AUTOMATED EXTERNAL DEFIBRILLATORS IN THE WORKPLACE

There are more than 356,000 out-of-hospital cardiac arrests annually in the United States, with roughly 10,000 occurring in the workplace (American Heart Association, 2020). Sudden cardiac arrest (SCA) can strike anyone at any time and without warning and waiting for the arrival of emergency medical system personnel results in only five to seven percent survival, according to the AHA. Remarkably, studies with immediate defibrillation have shown up to a 90% chance of surviving the attack (2020).

This bulletin discusses the critical need for AEDs in the workplace and offers guidance on the placement and use of these life-saving devices.

"NEARLY 50% OF ALL U.S. WORKERS CANNOT LOCATE AN AED AT WORK"

Minutes Matter

For a victim of SCA, waiting for treatment by emergency medical response drastically reduces the odds of survival. According to the AHA, emergency response has, on average, a seven-minute response time from dispatch to arrival at the scene of a SCA, but defibrillation is critical within the first five minutes of the attack. The AHA reports that 30% - 50% of SCA victims would survive if AEDs were used within those first five minutes.

What is an AED?

An automated external defibrillator is a computerized medical device that can check a person's cardiac rhythm and advise when shock is necessary. AEDs use voice prompts and lights to tell the rescuer the steps to take. If it detects an irregular heart beat (arrhythmia) the AED delivers an electric shock through the chest to the heart. The shock can potentially stop an abnormal heart rhythm and allow a normal rhythm to resume following sudden cardiac arrest.

AEDs in the Workplace

OSHA identifies SCA as the number one killer in the workplace. By its very nature, SCA is completely unpredictable and can attack anyone at any time. Alarmingly, nearly half of all U.S. workers can locate an AED at work. Further research from the AHA found that 55% of workers can't get first aid or CPR and AED training from their employer. If training is offered, it's often either CPR or first aid, not both.

Improving Survival from SCA

Once SCA attacks, the chance of survival decreases by seven to ten percent for each minute that passes without defibrillation. A strong "Chain-of-Survival" model can improve chances of survival from and recovery for victims of sudden cardiac arrest. The AHA lists six steps that must take place in rapid succession to maximize the chances

of survival from sudden cardiac arrest.

- Recognition of cardiac arrest and activation of the emergency response system
- Early cardiopulmonary resuscitation (CPR) with an emphasis on chest compressions
- Rapid defibrillation
- Advanced resuscitation by Emergency Medical Services and other healthcare providers
- Post-cardiac arrest care
- Recovery (including additional treatment, observation, rehabilitation, and psychological support)

Prompt treatment with cardiopulmonary resuscitation (CPR) and/or use of an AED, and calling 9-1-1 for emergency medical services can significantly improve the odds of survival.

Bystander Intervention

Increased survival rates are the main reason that hundreds of thousands of AEDs have already been deployed throughout U.S. workplaces and public places. About 1,700 lives are saved in the United States each year by bystanders using an AED. A study of nearly 50,000 out-of-hospital cardiac events published by the AHA found that those suffering from cardiac arrest in a public setting were twice as likely to survive if an AED was utilized before emergency help arrived. Senior study author

Myron Weisfeldt, M.D further stated, "Tragically, the survival rate for SCA is less than 5% due to limited AED accessibility."

Emergency Use of AEDs

The Cardiac Arrest Survival Act of 2000 was issued by Congress to establish limited protections from civil liability arising from the emergency use of AEDs. Good Samaritan laws have also been enacted across America. These laws vary from state to state, but generally encourage bystanders and the lay public to perform CPR and to use an AED by protecting them from liability.

Placement of AEDs

As recommended by the American Red Cross and American Heart Association, place AEDs so that individuals can get to the device and return to a victim within three to five minutes. This is known as the "collapse-to-shock" cycle.

OSHA suggests that AEDs are placed in locations where:

- Many people work closely together, such as assembly lines and office buildings
- People gather, such as company fitness centers and lunch rooms
- Lightning strikes could take place, such as outdoor exercise areas or worksites

How Many AEDs Are Needed?

To estimate the number of AEDs needed, consider:

- How many locations there are
- The number of buildings and/or work sites per location
- The number of floors per building

- The "three-minute response" rule from collapse-to-shock - Are there more AEDs needed per floor or work site to meet this response time?

AED Training

AED training is an important resource in emergencies. Training courses usually last about three to four hours to allow adequate time for hands-on practice and to help increase user competency and confidence. AED training and related resources are offered through the American Heart Association, the American Red Cross, the National Safety Council and others. AED manufacturers and vendors also offer training resources.

AED training curricula vary, but generally emphasize:

- A working knowledge of CPR
- Safety for both victims and rescuers
- Proper placement of electrodes
- Delivering the first shock as quickly as possible, ideally within 60 seconds from time of arrival at the victim's side
- Plenty of hands-on practice, with one instructor and one AED or AED trainer for every four to six students

SUMMARY

SCA is the reason for 15% of all workplace fatalities (OSHA). Onsite placement of AEDs makes it possible for more people to help a co-worker suffering from sudden cardiac arrest while emergency medical response is in route. AEDs can significantly improve survival odds. They are compact, lightweight, portable, safe, and easy to use by nonmedical people (lay-rescuers) and made part of emergency response programs that also include rapid use of 9-1-1 and prompt delivery of CPR. All three of these activities are vital to improving survival from SCA.

ADDITIONAL INFORMATION

American Heart Association | Heartsaver CPR AED Training | www.cpr.heart.org

American Red Cross | CPR/AED Training | www.redcross.org

National Safety Council | First Aid, CPR and AED Courses | www.nsc.org

REFERENCES

- American Heart Association. (2020). Heart Disease and Stroke Statistics—2020 Update. Circulation, 141(9) 139–596. https://www.ahajournals.org/doi/10.1161/CIR.0000000000000757
- Occupational Safety and Health Administration. (2021). Automated External Defibrillators (AEDs). Retrieved from https://www.osha.gov/ae