Cardiac surgical report cards have historically been mandatory. This paradigm changed when The Society of Thoracic Surgeons recently implemented a voluntary public reporting program based on benchmark analyses from its National Cardiac Database. The primary rationale is to provide transparency and accountability, thus affirming the fundamental ethical right of patient autonomy. Previous studies suggest that public reporting facilitates quality improvement, although other approaches such as confidential feedback of results and regional quality improvement initiatives are also effective. Public reporting has not substantially impacted patient referral patterns or market share. However, this may change with implementation of healthcare reform and with refinement of public reporting formats to enhance consumer interpretability. Finally, the potential unintended adverse consequences of public reporting must be monitored, particularly to assure that hospitals and surgeons remain willing to care for high-risk patients.


In September 2010, The Society of Thoracic Surgeons (STS) voluntarily published detailed information regarding the performance of its members who participate in the STS National Database. For this seminal initiative, a collaborative effort with Consumers Union [1], STS reported a variety of performance metrics for the index procedure in cardiac surgery, coronary artery bypass grafting (CABG). In January 2011, STS published an expanded version of similar data on its own Web site [2].

As the Society embarks upon these landmark voluntary reporting initiatives, it is appropriate to review the history, rationale, and consequences of previous mandatory public reporting initiatives and their relevant alternatives. Although this review focuses on public reporting of cardiac surgical outcomes in the United States (U.S.), we wish to specifically acknowledge the leadership of cardiac surgeons in the United Kingdom. The public dissemination of outcomes by the Society for Cardiothoracic Surgery in Great Britain and Ireland has provided an outstanding demonstration of medical professionalism, and these efforts have resulted in dramatically improved patient outcomes.

In Part 2 of this series, we examine issues related to implementation of a public reporting system.

Historical Context

Sporadic, aggregate statistical reports of surgical success rates appeared at least as early as the beginning of the 19th century [3, 4]. Perhaps the most notable early public reporting effort was Florence Nightingale’s 1863 publication of English hospital mortality rates [5]. Although the analyses and report design were criticized at the time, this may be the first instance in which the comparative outcomes of specific healthcare providers were ever published. Half a century later, Ernest Amory Codman, a surgeon at the Massachusetts General Hospital, incurred the wrath of his own institution and the Boston medical community by repeatedly challenging the competency of his profession [6–10]. His prescient call in 1917 for hospitals to release and compare outcomes data is, for much of medicine and surgery, still unanswered even today [6]:

So I am called eccentric for saying in public that hospitals, if they wish to be sure of improvement:

must find out what their results are
must analyze their results . . .
must compare their results with those of other hospitals
must welcome publicity not only for their successes, but for their errors

Such opinions will not be eccentric a few years hence

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Modern Initiatives to Enhance Accountability and Transparency

Although Codman’s leadership in voluntarily releasing his own results was not embraced by his peers, his vision was instrumental in the subsequent development of the American College of Surgeons and the Joint Commission. There was, however, little evidence of enhanced public transparency and accountability in healthcare over the ensuing 70 years. Before the 1986 publication of hospital mortality rates by the Health Care Financing Administration (HCFA), which was the U.S. federal Medicare agency and is now known as the Centers for Medicare and Medicaid Services, Fink and colleagues [11] were unable to document a single published study in which a hospital-specific mortality rate had been identified.

The 1986 HCFA initiative was a bold attempt to implement Codman’s vision for public reporting, yet its execution was problematic. It relied on administrative claims (billing) data rather than clinical data and was widely criticized for its numerous methodological flaws, including inadequate risk adjustment [12–14]. This ultimately led to the program’s termination in 1993. However, despite these implementation issues, the HCFA initiative signaled the beginning of the modern era of transparency and public reporting.

Many of the subsequent early public reporting initiatives focused on cardiac surgical procedures, principally CABG, and included the development of clinical data registries by STS [15–19], the Veterans Administration (VA) [20–22], states including New York [23], New Jersey, and Pennsylvania, and the Northern New England Cardiovascular Disease Study Group [24, 25]. These registries provided high-quality clinical data that were audited for completeness and accuracy and that served as the basis for risk-adjustment models that appropriately accounted for patient severity [26, 27].

