



UC SANTA CRUZ AED PROGRAM MANUAL

UCSC OFFICE OF EMERGENCY SERVICES

VERSION 2.0
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Version Changes

Below is an index of the various changes that the manual has undergone since inception.

Version Number	Detailed Changes
2.0, September 2021	Rewrite of ‘About the Program’, Added section ‘AEDs: What they are and How they work,’ updated AED Program Manager to the Deputy Emergency Manager, updated procurement and maintenance costs, updated descriptions to include OES recommendation of a specific AED (Heartsine 450P), updated details about required AED locations, maintenance information, Lifelink access, grammatical fixes, updated web links, aesthetic changes. Complete rewrite of Annexes.

UC Santa Cruz Automated External Defibrillator Program

The UC Santa Cruz Automated External Defibrillator (AED) program is managed by the Office of Emergency Services (OES). For questions about this program, please contact us at oes@ucsc.edu.

ABOUT THE PROGRAM

The UC Santa Cruz Automated External Defibrillator (AED) Program is designed to accomplish multiple tasks intended to improve public safety and provide a potentially life-saving service to the campus community.

The program is designed to provide mechanisms for departments to obtain and operate AEDs. Namely, this program answers the questions:

1. How can departments acquire an AED?
2. Where should departments place an AED?
3. How can staff receive training on AEDs?
4. How should an installed AED be maintained?
5. What should be done when an AED has been used?

Through providing detailed answers to these questions, the UCSC AED Program improves the public safety capabilities of the campus while ensuring proper oversight and legal compliance. Specifically, the UCSC AED Program is structured with respect to [California Health and Safety Code §1797.196](#) and the [County of Santa Cruz Public Access AED Program Implementation Guidelines](#).

AEDS: WHAT THEY ARE AND HOW THEY WORK

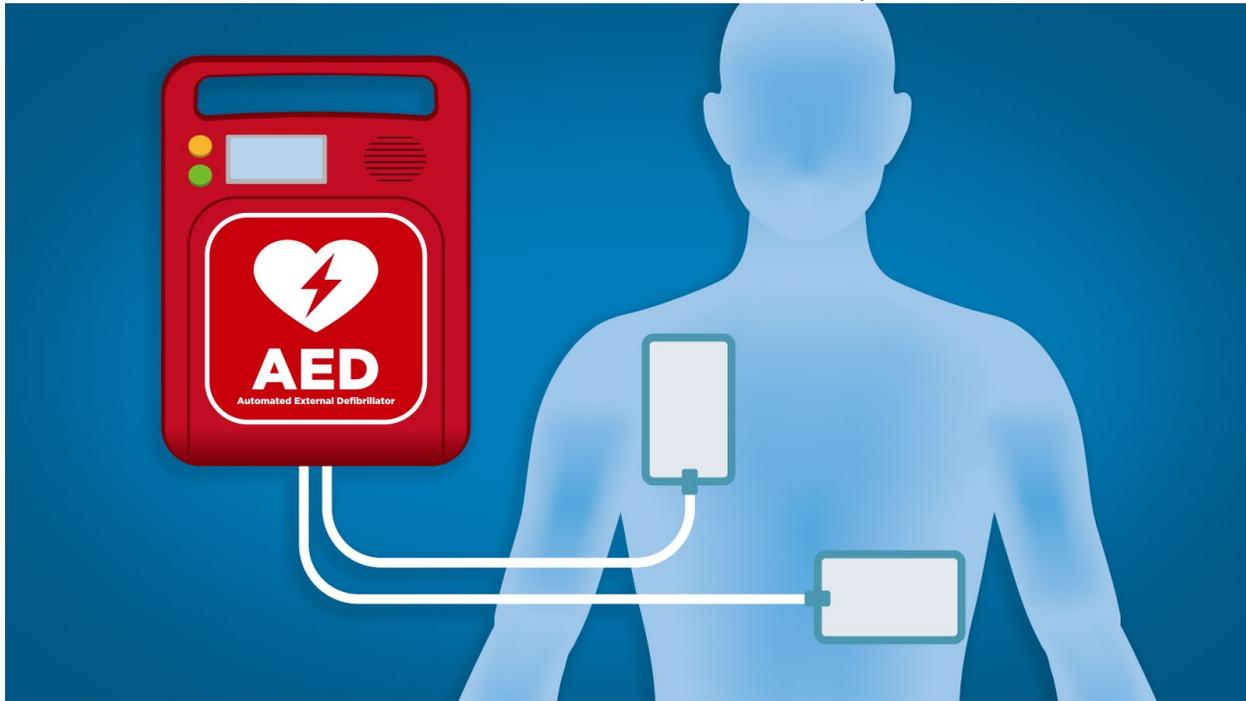
An Automated External Defibrillator (AED) is an electronic medical device used to treat individuals experiencing sudden cardiac arrest. The device analyzes an individual's heart rhythm and, if appropriate, delivers an electric shock intended to stabilize the heart's rhythm.

