

I'm Dr. Victoria Vetter. I'm a pediatric cardiologist and Medical Director of Youth Heart Watch at The Children's Hospital of Philadelphia and Professor of Pediatrics at the University of Pennsylvania School of Medicine. Youth Heart Watch is an organization whose mission is to prevent sudden cardiac arrest or death by helping schools develop defibrillator or AED programs.

As a children's heart doctor, I have cared for thousands of Pennsylvania's children and families at risk for or touched by sudden cardiac arrest, a condition in which the heart suddenly stops beating because of a disorganized heart beat called ventricular fibrillation. This prevents the flow of blood to the body organs and if nothing is done, the affected individual will not survive. Sudden cardiac arrest is usually the result of an electrical or structural cardiac condition, generally present from birth, but often not identified. For these children, and many others who are living with an undiagnosed cardiac condition, the availability of an AED in their schools could mean the difference between life and death.

Sudden cardiac arrest is the leading cause of death in active young athletes. The factors that are most important in improving survival are the immediate recognition of the sudden cardiac arrest, the presence of a trained responder to start CPR and access to early defibrillation through the onsite presence of an AED.

The only way to treat sudden cardiac arrest with ventricular fibrillation is to use a defibrillator or AED. While CPR or cardiopulmonary resuscitation can help, only defibrillation can restore a normal rhythm. This can be accomplished by the use of this portable computerized device or AED. It automatically analyzes the person's rhythm, guides the rescuer, and provides an electrical shock when necessary to restart the heart. Non medical lay responders can easily be trained in CPR and AED use. In fact, several studies have compared 6th to 8th grade students with trained EMS with favorable results.

The greatest chance for survival occurs when defibrillation occurs in 3-5 minutes, thus the need to have an onsite AED. For every additional minute after collapse before defibrillation occurs, survival decreases by 10%. Immediate use of an AED within 3-5 minutes of an arrest can improve survival up to 75% in children. The current national survival of sudden cardiac arrest is 5-10%.

We don't think of this type of problem as affecting children, but thousands die of sudden cardiac arrest each year. Over 300,000 adults die suddenly each year, one every two minutes, 12,000 in Pennsylvania each year or 33 each day. On any weekday, up to one-fifth of the population is in a school, not only students, but teachers, other school staff and visitors, including parents and grandparents.

Although some children may have warning signs such as a rapid heart beat, dizziness, fainting, or chest pain during exercise, most of these children have not had symptoms and have not been diagnosed with heart disease. In fact, over half the time, the first symptom is a sudden cardiac arrest, frequently during activity. It may be possible to identify those at risk prior to an arrest by screening

including electrocardiograms or echocardiograms and a pilot school screening study would provide valuable information. At CHOP, we have been performing screening studies in schools to determine the best methods to find these children before they have a life-threatening cardiac arrest.

In 2003, Youth Heart Watch at The Children's Hospital of Philadelphia was formed to provide education and awareness regarding sudden cardiac arrest in children. Through contributions, all of the Philadelphia School District public high schools at that time were able to receive AEDs. Hundreds of Philadelphia school teachers and employees have been trained in CPR and AED use. In December, Youth Heart Watch presented 26 AEDs to the Philadelphia Public Middle Schools along with grants to train staff in CPR and AED use.

Guidelines for emergency response planning in schools have been recommended by a number of organizations. This includes the American Heart Association, the American Academy of Pediatrics, the National Athletic Trainers Association, and the American College of Cardiology's Bethesda Conference #36. All recommend an AED on the school site if at least one SCA is likely to occur within 5 years and if the local EMS cannot arrive at the school and initiate a shock from an AED within 5 minutes of collapse. This effectively means that every school should have an AED. It appears that between one-third to 61% of high schools across the US have AEDs on site. Systematically collected information on AEDs in Pennsylvania schools is not available.

We know that AEDs will save lives, but we don't know where. I sincerely ask your support of Pennsylvania House Bill 1803, leading to an AED in every school and athletic field in our state.

In a study in Washington state, cardiac arrests in school settings included visitors (46%), staff (34%), and students (12%) with 7% undetermined. The incidence of cardiac arrest per year increased with age with 1 per 8 colleges, 1 per 125 high schools, and 1 per 200 lower-level schools. Funding for the defibrillators came from donations (60%), school district (27%), and athletic department or school (11%). Addition of CPR and AED training to the student curriculum will enhance the health of the community over time and should be a part of all AED school programs.

Over 12 states have passed legislation to require or support AED use in schools. In 2000, Congress passed the Cardiac Arrest survival Act mandating AED in all Federal buildings and extending the Good Samaritan laws to protect laypersons from liability associated with the good faith use of public AEDs. In 2001, Congress passed the Community Access to Emergency Defibrillation Act of 2001 to help fund public access defibrillation programs, especially in rural communities. Suits have been filed against Busch Gardens, several airlines and a school in Ohio for failure to have an AED onsite.