As risk-adjusted outcomes were analyzed from the first years of data collection, initial results showed substantial variation among hospitals and surgeons [23–25, 28, 29]. This led to a variety of approaches—public reporting, confidential feedback to providers, and regional best-practice collaboratives—to improve outcomes and reduce interprovider variation. New York initiated a robust cardiac surgery public reporting program in 1989 [29], and various states including Pennsylvania, New Jersey, California, and Massachusetts have subsequently implemented similar initiatives.

A different approach has been used by the Veterans Administration and STS (until its recent public release), which provide confidential feedback to participants showing their performance relative to national benchmarks [18, 20, 22, 30–32]. The Veterans Administration also uses such data to identify underperforming programs that require additional review and remediation.

The Northern New England Cardiovascular Disease Study Group is the paradigm for the third approach to improving the quality of cardiac surgery. This program has used a highly structured, regional collaborative approach that identifies and disseminates best practices to participants [33], but until recently did not publicize its results externally. Subsequent voluntary collaborative efforts have been conducted by surgeons in Virginia and Michigan, in some instances with support from payers, and these have resulted in substantial improvements in outcomes and a reduction in complication-associated costs [34–36].

The Ethics of Public Reporting

Deontological Ethics and the Right of Patient Autonomy

Deontological ethical theory, often associated with the work of Immanuel Kant, assesses the inherent morality of actions based on rules or duty rather than simply their consequences [37]. It is this ethical framework that provides the most compelling mandate and justification for public reporting. From this perspective, the moral imperative for transparency is based on the fundamental rights of patients and corresponding responsibilities of physicians, expressed in a variety of iterations since the original writings of Hammurabi and Hippocrates [37]. These rights and responsibilities include beneficence—the obligation to improve, to the extent possible, the health of patients—and nonmaleficence—not causing harm, as expressed in the familiar Latin admonition primum non nocere. There is also a duty of justice, often interpreted as providing care equitably and without discrimination or bias.

In the latter half of the 20th century, patient autonomy or self-determination emerged as an increasingly important principle governing the patient–doctor relationship. The need to explicitly affirm this fundamental ethical principle became apparent after reports of Nazi experimentation on prisoners during World War II, and unethical practices in the Tuskegee syphilis study conducted by the U.S. Public Health Service [37]. From these revelations a number of landmark ethical documents arose, including the Nuremberg Code, the Helsinki Declaration, and the Belmont Report, all of which affirm the rights of individual patients to self-determination based on full knowledge of risks and benefits [37].

Patient autonomy is usually considered in relation to informed consent for procedures or participation in research studies. However, there is no logical reason why this patient right to autonomy in decision-making should be confined to these two specific circumstances and not applied more broadly [38, 39]. For example, providers typically inform patients of the average risks associated with a proposed procedure, but this may not capture the actual risk for specific patients. To redress this deficiency, Arnold and colleagues [40] embedded patient-specific risk estimates into a tailored consent form for percutaneous coronary interventions, thereby enhancing the decision-making autonomy of patients.

Using similar reasoning, the right of autonomy would also support publication of provider performance data, because these may demonstrate differences that will
affect patient choice. The caveat, however, is that such performance estimates are credible (data source, sample sizes, risk-adjustment, reliability in discriminating among providers, and other methodological considerations) and presented in a manner that can be accurately interpreted by consumers. This Kantian framework is the ethical foundation upon which the STS public reporting initiative is based. It does not require a demonstration of utilitarian effects, although these may often be observed as well.

This fundamental right of patient autonomy is not new, but its application to public reporting is still evolving. That most healthcare providers have not historically embraced public reporting derives more, in our opinion, from failure to understand this ethical responsibility than from willful rejection or obstruction. However, from the provider perspective, there are clearly legitimate concerns, including data and analytical credibility, patient comprehension, fear of litigation, and negative impact on patient referrals.

