

Progress Against Cardiovascular Disease Putting the Pieces Together

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The *JAMA* theme issue on cardiovascular disease (CVD) recognizes the progress made in CVD but also acknowledges the challenges that remain. On the positive side, from 2000 to 2010 age-adjusted death rates attributable to overall CVD in the United States declined by more than 30%. Yet CVD continued to account for a third (787 650) of the 2.5 million deaths in the United States per year, an average of 1 death every 40 seconds.¹ Worldwide, the picture is more concerning. The incidence of CVD is increasing rapidly in low- or-moderate income countries, and according to current World Health Organization statistics, ischemic heart disease and stroke were the number 1 and number 2 leading causes of death in the world in 2012.² With renewed interest in noncommunicable diseases, there has been greater focus on CVD.

This theme issue includes reports addressing several important aspects of CVD including atherosclerotic disease, heart failure, valvular heart disease, and atrial fibrillation. For example, in one report from a large observational Swedish heart failure registry, patients with heart failure and preserved ejection fraction (HFPEF) showed possible benefit of β -blocker treatment in reducing all-cause mortality.³ These observational results suggest a rationale for a clinical trial of β -blockers in HFPEF. Another article describes an unblinded trial of patients with nonvalvular atrial fibrillation at elevated risk for stroke who were followed up for 3.8 years. Compared with patients who received warfarin, those who received percutaneous left atrial appendage closure met criteria for both noninferiority and superiority for preventing the combined outcome of stroke, systemic embolism, and cardiovascular death, as well as superiority for cardiovascular and all-cause mortality.⁴

A research letter in this issue shows both positive and negative trends in mortality rates for specific cardiovascular diseases between 2000 and 2010. The report confirms the well-known statistic that overall CVD mortality remains the leading cause of death in the United States despite major declines in mortality rate, driven mostly by a decrease in coronary heart disease mortality. Less well-recognized, as indicated in the report by Ritchey et al,⁵ is the increase in heart disease deaths attributable to hypertensive heart disease and arrhythmia in this same period. As signified by the research reports in this issue, there is good news because of some successes, but substantial ongoing challenges remain. Keeping both sides of the story in focus is necessary to understand the full picture.

A prime example of both the promise and problems in addressing CVD has played out this past year in the area of CVD prevention. Since the time of the 2013 *JAMA* CVD theme is-

sue, new practice guidelines for CV risk assessment,⁶ lipids,⁷ hypertension,⁸ and obesity⁹ were released in the United States. These new practice guidelines represented the culmination of the efforts by many to assemble and analyze the results from multiple large clinical trials. While these guidelines have brought praise, they have also been controversial, in particular in areas for which the evidence is still incomplete. However, the new guidelines, like the story about CVD in general, tell of success with remaining challenges.

Epidemiologic and clinical studies have demonstrated that CVD prevention is feasible, realistic, and within reach. Elevated blood lipid levels, hypertension, elevated blood glucose levels, overweight, unhealthy dietary habits, cigarette smoking, and insufficient regular exercise are established primary causal factors of CVD.¹⁰ While these risk factors remain highly prevalent (part of the challenges), when these modifiable factors are absent in youth and middle age, epidemiologic evidence shows a life course virtually free of major CVD burden (very good news).¹⁰ The American Heart Association has termed these 7 modifiable factors "Life's Simple Seven" and has promoted the recent concept of "ideal cardiovascular health."¹⁰ Keeping the opportunity for greater prevention and control in focus is the critical message of this new American Heart Association initiative and the underlying goal of the new prevention guidelines.

Three key steps have been outlined for ensuring continued progress.¹¹ 1. Strengthen the evidence. Clinicians and the general public need to know what works, in whom, the size of the likely benefits, and the trade-offs in risk. 2. Strengthen the implementation. There is a need to capitalize on a variety of emerging technologies, devices, and applications, as well as care delivery models to help patients take positive steps toward a state of ideal cardiovascular health.¹⁰ 3. Strengthen the patient's voice and empower patients to improve their health. To be most effective, the prevention strategies selected need to be personalized and individualized to match the values and behavioral needs of the patient.¹²

The new guidelines emphasize each of these points. They encourage clinicians to assess CVD risk in all patients, share that risk information directly with patients, and use this information as a basis to initiate an informed conversation about ways of improving patients' prognosis.¹³ Additional steps after that involve the still-evolving concept of shared decision making and depend on physician and patient preferences, behavioral considerations such as readiness to make changes, costs, and others. While more work should be done to make some of the recommendations more accessible to patients, the

key point is to make prevention and treatment of the risk factors a top priority, because reducing the risk factors lowers the risk.

In the near future, additional tools will become available to assist patients in managing the challenge of behavior change and reaching a state of ideal cardiovascular health. It will be helpful to create from the obesity and lifestyle guidelines more accessible materials for patients and the general public. Mobile technologies, including monitors and message-delivery systems, smartphone applications, and other self-help devices, will combine with a growing move-

ment in patient empowerment. Fueled by additional advances in basic, clinical, and population science, the full picture of cardiovascular health and disease takes on a very promising dimension. We are optimistic and look forward to continued progress.

The cover of this theme issue is a reminder of the opportunity and the need to “put all the pieces together” to grasp the full picture of CVD and health. We invite everyone to enjoy the fulfillment of building your own heart art, and we hope you will combine it with continued efforts to paint a more healthful CVD picture in the near future.

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