

Saving Lives in Schools: Understanding and Responding to Cardiac Arrest

Michael Riley, NREMT-P, EMS-I

Director
Center for Resuscitation Education & Community Engagement
Cooper University Health Care

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Disclosure

I have no financial disclosures or conflict of interest with the presented material in this presentation.

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School Information

- On any given day in the United States, 49.4 million students and nearly 300,000 staff are in school settings. That's 20-25% of our population in the U.S. are in school during the day.
- Communities entrust schools to provide students, staff, and visitors with a safe learning environment.
- More than a third of schools nationwide don't have a full-time nurse on-site.
- While many teachers may be aware of CPR, their confidence in performing it in an emergency situation can vary depending on their training level.
- While most schools have AEDs, concerns exist about whether they are readily accessible, with some AEDs being locked away, which can delay response time during a cardiac emergency.
- School-nurse responders **self-reported** more confidence in managing respiratory distress, airway obstruction, profuse bleeding/extremity fracture, anaphylaxis, and shock in a diabetic child and comparatively **less confidence in managing cardiac arrest, overdose, seizure, heat illness, and head injury.**

• American Academy of Pediatrics study (The Preparedness of Schools to Respond to Emergencies in Children: A National Survey of School Nurses)

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What is Sudden Cardiac Arrest?

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Understanding Sudden Cardiac Arrest

Sudden Cardiac Arrest (SCA) is a medical emergency that occurs when the heart unexpectedly stops beating. This is not the same as a heart attack, although the two conditions can be related. Here's a breakdown to help understand SCA:

- SCA happens when the electrical system of the heart malfunctions, causing the heart to stop pumping blood effectively.
- As a result, the heart's rhythm becomes irregular (arrhythmia), typically leading to ventricular fibrillation (VF) or ventricular tachycardia (VT), both of which are life-threatening arrhythmias.
- Without immediate treatment, SCA leads to loss of consciousness and death within minutes.

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SCA vs Heart Attack

Sudden Cardiac Arrest	Heart attack
The heart suddenly stops beating from an electrical issue. Blood is not being pumped to the heart, brain, and vital organs	Blood flow to the heart is blocked, preventing the heart muscle from getting enough oxygen
Causes of SCA <ul style="list-style-type: none">• Underlying cardiac condition• A sudden blow to the chest• Drugs• Respiratory arrest	Causes of a Heart Attack <ul style="list-style-type: none">• Blood clot• Coronary arteries have a build-up of plaque

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What does Cardiac Arrest look like?



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Startling Stats

- Only 40% of people who experience an OHCA get the immediate help they need before professional help arrives.
- 10% of SCA victims survive a cardiac arrest event.
- Sudden Cardiac arrest is the #1 cause of death for student-athletes.
- 1000 people/day, 2-3 of those are children
- CPR is an emergency lifesaving procedure when the heart stops beating. Immediate CPR can double or triple the chances of survival after cardiac arrest.
- Schools with trained staff and a CERP have higher survival rates.

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What we do know.

- Survival chances decrease by 10% for every minute that immediate CPR and use of an AED is delayed.
- Immediate CPR and the use of an AED can triple the chance of survival.



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CPR

CPR (Cardiopulmonary Resuscitation) is an emergency procedure performed when someone's breathing or heartbeat has stopped, such as in cases of cardiac arrest. CPR combines chest compressions and rescue breaths to help maintain oxygenated blood flow to the brain and vital organs until professional medical help arrives.

For Adults:

- 1. Check for responsiveness:** Tap the person and shout, "Are you okay?" If there's no response, call 911 (or emergency services) immediately.
- 2. Check for breathing:** Look for chest movement or listen for breathing. If there is no normal breathing, proceed with CPR.
- 3. Chest compressions:**
 - a. Place your hands, one on top of the other, in the center of the chest (lower half of the sternum).
 - b. Push down hard and fast, allowing the chest to rise between compressions. Aim for about 2 inches deep at a rate of 100-120 compressions per minute.

For Children and Infants:

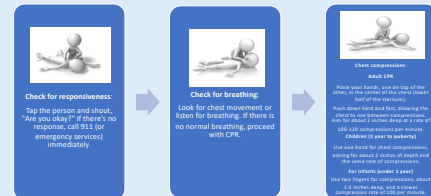
- For children (1 year to puberty), use one hand for chest compressions, aiming for about 2 inches of depth and the same rate of compressions.
- For infants (under 1 year), use two fingers for compressions, about 1.5 inches deep, and a slower compression rate of 300 per minute.

CPR can make the difference between life and death in critical situations. It's essential to act quickly and keep performing CPR until professional medical help arrives or the person begins to show signs of recovery.

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CPR



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Automated External Defibrillator

An AED stands for **Automated External Defibrillator**. It is a portable electronic device used to treat people experiencing sudden cardiac arrest (SCA) by delivering an electric shock to the heart to restore its normal rhythm. The device is designed to be easy to use, even by individuals with minimal medical training.

Key features of an AED:

- 1. Automatic analysis:** The AED checks the heart's rhythm and determines if a shock is needed.
- 2. Shock delivery:** If the device detects a shockable rhythm, it will automatically deliver a shock to the heart.
- 3. Voice prompts:** The AED provides clear, step-by-step instructions to guide the user through the process.

