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Volume-Outcome Relationship for Coronary Artery Bypass Grafting in an Era of Decreasing Volume

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Hypothesis: We hypothesized that the recent reduction in procedure volume for coronary artery bypass grafting (CABG) has led to an increase in the in-hospital mortality rate.

Design: Hospital discharge data from the Nationwide Inpatient Sample from January 1, 1988, through December 31, 2003.

Setting: A 20% random sample of patients admitted to US hospitals.

Patients: All patients who underwent CABG or percutaneous transluminal coronary interventions. Facilities performing CABG were assigned to standard volume cutoffs.

Main Outcome Measures: Rates of cardiac procedures and the proportion of hospitals meeting standard volume cutoffs, as well as the CABG mortality rate.

Results: During our 16-year study period, the rate of CABG increased from 7.2 cases per 1000 discharges in 1988 to 12.2 cases in 1997 but then decreased to 9.1 cases in 2003, while the rate of percutaneous interventions tripled. For CABG, the proportion of high-volume hospitals declined from 32.5% in 1997 to 15.5% in 2003. Despite shifts between high- and low-volume hospitals, the CABG mortality rate steadily declined from 5.4% in 1988 to 3.3% in 2003. Hospitals performing the lowest volume of CABG experienced the largest decrease in the in-hospital mortality rate.

Conclusions: Since 1997, CABG volume has declined in the setting of a decrease in in-hospital mortality. A lower mortality rate in the setting of reduced CABG volume is a counterintuitive finding, suggesting that procedure volume is an insufficient predictor of outcome on which to base regionalization strategies.