

AEDs in the Marine Industry

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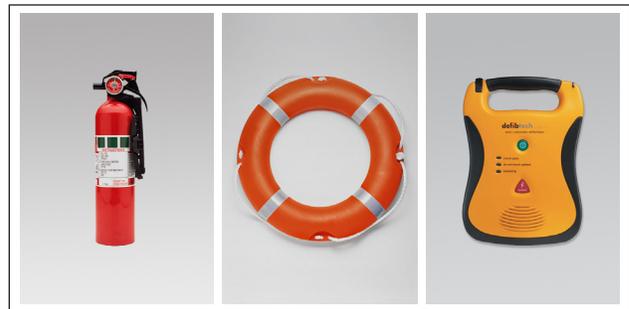
Executive Summary - Automated External Defibrillators (AEDs) are becoming increasingly common in workplaces and public facilities across the nation. They've been endorsed by several medical research studies and health care organizations, including the American Heart Association, the American Red Cross, the American Safety & Health Institute and OSHA, among others. In addition, because of their life-saving capabilities, ease-of-use and affordability, AEDs are also starting to be purchased for home and personal use. Still, many have refrained from purchasing AEDs due to unawareness or confusion. This article focuses on the benefits of deploying AEDs in the marine industry, including personal watercraft, commercial vessels and cruise ships. In truth, it can rightfully be applied to other industries where people seek to protect themselves, their loved ones, employees and patrons from sudden cardiac arrest – a leading cause of death in the United States and around the world.

It was last September when a deckhand aboard the Saint Mary's Challenger suddenly began suffering chest pains. At the time, the cement freighter was chugging along on Lake Michigan, 33 miles offshore, east of Sheboygan, Wisconsin. He found his way to the pilothouse complaining of pain in his chest, and then collapsed. The captain and first mate, who had both just received training in CPR-AED on the Defibtech Lifeline training unit, grabbed the AED and began to administer treatment. The unit advised not to deliver a shock. Caregivers used the defibrillator to monitor his heartbeat until medical help could arrive. A MedEvac helicopter flew him to Mercy Hospital in Michigan where he underwent surgery for a blockage. Six weeks later, he was back at work. "I'm very, very happy that a Defibtech defibrillator was on board," he said. The AED gave him the peace of mind that he and other crew members had a lifesaving device on board to protect them in case of a cardiac emergency.



The protection of health and safety is a top priority aboard vessels of all sizes and classes.

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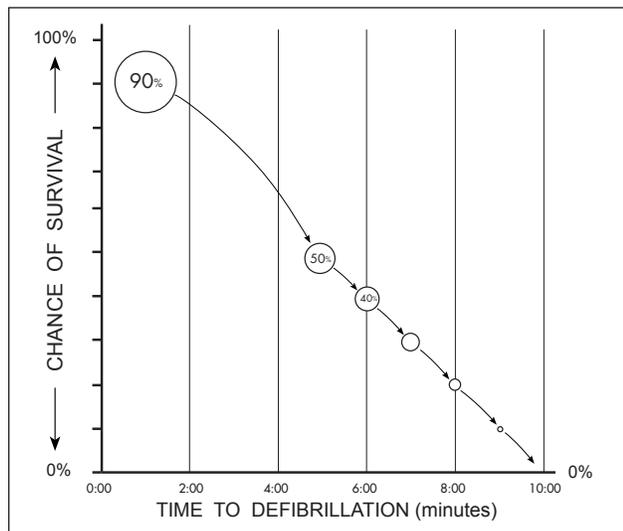
AEDs are becoming essential safety equipment in marine environments.

The presence of an AED could have made an even more dramatic difference in the case of a Southern California couple whose afternoon outing on their pleasure boat in the waters of the Pacific Ocean turned into the ultimate nightmare when emergency struck and they were caught unprepared. John Scott Morehouse and his wife, Susan, were about ten nautical miles off Ventura Harbor when Mr. Morehouse suffered a heart attack. Mrs. Morehouse immediately sent out a radio plea for help, but by the time nearby boaters, including a paramedic, doctor, and firefighter, were able to reach the boat, it was too late. They began CPR promptly. Despite their best efforts over the next hour, they were not able to save Mr. Morehouse. He died of heart failure. He was only 54 years old.

