Increasing the Availability of Automated External Defibrillators at Sporting Events: A Call to Action from the American College of Sports Medicine

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Abstract

Given that most sudden cardiac arrests (SCAs) occur outside of a medical facility, often in association with exercise and sporting events, and given that early cardiopulmonary resuscitation (CPR) plus defibrillation is the strongest predictor of survival from SCA, this Call to Action from the American College of Sports Medicine recommends increasing the availability and effectiveness of early CPR plus defibrillation so that the time from collapse-to-first automated external defibrillator shock is less than 3 min.

Introduction and Rationale

Cardiovascular conditions cause 75% of deaths that occur during sports. One of 70 high schools has a sudden cardiac arrest (SCA) event on campus yearly. Half of these SCAs occur in students or student athletes; half occur in staff, spectators, coaches, officials, visitors; most SCAs (66%) occur at athletic facilities (1). The chance of survival increases 50% if bystander cardiopulmonary resuscitation (CPR) is provided and if defibrillation occurs within 3 to 5 min of collapse. Survival from out-of-hospital SCA is improved if lay responders are both trained and equipped with an automated external defibrillator (AED) compared with CPR alone (2). Furthermore, compared with schools without an emergency action plan (EAP), survival rates are 35% greater in schools with an established EAP for SCA (79% vs 44%; odds ratio [OR], 4.6) (1). Survival also is 30% greater if lay responders perform early defibrillation using an onsite AED than if defibrillation is delayed and performed by emergency medical personnel using an offsite AED (80% vs 50%; OR, 4.0) (1). A 2007 task force recommended that all National Collegiate Athletic Association schools have an EAP, including training in CPR and available AEDs, but these recommendations have not been widely adopted throughout the U.S. educational system, especially at the high school and lower levels. This Call to Action recommends increasing the availability and effectiveness of CPR training and AEDs so that the time from collapse-to-first AED shock is less than 3 min.

Environment and Setting

Youth Sport Competition

Medical support of youth sports is highly variable. Elite clubs and teams often have health care providers, such as athletic trainers, first responders, or emergency medical technicians available, whereas lower competitive levels, such as recreational leagues, typically do not (1). In such cases, individuals who may not have medical training, such as parents, coaches, administrators, and staff, by default provide initial medical care. Regardless, AEDs should be present and easily accessible at all youth sporting events.

Adult Sport Competition

Organized adult sporting events, including those at the collegiate and professional levels, involve thousands of men and women annually. SCAs at these events do occur but are not common. A comprehensive EAP includes personnel trained in basic CPR, a readily available AED, personnel trained in its use, and on-site emergency medical services with a transport ambulance. At a minimum, when resources do not permit on-site emergency and transport services, event planning must ensure unobstructed entry and exit paths for responding emergency medical providers.

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Formal Sport Practices

Practice time far exceeds competition time for most athletes. Accordingly, EAP established for competitive events also should be in place for practices. At least one person trained in bystander CPR and AED use should be present for the duration of formal practices, and an AED should be present or rapidly accessible.

Mass Participation Events

Organized mass participation events, including long distance road races, triathlons, and walking/cycling fundraisers, attract large numbers of recreational and competitive athletes. These events often include older participants with known or occult atherosclerotic heart disease. Sudden cardiac arrest in these venues is rare but universally fatal without prompt bystander CPR and early defibrillation. Accordingly, mass participation events should ensure that AEDs are available. The optimal number and location of AEDs should be determined with the goal of providing defibrillation in less than 3 minutes. Since these are the sites of most SCAs, events should prioritize AED placement near both the start and finish lines (3) but also should consider on-course AED placement and the ability to transport an AED to a collapsed participant rapidly.

Legal Issues

All 50 states have AED laws addressing the attributes of a public access defibrillation (PAD) program (4). Like Good Samaritan laws, these AED laws provide immunity provisions from civil liability. For example, they protect *volunteers* who acquire and use AEDs in public places, such as airports, from ordinary negligence (careless conduct causing further harm to the victim) but not from gross negligence or reckless conduct. In recent years, several states have enacted statutes that *require* the placement of AEDs in fitness and sport facilities and at school athletic events (5). These statutes provide definitions, requirements, and certain immunity provisions. Failing to follow statutory requirements can be the basis for legal claims of negligence and wrongful death. However, such legal claims also can occur for failing to acquire and use an AED even when a specific state statute does not exist. In these cases, the victim or victim's family will likely claim that the defendants (*e.g.*, facility management or event sponsor) failed to meet a certain standard of care. Courts determine the standard of care but often consider standards, guidelines, and/or position articles published by professional organizations to help establish the standard of care. To help ensure a proper AED protocol is developed and implemented, facility/event personnel should consult with a knowledgeable lawyer, who can research current, applicable AED state statutes; a health care provider with expertise in emergency medicine; and follow AED standards, guidelines, and position articles published by professional organizations to help ensure that a proper AED protocol is developed and implemented.

The Call to Action

Given that most SCAs occur outside of a medical facility (6), often in association with exercise and sporting events, and given that early CPR plus defibrillation is the strongest predictor of survival from SCA (6) this Call to Action recommends increasing the availability and effectiveness of early CPR plus defibrillation so that the time from collapse-to-first AED shock is less than 3 min (6). Specifically, this Call to Action recommends the following:

1. AEDs should be present in all educational facilities from grade school through college. The AED's location should be clearly marked and easily located, and the AED should be regularly maintained in concert with the scheduled maintenance of other safety equipment, such as of smoke detectors and fire extinguishers. Schools also should have an EAP to manage SCAs. All school sports-related staff, coaches, assistants, trainers, and the athletes themselves should be trained in the early recognition of SCA; and the importance of early activation of the EAP, basic CPR, and the use of AEDs.
2. AEDs should be present at all athletic events, including those not associated with educational programs. Organizers of sporting events should have an EAP to manage SCAs, including the presence of trained staff, who can recognize SCA, initiate the emergency plan, and provide prompt CPR and defibrillation.

Guidance in developing an emergency action plan for SCA at sporting events and elsewhere is available at: www.anyonecansavealife.org

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