

Sudden Cardiac Death

THE OTHER SILENT KILLER

By: Philip Shaver, MD, panel moderator



Each year, about 340,000 people die of coronary artery disease without being hospitalized or admitted to an emergency department. Most of these are sudden deaths caused by cardiac arrest. Healthy Living magazine assembled three prominent physicians from Eisenhower Medical Center to discuss the prevention of sudden cardiac death and identifying those at risk. The physicians included two Board Certified Cardiologists/Electrophysiologists, who are Co-Directors of the Cardiac Arrhythmia Program at Eisenhower Smilow Heart Center: Leon Feldman, MD and Andrew Rubin, MD. Philip Shaver, MD, a Board Certified Cardiologist at Desert Cardiology Center, located on the Eisenhower Medical Center campus, served as moderator.

Dr. Shaver: Our topic tonight is "Sudden Cardiac Death," the role of ICDs and AEDs. First, I'd like just to explore what an electrophysiologist is. Andrew, can you tell our readers, how is he different from just a cardiologist?

Dr. Rubin: An electrophysiologist has to be formally fellowship trained in this sub-specialty following his cardiology fellowship and internal medicine residency. Electrophysiology is the study of the electrical system in the heart and related clinical issues including pacemakers, defibrillators and electrical evaluations of the heart.

Dr. Shaver: Leon, can you just define what the acronyms, ICD and AED stand for?

Dr. Feldman: ICD stands for implantable cardioverter defibrillator. AED is automated external defibrillator.

Dr. Shaver: The Web site of the American Heart Association states approximately 340,000 people a year die of coronary artery disease without being hospitalized or admitted to an emergency department. That's about half of all deaths from coronary artery disease. More than 930 Americans die each day. Most of these are sudden deaths caused by cardiac arrest. Andy, who is at risk for sudden cardiac death?

Dr. Rubin: The most common people to have sudden death are the people that don't know they have heart disease. But we are able to identify people with prior heart attacks and weak heart muscle who percentage-wise are at a higher risk, although the gross numbers are not as high as the population as a whole. Because the survival from a sudden cardiac death episode is no more than five percent, we have been trying, over the last 10 years, to identify the highest risk patients, and those are the patients with prior heart attacks or heart muscle weakness from a variety of causes.

Dr. Shaver: Again, the American Heart Association, on their Web site, claims that 90 percent of adult victims of sudden cardiac death have two or more major coronary arteries narrowed by fatty buildups. Why do people suddenly collapse and die?

Dr. Rubin: The most common reason for people who die suddenly from a cardiac standpoint is from ventricular arrhythmias, either ventricular tachycardia from the scars of a prior heart attack or ventricular fibrillation from an acute myocardial infarction or an acute ischemic episode. Other people can die suddenly from ventricular arrhythmias as a result of a weakened heart muscle unrelated to coronary disease called cardiomyopathy, side effects of drugs, or a genetic predisposition to ventricular arrhythmias.

Dr. Shaver: What exactly does the heart do when it goes into ventricular fibrillation?

Dr. Rubin: The ventricles, the main pumping chambers of the heart, are beating or attempting to beat so rapidly that there is no time for filling of the pumping chamber, so in effect, no blood is coming out of the heart, and the body does not have a blood pressure or oxygen to the tissues.

Dr. Shaver: Define what the term ejection fraction is, and we use that figure because that identifies if you are at the cut-off point between higher and lower risk.

Dr. Rubin: Ejection fraction is the percentage of blood ejected from the heart when it squeezes, in reference to the amount of blood before it's squeezed. So if your ejection fraction is 50 percent, that means that 50 percent of the blood in the pumping chamber has been pushed out of the heart when it pumps. A normal value is greater than 55 percent and below a level of 40 percent we become concerned about a risk of sudden cardiac death, and especially as it falls to 35 percent or less.

Dr. Shaver: Are there any medications now that are effective, or is it all electrical treatment now in preventing sudden death?

