

Study prompts new mandate for N.C. high schools

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A new study at Wake Forest University School of Medicine reveals that many N.C. high schools are not adequately prepared to handle the immediate medical needs of a student or employee who suffers a sudden cardiac arrest on campus. The findings were used to support a new statewide program to place automated external defibrillators (AEDs) in high schools.

The study, scheduled to appear in the May/June 2009 issue of the *North Carolina Medical Journal*, evaluated how prepared N.C. high schools were for sudden cardiac arrests (SCA). It found that they lacked concise [emergency action](#) plans, needed to increase use of AEDs and coordinate more with local emergency medical services (EMS).

"Since screening for SCA remains mostly ineffective, focusing efforts towards emergency planning offers a concrete way to impact the health of student athletes," said Anna Monroe, M.D., an emergency medicine resident and lead investigator for the study. "With this study, I hope to bring to light the importance of increased preparedness in response to SCA in North Carolina."

During SCA, [heart function](#) stops abruptly and without warning. It is usually the result of electrical impulses in the heart becoming rapid or chaotic. These [irregular heart rhythms](#) are called arrhythmias, which prevent the heart from pumping blood to the brain and vital organs. In most cases, there are no warning signs or symptoms for SCA, even with the correct pre-participation screenings that athletes must go through.

It is estimated that about one out of every 200,000 [high school](#) athletes experiences SCA. However, there is no standardized or mandatory reporting system for SCA incidents in high school athletes. The National Center for Catastrophic Sports Injury Research mentions eight football fatalities from the 2006 season and two in 2007 that were attributed to cardiac causes. While statistics show that SCA is relatively rare in high school athletics, the death of a seemingly healthy young athlete can be devastating to an entire community.

More than 500,000 deaths result from SCA in the United States each year. SCA is fatal if immediate cardiopulmonary resuscitation (CPR) followed by defibrillation is not administered. Survival rates decrease between 7 and 10 percent for each minute the patient does not receive defibrillation. In instances when CPR is started immediately, however, that survival rate decrease drops to 3 to 4 percent per minute. Because of this fact, it is crucial that emergency action plans are in place and well practiced to ensure the quickest and most effective response to SCA, researchers say.

For the October 2007 study, researchers analyzed survey responses submitted by athletic directors from 138 North Carolina high schools, representing 37 percent of the 376 schools contacted to participate.

Survey questions were designed to assess vital and easily calculated aspects of emergency planning using the 2007 National Athletic Trainers Association guidelines as a standard. According to the guidelines, elements of emergency planning for SCA include ensuring an efficient system for communication both within a school and between the school and local EMS system, providing access to an AED and other necessary equipment to be used by trained responders, and perfecting and practicing a written action plan.

While most of the responding schools - 72.5 percent - reported having an

AED, fewer than 56 percent reported having an emergency action plan to follow in the event that they would need to use the device. The survey also revealed that division 1 schools were least likely to report owning an AED and, together with division 2 schools, were less likely to report having action plans than larger division 3 and division 4 schools.

Researchers noted in their report that "the majority of responding schools did not know if EMS could arrive and defibrillate within five minutes, and that the most commonly reported barrier to obtaining an AED was cost."

At the time of the survey, N.C. schools were not yet required by the N.C. High School Athletic Association (NCHSAA) to have an emergency action plan.

"This study contributed to the NCHSAA's decision to mandate that all of its schools have an appropriate EAP in place, which went into effect January 2009," said Daryl A. Rosenbaum, M.D., an assistant professor of family and community medicine and co-author of the study.

Rosenbaum also serves on a task force convened by the NCHSAA that is aimed at making high school sports safer. "The NCHSAA AED program has so far paid for the placement of AEDs in 98 schools that needed them and required those schools to develop an EAP and train three staff members in AED use." There are at least nine more schools currently working on the project, according to the NCHSAA.

Source: [Wake Forest University](#) Baptist Medical Center

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