Beyond the ethical responsibilities of individual physicians and surgeons, professional organizations and societies, such as STS, have a special responsibility owing to the “monopoly of expertise” and right of self-regulation granted them by society [39, 41]. They are obligated to always put the interests of patients first, before the interests of their members, which distinguishes them from guilds or unions [41]. These interests arguably include a right to know their provider’s outcomes. Here, the professional society can make a unique contribution by providing national, risk-adjusted benchmarks against which to gauge a provider’s results. The important caveat is that all such analyses be conducted in a scientifically rigorous fashion.

Professional organizations are often best qualified to provide credible and accurate data information [42], although there can be the perception of a conflict of interest. This is best addressed through complete transparency of the analytical methodologies and audit processes, which is the approach taken by STS. In addition, although STS collaborates with its data warehouse and analytical center at Duke Clinical Research Institute in developing and implementing methodologies for risk adjustment, performance measurement, and provider profiling, it has no involvement whatsoever in the actual analyses and thus no opportunity to manipulate the results.

Utilitarian Ethics: Quality Improvement, Consumer Choice, and Risk Aversion

It is widely acknowledged that the quality, safety, and value of the U.S. healthcare system must improve [43–46]. Viewed from the utilitarian, consequentialist, or teleological framework of Jeremy Bentham and John Stuart Mill [37], the ethical justification for measuring and reporting healthcare performance would derive primarily from their utility in achieving these desirable goals (optimizing quality, cost, and value) rather than from their inherent moral worth. In the following sections, we will investigate the evidence whether public reporting improves quality or informs consumer choice of providers, balanced against countervailing risks such as misinterpretation of results, gaming, and the unwarranted denial of care to some high-risk patients. As we will see, there is strong and consistent objective evidence supporting the positive impact of performance measurement and provider feedback, whereas the incremental effect of publicly reporting these data is less certain.

Quality Improvement

Many believe that the primary goal of public reporting is to promote quality improvement. There is substantial evidence that this is a common consequence, but it is unclear if public reporting is the only or best way to achieve this goal [27, 47]. Much of the evidence regarding this issue comes from cardiac surgery. For example, after the introduction of CABG report cards in New York, there was a 41% decline in risk-adjusted New York CABG mortality rate between 1989 (4.17%) and 1992 (2.45%) and a corresponding reduction in high and low outlier hospitals [28, 29, 48]. Between 1989 and 1992, New York Medicare patients experienced a 22% decline in their CABG mortality rates vs 9% decline in the rest of the nation, and in 1992 New York had the lowest Medicare CABG mortality rate in the nation [49]. There are numerous specific examples of New York hospitals that changed their structures and processes of care with resulting improvements in outcomes [50, 51].

However, other data cast doubt on the unique role of public reporting in this mortality decline. Ghali and colleagues [52] demonstrated that from 1990 to 1994, there were similar trends in declining mortality in Massachusetts and in Northern New England, areas that are contiguous with New York. The former had strong state regulations governing cardiac surgery but no organized public reporting, data collection, or performance improvement activities. The Northern New England Cardiovascular Disease Study Group had an exemplary program of data collection, analysis, and confidential feedback of results to providers as well as highly effective, collaborative efforts to disseminate best practices [24, 25, 33].

Other studies also demonstrate that public reporting may not be unique in its ability to stimulate performance improvement. In a study of Medicare CABG recipients, Peterson and colleagues [49] found that New York and Northern New England had nearly superimposable reductions in mortality and lowest-in-nation 1992 mortality rates. Guru and colleagues [53] studied CABG mortality in Ontario, Canada, demonstrating a 29% reduction in mortality after confidential reporting was introduced but no additional decrement in mortality when public reporting was added. Confidential feedback of results in Ontario was associated with lower mortality rates compared with the rest of Canada where this was not the practice.

Studies of quality improvement related to public reporting in nonsurgical conditions reveal similarly inconsistent results. Hollenbeak and colleagues [54] studied the ratios of observed/expected mortality in Pennsylvania-
nia between 2000 and 2003 for acute myocardial infarction (MI), heart failure, stroke, pneumonia, and sepsis. All the results from this public reporting state were favorable (odds ratios significantly less than 1), and they were superior to those of other regions with limited or no public reporting. Furthermore, Pennsylvania results were not significantly different from those in 3 other publicly reporting states, suggesting that public reporting was the common thread.

