

**Standard Operating Procedure**  
Automated External Defibrillators (AEDs)

<b>Title</b>	Automated External Defibrillators (AEDs)
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### 1. Purpose

This guidance relates to the emergency response procedures for the use of Automated External Defibrillators (AEDs) and the arrangements for the training, use, maintenance and recording of checks made on AED equipment across the University campus.

### 2. Scope

To outline:

- AED equipment and its use
- Responsibility
- Process for emergency response
- Provision and location of AEDs
- Access of AEDs
- Training in the use of AEDs
- AED requirements
- Action needed if an AED has been used
- Unavailable AED in the designated location
- AED maintenance checks
- Frequency of AED maintenance checks
- Recording of AED maintenance checks
- Disposal of AED pads and batteries
- Recording and management of AED data
- Replacing existing AEDs

### 3. AED equipment and its use

An AED is a portable medical device designed to analyse the hearts rhythm and deliver an electric shock to victims of ventricular fibrillation to restore the heart rhythm to normal. Ventricular fibrillation is the uncoordinated heart rhythm most often responsible for sudden cardiac arrest.

An AED detects the electrical activity of the heart and gives automated instructions (also in alternative languages) to the operator on what to do, the AED will only operate under certain circumstances to prevent incorrect use. You can't deliver a shock accidentally; the defibrillator will only allow you to shock if it is needed.

### 4. Responsibility

Health and Safety Services Team are responsible for:

- Ensuring first aid training is conducted to standards set with explanation and demonstration regarding the use of AEDs.
- Organising the supply of parts such as batteries, pads and the additional kit as needed for AEDS.
- Maintaining the central database with expiry dates for pads and batteries – contacting areas to arrange replacements as needed before expiry takes place.

- Organising and sending email reminders of the checks that are needed in a timely manner.
- Recording when AED checks have been completed and updating the information on the Assure system.
- Conducting a detailed 'Automated External Defibrillator (AED) checklist' check once a year on all AEDs.
- Being a point of contact when liaising with the AED tech team for any AED faults or queries that cannot be resolved.
- Organising and controlling data downloads from the AED as requested.

Departmental / nominated responsible person responsibilities:

- Conducting and recording weekly visual checks on the provided AED tags attached to each device.
- Supporting to carry out a detailed 'Automated External Defibrillator (AED) checklist' once a year.
- Identifying and reporting of any issues as a result of the visual or detailed checks conducted.
- Completing the recording requirements using the Assure System to record the check or using a paper-based checklist (if preferred) and emailing this to the Health and Safety training mailbox.

## 5. Process for emergency response

The University of Warwick arrangements for emergency response to any first aid incident is to contact a first aider. All details of first aiders including base area and phone number can be found using the webpage below [https://warwick.ac.uk/services/healthsafetywellbeing/guidance/first\\_aid/openingpage/](https://warwick.ac.uk/services/healthsafetywellbeing/guidance/first_aid/openingpage/) Also, this information can be found on First Aid notices displayed in buildings across the campus.

In addition, all of the Community Safety Team are trained first aiders. If emergency assistance is required as well as contacting your local first aider if possible, the Community Safety Team should be contacted on (internal 22222 or external 024 76522222) so they can attend the incident and also contact and arrange for the emergency services to attend as required.

All incidents and records of first aid treatment should be recorded on the [Assure system](#) additionally Community Safety will document the incident on their iTrak reporting system.

## 6. Provision and Location of AEDs

To help someone who is in cardiac arrest effectively, an AED needs to be found as quickly as possible. For every minute it takes for the AED to reach someone and deliver a shock, their chances of survival reduce.

There are over 40 AED units (\*41 as at 20/01/2024) that are provided in several key areas across campus, with mobile units held on all Community Safety Team vehicles.

Areas include:

- Sports and wellbeing hub (main hub x2, tennis centre, Athletics track and Cryfield Pavillion)
- Warwick Manufacturing Group (x10 buildings)
- Warwick Medical School (Gibbet Hill café and IBRB)
- Warwick Business School
- Community Safety (in all 3 mobile vehicles and the gatehouse reception area)
- Warwick Arts centre
- Wellesbourne (x2)
- Library
- Argent court
- Beehive
- Science concourse
- National Automotive Innovation Centre - NAIC (PLBB) (x2)
- Rootes Social Building
- Nursery
- Millburn House
- Carpenters workshop
- Warwick Student Union (self-managed by SU)
- Westwood Café

- Zeeman
- Sherbourne accommodation

The AEDs available at the University have been positioned in suitable locations with consideration to the factor that exposing the AED to extreme weather and environmental conditions outside of its operating parameters may compromise the ability of the AED to function properly.

