Reduce Acute Care Costs, and All Other Healthcare Costs Too

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We have been hearing for years that healthcare costs in the United States are higher than in most of the rest of the world, that they are increasing and are unsustainable.[1] Cardiovascular diseases remain the number one cause of death and disability in most of the world, and in the United States, they account for a considerable share of the economic burden.[2,3] Much of the costs for cardiovascular disease is related to hospitalizations for cardiovascular events. In particular, a high-cost event is hospitalization for acute myocardial infarction (MI). In this regard, the article in this issue of the *Journal of the American Heart Association* (*JAHA*) about the costs of acute MI from the TRANSLATE-ACS (Treatment With ADP Receptor Inhibitors: Longitudinal Assessment of Treatment Patterns and Events After Acute Coronary Syndrome) registry is timely and informative.[4]

The TRANSLATE-ACS registry was a prospective registry of 12 365 patients hospitalized with an acute MI between April 2010 and October 2013. These patients were from 233 hospitals in the United States that participated in the American College of Cardiology National Cardiovascular Registry. The patients all underwent percutaneous coronary intervention (PCI) and were discharged on the P2Y12 inhibitor clopidogrel (72%) or prasugrel (25%). Data were prospectively collected on case report forms. Measures of resource use include length of stay, diagnostic catheterization, transfusions, and types of revascularization. Billing data from a randomized sample (n=4619) of the cohort were collected to estimate the initial hospitalization costs. Follow-up hospitalizations were identified by telephone interviews and from electronic health records. Follow-up billing was requested from the hospitals and, in addition to charges, included length of stay, intensity of care, procedures, *International Classification of Diseases, Ninth Revision* (*ICD-9*), code, and Medicare severity–diagnosis-related group costs and discharge disposition. Hospital charges were reduced to costs using hospital-specific, departmental cost/charge ratios. Missing hospital bills (0.5%, baseline; 7.3%, follow-up) were imputed on the basis of reported length of stay and median daily costs for the type of hospitalization. Hospital costs were adjusted to 2013 US dollars. Physician costs were estimated by assessing major physician services for specific hospitalizations and applying costs from the Medicare physician reimbursement rates.

Of the 11 969 patients in the study, just over half presented with an ST-segment–elevation MI (STEMI), 14 (0.1%) died during the index hospitalization, and 11 599 (97%) had complete data for at least one hospitalization. Complete data at 1 year were available for 10 439 patients. The mean age was 59 years, 28% were women, 12% were nonwhite, and 15% were without insurance. Most patients were treated at teaching hospitals (73%) and in urban locations (96%). Most patients received at least one coronary stent (97%), mostly drug eluting (73%). Complications included heart failure (1.4%), cardiogenic shock (1.2%), non–coronary artery bypass grafting surgery (1.0%), indexes of bleeding (0.6%), recurrent MI (0.7%), and coronary artery bypass grafting (0.2%). Most patients were discharged to their home (99%). The average cost of the initial hospitalization was $18 931, including physician fees. The adjusted costs were increased for heart failure, longer lesions, difficulties with self-care, and bleeding risk. Costs varied by regions of the country, being highest in the West. Complications increased cost substantially, in particular coronary bypass surgery ($42 277), other surgery ($13 317), stroke ($17 809), recurrent MI ($7291), heart failure ($4566), and bleeding ($2026); and in the non-STEMI group, intensive care unit care ($3282).

In the year after discharge, 3% died and 48% underwent additional hospitalizations. Follow-up costs averaged $8037, 57% of which were cardiovascular. Follow-up costs increased with multivessel disease ($5277), heart failure ($4196), multiple comorbid conditions, indexes of health status (eg,

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measures of quality of life and self-care), and initial process measures (eg, PCI without a stent and sole use of bare metal stents).

This study has several excellent attributes. The data collection was reasonably complete; and for missing data, the use of imputation was appropriate. The data were collected prospectively on case report forms, allowing better quality of data on severity of disease, comorbidity, processes of care, and socioeconomic factors than administrative databases.[5] Follow-up to 1 year offers a better understanding of costs than a study limited to the index hospitalization. The analysis, presentation of the data, and discussion of the study were excellent.

