An Introduction to Sudden cardiac arrest
An Introduction to Sudden Cardiac Arrest

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5. The Different Types of Defibrillators Available
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What is Sudden Cardiac Arrest (SCA)
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• Sudden Cardiac Arrest (SCA) is an arrhythmia- abnormal heartbeat- which causes the heart’s normal rhythm to suddenly become chaotic.

• The heart can no longer pump oxygenated blood effectively around the body and the victim collapses, becomes unresponsive, and stops breathing.

• The only known treatment method is defibrillation.

• An AED (Automated External Defibrillator) is used to administer an electric shock to a person who is having a cardiac arrest in order to allow the heart to reset to a normal rhythm.
What is Sudden Cardiac Arrest (SCA)

SCA KILLS MORE PEOPLE EACH YEAR THAN THE TOTAL DEATHS OF:

Breast Cancer
Lung Cancer
And HIV/AIDS Combined

SCA AFFECTS 6,000,000,000,000 PEOPLE EVERY YEAR WORLDWIDE.

SCA STRIKES SOMEWHERE IN THE WORLD EVERY 2 MINUTES
What is Sudden Cardiac Arrest (SCA)

100,000 adults in the UK die each year from SCA

Sources: Office for National Statistics; World Health Organisation; Department of Transport
Common Causes and Misconceptions of SCA
Common Causes and Misconceptions of SCA

Common causes for sudden cardiac arrest include but are not limited to; Asphyxiation, drowning, circulation problems, drug effects, electrocution, heart diseases, hypothermia, metabolic changes, respiratory problems, trauma to the chest.

![Annual Fatalities in the UK](chart)

- House Fires
- Road Accidents
- Breast/Prostate Cancer
- Diabetes
- Lung Cancer
- SCA
Common Causes and Misconceptions of SCA

CARDIAC ARREST is an ELECTRICAL problem

The person will be UNCONSCIOUS

▪ Call 999 ▪ Start CPR

A HEART ATTACK is a CIRCULATION problem

The person will probably be CONSCIOUS

▪ Call 999 ▪ Keep them calm
All Automated External Defibrillators (AEDs) are designed to treat a patient that is unresponsive or not breathing normally

• AEDs treat two specific fast arrhythmias:
  – Ventricular fibrillation (VF)
  – Pulseless ventricular tachycardia (VT)

• 90% of SCA patients initial rhythm is Ventricular Fibrillation
How to Respond Should You Encounter a SCA
How to Respond Should You Encounter a SCA

If you encounter a Sudden Cardiac Arrest there is what's known as ‘The Chain of Survival’ which is essential to ensuring the victim stands a good chance of surviving a SCA. This needs to be implemented as rapidly as you can!

But remember defibrillation is the only way to treat a Sudden Cardiac Arrest.
How to Respond Should You Encounter a SCA

The first steps in ‘The Chain of Survival’ are to call the emergency services: When calling 999 you have two options depending on your situation

1. PAD – if your nearest defibrillator is a Public Access Defibrillator you may need to acquire a code from the operator to open the box and gain access to the AED.

2. Alternatively, just make them aware of the situation so they can start heading to your location
How to Respond Should You Encounter a SCA

Early CPR

• Chest compressions/rescue breathing 30:2.
• Keeps oxygenated blood flowing to brain and heart to ‘buy time’.
• Push hard and fast.
• Min depth 5cm at 100 to 120 per min.
• Important part of the Chain of Survival
How to Respond Should You Encounter a SCA

Early Defibrillation is KEY! BUT it is the WEAKEST LINK

• This stage is the most important stage because from the moment SCA strikes the victims chance of survival drops by 10% for every minute that passes.
• This statistic is why ALL work places, public spaces and anywhere else where you and your loved ones spend time should have easily accessible defibrillators.

Early Defibrillation - to restart the heart

![Graph showing the percentage chance of survival without defibrillation over time](https://example.com/graph.png)
How to Respond Should You Encounter a SCA

“But why do we need a defibrillator if we’ve rang the emergency services?” – This is the most common reason why people do not have a AED as they believe the emergency services will arrive in time.

Average ambulance response time in the UK is 11 minutes.

Chance of survival with every minute that passes drops 10%.
How to Respond Should You Encounter a SCA

<table>
<thead>
<tr>
<th>Service</th>
<th>Phone call</th>
<th>Responder on-site</th>
<th>To patient</th>
<th>Time to first shock</th>
<th>Rate of survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Ambulance</td>
<td>1 min</td>
<td>8 min</td>
<td>1 min</td>
<td>10 min</td>
<td>&lt;10%</td>
</tr>
<tr>
<td>Fire</td>
<td>1 min</td>
<td>4 min</td>
<td>1 min</td>
<td>6 min</td>
<td>40%</td>
</tr>
<tr>
<td>Police</td>
<td>1 min</td>
<td>4 min</td>
<td></td>
<td>5 min</td>
<td>50%</td>
</tr>
<tr>
<td>Public Access Defibrillation</td>
<td>1 min</td>
<td>2 min</td>
<td></td>
<td>3 min</td>
<td>&gt;70%</td>
</tr>
</tbody>
</table>

