Public reporting of hospital outcomes was pioneered by New York State, with coronary bypass graft surgery (CABG) statistics available since 1989 and coronary angioplasty (PCI) since 1994. The public release of individual physician data after 1991, subsequent to a lawsuit filed under the Freedom of Information Act, was hailed as a victory for the public right-to-know, with proponents of public reporting hypothesizing potential salutary effects on physician and hospital behavior, anticipating secondary improvement in outcomes. Both crude and risk adjusted statistics did improve, with risk adjusted mortality declining by as much as 41% (1), facilitated by a decline in CABG by the lowest volume operators who had a disproportionately high operative mortality (2) and changes in patient management algorithms. Although the latter may have been driven in part by public reporting, it notably coincided with improvements in medical technology and in adjunctive pharmacology and the incorporation of an evolving evidence base from many well-conducted clinical trials (3).

Although there were clearly improvements in outcome, it is quite possible, even likely, that this was not due to the advent of public reporting. There are at least four alternate hypotheses to explain improved CABG outcomes unrelated to the effects of public reporting. These same issues apply to PCI, for which the reporting history has been shorter and fewer data are available. The four hypotheses are: 1) improvements in periprocedural management, 2) changes in patient selection, 3) aggressive assignment of variables that define patient risk, and 4) migration of high-risk patients to nonreporting states. A case could be made that all four have impacted the perceived results, although the evidence has been variable, reflecting the difficulty of analyzing the large databases, variable methodologies in data collection and risk adjustment, and incomplete data.

First, improved outcomes may have been secondary to improvement in clinical management algorithms for patients undergoing PCI or CABG and the institution of continuous quality improvement programs. A frequently cited example is CABG outcomes in Massachusetts, a state that, despite the absence of public reporting, had improvements in mortality (4) similar to those in New York during the period in question.

Second, as outlined in the study on PCI statistics by Mosucci et al. (5) in this issue of the Journal, individual physicians and hospitals as a whole appear to be declining to provide aggressive, potentially life-saving care for some higher-risk patients. Interventional cardiologists in public reporting states may sympathize, although the ethical issues of failing to provide high-risk patients the benefits of potentially life-saving technologies are troubling. For practitioners in states with public reporting, in addition to the medical-legal risk shouldered by physicians and institutions when managing high-risk patients (lawsuits predicated on bad outcomes, not necessarily bad management), now each patient also represents a public relations and economic risk as well. The reporting of crude operator statistics, without risk adjustment, clearly punishes the practitioner willing to undertake high-risk procedures.

Although the reporting of risk-adjusted statistics is designed to address this issue, 85% of physicians in a recent survey of New York State interventional cardiologists lack faith in the risk adjustment model (6). In fact, the models used for risk adjustment have significant potential for inaccuracy and misrepresentation (7,8). In practice, most New York State practitioners have described refusal to perform angioplasty in cardiogenic shock patients or the transfer of high-risk patients to a state where public reporting was not then performed. Recent confirmation comes from the same survey in which 83% of practitioners agreed that patients who are at high risk are denied PCI because of fear of public reporting and 79% confirmed that their own decision on whether to perform PCI on individual patients had been influenced (6). Similar findings were reported by Burack et al. (9) in a survey of cardiac surgeons, in which 62% reported refusal to perform CABG in at least one patient in the previous year because of public reporting. The consequences of this risk aversion are potentially significant, with at least some evidence that outcomes may actually have worsened in patients denied aggressive therapy (10).

A third phenomenon has been described as “increased reporting of characteristics of patients at high risk in an attempt to reduce risk-adjusted mortality” (6) or “artificial increases in patient severity scores resulting from selective emphasis of clinical characteristics” (11). Both of these statements could at least in part be deconstructed to reflect “gaming” of the system, namely placing patients at moderate risk into high-risk categories to favorably influence risk-adjusted outcomes. That data reporting is largely self-generated lends itself widely to this possibility, some of it likely performed without overt intent to mislead. In the Narins et al. (6) study, 88% agreed that the system is gamed.
An example: after public reporting commenced, preoperative emphysema was reported to increase from "a few percent to >50%" (12). Increasing numbers of patients started receiving intravenous nitroglycerin preoperatively, presumably because higher risk is assigned to patients with a diagnosis of unstable angina as demonstrated by need for parenteral anti-ischemic therapy.

