

SUDDEN CARDIAC ARREST*Prevention is the Cure*

Sudden Cardiac Arrest (SCA) continues to be a major public health problem. SCA is a leading cause of death in the United States, exceeding the total number of deaths from breast cancer, lung cancer, and AIDS combined (1,2). SCA accounts for 15 to 20 percent of the total mortality in the United States each year (3), with the number of deaths estimated in the range of 300,000 to 350,000. Unfortunately, the magnitude of SCA is greatly underestimated and often overlooked. According to Douglas P. Zipes, MD, Distinguished Professor, Indiana University School of Medicine (Indianapolis IN), “we are dealing with a very big problem. In terms of the magnitude of sudden cardiac arrest, it's like three fully-loaded 747s crashing every day, 365 days a year. The number of people killed in that way would get people's attention, but the 350,000 or so deaths each year from sudden cardiac arrest, for some reason, do not.”

SCA can occur in an instant, often without warning. (4) The Centers for Disease Control (CDC) recently estimated that in the United States the survival from SCA is only 5 percent. (5) Victims of SCA die because lifesaving defibrillation therapy was not administered within four to six critical minutes (6,7,8). While some patients never have signs or symptoms and their first presentation is with SCA, for those individuals who are identified as high risk, preventative treatments, which include both drug therapies and Implantable Cardioverter Defibrillator (ICD) therapy, have been proven to be effective in the prevention of SCA. Dr. Zipes points out



that “without question, an ICD is life-saving therapy. To *not* have a device ensures close to 100 percent mortality if someone develops ventricular fibrillation, while having a device ensures a 98 or 99 percent chance of surviving the event. (9) So there is no question that these devices are efficacious.”

The 2006 ACC/AHA/ESC *Management of Patients with Ventricular Arrhythmias and the Prevention of Sudden Cardiac Arrest Guidelines* recommend ICD therapy as the standard of care in indicated patients, yet less than 35 percent of patients with a Class I recommendation for an ICD have one. It is unclear why these Guidelines are underutilized, but Eric N. Prystowsky, MD, Director of the Clinical Electrophysiology Laboratory at St. Vincent Hospital (Indianapolis, IN), Consulting Professor of Medicine at Duke University Medical Center (Durham, NC), comments that “if we are going to reduce the incidence of the leading cause of death in the adult population in the United States, we have to be aware of the guidelines for device implantation, as well as the guidelines for

the care of our patients who have heart disease.” Dr. Prystowsky believes the Guidelines have not been fully implemented because of biases and skepticism regarding devices versus drugs. “There seems to be a substantial amount of skepticism that may be based in part on the perceived magnitude of benefit of ICDs. Beta blockers, statins and ace inhibitors are all important to reducing mortality from heart disease. But if you look statistically at the relative or absolute benefit of survival, the number of patients needed to treat to save a life with a defibrillator is far less than with a statin (10).” Dr. Prystowsky continues, “I think that if randomized clinical trials demonstrate efficacy, guideline writing committees evaluate the data and support it, and insurers and the government concur and agree to pay for the ICDs, then it's inappropriate to avoid the discussion of ICD therapy with a patient.”

David S. Cannom, MD, Medical Director of Cardiology, Hospital of the Good Samaritan, Clinical Professor of Medicine at UCLA (Los Angeles, CA), has been an investigator in nearly every major trial of ICD efficacy since 1990 and notes that the survival data favor the ICD in high risk patients. “The debate over ICD use has gotten bogged down in the controversy over cost-effectiveness because devices are expensive. However, we have

good data to show that the cost-effectiveness is right in the middle of the cardiology therapy cost spectrum from beta blockers on the one end up to heart transplants on the other. ICD therapy costs about \$50,000 per life year saved (11). This data has kept some physician purists on the sideline in terms of recommending a prophylactic device because they feel it is expensive, the odds that a patient will use it are only 50 percent, and they say their patients are feeling fine without a device, so why bother? I think that argument is a specious one. Doctors have an obligation to look for these patients because the data is in favor of the effect on total mortality in every one of the high risk patient groups that has been subject to randomized clinical trials, except for two groups: the group that just had open heart surgery and the group that had a heart attack within the 6-40 days prior to their receiving a device. All other high risk patients (those with low pumping function) benefit in terms of total survival over the next many years.”

Earlier this year, Medtronic (Minneapolis, MN), the world's leading provider of ICDs, announced the launch of a comprehensive national campaign designed to educate physicians and patients about SCA, its risk factors, and the role of ICD therapy in saving lives. Dr. Zipes has been involved with Medtronic's campaign and had this to say: “Medtronic is raising

awareness about SCA with the idea that the educational efforts should be multi-pronged and should be directed not only to physicians, but to the public at large. The campaign is tasteful and ethical and is basically trying to make patients aware of the risks involved with SCA without making them panic.”



If you would like to get more involved with the SCA and ICD public awareness campaign or if you would like additional educational materials, call 1-866-950-5550, visit the Web site at www.whatsinside.com.

References

1. American Cancer Society. Cancer Facts and Figures 2006.
2. The World Factbook - Rank Order - HIV/AIDS - deaths. Available at: <http://www.cia.gov>.
3. Zheng ZJ, et al. Sudden cardiac death in the United States, 1989 to 1998. *Circulation*. October 30, 2001;104(18):2158-2163.
4. Simmons TW. Sudden Cardiac Death: Primary and Secondary Prevention. Wake Forest University Baptist Medical Center, Clinical 5. Update, 2005.
5. Zhi-Jie Z, et al. Sudden cardiac death in the United States, 1989-1998. *Circulation*, 2001; 104:2158-2163.
6. Ginsburg W. Prepare to be shocked: the evolving standard of care in treating sudden cardiac arrest. *Am J Emerg Med*. May 1998;16(3):315-319.
7. Pell JP, et al. Presentation, management, and outcome of out of hospital cardiopulmonary arrest: comparison by underlying aetiology. *Heart*. August 2003;89(8):839-842.
8. de Vreede-Swagemakers JJ, et al. Out-of-hospital cardiac arrest in the 1990s: a population-based study in the Maastricht area on incidence, characteristics and survival. *J Am Coll Cardiol*. November 15, 1997;30(6):1500-1505.
9. Zipes DP, Roberts D. Results of the international study of the implantable pacemaker cardioverter-defibrillator. A comparison of epicardial and endocardial lead systems. The Pacemaker-Cardioverter-Defibrillator Investigators. *Circulation*. July 1, 1995;92(1):59-65.
10. NNT is a normalized measure of clinical effectiveness and efficiency that allows comparison among treatments/studies. NNT is calculated at a specific point in time. When comparable data is available it is best to compare NNT for different therapies at the same point in time. MADIT-II @ 3 years from KM curve:31%-22%, NNT=11. N Engl J Med. 2002;346:877-883.4S (simvastatin) @ 6 years from KM curve:12.3%-8.7%, NNT=28. Lancet. 1994;344:1383-1389.
11. Moss AJ. Presentation at Satellite Symposium, Cost-Effectiveness of Device Therapy in the Heart Failure Population, Heart Failure Society of America Annual Meeting September 23, 2003