

Frequently Asked Questions about AEDs and Public Access Defibrillation Programs

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General Questions about AEDs

1. What does AED stand for?

AED stands for automated external defibrillator.

2. What's an AED?

An AED is a device used to administer an electric shock through the chest wall to the heart. Built-in computers assess the patient's heart rhythm, judge whether defibrillation is needed, and then administer the shock. Audible and/or visual prompts guide the user through the process.

3. How does an AED work?

A microprocessor inside the defibrillator interprets (analyzes) the victim's heart rhythm through adhesive electrodes (some AED models require you to press an ANALYZE button). The computer analyzes the heart rhythm and advises the operator whether a shock is needed. AEDs advise a shock only to ventricular fibrillation and fast ventricular tachycardia. The electric current is delivered through the victim's chest wall through adhesive electrode pads.

4. Why are AEDs important?

AEDs are important because they strengthen the Chain of Survival. They can restore a normal heart rhythm in victims of sudden cardiac arrest. New, portable AEDs enable more people to respond to a medical emergency that requires defibrillation. When a person suffers a sudden cardiac arrest, their chance of survival decreases by 7% to 10% for each minute that passes without defibrillation. AEDs save lives.

5. Who can use an AED?

Most AEDs are designed for use by non-medical personnel such as police, flight attendants, security guards, and other lay rescuers who have been properly trained. Having more people in the community who can respond to a medical emergency by providing defibrillation will greatly increase sudden cardiac arrest survival rates.

6. What is a cardiac arrest?

A cardiac arrest means that the heart stops pumping blood through the body. Without a constant blood supply, the brain stops working almost immediately and the person goes unconscious.

7. Is cardiac arrest the same thing as a heart attack?

No. A heart attack is caused by a sudden blockage of a small artery that supplies blood to the heart muscle. When the blood supply is cut off, that portion of the heart muscle dies and this is what causes the pain. Some people who have heart attacks may experience a cardiac arrest.

8. Does a cardiac arrest only happen after a heart attack?

No. Anyone can have a cardiac arrest at any time. Heart attacks are only one potential cause of cardiac arrest.

9. Why does someone experiencing a cardiac arrest need an AED?

In a cardiac arrest, the heart most often goes into uncoordinated electrical activity called ventricular fibrillation. The heart twitches ineffectively and can't pump blood. The AED delivers electric current to the heart muscle, momentarily stunning the heart, stopping all activity. This gives the heart an opportunity to resume beating effectively.

10. Will an AED always resuscitate someone in cardiac arrest?

The AED treats only a heart in ventricular fibrillation (VF), an irregular heart rhythm. In cardiac arrest without VF, the heart doesn't respond to electric currents but needs medications. The victim needs breathing support. AEDs are less successful when the victim has been in cardiac arrest for more than a few minutes, especially if no CPR was provided.

Questions about AED Placement

1. What is public access defibrillation (PAD)?

Public access defibrillation (PAD) means making AEDs available in public and/or private places where large numbers of people gather or people who are at high risk for heart attacks live.

2. Where should AEDs be placed?

Studies have shown a higher incidence in certain locations. Some of the typical locations include: airports, sports arenas, community/senior citizen centers, dialysis centers, transportation terminals, golf courses, gated communities, health centers/gyms, jails, large industrial sites, large shopping malls, nursing homes, private businesses, sport/event complexes, and cardiology, internal and family medicine practices and urgent care centers.

3. Am I legally liable for using an AED?

The Good Samaritan Law gives critical protection to the owner of an AED and

those trained to use it. Many AED/PAD cases in courts revolve around the failure to have or use an AED.