In a study widely used to support the value of public reporting, Hibbard and colleagues [55] favorably compared the changes in Wisconsin hospital performance that resulted from public reporting vs those that resulted from private feedback of information to hospitals. However, careful scrutiny of this study reveals both methodological issues (limitation of significant findings to obstetrics, an area where baseline performance was low; nonrandom allocation of hospitals to the public reporting group; small numbers of hospitals; minimal risk adjustment) and the disappearance of statistical significance when appropriate random effects models were used. In fact, one could argue that the study actually demonstrates a finding contrary to that usually ascribed to it. Specifically, when the appropriate statistical approach is used, private feedback and public reports had indistinguishable results, and both were superior to no reporting whatsoever.

In one of the only randomized trials of public reporting, Tu and colleagues [56] found that early public reporting of MI and heart failure process measure performance did not improve subsequent process adherence but did result in statistically larger reductions in 30-day MI mortality. This suggests that hospitals in the early public reporting group did make some changes that impacted mortality, although perhaps not in the formally measured care processes.

Fung and colleagues [57] concluded in a recent review that evidence supporting an association between public reporting and quality improvement is equivocal and generally limited to a few specialties such as cardiac surgery. Hannan and colleagues [58] found that any organized improvement initiative, with or without public reporting, produced superior results compared with no such program, although public reporting states had the lowest ratios of observed-to-expected mortality.

Regardless of the incremental effect of public reporting, the common denominator among most published studies is the importance of structured initiatives to collect high-quality clinical data, use of such data to determine risk-adjusted outcomes rates, and feedback of results to providers. Ideally, as in the Northern New England Cardiovascular Disease Study Group, such data are also used as the basis for quality improvement initiatives.

Informed Consumer Choice, Market Impact

One utilitarian rationale for public reporting is the belief that informed consumers (patients, referring doctors, health plans, and payers) will rationally respond to such data and choose the highest performing providers. In response, providers will strive to improve their results to maintain or increase referrals. Historically, it has been difficult to demonstrate that such “market effect” or consumer redirection has actually occurred in cardiac surgery or in other areas of healthcare [57, 59–62].

Patients, the ultimate decision-makers, generally have not used public report cards to the extent envisioned by some health policy experts. For example, Schneider and Epstein [63] found that only 12% of patients surveyed in Pennsylvania were aware of their state’s CABG report card, and less than 1% knew the correct rating of their provider and felt it had a moderate or major effect on their selection decision. Similar findings have also been observed in other areas of surgery. Schwartz and colleagues [64] studied 510 Medicare patients who underwent surgical interventions in 2000. Reputations of the hospital and surgeon were the most important considerations for these patients in selecting their surgical provider, whereas objective comparative data were the least important. Wilson and colleagues [65] found that surgical patients relied heavily on the advice of their primary doctor in deciding where to have major operations.

Geographic convenience and familiarity may be more important factors in consumer choice. Finlayson and colleagues [66] studied patient selection of a provider for pancreatectomy, a complex procedure with substantial interprovider variation in mortality. Patients generally preferred their local hospitals, even when informed that distant specialized referral centers had several times better survival rates. Shahian and colleagues [67] found that geographic proximity, hospital reputation, and historical referral patterns trumped objective performance data in choosing a hospital for cardiac surgical procedures.

Some types of performance reports and ratings may have more impact than others. Highly publicized adverse events or poor report card ratings may have a greater influence on consumers than identification as a top performer [55, 68, 69]. For example, when long-neglected, excess mortality rates for pediatric heart surgery at the Bristol Royal Infirmary (United Kingdom) were finally disclosed, it sparked national outrage and led to legislative mandates for enhanced public accountability and transparency across the National Health Service [39]. Similarly, newsworthy information that might change consumers’ impressions of a provider has greater impact than report cards that only demonstrate stable performance [61].