Dr. Rubin: In the secondary prevention of sudden cardiac death, or for someone who has previously survived an episode of sudden death, the treatment of choice is a defibrillator especially in patients with an ejection fraction of 35 percent or less, without question. In patients who have an ejection fraction of greater than 35 percent, there can be some discussion about whether a drug called amiodarone (Cordarone®) is nearly as good as a defibrillator, but in general, a defibrillator is supported as the treatment of choice. For prevention of the first episode of sudden cardiac death, that is primary prevention, there is no medicine that approaches the efficacy of the defibrillator.

Dr. Shaver: Leon, do you advise your patients to take fish oil, who are at risk for sudden death?

Dr. Feldman: I think the most important issue about prevention of sudden death is prevention of heart disease. So that with any luck, you should never have to visit with an electrophysiologist, and that would include smoking cessation, exercise, healthy lifestyle, good diet, and treating conditions such as hypertension, particularly if you are in a family at risk. Family history of sudden cardiac death puts you at higher risk of sudden death. Family history of premature atherosclerosis puts you at risk for early heart disease, so identifying people early at risk for heart disease will go a long way to reducing sudden death. In terms of fish oil, test results are not very promising. A healthy diet helps prevent heart disease. But fish oil per se, does not prevent arrhythmia, so it doesn't have a role in that treatment.

Dr. Shaver: Well, who's an ideal candidate for an ICD?

Dr. Feldman: The ideal candidate for an implantable defibrillator is the patient who has not yet suffered a potentially fatal heart rhythm. That patient is usually someone with a weakened heart muscle. We're learning that it can be any individual who has a weakened heart muscle or a lower ejection fraction, even people who are without symptoms from their heart disease. What we need to do is adjust the mindset of the medical community and patients that knowing your ejection fraction is equally important to knowing your cholesterol, and maybe more so. Just like knowing your blood pressure. We used to call it the silent killer. Having a low ejection fraction and a weak heart muscle is more of a silent killer than any other disease.

Dr. Shaver: Isn't ICD implantation a relatively minor procedure?

Dr. Feldman: The toughest part about defibrillators for prevention therapy is that we have to do a minor surgical procedure on a patient who felt otherwise okay. A minor surgery provides a significant amount of protection. The surgery usually takes about 30 minutes. The fact that Dick Cheney has a defibrillator has made it a bit easier.

Dr. Shaver: Let's change gears and discuss AEDs (automated external defibrillators). An AED is a fairly simple thing to operate. An AED basically requires four steps once you open it. You turn it on. You push a button that says power. You attach two pads to the patient. You tell bystanders not to touch the patient while the AED shocks the patient, if appropriate. It's very simple for anyone to do and school children have successfully been taught to use it.

Dr. Feldman: My thought is that AEDs should be everywhere. The cost of an AED is modest. They are available anywhere from \$1,000 to \$2,000 dollars for most models. External defibrillators are very easy to use, and in the public access defibrillator trial, twice as many people were saved who had access to defibrillators and CPR, than who had CPR alone.

Dr. Rubin: The best way to allow survival after cardiac arrest is early defibrillation. So the quicker you can get it to a victim, the more likely they're going to survive.

Dr. Shaver: There are a few numbers you should know in reference to cardiovascular risk. You should know your cholesterol, your glucose, your blood pressure and your ejection fraction. An echocardiogram is the simplest way to determine your ejection fraction. It is a painless, harmless, and relatively inexpensive test. Any final thoughts

you'd like to pass on?

Dr. Rubin: Well, I think it's important for the public to know that sudden cardiac death is the most common way people die, far outstretching how many people die from breast cancer, lung cancer, AIDS, stroke, or emphysema. Since we now understand the magnitude and frequency of this problem, we have to say, how can we best prevent it. Over the last eight years, research has shown that defibrillators are a proven way to prevent sudden cardiac death and allow people to have an overall prolonged survival.

Dr. Shaver: It's very akin now to putting in a pacemaker. The size of an ICD now is what a pacemaker was 10 years ago.

Dr. Feldman: I have a final thought about this, and my own perception is that sudden cardiac death has never had a champion. Breast cancer has survivors and faces, so does almost every other major disease. Sudden cardiac death has no survivors. And so, it's been a difficult disease to make people aware of it. People don't die suddenly from heart attacks. People die suddenly from abnormal heart rhythms.