Preparticipation Sports Evaluation: What’s New?

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Goal and Objectives

• Review the newest topics for the preparticipation sports evaluation
  - The learner will be able to discuss cardiac screening and prevention of sudden cardiac death
  - The learner will be able to make a decision about baseline testing for concussion management
Primary Goals of the Preparticipation Evaluation

• To detect
  – Medical conditions that present a risk of injury, disease or death to an athlete/opponent
  – Previously undiagnosed or misdiagnosed medical conditions
  – Medical conditions that need further evaluation or rehabilitation prior to participation

• To provide guidance for sports participation for patients with medical conditions

• Meet legal and insurance obligations

PSE-Rules in Texas

• Timing of exam
  – 7th, 9th, 11th grade needs full evaluation
  – 8th, 10th, 12th need medical form only
  – Full evaluation if
    • Illness or injury since last PSE
    • Hospitalization in the past year
    • Any neuro injury
    • Single paired organ
    • “Under a doctor’s care”
Causes of Death in the US Population Aged 1 to 21 Years

Causes of Death in National Collegiate Athletic Association Athletes
Cardiovascular Questions

• Have you ever passed out during or after exercise?

• Have you ever had chest pain during or after exercise?

• Have you ever had racing of your heart or skipped heartbeats?

• Do you tire more quickly than your friends during exercise?

Cardiovascular Questions

• Have you ever had high blood pressure or cholesterol?

• Have you been ever told that you have a heart murmur?

• Has anyone in your family died of heart problems or sudden death before the after of 50?

• Have you every been restricted or disqualified from participation for a heart problem?

• Have you ever been dizzy during or after exercise?
Sudden Death in Young Competitive Athletes

• 1980-2011: 842 young athletes (<35 years) died of sudden cardiac death (28/year)
• 88% male
  - Median age 17
  - Most frequently in basketball and football (54%)
  - With respect to incidence, the mortality rate in African Americans and other minorities exceeded that in whites by 3.2-fold
• Signs and symptoms are infrequent
  - 9% immediately before
  - 18% during the preceding 36 months

Barry J. Maron et al., Demographics and Epidemiology of Sudden Deaths in Young Competitive Athletes: From the United States National Registry. The American Journal of Medicine, 2016.
Causes of Sudden Cardiac Death in Athletes <35

- Hypertrophic Cardiomyopathy (36%)
- Indeterminate LVH (9%)
- ARVC (5%)
- Coronary Artery Anomalies (5%)
- Ruptured Aortic Aneurysm (5%)
- Atherosclerotic CAD (5%)
- Aortic Stenosis (5%)
- Myocarditis (3%)
- Other (DCM, WPW, LQTS, MVP, CAD, LVH) (3%)

Non-Cardiovascular
- White Males: 30%
- Minority Males: 7%
- White Females: 1%
- Minority Females: 3%

Confirmed Cardiovascular
- White Males: 43%
- Minority Males: 8%
- White Females: 3%
- Minority Females: 3%

Hypertrophic Cardiomyopathy
- White Males: 53%
- Minority Males: 2%
- White Females: 2%
- Minority Females: 1%

6/23/16
Texas House Bill 767- 2015

- Every high school athlete would need to receive the cardiac assessment before their first and third years to be eligible to practice or play
- Approved by the Texas House of Representatives, not Senate’s Education Committee
- Cody Stephens Go Big Or Go Home Foundation in his memory and have raised about $500,000
- Texas already has an insufficient number of ECG machines and pediatric cardiologists to interpret ECG

American Medical Society for Sports Medicine – 2016

- The absence of clear outcomes-based research at this time precludes AMSSM from endorsing a single or universal cardiovascular screening strategy for all athletes
- AMSSM supports individual physician autonomy to assess the current evidence and implement the most appropriate cardiovascular screening strategy unique to their athlete population and community resources
Cardiovascular Screening Strategy

• Considerations
  - Targeted athlete population should include the risk of SCA/D
  - Available infrastructure and cardiology resources
  - Screening for early detection of cardiac disorders has a favorable risk-benefit ratio that will improve athlete outcomes with limited harm

• Optimize strategies to assure accurate ECG interpretation and adequate cardiology resources to conduct the secondary evaluation of ECG abnormalities

Neurology

• Have you ever had a head injury (confused or lost your memory) or concussion?

• Have you ever been knocked unconscious?

• Have you ever hurt your neck or spinal cord or had a pinched nerve?

• Have you ever had tingling or weakness in your hands, feet, legs or arms?

• Have you ever had a seizure?

• Do you have frequent or severe headaches?
Concussions

“I went to a boxing match and a hockey game broke out”

Should Neuropsychological Evaluation be Part of the PSE?

• Will a baseline evaluation help in the evaluation of concussions if they happen?

• Who and where should this be done?

• What is the best neuropsychological test?
• Some data that age and gender normative data is valid comparison for post injury testing

• Testing should be performed in the individual, not group setting
  – Group scores were significantly lower for verbal memory, visual memory, processing speed time, reaction time. Symptom inventory was not affected


What is the Best Test?

• There are many options

• Keep it simple and valid

• SCAT 3 includes a symptom inventory and neurocognitive testing that is designed for ATC and can be performed in less than 10 minutes
Summary Points

• We should always look at the best data before making universal recommendations

• Cardiac screening is an emotional subject that needs more information

• Neuropsychological baseline testing will not solve the debate about concussion management