We divided the groups into high (>10) and low (<10) CAF scores and evaluated differences in demographic parameters and hospitalization length; although no demographic parameter differences were found between the groups (Table 1), a statistically significant difference was found in hospitalization length (5 days on average for the low CAF score group and 7 days on average for the high CAF score group) (Figure 1).

The CAF score is a complicated score to use on a daily basis in cardiac surgery, yet the score’s ability to predict both 30-day and 1-year mortality as well as hospitalization length as a marker for postoperative recovery suggests its importance. We suggest that future, larger randomized studies should reduce the CAF score to the minimal variables needed to achieve the same added value while making it more user friendly.

We thank Barac and colleagues1 for their interest in our work and for sharing their experiences with use of the comprehensive assessment of frailty (CAF) tool to predict duration of hospitalization as a measure of recovery after cardiac surgery. We agree that the development of clinical prediction scores that incorporate frailty measures are urgently needed.2 Rapid advances in medical informatics will make available patient data from larger and larger databases to develop such scores for vulnerable subpopulations. But this is just the first step. We also need external validation of existing scores, as attempted by Riley and colleagues.3 External validation tests the performance—specifically discrimination and calibration—in a patient cohort external to that used for model development to examine the reliability of a model’s prediction. Comparative studies of clinical prediction scores will help to identify the model with the best predictive performance across diverse clinical settings and populations. Barac and colleagues1 correctly state that we can experiment with existing clinical prediction scores by the addition or subtraction of predictors to improve usability and predictive power. We need champions to implement clinical prediction scores to improve decision making. Finally, we need studies that demonstrate improvement in clinical outcomes when using a clinical prediction score.

Any clinical prediction score needs to be fast, simple, and powerful. Most of us use the Framingham Risk Score, but we do not know many surgeons who routinely calculate the SYNTAX score! As for the CAF, it is a complicated score for daily use. The CAF combines body mass index measurements, a patient survey, routine blood tests, and specialized tests such as pulmonary function testing as well as physical performance tests. A reasonable estimate to complete this patient evaluation would likely exceed 30 minutes to an hour per patient, which is not feasible outside of research contexts. Further, one needs to obtain formal pulmonary function tests, which are not routinely obtained for most patients.

References
We agree that this comprehensive process may be reasonable to consider as a second stage of evaluation for those who have screened positive for features consistent with frailty using a simpler tool.

Contemporary cardiac surgery teams do need tool(s) that assist in shared clinical decision making to make a rational, individualized decisions regarding when we should operate and when we should turn a patient toward other therapies. However, in addition to hard clinical endpoints, we also need to know the influence on patient-reported outcomes. A scoring system that predicts protracted in-hospital stays, rehospitalization, and thus utilization costs such as the CAF would be of value but will require larger validation with patient-reported outcomes. An ideal score would be fast, simple to perform on the wards or in an outpatient clinic, and would fit on a single screen of a smartphone. We applaud the authors for their initiative. More work is needed to develop a frailty score based on and tested on a large body of patients undergoing cardiac surgery.

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