

Project ADAM CPR & AED Curriculum Facilitator Manual



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Dear Reader,

According to the American Heart Association Heart Disease and Stroke Statistics 2015 Update, approximately 320,200 cardiac arrests occur in the community (at home or in public places) each year. The estimated survival rate for this type of arrest is only 10.6%, but survival with good neurological function is even less, at 8.3%. Project ADAM aims to prevent death from sudden cardiac arrest through education and implementation of cardiopulmonary resuscitation (CPR) and automated external defibrillator (AED) programs in schools and community settings.

On any given day, approximately 20 percent of the community is in its schools. Students, teachers, staff and family members visit school campuses for education, extracurricular activities, athletics, entertainment, and more. A focused effort on cardiac arrest preparedness in schools is critical to protecting our children and others in the community.

This curriculum was developed through Project ADAM to provide an inexpensive method of disseminating national evidence-based CPR and AED education to school administration, staff, students and family members. An online version of this curriculum is available at no cost by contacting your local Project ADAM program. Please visit www.projectadam.com for a complete list of programs.

This curriculum follows a train-the-trainer model. The body of the curriculum is comprehensive and intended for instruction of individuals (facilitators), who will use the curriculum as a resource when teaching CPR and AED to school staff and student groups. Simplified, age-appropriate outlines are located in the appendices for use as teaching aids.

Also located in the appendices is a 'Heart Safe School' checklist. Project ADAM's Heart Safe School program focuses on core elements of cardiac emergency awareness, preparedness and practice drills, to ensure schools are prepared to respond to cardiac emergencies. Please refer to the checklist to identify whether your school is Heart Safe and contact your local Project ADAM for more information.

Your help is critical. This is a community effort. On behalf of Project ADAM and all the children and families whose lives we touch, thank you for your attention to this life saving effort.

Sincerely,
Your Friends at Project ADAM

INTRODUCTION

What is Project ADAM (Automated Defibrillators in Adam's Memory)?

January 22, 1999, an ordinary day for most, was the day Adam Lemel's heart suddenly stopped and he died. Adam Lemel was a seemingly healthy, active 17-year-old. Among many interests Adam loved playing basketball, and on that fateful day he was playing basketball at school when he suddenly collapsed and died from an undiagnosed heart condition. Adam's death is a reminder of the thousands of lives lost every year from sudden cardiac arrest (SCA). Adam's parents, Patty and Joe Lemel were determined to prevent future victims of sudden cardiac arrest. Together, they collaborated with Children's Hospital of Wisconsin to create Project ADAM, in Adam's memory.

Project ADAM's mission is to save lives by preventing sudden cardiac death (SCD) through education and implementation of cardiopulmonary resuscitation (CPR) and automated external defibrillator (AED) programs in schools and community settings. Since its inception at Children's Hospital of Wisconsin, Project ADAM has partnered with numerous hospital systems to develop affiliate programs across the country. As of January 2017, Project ADAM is responsible for saving more than 100 lives through its cardiac emergency preparedness programs. This course was designed to help prepare individuals to respond effectively to a cardiac emergency, because anyone could be responsible for the next life saved!

Watch Chapter 1: The Adam in Project ADAM (2:40)

Online: <http://www.projectadam.com/Heartsafeschools>

What will be covered in this course?

This course is divided into five parts that include:

1. Basic physiology of Sudden Cardiac Arrest (SCA)
2. Recognizing signs/symptoms of SCA
3. How to perform Cardiopulmonary Resuscitation (CPR) with AED
4. Cardiac Emergency Preparedness
5. Practice Scenarios

What are the learning objectives for this course?

By the end of the course, the learners should be able to:

6. Recognize signs/symptoms of SCA
7. Know how to perform hands-only CPR
8. Know how to use an AED
9. Know how to activate the Cardiac Emergency Response



Please administer the pre-test for Facilitators/Faculty/Staff before moving on!

