

## **Life Threatening Events Associated with Pediatric Patients in Sports**

### **Incidence of Sudden Death**

The incidence of sudden cardiac death in young athletes aged 12-25 years is 0.5-2/100,000 per year and is approximately 2.5 times higher than in non-athletes. There are 504,072 students in Orange County public schools and 58,008 students in Orange County private schools. Within the last year, there have been three deaths of high school athletes in Orange County reported by the media.

### **Causes of Sudden Death**

The most common single cause of sudden death is hypertrophic cardiomyopathy, a genetic disease involving the thickening of the ventricular septum and/or other segments of the left ventricle. Other common cardiac causes include arrhythmogenic right ventricular dysplasia, Commotio Cordis and coronary artery abnormalities. Asthma and dehydration are important non-cardiac risk factors for sudden death.

### **Recommendations (Five total):**

The diagnoses listed above and the varying success rates of resuscitation of these diagnoses demand a multi-tiered strategy that entails screening, resuscitation, and post event analysis.

#### ***Screening Strategies: Universal Physical and History Form and ECG***

Pre-participation screening in the United States currently consists of only of a history and physical examination. A recently released report from Italy concludes that a program with ECG screening leads to a substantial reduction of mortality in young competitive athletes by approximately 90%. Implementation of a screening program which includes an **electrocardiogram** is being recommended. In addition, we recommend a validated **history and physical form** to be adopted for all the schools in the county and that this be in an electronic storage format.

#### ***Resuscitation Strategies: CPR Training and AED***

Public school teachers and students represent a potentially effective first-response component during disasters and isolated emergencies in the school environment. There is evidence that interactive computer based self instruction alone may be sufficient to teach CPR and AED knowledge and AED actions to high school students. Implementation of a program which includes **CPR training** for all high school students and teachers is being recommended. In addition, On any given day, as much as 20% of the combined US adult and child population can be found in schools. Trained laypersons can use automated external defibrillators (AEDs) safely and effectively. Recent studies have demonstrated that a pediatric-based AED can detect shockable rhythms correctly, making it safe and exceptionally effective for children. Implementation of an **automated external defibrillator** program in all schools is being recommended.

#### ***Post Event Strategies: Incident Review Team***

To better understand the incidence of life threatening events in athletes in Orange County schools, a core incident review team consisting of a nurse, a psychologist, and a pediatrician has been proposed.

Sincerely Submitted,

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on behalf of the Scientific Committee.