

## EDITORIAL COMMENT

# Public Reporting in Interventional Cardiology

## The Challenges Ahead\*

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Efforts to publicly report healthcare outcomes are not new. In what may be the earliest effort at public reporting, Florence Nightingale published the mortality rates at English hospitals (1). Her report was not well received nor was the initiative of Dr. Ernest Codman, an advocate of hospital reform, when he called for the public release of surgical outcomes some 50 years later (2). Public reporting efforts remained dormant until the 1980s when risk-adjusted death rates at U.S. hospitals became public (3). These too were widely criticized and, irrespective of their results, administrators from a broad range of hospitals expressed concerns about the accuracy, appropriateness, and helpfulness of these data (4). The pace of public reporting efforts is accelerating with numerous government agencies and independent organizations releasing increasing amounts of information. Public reporting will continue as contained within the Affordable Care Act of 2010. The secretary of Health and Human Services was directed to establish a national strategy for quality improvement that includes public reporting of performance information on quality, cost, and other metrics through healthcare quality websites by 2014.

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The foundation upon which public reporting exists is the belief that the information provided will affect decisions and behaviors of the various stakeholders and will ultimately result in an improvement in healthcare delivery. This assumption, however, has not been convincingly proven (5). Skeptics of public reporting voice many concerns about the accuracy and reliability of the information in reports and weaknesses in the risk-adjustment methods that are

frequently used. There are additional concerns that the system could be “gamed” by providers and consumers could misinterpret data if they do not understand the terminology or context of a public report. Several papers have suggested that the public release of data resulted in unintended negative consequences for patient care (6–11). The paper by McCabe et al. (12) in this issue of *JACC: Cardiovascular Interventions* adds to this concern.

Massachusetts has publicly reported risk-adjusted mortality for percutaneous coronary intervention (PCI) since 2003. Over this period, 4 of the 24 hospitals performing PCI in the state were identified in a public report as outliers because of a risk-adjusted mortality higher than the state average. McCabe et al. try to determine if identification of a hospital as an outlier caused operators at the facility to decline high-risk cases. They examined the hospital's change in predicted in-hospital mortality over time with the hypothesis that facilities identified as outliers would have a decrease in predicted mortality, indicating a shift away from doing high-risk cases. Following public identification as an outlier, they found an 18% relative reduction in predicted mortality among PCI patients at outlier institutions, suggesting that, on average, PCI patients at outlier hospitals were less severely ill. Furthermore, they found an additional 37% relative reduction in predicted mortality risk among all PCI patients in Massachusetts. Because risk-adjusted mortality for coronary artery bypass graft surgery is reported in Massachusetts, the investigators examined the expected mortality for surgical patients at outlier hospitals, thinking it might increase if more high-risk patients were referred for coronary artery bypass graft. In fact, it did the opposite, suggesting high-risk PCI patients were not referred for surgery. It would be ideal to know the outcome of individual high-risk patients to understand if, in fact, patients needing PCI were denied the procedure and died or perhaps were treated medically and survived. However, this comment is not meant to cast doubt on the investigators' conclusion that being labeled an outlier caused operators to be more adverse to risk. Although McCabe et al. used several prediction models and assumptions that could introduce errors, I believe their results. Who remembers falling off your bicycle and skinning a knee as a child and then going a bit slower on your next bicycle ride? How many drivers instinctively slow down when they pass a police officer issuing a ticket to another motorist? If your hospital were zapped as an outlier in a public report, would you want to try for 2 in a row?

There is no question that the topic of public reporting of healthcare outcomes is in the spotlight. For years, formal data about the performance of hospitals and physicians was simply unavailable. Information about good or bad hospitals or physicians was shared by word of mouth in a community if at all. Times have changed regarding our access to

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information. Thanks to the Internet, search engines, and multiple social media sites, you can find incredible amounts of information and misinformation online about any topic. We have now become well-informed consumers who carefully research the quality and price of a refrigerator before ever entering a store. Should we not be doing that for health care? Decisions about your health are some of the most important decisions you will make, so many now advocate that information about physicians and healthcare facilities be available for all to see. Nobody would hire a plumber rated as the worst in the area to fix a clogged pipe, so why would you want your clogged coronary fixed by a “negative outlier”? It all sounds so clean and simple, but that is not the case. Public reporting is very complex and makes many in health care nervous. Their secret wish is for it to disappear like a bad dream, but public reporting is here to stay. The challenges ahead are how best to develop public reporting for a good purpose and yet avoid unintended consequences such as the risk-adverse behavior.