4. What are the legal requirements when you have an AED?

The legal requirements when a business has an AED are defined in California Health & Safety Code section 104113 and Title 22, Division 9, Chapter 1.8. Lay Rescuer Automated External Defibrillator Regulations:

- Have a medical director to provide medical oversight of your AED Program.
- Have a written Internal Emergency Response Plan that describes procedures to be followed in the event of an emergency, including the use of an AED.
- Ensure that your trained employees know and understand your Internal Emergency Response Plan.
- Maintain your AED in working order.
- Have employees trained in CPR/AED according to American Heart Association or American Red Cross guidelines. Training must be maintained ongoing with renewal at least every two years.
- Have no less than one trained employee available during normal business hours.
- Maintain and test the AED for readiness according to the manufacturer's guidelines, but at least monthly, and record the checks.
- Notify Alameda County EMS of the AED being placed.
- Report any use of the AED to your medical director and to Alameda County EMS.
- Building owners who place an AED must annually provide a brochure to tenants on the use of the AED and its location.

5. How many AEDs do I need at my worksite?

The goal is to have an AED located so responders can respond and deliver a shock within three minutes. The placement of AEDS is usually determined by the size of your facility. Often one AED is enough, but if your facility is spread out or on several floors of a building, more than one may be recommended.

6. How can I get an AED and what does training involve?

AEDs can be purchased through one of several vendors. Training typically involves a course in CPR, the use of barrier devices in CPR, the use of an AED, and how to recognize the signs of four major emergencies. Lists of vendors and training organizations can be found on our website

7. Why can't I just buy an AED unit and keep it at my company worksite?

AEDs are regulated by the FDA and require medical oversight.

8. Why must there be oversight by a medical doctor?

An AED is a medical device authored by the FDA and must be prescribed by an MD. The MD will also provide oversight according to their role of support identified in your Emergency Response Plan. It essentially is a quality control mechanism. The licensed physician will ensure that all designated responders are properly trained and that the AED is properly maintained.

9. What is an Emergency Response Plan?

An Emergency Response Plan typically includes information on the roles of the AED/Pad Program Coordinator, training and equipment requirements, what to do during a medical emergency, checklist, etc. Our website has a sample template of a plan.

10. Why is notifying the local EMS office important?

When an AED is placed, regulations require the site information needs to be given to the Alameda County EMS office. This information in turn is passed to local Fire Department and used to update their 911 / Emergency Medical Dispatch database. When a 911 call is placed from that site, EMS dispatchers and responders are aware of the AED onsite.

11. Why should people who are responsible for operating an AED receive CPR training?

Early CPR is an integral part of providing lifesaving aid to people suffering sudden cardiac arrest. The ventilation and compression skills learned in a CPR class help to circulate oxygen-rich blood to the brain. After delivering a series of electric shocks, the typical AED will prompt the operator to continue CPR while the device continues to analyze the patient.

12. If AEDs are so easy to use, why do people need formal training in how to use them?

An AED operator must know how to recognize the signs of a sudden cardiac arrest, when to activate the EMS system, and how to do CPR. It's also important for people to receive formal training on the AED model they will use so that they become familiar with the device and are able to successfully operate it in an emergency. Training also teaches the operator how to avoid potentially hazardous situations.

13. Can anyone buy an AED?

AEDs are manufactured and sold under guidelines approved by the Food and Drug Administration. Current FDA rules require someone who purchases an AED to present a physician's prescription for the device. The AED manufacturer usually arranges this.

14. How much does an AED cost?

The price of an AED varies by make and model. Most AEDs cost between \$1100 and \$2000. There are also options such as wall cabinets, fast response kits, and signs.

15. Is there funding available to help offset the cost of a PAD program?

Funds are often available through grants from AED manufacturers, foundations, and the government.

16. What steps should an organization take to buy an AED for its premises?

There are ten steps to start an AED/PAD program:

1. Decide to implement AEDs into your company's health and safety program.
2. Identify an AED/PAD coordinator.
3. Do a site assessment for AED placement.
4. Find a medical director to oversee the program.
5. Develop an Emergency Response Plan (there is a free template on our Website).
6. Select a training organization to provide training to employees in the use of an AED and in CPR.
7. Choose an AED including cabinetry, signs and a fast response kit.
8. Develop a plan of ongoing training and AED checks.
9. Notify Alameda County EMS to integrate the AED location into the local EMS system. Use the "New PAD Application" form on our website.
10. Inform your employees of the AED, where it is, and those trained.