All University AEDs locations are also recorded on [Heart Safe](#) and [Circuit](#) which are national defibrillator networks which map defibrillators across the UK, connecting them directly and automatically to each ambulance service.

This information is updated and maintained by Health and Safety Services Team.

## 7. Access of AEDs

AEDs are either kept in carry cases and stored in secure wall holders or stored in mounted cabinets located in prominent positions; with some requiring keycode access. The Community Safety Team and the Ambulance Service have the codes to open each of the AED cabinets.

The Community Safety Team have a process for ensuring all their team members can access the keycode details and can provide them as required in an emergency.

Please see the [AED webpage](#) for exact AED locations and any accessibility restrictions.

Some buildings will be restricted by opening times and some may only be accessible by University ID card access. Where access to a building and an AED is not possible due to restrictions, then the Community Safety Team should be contacted, whom operate 24/7 cover and will respond with a mobile unit.

## 8. Training in the use of AEDs

The main type of AED chosen by the University is the Cardiac Science - Powerheart G5 model. There are some older G3 models and some other branded AEDs purchased by Warwick Manufacturing Group and Warwick Student Union – they maintain their own supply of pads and batteries for the additional brands.

All models are suitable for any person to use in an emergency and will not deliver a shock to a casualty unless it is appropriate to do so. The equipment is automated and will instruct the user, giving clear “step by step” guidance. **It is not pre-requisite to have had First Aid training to use an AED.**

[First Aid training](#) is organised by the University Health and Safety Services Team and sessions are run face to face on campus by qualified external instructors. The syllabus of this course covers the use of AEDs. For further information contact email: [healthsafetytraining@warwick.ac.uk](mailto:healthsafetytraining@warwick.ac.uk)

Also [Active Bystanders can save lives - Sudden Cardiac Arrest](#) webpage gives details regarding accredited Basic Life Support training available for staff and students.

## 9. AED requirements

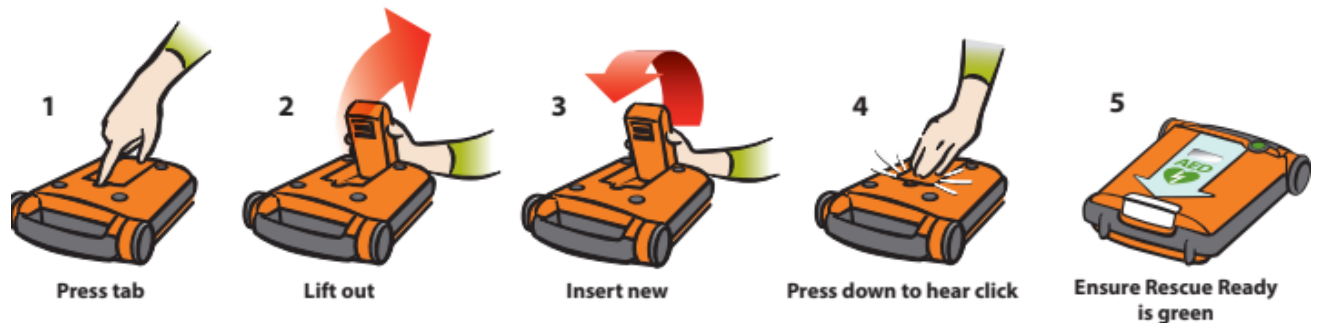
Adult and paediatric pads are available for each AED (the paediatric pads are recommended for use when the patient is under 8 years of age or younger and weighs 25kg or less).

All AED pads are stored in a ready-to-use, sealed package. Pads are self-adhesive with an attached cable and connector for power and ECG transmission. It is advised to keep a fresh, unopened pair of Adult pads plugged into the AED. Pads cannot be re used, instead they have to be replaced each time they are used.

Paediatric pads are not to be pre-connected to the AED but kept separate and it is advised to only connect paediatric pads only when attempting a paediatric rescue. Upon completion of the rescue, reconnect the adult pads prior to placing the AED back into standby mode.

