Resuscitation Council UK

Public access defibrillators:

A guide for communities

Contents

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British Heart Foundation

Foreword from our President - Prof Gavin Perkins MBE

Cardiac arrest (when the heart suddenly stops pumping blood around the body) claims the lives of tens of thousands of people in our communities each year. It doesn't have to be like that.

Resuscitation Council UK (RCUK) is the expert organisation in resuscitation. We are saving lives by developing guidelines, influencing policy, delivering courses and supporting cutting-edge research. Through education, training, and research, we are working towards the day when everyone in the UK has the skills they need to save a life.

Three simple actions can make the difference between life and death:

- early recognition (that someone is in cardiac arrest) and dialling 999
- starting chest compressions
- sending someone to fetch an automated external defibrillator.

Automated external defibrillators are simple devices which, when needed, deliver a shock to restart the heart. Using a defibrillator within 3–5 minutes of collapse can increase survival rates by up to 70%. This guide explains why it's important to make sure everyone has fair access to defibrillators in their community.

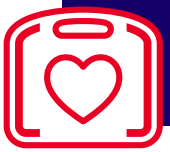
Our publication explains how automated external defibrillators work, when and how to use them, what people should consider when purchasing and installing a device, and the importance of registering the device with The Circuit (the national defibrillator network), as well as describing the legal implications in providing a device to a community.

Together, we can ensure everyone in the UK has access to lifesaving defibrillators. Learn how you can help make your community heartsafe today.

Introduction

Sudden cardiac arrest is when the heart suddenly stops pumping blood around the body; the person immediately becomes unconscious and stops breathing normally. They will die within minutes if not treated quickly.

Out-of-hospital cardiac arrest affects 100,000 people a year in England of whom resuscitation is attempted by ambulance services in around 30,000 people.



The large gap between the number affected by cardiac arrest compared with the number treated is mostly explained by delays in recognising cardiac arrest (for example if a person collapses when no one is around) or failing to start resuscitation before ambulance services arrive.

9%

In 2024, defibrillators were used by members of the public in only 9% of cardiac arrests.

Early recognition of cardiac arrest, immediate resuscitation and rapid defibrillation can more than double the chance of survival. Resuscitation involves the use of chest compressions (and rescue breaths for those trained and able to do so), known as cardiopulmonary resuscitation (CPR). Use of a defibrillator is an important part of resuscitation and once CPR is established, the person in cardiac arrest should be connected to a defibrillator as soon as possible. Defibrillation is the use of a defibrillator to deliver a shock to restore the heart's rhythm. In many patients, this helps to restart the normal pumping action of the heart. For every minute's delay to defibrillation (where indicated), once resuscitation has started, the chance of survival decreases by 10%. Defibrillators intended for use by members of the public are often referred to as automated external defibrillators (AEDs). When they are placed in a location that allows members of the public to access them, they are referred to as public access defibrillators (PADs). Throughout this document, they will be referred to as defibrillators.

RCUK supports the widespread installation and public availability of defibrillators. Greater availability of defibrillators has the potential to save thousands of lives each year. This guide provides information about defibrillators available in public places and how they can be used anywhere, by anyone, including those with no previous training, to try to save the life of a person in cardiac arrest. We hope it will provide the reader with the essential practical information needed so they are confident their defibrillator is ready for the ultimate medical emergency.

Scan the CPQR code to learn CPR:

Adult

Child and baby

SCAN IT. LEARN IT. SAVE A LIFE.

Further information on how to recognise and treat a cardiac arrest along with training resources in many languages, are available on our website.

Defibrillators: what they do and instructions for use

Figure 1 An example of a defibrillator, open and ready to be used

What they do

A defibrillator is a portable electronic machine (Figure 1) that can deliver a shock when needed to attempt to restore a person's heart rhythm. The type used by members of the public automatically detects the abnormal heart rhythm that causes cardiac arrest and tells the user when a shock is needed. The devices are designed for use by members of the public with no training or clinical background, before the arrival of the emergency services.

Once a cardiac arrest is recognised, CPR should be started and continued until a defibrillator arrives, is switched on and the pair of pads applied to the person's chest.

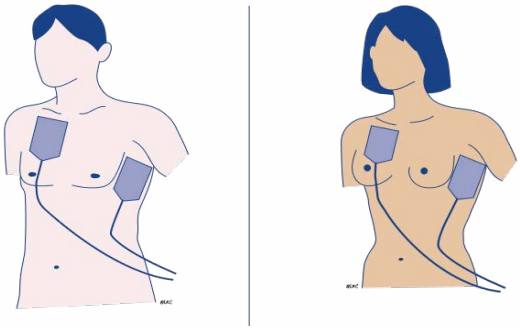


Image credit to European Resuscitation Council

CPR and the use of a defibrillator can more than double the chance of survival.