17. Which AED model is recommended?

We do not recommend one manufacturer or model over another. All AED models have similar features, but the slight differences allow them to meet a variety of needs.

Questions about AED Use

1. Is an AED safe to use?

An AED is safe to use by anyone who's been trained to operate it. Studies have shown the devices to be 90% sensitive (able 90% of the time to detect a rhythm that should be defibrillated) and 99% specific (able 99% of the time to recommend not shocking when defibrillation is not indicated). Because of the wide variety of situations in which it will typically be used, the AED is designed with multiple safeguards and warnings before any energy is released. The AED is programmed to deliver a shock only when it has detected VF. However, potential dangers are associated with AED use. That's why training—including safety and maintenance—is important.

AEDs are so user-friendly that untrained rescuers can generally succeed in attaching the pads, pressing "Analyze" (if required), and delivering shocks. However, untrained rescuers may not know when to use an AED, and they may not use an AED safely, posing some danger of electric shock to themselves and others. Also, untrained rescuers probably would not know how to respond to the

victim if the AED prompts "no shock indicated." An operator needs only to follow the illustrations on the electrode pads and the control panel and listen and follow the voice prompts (for example, "Do not touch the patient."). An AED will deliver a shock only when a shock is advised and the operator pushes the "Shock" button. This prevents a shock from being delivered accidentally.

2. Are AEDs safe to use on children?

An AED should not be used on a child younger than 8 years old or weighing less than about 55 pounds.

3. Will I get zapped if I shock a victim in the rain or near water?

It's remotely possible to get shocked or to shock bystanders if water is standing near or underneath the patient. Try to move the patient to a dry area and cut off wet clothing. Also be sure that the skin has been towed dry so the electrode pads will stick to the skin. At the moment you press the "Shock" button, you must make sure that no one, including yourself (the AED operator), touches any part of the victim.

4. Can an AED make mistakes?

The AED's internal computer uses complex analysis algorithms to determine whether to shock. If the operator has attached the AED to an adult victim who's not breathing and pulseless (in cardiac arrest), the AED will make the correct "shock" decision more than 95 of 100 times and a correct "no shock indicated" decision more than 98 of 100 times. This level of accuracy is greater than the accuracy of emergency professionals.

5. Why do you stop CPR as the electrode pads are placed and analysis occurs?

For the AED to analyze accurately, the victim must be motionless. Sometimes there will be an agonal respiration (a gasping breath that can occur when the heart is stopped) that causes some movement. AEDs can recognize this extra motion and indicate, "motion detected" to the operator. This warns the operator to assess carefully for extra movements from the victim or other people at the scene.

6. Why should a lay rescuer continue CPR after the arrival of emergency medical services (EMS) professionals?

It's helpful to EMS professionals to be able to set up their equipment, including their defibrillator, while lay rescuers continue CPR. The paramedics and EMTs will take over CPR and reconfirm that the victim is in cardiac arrest.

7. Why does it seem that the victim goes without CPR for so long during defibrillation, and why does an AED shock so many times?

After prescribed periods of CPR, the machine analyzes the victim's rhythm. The victim must remain motionless while the AED decides to shock and delivers the shock. Sometimes the victim doesn't change from VF to non-VF at once. These

victims require multiple shocks. If repeated shocks are needed, the shocks are "stacked" in sets of three to increase their effectiveness.

8. Besides using an AED, how else might a lay rescuer help at the scene of a sudden cardiac arrest?

Lay rescuers are most often asked to call 911 and get the AED. The lay rescuer can assemble the pocket facemask and begin providing mouth-to-mask ventilations. Responders might provide CPR or continue defibrillation if a workplace defibrillator is used. Support and direction to bystanders, friends, and family are appropriate. When EMS personnel arrive, the lay rescuer can provide directions and help get information about the patient.

9. What actions should a CPR responder take after using an AED on a person in cardiac arrest?

There should be some type of debriefing for EMS personnel or lay rescuers involved in a resuscitation attempt. Also, the voice-rhythm-shock record should be collected from the AED's event documentation system. There is also an "AED Use" form that you or your medical director needs to complete and send to Alameda County EMS. The form can be found on our website.