Editor’s Perspective

Medicine in the Era of Outcomes Measurement

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On February 9, 2009, the headlines of the Boston Globe proclaimed that two hospitals in Massachusetts, including an institution considered one of the nation’s best, had significantly higher than expected mortality rates for patients undergoing percutaneous coronary intervention (PCI). The story was based on the in-hospital risk-standardized mortality rates for hospitals throughout the state, released by the Massachusetts Department of Public Health. The unexpected result raised questions, concerns, and some confusion about hospital performance and the validity of the measures.

The recent focus on hospital outcomes measures seems likely to intensify with the anticipated release by the Centers for Medicare & Medicaid Services of 30-day risk-standardized mortality and readmission rates for acute myocardial infarction, heart failure, and pneumonia. After more than a decade of focus on structure and process, there is a growing sense that, in a health care system that strives to be patient-centered, we need assessments of what actually happens to patients. The structural characteristics of an institution—such as equipment, certification, or procedural volume—do not guarantee higher quality of patient care or superior outcomes, nor does its reputation necessarily reflect actual experience. Process measures can capture key actions by clinical teams that are strongly related to outcomes, but they may typically focus on only a small subset of the complex array of interactions, decisions, and activities that contribute to the quality of patient care. Many aspects of care that defy easy measurement contribute importantly to a patient’s likelihood of a successful outcome. Thus, to describe the performance of the system we should also pay attention to patient outcomes.

The approach to the mortality measures that is used in Massachusetts improves on what was used by the Health Care Financing Administration to report outcomes in the 1980s. The Massachusetts Data Analysis Center (Mass-DAC), the data-coordinating center responsible for the measures and directed by one of our Associate Editors, uses advanced statistical models and uses detailed clinical data collected by the hospitals to adjust for differences in the types of patients treated at each hospital. Hospital data managers meet regularly with the data coordinating center to review definitions and discuss data collection improvement strategies. Clinicians from the hospitals voluntarily review records and adjudicate variables to ensure accuracy. Committees elected by local chapters of the professional societies in Massachusetts further address residual concerns through review of blinded results before any data are publicly released.

The measures hold the promise of focusing our attention on the patient and the end result of health care, which when invisible are too easily ignored. The measures provide an external assessment based on data from all the hospitals and generate a perspective on performance that could not be gleaned from any single institution. In addition, the public nature of the data reinforces a commitment of the profession to transparency and encourages institutions to focus quality efforts broadly rather than on the specific processes being reported.

The program has consequence, as was the case several years ago when significantly higher mortality rates at a prominent bypass surgery program prompted a temporary closure. The senior vice president and general counsel of the program wrote in a 2008 Boston Globe editorial that, “[s]uspension of their program taught us to never accept the status quo, to know we can always get better, and to highly value a culture of learning and continuous improvement.” The measures can also serve to highlight excellent performance that might otherwise go unnoticed.

Nevertheless, even the best outcomes measures have limitations. As noted by others, many deaths are not preventable even by the best quality care, and a goal of zero is unattainable. The measure is intended to assess how a hospital performs compared with what might have been expected based on the performance of the entire group. Even with an extensive list of clinical variables and an outstanding risk model, some patients will have unmeasured conditions, unrelated to quality of care, which influence mortality risk. The models, by design, should undergo regular examination and refinement to include any relevant information that can improve their risk adjustment. Finally, although small numbers of patients in some hospitals limit the inferences that can be made about performance, proper statistical methods can ensure that the number of patients at each hospital is considered and that inferences about performance do not go beyond the information available to make such inferences.

Once we account for differences among hospitals in the risk of their patients and the likelihood of differences occurring by chance, quality of care remains as a probable contributor to the differences in outcomes. Hospital variation in quality of care processes is well documented, and it is thus plausible—even likely—that quality issues contribute to differences in outcomes measures across hospitals. Nevertheless, a common refrain from hospitals with high mortality
rates is that they have reviewed deaths in their institution and failed to find any that were preventable. This variation, however, may reflect differences in the frequency of clear proximate causes (eg, a patient is given a heparin overdose, bleeds, and dies) of adverse outcomes or a confluence of more subtle systematic factors that expose every patient to a higher risk. These subtle factors, which define the risk of the hospital environment, may provide the best opportunity for improvement in outcomes. The goal is to reduce risk and potentiate the actions that promote the effectiveness of clinical interventions.