PROJECT ADAM CPR & AED CURRICULUM: PRE-TEST

Facilitators/Faculty/Staff

Today's Date: _____

I am: Faculty _____ Staff _____ Student in grade _____ Other _____

I have taken a previous course in CPR/AED (circle one): Yes No

I am certified in CPR/AED (circle one): Yes No

1. What is Sudden Cardiac Arrest (SCA)?

- Abrupt, unexpected loss of heart function, preventing blood and oxygen supply to the vital organs
- A clogged blood vessel in the heart, with sudden sharp pain in the chest
- The sensation of pounding in one's chest when their heart is beating too fast
- The sudden rupture of a blood vessel within the heart

2. What are the *possible* causes of sudden cardiac arrest (SCA)?

- Electrical abnormality within the heart
- Oxygen deprivation to the heart muscle
- A blow to the chest at a critical time in the cycle of the heart (commotio cordis)
- Abuse of certain drugs and/or stimulants
- All of the above

3. Among youth, SCA is most likely to occur during which of the following?

- A scary movie or show
- A fast amusement park ride, like a roller coaster
- Sports or athletic activities
- Emotionally stressful events, like arguing with friends

4. Which of the following are symptoms of SCA? (circle all that apply)

- Sudden, unexplained collapse
- Loss of consciousness
- Irregular breathing or no breathing
- Seizure-like activity

5. When performing CPR on an adult victim (puberty and older), how deep should you deliver chest compressions?

- Less than 2 inches
- At least 2 inches, but no more than 2.4 inches
- At least 3 inches, but no more than 3.4 inches
- More than 4 inches

6. Identify the correct number of hand(s) or digits used to deliver chest compressions, depending on age of victim.

- Infant – 2 hands, Child – 1 or 2 hands, Adult – 2 fingers/thumbs
- Infant – 2 fingers/thumbs, Child – 2 fingers/thumbs, Adult – 1 hand
- Infant – 1 hand, Child – 2 hands, Adult – 2 hands
- Infant – 2 fingers/thumbs, Child – 1 or 2 hands, Adult – 2 hands

7. What is the correct number of compressions to be given per minute, for victims of any age?

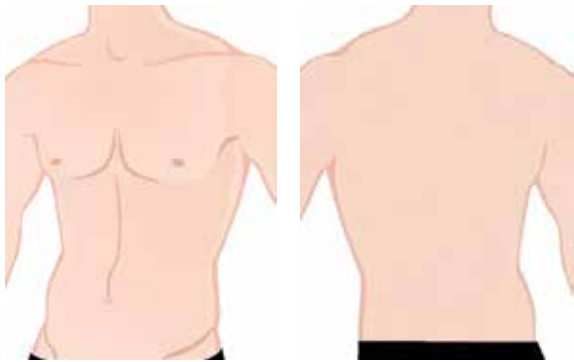
- a. 80-100
- b. 100-120
- c. 150-180
- d. 180-200

8. What is the 'Cardiac Emergency Response Plan?' (write-in your answer)

9. What is the purpose of an AED?

- a. To activate the Cardiac Emergency Response Plan and call 911
- b. To provide instructions on how to perform CPR
- c. I don't know
- d. To automatically analyze the heart rhythm, determine if a shock is advisable and deliver a shock when needed

10. Draw the correct placement on the chest and/or back of AED pads for an adult and infant, assuming **only adult pads** are available.



FRONT

BACK



FRONT

BACK

11. During a two-rescuer response, number the steps in order (1-4) to be performed after WITNESSING the sudden collapse of an adult or child.