The heart naturally uses electrical impulses to contract muscles and send blood throughout the body. When these impulses become abnormal, an individual enters cardiac arrest. A proper outside source of electrical shock can abruptly change these abnormal impulses into normal impulses that allow the heart to function normally.

An AED should only be used on an individual who is unconscious and showing no signs of normal circulation (coughing, normal breathing, movement). AEDs provide an audible step-by-step guide on how to use them as soon as they are turned on. Generally, this involves directing the user to place electrode pads on the victim's bare chest, letting the AED analyze the victim's heart rhythm to discern if the abnormal rhythm is 'shockable', and instructing the responder to stand clear while delivering a shock.

AEDs are often used in conjunction with cardio-pulmonary resuscitation (CPR) techniques to maximize the odds of the victim's survival. In fact, the AED will usually prompt a user to begin compressions between shocks in order to improve the victim's odds of surviving. The AED attempts to shock the heart into resuming normal function while CPR attempts to emulate the heart's function. Combined CPR/AED use immediately after someone enters cardiac arrest has a proven track record for improving both survivability and long-term quality of life.

AEDs can be found in many public areas and the State of California has implemented numerous programs and initiatives aimed at improving public access to AEDs.



AED pads are attached to sections of a victim's chest to provide an ideal environment to deliver a shock. Credit: U.S. Food and Drug Administration

REFERENCE DOCUMENTS

Forms, codes, and recommendations that guide this program.

- UC Santa Cruz AED Program Manual
- [California Health and Safety Code §1797.196](#)
- [California Civil Code Section §1714.21](#)
- [County of Santa Cruz Public Access/Layperson Defibrillator \(AED\) Program Implementation Guidelines](#)
- [American Red Cross AED Use Instructions](#) (adapted into [Annex F](#))
- [Heartsine 450P AED User Guide](#)
- [Zoll AED Plus AED User Guide](#)

OVERSIGHT, ROLES, AND RESPONSIBILITIES

This section describes the roles and responsibilities for the positions in the UCSC AED Program.

PROGRAM MANAGER RESPONSIBILITIES

The AED Program Manager is the UCSC Deputy Emergency Manager. The Program Manager is responsible for:

1. Compliance oversight and material management of the AED program.
2. Management of the AED roster.
3. Dissemination of procedural changes.
4. Notification to Santa Cruz County Emergency Medical Services of installed AEDs, AED use, and general program changes.
5. Upkeep and maintenance of AED records, inspections, maintenance, and tests.
6. Creation and distribution of program-related training.
7. Coordination, onboarding, and support of Department AED Coordinators.