Once switched on, the defibrillator will guide the rescuer (using audio and visual prompts) through the actions required to provide effective lifesaving treatment in the critical first few minutes after a cardiac arrest (including delivering a shock if needed). Always follow the defibrillator's instructions, it's like having an expert by your side.

Our defibrillator poster summarises the key steps involved and should be placed beside or on a defibrillator cabinet. It's available to download for free from the RCUK website.

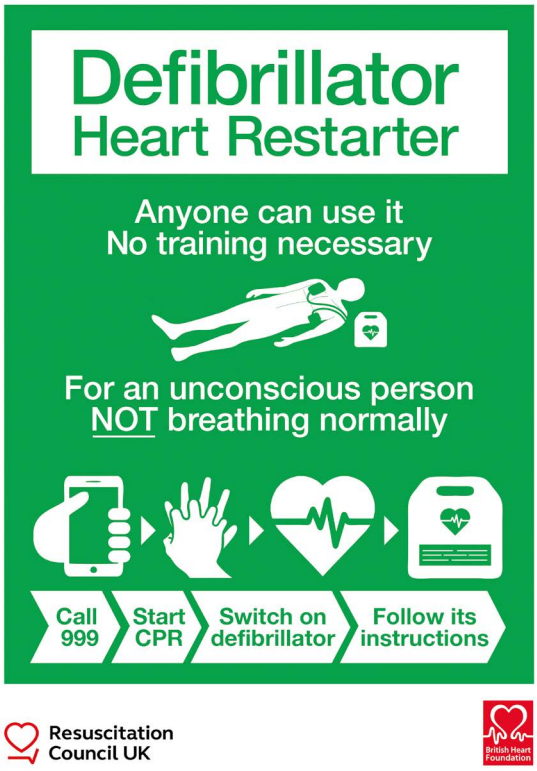


Figure 2 - An example of our defibrillator poster illustrating the steps to take to confirm cardiac arrest, call 999, start CPR and use a defibrillator.

Defibrillators for children

Some defibrillators enable the user to indicate if it is being used for a child in cardiac arrest. This may be through a switch on the defibrillator, or by attaching paediatric defibrillator pads (if they are available). This will allow an appropriate shock energy to be delivered to a child. Defibrillation, if needed, must not be delayed; adult pads and energy can be safely used on a child if this is the only resource available. If using adult pads on a child, care should be taken to ensure that the pads are not in contact with each other when delivering a shock.

Be prepared!

Even though training is not required to give CPR and use a defibrillator, familiarisation may support individuals to feel more able and confident to do so. Learn more about how to perform CPR and use a defibrillator with our interactive Lifesaver training, and our short animated video, Defib Dani.

RCUK have teamed up with GoodSAM to provide free online CPR training and defibrillation awareness through their lifesaver product. The GoodSAM mobile phone app alerts trained volunteers to provide help at the scene of a cardiac arrest including collecting a defibrillator if it is nearby. Once training has been completed, individuals can sign up to be a GoodSAM cardiac responder to support their local community.

How to find a defibrillator in an emergency

The trained staff who answer emergency 999 calls instruct people at the scene of a cardiac arrest to give CPR and use a defibrillator, if available. They will tell the caller the location of the nearest defibrillator that is registered on The Circuit – the national defibrillator network.

Registering your defibrillator on The Circuit – the national defibrillator network

The Circuit
The National Defibrillator Network

We strongly recommend that defibrillators are registered on The Circuit – the national defibrillator network provided by the British Heart Foundation (BHF). This ensures that the emergency services, voluntary responders and members of the public are able to access the defibrillator when needed to save a life. All ambulance services in the UK are linked to The Circuit. Registration is simple, quick and free of charge. Registration ensures the ambulance service knows the exact location and access arrangements for your defibrillator in the event of an emergency.

Registering with The Circuit also means you will receive helpful reminders to check your defibrillator and to change the pads when they have expired.

We also recommend that defibrillators are kept in unlocked cabinets to enable access 24 hours a day, 365 days are year. However, defibrillators can be registered for the days and hours they are available – it could still make a lifesaving difference.

Organisations with more than ten defibrillators can register them using an organisation account. This provides additional functionality and reporting to help the organisation's nominated administrator ensure that all their defibrillators are being checked regularly and returned to emergency ready status as quickly as possible. It also helps with routine tasks such as planning the replacement of expiring pads.