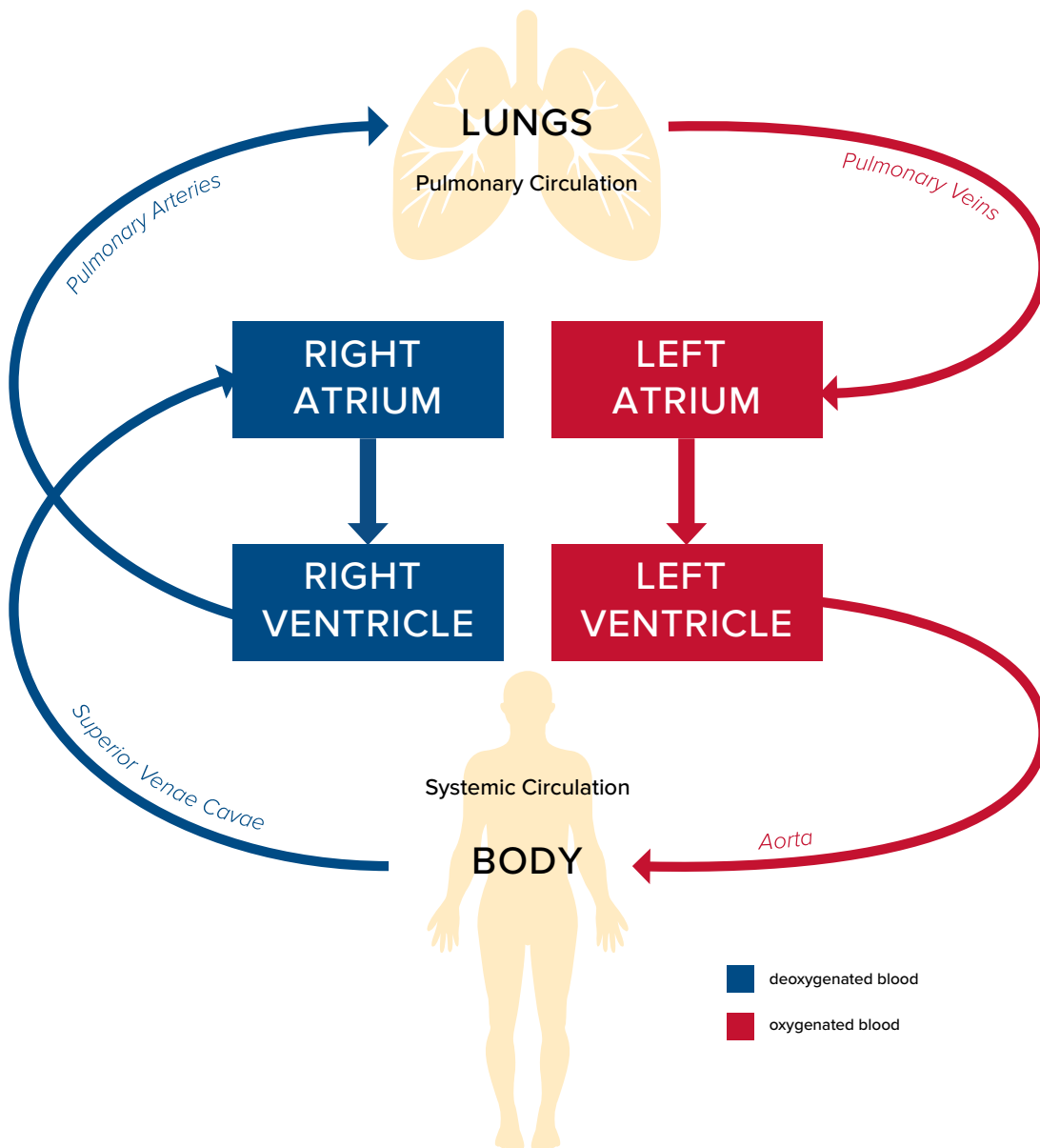
- ___ Check for responsiveness
- ___ Transfer care to EMS
- ___ Use AED as soon as it's available by opening the cover and following the prompts
- ___ Start cardiopulmonary resuscitation (CPR) and send 2nd rescuer to call 911 and get AED

*How would the steps differ if you were the **only** rescuer on the scene of this witnessed collapse?*

UNDERSTANDING SUDDEN CARDIAC ARREST (SCA)

Heart Anatomy

The heart is a muscle in the chest that pumps blood and oxygen to the head and body. The normal heart has four chambers; two atria (top chambers) and two ventricles (bottom chambers). The heart can be thought of as a box that is divided into right and left sides. The left atrium receives oxygenated blood (oxygen rich blood) from the lungs, then the left ventricle pumps that oxygenated blood to the brain and body. After the oxygen is used by brain and body cells, the deoxygenated blood (oxygen poor blood) is returned to the right side of the heart via the right atrium. The deoxygenated blood then enters the right ventricle where it is pumped to the lungs to pick up more oxygen. Oxygen is essential for all cells and vital organs in the body to survive.





A SCA results from an electrical problem within the heart

What is sudden cardiac arrest (SCA)?