DEPARTMENT AED COORDINATOR RESPONSIBILITIES

Departments intending to place an AED in their building assume the responsibility to maintain compliance with the UCSC AED Program, including the assignment of a Department AED Coordinator. This Department AED Coordinator is responsible for:

1. Purchasing and coordinating the installation of an AED in accordance with the Acquisition Checklist ([Annex A](#)).
2. Maintaining and ensuring the operability of an installed AED in accordance with the Readiness Checklist ([Annex B](#)).
3. When an AED is activated, immediately following the response procedures outlined in the Response Checklist ([Annex C](#)).
4. Communicating questions and concerns to the Program Manager in addition to any changes in AED location, functionality, coordinator, and contact information.

Note: The UC Santa Cruz Police Department uses mobile AED units that each individual on-duty officer is responsible for. As a result, separate requirements are implemented.

AED USER RESPONSIBILITIES

Any individual, regardless of training, can use and operate an AED. Individual responders should be directed to complete the following actions in conjunction with the Department AED Coordinator.

1. After an AED is activated, remove the AED from public access and notify the Office of Emergency Services (oes@ucsc.edu).
2. Complete an AED Use Form ([Annex D](#)) and call the Office of Emergency Services (oes@ucsc.edu).

PROCURING AN AED

The Office of Emergency Services recommends that departments interested in procuring an AED select the [Heartsine 450P](#) for all interior offices and residential areas. For exterior locations, OES recommends the [Zoll AED Plus](#). This model has been successfully implemented on campus and is equipped with exceptional safety features, along with being priced competitively.

PROCUREMENT AND MAINTENANCE COSTS

Departments are fully responsible for funding both the initial purchase and ongoing expenses of AEDs. Central funding may not exist for elective AED purchases. Before purchasing an AED, departments should determine if they can support the procurement and maintenance fees associated with owning an AED.

Both the initial cost of an AED and ongoing costs of ownership are highly variable depending on the make and model of the AED. The following tables provide information specific to the Heartsine 450P, other AEDs may have significantly different prices. Note that pads and batteries can only be used once and must be replaced before an AED is put back into service. Otherwise, both the pads and battery **should be replaced every four years**.

AED and CPR training are offered with an accompanying certification from the American Heart Association or the American Red Cross. These certifications are valid for two years and can be offered from a multitude of vendors. Although not required, the Office of Emergency Services recommends that at least one tenant of the building housing an AED receive this training.

Most AED models, including the HeartSine 450P, can be acquired in conjunction with various supplies including signage, a wall cabinet, and CPR masks. If you intend to have a public-facing AED and want it mounted, the UCSC Carpentry Shop can perform the installation at a quoted 'not-to-exceed' price of \$262. (Quoted July 2021)

Initial Costs for AED Deployment (as of September 2021)

Item	Expense
AED Package	\$1,400 - \$1,800
AED Wall-Mount Installation	\$262

Ongoing Costs for AED Deployment (as of September 2021)

Item	Expense
Replacement Adult Pads	\$186
Replacement Pediatric Pads	\$220
Replacement Battery	\$150 - \$400
AED & CPR Training	\$50 - \$75/person

PROCUREMENT COMPLIANCE AND RECOMMENDATIONS

Although the majority of UCSC buildings are not required to provide access to a public AED, the Office of Emergency Services highly recommends that departments with high occupancy and foot traffic do so. A greater number of AEDs on our shared campus increases the likelihood of an AED being readily available and accessible in the case of an emergency.

Health studios, health facilities, and new construction have AED placement requirements that must be complied with in accordance with California State Law. These requirements are provided below:

1. **Health Studios/Gyms/Facilities** – Must have at least one AED on site and one currently certified employee capable of using it. (CA Health and Safety Code §104113)
2. **New Construction** – Any buildings constructed or renovated after January 1st, 2017 are required to have an AED on site if they meet the below occupancy criteria. (CA Health and Safety Code §19300)
 - a. Assembly buildings with an occupancy greater than 300.
 - b. Business buildings with an occupancy of 200 or more.
 - c. Educational buildings with an occupancy of 200 or more.
 - d. Factory buildings with an occupancy of 200 or more.
 - e. Institutional buildings with an occupancy of 200 or more.
 - f. Mercantile buildings with an occupancy of 200 or more.
 - g. Residential buildings with an occupancy of 200 or more, excluding single-family and multifamily dwelling units.

