Evidence-Based Medicine: Making the Grade
Miles to Go Before We Sleep

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Rarely has cardiovascular medicine faced greater challenges. Rarely have our patients expected more of us. But never have we had such tools to make people well. . . . It is time to make good on that promise.1

During the past 2 decades, there have been major advances in medical therapies that can improve outcomes for patients with cardiovascular disease. The Institute of Medicine in its 2001 report Crossing the Quality Chasm2 observed major deficiencies in the health care provided for patients and emphasized the importance of applying evidence-based therapies to patient care. In this issue of Circulation, 2 studies provide important information about the use of these therapies among patients with hypertension and for those with known coronary heart disease. Their findings reveal increased use of medical therapies but suggest a need for broader emphasis on strategies that will improve patient adherence to prescribed therapies and focus on eliminating existing sociodemographic disparities.

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The study by Gu et al3 compares National Health and Nutrition Examination Survey (NHANES) III (1988 to 1994) and NHANES 1999 to 2002 data to investigate trends in the use of antihypertensive medications among US adults with hypertension. Compared with NHANES III, the NHANES 1999 to 2002 hypertensive population had higher body mass index values and higher prevalence of diabetes but lower prevalence of chronic kidney disease. During the period studied, a favorable increase in the use of antihypertensive medications occurred, with 62.9% of patients receiving prescribed therapies in 1999 to 2002 compared with 57.3% in 1988 to 1994 (P<0.01). The use of polytherapy with calcium channel blockers, β-blockers, or angiotensin-converting enzyme inhibitors also increased, whereas monotherapy with diuretics or β-blockers decreased, reflecting a broader application of multiple treatment strategies. The greatest increase in use of antihypertensive medications occurred among older non-Hispanic white and black men. Overall, the use of antihypertensive therapies was lower among men than women and among Mexican Americans than among non-Hispanic whites and blacks. Although the number of patients reporting control of hypertension has increased from 25.8% to 31.8% (P<0.001), the vast majority of patients with hypertension in the United States are not treated to target levels, confirming the concerns of the Institute of Medicine report. The observed blood pressure control rates remain well below the Healthy People 2010 goal of 50%.4 Because hypertension is a major risk factor for stroke, heart failure, coronary heart disease, and end-stage renal disease, this finding emphasizes the need for major preventive therapy initiatives.

The study by Newby et al5 analyzes the use of evidence-based therapies (aspirin, β-blockers, statins, and angiotensin-converting enzyme inhibitors) during the period from 1995 to 2002 for patients with documented coronary artery disease in the Duke Databank for Cardiovascular Disease, which includes 22,539 patients with coronary artery disease and no evidence of congestive heart failure and 8914 with coronary artery disease accompanied by heart failure. Their report is of particular interest because it provides information on the use of medical therapies over time and examines consistency of use long term and its relationship to mortality. The proportion of patients reporting use of each agent was observed to increase over time, with the peak rates of use occurring in 2002, the latest year of the study. At that time, the use of aspirin was 83%; β-blockers, 61%; lipid-lowering agents, 63%; and angiotensin-converting enzyme inhibitor use, 39% for patients without heart failure versus 51% for those with heart failure. Newby et al also report information on the consistent use of these medications. Only aspirin was used consistently in more than half of the patients (71%), and only 21% of patients reported consistent use of combined aspirin, β-blocker, and statin therapy. In contrast to the study on hypertension, increasing age at entry predicted lower use of medication, except for angiotensin-converting enzyme inhibitor use in those patients without heart failure. The consistent use of aspirin, β-blockers, lipid-lowering therapy, and angiotensin-converting enzyme inhibitors in patients with heart failure was associated with improved long-term outcomes.

Newby et al conclude that although the use of evidence-based therapies of patients with coronary artery disease has improved, their use remains suboptimal, and the authors underline the importance of focusing attention on improving long-term adherence to these therapies.

Both studies documented increased use of therapies that can improve outcomes for patients with cardiovascular disease. Yet, both indicate that most patients are not receiving therapies that could significantly improve cardiovascular outcomes. The American Heart Association and others have
initiated successful programs that have increased the prescription of these therapies at the time of hospital discharge.\textsuperscript{6–8} The Can Rapid Risk Stratification of Unstable Angina Patients Suppress Adverse Outcomes With Early Implementation of the ACC/AHA Guidelines (CRUSADE) National Quality Improvement Initiative has reported a decrease in hospital mortality associated with incremental increases in the use of guideline recommended medical therapies. Data from the American College of Cardiology’s Guidelines Applied in Practice (GAP) program reveal improved survival at hospital discharge, 30 days, and 1 year among patients receiving guideline-recommended therapies during hospitalization for acute myocardial infarction. Results from these programs emphasize the importance and value of systems directed toward increased use of evidence-based therapies in improving cardiovascular outcomes.

Many factors affect patient adherence to prescribed medical therapies. These include multiple daily dosing regimens, lack of patient understanding of the benefits of therapy, side effects, and cost of medical therapies, especially among the uninsured. Older patients with altered mental status or declining memory frequently have problems with adherence. Clearly, the problem of patient adherence to prescribed medical therapies is complex and can be solved only by addressing multiple levels of the healthcare process. A statement from the AHA Expert Panel on Compliance recommends that emphasis be placed on implementing strategies to improve adherence to medical therapies at the patient, provider, and organization levels.\textsuperscript{9} The system or organization within which clinicians work should provide resources to aid in improving patient adherence. In this regard, nurse-managed, cardiovascular risk-reduction programs can aid in improving patient adherence to medical therapies.\textsuperscript{10,11} To further understand the factors that relate to improving patient adherence and their associated outcomes, the CRUSADE quality improvement initiative has begun a program at 50 sites in which patients will be contacted via telephone at 3 and 12 months to assess medication adherence and attitudes, functional status, and reoccurrence of events and hospitalizations. Quality improvement programs must continue beyond the period of hospitalization and involve the outpatient setting if we are to recognize the full benefit from evidence-based therapies to improve cardiovascular outcomes.

It is imperative that systems developed to improve the use of and adherence to evidence-based therapies also address existing sociodemographic disparities. The improved treatment rates among non-Hispanic black women are to be commended and must be extended to the Mexican American patients with hypertension, especially the younger men for whom treatment rates remain low. Data presented at the AHA Minority Health Summit\textsuperscript{12} indicate that mortality from heart disease and stroke is highest in underserved racial/ethnic groups. Although the cause of disparities in health care is multifactorial and may include significant language and educational barriers, it is essential that systems be developed to include improved use of evidence-based therapies for these patients.

We have clearly made progress in the implementation of evidence-based therapies for the prevention and treatment of cardiovascular disease. Yet, as heartening as these results may be, most patients still do not receive the comprehensive medical therapies that can dramatically improve cardiovascular outcomes. If we are to recognize the true potential of these therapies, we must build on the encouraging progress noted by the 2 studies reported in this issue of \textit{Circulation} and provide the necessary focus and resources to see that the remaining gaps in therapy are eliminated for all sociodemographic groups. This will require a sustained effort directed toward improved implementation of and adherence to evidence-based medical therapies.

Disclosures
Dr Smith has served as a consultant to and/or received honoraria for speaking from Bayer, Sanofi-Aventis, Eli Lilly, GlaxoSmithKline, and Pfizer during the past year.

References

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