The story is heartbreaking. But what makes it even more so is that Mr. Morehouse might very well be alive today if his boat had been equipped with a simple medical device called an AED, an Automated External Defibrillator. First responders-in this case, his wife- could have used it to administer a life-saving shock to his heart. An AED in the hands of Coast Guard and Harbor Patrol emergency crews that responded might have made a difference as well. While they were commended for their response to this emergency, would-be rescuers noted surprise at the "lack of resources" onboard their rescue vessels, including an AED.

Sudden Cardiac Arrest (SCA) is a true health epidemic- in the United States and around the world. In the U.S. alone, it kills more than 400,000 of our family members, co-workers, customers, friends and neighbors each year-more than car accidents, breast and prostate cancer, handguns, fires and AIDS combined.¹ It is also unpredictable, in that it can strike anyone, anytime, anywhere – at home, at work, or out on the water, where victims are especially vulnerable because medical attention is much more difficult to access than on land. They are often miles away from any hospital or emergency help. Many harbors are located in remote places where such access is also difficult.

And yet, when Sudden Cardiac Arrest strikes, time is of the essence, with only minutes separating the line between life and death. SCA causes the normal heart rhythm to go haywire and the heart can no longer pump blood effectively. The victim collapses, stops breathing, and has no detectable pulse. Every minute that the heart is not beating lowers the odds of survival by 7% to 10 %. After 10 minutes without defibrillation very few people survive. In fact, studies show, unfortunately, that only 5-7% of SCA victims survive.² But these statistics can and should be better because unlike other health problems of such magnitude, SCA is treatable. The only cure for most cases of SCA is immediate shock therapy from an AED, which shocks a lifeless heart back to a normal rhythm. An astounding 50 to 70 percent of those who receive defibrillation from an AED within three to five minutes of SCA survive. The key, then, is deployment of these devices in places where they are easy to reach and use. Whether on land or at sea, having a defibrillator on hand can dramatically increase the chances of survival for someone who suffers SCA.^{3,4}



Chance of SCA survival decreases rapidly as time passes without defibrillation.

Anyone who knows the joys of being out on the water also recognizes the potential dangers and responsibilities that come with the territory. Boat owners and operators would not think of leaving harbor without doing a safety check or carrying an emergency kit equipped with such essentials as life preservers, fire extinguishers, flares, and the like. And now, more and more boating enthusiasts are recognizing that one more device should be added to that emergency kit, the one device that can be a “lifesaver” in the true sense of the word -- an AED. Insurance companies are also looking at AEDs from the perspective of cost-effectiveness as well as life-saving potential. Some insurance agencies and marine organizations have instituted new guidelines that now mandate AEDs on all member vessels. For a boat owner, having a portable defibrillator on board makes complete sense for many reasons.

Why Choose Defibtech to Come On Board? Tough Against the Elements, Easy to Use

While boating carries the exhilaration of being out in the wind, the sea and the spray, such an environment can also wreak havoc on equipment, especially over time. That’s why any kind of device, especially one used in a medical emergency, must be extra durable and be able to stand up to the elements. In nautical terms, a lifeline is something you throw into the sea to save someone’s life. In meeting the requirements of dependability and durability on the water, the Defibtech Lifeline AED, designed and manufactured in Guilford, Connecticut, sails way ahead of the competition. Defibtech is the only AED company that offers a seven year battery that features 16 hours of continuous operating time.⁵ The standard in the industry is a five year battery that offers eight hours of continuous monitoring. The eight hour difference offered by Defibtech’s seven year battery can make a critical difference if a victim is stricken with Sudden Cardiac Arrest out in the middle of the ocean, potentially miles and hours away from medical help.

Before a Defibtech AED leaves the factory, each and every unit undergoes a gauntlet of quality tests to ensure its performance and durability. Defibtech AEDs also meet stringent military drop and shock standards as well as jet aircraft and helicopter tests for immunity to vibration. They are among the industry’s highest-rated for dust protection. Splash tests have assured its ruggedness and ability to stand up to wet conditions. To further protect the AED in marine environments, Defibtech offers attractive, rugged and waterproof AED cases that also float. Defibtech’s cutting edge data card technology is used to record event data, as well provide unparalleled field upgrade capability if rescue protocols change. While competitors require sen-

sors, cables or computer connections, Defibtech offers the only AED in the market that can be upgraded easily in the field by the end-user.

Aside from durability, reliability and technical capabilities, another key factor to consider when choosing an AED—regardless of whether the AED is used by an EMS professional or a lay responder—is its ease-of-use. What’s truly remarkable about the design of the Defibtech AED is that its form simply enhances its function. The bright color gives it high visibility so it’s easy to find and deploy. The two-button operation makes it intuitive and simple to use for anyone, even without training. There are no lids, moving parts, internal screws or cases that would confuse or delay rescuers in an emergency. There is no ECG display to confuse lay responders.

