

# Guidelines for Trainers: Be Prepared for SCA

BY MELINDA TANZOLA  
Contributing Writer

ATLANTA — Automated external defibrillators can be a lifesaver in sudden cardiac arrest, the No. 1 cause of death in young athletes, but planning, preparation, and education are essential.

"The single most important determinant of survival is the time from cardiac arrest to defibrillation," Dr. Jonathan A. Drezner said at a press briefing held during a meeting of the National Athletic Trainers' Association.

Without CPR, survival decreases by 10% with every minute that passes without defibrillation, said Dr. Drezner of the University of Washington in Seattle.

Between 40% and 70% of people with sudden cardiac arrest (SCA) survive if treated with CPR and an automated external defibrillator (AED). In contrast, survival rates after SCA in young athletes are much lower, around 10%-15%. Possible explanations for this discrepancy include a delayed recognition of SCA and de-



John Moyer of Shawnee on the Delaware, Pa., shown here with a training AED, works with an organization whose goal is to get schools equipped with AEDs. The picture is of his son Gregory, who died of a heart attack during a basketball game.

layed defibrillation; only 25%-50% of schools have an AED.

To improve these outcomes, an interassociation task force, cochaired by Dr. Drezner and Ron Courson, director of sports medicine at the University of Georgia, Athens, has developed formal guidelines to help schools and other organizations prepare for SCA and to manage it should it occur.

The guidelines suggest that all collapsed and unresponsive athletes should be treated as if they have SCA until they demonstrate otherwise. The collapsed person should receive CPR until the AED arrives, though this wait should be as short as possible. The first shock from an AED should be applied within 3-5 minutes of the collapse.

This rapid response requires that the AED is easily accessible from every venue; that individuals know where it is and can retrieve it quickly; and that someone is trained in using the device.

"Our recommendation, consistent with the American Heart Association, supports an AED program in any school where the time from activating the emergency response system to the delivery of a shock will be greater than 5 minutes," Dr. Drezner said.

All schools and institutions that sponsor athletic activities should have a written, structured emergency action plan specific to each venue, the guidelines state. Components of the plan should include communication, personnel, equipment, and transportation to an emergency facility. Additionally, all first responders should be trained in AED and CPR.

It is important that EMS personnel, school officials, and first responders are involved in the development of the plan, and that, just as with fire drills, these procedures are practiced by the individuals who would be in-

involved in an actual incident.

The first responder should resume chest compressions immediately after the first shock. The guidelines recommend repeat rhythm analysis after 2 minutes or five cycles of CPR until advanced life support arrives or until the person begins moving.

SCA is relatively uncommon in the United States, with incidence rates between 1:50,000 and 1:200,000. However, when a child dies from SCA the impact can be catastrophic, affecting not only the child's family, but the entire school and community.

Complete prevention is difficult because in many cases, occult heart disease goes undetected with no signs or symptoms until the SCA occurs. Preparticipation screening is not likely to detect hypertrophic cardiomyopathy, the abnormality usually associated with SCA.

Moreover, SCA also can occur after a blow to the chest above the heart (commotio cordis). Although proper equipment can minimize the chance of this developing, a small risk remains. ■

## Athlete Resuscitation Not Uncommon

BY BRUCE JANCIN  
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ATLANTA — The resuscitation rate in athletes who experience sudden cardiac arrest as a result of ventricular fibrillation during sports events may be much better than widely assumed, Dr. Christine E. Lawless said at the annual meeting of the American College of Cardiology.

Sudden cardiac death in athletes on the playing field is a rare event, with an estimated 150-200 cases per year in the United States. As a result, there are almost no data on resuscitation success rates.

The belief among many physicians is that the resuscitation rate is low because of the severity of the underlying heart disease coupled with the intense catecholamine release during exercise, which is thought to raise the defibrillation threshold. But this assumption was contradicted by the personal experiences of physician members of the American Medical Society for Sports Medicine (AMSSM) in a survey, said Dr. Lawless, director of cardiac prevention, rehabilitation, and sports cardiology at Ohio State University, Columbus.