Nobody disputes mortality as an important outcome, but making judgments about the overall quality of a program based on a very uncommon event like mortality has weaknesses. Hospitals in Massachusetts were identified as outliers because their risk-adjusted mortality was significantly above the statewide average in a given year. The potential pitfalls of this are illustrated with the following statistical model, which is especially relevant considering recent data from the National Cardiovascular Data Registry showing that 49% of facilities perform <400 PCIs annually and 26% perform <200 PCIs annually (13). Assume the average state PCI mortality is 1%, but in a given year, an individual hospital has a mortality of 2%. At a facility volume of 400 cases annually and using a 95% confidence interval, it would take just about 2 years of data at 2% mortality to be certain the increase was significant rather than variation; at a facility volume of 200 PCIs annually, it would take almost 4 years to be certain. Therefore, as PCI volumes decrease, using a hospital’s risk-adjusted mortality as the sole measure of quality is problematic.

Mortality cannot be ignored, but when thrust into a situation where a high-risk PCI is the best (and sometimes only) option for a patient, the outcome may not be good despite the best efforts of the operator and the entire catheterization team. *Primum non nocere* or “first do no harm” is a phrase we heard early in medical training, but we should not be paralyzed daily by fear that 1 bad outcome from a potentially lifesaving and appropriate procedure will harm a physician’s or hospital’s reputation. How is the line drawn between a procedure that is truly futile, and another that has a chance, albeit small, of saving a life? Data from a spreadsheet and statistical number crunching may be fine if you are trying to show that patients are receiving the correct medications before and after a PCI, but they may not be ideal for a complex

outcome such as mortality. The challenge moving forward is how do we satisfy the increasing demands for public reporting and not have this process lead to inappropriate conclusions by the public or unintended consequences? Most major research trials have independent data safety and monitoring boards and a process whereby clinical events, such as mortality, are carefully reviewed with a determination whether the event was really related to the therapy being studied. In a similar fashion, unbiased peer review may be necessary to fully understand the circumstances surrounding a PCI-related mortality, and this goes well beyond the process of risk adjustment. Obtaining such peer review is difficult, especially at smaller hospitals, but there are independent professional organizations that provide this service. Perhaps in the future the ideal model would be to report both risk-adjusted and adjudicated mortality rates with an explanation of how these are different.

Several organizations, including the American College of Cardiology and Society for Cardiovascular Angiography and Interventions, have developed principles and guidelines for public reporting, but it is not clear whether these are being followed by the many entities that now make the healthcare information public (14,15). Just as it is easy to be bombarded by information from the Internet, being bombarded by public reports of healthcare outcomes from multiple sources that often provide conflicting information is not helpful. As an acquaintance recently quipped, “It’s amazing that in America there appear to be over 300 hospitals in the top 100”. All physicians need to understand that you can run, but in the near future, there will be nowhere to hide from public reporting. How will we adapt to this new era of transparency? Consider the following steps. First, clinical practice guidelines are not perfect, but following guideline-directed therapy is unlikely to get one labeled as an outlier. Second, know the performance measures that apply to your area of practice. These describe measurable aspects of care that are ripe for public reporting. Third, know your numbers. Several years ago, the American Heart Association launched a campaign to encourage patients to know their lipid, glucose, blood pressure, and weight numbers. Hospitals and physicians should now know their numbers—that is, how they perform on key metrics against national benchmarks. Data are available, but, surprisingly, they are not reviewed on a regular basis or used optimally for quality improvement. Know your data and be proactive in efforts to improve. Understand that in the near future, there will be new payment models that are based not on the quantity of care, but on the quality of care you provide. Finally, be patient-centered, putting the best interests of the patient first in daily decisions. We are entering into an era of transparency that will require time and careful thought before the right balance between too little and too much information is

achieved. The example provided by McCabe et al. shows there is still work to be done.

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