

# Santa Clara University

## Automated External Defibrillator (AED) FAQ

### **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.

### **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.

### **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.

### **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.

**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.

**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.

**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.

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.

**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.

### **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). Due to 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. The American Heart Association (AHA) recommends that persons who live or work where an AED is available for use by lay rescuers participate in the AHA's Heartsaver AED Course. 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.

### **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.

### **Can an AED make mistakes?**

An AED will almost never decide to shock an adult victim when the victim is in non-VF. AEDs "miss" fine VF only about 5% of the time. The 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.