

CLINICAL DECISIONS

INTERACTIVE AT NEJM.ORG

Cardiac Screening before Participation in Sports — Polling Results

James A. Colbert, M.D.

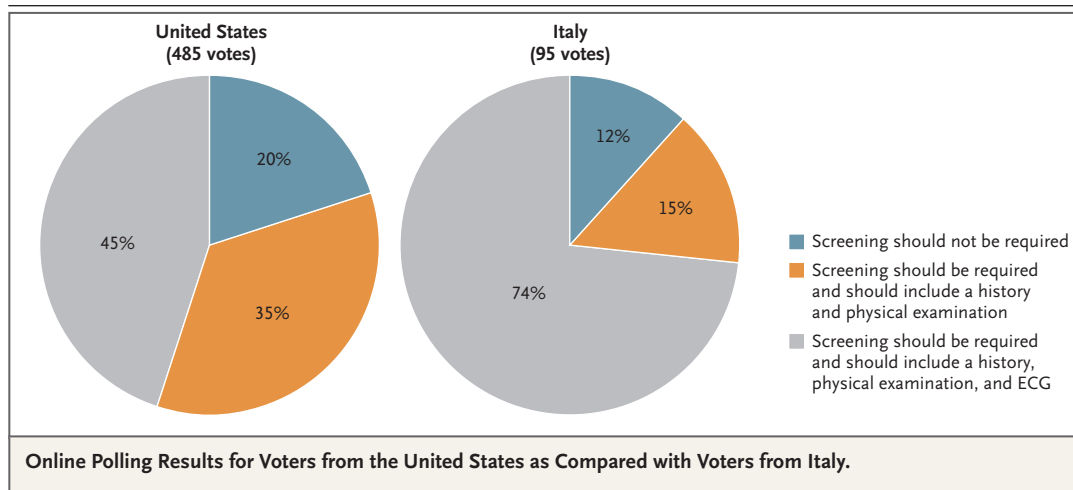
Millions of high school students participate in organized sports, and a small number of these young athletes will die from sudden cardiac arrest. Whether school-age athletes should be screened for cardiac conditions before they participate in sports remains an area of controversy in the medical community — with extremely disparate practices around the world. Even those in favor of screening have differing opinions of the preferred strategy for detecting cardiac abnormalities; some proponents advocate the use of electrocardiography (ECG) or imaging methods, whereas others recommend only a thorough history and physical examination.

Recently, as part of our Clinical Decisions series, the *Journal* presented the case of a high school athletic director who was seeking guidance on whether to initiate a requirement for cardiac screening of young athletes before allowing them to participate in school-sponsored sports.¹ Four physician experts presented their views, and readers were invited to join the debate by voting and posting comments at NEJM.org. The case was also presented at a session of the annual meeting of the American Heart Association

(AHA), which was held in Dallas in November 2013; in that session, the same four physician experts presented their views in a moderated debate. The AHA session was well attended and featured a lively debate among the four invited speakers.

In both the *Journal* article and the AHA session, Sanjay Sharma of London argued that screening young athletes would save lives, whereas Mark Estes of Boston argued that screening has not been scientifically proven to reduce deaths. Victoria Vetter of Philadelphia presented the case for screening with a history and physical examination only, and Domenico Corrado of Padua, Italy, argued that screening with ECG enhances detection of cardiac abnormalities.

Of the audience members who voted live at the AHA session, 70% favored screening young athletes for cardiac disease and 60% believed that screening programs should include ECG. In response to our online poll, our website received 1266 votes from 86 countries. Overall, 18% opposed cardiac screening of young athletes before participation in sports, 24% favored screening with a history and physical examination only, and



58% favored screening with a history, physical examination, and ECG. Voters from the United States were less inclined than voters from other countries to favor screening with ECG; 35% of U.S. voters recommended screening with only a history and physical examination, and 45% recommended screening with ECG. In contrast, approximately 66% of the voters from Europe, where screening programs with ECG are more widespread, recommended screening with ECG, and only 13% recommended screening with just a history and physical examination. The largest bloc of voters in Europe was from Italy, a country with a comprehensive national screening program, and 74% of the 95 voters from Italy preferred screening with ECG.

A total of 88 readers wrote comments. Of the commenters, many advocates of screening either were involved in administering screening programs or had personal experiences with young athletes who had died suddenly from cardiac arrest — deaths that might have been prevented by screening. Proponents of screening made the case that the incremental cost of screening was low in comparison with ancillary athletic expenses such as clothing, gear, and travel. Those arguing against screening pointed to the lack of evidence that screening prevents death and raised concerns about the high absolute numbers of false positives. Other commenters mentioned the unfavorable cost-benefit calculus for screening, given the very low prevalence of sudden cardiac death among young athletes. Some readers raised the question of who would read and interpret millions of ECGs, arguing that pediatricians and family practice physicians do not have the necessary qualifications, and the small number of pediatric cardiologists do not have sufficient capacity to read these exams. Finally, some readers noted that there are few treatments available for young athletes who are found to have abnormalities on ECG screening and wondered what

they would recommend to these children. Would they advise them to lead a sedentary life?

Currently, the AHA and the American Academy of Family Physicians recommend screening young athletes with the use of a comprehensive history and physical examination but do not advocate widespread use of ECG as part of screening.^{2,3} In Europe, on the other hand, the European Society of Cardiology, citing data from the experience with screening in Italy, is now recommending ECG screening for all young athletes.⁴ Ultimately, physicians, policymakers, and the general public will need to decide whether to devote health resources to screening athletes when there are many competing public health priorities such as gun violence, motor vehicle accidents, drug abuse, and suicide, each of which claims many more young lives than sudden cardiac death.

Disclosure forms provided by the author are available with the full text of this article at NEJM.org.

From Brigham and Women's Hospital, Boston, and Newton-Wellesley Hospital, Newton — both in Massachusetts.

1. Cardiac screening before participation in sports. *N Engl J Med* 2013;369:2049-53.
2. Zipes DP, Camm AJ, Borggrefe M, et al. ACC/AHA/ESC 2006 guidelines for management of patients with ventricular arrhythmias and the prevention of sudden cardiac death — executive summary: a report of the American College of Cardiology/American Heart Association Task Force and the European Society of Cardiology Committee for Practice Guidelines (Writing Committee to Develop Guidelines for Management of Patients with Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death) developed in collaboration with the European Heart Rhythm Association and the Heart Rhythm Society. *Eur Heart J* 2006;27:2099-140.
3. Giese EA, O'Connor FG, Brennan FH, Depenbrock PJ, Orsicello RG. The athletic preparticipation evaluation: cardiovascular assessment. *Am Fam Physician* 2007;75:1008-14.
4. Corrado D, Pelliccia A, Bjørnstad HH, et al. Cardiovascular preparticipation screening of young competitive athletes for prevention of sudden death: proposal for a common European protocol: consensus statement of the Study Group of Sport Cardiology of the Working Group of Cardiac Rehabilitation and Exercise Physiology and the Working Group of Myocardial and Pericardial Diseases of the European Society of Cardiology. *Eur Heart J* 2005;26:516-24.

DOI: 10.1056/NEJMc1401118

Copyright © 2014 Massachusetts Medical Society.