Since AEDs are by definition automated and designed to deliver the appropriate shock correctly, they can be used by lay first responders to defibrillate the victim until emergency crews arrive. Those lay responders, by using a medical device so easy to use that even a young child can be trained in minutes to save someone’s life, can make the difference between life and death. Voice instructions guide the user through the necessary steps. A computer inside the AED analyzes the patient’s heart rate and determines if a shock is required. If the victim doesn’t need a shock, there are safeguards built into the unit so a shock can’t be delivered.

Defibtech : Industry Frontrunner

In a recent usability study of five commercially available AEDs, Defibtech emerged as the clear frontrunner.⁷ 125 subjects between the ages of 18 and 75 were recruited to participate in the study by a researcher at the University of Illinois Medical Center in Chicago. None had received training in the use of an AED or in fact, had ever used one. There were three criteria for success with the ultimate goal of safe and effective defibrillation and shock delivery. Participants were required to position the electrode pads properly on the victim’s bare chest. They had to press the SHOCK button when instructed, and stay clear of the victims during charging of the AED and shock delivery.

The Defibtech AED achieved the highest success rate, with 92 percent of participants meeting those criteria. The AED from Philips came in second with an 84 percent success rate, followed by Medtronic and Zoll, each with 72 percent. Cardiac Science trailed the pack with only a 36 percent success rate. While studies like this validate the efficacy and user-friendliness of Defibtech’s AED, other endorsements, awards and accolades continue to roll in:⁸



The user-friendly, technologically-advanced, award-winning Defibtech AED.

- The Defibtech AED was selected for use at the 2006 Winter Olympic Games in Torino, Italy. Defibtech Lifeline AEDs were distributed throughout the Olympic venues and in neighboring towns dotting Italy’s Piedmont region.
- YMCAs and YWCAs chose the Defibtech AED for placement in their facilities across the United States. AEDs have been placed in locations where Sudden Cardiac Arrest has a high chance of striking -- health centers, gyms, community centers, corporate offices, any place that has a concentrated population density.
- Last year the state of New Jersey signed a contract with Defibtech to supply its AED to all police and fire vehicles in the state as well as the state capitol. To date, New Jersey has placed more than 3500 Defibtech AEDs throughout the state, representing the largest public access AED deployment on record. Other states that have chosen the Defibtech defibrillator include Maine, Idaho, Florida, and New Mexico, Utah, Louisiana and Arkansas.
- The Massachusetts Bay Transit Authority (MBTA) deployed more than 60 Defibtech Lifeline AEDs throughout the MBTA system, with placements in transit stations, corporate offices, and vans. Within days of deployment, a person who went into Sudden Cardiac Arrest in an MBTA station was saved by a Defibtech AED.
- In recognition of its unusually attractive, sleek, user-friendly design, the Defibtech AED was given a place on the pop culture map. The Museum of Modern Art (MoMA) in New York City se-

lected the Lifeline AED for inclusion in its *SAFE: Design Takes On Risk* exhibit.

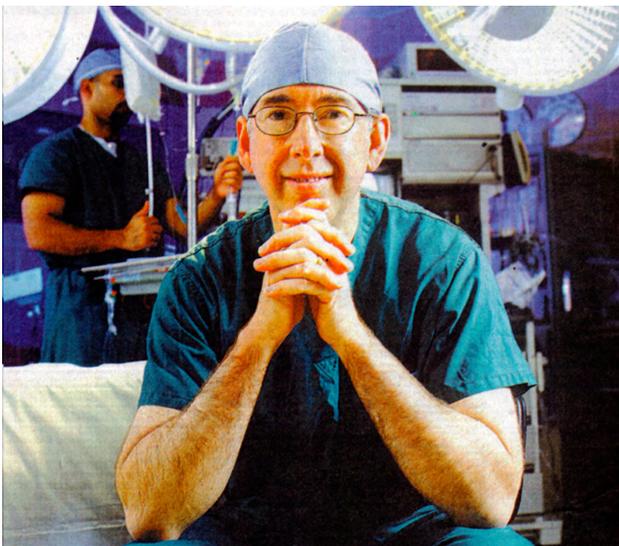
- This year Defibtech won the 2006 American Business Award, hailed as the “business world’s own Oscars” in the “Best Overall Company” category.

