

# **A Guide to Sudden Cardiac Arrest**

The world's biggest killer!



**martek**<sup>™</sup>  
MARINE  
Innovative Ship Solutions



---

# CONTENTS

---

Contents	2
Glossary	3
Introduction	4
The facts about SCA	4
What is SCA?	4
Causes of SCA	5
The adult chain of survival	6
Treatment for SCA	7
What is CPR?	7
Who can use an AED?	8
Sir Ranulph Fiennes' brush with death	9-10
About Martek Marine Ltd	11
Customers	11
Certification	12
Contact us	12

# Glossary

---

## AED

Automated External Defibrillator, a portable device designed for the emergency treatment of sudden cardiac arrest (SCA) victims

## Arrhythmia

Abnormal electrical activity in the heart, resulting in a rhythm which is either too fast, too slow, irregular or chaotic

## CPR

Cardiopulmonary Resuscitation, an emergency medical procedure for a victim of sudden cardiac arrest (SCA)

## Defibrillation

The process by which an AED sends an electric shock to the heart in order to stop an arrhythmia

## SCA

Sudden Cardiac Arrest, a condition whereby the heart suddenly and unexpectedly starts beating abnormally, causing blood to stop flowing to the brain and other vital organs

## VF

Ventricular Fibrillation, an abnormal, irregular heart rhythm whereby there are very rapid, uncoordinated, fluttering contractions of the lower chambers of the heart

# Introduction

---

Around 3 million deaths occur globally every year due to Sudden Cardiac Arrest (SCA). The only way to save a victim of SCA is with a defibrillator. SCA is the world's biggest killer and can happen to anyone, anywhere at anytime.

This booklet provides information on SCA and how it can be treated. It has been compiled using extensive medical research.

## The facts about SCA

---

- It strikes without warning, killing around 3 million people per year worldwide
- It kills more people than breast, lung and prostate cancer combined
- It can happen to anyone, even young athletes
- Defibrillation is the only treatment for SCA



## What is SCA?

---

SCA occurs due to an electrical malfunction which disrupts the normal heart rhythm. Ventricular fibrillation (VF) is the most common abnormal heart rhythm, or arrhythmia. VF causes the heart to quiver, as per the diagram below.

As a result, the heart can no longer pump blood effectively and the victim collapses, stops breathing, becomes unresponsive, and has no detectable pulse.

When the heart suffers VF, SCA occurs. The only way to treat a victim of SCA is through defibrillation, by which an electric shock is delivered to the heart in order to restore a normal rhythm.



## Causes of SCA

---

The most common cause of SCA is a heart attack, which is caused by a blockage in the arteries. This prevents oxygenated blood reaching a section of the heart, causing that part to die. If the section of the heart deprived of oxygen is large enough, it will disrupt the electrical impulses and cause a SCA. Clinical and statistical studies have identified several factors that increase the risk of a heart attack.

### **The following risk factors cannot be changed:**

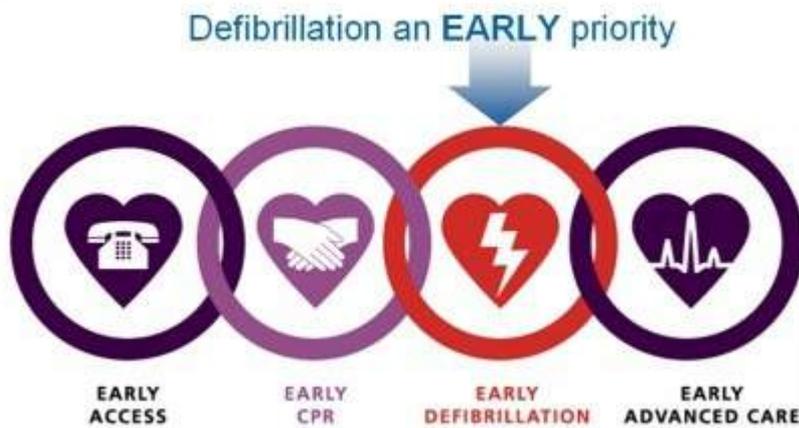
- **Increasing age:** The BIMCO / ISF Manpower 2005 Update identified that over 25% of officers on ships from OECD countries are over 50 years old, and well over 50% are over 40, meaning that they are at greater risk of suffering from a heart attack
- **Male gender:** Men have a greater risk of heart attack than women do, and also fall victim earlier in life. With men making up the vast majority of seafarers, the risk of heart attack on board a ship is increased
- **Heredity factors**, including race

