

# AED Implementation Guide

for Schools







# Your Guide to Putting a Heart Safe AED Program in Place

Every day, nearly 1000 men, women and children die from sudden cardiac arrest (SCA).<sup>1</sup> Although SCA at any age is a tragedy, the loss is compounded when the life lost is young, with hopes and dreams unfulfilled.

Automated external defibrillators (AEDs) save more lives. An abnormal heart rhythm known as ventricular fibrillation (VF) commonly causes SCA. AEDs deliver a pulse of electricity, the single most effective way to restore the normal rhythm of a heart quivering in VF. Although not everyone experiencing SCA can be saved, studies show early defibrillation can dramatically improve survival rates.


Every minute counts. Typically, only about five percent of SCA victims survive. However, survival rates can increase up to 74 percent<sup>2</sup> if CPR and a shock from an AED are provided within three minutes of collapse. Reducing response time by even one or two minutes from collapse to shock can mean the difference between death and survival.<sup>3</sup>

Many of us remember reading heartbreaking headlines:

- A ball strikes a 14-year-old lacrosse player in the chest, sending his heart into a deadly, irregular rhythm. Although he receives CPR and a hospital is less than a mile away, it takes 12 minutes for delivery of defibrillation and Louis does not survive.
- A 14-year-old athlete, nicknamed “iron man,” is running in gym class when he suffers SCA. More than 10 minutes pass before the first defibrillation shock is given. He survives, but with severe brain injury.
- After clearance with a basic sports physical, a star football player suffers SCA during practice. A defibrillator is brought to the scene, but too late to save him. An autopsy discovers an undiagnosed heart condition.

The following real-life examples show the difference that having an AED close by can make:

- A 15-year-old girl collapses during basketball practice. The high school trainer uses an AED kept near the court to resuscitate her.
- A school janitor suffers cardiac arrest and is shocked back to life with an AED installed near the gym, thanks to a state law requiring AEDs in schools.
- A man suffers cardiac arrest while watching his granddaughter play basketball. The principal retrieves and applies the school AED, and saves his life.
- A 46-year-old father of two, playing a game of pick-up basketball with friends at his local school, collapses in SCA. Bystanders provide CPR and a defibrillation shock with the AED installed at the school just weeks before. He survives and returns to a full and rewarding life.



**“Nobody can tell a family who has lost a child or lives with a brain-injured survivor from cardiac arrest that AEDs aren’t necessary in schools.”**

Chris Shipler, father of a 14-year-old struck down by sudden cardiac arrest while running in gym class. Sean survived with severe brain injury.

Because early defibrillation is the standard of care in many communities, the public increasingly expects to find AEDs included in a school's disaster response plan. This guide will help you tailor a program that works for your school.

Early defibrillation by a first responder at a school or sports field is just one link in the "Chain of Survival" defined by the American Heart Association (AHA):

1. Early recognition of SCA and notification of EMS
2. CPR initiated quickly by bystanders
3. Early defibrillation by rescuers at the scene
4. Advanced cardiac care provided by EMS personnel
5. Integrated, post-cardiac arrest care by medical professionals in the hospital



## Causes of SCA in Children and Youth

**"We couldn't accept that a vital 17-year-old young man could live all his life with an undetected heart defect and there was no way to prevent this tragedy from happening."**

Linette Derminer, who has lobbied for state funding for AEDs in Ohio schools since her son Ken died of SCA at football practice.

Although rare, SCA does occur in children and youth, and like adults, often without previous symptoms. A number of heart conditions often go undiagnosed in young people, and tragically, the first sign there is a problem can be SCA.

These often silent heart conditions include:

- Hypertrophic cardiomyopathy
- Primary pulmonary hypertension
- Coronary artery defects
- Long QT syndrome
- Accidents caused by a blunt blow to the chest at a critical time in the cardiac cycle (commotio cordis)
- Risky behaviors including cocaine or other stimulant use
- Eating disorders that can cause electrolyte imbalance

## Your School's AED Program: Strategies for Success

Taking a strategic and organized approach to your school's AED program involves the following steps.