The Office of Emergency Services recommends that any building meeting the occupancy criteria noted above consider procuring an AED, regardless of construction age. If you have any questions about whether your building meets the occupancy criteria listed above, please contact the Office of Emergency Services at oes@ucsc.edu.

INSTALLATION, LOCATION, AND MAINTENANCE

LOCATION AND INSTALLATION

The following guidelines provide summary information regarding location and installation of AEDs. The Office of Emergency Services will review and approve actual installation locations on a case-by-case basis in consultation with UCSC Physical Planning, Development and Operations, in order to ensure compliance with applicable laws and regulations, including the Americans with Disabilities Act (ADA). The requirements that OES and PPDO abide by include the following:

- The AED must be located in an area accessible to all employees in an unlocked cabinet. The cabinet should be alarmed in such a way that the alarm goes off when the cabinet is opened and stops when the cabinet is closed.
- The AED should be installed at a central point relative to the building's population. The AED should be within a maximum of 90 seconds walking time from the furthest populated area of the building. Ideally, the AED is installed in a high-traffic area.



- The AED will have electrodes already connected and be configured in a way to be used immediately. The AED should also have a spare set of electrodes either in the cabinet or under the lid.
- One resuscitation kit will be connected to the handle of the AED. This kit will include two pairs of latex-free gloves, one razor, one set of trauma shears, and one facemask barrier device.
- The wall cabinet housing an AED must not protrude more than 4 inches from the wall into walkways, corridors, passageways, or aisles.
- The AED must be installed near phone service.
- The AED must be clearly visible and unobstructed.
- The AED must include use and reporting instructions (see AED Instructions and Reporting annexes within this manual)

Automated External Defibrillator Mounting Heights

The height to reach the handle of an automated external defibrillator (AED) in a public gathering place should be no more than 48 inches high. ADA guidelines specify maximum reach ranges for health equipment such as AEDs and other life safety devices. For safety equipment with an unobstructed approach, the maximum forward reach to the equipment is 48 inches above the floor. The maximum side reach for an unobstructed approach to an AED is 54 inches.

MAINTENANCE COMPLIANCE

A department owning an AED assumes the responsibility to regularly maintain and test the AED according to the guidelines set forth by the manufacturer and according to any applicable State Laws or Civil Codes. In addition to the manufacturer's instructions, ensure the following are completed.

- Every 30 days, verify that the AED is operable by physically inspecting it for signs of damage, tampering, or blinking/red indicator lights. Record your verification using the Lifelink tool that you are granted access to by OES. If you have issues accessing the tool, contact the Office of Emergency Services at oes@ucsc.edu.
- When conducting your monthly verification, also check to make sure that appropriate signage is clearly visible near the AED describing its use.
- Once a year, provide all tenants of a building housing an AED an approved flyer describing the proper use of an AED and where to receive training on CPR and AED use.
- Maintain records of when AED components (pads, batteries) expire and prepare replacements in advance of the expiration date to avoid a lapse in service.

OPTIONAL CPR/AED TRAINING

While CPR and AED training are not required in order to have an AED installed, the Department Coordinator may wish to have one employee per AED unit undertake training in CPR/AED use. If training is offered, the training must comply with the regulations adopted by the Emergency Medical Service Authority and the standards of the American Heart Association or the American Red Cross.

UC Santa Cruz does not currently offer any CPR/AED certification training. However, local companies offering compliant AED certifications include [DefibThis](#) and [Above Bar](#) with certifications from the American Heart Association. Training is also offered through the [Santa Cruz American Red Cross](#).

The Department AED Coordinator and the Program Coordinator will maintain training records. Email a copy of training certificates to: oes@ucsc.edu.

ACTIVATION, REPORTING AND RESTORATION

AED deployments require activation, reporting, and restoration. The following steps are also included in the AED Response Checklist ([Annex C](#)).