**Survival rates increase 10% per minute.**
How to Respond Should You Encounter a SCA

1. Unresponsive
   - Call for help

2. Open airway
   - Not breathing normally
   - Send or go for AED
     - Call 999

3. CPR 30:2
   - Until AED is attached

4. AED assesses rhythm

5. Shock advised
   - 1 Shock
     - 150-360 J biphasic or 360 J monophasic
     - Immediately resume CPR 30:2 for 2 min
     - Continue until the victim starts to breathe normally

6. No Shock advised
   - Immediately resume CPR 30:2 for 2 min

AED Protocol - ERC Resuscitation Guidelines 2015
Final point in the chain of survival is to get the patient into advanced care which will be provided at the nearest hospital so they can check patient.
How Defibrillators Work and General Concerns
How Defibrillators Work and General Concerns

• AED’s analyse the victims heartbeat and will only allow delivery of a shock if the victim needs one

• Part of the FDA test - the failsafe will not allow a shock to be delivered unless VF is detected

• AEDs have failsafe that is able to dump shock right up to the last second if someone touches the patient

• No recorded cases of harm to rescuers and bystanders caused by an AED
CPR AEDs and the law

• AEDs are often provided in public places and can be safely used by untrained members of the public while waiting for an ambulance.

• The likelihood of causing harm by performing CPR or using an AED is very small indeed. Nevertheless, there has been some concern that should an attempt to resuscitate someone having a suspected SCA result in harm, a legal claim could be brought against the rescuer. To date, there has been no reported successful claim to this effect.

• Anyone who attempts resuscitation would only be legally liable if it could be shown that the intervention had left a person in a worse position than they would have been in had no action been taken. In the case of a cardiac arrest, this would be virtually impossible, since without intervention death is inevitable.
The Different Types of Defibrillators Available
The Different Types of Defibrillators – Product Demo

• Fully Automatic Defibrillator

• Lifeline AUTO will determine if a shock is required then deliver automatically

• Semi Automatic Defibrillator

• Lifeline AED and VIEW will determine if a shock is required then user presses button to deliver shock
What to consider when purchasing?

• DURABILITY – FDA APPROVED

• SIMPLE AND STRAIGHTFORWARD DESIGN

• EASY TO USE

• LOW MAINTENANCE

• COST OF OWNERSHIP

• FUTUREPROOF

• WARRANTY

• SUPPORT SERVICE

• TRAINING OPTIONS
Independent studies

Independent Usability Study
The University of Illinois took the 5 leading AED manufacturers and tested them on 125 non medically trained people:

• The Defibtech AED came out as the easiest to use following this study
• 92% of users successfully administered a shock with the Defibtech AED, compared to 84% Philips, 72% for Medtronic (Physio Control) and Zoll, 36% for Cardiac Science

Conclusion of the study:
The Defibtech AED was more successfully used by non-medically trained bystanders than the other 4 leading manufacturers
Independent studies

**Independent Usability Study**

- Heartsine 500P Semi
- Defibtech Lifeline View Semi
- Zoll AED Plus Semi
- Welch Allyn AED 10 Semi
- Cardiac Science Powerheart G5 Semi

Recommend **Lifeline VIEW** as being the best device for Public Access Defibrillation schemes in 2016, and equally thus, the **best device for workplace installations for 2016**.
Not sure if you need a defibrillator
Risk Assessment – Factors to consider

1. Rapidly increasing aging population/workforce

2. Growing focus of companies on improving and modernising healthcare and safety at work

3. Huge burden of cardiovascular disease

4. UK Ambulances have failed to reach 75% of their most serious 999 calls within 8 minutes
Risk Assessment – Factors to consider

• Look at layout of site – is it spaced out? How many buildings on site? Layout of building
• How many employees on site and where? Populated in one area or spaced out
• Members of public on site? Adult/children or both?
• Any previous incidents? Any underlying heart conditions? Previous history of heart attack, heart disease, heart surgery?
• Nearest hospital – distance in busy and off peak times
• Any employees - smokers, diabetics, high bp, overweight, fainted or blacked out, high cholesterol, palpitations, family history of heart disease or cardiac arrest?
• Dangerous work environment? Stressful work environment?
• Stressful work environment?
Implementing Defibrillators in the Workplace or Community
Factors to consider

- Training

- Maintenance and Servicing
  - Pads
  - Batteries

- Adding to First Aid safety checks

- Security and vandalism – storage

- Public access AEDs
  - person of contact
  - installed correctly
  - checked regularly
  - registered with Ambulance service
Who has chosen Defibtech AEDs?
Support

For help or any other support contact:

Moya Murphy
Phone: 07960 384 488
Email: moya.murphy@martek-lifecare.com
Any Questions?