For more information on registering your defibrillator or opening an organisation account please visit the British Heart Foundation's The Circuit webpage.

Purchasing, installation, signposting and maintenance

Selecting a defibrillator

There are several different defibrillators available and there will be a number of factors that influence the model of defibrillator that you choose. We have produced a guide to the minimum specification of defibrillator required (see Appendix B). Your local ambulance service may be able to guide you in your choice of defibrillator. There is also a national checklist for defibrillator installation (see Appendix C) which will support you to decide where to place your defibrillator, ensure it's emergency rescue ready, and how to arrange CPR and defibrillator awareness training.

Financial cost

There are financial costs involved in installing a defibrillator. This includes the initial purchase of the device and consumables such as the replacement of defibrillator pads and battery. Regular checks to ensure the defibrillator is operational are recommended.

Defibrillators kept outside need to be kept in a specially designed cabinet. The cabinet requires a domestic power supply for its heating element to ensure the defibrillator remains operational in colder weather and should be weatherproof.

Location

You can check the Defib finder to see the location and accessibility of existing defibrillators in your community.

Ideally, a defibrillator should be accessible within 200 metres or two minutes' brisk walk (four minutes there and back) from where it is anticipated it might be needed. Assess real-world distances, i.e. how someone would access the defibrillator in real life, rather than simply drawing a straight distance between points.

Placing a defibrillator in busy areas (e.g. airports, train or bus stations) or at local landmarks (e.g. pubs, place of worship, schools) may help ensure better access to the defibrillator. Whenever possible, defibrillators should be made available 24 hours per day to maximise their availability.

Even though cardiac arrest may be a relatively infrequent event, in many rural communities or workplaces with difficult access (likely to delay ambulance arrival), a local defibrillator may provide a person suffering cardiac arrest with the only realistic chance of survival. Provision of a defibrillator on passenger aircraft is another example where survival from cardiac arrest is otherwise unlikely.

Research has highlighted the mismatch between where cardiac arrests occur and where defibrillators are located. Areas of greatest need are often those with the lowest access to defibrillators. Less wealthy areas and those with a higher proportion of their population from a minority ethnic background have a higher risk of cardiac arrest and less access to defibrillators. These areas are referred to as cardiac arrest 'hot spots'. Installing defibrillators in these areas may have an even greater positive impact on survival rates from cardiac arrest across the UK. RCUK are using the ResusReady map to try and identify where inequalities in training and awareness of CPR and defibrillators exist so that targeted efforts can be made in those areas.

Charities regularly run schemes providing fully funded defibrillators and unlocked cabinets for community groups. The schemes often target areas where there is a higher risk of cardiac arrest and/or where there are no current defibrillators registered on The Circuit.

Routine checking procedure

Owners or guardians of defibrillators will need to carry out routine checks, replace the battery, when necessary (as indicated by the service light on the defibrillator, or at routine checking), and replace used or out-of-date disposable items such as defibrillator pads, razors and plastic gloves. In all cases, the manufacturer's instructions should be followed. BHF have produced a guide giving more information about routine checks and how registering on The Circuit will ensure you receive helpful reminders.

A robust system should be implemented to ensure that defibrillator checks are completed and issues dealt with. These checks should always be recorded on The Circuit as this ensures the ambulance service know your defibrillator is emergency ready. Some ambulance services will not deploy a defibrillator that hasn't had a check recorded for over three months. Manufacturers may provide a temporary replacement defibrillator if one must be removed for repair. Arrangements for this should be clarified and agreed during purchase.

Signposting

Anyone needing to use a defibrillator must be able to find it quickly and take it to the collapsed individual without any delay. This means that, wherever possible:

- It should be placed in a prominent location so that people can see it easily.
- Its location should be shown using the recommended sign (Figure 3).
- Directional signs should be used to guide people to the defibrillator location. Signage should indicate the direction and distance to the defibrillator and be visible within a minimum 200 metres radius of the defibrillator (Figure 4).
- Signage should be a sufficient size to be legible from a distance of at least 50 metres.
- The defibrillator cabinet should be illuminated at night, and, whenever possible, exterior signs should have supplementary lighting or at least be made of photoluminescent material.

Free download of the signs are available here.

Figure 3 - The recommended sign for advertising the location of a defibrillator.

Figure 4 - Example of a stand-alone directional sign that could be used to help people find the nearest defibrillator quickly.

Figure 5. An example of how existing signs (e.g. at transport stations or in public locations) can be modified to help people find their nearest defibrillator quickly.