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### Get Ready:

- Assign a project coordinator
  - Champion the idea and raise awareness
  - Review laws and regulations or consult your risk management and legal team
  - Coordinate with local EMS
- 



### Get Set:

- Arrange for medical direction
  - Identify your response team
  - Choose your equipment and vendor
  - Design policies and procedures
  - Assess the number of AEDs you need and determine placement
    - Estimate costs for equipment, training and promoting your AED program
    - Fund your budget
    - Train your responders and plan for refresher training
- 



### Go:

- Acquire and deploy AEDs and other supplies
- Promote your program to raise support
- Build quality assurance into your operation

## Get Ready: Assign a Project Coordinator, Champion the Idea and Raise Awareness



Implementing a successful early defibrillation program requires support throughout your school community—from school board members, district administrators, legal counsel, risk managers and others. You will also want to involve teachers, school staff, PTA and older students. A school nurse or athletic trainer is often the logical choice to champion the effort. Designate a small task force to plan and implement the program, and arrange a meeting so people can air their concerns and get questions answered.

Many people do not realize how easy and intuitive AEDs are to use. A product demonstration by the vendor or your local EMS can help them see firsthand how this lifesaving technology works.

Emphasize that your school is a community center with people of all ages coming and going. An AED program can benefit many—students, parents and family members, faculty and administrators, voters and after-hours meeting attendees.

## Get Ready: Review Laws and Regulations

**“We both feel that the minimal expense of an AED unit and staff training pales in comparison to the loss of a child.”**

Michael and Suzy McCarthy, parents of a five-year-old that suffered a sudden cardiac arrest while attending her kindergarten class.



It may reassure those concerned about liability to know that manufacturers design AEDs so they are easy and safe for anyone with minimal training to use. An AED analyzes the heart’s rhythm, advises whether a shock is needed, and requires very little decision-making on the part of the rescuer. If SCA is untreated the victim will not survive, and providing a defibrillation shock can only help, not harm.

Even so, some members of your school community may worry about liability and AEDs. Inform them that AED use is the standard of care these days. Currently more than 14 states mandate schools to have AEDs.

The U.S. Cardiac Arrest Survival Act (CASA) of 2000 established federal liability protection for those who acquire or use an AED. Good Samaritan laws in all 50 states grant immunity from civil liability to many people who use an AED in an emergency.

Because court decisions, laws and regulations depend on location, consult your state and local regulations and review your program with your legal and risk management team. They can help you design a program that meets requirements and weigh the advantages and risks of an AED program.

The requirements of existing AED laws and regulations can include:

- Training in CPR and AED use
- Coordination with EMS in your community
- Medical direction
- Record-keeping for each AED use
- Regular device maintenance and supply replenishment

## Get Ready: Coordinate with your local EMS



Work closely with your local EMS to integrate your program into your community's public access defibrillation (PAD) program. Many communities require you to notify local EMS when setting up a program. EMS can provide guidance on choosing and placing equipment, training and medical direction, and they may be available to check your equipment each year as part of the school's annual fire inspection. To help ensure the best care for a cardiac arrest victim it is also essential to have clear procedures for smooth hand-off to EMS when the ambulance arrives.

If your community uses an enhanced 9-1-1 system you may be able to add the locations of school AEDs to the computer-assisted dispatch system. Should someone without knowledge of your school's AED program call for help, the dispatcher can tell the caller exactly where the nearest AED is located.

## Get Set: Arrange for Medical Direction



AEDs are designed for use by anyone with minimal training, however, the U.S. Food and Drug Administration (FDA) classifies them as medical devices, and most AEDs require a prescription.

The prescribing physician may also serve as medical director for the program. The medical director provides ongoing medical oversight but is not expected to be at the scene when an AED is used. He or she also approves standing orders for rescuers to follow when using an AED, and may sign off on training plans and policies and procedures, updating

them as appropriate, evaluate data recorded on an AED during a medical emergency, and help assess each AED use to suggest protocol improvements.

Your EMS medical director may agree to oversee your program. Other options include an interested physician in the community or local hospital, a complete AED management program from your AED vendor, or an MD employed by your school district.

**Close coordination with local EMS assures that your school AEDs are integrated into the public access defibrillation program in your community.**

**“Our school was only one and a half miles from the fire station, and it still took 10 minutes and 18 seconds for Sean to receive his first defibrillator shock.”**

Chris Shipler, father of Sean, whose brain was injured as a result of SCA during gym class.