Finally, one alternative for practitioners in states with public reporting is to send the patients to a non-reporting state. This decision was widely felt to occur when New York instituted public reporting, and a study examining patients referred to the Cleveland Clinic (11) demonstrated a significantly higher-risk population referred from New York State than anywhere else in the U.S., starting in the period when reporting began (risk-adjusted mortality odds ratio 1.7; 95% confidence interval 1.1 to 2.7). In contrast, there was no difference between patients referred from New York State and those from elsewhere in the U.S. in the eight years before public reporting. It is unclear whether this phenomenon was a local observation only because a broad review of Medicare patients by Peterson et al. (13) failed to confirm the migration out of state of patients for CABG during this period. Although there is little doubt in the minds of most observers in the New York area that out-of-state migration accompanied the institution of public reporting, this was the view from the "ground level" (14) and may have been masked by other changes in practice algorithms.

Some other potential confounding issues need to be considered. Regional variation in the use of invasive cardiac procedures was documented before outcomes reporting, with New York having a much lower rate of coronary angiography, for example, than Texas, although there was no demonstrable influence on outcomes (15). The variability in procedure performance by region of the U.S. has been reported several other times, with PCI and CABG for acute myocardial infarction lowest in New England (16). This article from the Global Utilization of Streptokinase and Tissue Plasminogen Activator for Occluded Coronary Arteries (GUSTO) investigators offers several alternate hypotheses, including possibly different penetration of managed care (Michigan has a relatively smaller managed care patient base) and different availability of facilities. The latter is potentially relevant: Michigan, with a population just more than 9 million in the 1990 census, had 30 hospitals providing PCI in the 1998 to 1999 time frame; New York, with a population just under 18 million, had 34 hospitals.

Although there are necessary limitations in the study by Moscucci et al. (5), and in both the New York and Michigan databases, I believe the authors' conclusions are correct. The eight Michigan hospitals surveyed likely have some differences from the hospitals in the New York registry. As the authors point out, age-adjusted death rates in New York are somewhat higher than in Michigan, making it unlikely that the higher comorbidity profile of PCI patients in Michigan is due to a sicker overall population, but those statistics are derived from the state as a whole rather than the catchment area of the eight hospitals in the Michigan consortium. It is nevertheless unlikely that this accounted for the findings. The exclusion of physician experience, a variable that is known to affect outcomes, is also a potential confounding factor.

In states that have adopted public reporting, it takes a particularly blend of personal courage to perform PCI on the highest-risk patients. While writing this editorial, I was asked to perform emergency intervention on a patient transferred to our hospital in cardiogenic shock who had undergone several prolonged episodes of cardiopulmonary resuscitation. His neurological status was uncertain, but because of young age, unstable hemodynamics, and the wishes of a very involved family, I took the patient to the catheterization laboratory. With intra-aortic balloon pump placement and opening of his left anterior descending coronary artery, the patient stabilized, but combination of shock to his lungs and kidneys and poor cardiac function ultimately led to the patient's death two weeks later. A colleague's primary comment subsequently was admiration, not for clinical skill in stabilizing the patient, but for courage in accepting a likely increase in my personal 30-day mortality statistics. This scenario is surely not what the late Dr. David Axelrod had in mind when he pursued the institution of public reporting so vigorously. Would any of us want access to emergency intervention for our own family members curtailed because of fear of public reporting?

Public reporting is here to stay and will likely expand substantially until out migration becomes impossible. More aggressive auditing may help, and further attempts to improve risk adjustment, as nicely demonstrated by Moscucci et al. (5), will help provide a fairer overall picture. Publication of outcomes is only one factor in patient and referring physician decision-making. The public, even the well-informed public, frequently ignores published statistics, perhaps best demonstrated by former President Clinton's recent cardiac catheterization and CABG. These procedures were performed in the only two hospitals in New York State that had risk-adjusted death rates significantly higher than the statewide average (17). Nevertheless, access to the most aggressive forms of intervention will likely continue to be declined to some patients at the highest risk, despite the good intentions of those who instituted these programs, and may well offset the already quite uncertain, possibly nonexistent benefits of public reporting.

Reprint requests and correspondence: Dr. Zoltan G. Turi, Cooper University Hospital, Robert Wood Johnson Medical School, One Cooper Plaza, SC-405, Camden, New Jersey 08103. E-mail: turi-zoltan@cooperhealth.edu.

REFERENCES


