Know the difference

Sudden cardiac arrest (SCA)

Early cardiopulmonary resuscitation (CPR) and using an automated external defibrillator (AED) can make a dramatic difference to survival. Sudden cardiac arrest (SCA) is caused by an abnormal heart rhythm resulting from a problem in the heart's electrical system. The most common heart rhythm disorder that leads to SCA is ventricular fibrillation (VF). During VF, the heartbeat becomes fast, shallow, and uncoordinated, preventing effective pumping of blood around the body. Commotio cordis is another condition that can occur when an individual experiences a severe blow or trauma to the chest, which can result in a SCA. If a person is struck in the chest at a specific time in the heart rhythm cycle, the heart's electrical signal can be interrupted, resulting in the heart stopping. Resuscitation within 3 minutes resulted in a survival rate of 25% (17 of 68 cases). Survival drops to 3% when resuscitation is delayed beyond 3 minutes. Therefore, immediate response is vital. Every minute after an SCA, the chance of survival falls by 7-10%. Early action to prevent death from SCA is vital.

Ensuring the Chain of Survival

Survival of SCA depends on a series of critical links that together form the Chain of Survival:

1. **Early access** - Dial 999 immediately.
2. **Early CPR** - Provide CPR to help maintain blood flow to the brain and organs until the arrival of the defibrillator & advanced medical care.
3. **Early defibrillation** - Defibrillation is the only way to re-establish the heart's natural rhythm following a SCA.
4. **Effective advanced life support** - An emergency team provides airway support, defibrillation, & intravenous medication.
5. **Early advanced cardiac life support** - After initial survival of a SCA, a comprehensive management plan is made to decrease chances of further cardiac events.

Early CPR

CPR should be provided for anyone who has collapsed and who is unresponsive and not breathing.
CPR involves providing chest compressions and rescue breaths when someone collapses because of a sudden cardiac arrest. The heart works as a pump when it is compressed, propelling blood around the body until emergency services arrive. Rescue breaths enable oxygen to get into the blood – these are provided only if the responder is both trained and willing. CPR is essential to buy time before the heart can be restarted with a defibrillator.

Early defibrillation

An AED is a portable device that can automatically shock a heart back into rhythm before the emergency services arrive. Once activated, the AED guides the user through each step of the defibrillation process by using voice and visual prompts.

Who can use an AED?

Anyone! Using an AED is easy and can cause no harm when instructions are followed. The Resuscitation Council AED Guidelines advise that an AED can be used safely and effectively without previous training and therefore should not be restricted to trained rescuers. AEDs analyse the heart's rhythm and will only deliver a shock if needed and if no one is in danger. This means that anyone can use an AED safe in the knowledge that they can only be helping. Everyone should become familiar with AEDs and how they work.

It is safe to use an automated external defibrillator (AED) on someone who has a pacemaker or implantable cardioverter defibrillator (ICD). It is important not to place the pads in contact with, or directly over the device. The pads are usually placed on the upper right of the chest and on the left side of the rib cage, so a device should not get in the way. If someone has an implanted device, you will notice a scar and a bump. Place the pad to the side of the device (about 3cm).

The shock produced could affect the functioning of the pacemaker or device, however the benefits of using the AED to save someone's life outweigh this potential risk. If you receive CPR or defibrillation, you should have your device checked afterwards to ensure the settings are still accurate. If you have any questions or concerns, please contact your cardiologist.

How can CPR and an AED make a difference?

Early defibrillation using an AED is the only way to re-establish the heart's natural rhythm following a sudden cardiac arrest. CPR is necessary to keep the patient alive until the heart rhythm is restored. It is essential AEDs are publicly accessible so life-saving equipment is available to anyone, whatever time of day.

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Make a difference

If someone collapses, follow these simple steps...

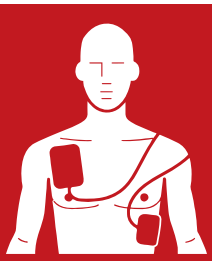
1. **DANGER:** Ensure the area is safe before you approach the patient. If it is not safe or you are not sure, call 999 and wait for help to arrive.
2. **RESPONSE:** Confirm that the patient is unresponsive. Try to talk to the patient and shake shoulders.
3. **SHOUT:** If the patient does not respond, shout for help, call 999 and send for an AED.
4. **AIRWAY AND BREATHING:** Look, listen and feel to see if the patient is breathing. Ensure the airway is open and clear.
5. **CPR:** If the patient is not breathing, begin CPR.
6. **DEFIBRILLATION:** When the AED arrives, follow the 6 directions of the AED until emergency services arrive.

No early intervention = 5% survival
CPR alone = 9% survival
Early defibrillation[1] + CPR => 70% survival[2]

How to use an AED

Turn on AED.

Expose chest by removing clothing, cut with scissors if necessary.



Remove pads. Stick pads on bare skin.

Follow voice prompts until emergency services arrive.

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1 - Early is defined as within three minutes from collapse
2 - Survival rates of 74% and higher have been recorded by some studies of early AED defibrillation