

Opportunities to Improve Outcomes in the Heart Failure Patient: Alleviating Symptoms and Prolonging Life

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Congestive heart failure (CHF) currently affects nearly 5 million people in the United States and both its incidence and prevalence continue to increase around the world. Reports indicate that in more than 66% of patients, heart failure is the result of left ventricular (LV) remodeling after a myocardial infarction (MI). Patients with moderate LV dysfunction have an approximate 25% increased risk of premature death over 2.5 years; 50% of these deaths are thought to be due to sudden cardiac death (SCD), and may be preventable. Progressive LV dilatation develops in 50% of MI survivors, resulting in early contractile dysfunction. In most of the remaining patients with heart failure, ventricular remodeling results from primary myocardial disease.

Despite formidable decreases in risk of SCD since the 1990s, it remains a significant cause of mortality in the United States. The annual incidence rate is estimated to be between 50 and 90 per each 100,000 of the general population, and to account for 62% to 75% of all US coronary heart disease deaths.¹⁻⁵

As the US population continues to age and as survival from MIs, primary myocardial diseases, and other coronary episodes continues to increase, the rate of SCD among patients with CHF is expected to rise concomitantly.^{1,6,7} With an annual cost of \$30 billion (more than \$10 billion in hospital costs, alone),¹ CHF represents an enormous drain on medical, financial, personal, and societal resources. Clearly, prevention is the long-term answer whereas optimal disease management is the best approach for those afflicted with CHF. Both solutions, however, must be accompanied by, and indeed are predicated on, an increased awareness among the public and health care providers of the magnitude of this public health risk; the various medical and device options currently available to relieve the medical, personal, and economic burden caused by CHF and sudden death; and the importance of implementing and adhering to evidence-based guidelines.

Despite the use of proven medical therapies, such as β -blockers, angiotensin-converting enzyme inhibitors, and aldosterone antagonists to treat patients with CHF,^{8,9} patients can and do die unexpectedly and suddenly. In efforts to prevent SCDs and improve symptom status, heart failure patients are treated either pharmacologically or with targeted device therapy such as pacemakers for cardiac resynchronization (CR) or an implantable cardioverter-defibrillator (ICD). CR therapy results in improved ventricular contraction and has been shown to be effective in CHF patients with left ventricular systolic dysfunction and prolonged intraventricular conduction. Recently it was proved in findings from the SCD-HeFT trial that an "ICD significantly decreased the relative risk

of death by 23%, resulting in an absolute reduction of 7.2 percentage points at 5 years among patients with CHF who received state-of-the-art background medical therapy and the benefit did not vary according to the cause of CHF."¹⁰

Developing new technologies and identifying additional patient groups most likely to benefit from targeted device therapies are the challenges faced by clinicians and clinical scientists working to reduce the numbers of patients who die from SCD each year. Based on the results to date, the future not only holds great promise for physicians who treat patients with heart failure but also presents us with exciting challenges in public health education.

Toward this end, a meeting of nationally recognized opinion leaders in the field of cardiology and heart failure treatment was convened to discuss the latest research results and clinical developments in CHF, SCD, and opportunities to improve outcomes for patients with heart failure. The results of these discussions and presentations are gathered in this supplement to *Reviews in Cardiovascular Medicine*.

Drs. Hiestand and Abraham begin the supplement with an examination of the results of 3 large clinical trials, EPHEsus, COMET, and CHARM, that have provided evidence of benefit with medical therapy including the selective aldosterone inhibitor eplerenone, the β -blocker carvedilol, and the aldosterone-receptor blocker, candesartan, for patients with heart failure. The authors conclude that not only is it feasible to design and conduct heart failure studies large enough to assess improvements in mortality and morbidity but also that it is becoming increasingly clear that multiple pharmacologic agents are

required for optimal patient treatment. Dr. Saxon follows with a review of the current SCD statistics and an identification of those patients at greatest risk of sudden death. A description and evaluation of the long-standing, but "underutilized" medical therapies and the use of the newer/promising device therapies that improve overall and SCD survival is included, along with a call for improving public and professional awareness of CHF and risk of SCD.

Dr. Estes and associates then present a summary of results of recent device trials in heart failure patients, including the landmark SCD-HeFT Trial, and discuss how best to apply these results in a clinical setting. The authors believe that targeted device therapy has the potential to significantly improve clinical status and outcomes when appropriately combined with medical therapy. Among the other salient results reported is the fact that ICD therapy can significantly reduce mortality from SCD among patients with reduced LV function. Dr. Fonarow continues with a discussion of the underutilization of evidence-based guideline-recommended therapies for patients with CHF and documents treatment gaps in patient care, including patient education. He demonstrates the benefits of using evidence-based therapies and states that implementing hospital-based systems and outpatient disease management programs for heart failure care can result in substantial reductions in risk of further hospitalizations and death in a large number of patients with CHF.

The supplement concludes with the perspectives of Dr. Yancy, who points out that data demonstrate that compliance with evidence-based strategies is unacceptably low,

a fact that threatens to affect quality of care for many CHF patients. He proposes a treatment algorithm for patients with CHF and states that by correctly applying proven therapies, particularly medical and device platforms, heart failure incidence and prevalence can be greatly reduced.

I want to thank my colleagues, all experts in their field, for sharing their insights and expertise in this important, challenging, and ever evolving clinical area, and particularly Dr. Clyde Yancy for overseeing the project as supplement editor. I also thank Medtronic, Inc. for providing the funding necessary to present this contemporary, compre-

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