Large Cardiac Registries: The Path to Higher Quality and Lower Cost in Our Healthcare System

Thomas J. Ryan, MD

This observer agrees with Stanford economist Victor Fuchs that the 3 major reasons to undertake systematic reform of the US healthcare system are (1) to provide coverage for the uninsured, (2) to correct significant lapses in quality, and (3) to control the high and rapidly increasing cost of care.\(^1\) The “how to” for achieving each of these objectives is clear. It merely requires defining who is to be covered under universal coverage, insisting that we have “effective care,” and deciding the best way to achieve payment reform. On the other hand, the devil is in the details, as became abundantly clear during this past year of congressional debate before the passing of the Patient Protection and Affordability Act. Of the 3 issues cited, coverage is the most clearly addressed in this legislation, although, as it now stands, some millions of uninsured will still remain. The other 2 issues, quality and cost of care, appear the most threatening. Michael Chernow of the Harvard Department of Health Care Policy, in discussing the increasingly larger annual deficits ($1.3 trillion dollars in 2010) and their resultant debt burden ($8.8 trillion at the end of 2010), representing 60% of the gross domestic product, underscores how unsustainable these figures are and cautions that the result will be a financial Armageddon.\(^2\) Accordingly, it is imperative that we members of the cardiovascular community provide workable solutions to improve quality and reduce the cost of care because, if we fail, it will bankrupt us.

In this regard, and equally pertinent to the “devilish details” accompanying health reform law (PL 111–148; PL 111–152), is an informative article published in this issue of Circulation by Hannan and colleagues.\(^3\) This “tale of two cities” examines differences in utilization rates, practice patterns, and facilities available for percutaneous coronary intervention (PCI) in New York State (NYS) and Ontario, Canada. It uses the highly regarded cardiac registries located in NYS and Ontario to compare the temporal trends of cardiac invasive procedures in NYS and Ontario using population-based data from 1997 to 2006, stratified by procedure indication. The objective was to investigate whether substantial differences in the utilization of costly procedures such as PCI and coronary artery bypass grafting (CABG) existed between a program financed under the free-market system in NYS and the single-payer, government-controlled system in Ontario.

The principal finding was that in patients with coronary artery disease, excluding those with acute myocardial infarction (AMI), the age- and sex-adjusted rate of elective (discretionary) PCI was 2.3 times greater in NYS than in Ontario in 2004 to 2006. This is in keeping with prior studies that attributed this difference in large part to the methods of financing health care in the United States and Canada.\(^4,5\) Such a discrepancy is not surprising considering that the US market-oriented healthcare system, even with Certificate of Need legislation, does not place any formal restrictions on the volume of cardiac procedures performed and tolerates duplicative services in the same geographical areas. In contrast, the volume of cardiac procedures, location of cardiac facilities, and funding of services in Canada are determined by the single-payer provincial governments and account for the price differential per capita between the 2 systems. The present study also confirms that there are considerable differences in the higher ratios, NYS versus Ontario, of interventional cardiologists (3:1), cardiac surgeons (2:1), and cardiac facilities (2.5:1). As we have learned, the more capacity a system has, the greater its utilization rates. Underutilization of cardiac procedures in Canada’s single-payer system was blamed for excessively long waiting times that resulted in many unnecessary deaths.\(^6\) This led to the formation of the Cardiac Care Network of Ontario (CCN), an independent panel of experts charged with the task of monitoring and management of cardiac waiting lists as well as providing “evidence-based target rates” for cardiac procedures that reflect the perceived needs of the population. As a consequence, there has been a substantial increase in the population rates of PCI and CABG and a marked reduction in waiting times in Ontario to a median of 3 days for PCI and 12 days for CABG.\(^7\)

Interestingly, the rates of elective (discretionary) CABG were not significantly different between the 2 systems and likely reflect the propensity of cardiologists in both countries to recommend PCI over CABG. In the case of patients with AMI, however, differences in urgent (nondiscretionary) coronary revascularization rates between NYS and Ontario narrowed substantially over time. In 2004 to 2006, the ratio was only 1.3 times higher for PCI and 1.4 times higher for CABG in NYS relative to Ontario. This latter finding gives evidence to the fact that regardless of financing by either a single-payer or a market-based system, practice patterns of interventional cardiologists were shaped by evidence-based
data that PCI was superior to other forms of reperfusion in AMI therapy.