- Signage should be properly maintained; we suggest that all signs associated with the defibrillator be inspected at the same time that the defibrillator undergoes its routine checks.
- Anyone living or working near to where a defibrillator is located should know what it is, what it is for and be able to direct people to it immediately.
- Check how easy a defibrillator is to find by approaching its location from the different directions that someone may approach from in an emergency.
- Check the description of the defibrillator location that you provided when registering it with The Circuit. Make sure you are confident that the defibrillator can be found and accessed quickly in an emergency.

Arrangements after use

When a Circuit-registered defibrillator is deployed by the ambulance service, the Guardian will receive an email immediately to let them know. The Guardian can then check a short time after to see if it has been returned to its cabinet or normal storage location. There may be a delay in the defibrillator being returned, or there may be uncertainty about where it came from. The Circuit provides stickers that can be applied to the defibrillator with spaces to enter a contact number, location (using postcode, What3Words or a location name) and, if needed, the cabinet unlocking code so the defibrillator can be placed back inside. If you don't have a Circuit sticker, then tie on a label or use an indelible marker to write the same information directly onto the case. This will assist in the prompt return of your device after use.

It's important to sanitise the defibrillator, return it to its usual place, and replace used disposables, especially the defibrillator pads, to ensure that it is available for further use as soon as possible. If your defibrillator is registered on The Circuit, you should log in to your Guardian account and update its status, so the ambulance service know it is emergency rescue ready again.

Figure 6. An example of an 'unlocked' cabinet containing a public access defibrillator.

Accessibility

There may be concern that a defibrillator in a public place may be at risk of theft or vandalism, but in practice this is rare. Any arrangements to try to put additional security measures in place, such as using a locked cabinet, may create significant delays. RCUK's recommendation is that defibrillator cabinets should not be locked. Our statement regarding this can be found here.

Where local considerations result in a decision to use a locked cabinet, the following are recommended.

- ✓ Ensure the lock is simple to operate and well maintained. This includes use of a suitable lubricant recommended by the cabinet supplier. This will reduce the chance of the lock becoming difficult to operate.
- ✓ Ensure the keypad is visible and well-lit at night.
- ✓ Ensure the unlocking code is accurately recorded on The Circuit so the emergency call handler can provide it to bystanders sent to retrieve the defibrillator during a cardiac arrest.

Data from The Circuit suggests that many occasions where cabinets are forced open are neither vandalism or theft, rather they are people responding to genuine emergencies who are struggling to operate the lock or to obtain the unlocking code. Furthermore, when defibrillators are missing, it is generally a result of them being deployed to an emergency rather than because of theft. Clear labelling on the device and registration on The Circuit is the best way of ensuring that a missing defibrillator is returned promptly.

RCUK advises that only the defibrillator and associated equipment should be stored within the cabinet.

Defibrillators in schools and workplaces

The number of community defibrillators has been increased by the provision of a defibrillator to all state-funded schools across England by the Department for Education (DfE). The DfE has published: Automated external defibrillators (AEDs): guidance for schools. The guidelines state: schools should always ensure that all defibrillators are registered on The Circuit, the national defibrillator network. While incidents of cardiac arrest in school-age children are rare (1.7% of out-of-hospital cardiac arrests in 2023 were in children less than 15 years of age), about one-third of out-of-hospital cardiac arrets occur within 300m of a school.

RCUK recommends that defibrillators are accessible 24 hours a day, seven days a week.

The DfE programme will achieve even greater defibrillator coverage across England if they are placed on school gates/community-facing walls and accessible to whole communities rather than being locked inside schools.

The DfE guidance also provides details on how to source, install, use and maintain a defibrillator in your school. The guide's buying arrangements are open to a wide range of education providers, as well as schools.

School-age children have been shown to be capable of using defibrillators in simulated cardiac arrest scenarios.

First-aid and CPR training is included in England's national curriculum as a non-compulsory subject, and other nations have made commitments to teaching CPR. RCUK recommends both CPR training and defibrillator familiarisation for pupils and school staff. This supports confidence in delivering CPR and de-medicalisation of defibrillators at an early stage, increasing the chances of defibrillator recognition and confidence to give CPR and use a defibrillator during an emergency later in life.

You can find more information on CPR training in schools here.

Figure 7. School children at a CPR and defibrillator awareness workshop.

Is there a 'duty of care' to visitors or users of facilities?

Familiarisation and training in the use of a defibrillator is part of the Health and Safety Executive's (HSE) First aid in work guidance. Employees who undertake courses that adhered to HSE's guidance will be trained to use one, regardless of whether a defibrillator is provided in their workplace. There may be potential consequences for some employers under common law if a defibrillator is not provided. For further information, see RCUK's guide CPR, AEDs and the law.