A Total Lifesaving Solution: Installation, Training, Comprehensive AED Management and Medical Guidance

Defibtech offers one of the finest AEDs on the market, but the purchase of the device itself represents only a part of what it takes to implement a successful AED program. DefibtechMD (DefibtechMD.com) is a turn-key AED management service that offers a full suite of comprehensive AED management and program oversight services including training, tracking and medical direction.

Defibtech AEDs are offered through distributors who have experience in deploying the devices. They can make onsite visits, install and train responders so that the unit and the responders are always ‘rescue-ready.’ Defibtech distributors can also place and track every unit deployed and can monitor those units across states and countries, nationally and internationally. Defibtech AEDs are currently deployed around the globe, to many multinational Fortune 1000 companies and governmental organizations.

Just as important, its advanced design techniques and robotic assembly allow Defibtech to sell its AED very competitively in the marketplace. Just five years ago, AEDs cost



Glenn W. Laub, MD, CEO, Defibtech; Chairman of Cardiac Surgery and Director of the Heart Hospital, St. Francis Medical Center, Trenton, NJ.

about \$4000, a major obstacle to their wide-scale deployment. But prices have come down dramatically recently, and now an AED can be purchased for under \$1500. While this may seem expensive initially, over the years, it is a good investment, especially when you compare that investment to the price of a life that is saved. Defibtech’s success in providing customers with quality products that are priced competitively was recognized with the “Best Bang for the Buck” award from Frost and Sullivan, a global growth consulting company. The accolade is conferred annually on the company that has “provided customers with the solution or service that offers the highest ratio of value to cost within a particular market.” In announcing last year’s recipient, Frost and Sullivan offered the highest praise. “By providing reliable, high-quality AEDs at a lower price, Defibtech is driving the industry towards affordability and greater market penetration.”

In addition to price, user-friendliness, design, efficacy, and support, everything that makes Defibtech the leading choice in AEDs, another point that sets Defibtech apart from its competitors is that its CEO is a highly respected heart surgeon whose life work has been built around saving lives. Dr. Glenn W. Laub, who is also Director of the Heart Hospital at St. Francis Medical Center in Trenton, has probably operated on more than 5000 patients over the last 18 years. He believes that by deploying more defibrillators and making them cheaper and easier to use, more than 50,000 lives a year across the country could be saved, more than every person who dies in a traffic accident annually. “I can save more lives by deploying defibrillators than I can in the operating room,” he declares, a bold and candid affirmation of his belief in the effectiveness of the Defibtech AED and its role in emergency response.

An Applied Science and Chemical Engineering major at Yale University, he met the son of a well-known Yale professor in the engineering lab over a computer. That student, Gintaras A. Vaisnys, who would also graduate from Yale, teamed up with Laub in 1999 to co-found Defibtech, one of the fastest growing and most highly regarded medical device companies in the world, with sales across North America, South America, Europe, Asia and the Middle East. Defibtech employs an exceptional, highly-motivated team of individuals who believe in the company’s mission to save lives. Its engineers not only have extensive medical device design experience but also, just as importantly, high-tech, high-volume consumer product development experience.

Dr. Laub sees AEDs increasingly becoming as common a sight as the fire extinguisher. After police cars and fire vehicles, he wants to see AEDs installed in all public spaces on land and at sea -- on boats, whether private pleasure



AEDs provide protection for your boating passengers and peace of mind for you.

boats or large cruise vessels, in movie theaters, malls, grocery stores, anywhere there are lots of people of different ages, backgrounds, and health risks. Eventually, he sees AEDs taking a place in all private homes as well. “It doesn’t make sense only to put fire extinguishers in fire trucks and then wait for them to get to your home or business in an emergency when minutes can make the difference between life and death. And if you’re out on the water, medical help is that much farther away. Just as you would have a fire extinguisher, a radio, and emergency rations on board, it makes sense to have a defibrillator as well.”

In Southern California, while Mr. Morehouse’s death was a terrible tragedy for his family and the boating community, it did spur positive change. Recognizing that AEDs have become just as vital a piece of emergency equipment as life preservers, the Ventura Harbor Port District has invested in AEDs to have on board all its rescue vessels.

For anyone who loves life on the water, boating represents not just an activity, but a lifestyle. Increasingly, those who are willing to spend thousands of dollars on their boats and the pursuit of happiness are recognizing that the purchase of an AED is not only a wise investment decision, it’s the right and responsible thing to do. After all, some day, somewhere, out on the water, when they are least expecting it, it could save the life of someone they love and perhaps, even their own.

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