The recommended additional kit to support with CPR (Cardio-Pulmonary Resuscitation) contained within the AED device consists of, gloves, a razor, scissors, towel, CPR mask and yellow clinical waste disposal bags.

The battery pack provided should be attached to the AED at all times so that the AED is available to perform a rescue in an emergency, see the instructions below for how to remove and replace the battery on a G5 model.



AED battery packs do have a recommended shelf life; however the battery indicator will show the actual battery level and this will vary as to how much the unit has been used. Note the battery can deliver up to 500 shocks in its complete battery life and at least nine shocks after the AED indicates the battery is shown as red and low.

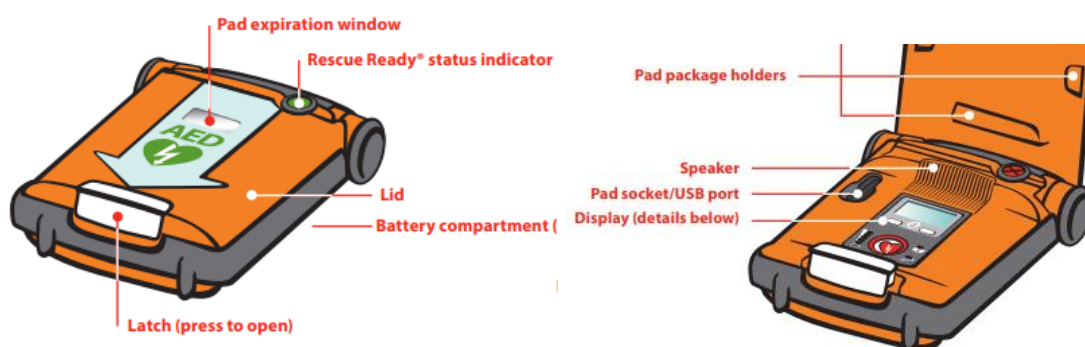
AED batteries drain more quickly in colder temperatures and the water-based gel found in some AED pads may freeze. AEDs that are too cold may also fail to operate, rendering them useless in emergency situations.

If your AED is too cold – the green 'rescue ready' light may change to red – if this does happen firstly, bring your defibrillator inside/nearby to a warmer environment to warm up slightly. If after a short duration (approx. an hour) the light doesn't change back to green 'rescue ready', even if the AED unit feels warmer to touch then please contact the Health and Safety mailbox; [healthsafetytraining@warwick.ac.uk](mailto:healthsafetytraining@warwick.ac.uk)

AED batteries and pads expiry dates are typically displayed next to an hourglass or egg timer symbol. Pad and battery expiry dates are recorded on a database maintained by the Health and Safety Services Team.

AED pads have a specified shelf life because of a chemical breakdown of the gel in the AED pads, the manufacturers of AED pads cannot guarantee that the pads will have enough adhesion to work properly after a certain amount of time has passed. Therefore, it is important that replacements are acquired and installed before the relevant expiry date.

It is recommended that pads are positioned in the AED device in the pad package holders so that the expiry date can be seen through the pad expiration window as shown below on a G5 model.



To order replacement pads, additional kit or batteries contact the Health and Safety mailbox; [healthsafetytraining@warwick.ac.uk](mailto:healthsafetytraining@warwick.ac.uk) with the relevant details and then collection/ delivery of the replacement parts needed can be arranged.

## 10. Action needed if an AED is used

After an AED has been used, details of the first aid incident will need to be recorded on the [Assure system](#).

The AED doesn't need to recalibrate each time it is used, but as the AED has been in use there will be a requirement to complete some tasks to prepare the AED for the next rescue.

It is recommended the AED is cleaned and the case wiped over with an antibacterial wipe. However any cleaning and moisture should be kept away from the defibrillation pad connectors and cable connector openings.

New pads will need to be attached to the AED and a check of the battery level will need to be performed.

A full check on the additional kit to support with CPR contained with the AED device will need to be checked. If items have been used, they may need replacing, the kit consists of, gloves, a razor, scissors, towel, CPR mask and yellow clinical waste disposal bags.

Also, a check for any obvious damage will be needed. See the 'Automated External Defibrillator (AED) checklist' document for guidance on the full checks needed (Appendix 1).

Once completed the 'rescue ready' green light should be indicated. If this is shown, the AED should then be placed back in its usual location.