## Get Set: Identify Your Response Team



The size and layout of your school and its operating hours will help determine how many people should be trained for your AED program. Possibilities for response team members include those who can immediately take action, rather than teachers who are required to stay with their students:

- Those who already provide medical services, such as school nurses and health aides
- People who are present when others are exercising—coaches, trainers, lifeguards and physical education teachers
- Assign some rescuers who are present after school hours, such as administrators, coaches, music directors, drama teachers, high school students, and custodial, office or security staff. Everyone trained in AED use will take this lifesaving skill with them into the community, thus strengthening the AHA's "Chain of Survival."

Be sure to account for staff turnover, as lack of a stable rescuer pool can weaken the effectiveness of your program

## Get Set: Choose Your Equipment and Vendor

Your local EMS and medical director can advise you about the type of AEDs to purchase. Inquire about the vendor's reputation for reliability, durability and ongoing product/program support. Selecting a single AED brand simplifies training, ease of use and ongoing maintenance.

Things to consider when choosing AEDs include:

- Easy to use, clear voice and visual prompts
- Fully automatic capability
- Easily viewable readiness display that tells you the device is ready to go
- Program management offerings
- Adult and pediatric capability
- All-inclusive pricing
- Low, long-term cost of ownership warranty
- Synchronized battery/electrodes replacement cycles
- Compatibility with local EMS equipment
- Longevity of the company and the size of its installed base
- Escalating energy capability
- Clinical studies supporting the vendor's products



Seek the advice of your local EMS regarding the type of AEDs to buy.



## Get Set: Design Policies and Procedures— and Continually Improve Them



If your school already has a written plan for responding to medical emergencies, update it to include AEDs. If not, now is the time to put a plan in writing.

Be sure to cover the following points in your response plan for cardiac emergencies:

- How the onsite response team will be notified
  - Who will initiate CPR while another person runs for the AED
  - Who will notify EMS
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- Who will meet EMS and direct them to the scene
  - How data the AED records will be managed and shared
  - Appropriate actions to take after an event: downloading and transferring data from the AED, notifying the medical director
  - How to manage situations when school staff take AEDs off-site to sporting events, and how to provide AED coverage for the school community

Be sure to have your medical director and legal and risk management team review your policies and procedures, which should include:

- Locations of AEDs and related rescue equipment, such as gloves and face masks for CPR
- A process, schedule and checklist for inspecting and maintaining equipment
- Records that must be kept each time an AED is used, in order to satisfy any district or state reporting requirements
- Training and refresher training requirements
- Who manages the AED program at the district and school levels
- Who provides medical direction
- A process to periodically review and update AED policies and procedures
- Operating instructions, vendor contact information, how to order supplies, a training roster, and pertinent state laws and local regulations.

As with other policies and procedures, those relating to AEDs will require periodic updating as laws and regulations change, as best medical practices evolve, and as you learn from your own experience.

## Get Set: Assess the Number of AEDs You Need and Determine Placement



To achieve a good response time, you will want enough AEDs in the right places, an effective communications plan, and sufficient people trained to quickly respond to a cardiac event.

Ideally, defibrillation should be provided in three minutes or less to achieve higher success rates.<sup>4</sup> Every additional minute of delay lowers the rate of successful resuscitation by seven to 10 percent.<sup>5</sup>

Place AEDs within a brisk one-minute walk of any location in the school. Give first priority to areas of higher risk, such as:

- Locations where people exercise, including gymnasiums, sports fields and pools
- High-density areas, such as auditoriums, cafeterias or large meeting rooms
- Difficult-to-reach areas for EMS teams, such as those deep inside a facility, high in a tall building, and in remote or locked locations

**Be sure to update policies and procedures as laws and regulations change, as best medical practices evolve, and as you learn from your own experience using AEDs.**

Having a defibrillator is pointless unless people know where it is, can retrieve it easily, both during and after school hours, and know how to quickly summon trained responders. Display signs alerting visitors to the locations of the AEDs. Placing signs near a phone makes it easier to quickly activate your internal response team and local EMS.

You can save precious seconds with automatic notification systems, such as wiring a monitored AED wall cabinet so that opening the door triggers an alert to the main office or calls 9-1-1. If vandalism is a concern, consider using wall cabinets equipped with lights that flash or alarms that sound when you open the door.

Your local EMS or AED vendor may be able to help you determine the number of AEDs and where to place them. Traversing a building while you carry a stopwatch and floor plans is useful when selecting AED locations. Walking at a brisk pace, you can cover about 300 feet per minute. Remember, you want a “drop to shock” time of three minutes or less.

