Sudden Cardiac Death & Arrest in Athletics

What Causes SCA/SCD in Athletes?

Sudden cardiac arrest (SCA) is the leading cause of death in young athletes. Despite pre-participation screening, healthy-appearing competitive athletes may harbor unsuspected cardiovascular diseases with the potential to cause sudden death. The underlying cardiac anomaly in young athletes with sudden cardiac death (SCD) is usually a structural cardiac abnormality. Some possible structural abnormalities include:

- Hypertrophic cardiomyopathy
- Coronary artery anomalies
- Myocarditis
- Arrhythmogenic right ventricular dysplasia
- Marfan syndrome
- Valvular heart disease
- Dialated cardiomyopathy
- Atherosclerotic coronary artery disease

Another cause of SCD in athletes is commotio cordis, which is caused by a blunt, nonpenetrating blow the the chest that induces a ventricular arrhythmia in an otherwise normal heart.

In 50-80 percent of cases, the athlete is asymptomatic until the cardiac arrest occurs.

AED's and EAP's

Approximately 40 % of cardiac arrest victims exhibit ventricular fibrillation on first rhythm analysis. The probability of successful defibrillation for VF SCA diminishes rapidly over time. Survival rates decline 7-10 percent per minute for every minute that defibrillation is delayed. Survival after SCA is unlikely once VF has deteriorated to asystole. It is extremely important therefore to ensure that early defibrillation is possible. At Lower Moreland, Automatic External Defibrillators (AED's) can be accessed and applied to victims within minutes of SCA, thus giving the victims the greatest possible chance of survival.

Adherence to the school's Emergency Action Plan (EAP) is key to providing adequate emergency care for victims of injury and illness. The EAP establishes an efficient communication system between coaches, the athletic trainer, athletic administrators, and other emergency medical personnel. The EAP delineates responsibilities of each party pertaining to emergency situations and establishes a chain of command. The EAP also outlines what emergency equipment is available and how that equipment is to be acquired, including where and how EMS will have access to the school venues.

By utilizing AED's and EAP's it is feasible that the time from arrest to first shock via AED would be no more than 3-5 minutes, which would greatly increase the likelihood of a positive outcome.