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Taking the measure of clinical care

Clinical trials are unsurpassed at estimating treatment effects, but observational studies uniquely tell us about actual clinical practice. In this issue two articles from the Canadian Cardiovascular Outcomes Research Team (CCORT) describe the in-hospital mortality rates of coronary artery bypass graft surgery (CABG) (pages 774-781) and percutaneous coronary interventions (PCI) (pages 782-789) performed in Canada from 1992 to 2001. The goal of these studies was to measure both crude and risk-adjusted in-hospital mortality rates by year and by province. The national scope of this study is unique, and these data are of importance to medical practitioners and to the Canadian people. Their publication deserves mention. I will comment on some specific findings and on some opportunities that may extend the current work.

During its 35-year history, CABG has become the most closely examined surgical procedure in the history of medicine. Regional and national databases have been established, and public reporting of results have become commonplace. The current findings describe continued decline of in-hospital mortality rates, with a current rate of approximately 2%. This rate compares well with those observed in northern New England (1) and by the Society of Thoracic Surgeons (2). The Canadian CABG study also shows statistically significant but relatively small scale differences in the provincial mortality rates.

PCI and their outcomes have been extensively studied since the mid-1980s (3). The results described in the current study show a doubling of PCI procedures and a relatively constant mortality rate of approximately 1.4% during the past nine years. There has been a very substantial decrease in the rate of urgent/emergency CABG surgery during this time period. There are statistically significant differences in the reported provincial PCI mortality rates. During the course of this study the PCI procedure has been changed substantially by the widespread use of coronary stents (4,5) and the development of improved antiplatelet agents. In addition, PCI has become the treatment of choice for the initial revascularization of acute myocardial infarction (6). These improvements in the processes of clinical care and the increased use of the technique in a more acute setting influence the mortality rates in opposite directions, and in combination they may be responsible for the constant mortality rates seen in most PCI databases. These findings are similar to those reported by others (7,8).

Overall, these results are good news for both physicians and patients. With respect to coronary revascularization, Canadians are being well served by their health care system. The members of CCORT are to be congratulated for their work on this substantially complex measurement task. Measurement is of critical importance; it provides the answer to the clinician’s question “How am I doing?” Management experts contend that if you cannot measure a process then you cannot manage it. In health care the measurement task is made more complex by differences in the clinical characteristics of patients. The Canadian Institute for Health Information hospital discharge database made this excellent study possible but could not make it perfect. Important variables such as emergency surgery, cardiogenic shock, left ventricular ejection fraction and the extent of coronary artery disease are not routinely collected in administrative databases. Further, the reported rates of some comorbid conditions (such as diabetes, chronic lung disease and peripheral vascular disease) are lower than would be expected, suggesting incomplete documentation. This lack of specific clinical data makes really accurate risk adjustment difficult or impossible. At a high level of aggregation, such as annual reports of the national data, this lack of detailed data is unlikely to substantially change the results. However, on a provincial or hospital level the inability to adjust for subtle differences in case selection may substantially confound the results. Some may say that these relatively small differences are not important and that the extra

expense that would be required to obtain detailed clinical data is not justified by the benefit. The benefit is improved patient care. Measurement is important but it is an objective, not a goal. The combination of accurate data and clinical insight yields information. Information leads to understanding of the relationship between specific processes of clinical care and patient outcomes. This understanding may lead to improvements in clinical care that would benefit individual patients. Of course, these benefits must be weighed against other societal needs for resources.

There are additional tasks that may be usefully undertaken and that may accelerate the rate of improvement in clinical care. In industry and in health care, benchmarking is likely to result in improved clinical processes (9). Visits to other heart surgery or invasive cardiology programs often provide valuable insight about the organization of care. Team building is a related and important area. Heart surgery and advanced cardiac care are large scale group processes. The medical centres with the best clinical outcomes often have the best defined clinical processes (10). None of the above comments should suggest that quality improvement is remediation. Rather, it should be thought of as pursuing perfection. CCORT is a very important strategic resource. Measurement is essential but is not sufficient. Their continued work will benefit patients and provide an example for other clinical specialties.

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