However, there are inevitably several limitations to this study, largely noted by the authors. The study did not have an alternative source to assess whether there was full accounting for all subsequent hospitalizations. Participation by the hospitals was voluntary and not reflective of the national population with acute MI, being younger, having fewer minorities, and more often being teaching hospitals. Physician resource use was not directly accounted for and was approximated. Costs during follow-up outside of hospitalizations were not accounted for. The percentage of STEMIs compared with non-STEMIs was higher than has been noted in other studies.[6] All patients underwent PCI, and almost all were discharged alive; both of these issues were by design. In particular, the number of patients with cardiogenic shock was low. Contemporary patients with cardiogenic shock or even hemodynamic instability may undergo procedures to provide hemodynamic support, considerably increasing cost.[7] Finally, the nonmedical costs, such as the cost of disability or the need for non–medical care providers, were not included.[8] Although not invalidating the study, these issues do limit the ability to generalize these results to the population of the United States hospitalized for an acute MI. Thus, we should not say that the 1-year costs identified in this study can be widely adopted as a benchmark for the cost of acute MI. Nonetheless, there is much to learn from this study.

The drivers for cost include factors related to severity of illness and comorbidity as well as complications and hospital characteristics. The authors note that the care providers in the hospital will have limited ability to reduce costs, perhaps offering some relief to beleaguered care providers on the front line in the hospital. One possibility the authors note, in particular, is to less frequently use the intensive care unit for stable patients with STEMI. This has likely occurred in many places already as contemporary cardiac intensive care units are largely consumed by taking care of the most critically ill patients with hemodynamic compromise and other serious acute care problems.[9] Care providers are and will continue to be strongly motivated to avoid complications. Hospitals are already acting to shorten length of stay.[10] Reducing rehospitalizations after an acute MI remains an area of considerable focus on the part of healthcare systems and the Centers for Medicare and Medicaid Services.[11] Indeed, financial incentives will continue to drive healthcare systems to shorten length of stay and prevent rehospitalizations.[12] However, the ability to reduce rehospitalizations, even with optimal care, will be limited by patients experiencing recurring serious medical problems. There may be opportunity to reduce costs by greater efficiencies and cost reductions overall, such as controlling the use and costs of pharmaceuticals and devices. In particular, the use of expensive hemodynamic support of PCI should be limited to those patients in whom there is compelling evidence, hopefully from randomized controlled trials, of improved, cost-effective outcomes compared with otherwise contemporary care.

It would appear that although a focus on cost and cost-effectiveness of acute care is necessary, it is not clear that this will have more than a marginal effect on overall healthcare costs. Care for stable patients with chronic diseases also needs to be an area requiring ongoing attention. Thus, expensive procedures for chronic diseases need to be justified (eg, although PCI has been shown to prolong life in the setting of an acute MI, such evidence is lacking for stable ischemic heart disease).[13,14] The high cost of pharmaceuticals in the United States is well known.[15] Perhaps less appreciated, but of considerable importance, is the high rate of administrative costs in the United States.[16] This could potentially be limited by adopting a single-payer system, now at the forefront of political discussion.[17]

The biggest of opportunity and challenge concerns prevention. The reduction of death from MI by >50% in the United States over the past 50 years is related to prevention.[18,19] Most atherosclerotic cardiovascular disease is preventable. Some components of prevention will not increase and may reduce costs (eg, increased physical activity and elimination of tobacco smoking).[20] Therapy for high blood pressure and hyperlipidemia has been shown to be cost-effective, if not cost saving.[20] The control of costs in our healthcare system will require addressing multiple issues, including greater efficiency of acute care; judicious care of chronic illnesses, including avoidance of expensive unnecessary procedures; control of pharmaceutical prices; reduction of administrative costs; and a greater focus on prevention. This is a big, crucial endeavor that will require all stakeholders in society to take part.

Disclosures

None.

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