Report of the Ad Hoc Committee on Physician-Specific Mortality Rates for Cardiac Surgery

As regulatory agencies, purchasers of health care services, patients, and physicians increase their focus on the quality and the cost of delivery of health care, assessment of outcomes following treatment is assuming increasing importance. An important example of this is the emphasis on hospital mortality rates following coronary bypass grafting procedures (CABG). The Health Care Financing Administration (HCFA) has been accumulating mortality statistics for CABG on Medicare patients, and since 1987 has published these statistics annually for all hospitals that perform cardiac surgery. To date, HCFA has not chosen to publish mortality statistics for individual surgeons.

According to the National Association of Health Data Organizations, over 30 states have created health care data centers, principally to collect and publish data on outcome, mortality, and costs. Notable among these are the New York State Department of Health and the Pennsylvania Health Care Cost Containment Council, which have released data to the public relating to mortality rates following CABG. This has included both hospital-specific and physician-specific mortality rates. In the state of New York, the data were released under the Freedom of Information Act, without prior critical review of the data by the Cardiac Advisory Committee (Spencer FC, personal communication), and were acquired and disseminated by several newspapers and at least one national television network. The release of this type of information to the public has generated considerable controversy and confusion among consumers and health care providers as well as concern among cardiothoracic surgeons, who argue that hospital mortality rates should not be used as the sole or principal indicator of the quality of care rendered to cardiac surgical patients.

Problems With the Use of Physician-Specific Mortality Rates as the Sole or Principal Indicator of Quality of Care

Validity of the Statistical Models Used to Predict Hospital Mortality

It is now generally acknowledged that crude hospital mortality rate is an inaccurate indicator of quality of care for patients who undergo cardiac operations. The risk of CABG procedures is determined by a number of factors, which include the age and sex of the patient, the severity of the underlying heart disease, the urgency of the operation, the presence of associated diseases such as diabetes and hypertension, the presence of complications resulting from the heart disease, and a history of previous angioplasty or bypass surgery [1]. In response to criticisms from epidemiologists, statisticians, and physicians, HCFA developed statistical models for risk-adjusted mortality rates that take into account the "severity of illness" of the patient and permit a more rational comparison of mortality rates between hospitals. However, the model used by HCFA to adjust for differences in the characteristics of individual patients has been characterized as insufficiently sensitive to make valid inferences about the quality or effectiveness of hospital care [2]. Similar criticisms have been directed at other statistical models that have been used to predict hospital mortality rates for CABG, including those used by the states of New York and Pennsylvania.

Adjustment of mortality statistics according to the presence of comorbid conditions is essential. However, such adjustments may also be inadequate, because important chronic disorders that can affect operative mortality rates are often underreported in critically ill patients with multiple disorders [3]. Comorbidity is an important consideration, because referral patterns and regionalization of care tend to concentrate high-risk patients at certain centers [4]. The resultant increase in crude or risk-adjusted mortality rates at such centers may be misinterpreted as poorer quality of care [5]. As an example, the hospital (or surgeon) who refers the majority of patients whose operative procedures are associated with increased risk to other centers or surgeons may have a hospital mortality rate of 2%. This may not represent a higher quality of care than a hospital or surgeon that has a 5% to 8% mortality rate but chooses to treat patients who have been refused operations elsewhere or patients who are at a potentially higher risk because of coexisting medical conditions or the need for combined operations or reoperations.

Other statistical techniques for risk stratification including multivariate analysis with logistic regression and Bayesian analysis also have limitations. The results of multivariate analyses depend to a great extent on the factors chosen for analysis. All methods of outcome analysis should incorporate methodology for ongoing revision, as improvements in selection of patients and operative technique may neutralize factors that in earlier times may have been important predictors of increased mortality rates.

It could be argued that currently, there is no readily available, universally accepted statistical method that can reliably compare hospital mortality data between hospitals or between individual surgeons. This argues strongly for the use of other indicators of quality of care in addition to hospital mortality rates, when the results of CABG are compared between different institutions or between individual surgeons. These indicators could include, but would not be limited to, perioperative complications (which could also be risk-adjusted), cost/benefit analyses,
improvement in functional capacity and quality of life, and patient satisfaction.

Limitation of Access to Appropriate Care

Publication of physician-specific mortality rates for cardiac operations may compromise the care of patients with heart disease who might benefit from operation. As an example, there are surgeons within a cardiac surgical group practice or in particular hospitals who, because of their seniority, expertise, or interest, do a disproportionate share of CABG or other cardiac operations on high-risk patients. Publication of physician-specific mortality rates, even if they are adjusted for risk, could adversely affect such surgeons and could result in a reduction in the number of high-risk patients on whom they will operate or in a refusal by them to treat high-risk patients.

The fear of publication of hospital-specific and physician-specific hospital mortality rates has led to referral of high-risk patients to other centers. This was shown by the American Broadcasting Companies on a television news program (The American Agenda, ABC News, May, 1991) where, following the release of hospital mortality rates for specific physicians in the state of New York, patients in Buffalo, NY, were being referred to cardiac surgical centers outside the state of New York because of concern by the hospitals and physicians about high mortality rates. The results of such a referral system may be beneficial, as high-risk patients may receive better care in centers that have experienced surgeons and highly trained staffs. However, if the surgeons who treat these high-risk patients also come under scrutiny, and their professional reputations and hospital privileges are jeopardized, then it is quite likely that the number of surgeons and the number of hospitals that are willing to treat high-risk patients will diminish.