When the workforce is large or there are substantial numbers of visitors, this strengthens the case for a defibrillator being made available. Completing the risk assessment in Appendix A will support organisations to establish if they should provide a defibrillator.

Is there a statutory duty under the Health and Safety at Work Act 1974 and associated regulations?

There are no statutory laws in the UK relating to resuscitation or the provision of a defibrillator. The HSE does not mandate that any employer or organisation must provide a defibrillator. However, some professional organisations mandate that defibrillators must be provided within their settings.

In the United Kingdom, there are no legal restrictions to the use of a defibrillator. By using a defibrillator on someone who is unconscious and not breathing normally, they cannot make the person's condition worse. A defibrillator will only recommend a shock if it detects a heart rhythm which may respond to a shock and save their life. This topic is covered in detail in the RCUK publication CPR, AEDs and the law.

It's important to have an alerting system within the workplace so that, in the event of suspected cardiac arrest, a defibrillator can be accessed quickly, even if the collapsed person is in a different area. The priority is to call 999 and give the person immediate CPR while the defibrillator is brought to them.

Organisations with defibrillators should have a formal policy to maintain them and ideally ensure they are available for public access 24 hours per day and 365 days per year, wherever possible.

Figure 8. Use of a defibrillator in the workplace.

Summary

RCUK is working towards the day when everyone in the UK has the skills to save the life of someone suffering a cardiac arrest. Currently, only 1 in 10 people survive an out-of-hospital cardiac arrest. This guide outlines the need for defibrillators that are accessible to the public across the UK. Members of the public need to feel confident to recognise cardiac arrest, call the emergency services, initiate CPR and use a defibrillator to save more lives. Communities, workplaces and schools should invest in a public access defibrillator programme. Defibrillators should be accessible and registered on The Circuit - the national defibrillator network.

A lack of training should not be a barrier to starting CPR and using a public access defibrillator, but we recommend CPR and defibrillator awareness training is made available to communities through agreements with local ambulance services, training organisations or online training programmes such as RCUK's Lifesaver. This will increase the public's awareness and confidence to act when cardiac arrest occurs and contribute to our aim of ensuring everyone in the UK has the skills to save a life.

Further reading and resources

Research and guidelines

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Resources

British Heart Foundation - Defibrillators: https://defibrillators.bhf.org.uk/

Out-Of-Hospital Cardiac Arrest Outcomes (OHCAO) Registry: https://warwick.ac.uk/fac/sci/med/research/ctu/trials/ohcao/

Resuscitation Council UK - CPR, AED's and the Law. www.resus.org.uk/library/publications/publication-cpr-aeds-and-law

Resuscitation Council UK - Defib Dani: www.resus.org.uk/public-resource/defibrillation/defib-dani

Resuscitation Council UK - Every second counts report: www.resus.org.uk/get-involved/inequalities-in-resuscitation

Resuscitation Council UK - How to do CPR: www.resus.org.uk/public-resource/how-do-cpr

Resuscitation Council UK - Lifesaver: www.resus.org.uk/public-resource/how-we-save-lives/lifesaver-learning

Resuscitation Council UK - Defibrillation: www.resus.org.uk/public-resources/defibrillation

St John Ambulance: www.sja.org.uk

The Circuit: www.thecircuit.uk

UK ambulance service directory: https://aace.org.uk/uk-ambulance-service/

Appendix A

Guidance: Do I need an AED? The first aid needs assessment

Introduction

All businesses and organisations will undertake a first aid needs assessment to determine the level of first aid provision within their workplace as a part of their responsibilities to protect the safety of their workforce and visitors. As an organisation or company it is a legal requirement to take precautions to reduce foreseeable risks, to document this and be able to present it to the HSE if requested. As part of this assessment it is quite appropriate to consider the risk of a cardiac arrest occurring in the workplace and investing in automated external defibrillators (AED).

Completing a first aid needs assessment entails making an estimate of the risk of a cardiac arrest occurring at a location and considering the potential consequences if it were to occur. The process is not as complicated as many people think. In its most basic form, it is a way of recording the steps taken to ensure the safety of people at a particular site. By putting this information in a standard format, it allows companies and organisations to ensure that everyone is following the same steps. Companies will often do their assessments in slightly different ways, although most share the same basic information. This is not intended to be a rigid, objective or scientific process but just a simple method to help managers to prioritise and take appropriate measures.

It is not a legal requirement to perform such an assessment, but it is considered standard practice. Assessing and recording risks in one place (e.g. a charity shop) might be a very different matter from recording risks in another (e.g. a coal mine). This is why there is no universally accepted format for conducting a risk assessment. Further information and worked examples are available from the Health and Safety Executive (HSE) on their website.