Additional lessons can be learned from this observational study that reveal some of the downsides of governmental control and relate to another experience the same CCN panel of experts encountered relating to emergency PCI for patients with ST-segment–elevation myocardial infarction. The panel recommended a province-wide regionalized approach to increase access to PCI for patients with ST-segment–elevation myocardial infarction (24/7 coverage) on the basis that primary PCI improves patient outcomes the earlier it is performed. However, this proposal was independently reviewed by the Ontario Health Technology Advisory Committee, which concluded that a regionalized system was not cost effective and that a province-wide reorganization of emergency medical services was considered impractical. In addition to being quite the opposite view taken by the American Heart Association’s very successful Mission Lifeline program, it is now well documented that Ontario had fewer than 10% of patients with ST-segment–elevation myocardial infarction treated with emergency PCI, and even among those facilities capable of PCI, it was found that only a third of the 12 such hospitals were performing primary PCI around the clock in 2007. In contrast, NYS emergency PCI employs a 24/7 coverage that expends both the financial and human resources to do so. Comparing same-day PCI rates for AMI, NYS performed twice as many emergency procedures per capita as Ontario. Even when altering the definition of emergency coronary revascularization to include procedures performed within 24 hours, the findings showed that NYS performed 1.8 times as many emergency PCIs and 4 times as many CABGs per capita in the 2004 to 2006 time frame. As Table 4 of the Hannan report summarizes, adjusted rates for coronary revascularization for recent AMI showed a relative ratio of 1.3 and an absolute difference of 23.6 per 100,000 patients.

Unfortunately, the Hannan article is limited by the lack of many data elements necessary to compare outcomes of similar cohorts of patients, the appropriateness of their care, and the actual cost of care, because they were not available in either one or the other databases. The point worth making is that these data elements, and more, do exist and could be available for in-depth analyses not only of cost but also how best to provide effective or optimum cardiac care. Regardless of how such care is eventually defined, it will, per force, have to include in its calculus a quantification of complication rates and sequelae over time, as well as an appropriateness score in addition to the customary success or failure rates. The sum cost of all these variables will constitute the denominator. Simply stated, the formula is as follows: effective cardiac care = all outcomes/the total cost. These are the very kind of data that are being sought by the newly established Independent Medicare Advisory Board created under the Health Reform Act. The intent is to bring more science and less politics to the process of making specific recommendations to improve quality and reduce costs in the Medicare program. A request for proposal is not due until 2014 and, if approved, will have the merit of automatically becoming law unless Congress affirmatively disapproves it.

In my view, we now have a unique opportunity for the cardiovascular community to put together a pilot program that uses the many outstanding database systems in this country to address, initially, the same entities as the Hannan study: AMI, PCI, and CABG in coronary patients. After compiling all the requisite data elements in this clearly defined population from all regions of the country, the object would be to establish more precise estimates of pertinent variables, such as (1) cost of such care and its regional variations; (2) both short- and long-term mortality rates, as well as major cardiac complications; (3) the determinants of effective care; and (4) definition for some measure of appropriateness of care. These and other findings could then be compared with the relevant American Heart Association, American College of Cardiology, and American Society for Clinical Investigation Procedural and Practice Guidelines to arrive at sensible policies that are evidence-based at a justifiable cost for this specific cardiac care. The end product of this pilot would then go forward as a request for proposal for the advisory board to consider submitting under its statutory obligation to reduce increased Medicare spending. It is to be stressed that Medicare, as a single-payer model under government control, has ordained that implementation of the board’s recommendations by the Secretary of Health and Human Services is not subject to administrative or judicial review.

There are clearly some issues to be resolved in constructing such a proposal, not the least of which are how generalizable is such a model and how will the costly process (funds plus full-time employees) of capturing the data elements requisite to defining effective be achieved? It will basically depend on how appealing one can make the fact that we are dealing with a disease that represents one of the leading causes of death and disability in this country, and its management consumes a significant portion of the healthcare dollar. The talent pool that exists within organized cardiology (American Heart Association, American College of Cardiology, American Society for Clinical Investigation, etc) that encompasses practitioners, academics, investigators, and some from the world of business will have to supply the leadership for this effort. After the prompt submission of the sharply focused pilot study, it would seem wise that a senior group of leaders supplement the proposal with policies that address the less visible but costly behavioral practices of physicians, such as the propensity to test and treat; undertake needless procedures, often at a patient’s request; delay procedures that extend lengths of stay; and practice defensive medicine to avoid the possibility of suit. Tort reform should be supported, especially where it relates to tragic outcomes that have no relation to malfeasance.

Not to be overlooked are the cost savings to be realized by reducing errors in medicine such as the dispensing of medicine incorrectly, either by dose, amount, or wrong drug, in our medical system; the dreaded hospital infections, septic wounds, and other errors, both medical and surgical, that can be sharply reduced by a “checklist” system of care approach. The present study by Hannan et al amply demonstrates the scope of vital information necessary to improve medical practice that can be amassed by large data registries.
Coordinating such inputs from around our country is integral to our success in assuring that healthcare payments are tied to sound medical care. Presently, it is the Independent Medicare Advisory Board that has the force of law behind its proposals which should be our immediate objective and represents an opportunity we should not squander.

Disclosures
None.

References

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