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Prevention with students (Physicals)



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Prevention



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New Jersey Laws

Chapter 35 Section 18A-35-2 - 2018
New Jersey requires public and charter high school students to learn cardiopulmonary resuscitation (CPR) and how to use an automated external defibrillator (AED) before graduating

- Training must be hands-on and come from a nationally-recognized association
- Districts can choose a free, non-certification program

Janet's Law - 2014

- Staff members must be trained in cardiopulmonary resuscitation (CPR) and AED use
- At least five staff members must be trained in CPR and AED use
- A staff member must be responsible for responding to a cardiac arrest
- All public schools must have an AED on school property

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Reported Cardiac Arrest in NJ Schools

- 2/8/2024 - Jaeden Gibbs, 15 - Bayonne, NJ
- 1/29/2024 - Victor Poupart, 17 - North Brunswick Township, NJ
- 6/17/2024 - Jeffrey "JJ" Machnik, 18 - Howell Township, NJ
- 2/16/2023 - Elijah Jordan Brown-Garcia, 12 - Newark, NJ
- 1/12/2023 - Jonathan Maro, 15 - Hillsborough, NJ
- 10/2021 - Mrs. Sandra Witzak - Galloway, NJ
- 1/6/2012 - Eric Micheo, 18 - Paramus, NJ
- 4/2009 - Kittim Sherrod, 17 - Edison Township, NJ
- 8/10/2006 - Janet Zilinski, 11 - New Brunswick, NJ

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School Nurses

A school nurse plays a critical role in responding to a student experiencing cardiac arrest, as they are often the **first** or **only** medical professional on scene and are responsible for initiating immediate life-saving measures like CPR and utilizing an automated external defibrillator (AED) if available, significantly increasing the chance of survival in such emergencies; this includes developing and implementing a school-wide Cardiac Emergency Response Plan (CERP) to ensure preparedness for such situations.



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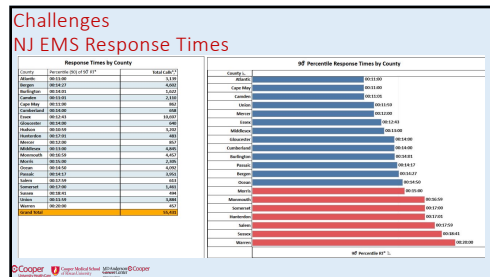
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Challenges

- **Limited Staff:** In some schools, only one nurse may be responsible for a large student population, which can create challenges in handling emergencies effectively.
- **Access to Equipment:** Some schools may lack readily available AEDs or may not have the resources to ensure that all staff are adequately trained in emergency procedures.
- **Emotional Impact:** Cardiac arrest incidents, especially involving students, can have a significant emotional impact on the school community, requiring follow-up support from the nurse and other professionals.

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Cardiac Emergency Response Plan (CERP)

What is a Cardiac Emergency Response Team?

The Cardiac Emergency Response Team is a group of school staff members who have current CPR/AED training and are designated to respond to and provide basic life support during a cardiac emergency. The Cardiac Emergency Response Team should be established prior to the start of each school year to plan, implement, and evaluate the school's adopted Cardiac Emergency Response Plan (CERP).

Who are potential members of a Cardiac Emergency Response Team?

Staff members with current CPR and AED training. Include at least one staff member in each section of the building(s) or location(s) - Medical professionals such as an on-site nurse - Organization administrators or management - Health and physical educators - Athletic directors or trainers - Coaches or after-school event advisors

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Cardiac Emergency Response Plan (CERP)

- Training: Ensure staff are trained in CPR and AED use.
- Emergency Response: Ensure everyone knows how to recognize cardiac emergencies and activate EMS.
- AED Accessibility: Have easily accessible, well-maintained AEDs on-site.
- Clear Roles: Designate roles for team members involved in the response.
- Post-Care: Arrange immediate medical follow-up and psychological support.
- Drills: Regularly practice and improve emergency response protocols.

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Cardiac Emergency Response Plan (CERP)

Roles and Responsibilities

Goal: Define clear roles to ensure an organized and efficient response.

Designate a Cardiac Emergency Response Team (CERT):

- Leader: Responsible for overall coordination and making decisions during the emergency.
- CPR Provider(s): Perform chest compressions and rescue breaths.
- AED Operator(s): Operate the AED and monitor for further shocks.
- EMS Communicator: Call and update EMS on the situation and location.





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Cardiac Emergency Response Plan (CERP)

Drills

Goal: Regularly practice and evaluate the emergency response plan.

- Drills: Schedule regular CPR, AED, and emergency response drills involving all staff and key personnel.




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Name of School and District: _____ o ES o MS o HS o Pvt.

AED Coordinator: _____


- A program coordinator is identified, who oversees the overall program.
- School has _____ (if AEDs). We have _____ buildings, _____ students, _____ staff.
- The placement of the AED(s) makes it accessible from any part of the building or campus within 2-3 minutes (either by fast round-trip walk or by staff transporting to victim).
- There is a designated emergency response team and
- CPR/AED training is updated: annually? every 2 years? or (list)
- There is a system in place to track CPR/AED training, and identify those who require retraining or practice (including budget or plan for retraining).
- All faculty and staff know where the AEDs are located and how to access them.
- All faculty and staff have had awareness training on sudden cardiac death (warning signs, recognition, communication procedures, other staff roles, etc.)
- We have a communication code (overhead page or other) to notify responders and others in the area that an incident is occurring. Teachers outside with students carry a communication device.
- The device is checked monthly _____ or per manufacturer's directions. This maintenance check is documented each time in writing.



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Thank you

For more information or help with CPR/AED education and/or building your CERP.



Richard E. Gray

Director, Transportation Education

AED Training Course Coordinator


Center for Research in Education and Community Engagement


Cooper University Health Care

601 Madison Avenue, Suite 201

Camden, NJ 08102

Office: (856) 940-1812

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