How to assess the need for an AED

The method of conducting a first aid needs assessment advocated here employs the widely used methods used to assess the risk of any adverse event occurring. The key procedure is the calculation of a numerical score based on two variables:

1. The likelihood of an event occurring.
2. The consequences or severity if the event actually occurred.

Each of these variables is given a score from 1 - 5 and the product of the two scores provides a total score on which to base actions.

1. The likelihood of cardiac arrest occurring

The risk of an arrest occurring varies according to several factors, each of which should be considered when assigning the score.

- The number of people passing through the site(footfall). In most cases, the larger the number present, the greater the risk.
- The age of those present (as cardiac arrest is more common with increasing age).
- The nature of the location. Some places are higher risk than others. Experience has shown that where large numbers of the public are present, in busy places like transport hubs (e.g. airports and railway stations), cardiac arrests are more likely to occur.

To help attach a numerical value to the likelihood of cardiac arrest occurring, the descriptions in the following table can be used.

Table 1

Probability	Score	Probability of risk being realised	Description
Almost certain	5	76 - 100%	Risk has high likelihood of occurring despite precautions
Likely	4	51 - 75%	Risk has high likelihood of occurring
Moderate	3	26 - 50%	Risk has a moderate likelihood of occurring
Unlikely	2	11 - 25%	Risk is considered unlikely to occur
Rare	1	0 - 10%	Risk will occur in rare circumstances

In the case of cardiac arrest, the likelihood of the event occurring in most public places and workplaces will be low with a score of 1 or 2. Examples might include a small shop, garage or workshop. Some higher risk sites like busy transport hubs and sports centres will justify a score of 3, possibly even 4. Higher scores are unlikely outside a specialist healthcare setting.

At present there is insufficient published evidence to give precise advice for an individual location and the rating score applied has to be a 'best-guess' or estimate. More accurate information will be available with increasing experience and we encourage research in this area.

2. The consequences (severity) of cardiac arrest occurring

In a typical risk assessment, a score of 1-5 will be allocated based on the consequences of the event occurring. Table 2 shows a convenient grid that might be used.

Table 2

Description		
1	Negligible	Minimal or no effects if event occurs
2	Minor	Consequences very minor, no lasting effects
3	Moderate	Important consequences
4	Major	Significant impact / injury on anyone affected
5	Extreme	Death or serious injury

However, cardiac arrest is uniformly fatal unless treated, so the score will always be 5. Even if resuscitation is successful, the impact on the individual will be significant. For example, they will be in hospital for some time and probably require additional clinical interventions, so the score will remain the same at 5.

Risk rating score

Risk = Severity (5) x Likelihood

By multiplying the scores for the severity and likelihood, the risk is given a numerical value ranging from 1 (unlikely to happen and with minimal consequences even if it does occur) to 25 (highly likely to happen with disastrous consequences). Given the severe consequences of cardiac arrest in the present example the minimum score will be 5. Table 3 shows a convenient way to plan a response depending on the score calculated.

Table 3

Rating score	Action
1-4*	Broadly acceptable - no action required
5-9	Moderate - reduce risks if reasonably practicable
10-15	High Risk - priority action to be undertaken
16-25	Unacceptable - action must be taken IMMEDIATELY

* This score will not be possible in the case of cardiac arrest because of the severe consequences necessitating a minimum score of 5.

Alternatively, the colour of the square on the grid in Figure 1 that contains the calculated risk score can be used to guide actions.

Risk assessment grid

Figure 1. Risk assessment grid.

- *Low risk (green): Quick, easy measures implemented immediately, and further action planned for when resources permit.
- Moderate risk (orange): Actions implemented as soon as possible, but no later than the next financial year.
- High risk (yellow): Actions implemented as soon as possible and no later than six months.
- Extreme risk (red): Requires urgent action. Senior management to be made aware and immediate corrective action to be implemented.

The majority of locations with a low footfall will score below 10, but busy transport hubs would score at least 15, possibly 20.

Management of risk of cardiac arrest

The best chance of successful resuscitation will be when CPR and defibrillation are carried out with the minimum delay. The chances of successful resuscitation fall up to 10% with every minute that CPR and defibrillation are delayed so there is a very real advantage in having an AED available on site. Survival rates of over 70% have been reported when defibrillation is performed within three minutes of someone collapsing. This is a time frame that is rarely possible for ambulance services – current targets are for ambulances to reach people with life-threatening problems (including cardiac arrest) within seven minutes on average.