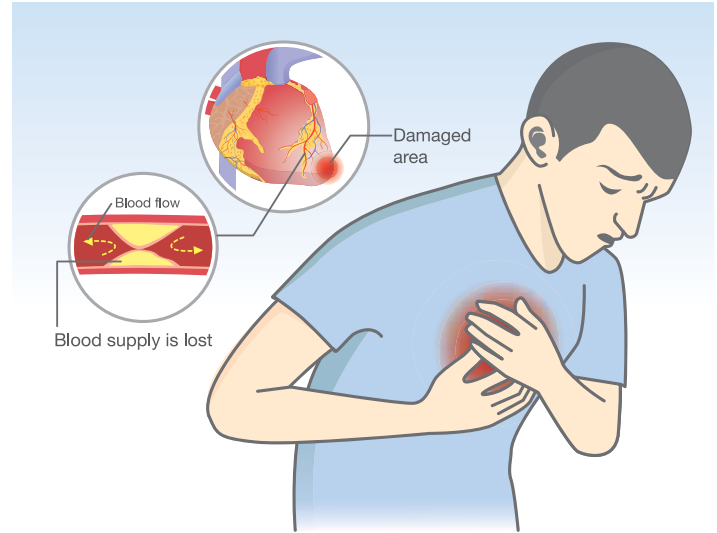
Sudden cardiac arrest (SCA) is the abrupt, unexpected loss of heart function, usually resulting from an electrical problem within the heart.

A natural electrical system within the heart causes the heart muscle to contract in an orderly, normal rhythm. When the electrical current through the heart is interrupted, the heart muscle contracts irregularly (arrhythmia). Often arrhythmias can be temporary and harmless; however more serious arrhythmias can lead to a sudden stop in heart function, also known as sudden cardiac arrest.

Ventricular fibrillation (v-fib) is the most serious heart arrhythmia, in which the lower heart chambers (ventricles) quiver rather than contract. When this happens, the heart stops efficiently pumping blood and oxygen to the brain and other vital organs. This causes the victim to collapse and lose consciousness, and if not treated within minutes results in sudden cardiac death (SCD).

Is SCA the same as a heart attack?

Sudden cardiac arrest is different from a heart attack, which is also known as myocardial infarction or MI. A heart attack is a plumbing problem usually resulting from one or more blockages in a heart blood vessel, preventing flow of oxygenated blood to a portion of the heart. This causes damage to part of the heart muscle and can result in symptoms



A myocardial infarction (heart attack) results from a plumbing problem within the heart

such as chest pain or pressure, shortness of breath, and pain or discomfort in one or both arms, back, neck, jaw or stomach. A heart attack can often be treated with medications or surgery; however, a heart attack that is left untreated can progress into sudden cardiac arrest, which can quickly result in sudden cardiac death due to complete loss of heart function.

Who is at risk for sudden cardiac arrest (SCA)?

SCA can happen to anyone, despite age, race, gender, or fitness level. According to the 2015 Institute of Medicine Report (Strategies to Improve Cardiac Arrest Survival), sudden cardiac arrest is the third leading cause of death in the United States, following cancer and heart disease. Each year approximately 600,000 persons in the United States experience a sudden cardiac arrest, of which more than half occur outside of the hospital- in the community. Less than 9% of these arrest victims survive without significant brain damage.

In children and adolescents, SCA is often attributable to a previously undiagnosed heart disorder, which more than half the time is due to genetic or hereditary causes. An estimated 12,500 children experience cardiac arrest each year, however true prevalence of death related to SCA in youth is unknown because complete information has not been routinely or systematically collected on the incidence of sudden cardiac death in the young.

RECOGNIZING SIGNS AND SYMPTOMS OF SCA

Watch Chapter 2: Understanding Sudden Cardiac Arrest (5:36)

Online: <http://www.projectadam.com/Heartsafeschools>

What are the symptoms of SCA?

Sudden cardiac arrest is unpredictable, therefore understanding and early recognition of symptoms is critical.

Sudden, unexpected collapse (usually during exercise) is the number one symptom of SCA.

Other symptoms include:

- Loss of consciousness (not responding to name or gentle shaking)
- Irregular breathing (gaspings, gurgling) or not breathing at all
- Seizure-like activity (shaking of the body, often arms and legs)
- No pulse or weak pulse

What are the warning signs of impending SCA?

Unfortunately, most often SCA has no warning signs at all, or those that manifest may be subtle and go unnoticed. It is important to familiarize yourself with potential warning signs and seek medical attention if any concern exists.