**In addition to a heart attack, some of the other common causes of SCA are listed below. There is an increased incidence of many of these causes on-board a ship:**

- Asphyxiation
- Circulation problems
- Drowning
- Drug effects
- Electrocutation
- Heart diseases
- Hypothermia
- Metabolic changes
- Respiratory problems
- Trauma caused by a fall or severe impact to the chest

# The adult chain of survival

---



The adult chain of survival is a set of guidelines for the treatment of SCA. By taking the quick action recommended, the chance of saving someone's life on board a ship is dramatically improved.

**Early access:** Immediately summoning medical help

**Early CPR:** Rescue breathing and chest compressions, which circulates blood to vital organs

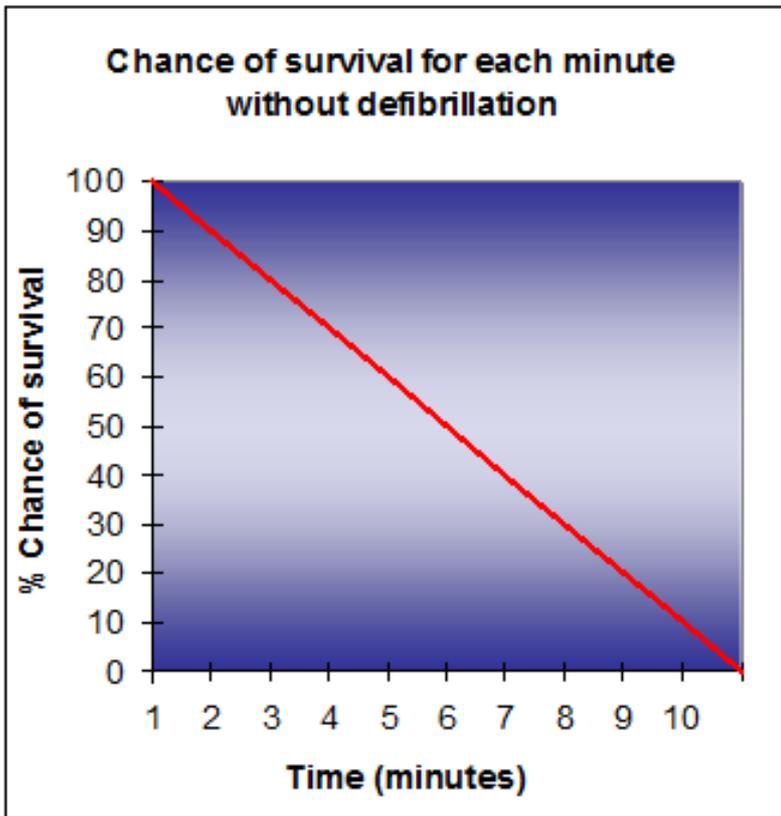
**Early defibrillation:** Delivering an electric shock to the heart within minutes of a SCA

**Early advanced care:** Receiving assistance from qualified medical service providers via telemedicine or remote vital signs monitoring



# Treatment for SCA

---



The only proven way to treat SCA is by delivering an electric shock to the heart, in order to restore a normal heart rhythm. This is called defibrillation and can mean the difference between a victim surviving or dying.

Cardiopulmonary resuscitation (CPR) will not restart the heart following a SCA. CPR is a temporary measure used to maintain a supply of blood to the body's vital organs.