Using the close proximity of an ambulance station as a justification for not installing an AED will introduce a flaw in your risk assessment, as this assumes that ambulances are always on standby in the ambulance station. What actually occurs is that the NHS Ambulance Trust will deploy the ambulance where it is most likely going to be needed and this may be a considerable distance from the station.

Using the risk assessment system described above, most sites will score either 5 or 10 which suggests that there is a reasonable possibility of a cardiac arrest occurring in most locations. Unfortunately, there is very little that can be done to reduce this risk. This means that the only practicable action possible is to ensure that in an emergency the location and accessibility of the AED is easy and well known to all staff (particularly those who are required to act as workplace first aiders). In these situations, it is also important that staff receive regular training in resuscitation techniques and ideally receive awareness sessions which familiarise them with how to use an AED. Indeed, HSE in their guidance strongly recommend that workplace first aiders receive annual refresher training in order to maintain their competency.

Appendix B

Recommended minimum specification for publicly accessible defibrillators

General

Item Number	Description	Completed
1	The device must be easily transportable, in its case with all the appropriate accessories.	☐
2	The device must have a water ingress protection (IP) rating of 4 or above (as defined in accordance with BS EN 60529:1992 or equivalent).	☐
3	The device must be able to be stored at 0 to 40°C.	☐
4	The device must be able to operate at 0 to 40°C.	☐
5	The device must be able to operate at non-condensing relative humidity levels of 10 to 95%.	☐
6	The device must incorporate a real-time clock and/or the associated software must provide the ability for events to be time-stamped.	☐
7	The device must have a life expectancy of at least 5 years.	☐
8	Replaceable batteries and/or any other replaceable power sources for the device must have a shelf life of at least 3 years.	☐
9	Replaceable batteries and/or any other replaceable power sources for the device must have a life expectancy of at least 2 years once inserted into the device.	☐
10	The weight of the device including the battery, case and appropriate standard accessories should not exceed 4kg.	☐

Power

Item Number	Description	Completed
11	The device must be able to operate on a battery-only basis.	☐
12	The device must have a battery shock capacity minimum of 30 full discharges at the maximum energy the device operates at throughout the standard life of the battery.	☐
13	The initial analysis time plus the time to charge and be ready to deliver an initial shock must be a maximum of 15 seconds.	☐

Warranty

Item Number	Description	Completed
14	The device must have a warranty of at least 5 years from purchase date.	☐
15	The battery and/or any other replaceable power source for the device must have a warranty of at least 3 years.	☐

Data / Memory

Item Number	Description	Completed
16	The device must have the capability to store data on at least one of the following: PC Data Card or internal memory.	☐
17	The device must have data connectivity to an ancillary device e.g. IRDA, USB, wireless, cable, data card, Bluetooth.	☐

Facilities

Item Number	Description	Completed
18	The device must have simple controls that can be understood by a non-expert.	☐
19	The device must have voice prompt ability in English including a safety message.	☐
20	The device must have visual prompt ability.	☐
21	The device must have biphasic waveform or a waveform of comparable efficacy.	☐
22	The device must have the ability to deliver a shock energy of at least 150 J (for pulsed biphasic waveform devices a minimum of 130 J).	☐
23	The device must have automatic discharge control to safely discharge the unit if the charge is not used (e.g. if the device charged but the individual was not shocked).	☐
24	The device must be able to shock VF and VT above 150 BPM in an adult. If the device has paediatric settings it must be able to shock VF and VT above 180 BPM.	☐

Item Number	Description	Completed
25	The device must have impedance control.	☐
26	The device must have a low battery level alarm, or low battery level indicator.	☐
27	The device must have an indicator confirming self-test success i.e. indicates safe to use.	☐
28	The device must be able to withstand daily cleaning with a detergent wash and disinfection using a range of nationally available generic disinfection agents without any detrimental effect.	☐
29	There must be a carry case available for the device and related accessories.	☐
30	The device must be compatible with the most recent Resuscitation Council UK and/or European Resuscitation Council Guidelines.	☐
31	Average time from notification of unit error to repair, replacement or provision of a loan unit/consumables must be no more than two working days.	☐
32	The device must not require any chargeable maintenance during its standard warranty period.	☐

Accessories

Item Number	Description	Completed
33	The shelf life of the compatible self-adhesive pads must be a minimum of two years from the date of supply.	☐
34	The pads must have the ability to be pre-connected.	☐
35	Where a key is required to switch between adult and paediatric mode, this must be included in the purchase price.	☐
36	The purchase price must include (as a minimum) one set of pads or – where separate adult and paediatric pads are available – one set of adult pads and one set of paediatric pads.	☐
37	Outdoor cabinets must have a minimum IP rating of IP65.	☐