1. **Activation** – The AED Responder will, when reacting to a sudden cardiac arrest, turn on an AED and follow its instructions to the best of their ability.
2. **Reporting** – After Emergency Medical Services (EMS) has retrieved the patient and the initial incident ends, the responder will complete an AED Use Form ([Annex D](#)). When the form is completed, the responder will submit it to the Office of Emergency Services at oes@ucsc.edu.
3. **Restoration** – Upon notification of AED Use, the Office of Emergency Services will pick up the AED, download relevant diagnostic/rescue data, examine the unit for any required follow-up actions, and return the unit to the department.
4. **Support** – Rendering aid can be a difficult experience. The [Employee Assistance Program \(EAP\)](#) is available to staff and faculty who wish to find assistance processing their experience. For student responders, [Counseling and Psychological Services \(CAPS\)](#) is an available resource.

AED COORDINATOR TRAINING

As a component of the UCSC AED Program, Department AED Coordinators are responsible for completing an AED Coordinator Training hosted on the UC Learning Center. This course covers the material in this manual in addition to showing examples of AEDs in service and demonstrations of the maintenance inspections. You can access the training by searching for ‘AED Coordinator Training’ on the UC Learning Center.

Once you complete your training, please make sure to send the PDF training certificate to oes@ucsc.edu.

Please note that the AED Coordinator Training is not an AED/CPR certification. We recommend that departments pursue those certifications as described in the Optional CPR/AED Training section.

PROGRAM ANNEX

[Annex A](#) – AED Acquisition Checklist

[Annex B](#) – AED Readiness Checklist

[Annex C](#) – AED Response Checklist

[Annex D](#) – AED Usage Form

[Annex E](#) – AED Building Notification Letter

[Annex F](#) – Breathing Victim Response Procedures

[Annex G](#) – Breathing Victim Emergency Response Procedure

AED ACQUISITION CHECKLIST (ANNEX A)

The Department AED Coordinator is responsible for following the checklist detailed below when initially acquiring an AED for their department.

Item	Task	Completed?
1	Read the full content of the UCSC AED Program Manual.	
2	Determine if your department has funding to purchase, install, and maintain an AED.	
3	Purchase the AED model recommended and supported by UCSC's Office of Emergency Services.	
4	Review your specific AED documentation for instructions on use, installation, operating, training, and maintenance.	
5	Plan your AED installation by coordinating with the AED Program Coordinator and determining an appropriate install location.	
6	Install your AED (or coordinate installation) in accordance with the manufacturer's installation guidelines. Make sure to include appropriate items including the AED sign, instruction poster, and rescue kit.	
7	Register your unit with the Office of Emergency Services through this form . (OES will register your unit with the Santa Cruz County Emergency Management).	
8	Receive training for the Department AED Coordinator role from the course offered on the UC Learning Center. Upon completion, send your training certificate to oes@ucsc.edu .	
9	Request access to the Lifelinkcentral™ portal to submit monthly maintenance inspections and track your AED.	
10	Invite members of your department to receive CPR/AED training and document members who choose to do so.	

AED READINESS CHECKLIST (ANNEX B)

The Department AED Coordinator is responsible for following the checklist detailed below when maintaining the AED assigned to the department.

Item	Task	Completed?
1	Keep all documentation associated with your AED in a secure, recorded location that can be easily accessed.	
2	Inspect your installed AED at least once every thirty days in accordance with manufacturer requirements. The inspection should include checking: <ul style="list-style-type: none"> • That the status light indicates that the AED is ready for use. • That exterior sockets and components are free of cracks. • That both the battery and the pads are not expired. • That any additional instructions provided by the manufacturer are followed to ensure that the AED is maintained. • That signage around an AED including an Instructions Poster (Annex F) and AED Use Form (Annex D) are present and untarnished. 	
3	Document your monthly inspections using the Lifelinkcentral™ tool. <ul style="list-style-type: none"> • If you do not have access to the Lifelinkcentral™ tool, contact the Office of Emergency Services to request access at oes@ucsc.edu. 	
4	Notify your building tenants at least once a year of AED locations and where to receive training on AED use. Keep a record of any trained personnel.	
5	If your Department AED Coordinator changes, ensure that the incoming coordinator takes 'AED Coordinator Training' course in the UC Learning Center. E-mail training certificates to oes@ucsc.edu .	