Do not allow lack of funding deter you from setting up your program. A phased approach can be very successful. First, place AEDs in schools with large enrollments, many athletic events or activities that draw big crowds, such as concerts, plays and meetings. You can equip lower-risk locations later phases of your program rollout.

## Get Set: Estimate Costs for Equipment, Training and Promoting Your AED Program

After selecting a vendor, estimate your program budget. You will need to include costs for the equipment and supplies as well as training. Be sure to calculate start-up costs and ongoing expenses, such as refresher training and maintenance.

ITEM	NUMBER NEEDED	COST
AEDs		
Extra defibrillation electrodes		
Infant/Child Reduced Energy Electrodes for children less than eight years old or less than 55 lbs.		
Alarmed wall cabinets or carrying cases		
Supplies such as non-latex gloves, pocket mask, scissors, razor (to shave chest hair if necessary) and towel (to dry chest area)		
Medical direction		
Initial staff/student training		
Training supplies (AED training devices, extra training electrodes and manikins)		
Data management system, which may include a computer, modem and software		
Refresher drills and recertification training		
Replacement electrodes and batteries as needed		
Device maintenance or service agreement		
Amortized fund to pay for future units and replacement AEDs		
TOTAL		



A phased approach can be very successful, first placing AEDs in schools with large enrollments, many athletic events or activities that draw large crowds, and equipping other locations in later phases.

## Get Set: Fund Your Budget



Although adequate budget and staffing are constant concerns for schools, you can build a strong case for early defibrillation. With proper information, you can convince school administrators and private donors to invest in lifesaving early defibrillation. Keep in mind that as AEDs become the standard of care, a school may face more liability risk for not having an early defibrillation program in place.

Think in terms of lowering costs rather than fundraising alone. To conserve resources, consider leasing or volume purchasing programs.

Seek in-kind contributions, such as training donated by nursing associations, doctors, EMTs or firefighters. Stretch your dollars by asking individual donors if their employers can provide matching contributions. Rolling your program out in phases can help distribute costs over time, especially in larger districts.

### **Possible sources of funding within the school community include:**

- The school district budget
- Booster clubs, PTA and PTSA
- Student groups or community service classes
- Local businesses that partner with schools
- School alumni
- Special events, such as bake sales, auctions, benefit concerts, raffles, car washes and passing a donation box at sporting events

### **Possible sources of funding beyond the school community include:**

- Government grants for AEDs in the community or for emergency preparedness in general
- Health plans, local hospitals and hospital guilds
- Civic organizations, including Rotary, Masons, Elks, Kiwanis, Eagles, Lions, American Legion and VFW clubs
- Religious groups
- Insurance companies
- Private foundations
- Grants—target your grant proposals to organizations that provide funding to schools, health, sports and emergency preparedness, related to student health and safety



## Get Set: Train Your Responders and Plan for Refresher Training



Strengthening the Chain of Survival requires more than training people to use an AED. They need to know how to quickly recognize signs of SCA, start CPR right away, activate the internal response team, locate and use the defibrillator, promptly notify EMS, and care for a victim until the EMS team arrives. Training should cover all these aspects of the AED program.

Training classes give people both the skills and confidence to intervene in a cardiac emergency. Training options include having courses taught on-site by an independent training company or at a convenient location in the community through the EMS, fire department, local hospital or community college. Many schools adopt a “train the trainer” approach, which lets them become self-sufficient in training responders. If your school already teaches first aid or CPR to students or staff, add CPR and AED training to instill the culture of bystander response throughout your community. Training may also be available in the form of Web-based training or CD-ROM. Your sales representative can also help locate appropriate training.

Training classes should meet the guidelines of a nationally recognized program such as the American Heart Association, American Red Cross or National Safety Council. Review your school's emergency response plan during the training class, and be sure the training complies with state and local regulations. Often, immunity from civil liability applies only to people who are trained in AED use.

Refresher training should occur at least every two years—sooner if your equipment, policies or procedures change. Computer-based training (CBT) can help response team members keep skills sharp. Choose a CBT program that is validated as an effective learning tool.<sup>6</sup>

## Go: Acquire and Deploy AEDs and Related Supplies




Inspect and install AEDs according to device operating instructions. To help ensure AEDs are rescue ready, check the readiness indicator routinely and follow the maintenance guidelines provided in the OI. Also keep records of the expiration dates of consumables such as the battery and electrodes, and replace them as needed.

