Automated External Defibrillators
Time for Federal and State Advocacy and Broader Utilization

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More than 6 years ago, the AHA published Improving Survival From Sudden Cardiac Arrest: The “Chain of Survival” Concept. The paper identified the idea that all communities should adopt the principle of early defibrillation. This principle applies to all personnel who are expected, as part of their professional duties, to perform basic CPR: They must carry an AED and be trained to operate it. Health professionals who have a duty to respond to a person in cardiac arrest should have a defibrillator available either immediately or within 1 to 2 minutes. Responsible personnel should authorize and implement more widespread use of automated external defibrillation by community responders and allied health responders.1

Current EMT and First Responder Preparedness

A 1995 poll of state EMS directors, published in the Journal of Emergency Medical Services, identified obstacles to implementation of early defibrillation programs. Among the major obstacles was a lack of enabling state legislation (34% of respondents).2 According to a subsequent 1996 survey of state EMS directors, fewer than half of EMTs and fewer than one quarter of non-EMT first responders in the United States were trained and equipped to defibrillate.3

Unfortunately, the nature of prehospital medical care (including training, equipment, and standards of care) varies widely from state to state, which results in inconsistent care for the public. The 1996 poll of state EMS directors, released in January 1997, found that only 27 states permitted, through enabling legislation, non-EMT first responders to use AEDs. In only 6 states are lay rescuers allowed to use AEDs: California, Florida, Maine, Maryland, North Dakota, and Texas. Individual recommendations by the state EMS directors included (1) the development of model legislation; (2) fostering of federal initiatives to fund the purchase of AEDs; and (3) training of all non-EMT firefighters, police officers, and other public safety first responders in the use of AEDs.3

This is, however, a far cry from the status quo of only 5 to 10 years ago. As late as the early 1990s, very few EMTs were authorized to use AEDs. By 1994, however, 36 states had laws or regulations to allow EMT defibrillation, and by 1997, nearly all states authorized use of AEDs by EMTs. The spread of EMT defibrillation was enhanced by the publication of the US Department of Transportation’s 1994 EMT basic national standard curriculum, which sanctioned training EMTs to operate and maintain AEDs.

“Historically, one of the fundamental challenges facing proponents of early defibrillation initiatives has been the need for legislation to enable various levels of health care professionals, public safety personnel, and in some cases, lay citizens to use AEDs. In most states, AED use is considered a medical act (68 percent) and individuals who use AEDs are required to be certified or licensed (78 percent).”4

As far back as 1989, the American Medical Association Commission on EMS adopted a resolution that recognized that the use of AEDs by trained and medically controlled initial scene responders other than ambulance personnel has been shown to improve survival. The commission encouraged states to “adopt laws and/or regulations to facilitate early defibrillation, using such technologies as AEDs, without unnecessary personnel certification restrictions.”

Numerous other groups have since followed suit. Last year, the National Heart Attack Alert Program, representing a broad range of public health groups, stated during its quinquennial retreat the following goals: (1) to increase the concept of the chain of survival for acute myocardial infarction: early access to the EMS system, early CPR, early defibrillation, and advanced life support; (2) to increase the percentage of EMTs and first responders who are trained to operate AEDs; (3) to increase the percentage of patients with out-of-hospital cardiac arrest discharged alive; and (4) to decrease the time from call to EMS dispatch to arrival at the scene of defibrillation.

Lives Saved by First Responders

The survival rate from cardiac arrest in Boston has risen by 50% (from 16% to 24%) since 1994, when Boston began a program to train firefighters to use AEDs. Boston has added 5 new ambulances, 100 AEDs, and 135 EMTs to its First Responder Defibrillator Program and trained all of its 1650 firefighters in CPR and defibrillation. Boston EMS had previously purchased 85 AEDs.5

A well-trained EMT aboard a fire engine or an ambulance can clearly make a difference, but all too often, lifesaving
Selected Abbreviations and Acronyms
AED = automated external defibrillator
AHA = American Heart Association
CPR = cardiopulmonary resuscitation
EMS = emergency medical service
EMT = emergency medical technician

equipment isn’t along for the ride. Most important is a portable defibrillator, “... [yet] not even one third of the nation’s ambulances and fewer than five percent of all fire engines are equipped with one.”