AED RESPONSE CHECKLIST (ANNEX C)

The Department AED Coordinator is responsible for following the checklist detailed below when an AED is activated.

Item	Task	Completed?
1	After an AED is activated and a patient is taken into the custody of Emergency Medical Services, have the AED responders fill out the AED Use Form (Annex D).	
2	Secure both the used AED and the AED Use Form in a safe location away from public view.	
3	Notify the Office of Emergency Services that an AED was activated and that the AED and AED Use Form are ready for pickup. You can notify OES at oes@ucsc.edu .	
4	A representative from OES will coordinate a pickup time and location, facilitate the handover of the AED and AED Use Form.	
5	Once OES has completed needed data retrieval and verification, the AED will be delivered back to the department.	
6	Replace the AED's battery and pads.	
7	Perform a regular maintenance inspection of the AED once components are replaced.	
8	Update the Lifelinkcentral™ tool listing for your AED with the inspection results and new pad/battery expiration dates.	
9	Inform the Office of Emergency Services when the AED is back in service.	

AED USE FORM (ANNEX D)

The following form is developed to record and track AED usage. Upon the activation of an AED, this form must be filled out by the AED responder. In compliance with the UC Santa Cruz AED Program and the Public Access/Layperson Defibrillator (AED) Program Implementation Guidelines adopted by Santa Cruz County, this form must be submitted by the UC Santa Cruz Office of Emergency Services no more than 24 hours after an AED activation.

Upon the completion of this form, immediately contact the UC Santa Cruz Office of Emergency Services to coordinate the pick-up of both the AED and this form.

oes@ucsc.edu

Your Name: _____

Department Affiliation: _____

Email: _____ Phone: _____

Were you the primary responder who used the AED? Yes No

If not, name of the person who used the AED: _____

Patient's Name: _____ Date of Incident: _____

Patient's Age: _____ Patient's Sex: F M Time of Incident: ____:____ AM PM

How the Patient Was Found: Location of Incident (Address and Precise Location)

Witnessed Cardiac Arrest

Found Unresponsive

Was CPR Initiated? Yes No

Time of First Shock: ____:____ AM PM Number of Shocks Delivered by AED: _____

Was the patient responsive following defibrillation with an AED? Yes No

What is the make and model of the AED used? _____

Additional Responder Names: _____

Additional Comments

AED ANNUAL NOTICE (ANNEX E)



Office of Emergency Services
oes.ucsc.edu



OCCUPANT NOTICE OF AUTOMATIC EXTERNAL DEFIBRILLATOR (AED)

Notice Date: _____

Dear Occupant,

This letter is to notify you that your building is equipped with an Automated External Defibrillator (AED). An AED is a medical device used provide emergency medical assistance for those experiencing sudden cardiac arrest. In the section below, you will see information specific to your building about where your AED is located.

Although AEDs do not require specialized training, AED training is offered in conjunction with CPR in the Santa Cruz community. Local companies offering compliant AED certifications include [DefibThis](#) and [Above Bar](#) with certifications from the American Heart Association. Training is also offered through the [Santa Cruz American Red Cross](#).

Your AED Information

Department Name:

Building Name:

AED Make/Model:

AED Locations:

AED Coordinator:

For any questions about the UC Santa Cruz AED Program, please feel free to contact the UC Santa Cruz Office of Emergency Services at oes@ucsc.edu. You can also visit our website's webpage about the campuswide AED Program.

VICTIM EMERGENCY RESPONSE PROCEDURES (ANNEX F)

The following procedures provide a step-by-step guide for administering medical care (including the use of AEDs) for victims in various states. These procedures are adapted from the American Red Cross/American Heart Association and assume that the rescuer is acting immediately on the discovery of an individual in medical distress.

