Revision of the Pre-operative Probability of Stroke Following Coronary Artery Bypass Grafting

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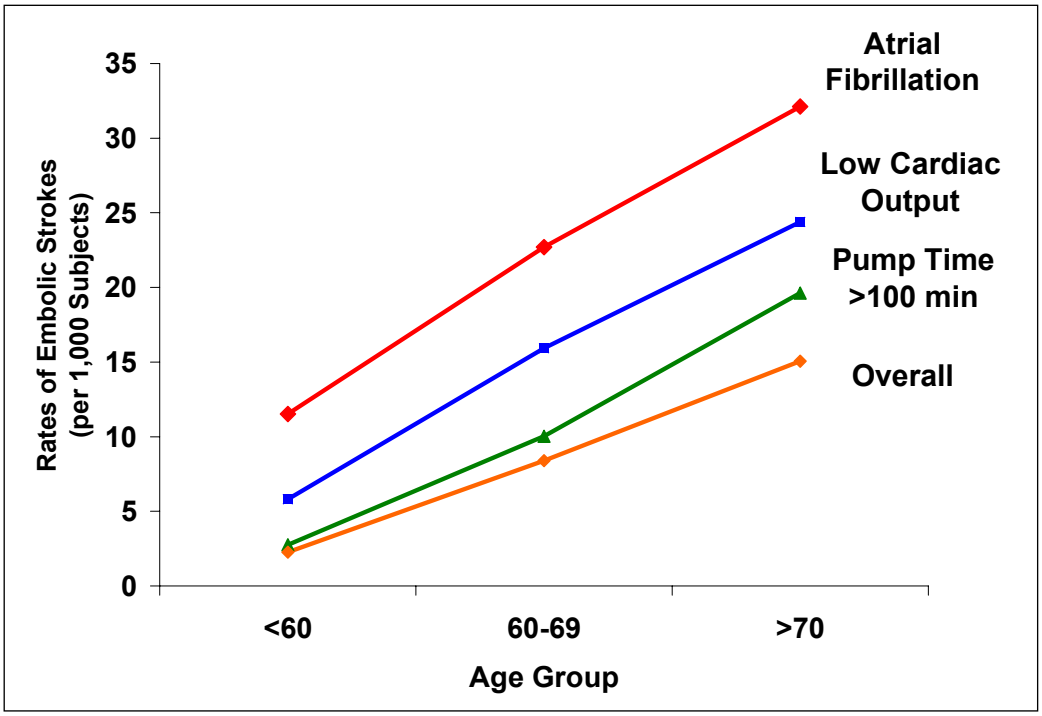
Background: Stroke is a devastating complication of CABG surgery. An individual's risk of stroke is based in part on pre-operative characteristics, but also on intra- and post-operative factors. We developed a risk prediction model for stroke based on factors in intra- and post-operative care, after adjusting for a patient's pre-operative risk.

Methods: We conducted a regional prospective study of 11,842 consecutive patients undergoing CABG surgery from 1996-2001. Data were collected on patient and disease characteristics, intra- and post-operative care and course, and outcomes. Stroke was defined as "a new focal neurological deficit which appears and is still at least partially evident more than 24 hours after its onset". Logistic regression identified significant predictors of stroke.

Results*:* The incidence of stroke was 1.49%. The regression model significantly predicted the occurrence of stroke. As compared to cardiopulmonary bypass <90 min, cardiopulmonary bypass 90-113min (OR 1.55, $p = 0.032$), cardiopulmonary bypass ≥114 min (OR 2.38, $p<0.001$), atrial fibrillation (OR 1.82, $p<0.001$), and prolonged inotrope use (OR 2.60 $p = 0.001$) significantly improved our ability to predict stroke. Nearly 75% of all strokes occurred among the 90% of patients at low or medium pre-operative risk.



Conclusions: The inclusion of factors associated with intra- and post-operative care and course significantly improved the prediction model. Most strokes occurred among patients at low or medium pre-operative risk, suggesting that many of these may be preventable. Reduction in stroke risk may require modifications in intra- and post-operative care and course.