When SCA strikes, time is critical. A victim can die within 10 minutes if they do not receive defibrillation treatment. For every minute that a victim does not receive defibrillation, their chances of survival drop by 10%.

The graph shows the chances of survival for each minute that passes without defibrillation. If a victim receives defibrillation within 3 minutes, their chances of survival are increased by up to 70%. On a ship without an AED, the chances of survival are practically zero.

## What is CPR?

---

CPR involves giving mouth-to-mouth resuscitation and chest compressions to keep blood flowing to the body's vital organs when the heart is not functioning properly. CPR will not restart a heart that is in SCA.

# What is an Automated External Defibrillator (AED)?

---

An AED is a portable device that analyses the heart's rhythm and prompts the user to deliver a defibrillation shock, if required. Once turned on, the AED guides the user through each step of the rescue process by providing voice and visual prompts.

An AED may not be something that your company has ever considered before. Martek Marine therefore recommended that you should look for the following when purchasing an AED:



## Ease of use

During any emergency situation, non medically-trained people are often in a state of panic. A good AED unit provides clear instructions for the user, which can include voice and visual prompts. This can save time and mean the difference between life and death.

## Batteries

AED units are available with varying battery lives, from 2 to 7 years. Units with longer battery lives reduce the overall cost of ownership and require less maintenance.

Cummins, R. O (1989) From concept to standard of care? Review of the clinical experience with automated external defibrillators. *Annals of Emergency Medicine* 18: 1269-75

## Ease of use

During any emergency situation, non medically-trained people are often in a state of panic. A good AED unit provides clear instructions for the user, which can include voice and visual prompts. This can save time and mean the difference between life and death.

## Batteries

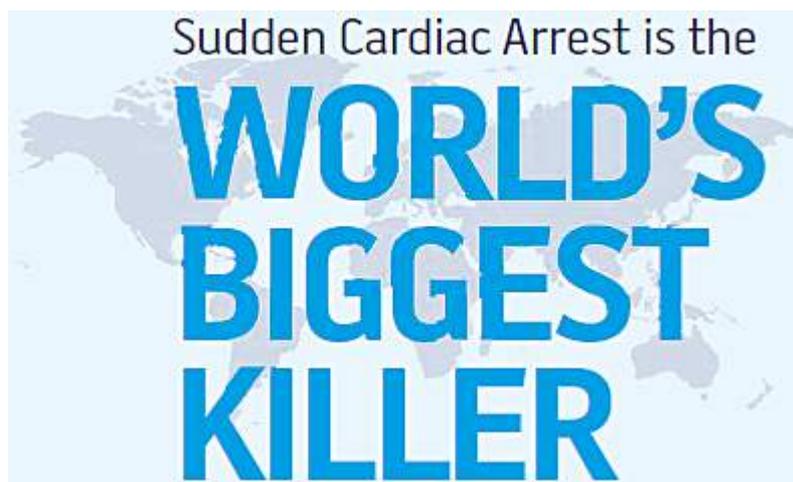
AED units are available with varying battery lives, from 2 to 7 years. Units with longer battery lives reduce the overall cost of ownership and require less maintenance.

# Who can use an AED?

---

Anyone can use an AED, with no training or medical background required. Having an AED available in the workplace, home and public places dramatically reduces the time from SCA to defibrillation and has been shown to greatly improve survival rates. An AED offers the only chance of survival from SCA on board a ship.

The Sudden Cardiac Arrest Association (SCAA), the world's largest and most powerful authority, has produced an index to define where defibrillators should be deployed, based on the probability of SCA in various places. This can help you determine the risk of SCA and decide whether to purchase an AED. Please contact us for further information.



# Sir Ranulph Fiennes's brush with death

---

Sir Ranulph Fiennes is no stranger to entering the unknown, and is described by the Guinness Book of Records as the greatest living explorer. He was one of the first people in the world to walk across the Antarctic unaided in some of the most unforgiving surroundings.