If any replacement pads, batteries, additional kit or AED error messages are identified when checks are conducted these should be reported to Health and Safety Services Team. Contact the Health and Safety mailbox; [healthsafetytraining@warwick.ac.uk](mailto:healthsafetytraining@warwick.ac.uk) with the relevant details and further advice will be given.

#### **11. Unavailable AED in designated location**

When an AED device is unavailable at its designated location, e.g. when it is sent away for service or repair a temporary AED device will be allocated where possible. This will be arranged by Health and Safety Services Team and while this process takes place, signage should be placed on the AED cabinet. (For template – see appendix 2).

The signage should direct responders to contact the Community Safety Team to attend with a mobile AED unit as temporary solution.

#### **12. AED Maintenance checks**

The AEDs that we have self-test on a daily, weekly or monthly basis – the AED has a rescue ready button that indicates green for ready or red for error on a G5 model.



AED is not Rescue Ready.



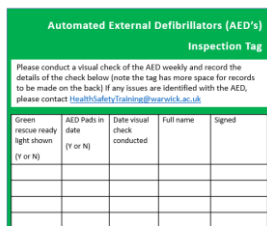
AED is Rescue Ready. Rescue Ready technology assesses the AED, battery, and pads to ensure they are ready to perform a rescue.

Once opened the AED will signal with a flashing light or audible alert if there is a problem, for example if the pads are not correctly connected or there is a low battery level. The AEDs will also run through a self-test when activated, prior to use.

If any AED error messages are identified when maintenance checks are conducted these should be reported to the Health and Safety Services Team. Please contact the Health and Safety mailbox; [healthsafetytraining@warwick.ac.uk](mailto:healthsafetytraining@warwick.ac.uk) with the relevant details and further advice will be given.

A visual check is needed on a regular basis, ideally weekly to ensure that each AED is stored in the correct location and has not been moved or been misplaced and that the rescue ready light is indicated green.

An 'Automated External Defibrillators (AEDs) Inspection Tag' is attached to each AED for the weekly check to be recorded on it. Each department where the AED is located is required to support with these checks. It is recommended that the completed inspection tags are retained on the unit to keep as historical evidence for at least a year. Then photographs of the completed tags should be taken so an electronic copy can be archived.



The image shows a green and white 'Automated External Defibrillators (AED's) Inspection Tag'. It includes instructions to conduct a visual check weekly and record details. The form has columns for 'Green rescue ready light shown (Y or N)', 'AED Pads in date (Y or N)', 'Date visual check conducted', 'Full name', and 'Signed'. There are several rows for recording data.

Image shown: 'Automated External Defibrillators (AEDs) Inspection Tag'

Also at regular intervals, ideally quarterly a detailed check should be conducted, the AED should be physically checked in more detail to see if it is ready for use; the batteries are charged, pads are in place and the expiry dates on the pads mean they can be used.

This information should be documented on 'Automated External Defibrillator (AED) checklist' (see appendix 1 for the template example)

The 'Automated External Defibrillator (AED) checklist' can be accessed via:



1. A QR code linking to the AED checklist form; this code can also be found attached to each AED location
2. The Assure webpage <https://app.uk.sheassure.net/UOW/p/Test>
3. Alternatively if a paper-based checklist is preferred this can be provided by the Health and Safety Services Team and once completed it would be needed to be sent via email as an attachment to [healthsafetytraining@warwick.ac.uk](mailto:healthsafetytraining@warwick.ac.uk)

All details of the checks conducted will be stored on the Assure system for monitoring and due diligence purposes. A briefing session can be offered to anyone conducting checks on the AED to ensure they are competent completing them to the standard required using the recording methods mentioned. Contact [healthsafetytraining@warwick.ac.uk](mailto:healthsafetytraining@warwick.ac.uk) for details.

### 13. Frequency of maintenance checks

The frequency of maintenance checks has been developed following guidance from the manufacturer of the AEDs.

A visual check is recommended to be conducted ideally weekly by the relevant department members where the AED is located. Also, a nominated responsible person from the building can support with these checks. Each area will have a nominated responsible person; see the responsible person column on the table shown on the webpage below

[https://warwick.ac.uk/services/healthsafetywellbeing/guidance/fist\\_aid/defibrilators/](https://warwick.ac.uk/services/healthsafetywellbeing/guidance/fist_aid/defibrilators/)

The responsible person will have regular contact with the Health and Safety Services Team and will be the point of contact for their allocated specific buildings AED.

