Sudden Cardiac Arrest and AEDs

What is sudden cardiac arrest (SCA)?

While very tragic and incomprehensible, SCA (sudden cardiac arrest) in young athletes is considered rare. However, when it happens to one of our young athletes, shock waves and unimaginable grief reverberate throughout the local and national community. Over and over again the question is asked, “How could this have been prevented?”

How many athletes are impacted by SCA?

Although it is the leading cause of death in young athletes, the exact incidence of SCA is unknown. Estimates in the U.S. range from 1:160,000 to 1:300,000 competitive athlete deaths per year, due to cardiovascular disease. (Maron, BJ, Doerer, JJ, Haas TS et al.)

What causes SCA?

Sudden death in young athletes is most often due to a congenital abnormality such as hypertrophic cardiomyopathy (enlargement and thickening of heart muscles). The enlarged muscular wall of the heart interferes with or prevents blood from flowing out of the heart when it is beating fast during exercise. Very few patients exhibit symptoms in advance. Sometimes the first symptoms may be a very dangerous heart rhythm (ventricular fibrillation) that occurs during physical exertion. Some other causes of SCA include Marfan Syndrome and electrophysiological abnormalities such as long QT syndrome and Wolff-Parkinsons-White syndrome.

What do you do when someone goes into SCA?

The treatment of sudden cardiac arrest is electrical shock delivered by an AED (automatic external defibrillator) within four to six minutes of the event. AEDs are frequently available in public settings and are very easy to use.

Does CSW have any automatic external defibrillators (AEDs) in the building?

CSW has 3 AEDs on school property. An AED is located outside of the Cab Calloway and CSW main offices and one is located outside of the cafeteria. Our own CSW athletic trainer carries a portable AED with him at all games and the trainers at away games carry AEDs as well. Training of all CSW coaches in CPR and AED use is mandatory.

Do the DIAA physicals that are required yearly show students at risk for SCA?

DIAA (Delaware Interscholastic Athletic Association) requires that every athlete undergo a sports physical and history every year. The pre-participation history form asks several questions related to cardiac and respiratory health. The health care provider may send the athlete for further testing such as an ECG or echocardiogram if a problem is identified from the history or physical exam.
Should high school physicals include ECGs (electrocardiograms) for all athletes?

There is much debate taking place now concerning the cardiovascular screening and prevention of SCA in young athletes and how best to proceed. Some medical researchers feel the incidence of SCA from cardiovascular disease is underestimated, necessitating further screening. The debate revolves around the inclusion (or not) of a resting 12-lead ECG (electrocardiogram) in conjunction with the physical examination and health history.

Many have looked at the protocols in Italy where all student athletes are required by law to have ECG screenings before athletic participation. This program, which has been in place since 1982, shows a decrease of the incidence of sudden deaths among athletes by 89%. There is no such program in the United States due to controversy over cost effectiveness and questions about the diagnosis accuracy of ECG resulting in false-positives. At this time, professional athletes are the only ones who are required to have an ECG.

Lately, the sports community seems to be taking a closer look at the efficacy of adding the ECG to the sports physical screening process. A recent study published in the *Annals of Internal Medicine* by cardiologists at Stanford University School of Medicine, challenged the conventional wisdom concerning sports screening. The study specifically addressed cost-effectiveness of the ECG for student athletes. The results of their studies showed that using the ECG to screen for sudden death is reasonable in cost and effective at saving lives. (Maron, BJ, Wheeler, MT, et al).

The good news is that the debate and research surrounding this tragic occurrence is moving to the forefront of discussions by professionals who deal with these young athletes. The goal of sports medicine professionals and sports governing bodies is to study and implement the best preventive methods for the occurrence of sudden cardiac death and the treatment of those individuals.

In the meantime, parents should continue to get yearly sports physical for their student athletes and report any family history of cardiac disease to their health care provider.

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Resources: