AEDs: are they for you?

An Automated External Defibrilator (AED) is a portable, computerised, battery operated device that checks the heart rhythm and delivers a potentially lifesaving shock, if it is required. They will not deliver a shock when it is not necessary, even if the button is pressed. Voice prompts direct the operator through each step, making them safe and easy to use. They form the third link in the chain of survival from the recognition of cardiac arrest, through CPR to advanced care.

Following the 2011 syllabus update, an awareness of AEDs became part of the RYA First Aid Course. Some clubs and marinas have bought them, they are commonly seen at airports, railway stations and on TV, but are they for you?

When and why are AEDs needed?

The heart pumps blood to the lungs to pick up oxygen and circulate it round the body. To do this, the heart muscle requires a good blood supply itself, provided by the coronary arteries. If these arteries have become narrowed there may be insufficient blood flow, which causes the pain of angina. Typically angina occurs during exercise or exertion when the heart is working harder and therefore requires more oxygen rich blood. It should ease with rest. Glycerol Trinitrite (GTN) is available in the Category C Medical Stores if required.

In a heart attack a coronary artery becomes blocked, an area of heart muscle is deprived of oxygen, and dies, and the pain persists. The damaged heart muscle may not be able to create the co-ordinated electrical impulses necessary and sudden cardiac death may occur. Initially the heartbeat may become dangerously fast, as in VT, (ventricular tachycardia) or more commonly, chaotic, as in VF (ventricular fibrillation). The chaotic, often irregular heart rhythm of VF means that the heart stops pumping blood effectively, rapidly starving the brain and other vital organs of blood and oxygen. If the patient survives they may have permanent damage to the heart, brain and other organs.

An AED is designed to reverse VF and allow an effective heart rhythm to be re-established, but the chance of success decreases rapidly. Every second counts.

Of course CPR is a vital step in the lifesaving process, and can keep some blood circulating. It must be started immediately, maintained until the AED arrives and quickly resumed between shocks.

How to use an AED

When the AED is opened the voice prompts begin immediately. Some machines require switching on and the pads to be plugged in, while others are ready to go. Once the pads are in place, the AED automatically analyses the heart rhythm and determines if a shock is needed. If it is, the machine instructs the user to push a flashing button to deliver the shock, and then continue CPR if necessary. The process can be repeated as needed until the emergency crew takes over.

The case of the footballer who survived to be fit and well after over an hour of CPR and shocks should encourage all rescuers to continue resuscitation for as long as possible.

AED procedure

1. Check for dangers to self, bystanders and casualty.
2. Check for response. If unresponsive shout for help.
3. Open the airway. If not breathing normally send for assistance and an AED.
4. Start CPR, and maintain until AED arrives.
5. Switch on the AED immediately and attach pads to the patient's bare chest without delay. Place and stick the pads with care:
   Place one below the right collar bone and the other 10cm below the left armpit in a vertical axis. Many pads are labelled left and right but reversal does not matter.
   Dry the chest to ensure the pads stick firmly and dry across the chest between the pads if necessary.
   Shave small areas of the chest if required so the pads will stick.
   Avoid placing the pads over jewellery or an implanted pacemaker or defibrillator.
   Remove any medicinal patches.
6. Follow the voice prompts. The AED will assess the heart rhythm. Do not touch the patient or allow movement.
7. If a shock is advised, do not touch the patient as the shock is delivered. Avoid kneeling in water or on a metal surface if possible.
8. Consider the presence of fumes. Do not use if petrol fumes are present.
9. Resume CPR immediately, and continue for two minutes when the AED will analyse again.

Continue CPR and shocks until the casualty shows signs of regaining consciousness such as coughing, opening their eyes or moving purposefully AND breathing normally, until someone else takes over or you are too exhausted to continue.

Who can use an AED?

An AED can be used safely and effectively without training, and their use should not be restricted to trained personnel only. However practical training is recommended when there is an AED on site. Many short courses are on offer and video demonstrations can be found on the British Heart Foundation's DVD 'Skills for Life' and on the DVD included in the Resuscitation Council book 'CPR and AED', among many others.

Do you need one?

The presence of an AED at a club or centre where there may be hundreds of people on site, where staff or members can be trained and when an ambulance can arrive quickly, makes a lot of sense. But afloat you must take into account some practical considerations:

- Will the AED be usable in your craft? Consider the lack of space, the possibility of excessive movement, and the presence of water and fumes.
- Will its use delay transport ashore where an ambulance could be waiting?
- If the boat is offshore, successful defibrillation will not ensure the patient's survival, as advanced cardiac care may not be available for many hours.
- The relatively low number of people on most boats makes the probability of it use low, in contrast to more highly populated areas.
- Like most safety equipment, the cost of AEDs is relatively high, so priorities will have to be made.