Appendix C

Resuscitation Council UK (RCUK) Public access defibrillator (PAD) installation checklist

Consider	Action and rationale	Completed
Is there a need for a defibrillator in this area?	Check The Circuit – the national defibrillator network to confirm the defibrillator availability (including accessible times) within the area you are considering. There may be a number of defibrillators; but they may not be accessible to the public at all times. A defibrillator that is available to the public at all times has the best chance of improving survival from cardiac arrest.	☐
Risk assessment	Are you an organisation or individual that has a duty of care to provide a defibrillator on your premises, or are you interested in ensuring provision? You can assess your needs using our guide: Do I need an AED? The first aid needs assessment | Resuscitation Council UK	☐
Which defibrillator should I purchase and is it suitable for anyone to use?	Research different Automated External Defibrillators (AEDs) on the market to find the most appropriate for your needs. We recommend this be done in conjunction with RCUK's recommended minimum specification for publicly accessibly defibrillators.	☐
How will I fund the initial and ongoing costs?	There may be grants available towards the cost of purchasing and providing a defibrillator for public access. An internet search will provide the most up-to-date information regarding funding sources with open applications. All state funded schools in England have access to a defibrillator. See Automated External Defibrillators(AED's) guidance for schools. Consider how you will fund the initial and ongoing cost of: • maintenance • storage cabinet • directional signage and the cost of replacing consumables • insurance premiums • replacement of batteries and consumables e.g. pads.	☐
Who will act as guardian and what system is in place to ensure continuity?	A defibrillator guardian should be nominated to undertake tasks and receive alerts from The Circuit. An agreement/policy should be established to ensure the continuation of this role if the guardian is absent.	☐
Identify the most appropriate installation point	A defibrillator kept outside needs to be inside a protective cabinet. The cabinet requires a domestic power supply for its heating element, so that an operational temperature can be maintained inside the cabinet to prevent damage or loss of function to the defibrillator during cold weather. The cabinet should also be weatherproof.	☐

Consider	Action and rationale	Completed
Security	Those concerned about security in an individual location should balance that against the risk of the defibrillator not being accessible when needed, e.g. being locked away or behind gates. Defibrillators should not have restricted access. See RCUK's statement on locked cabinets here.	☐
Register your defibrillator on The Circuit – the national defibrillator network	We strongly recommend that all PADs are registered on The Circuit. All 14 of the UK's Ambulance Services are linked to The Circuit and can direct a bystander to the closest registered PAD. Once registered, you will receive helpful reminders about checks, maintenance and expiry dates of consumables.	☐
Checks and maintenance	Checks on the defibrillator should be carried out as per manufacturer guidance and your risk assessment. A process should be put in place to ensure this is maintained and recorded. A defibrillator that is not rescue ready e.g. pads not replaced, is missing, or has a fault, cannot save a life. Those that register their defibrillator on The Circuit will receive reminders when checks are due and can record them on the system.	☐
What to store with the defibrillator	RCUK advises that only the defibrillator and associated equipment should be stored within the cabinet. Most defibrillator cabinets are designed to only store the defibrillator. The inclusion of additional items has the potential to distract from the provision of CPR or defibrillation.	☐
Sign posting	If bystanders can't locate the PAD, it cannot be used to help save a life. An assessment as to where directional signs should be placed should be made, and a test run should be completed once signs are installed. Checks on signs should be included as part of the routine checking process. Our recommended signs can be downloaded for free here.	☐
Training and device familiarisation	Each year in the lead up to Restart a Heart month, RCUK encourages grant applications from small organisations and charities in areas of the UK known to be cardiac arrest hotspots. The grant is intended to fund projects that focus on one or more of the following: • Share information about CPR and defibrillator use. • Address misinformation and barriers to CPR and defibrillator use. • Provide training. More information can be found here.	☐

Consider	Action and rationale	Completed
	To inform and encourage members of the public to use a defibrillator when it is needed, regardless of whether they have received any familiarisation or training. RCUK and BHF recommend that this poster is displayed beside, or on the defibrillator cabinet.	☐
	The RCUK Quality Standard for CPR and AED training in the community details what training or familiarisation is recommended for different members of the community. Those with a duty of care to provide a defibrillator will need to ensure that the correct level of training is given to those nominated in their organisation to respond in an emergency.	☐
Legal considerations	RCUK's document CPR, AED's and the Law provides guidance for organisations or individuals that are considering provision of a PAD and training for those who might use it. Please ensure you understand the document and your responsibilities.	☐

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