A 1995 survey of fire department operations by the Phoenix (Ariz) fire department shows the importance the fire department places on rapid response to both fire and EMS incidents. In Phoenix, the average response time for a fire department first responder/EMS-capable vehicle is 4 minutes and 15 seconds. The Phoenix Survey confirmed that fire departments provide advanced life support services in more than half (59%) of all cities in the United States and nearly 80% of US cities with populations greater than 1 million.

In 1990, the Hamilton, Ontario, fire department launched a program to train 450 firefighters to use AEDs. A subsequent study revealed that firefighter first responders were able to substantially reduce time to defibrillation.

In a recent survey of out-of-hospital ventricular fibrillation treated by defibrillator-equipped police and EMT-paramedics, survival to discharge was 49%, including 58% of those initially treated by police. All of the police officers were trained as first responders in accordance with the US Department of Transportation First Responder Training Program.

According to AHA guidelines, “... all personnel whose jobs require that they perform basic CPR [should] be trained to operate and permitted to use defibrillators, particularly AEDs. ... The AHA considers early defibrillation the standard of care in the community. Failure of emergency personnel to have a defibrillator available during a cardiac arrest is difficult to defend.”

States Move to Authorize First Responder Defibrillation
Concerted community-based action is needed to ensure widespread access to early defibrillation. Advocates for the chain of survival need to educate key decision-makers about the importance of AEDs, ensure that laws are in place that allow all first responders to administer defibrillation, provide all first responder vehicles with access to AEDs, and ensure implementation of current laws. The laws and regulations addressing training requirements should be flexible enough to adjust to changes in state-of-the-art AED technology.

At the state level, there has been a recent flurry of activity to expand access to AEDs. In Florida, legislation was recently signed into law that expressed the intent of the legislature that an AED may be used by any person for the purpose of saving the life of another in cardiac arrest. Under the legislation, all persons who have access to or use of an AED must obtain appropriate training, to include completion of a course in cardiopulmonary resuscitation or successful completion of a basic first aid course that includes cardiopulmonary resuscitation training and demonstrated proficiency in the use of an AED.

The Florida state Good Samaritan law was also amended to require that persons, including those licensed to practice medicine, who gratuitously and in good faith render emergency treatment and/or treatment by the use of or provision of an AED, without objection of the injured victim or victims thereof, shall not be held liable for any civil damages as a result of such treatment or as a result of any act or failure to act in providing or arranging further medical treatment where the person acts as an ordinary, reasonably prudent person would have acted under the same or similar circumstances.

The new law replaced previous language requiring successful completion of 6 hours of training in the use of automated or semiautomated defibrillators. “The new state legislation on AEDs, a model for a version that’s soon expected to be introduced nationally, is designed to promote widespread use of AEDs by easing training and other bureaucratic requirements.”

In Tennessee, state regulations authorize first responders and EMTs trained in an appropriate program to perform defibrillation on a pulseless, nonbreathing patient with an automated-mode device.

A recent law in Louisiana allows certified first responders to use AEDs in accordance with a protocol that shall be approved by the local parish medical society, or its designee, and the local physician medical director.

In July 1997, legislation was signed into law in Nevada encouraging all employers who are required to establish a written safety program to employ a person who has successfully completed a course in basic emergency care of a person in cardiac arrest that includes training in the operation of an AED.

In Massachusetts, legislation was introduced during the 1997 legislation session to replace the existing good Samaritan law and expand its focus to include the use of semiautomated or automated defibrillators. Under the legislation, any person trained according to the standard guidelines of the American Heart Association or American Red Cross in CPR and/or the use of semi or automatic external defibrillators, or any person who has successfully met the training requirements of a course in basic cardiac life support, according to the standards established by the AHA, who in good faith renders emergency CPR and/or defibrillation in accordance with his/her training, to any person who apparently requires cardiopulmonary resuscitation and/or defibrillation, shall not be liable for acts or omissions, other than gross negligence or willful or wanton misconduct, resulting from the rendering of such emergency cardiopulmonary resuscitation and/or defibrillation.
To make its case to legislators, the AHA Massachusetts Affiliate pointed out in its supporting materials that the "new generation of AEDs will make it more practical to train and equip a wider range of responders, including fire department personnel, police officers, lifeguards, flight attendants, security guards, and others responsible for public security. Public Access Defibrillation is the ultimate goal as a result of this new technology. This will mean the general public will have access to [AEDs] in highly populated areas such as office buildings, stadiums and airplanes, where survival rates from sudden cardiac arrest are less than 1 percent.