A detailed check on the AED is recommended to be completed ideally quarterly. The four times through year are allocated: quarter 1: October - December, quarter 2: January - March, quarter 3: April - June and quarter 4: July - September

Conducting the detailed check is allocated to different nominated groups of people – see details below:

Quarter details	Group	AED(s) to check
Quarter 1: October - December	Health and Safety Services Team	Responsible for a detailed check on all AEDs on campus
Quarter 2: January - March	Nominated responsible person	Responsible for only their specific AED in the building they work in
Quarter 3: April - June	Zone manager	Responsible for a detailed check on all AEDs on campus
Quarter 4: July - September	Community Safety Team	Responsible for a detailed check on all AEDs on campus



#### 14. Recording of maintenance checks

The visual check recommended to be conducted ideally weekly would need to be recorded physically and written in pen on the 'Automated External Defibrillators (AEDs) Inspection Tag' attached to each AED.

The sections of the tag that need to be conducted include;

Green rescue ready light shown (Y or N)

AED Pads in date (Y or N)

Date visual check conducted

Full name

Signed

The detailed check to be completed ideally quarterly and recorded on the 'Automated External Defibrillator (AED) checklist' this can be accessed via the QR code (available at each AED location) (<https://app.uk.sheassure.net/UOW/p/Test>) or link to the Assure webpage and completed electronically answering each question as required and submitted via the Assure system. Attachments in the format of images or documents can be attached if required. Actions can be allocated to the Health and Safety Services Team if an issue is identified e.g new AED pad required.

Once the checklist has been completed a copy of the contents can be emailed to the person who submitted it for their records or to share with a line manager or resource account etc.

Alternatively, if a paper-based checklist is preferred this can be provided but the information would need to be submitted via email to [healthsafetytraining@warwick.ac.uk](mailto:healthsafetytraining@warwick.ac.uk)

A step-by-step user guidance is available to support with conducting the detailed 'Automated External Defibrillator (AED) checklist'.

#### 15. Disposal of pads and batteries

Unused or expired pads contain no hazardous material, so they can be disposed of as general waste.

When disposing of used and unused pads, the electrode wire should be cut to prevent further use.

Used AED pads and gloves may have been contaminated with blood, tissue or other potentially infectious materials and must be placed into a yellow clinical waste bag, have a knot tied to keep the contents secure and disposed of via a clinical waste stream. It is recommended to give the bag and its contents to the ambulance service when they arrive to provide treatment to the patient. If this is not possible, send an email to [technicalsupport@warwick.ac.uk](mailto:technicalsupport@warwick.ac.uk) and arrange to take the yellow clinical waste bag and its contents to Gibbet Hill campus, Biomedical Research building, Prep room (M019). The prep room area is open from Monday – Thursday 07:30 – 16:00 and Friday 07:30 – 15:30. Spare yellow clinical waste bags can be found in the additional kit to support with CPR, contained with the AED device.

AED batteries are not rechargeable, and any used batteries should be disposed of safely and not in household waste.

Put any used or expired batteries in the red battery recycling box in the lobby/post area of your building. If you don't have this option in your building, please contact [wasteandrecycling@warwick.ac.uk](mailto:wasteandrecycling@warwick.ac.uk) for more details on how to dispose of the battery safely.

For large batteries or 'button' batteries please submit a request via the Estates Service Desk.

#### 16. Recording and management of AED data

AEDs can record when they are used on a memory chip/module.

The information collected is:

- The heart rhythm at the time the pads were placed on the chest,
- If the patient was shocked and the result of the shock being delivered.

The AED can store 90 minutes of rescue data, the data is held on the AED not the battery so if needed the battery can be removed or replaced and the data will still be secured.

This information may be downloaded following a serious event. It is generally not for public use and needs to be handled in a confidential manner. This is special category data which requires extra

protection. It is recommended that only those that need to see the data have access and it is kept securely according to the Universities security practices. The Community Safety Team and Health and Safety Services Team would store the files in a secure folder with only limited and restricted access to view them.

A list of 'Rescue Review Questions' would need to be fully answered by the person making the request before a potential download request can be submitted – (see Appendix 3 to view these questions.)

The data request could be made by relevant bodies, as part of their research programmes and for statistical evidence of the effectiveness of defibrillators or by external stakeholders such as the police or a coroner following a suspicious death.