Reasons for the apparent lack of impact of report cards on consumer behavior and market share have been extensively studied across healthcare sectors [57, 59–62], and the findings are similar to those observed in cardiac surgery studies [63]. Most patients are unaware of the existence of report cards, do not know how to access them, lack trust in them, or are unfamiliar with how to interpret the ratings. For all these reasons, most patients do not effectively use report cards to evaluate their providers, even in more elective situations. For conditions such as MI or cardiac surgical procedures that often
present urgently, patients are confronted with making a choice of providers in the midst of an acute event. Because there is little opportunity to consult report cards, public reporting of the results for urgent and emergency care may be least likely to influence consumer behavior [61, 70].

For physicians, selection of specialty providers is often based on trust acquired through longstanding referral relationships, and these may be resistant to all but the most convincing objective data. Physicians may also have more sophisticated technical concerns that influence their acceptance of publicly reported metrics, including data source and accuracy, limitations of mortality rate as the sole quality metric, adequacy of risk adjustment [71], and sample size considerations. The magnitude of provider differences is often small in healthcare, and with typical volumes and case-mix, providers may have similar and statistically indistinguishable results [72–74].

Finally, process measure adherence rates have become such a focus of hospital attention that results across hospitals tend to converge, leading to ceiling effects or “topping out” of performance measures.

Studies of cardiac surgery confirm these general observations regarding physician referral patterns. After the introduction of CABG report cards in Pennsylvania, only 10% of cardiologists surveyed by Schneider and Epstein [71] stated that mortality rates were “very important” in evaluating the performance of cardiac surgeons. A similarly low percentage discussed these report cards with more than 10% of prospective CABG patients, and 87% reported that report cards had minimal or no effect on referral patterns. Hannan and colleagues [75] studied cardiologists in New York after the publication of cardiac surgery report cards. Although two-thirds believed report cards accurately discriminated performance differences among surgeons, only 22% routinely discussed the reports with patients and a minority indicated that the reports had substantially impacted their referral patterns.

Finally, studies regarding the use of CABG outcomes by payers are also somewhat surprising, given that they have the access, expertise, and incentive to effectively use these data. Results from New York [76] and Massachusetts [67] CABG studies that used data from the 1990s showed no evidence that managed care payers used quality data to direct patients.

Market Effect Appears to be Increasing

There are reasons to believe that the effect of report cards on consumer choice and market share may be increasing throughout healthcare, and this will certainly affect cardiac surgery. For example, a 2008 Kaiser Family Foundation Study [81] of consumer preferences revealed that since 1996, a significant decline has occurred in the percentage of consumers who selected a surgeon because they had treated family or friends (76% to 44%). Correspondingly, an increase from 20% to 47% was documented in the percentage of patients who would choose a higher-rated surgeon. Similar findings were observed for choice of hospitals. The tendency to select providers based on their ratings increased directly with the patient’s education level.

Healthcare reform will likely result in an accelerated linkage of performance with referrals, market share, and reimbursement. For example, federal government programs already provide incentives to report in their Hospital Inpatient Quality Reporting Program and Physician Quality Reporting System. Title III of the Patient Protection and Affordable Care Act of 2010 mandates improvements in the quality and efficiency of healthcare, incentive payments to hospitals that meet quality performance standards, and public reporting of individual hospital performance metrics. These initiatives will undoubtedly result in more actionable information being available to consumers. Similar initiatives by commercial payers and business coalitions (eg, Leapfrog and the Pacific Business Group on Health) are also increasing, including center of excellence designation and value-based referrals. Finally, the National Quality Forum (NQF) has reemphasized its longstanding, fundamental requirement that all measures submitted for NQF endorsement be suitable for public reporting, and it also requires evidence of progress towards public reporting within 3 years of initial measure endorsement.