As previously mentioned, post signs that alert people to AED locations. Some schools post an AED symbol and map so the devices are always easy to find.



Training will show that AEDs are easy to use, and in fact difficult to misuse, especially in devices with few steps to operate and simple voice prompts to guide rescuers.



Publicizing your early defibrillation program highlights your school's commitment to the safety and health of students, staff and visitors.

## Go: Promote Your Program to Raise Support


Publicizing your early defibrillation program to the larger community helps promote your school's commitment to the safety of students, staff and visitors. Publicity also can help raise funds to buy more AEDs or to train more rescuers. A communications campaign within the school should highlight the location of AEDs and inform students and staff how to alert trained responders in the event of a cardiac emergency.

Publicity about student athletes who did not survive SCA and those saved with a shock from an AED can help drive your efforts. Your school's website, intranet and e-newsletter as well as newspapers and radio and TV stations can help you publicize the need for AEDs in schools and promote your fundraising events. Parents, alumni and other donors may be eager to contribute once they understand the need.

You can promote your AED program in the following ways:

- Media coverage when AEDs are put into service and when a life is saved with an AED
- Announcements at meetings of faculty, staff, booster clubs, PTA, PTSA, student councils and school boards
- A special student assembly
- Posters and brochures, and decals on facility doors
- Articles in PTA, school, employee and union newsletters
- Notices on your school's intranet and public Web site
- E-mail or voice mail notification to employees, or print notices mailed with paychecks

Publicity can also serve to promote your AED program and to strengthen the Chain of Survival in your larger community.



Data collection and case review enables you to document how cases are handled, track the number of people helped, and identify how to change procedures to help improve survival rates.

## Go: Build Quality Assurance into Your AED Program

Once your AED program is up and running be sure to follow the policies and procedures developed to keep equipment, supplies and trained responders ready to go when needed.

Identify a school nurse or other trained responder to be responsible for maintaining the equipment, checking the readiness display on a regular basis, and replacing electrodes and other supplies before their expiration dates.

On a regular schedule, the AED coordinator needs to go through the checklist for devices and supplies, order new supplies as needed, and determine that responders receive refresher training on schedule. This enables them to refresh skills, renew certifications, and learn about changes in equipment, policies and procedures.

Record-keeping is a vital part of the education system, and AED use is no exception. Data collection and case review enables you to document how rescuers handle cardiac emergencies, track the number of rescue attempts, justify the financial investment, and provide data to identify trends and future changes needed.

## There's No Time to Lose!

Schools equipped with AEDs and staffed with trained responders can mean the difference between life and death for students, employees and the larger school community. Although there are many steps involved in setting up and managing a successful AED program, the rewards are great. Take the steps now to plan and set up your school's AED program.



**“We must do the responsible thing and be prepared to treat cardiac arrest with AEDs. This is the only tool we have to save our children right now.”**

Linette Derminer, who started KEN (Kids Endangered Now) Heart Foundation after her son Ken died of SCA at football practice.

## Use This Checklist to Help Launch Your Program

Physio-Control is the world's largest provider of external defibrillators, and has helped thousands of schools implement AED programs. A team of AED specialists is available for consultation as needed.

- Assign a project coordinator
- Champion the idea and raise awareness
- Review laws and regulations and consult your legal counsel or risk manager
- Coordinate with local EMS
- Arrange for medical direction
- Identify your response team
- Choose your equipment and vendor
- Design policies and procedures
- Assess how many AEDs you'll need and where they'll do the most good
- Estimate costs for equipment, training and PR
- Fund your budget
- Train responders and plan for refresher training
- Acquire and deploy AEDs and other supplies
- Promote your program to raise awareness and support
- Build quality assurance into your operation



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The LIFEPAK Heart Safe Solution from Physio-Control is a complete program that integrates the components needed to implement an AED program. Some of the services provided are: medical prescription, medical direction and oversight, training, post-event data review and a standards development tool that documents how you assessed your site to determine the number and placement of AEDs. Additional services are available, including data download and post-event rescuer support such as stress debriefing.

## National Training Organizations

American Heart Association, [www.americanheart.org](http://www.americanheart.org)

American Red Cross, [www.redcross.org](http://www.redcross.org)

National Safety Council, [www.nsc.org](http://www.nsc.org)

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For further information, please contact Physio-Control at 800.442.1142 (U.S.), 800.895.5896 (Canada) or visit our website at [www.physio-control.com](http://www.physio-control.com)



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