Step	Description
1	Assess Scene Safety – Is the area that the victim is in safe to enter? Are there hazards present? Prioritize your safety and do not enter unsafe areas where you could become a victim yourself.
2	Initiate the Chain of Survival – Call out for help “Help! Medical Emergency!” and ask a bystander to call 9-1-1 and (preferably another person) get the closest AED and medical kit. Unless you are alone, stay with the victim. <ul style="list-style-type: none"> • If you are alone, grab the AED immediately. If possible, dial into 9-1-1 simultaneously.
3a Responsive Victim	If the person is awake and responsive, you should: <ul style="list-style-type: none"> • Obtain their consent, tell them your name, your type/level of training, state what you think is wrong and what you plan to do, and ask permission to provide care. • Use appropriate Personal Protective Equipment (PPE) like gloves if possible. • Interview the person, ask them SAMPLE questions: <i>Symptoms</i> – How does the person feel? <i>Allergies</i> – What is the person allergic to? <i>Medication</i> – What medication is the person currently taking? <i>Past Medical History</i> – Is this a recurring problem, has this happened before? <i>Last In and Out</i> – When was the last time the person ate, used the restroom? <i>Events</i> – What happened to the person? • Conduct a Head-to-Toe Check, check their head and neck, shoulders, chest and abdomen, hips, legs and feet, and arms and hands for signs of injury. Don’t assume that the injury you initially see is the only one that they are experiencing. • Provide care to the best of your ability and scope of knowledge/training.
3b Unresponsive Victim	Shout to try and get the person’s attention, use the person’s name if you know it. If there is no response, tap on their shoulder (if adult/child) or foot (infant) and shout again. Check to see if the person is breathing and proceed accordingly. Spend no more than ten seconds checking for responsiveness.
4a Victim is Breathing	If the victim is breathing, follow the instructions in 3a – Responsive Victim. If the victim has no obvious signs of injury, roll them onto their side to assume the recovery position.
4b Victim is Not Breathing	If the victim is not breathing, you should: <ul style="list-style-type: none"> • Ensure that the victim is face-up on a firm, flat surface such as the floor or ground. • Begin CPR (starting with compressions) at a rate of 100 compressions per minute. If there are multiple people available, rotate compressions. Providing CPR is physically exhausting and a constant rate of compressions is required to maximize the odds of

	<p>survival. Do not over-exert yourself if there are other responders available to assist you.</p> <ul style="list-style-type: none">• When an AED arrives, continue providing CPR while the AED is being activated. When the AED turns on, precisely follow the audio prompts. These prompts will generally follow the AED Operation Procedures (Annex G), but any instructions given by the AED itself should take precedence.
5	When Emergency Medical Services (EMS) arrive on the scene, follow their instructions.

AED OPERATION PROCEDURES (ANNEX G)

Step	Description
1	Turn on AED and follow the visual and/or audio prompts.
2	Open the person's shirt and wipe their bare chest dry. If the person is wearing any medication patches, you should use a gloved (if possible) hand to remove the patches before wiping the person's chest.
3	Apply defibrillation pads. Make sure the AED pads are placed in the proper location and that they make good skin contact with the chest. Do not place AED pads over the nipple, medication patches or implanted devices.
4	Make sure no one is, including you, is touching the person. Tell everyone to "stand clear."
5	Push the "analyze" button (if necessary) and allow the AED to analyze the person's heart rhythm.
6	If the AED recommends that you deliver a shock to the person, make sure that no one, including you, is touching the person – and tell everyone to "stand clear." Once clear, press the "shock" button.
7	Begin CPR after delivering the shock. Or, if no shock is advised, begin CPR. Perform 2 minutes (about 5 cycles) of CPR and continue to follow the AED's prompts. If you notice obvious signs of life, discontinue CPR and monitor breathing for any changes in condition.