To achieve such an amazing goal takes the ultimate level of fitness, stamina and determination, and when you think of someone like Sir Ranulph; you think of a healthy person ready to take the world on. However, on 7th June 2003, Sir Ranulph's life took somewhat of a unexpected course into unknown territory.

Sir Ranulph was boarding a flight to Edinburgh at Bristol Airport when he suffered a massive heart attack, just before the plane took off.

Luckily for Sir Ranulph, the emergency fire services who attended to this incident had an AED, which saved his life. Sir Ranulph went on from here to have double heart-bypass surgery at Bristol Royal Infirmary. Following the incident, Sir Ranulph commented on his escape:

*"I was extremely lucky that a mobile defibrillating unit and the expert assistance of the Blue Watch of the Bristol Airport Fire Station were immediately on the scene."*

Sir Ranulph further went on to describe how unexpected his heart attack was:

"I had absolutely no indication anything was wrong until I woke up in a hospital bed and was told I'd suffered a heart attack. Before that there had been no obvious signs - I hadn't experienced any pain and was living my life as normal."

Sir Ranulph was one of the lucky ones to survive a SCA, as one of his fellow passengers was a nurse and they managed to get a defibrillator to him within 4 minutes. It would have been a very different picture now had the AED not been available.

Sir Ranulph has since gone on to conquer many more challenges, even running seven marathons on seven continents in seven days for the British Heart Foundation, just 4 months after his operation. Sir Ranulph has pledged to take an AED with him on all his future expeditions as standard, and believes that such a small piece of kit should be available in all public places.

After all, he is only alive now because an AED was at the airport.

***You're a long way from an ambulance out here***



# About Martek Marine Ltd

---

Martek Marine Ltd are leading a revolution in ship safety, performance and crew welfare! We're the driving force behind **GROUND-BREAKING** marine technology that are fundamentally changing our industry. Our comprehensive range of navigation, crew welfare, drone, unmanned aerial vehicle and gas products, are dramatically improving profitability, on-board safety and operational efficiency.

Our **DISRUPTIVE** technology offers compliance with all safety, environmental, medical, and navigation marine regulations, protecting assets, life and the environment in the global maritime industry. Trusted **EXPERTS** in our field, we've supplied over 30,000 shipsets of equipment since 1999.

As **THOUGHT LEADERS** and master **INNOVATORS**, we're transforming our industry...look at iVital™, the first marine approved, wireless telemedicine solution available for a monthly fee. Thanks to in-house design and manufacturing capabilities we're consistently growing, developing and enhancing our product ranges, whilst unbeaten **AGILITY** enables rapid response to bespoke customer requirements.

Making things **EASY** for customers, products including calibration gas, are available for purchase 24/7 online and we offer excellence, quality and professionalism every step of the way, it's the key to our **LEGENDARY** and multi-award-winning customer experience.

**The following shipping companies already trust Martek Marine with their crews' lives:**

- MOL Tank ships
- OSG
- V Ships
- CMA CGM
- Anglo Eastern
- Tsakos Shipmanagement
- SWIRE

# Certification

---

Manufactured under ISO 13485:2003, cleared by the FDA and CE marked to the Medical Devices Directive 93/42/EEC.



LIFEFORCE® carries GL Type Approval, meaning that you can be assured that it has been tested to prove that when needed, it won't let you down. In addition, the proven performance and reliability of LIFEFORCE® is supported by a full 5-year marine specific warranty with the option to upgrading to 7 years.



# Contact us

---

If you would like to receive further information about SCA or the LIFEFORCE® specialist marine Type Approved AED, please contact us:

## **MARTEK MARINE (UK OFFICE)**

6A Adwick Park  
Manvers  
Swinton  
Rotherham  
S63 5AB  
Tel: +44 (0)1709 599 222

## **MARTEK MARINE (SINGAPORE OFFICE)**

3 Church Street  
Level 8 Samsung Hub  
Singapore  
049483  
Tel: +65 6408 3334

[info@martek-marine.com](mailto:info@martek-marine.com)

[www.martek-marine.com](http://www.martek-marine.com)