Impact of Public Dissemination of Coronary Artery Bypass Graft Outcomes on Surgical Mortality


Study Overview

Objective. To determine the effect of publicly disseminated coronary artery bypass graft (CABG) outcomes and/or formal quality improvement initiatives on short-term mortality rates.

Design. Predicted operative mortality for specific regions were developed using logistic regression models. Regression models were adjusted for differences in age, race, acute myocardial infarction as a principle diagnosis, diabetes, chronic obstructive pulmonary disease, congestive heart failure, cerebrovascular disease, peripheral vascular disease, emergent admission, admission from the emergency room, cardiac catheterization or percutaneous transluminal coronary angioplasty procedures requiring emergent CABG surgery afterwards, use of intraaortic balloon pump, and year of admission. Data were obtained from the Medicare Provider and Analysis Review (MEDPAR) Part A data files.

Setting and participants. Patients enrolled in Medicare who underwent CABG surgery from 1994 to 1999. All patients were older than 65 years. 5 specific regions/states were identified as utilizing either public dissemination of surgical outcomes data or having a formal, regional quality improvement process. Hospitals that publicly disseminate their cardiac surgery outcomes included those participating in the New York Cardiac Surgery Reporting System (New York region), the Pennsylvania Health Care Cost Containment Council (Pennsylvania region), and the New Jersey Department of Health and Senior Services Registry (New Jersey region). Hospitals engaging in formal quality improvement initiatives were identified as participating in the Northern New England Cardiovascular Study Group (northern New England region) and the Cleveland Health Quality Choice program (northeastern Ohio region). These 5 regions were compared with an aggregate of the remaining regions.

Main outcome measures. The primary outcome for this study was in-hospital 30-day mortality adjusted for preoperative patient risk factors. Date of death was obtained from the MEDPAR database.

Main results. After excluding potential coding errors, the final sample included 911,407 patients. Demographic characteristics of patients in each of the 5 regions, as well as the rest of the United States, were compared. The percentage of individuals older than 75 years was higher in the Ohio (39.3%), New Jersey (41.6%), New York (41.1%), and Pennsylvania (39.8%) regions as compared with the remainder of the United States (38.2%). Compared with the rest of the country, the Ohio and New Jersey regions had a greater percentage of minorities, while the northern New England and Pennsylvania regions had fewer minorities undergoing CABG. The in-hospital and/or 30-day mortality rate was 4.75% for the rest of the country compared with 4.18% for northern New England, 4.14% for northeastern Ohio, 3.15% for New York, and 4.04% for Pennsylvania. All of these differences were statistically significant ($P < 0.05$). The mortality rate was 4.79% in the New Jersey region, a difference that was not statistically significant. The total adjusted odds ratio for Medicare CABG surgery mortality for regions with either public dissemination of CABG outcomes or formal quality improvement efforts relative to the remainder of the United States was 0.79 (95% confidence interval [CI], 0.73–0.85). When compared with the rest of the country, the regions making their statewide outcome data for CABG surgery available publicly had the following adjusted odds ratios: New York, 0.67 (95% CI, 0.57–0.77), Pennsylvania, 0.80 (95% CI, 0.73–0.87), and New Jersey, 0.94 (95% CI, 0.82–1.09). The 2 regions with regional quality improvement initiatives had adjusted odds ratios of 0.92 (95% CI, 0.76–1.11) (northern New England) and 0.89 (95% CI, 0.67–1.17) (northeastern Ohio) as compared with the remainder of the United States.

Conclusion. Public dissemination of CABG surgery outcomes...
data and formal quality improvement initiatives appear to be associated with lower risk-adjusted mortality rates.

**Commentary**

While many medical and surgical specialties have advocated profiling individual centers or providers as a means to improve performance [1], provider profiling has been most successfully used in cardiac surgery. New York state first began tracking outcomes from CABG surgeries in 1989 and first released this data publicly in 1992 [2]. Other states, such as Pennsylvania and New Jersey, have subsequently adopted a similar strategy. Similar tracking programs have been initiated in other regions of the country. These programs (the most notable of which is the Northern New England Consortium) compile information regarding surgical outcomes and share it with their member organizations but do not publicly disseminate their results (although these results have been published in peer-reviewed journals). Despite the significant effort and resources that have gone into the development of these programs, controversy remains about their overall impact [3].

Overall, the study findings would suggest that public dissemination and quality improvement initiatives are having an impact on overall CABG mortality. However, there are a few important limitations to this study, which may primarily be attributed to the study data source. The study relied on Medicare data that is derived from administrative codes. These codes are typically generated for billing purposes and not for clinical communication. Thus, they can be subject to up-coding or “code creep” in 2 ways. Coders may prefer to select codes that could result in a better financial reimbursement rate for the institution, and coders may be aware that by up-coding certain risk factors, risk-adjusted mortality rates may look better. The median age of patients in the Medicare database who underwent CABG surgery was 73 years, and we cannot know if similar improvements were seen in younger individuals undergoing the surgery.

**Applications for Clinical Practice**

States or regions that have adopted either public dissemination of CABG surgery outcomes or formal, regionwide quality improvement initiatives appear to have lower 30-day postoperative mortality rates, even after adjusting for regional variations in known patient risk factors associated with poor surgical outcomes. This study provides evidence that the quality improvement process can result in improved patient outcomes.

—Review by Harvey J. Murff, MD, MPH

**References**