Notwithstanding the tenuous empirical data supporting the effect of public reporting on consumer preference and market share, it is still likely that such reporting does serve as an incentive to providers. Whether based on objective evidence or subjective anxiety, providers fear the potential consequences of publicly reported, poor performance ratings. This may, in turn, promote competition based on quality, which should be a desirable consequence. However, although this may ideally stimulate improvements in care, it may also lead to unintended negative behaviors, as demonstrated in the next section.
Unintended Negative Consequences

In addition to the hypothesized advantages of public reporting, its potential adverse consequences have also been well described [82–84]. For process measures, these include, for example:

- an inordinate focus on measured processes of care, sometimes to the detriment of unmeasured processes (“tunnel vision”);
- focus on achieving overall target rates even when some measures may not be appropriate for individual patients;
- inadequate attention to patient preferences;
- misdirection of scarce resources;
- “check box” approaches to process measure adherence without fulfilling the spirit of the measure;
- consumer misinterpretation of performance reports; and,
- premature application of time-sensitive care processes before a diagnosis is firmly established.

Numerous unintended negative consequences of cardiac surgery outcomes reporting have also been observed, including “gaming.” Concerned about the effect of poor results on their reputations, providers may attempt to influence their reported outcomes through a variety of mechanisms without actually improving the care delivered to patients. Such approaches include:

- intentional up-coding of comorbidities to inflate the expected mortality rate and decrease the observed/expected mortality ratio [85];
- addition of trivial procedures to high-risk isolated CABG cases, with the intention of shifting them into an unreported “CABG + other” category; and
- prolongation of life in hopelessly ill postoperative patients until they have reached a predetermined mortality reporting end point, such as 30 days.

These unethical practices can be mitigated by better education of providers regarding the adequacy of risk-adjustment models, careful audit of comorbidity coding, and clearly delineated rules for classifying cases as “CABG + other.” The latter sometimes requires adjudication by surgeon reviewers to determine if an additional procedure was legitimate and whether it added to the patient’s risk [86].

From a public health perspective, the most important unintended negative consequence of public reporting of outcomes is risk aversion. The hypothesis is that in a public reporting environment, providers believe poor results will hurt their reputations and referrals. They therefore avoid accepting the highest risk patients—those most likely to suffer complications or death—despite evidence that risk adjustment will “level the playing field” [87]. It is exactly such high-risk patients who may benefit most from interventions, and failure to intervene may paradoxically increase the overall population mortality rate and healthcare costs because less effective (but initially less risky) therapy is used [88–90].

From an ethical perspective, unwarranted denial of care to a subgroup of patients violates the principle of justice. This phenomenon was first described in cardiac surgery by Omoigui and colleagues [91]. They noted that after the introduction of public report cards in New York, patients transferred to the Cleveland Clinic from New York had substantially higher risk profiles than they had historically and also when compared with other referral areas. Their observed and expected mortality rates were also correspondingly higher. A survey of New York cardiothoracic surgeons by Burack and colleagues [92] showed that 62% had refused to operate on a least 1 CABG patient in the previous year because of public reporting, a phenomenon not observed with procedures that were not publicly reported. Similar findings were also noted in Pennsylvania by Schneider and Epstein [71], who showed that 59% of cardiologists had increased difficulty referring high-risk patients to surgeons, and 63% of cardiac surgeons acknowledged they were less willing to operate on such patients. Werner and colleagues [93] reported that racial and ethnic disparities in the frequency of CABG increased in New York after report cards were introduced, presumably because minority patients were regarded as having higher risk. Finally, as percutaneous coronary intervention has become more commonly used for acute MI, evidence for avoidance of patients with high-risk characteristics such as cardiogenic shock has also been documented [94–97].

The existence of widespread risk aversion has been challenged by the results of other studies. For example, Peterson and colleagues [49] and Chassin [50] noted that from 1989 to 1992, the overall rate of CABG among New York’s Medicare population increased. Among this population, the proportion undergoing CABG outside the state fell from 14.3% in 1989 to 11.3% in 1992, and the proportion undergoing CABG in New York after an acute MI (a high-risk cohort) rose from 6% to 8.4% during the same period. Hannan and colleagues [58] compared states and regions that had public reporting or formal quality improvement initiatives with those that did not have such programs, and they found a higher percentage of high-risk patients in the former. Furthermore, the percentage of patients in New York with estimated risk of CABG mortality of 7.5% or more (high-risk) grew 73% from 1990 to 1992, whereas the proportion of low-risk patients rose only 11.4% [87]. Finally, studies in England [98] and California [99] have not revealed decreased access to care for high-risk cardiac surgical patients.