Any formal external requests for data received would be directed to the Health and Safety mailbox [healthsafetytraining@warwick.ac.uk](mailto:healthsafetytraining@warwick.ac.uk) and then would be forwarded to the Legal team so they can assess each request.

## 17. Replacing existing AEDs

AEDs will need to be replaced once batteries and pads cease to be available. If identified that stock has been discounted Health and Safety Services Team will notify the relevant departments and a new AED devices will be sourced.

## Guidance resources

A Video have been developed which demonstrate the use of using an AED  
<https://www.youtube.com/watch?v=UFvL7wTFzI0>

Powerheart G5 user guide:

[https://www.zoll.com/-/media/product-manuals/powerheart-g5/05/70-01975-02\\_a\\_user\\_guide\\_aed\\_g5\\_uk-english.ashx](https://www.zoll.com/-/media/product-manuals/powerheart-g5/05/70-01975-02_a_user_guide_aed_g5_uk-english.ashx)

Powerheart G3 user guide:

[https://www.zoll.com/-/media/product-manuals/powerheart-g3-and-g3-plus/05/70-02065-02\\_a\\_aed\\_g3\\_operator-and-service-manual\\_uk.ashx](https://www.zoll.com/-/media/product-manuals/powerheart-g3-and-g3-plus/05/70-02065-02_a_aed_g3_operator-and-service-manual_uk.ashx)

Training Moodle - [Automated External Defibrillator \(AED\) awareness moodle](#)

## History, or change control

Version Number	Reviewed by	Date	Comments
1.0	Lisa Grimsley	01/07/2023	Original copy
2.0	Lisa Grimsley	08/03/2023	Update in wording: removal of SHE, replaced with Assure, update to process of retaining inspection tags, changed building managers title to zone managers and added training moodle link
3.0	Lisa Grimsley	13/06/2023	Removal of Zone manager check planned for Qtr 3 – amended to Health and Safety Team
4.0	Lisa Grimsley	20/01/2024	Update to list of AED units, update regarding cold weather affects on the battery and revised quarter dates
5.0	Lisa Grimsley	14/03/2024	Added in Zone Manager to check AED quarter 3



Appendix 1:

**Automated External Defibrillator (AED) CHECKLIST – MAINTENANCE CHECKS** (Paper version)

Please fill in the form below and send to [healthsafetytraining@warwick.ac.uk](mailto:healthsafetytraining@warwick.ac.uk)

Location of AED:
Type of AED: (Make and model)

MAINTENANCE CHECKS	YES / NO	COMMENTS/ACTION
Is the Automated external defibrillator (AED) in the designated location?		
On the front of the AED device: is the AED on standby mode (Green flashing light or showing rescue ready)		
Are any red warning lights showing or are error messages being given? Once opened the AED would signal with a flashing light or audible alert if there was a problem.		
When the AED is open can AED instructions be seen visually or can prompts be heard?		
What level is the battery indicator showing? (5 green bars is fully charged).		
What type of pads are available? i.e Adult or paediatric		
Are the AED pads sealed?		
Are the pads attached to the AED via the connector?		
Record the dates on shown AED pads?		
Can the AED pads expiration date be seen through the window of the lid?		
Is the AED device, bag or storage cupboard damaged? e.g. cracks, loose parts, cupboard open, signs of being tampered with etc		
Is the additional kit present and in date (towel, scissors, razor, gloves and yellow clinical waste disposal bags)		
Name:		
Department:		
Email address:		
Date check made:		

**This Automated external  
defibrillator (AED) is currently  
being repaired, a temporary  
replacement is being arranged**

**If you need access to an AED in  
an emergency, please contact  
Community Safety on  
024 7622222 (external) 22222 (internal)  
to attend with a mobile AED  
device.**

### **Rescue Review Questions**

1. Contact details (name, phone number & email address) of referring officer
2. Please confirm date and time of rescue
3. Was the Sudden Cardiac Arrest (SCA) event witnessed?
4. If the event was witnessed, how long was the patient down before the AED was attached?
5. What was the patient outcome for this rescue?
6. Please provide information on the rescue type or person (i.e. EMS, lay person, etc.)
7. Was this device rescue ready?
8. Please provide the model and S/N of the AED used in this rescue
9. Please provide the expiration date and lot number information (if available) for the AED pads and battery
10. Was the patient male or female? How old were they? Approx.

Please describe the rescue in as much detail as possible.