"The use of [AEDs has] become industry standard training for emergency personnel. The technology has made the device cheaper to purchase and has become an invaluable tool in saving human life."13

The preamble to the Hawaii statute states that "the legislature finds that all personnel whose jobs require the performance of basic cardiopulmonary resuscitation (CPR) should be trained to operate automatic external defibrillators as recommended by the American Heart Association."

There is clearly a need to revise Good Samaritan laws across the country to protect good-faith efforts to revive those suffering sudden cardiac arrest. "Would-be AED users perceive a heightened legal risk flowing from the acquisition, deployment and use of the device. The current state of negligence law appears to support this perception."

Interestingly, a new legal trend is in the making. In 1996, Busch Gardens was found negligent in a case for not providing an adequate emergency response plan, including a lack of access to the use of defibrillators. Lawyers for the plaintiff argued that Busch Gardens had trained nurses and paramedics at site at all times who ought to have been provided the technology to resuscitate heart attack victims. In addition, a federal judge found Lufthansa Airlines negligent for failing to provide timely treatment for a patient suffering a cardiac arrest. This points out the concept of breach of duty, in which an individual or body was deemed to have an obligation to perform a duty, in this case, defibrillation.14

**Federal Legislative Actions Pursued**

AHA federal legislative actions on the AED issue began in earnest in late 1994 with the commencement of discussions with US Representative Gerry Studds (D-MA) and his staff, which eventually led to development of a comprehensive bill addressing the links in the chain of survival. In early 1996, the Cardiac Arrest Survival Act was formally introduced in the House of Representatives on March 6, 1996.

On Representative Studds' retirement at the end of 1996, the AHA, the American Red Cross, and its coalition partners began a process of redrafting the Cardiac Arrest Survival Act and securing a new sponsor for the legislation. On May 20, 1997, Representative Cliff Stearns (R-FL) introduced a retooled version of the Cardiac Arrest Survival Act. By February 1998, the legislation had been cosponsored by a bipartisan group of 80 members of the House of Representatives.

The legislation would establish a federal program regarding training in life-saving interventions and the use of life-saving equipment, including AEDs, to assist individuals experiencing cardiac arrest. Specifically, the legislation calls for (1) the National Heart, Lung, and Blood Institute, in cooperation with the National Highway Traffic Safety Administration, to develop and disseminate a model state training program for first responders and bystanders in life-saving interventions, including CPR; (2) the development of model state legislation to ensure access to emergency medical services, including consideration of the necessary location and placement of life-saving equipment, including AEDs; the development of requirements for training in the core content and use of life-saving equipment, including AEDs; and the provision of good Samaritan immunity for bystanders, first responders, instructors, and owners and managers of property where equipment is placed; and (3) the development of a national database for reporting and collecting information relating to the incidence of cardiac arrest and whether interventions, including bystander or first responder interventions, improve the rate of survival.

Highlights of the legislation that broadens the model federal EMS program include (1) clinical evaluation of the results of proposed interventions to ensure timely and appropriate changes in the curriculum and (2) development of a uniform national standard on the appropriate use of lifesaving equipment for first responders, bystanders, and other persons who may volunteer to resuscitate patients but are not trained paramedics or EMTs.

The legislation is supported by more than two dozen national organizations, including the AHA, American Red Cross, American Academy of Pediatrics, American College of Emergency Physicians, International Association of Fire Chiefs, and National Association of State EMS Directors.

Also, federal legislation was introduced by Representative Barbara Kennelly (D-CT) that would require the inclusion of AEDs as part of the on-board medical kits used by commercial US flights. In July 1997, American Airlines followed through on a November 1996 announcement to equip all of their over-water flights with AEDs. Approximately 300 AEDs will be carried on international flights and some domestic over-water routes. All American Airlines in-flight personnel will now be trained to use AEDs.

Finally, the Fiscal Year 1998 US Department of Transportation Appropriations bill committee report includes language stating that the use of AEDs by emergency responders can significantly improve cardiac arrest survival rates. To ensure that training standards for use of AEDs are not unnecessarily burdensome and are consistent with now easy-to-use AED technology, the Committee encourages the Secretary to work with state departments of transportation and other appropriate state agencies to review their defibrillator training requirement and to modify these requirements where appropriate.
Conclusions
We expect further progress on federal and state levels to remove barriers to the chain of survival. Expanded use of AEDs is essential to ensure the success of these efforts.

References

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