Patients with high-risk conditions will likely experience increasing difficulty finding surgeons who are willing to treat these conditions. On an ABC Prime Time Live segment (June 4, 1992) it was stated that as a result of the publication of hospital and physician-specific mortality rates, a large university-affiliated hospital in the New York City area now “routinely turns down non-emergency high risk cases.” This problem may be accentuated among the elderly, the poor, and among ethnic minority groups who are often high-risk candidates for CABG.

Data are not available about the number of patients with serious cardiac disease who might benefit from cardiac surgery but who are not considered for operation because of a “high” operative mortality rate. This simple fact seriously belies the use of operative mortality statistics as an overall index of quality of care. Unwittingly, the health care system is not critical of the situation of a patient who dies of heart disease without operation when that patient could have an 80% to 90% probability of surviving and benefiting substantially from a cardiac operation.

Inappropriate Use of the Data

Numerous examples of inappropriate use of hospital-specific and physician-specific mortality data for personal gain exist. After the release of mortality data for CABG by HCFA, advertisements by hospitals with some of the lowest mortality rates appeared in local newspapers and in national newspapers such as the Wall Street Journal. Following the recent release of hospital-specific and physician-specific data for CABG in Pennsylvania, a hospital in Pittsburgh sent letters to cardiologists in the city and placed advertisements on billboards, in print, and on radio stations indicating that this hospital and its surgeons were treating “some of the sickest and most elderly patients in Western Pennsylvania with excellent results, while delivering care that is among the lowest cost in the Commonwealth.” Examination of the data released by the state of Pennsylvania indicates that in this hospital, the number of deaths that occurred following CABG equaled the number of deaths expected and that this was also true for 23 of the other hospitals in the state that perform CABG. There were four additional hospitals in which the number of deaths that occurred was less than the number of deaths expected. Eleven of the 34 other hospitals that perform cardiac surgery in Pennsylvania had average costs per case that were lower than those reported by this hospital [6].

Conclusions and Recommendations

The Society of Thoracic Surgeons strongly supports the concept that public accountability of the medical profession to patients, consumer advocates, purchasers of health care, and governmental agencies is essential. However, such accountability must be tempered by assurances that outcome data regarding CABG and other cardiac surgical procedures that are collected and released to the public are valid and reliable. The Society further believes that analysis of outcome events following cardiac operations is an important aspect of the assessment of quality of care. Operative mortality, however, is only one of these outcomes. Focusing on the physician-specific mortality rate as the sole or primary determinant of outcome is inappropriate because it may direct attention away from deficiencies that may exist in other parts of the system. Coronary artery bypass surgery is a complex operation that requires, in addition to competent surgeons, experienced anesthesiologists, nurses, and paramedical personnel, as well as optimal facilities.

Regular peer review within individual hospitals has been recognized for many years as a fundamental requirement for assuring optimal patient care. Internal review of hospital mortality and complication rates is a requirement of the Joint Commission on Accreditation of Health Care Organizations, which provides accreditation of hospitals. For the past 29 years, The Society of Thoracic Surgeons has maintained a Standards and Ethics Committee, which has responded to requests from over 50 hospitals in the United States to review the quality of cardiac surgical programs. Not uncommonly, poor outcomes were found to be associated with problems in the overall system rather than with individual surgeons. Use of mortality and other risk-adjusted outcome data from these sources by individual hospitals and surgeons can be used to
improve the quality of existing programs and, as has been shown in the state of New York, can lead to improved results [7]. Internal and external peer review are critical components in the assessment of quality of care provided to cardiac surgical patients and are likely to be more effective indicators of quality than simple numerical ranking of individual hospitals and surgeons according to their hospital mortality rates.

The Society of Thoracic Surgeons supports the policy of the American Medical Association regarding the release of physician-specific data to physicians, consumers, and purchasers of health care from carefully conducted studies where the data are deemed valid, accurate, and objective [8]. With the American Medical Association, it opposes the publication of physician-specific data collected outside of such carefully conducted studies or where the data are inconsistent, incomplete, invalid, inaccurate, or subjective. Participation by physician organizations and practicing physicians in the accumulation and analysis of such data and the opportunity to review and respond to proposed data interpretations and disclosures prior to their publication and release are essential.

The Society of Thoracic Surgeons has established a national data base for collection of data for cardiac surgical procedures and has accumulated information on over 200,000 patients. This data base may be helpful in the future providing large case loads for careful statistical analysis, which will provide a benchmark for assessing mortality rates, complications rates, and other outcomes of individual hospitals and surgeons.

Utilization of all of the mechanisms outlined above for evaluating outcome following CABG will likely provide a more accurate assessment of quality of care than physician-specific operative mortality rates. Health care providers and regulatory agencies should be encouraged to use them.

References


Nicholas T. Kouchoukos, MD, Chairman
Richard P. Anderson, MD
Richard G. Fosburg, MD
Vincent L. Gott, MD
Frederick L. Grover, MD
George J. Magovern, MD
Robert L. Replogle, MD