Amid concerns about poor publicity, many institutions will unfortunately seek to protect their image rather than to augment their investment in improvement activities. In a study of bypass surgery deaths in high-performing hospitals, Guru and colleagues showed that up to a third of deaths could have been prevented had optimal care been provided. A prior study of surgery in Colorado and Utah reached the same conclusion. Hospital personnel need to use the methods identified in this literature to identify preventable deaths as part of their quality improvement efforts and translate these insights into improvements in care.

The measures can also benefit less visible institutions that are committed to excellent care. A strong measurement system allows any institution, no matter how far from the limelight, to be recognized for its performance. Moreover, the measures present the opportunity to learn from those institutions with consistently outstanding performance. If the signal from these institutions truly represents a manifestation of higher quality, then we should identify and disseminate these best practices. The experiences of institutions that demonstrate such positive deviance may lend insight into how all institutions could improve, an approach that has been successful in other settings.

To realize future improvements in outcomes measures, information beyond mortality and readmission will be required. We need to refine models through improved data and statistical techniques to better identify true variations attributable to differences in quality. We need more effective means of communicating results to clinicians and the public and further knowledge about how to optimally use the results. Finally, we need to monitor practice to ensure that the measures are not leading clinicians to limit access for high-risk patients who have strong indications for intervention.

Scholarship is a critical component in the effort to improve the quality of care. Circulation: Cardiovascular Quality and Outcomes seeks content that can provide insight into performance and support for practical action. Our mission is to provide a venue for practical science that can support practice and policy. In our first 5 issues, we have published a substantial amount of content that is relevant to national initiatives to measure and improve outcomes for acute myocardial infarction and heart failure. This literature includes the Methods paper that describes the readmission measure that the Centers for Medicare & Medicaid Services will use for profiling hospitals' experiences with patients admitted with heart failure; articles focusing on delays in the response of emergency medical services; patient delays in seeking care; delays in the delivery of critical services, and articles with a long-term perspective about outcomes that reveal progress and remaining challenges. Authors have also identified patients who are less likely to receive guideline-based therapies, hospitals that are less likely to provide the therapies, and the likelihood that patients will cease to take such therapies when prescribed. In addition, we have featured a study that illuminates the complexity of an adverse prognostic factor such as depression, revealing differential effects in men and women. We have also published a policy perspective that advocates for a payment system that is aligned with the strength of clinical evidence, which would provide an even greater incentive for the delivery of high quality care.

We believe that scholarly contributions exploring innovative approaches to health care delivery are critical. In particular, our “Innovations in Care” section was created to provide a forum for dissemination, discussion, and critique of systems that enable outstanding performance. Although medical journals have not traditionally been a venue for this type of content, we believe that a novel approach that is developed, implemented, and evaluated rigorously deserves a public forum. In this issue, one such contribution by Rinfret and colleagues examines the effect of a multidisciplinary information technology program on the control of high blood pressure. We also present several Methods papers from an initiative sponsored by the National Heart, Lung, and Blood Institute to improve the care of minority populations with hypertension, as part of the agency’s ongoing efforts to develop novel approaches to improving the quality of care. Each of these contributions holds great promise to change current thought about how best to deliver care to this high-risk population.

In an era of accountability, measures that reflect patient outcomes are likely to remain in public view. We need to dedicate our resources to understanding and improving performance. Through practical scholarship to improve measurement and practice, we can make true progress toward eliminating preventable adverse outcomes.

Disclosures
Dr Krumholz reports that he had contracts with the Colorado Foundation for Medical Care and currently has contracts with the Centers for Medicare & Medicaid Services to develop and maintain performance measures.

References


**Key Word:** Editorials
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_Circ Cardiovasc Qual Outcomes_. 2009;2:141-143
doi: 10.1161/CIRCOUTCOMES.109.873521

_Circulation: Cardiovascular Quality and Outcomes_ is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2009 American Heart Association, Inc. All rights reserved.
Print ISSN: 1941-7705. Online ISSN: 1941-7713

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://circoutcomes.ahajournals.org/content/2/3/141

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