

LIFEVEST THE WORLD'S FIRST WEARABLE DEFIBRILLATOR

LifeVest®, by LIFECOR (Pittsburgh, PA), is the world's first wearable cardioverter defibrillator and represents a treatment option for preventing sudden cardiac arrest through advanced protection and monitoring. The FDA-approved LifeVest device is commercially available as a lightweight undergarment that integrates both monitoring and life-saving electrotherapy. This innovative device can be used while patients are considered for long-term therapy from an implantable cardioverter defibrillator (ICD), and has the attractiveness of being able to provide prompt life-saving protection without surgery.

The LifeVest device is comfortable, weighs only three pounds, and is worn outside the body and under clothing. The integrated monitor, about the size of a large paperback book, is worn around the waist or from a shoulder strap and continuously analyzes the patient's electrocardiogram (ECG). It communicates with the heart through dry, non-adhesive sensing electrodes that detect life-threatening abnormal heart rhythms. If a life-threatening rhythm is detected, the device alerts the patient prior to delivering a shock, thus allowing a patient to disarm the shock if the aberrant rhythm is stable. If the patient is unconscious, the device releases a gel through the therapy electrodes and delivers an electrical shock to restore normal rhythm.

Sudden death occurs more frequently among patients who have had a myocardial infarction than in the general population. According to Robert C. Canby, MD, FACC, St. David's Medical Center (Austin, TX), "traditionally, the easiest and most comprehensive way to assess a patient's risk is by the overall ejection fraction. Following a myocardial infarction, there is an appropriate time to reassess how much damage the heart has had. At that point, if their ejection fraction remains depressed—less than or equal to 35%—the patient may be at risk for sudden cardiac death."

A common treatment for patients at risk of sudden death is an ICD. However, ICDs are designed for use over a long period and require surgery at considerable expense. As explained by Dr. Ramesh Hariharan, MD, Houston Electrophysiology Associates (Houston, TX), "the key element to protect these high-risk patients is to get them a defibrillator and a normal rhythm as soon as possible. However, you only want to consider implantation of a permanent defibrillator if their heart function is permanently reduced or if they remain in a group that has been identified as high risk. You don't want to implant a permanent defibrillator in somebody in whom you expect that interventional therapy or some kind of revascularization is going to help improve their odds. Until such time, you want to provide temporary support or

some kind of ongoing protection. Use of the LifeVest will give physicians the opportunity to see if high risk patients will have that improvement."

What sets the LifeVest device apart from other treatment options is that it is non-invasive and less expensive than ICDs, has no systemic side effects compared to antiarrhythmic drugs, and is not dependent on bystanders like AEDs. Dr. Canby finds the AED "intriguing, but there needs to be someone around to apply it at the appropriate times, and do it expeditiously." A patient's chances of survival drops about 10% for each minute after the onset of fibrillation, so it is imperative that a bystander take quick action. In contrast, with the LifeVest device no bystander intervention is required. The device continuously monitors the patient's ECG, and if a lethal arrhythmia occurs, the LifeVest device delivers a treatment shock typically within

one minute. Unlike ICDs, wearable defibrillators are intended for temporary use and may be rented on a monthly basis. Most health insurance, including Medicare, does not cover ICD implantation when the heart is recovering and its performance may improve, sometimes dramatically. The only Medicare-covered devices designed to prevent sudden death during this transition are wearable defibrillators.

David A. Sandler, MD, FACC, Member Oklahoma Heart Institute, Director of Electrophysiology, SouthCrest Hospital (Tulsa, OK), has had numerous patients use the LifeVest device and "they all recognize that an implantable defibrillator was ideal if they became candidates, but they were all very happy to wait and see if their heart function

recurred, which might obviate the need for an implantable device. Or, in cases of infection, they recognized that it allowed them to leave the hospital and still be protected."

Dr. Hariharan finds that the independence the LifeVest device provides is a key patient benefit. "They get used to the LifeVest in a couple of days and can be up and about, even return to work if they choose. An advantage for the physician is that is that we are able to monitor over the internet any abnormal rhythms the patients has as well as watch how much time a patients wears the Lifevest. My patients are amazed at the LifeVest and of the 100 or so patients I've had wear it, they have all tolerated it very well."



For more information on the LifeVest wearable defibrillator, contact LIFECOR at 1-800-LIFECOR (1-800-543-3267) or visit the LIFECOR web site at www.lifecor.com.