She received responses from 44% of the 1,069 AMSSM members to whom she mailed her survey on the use of external defibrillators to resuscitate athletes. Fifteen physicians described a total of 22 cases.

The overall resuscitation rate with survival to hospital discharge was 14 of 22 (64%). "That's comparable to what we see with AED [automated external defibrillator] studies in the general population," she noted.

The resuscitation rate was 71% in the 14 athletes who were older than 30 years, but only 50% in those aged 30 years or younger. The underlying cause of the cardiac arrest episodes differed by age, too. In patients up to

the AED turned out to be locked in a training room located under the stadium. "One of the things I advocate is that if there's an AED in the school, someone should routinely take it out of the training room and bring it over to the site of the practice," Dr. Lawless said, adding that an AED should be on the sidelines at every high-risk athletic event at all levels, including junior high school.

High-risk activities include basketball, football, running sports, and sports in which commotio cordis is a risk, such as baseball and lacrosse.

Session moderator Dr. Douglas P. Zipes noted that selection bias is always an issue in a survey. He was aware of a small unpublished study that concluded—contrary to Dr. Lawless's findings—that the resuscitation rate in athletes is very low.

He added that he found her survey's finding that older athletes had a higher resuscitation rate to be both interesting and counterintuitive.

"I would have armchaired the reverse: that younger patients have healthier hearts and would be more easily resuscitable, but not so," observed Dr. Zipes, director of the Krannert Institute of Cardiology at Indiana University, Indianapolis.

Dr. Lawless replied that her finding echoes the experience of medical directors of the big marathons. "They tell me they bring back about 70% of older athletes [with cardiac arrest] and have much more trouble with the younger ones," she said. ■



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DR. LAWLESS

age 30 years, the leading cause was cardiomyopathy, accounting for 38% of cases; in older athletes, coronary artery disease was identified as the cause in 57% of cases, with the remainder being of unknown cause.

AEDs were used in 12 cases, and manual external defibrillators (MEDs) were used in 8 cases. One patient responded to a precordial thump, and one was treated first—unsuccessfully—with an AED followed by the application of a MED, which was successful.

A recurring theme among survey respondents was frustration that when an athlete suddenly collapsed,

## Statins May Also Have Antiarrhythmic Effects

BOSTON — Statin therapy significantly reduces the risk of sudden cardiac death independent of its effect on cholesterol, according to a metaanalysis of 12 studies.

"This is not a surprise because statins have a variety of effects, and it is these effects both within the heart and outside the heart that we think explain this finding," said Dr. Derek Exner of the University of Calgary (Alta).

Multiple randomized trials have shown that statin therapy significantly reduces mortality in patients with ischemic heart disease, he said in an interview. However, their impact specifically on sudden cardiac death (SCD) has been unclear, although there is growing evidence that they have antiarrhythmic effects in addition to possible effects on platelet function and vascular tone.

His study, presented as a poster at the annual meeting of the Heart Rhythm Society, included 41,167 patients in 12 long-term, randomized, placebo-controlled trials of statin therapy for either primary or secondary prevention of coronary artery disease. During the mean follow-up of 3 years, 20% of the deaths (912) were categorized as SCDs—425 in the statin groups and 487 in the placebo groups. Deaths by all causes were observed in 2,243 and 2,708 of the statin and placebo groups, respectively.

By using a random effects model, Dr. Exner calculated that statin therapy reduced the odds of death by 22% and the odds of SCD by 14%, independent of changes in LDL and HDL cholesterol levels. The reduction in the odds of SCD did not differ by sex or by diabetes status. However, the magnitude of benefit was greater in secondary prevention, with an odds reduction of 18%, compared with 5% in primary prevention.

"This is a fairly large sample size of over 40,000 patients," Dr. Exner said. "It's the best we can do with the data, and we can feel pretty confident in the results. It suggests that the SCD protection is not explained, at least in a large part, by the change in cholesterol. Could it be partly related? It could be, but not statistically."

—Kate Johnson