



## ELECTROCARDIOGRAMS FOR EARLY DETECTION OF CONDITIONS THAT CAN LEAD TO SCA IN YOUTH

### What is Sudden Cardiac Arrest (SCA)?

- SCA is the condition in which the electrical system to the heart malfunctions, resulting in a disruption of the heart's normal rhythm and the loss of its ability to deliver blood to the body. If untreated, this abrupt disruption results in sudden death.

### What is an electrocardiogram (ECG)?

- An ECG is a simple, painless, non-invasive baseline test that measures the electrical activity of the heart.

### Research Demonstrates Why ECGs are an Important Step in Detecting Risk for SCA:

#### Importance of ECGs in Early Detection:

- Early recognition of risk is important for all age ranges of the population because of estimates that 30% to 50% of all SCDs are first clinical events and up to 67% occur either as first events or among those with identified disease who are profiled to be at low risk.<sup>2</sup>
- It is likely that the "fatal first event" probability is even higher for SCDs in the younger age groups.<sup>1</sup>

#### Effectiveness of ECGs in Early Detection:

- Nonetheless, studies of the causes of sudden death in athletes and their relative frequencies suggest that at least 70% of those individuals at risk because of preexisting disorders (and up to 90% for certain conditions) can be identified or suspected by findings on a screening ECG.<sup>1</sup>

#### Cost of ECG Screenings:

- It is likely that mass screening strategies can be negotiated at rates considerably lower... because the cost of ECGs done on a large scale is much less than the current cost of an ECG in an office or hospital setting. A negotiated cost of a screening ECG done on a large scale might be as low as \$10 per ECG.<sup>1</sup>
- In the screening study of Nevada high school athletes, ECG screening was estimated to be more cost-effective than history and physical examination alone.<sup>3</sup>





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## CONT. ELECTROCARDIOGRAMS FOR EARLY DETECTION OF OF CONDITIONS THAT CAN LEAD TO SCA IN YOUTH

### ECGs and False Positives:

- Between 5% and 10% of those screened would be referred for further testing. This should not be considered unnecessary testing any more than referring a child to a pediatric cardiologist for a murmur that is found to be innocent or an adult to a cardiologist for chest pain that is found to be secondary to gastro esophageal reflux is “unnecessary.” The referral of a young person for further evaluation will find those who are at risk for SCA.<sup>1</sup>

### **In addition to ECG screenings, it is critical to:**

Know the Warning Signs and Symptoms including fainting (syncope) or seizure during or after physical activity, or from emotional excitement, emotional distress or startle; chest pain or discomfort/racing heartbeat; unusual shortness of breath, fatigue/tiredness; dizziness/lightheadedness during or after physical activity.

Know Your Family History of unexpected sudden death during physical activity or during a seizure, or any other unexplained sudden death of an otherwise healthy family member under age 50.

Utilize the American Academy of Pediatrics Pre-participation Physical Evaluation Form and the Pediatric Sudden Cardiac Death Assessment Form

1. Myerburg RJ, Vetter VL. Electrocardiograms Should Be Included in Preparticipation Screening of Athletes. American Heart Association *Circulation* 2007;116:2616-2626.
2. Myerburg RJ. Sudden cardiac death: Exploring the Limits of Our Knowledge. *Journal of Cardiovascular Electrophysiology*; 2001;12:369-381.
3. Pelliccia A, Culasso F, Di Paolo FM, Accettura D, Cantore R, Castagna W, et al. Prevalence of abnormal electrocardiograms in a large, unselected population undergoing pre-participation cardiovascular screening. *European Heart Journal* 2007; 28:2006 2010. [PMID:17623682]

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