The available evidence suggests that risk aversion occurs, although there may be a bias toward publication of affirmative studies. The actual extent of this phenomenon in public reporting vs non-reporting environments remains unclear. This could be ascertained by prospectively following the outcomes of all patients initially referred for cardiac surgery, both those who underwent procedures and those who were denied interventions. Even if risk aversion does occur, the implications for population health are unclear. If interventions are inappropriately denied to high-risk patients who would potentially benefit from them, this would clearly be an
adverse unintended consequence. In some cases, however, anxiety about public reporting might result in “sorting” of higher-risk patients to the best surgeons who are most able to treat them successfully [90, 100]. Finally, risk aversion might result in some patients with little or no chance of survival being denied futile interventions, which in such extreme cases may be the best decision.

Because providers do not always believe that current risk-adjustment algorithms provide adequate credit for high-risk cases, strategies for mitigating risk aversion have been suggested. These include improvement of risk-adjustment algorithms, nonreporting or selective reporting of exceptional-risk patients, as practiced in several states, and use of more comprehensive measures of quality rather than only mortality. Resnic and colleagues [101] and Peterson [102] recently studied the effect of adding a compassionate use variable (patients undergoing active cardiopulmonary resuscitation, coma, or requiring a ventricular assist device) to the existing risk model for percutaneous coronary intervention in a public reporting program in Massachusetts. These patients represented only 1.7% of the overall shock or ST-elevation MI population but had a 69.8% mortality rate. After addition of this variable, model performance improved slightly. Most importantly, however, there was reversal of a previously noted decline [96] in the percentage of shock patients receiving percutaneous coronary intervention, presumably because providers were reassured that the adverse outcomes of such patients would not affect their report card results.

Finally, we acknowledge that all these varieties of gaming may occur even in the absence of public reporting; for example, in internal hospital quality programs where the results are shared only with hospital leadership. However, the stakes and the corresponding incentives for gaming increase when the results are publicly disseminated.

The Pragmatic Rationale for Public Reporting

This review has used utilitarian and deontological ethical frameworks to develop the arguments for and against public reporting. However, regardless of how one views this ethical rationale, the realities of contemporary healthcare provide numerous pragmatic incentives to publicly report. Some of these, such as continued participation in certain reimbursement plans, appeal primarily to the self-interest of physicians and hospitals rather than to more idealistic goals, but they may nevertheless produce positive results.

It is also inevitable that public reporting will increasingly become mandatory. By participating in voluntary public reporting initiatives that use credible data and methodologies (eg, the STS CABG Composite score [103, 104]), providers decrease the likelihood that other entities, such as commercial rating organizations, will develop measures derived from inferior methodologies, some of which use unadjusted or inadequately adjusted administrative data. Furthermore, should such competing measures be published, there would be a publicly available gold standard metric to refute misleading characterizations. Finally, mandatory or voluntary public reporting may be a highly effective stimulus for physicians and hospitals to cooperate in achieving the common goal of improved patient outcomes [105].

Summary

Although public reporting of provider performance was first introduced more than a century ago, its use was negligible until the past 2 decades. Before the 2010 voluntary publication of cardiac surgery outcomes by STS, most public reporting had been mandated by state or federal programs.

The effect of public reporting on quality remains controversial. Alternative approaches, such as confidential feedback of benchmarked results and participation in best-practice collaboratives, may achieve comparable performance improvements. The effect of public reporting on referrals and market share has historically been weak, but this could change substantially in the era of value-based healthcare reform. Gaming and risk aversion are unintended negative consequences of public reporting, and the latter may adversely affect access to care for the most critically ill patients.

Notwithstanding all of these other considerations, public reporting affirms the right of patient autonomy, and the latter is a fundamental ethical responsibility of physicians and professional organizations.

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