fatally flawed

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