Automatic external defibrillators

FACTORS TO CONSIDER

Introduction
In the United Kingdom approximately 30,000 people sustain a cardiac arrest outside of a hospital environment each year. For cardiac arrest caused by ventricular fibrillation (VF) or pulseless ventricular tachycardia (VT), electrical defibrillation is well-established as an effective therapy. The scientific evidence to support early defibrillation is overwhelming; the delay from collapse to delivery of the first shock is the single most important determinant of survival.

General legal
There is no legal requirement to have an automated external defibrillator (AED) in a public building or workplace; however, the benefits of providing an AED are often identified as part of the first-aid risk assessment. For example, the risk assessment may identify that the response time of the emergency services could be delayed due to the remote location, or known traffic congestion. The risk assessment also may identify other reasons for supplying an AED, including the demographics of users/workforce.

Type of AED
AEDs are sophisticated items of computerised equipment that analyse the electrocardiogram (ECG) rhythm of a casualty’s heart. AEDs can be used to deliver an electric shock when it is identified that the ECG rhythm is one that is likely to respond to a shock.

There are many types of AEDs available. Semi-automatic AEDs indicates the need for a shock, which is delivered by the operator, while the fully automatic AED administers the shock without the need for intervention by the operator. There are more advanced AEDs that are used by trained healthcare professionals.

For public buildings and workplaces selecting an AED that is simple to operate, with minimal controls is key. This will typically include voice prompted units that are automatic or semi-automatic.

Training and usage
An automatic or semi-automatic AED can be used safely and effectively without previous training. However, it is highly recommended that operators are trained as this will help to ensure the correct placement of pads and potentially reduce the time taken for the AED to deliver a shock is necessary. This approach to AED training is encouraged by both the Health and Safety Executive (HSE) and the Resuscitation Council (UK).

It is important to recognise that a First Aid at Work course will not cover the use of AEDs and, therefore, separate training will need to be organised, along with the periodic refresher training. There is no approved AED training content or standards from the HSE; however, consideration should be given to:

- The correct use of the equipment
- The correct location and storage (in relation environmental factors and ease of access)
- Identification of suitable maintenance and inspection programs

Location and environmental factors
Units should be provided in prominent locations and the use of the “UK standardised AED sign” is encouraged to highlight the location of an AED.

The use of secure storage or physical barriers defeats the purpose of an AED and may lead to a time delay. For environments where security or horseplay may be an issue, alarmed cabinets are available that give notice that the AED is being accessed (and could form part of a wider response plan).

In relation to storage, consideration should be given to exposure to wind, rain, temperature extremes, etc. Manufacturers should be consulted on potential locations and should identify units with suitable ingress protection figures.
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Maintenance
AEDs will have a self-test function and will always fail to safety. However, AEDs may require daily, weekly and monthly checks. Often this will include checking:

- The general condition of the AED, e.g., no obvious physical damage
- The status indicator of the AED, which will reflect the units battery condition and operability
- Sufficient availability of accessories, e.g., pads, including spares
- Components with an expiration data, e.g., pads, batteries, have not expired

When an AED is provided within a public building or workplace, arrangements should be made to ensure that a competent person takes responsibility for carrying out the checks and maintenance as outlined within the manufacturer’s schedule.

Other considerations
Although AEDs are generally simple to install and use, the following areas should be given consideration:

- Usage of the units on children and babies (consult with provider)
- Language barriers with signage and voice prompts
- Who will oversee the management of these assets
- Initial and refresher training

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