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Commentary: Outcome reporting after coronary artery bypass grafting: Is it a numbers game too?

Simon M. Duggan, MD, FRCS (CTh), and Clifford W. Barlow, FRCS (CTh), DPhil

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CENTRAL MESSAGE

Reporting CABG outcomes by rolling case volume, as complementary to time-based measures, may improve quality inference in low-volume centers.

There is intense debate about the merits of surgeon and hospital outcome reporting after cardiac surgery. Does reporting annual mortality rates increase transparency, guide physician and patient decision-making, and encourage better practice? Alternatively, does it lead to risk aversion, case avoidance, and even creation of the surgeon as a "second victim"? Regardless, the implications of outcome reporting are significant; therefore, it is essential that reports are meaningful.

Reporting outcomes of small hospitals and low-volume surgeons is challenging, even for common procedures such as coronary artery bypass grafting (CABG), because clustering of adverse events makes the inference of true quality inaccurate. In this edition of the *Journal*, Mori and colleagues[1] evaluate whether volume-based reporting of outcomes, rather than annual time-based reporting alone, may improve quality. Because some volume-based measures may harbor concerns for gaming,[2] they evaluated the case volume above which operative mortality may become a reliable metric. They retrospectively reviewed 155 centers' outcome reports over a 5-year period from New York and California. First, to characterize the relationship between annual center volume and year-to-year outcome variability, they used observed-to-expected (OE) operative mortality ratio as the standardized metric of risk-adjusted outcome, because the statewide risk models differed. Second, they identified case volume above which center-level year-to-year outcome variability stabilizes. Third, they assessed whether increasing the measurement period from 1 to 2 years improves quality.

The study results are contributory and the first to characterize this relationship in isolated CABG. The median annual case volume was 89, and although risk-adjusted mortality varied widely, there was a clear inverse association between volume and outcome. The inflection point of OE ratio occurred at 111 cases, and although extending the measurement duration from 1 to 2 years increased the number of centers above this threshold, the OE change was unaffected. Of note, the authors argue that standardizing the reporting frame by cumulative volume may reduce outcome variability and thus improve inference of quality. They advocate complementarily aggregating the data for hospital and surgeon performance based on cumulative volume in addition to the current time-based approach.

The authors accept the limitations of their study. The 111-case threshold is likely unique to isolated CABG and is probably different for other procedures. Combining data from 2 heterogeneous state datasets introduces several confounders because their risk models, the number of centers, and the states' reactions to poor reported outcomes differ. Additionally, because of the absence of patient-level data, it is possible that centers truly changed quality from year to year. Finally, it would take longer than 2 years for 25% of the centers to accrue 111 cases, although the authors suggest that reporting the rolling average of the last 111 cases, for example, could circumvent the potential delay. After all, the current 3-year delay in publication, as data are consolidated, already makes outcome reports less relevant and actionable.

From the Department of Cardiothoracic Surgery, University Hospital Southampton, Southampton, United Kingdom.

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Address for reprints: Clifford W. Barlow, FRCS (CTh), DPhil, University Hospital Southampton, Tremona Rd, Southampton, SO16 6YD, United Kingdom (E-mail: cliffbarlow@hotmail.com).

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Strongly differing views exist about outcome reporting. No surgeon should oppose complete transparency to assist choice and guide best practice. On the other hand, incorrect labeling of a surgeon or hospital based on poor data quality or chance misfortune is unacceptable. Previous outcome reporting has relied on time-based, usually annual, analyses. In their insightful article, Mori and colleagues[1] suggest that, as with many other aspects of cardiac surgery, outcome reporting is a numbers game too.

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