



A Guide to Sudden Cardiac Arrest



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 140,000 deaths occur in the UK every year due to sudden cardiac arrest (SCA). The only way to save a victim of SCA is with a defibrillator. SCA is the UK'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.

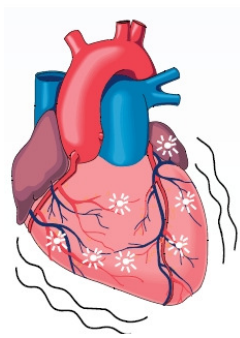
The facts about SCA

- It strikes without warning, killing around 140,000 people per year in the UK
- It kills more people than breast, lung and prostate cancer combined
- It can happen to anyone, even young athletes
- Defibrillation is the only treatment



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
- Male gender - Men have a greater risk of heart attack than women do, and also fall victim earlier in life.
- Heredity factors, including race

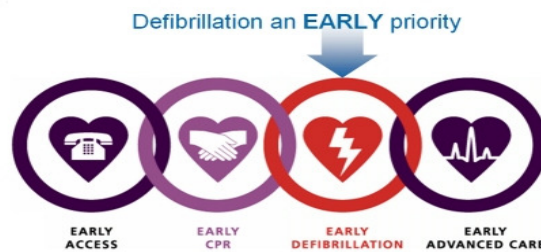
In addition to a heart attack, some of the other common causes of SCA are listed below. There is an increased incidence of many of these causes on board a ship:

- 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 is dramatically improved.

Early access: Immediately summoning medical help

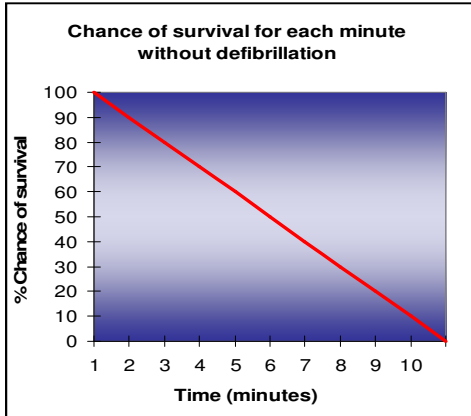
Early CPR: Rescue breathing and chest compressions, which circulates blood to vital organs

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 defibrillation¹, 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%.

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 Medical therefore recommended that you should look for the following when purchasing an AED:

¹Cummins, 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.

Durability and reliability

Not all AED units are suitable for harsh environments. Check to see that each of the models you are considering meets your requirements. For example, AED units are available which have been tested by the military to prove their durability and there are models on the market which carry specific industry warranties. This offers peace of mind that a particular model will be ready to perform in a life-saving situation.

Upgradeable operating system

Some AED units can have their internal operating system easily updated via a download, while other models require the owner to send the unit back to the manufacturer.

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' 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 an 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.



Thank you for reading this data sheet.

For pricing or for further information, please contact us at our UK Office, using the details below.



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