mortality greater than 10%. As a consequence, we intentionally presented a truncated calibration plot focusing on the probability range that includes more than 99% of patients. The reporting of calibration for prediction models remains difficult, as underlined by the comment by Kappen *et al*. Graphical analysis of the calibration plot remains the preferred approach.[3,4] However, most patients were at very low risk of in-hospital mortality. This resulted in a heavily left-skewed distribution, making the histogram of predicted probabilities uninformative. Because the calibration plot included more than 99% of patients, we believe that it is correct to state that in the validation cohort, POSPOM "has good calibration with only a small underestimation of in-hospital mortality in the validation cohort for predicted probabilities ranging from 1 to 10%." However, we agree with the authors that a closer inspection of those patients with high probabilities of in-hospital mortality is required.

As noted by Kappen *et al.*, POSPOM overestimates the risk of in-hospital mortality in patients with a risk greater than 10%. The observed in-hospital mortality in these patients was 13.3%, and the average predicted risk in these patients was 17.1%, as presented in the figure provided by Kappen *et al.*

From a clinical point of view, we believe that any preoperative risk of in-hospital mortality greater than 10% (*i.e.*, 20 times the average risk in our population) reflects very high-risk procedures. The role of a general preoperative assessment tool (*e.g.*, POSPOM) is not to distinguish between patients with a postoperative mortality risk of 23 and 62%, especially as these cases are uncommon (409 patients presented a POSPOM greater than or equal to 40 in the validation cohort, namely, 0.01% of the population). Rather, it aims to identify clinical situations that would require further preoperative investigations to determine an appropriate care strategy.

Beyond the discussion about the appropriateness of the calibration of POSPOM in our validation cohort,[3] we believe that an evaluation of the performance of POSPOM in a completely different cohort (*i.e.*, true external validation) is the necessary next step before implementation of this prediction model.

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Competing Interests

The authors declare no competing interests.

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ERRATUM

Preoperative Score to Predict Postoperative Mortality (POSPOM): Derivation and Validation: Erratum

In the March 2016 issue, the article beginning on page 570 included errors in the last paragraph of the Results section. The published paragraph and the corrected paragraph are included below, with the corrections in red.

Last paragraph of the Results section (published version):

In the validation cohort, POSPOM score equal to 30 (i.e., predicted in-hospital mortality = 5.65%) was associated with an observed in-hospital mortality of 6.74% (95% CI, 6.40 to 7.08%). The distribution of POSPOM and the associated observed in-hospital mortality in the validation cohort are shown in figure 3. POSPOM values less than or equal to 20 were associated with a probability of in-hospital mortality less than or equal to 0.32% (i.e., less than the in-hospital mortality observed in the full population—the average risk); a POSPOM value of 25 equates to a probability of in-hospital mortality of 1.37% (i.e., about three times the average risk), and POSPOM values of 30 and 40 equate to probabilities of in-hospital mortality of, respectively, 5.65 and 20.51% (i.e., 10 and 40 times the average risk).

Corrected version:

In the validation cohort, POSPOM score equal to 30 (*i.e.*, predicted in-hospital mortality = 7.40%) was associated with an observed in-hospital mortality of 6.74% (95% CI, 6.40 to 7.08%). The distribution of POSPOM and the associated observed in-hospital mortality in the validation cohort are shown in figure 3. POSPOM values less than or equal to 20 were associated with a probability of in-hospital mortality less than or equal to 0.04% (*i.e.*, less than the in-hospital mortality observed in the full population—the average risk); a POSPOM value of 25 equates to a probability of in-hospital mortality of 1.73% (i.e., about three times the average risk), and POSPOM values between 30 and 40 equate to a probability of in-hospital mortality of 11.77% (*i.e.*, 20 times the average risk).

Reference

Le Manach Y, Collins G, Rodseth R, Le Bihan-Benjamin C, Biccard B, Riou B, Devereaux PJ, Landais P: Preoperative score to predict postoperative mortality (POSPOM): Derivation and validation. Anesthesiology 2016; 124:570–9

In Cerebral Oximetry, Do We Trust?

To the Editor:

We read with a great interest the recent publication by Deschamps *et al.*[1] for the Canadian Perioperative Anesthesia Clinical Trials Group. While the results of this randomized controlled study are quite encouraging and further highlight both the feasibility and the potential clinical utility of cerebral oximetry in the setting of cardiac surgery, several concerns should be outlined.

First, the authors proposed a well-known algorithm to be used in the operating theater in order to reverse a cerebral desaturation below 10% relative to baseline. This notably low threshold value differs from those previously recommended and used by the same authors and others.[2] Interestingly, an extracranial contamination affecting near-infrared spectroscopy measurements of cerebral oxygen saturation beyond 10% has been reported in healthy volunteers for at least two of the three near-infrared spectroscopy devices used in the current study.[3] This last point could be of paramount importance and should be cleared up before conducting a large multicenter randomized controlled trial aiming to demonstrate a positive impact of preventing and treating cerebral desaturation on perioperative outcomes in high-risk surgical patients.

Second, the proposed algorithm suggests the early correction of intraoperative hypotension. Besides, the assessment of cardiac function and optimization of cardiac output occur only as a second-line treatment. That seems quite questionable, as low flow states could be significantly correlated with cerebral oxygenation in cardiac surgery, regardless of systemic arterial pressure.[4] In contrast, a decrease in pressure could not affect cerebral oxygen saturation.[4] Moreover, phenylephrine and norepinephrine administration in order to correct hypotension have been associated with a further decrease in cerebral oxygenation.[4,5]

Third, no difference was found in adverse events between the intervention and control groups in the study by Deschamps *et al.*,[1] even if cerebral oximetry was far better preserved in patients randomized to intervention than routine care. Of course, we agree that the study was not designed to demonstrate such a positive impact on perioperative outcomes and that a large-scale multicenter randomized study is mandatory to answer that crucial issue. However, it is noteworthy that the current multicenter study including up to 201 patients was unable to confirm previous results reported by Murkin *et al.*[6] in a randomized, prospective, and single-center study also including 200 patients, using a similar algorithm, and showing a significant reduction in major organ dysfunction in the intervention group ($P = 0.048$). Again, the definition of the targeted threshold value of cerebral oximetry initiating clinical interventions is probably crucial.

In conclusion, we share the same enthusiasm as that of the authors regarding the potential interest of noninvasive cerebral oximetry in cardiac surgery. While waiting for a large, multicenter, randomized controlled trial definitely showing a benefit on meaningful clinical perioperative outcomes, we need to be cautious before recommending a wider use of this kind of monitoring in the setting of cardiac surgery.

Competing Interests

The authors declare no competing interests.

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