A physician should be consulted if any of the following symptoms are present:

- Fainting (syncope) during or after exercise - *this is usually the greatest predictor of impending SCA*
- Dizziness/lightheadedness
- Weakness/wobbliness
- Vision changes
- Chest pain
- Excessive fatigue associated with exercise
- Excessive shortness of breath associated with exercise
- Heart palpitations/abnormal heart rate or rhythm (arrhythmia)
- High blood pressure

What are the risk factors for SCA?

SCA does not discriminate; It can happen to seemingly healthy people, however the following risk factors may increase the likelihood of SCA:

- Congenital heart abnormality, including structural or conductive defects
- Family history of sudden, unexpected, unexplained death (especially before age 50)
- Smoking
- Poor diet and exercise habits
- Use of drugs
- Obesity
- Diabetes
- *Commotio cordis* is a condition caused by blunt, non-penetrating trauma to the chest (such as being hit in the chest with a baseball or hockey stick). This happens during a critical time in the heart cycle resulting in ventricular fibrillation and sudden cardiac arrest.

How can survival from SCA be improved?

Do not hesitate...Act!

Death is certain if a victim of SCA does not receive help. Survival rates only increase with action and intervention.

Do not hesitate...Act Fast!

CPR combined with AED use within 3-5 minutes of recognizing SCA may save a life.

After 5 minutes, survival rates decrease by 10% for every minute of delay.

Do the math... What is the chance of survival 15 minutes after SCA without CPR and AED? Zero!

Do not hesitate...Act Now!

Existing laws exempt any person from liability who provides CPR and/or treatment with an AED, as long as their intent is to help the victim.

CPR BASICS

Chest compression technique for adult-sized victim

What is CPR?

Cardiopulmonary resuscitation (CPR) is the coordinated process of delivering chest compressions and rescue breaths to support oxygen delivery to a victim's vital organs. If the heart is unable to contract (squeeze) on its own, blood and oxygen will not be pumped to the brain or body. Oxygen keeps the organs and the victim alive. Without it, death is certain.



Chest compression is the act of pushing down hard and fast on the chest of another person, in order to compress their heart. This mimics the normal squeezing action produced by a healthy heart, and will help deliver oxygen and blood through the heart muscle, lungs, brain and body.

Rescue breathing* is the act of delivering oxygen to the victim's lungs by exhaling air from your own lungs into their lungs. It is performed by placing your mouth on the victim's mouth, and is also known as 'mouth-to-mouth' breathing.



Mouth to mouth rescue breaths

**For the purposes of this class, we will focus on compression-only (hands-only) CPR. Rescue breathing will not be taught or practiced.*

Why teach compression-only (hands-only) CPR?

CPR is associated with increased survival rates and better neurological outcomes (less damage to the brain) for victims of sudden cardiac arrest. A critical component to effective CPR is minimizing interruptions in chest compressions.

Interruption in chest compressions interferes with delivery of blood and oxygen to the victim's brain and body. Especially when a rescuer is unfamiliar with technique, the pause required to give rescue breaths can be extensive, resulting in prolonged interruption in compression delivery. Untrained lay rescuers should provide compression-only (hands-only) CPR for adult victims (puberty and older) of cardiac arrest and continue compressions until the arrival of an AED and/or rescuers with additional training.

Respiratory (breathing) problems are most often the cause of arrest in infants and children, therefore victims younger than puberty should receive rescue breaths in combination with chest compressions. However, as with older victims, if rescuers are unable or unwilling to deliver rescue breaths, compression-only CPR is also recommended for infants and children.



Why are depth, rate and recoil Important?

Survival depends on the quality of CPR. The depth, rate and recoil determine the quality of chest compressions.

Depth: Chest compressions are most often given too shallow. The heart is located deep within the chest cavity, protected by the ribs and breastbone (sternum), therefore one must push hard to compress the heart. For effective compressions, the victim should be on a firm surface. For an adult size victim chest compressions should be at least 2 inches. Research suggests a depth greater than 2.4 inches on adults may cause injury, therefore compressions should be between 2 to 2.4 inches deep.

The depth of compressions for infants (less than one year old) and children (1 year to puberty) should be 1/3 of their chest diameter. For infants that is about 1.5 inches deep and for children about 2 inches deep.

Rate & Recoil: The recommended rate of compressions for any age victim is 100-120 compressions per minute. Compressions slower than a rate of 100 per minute will not provide enough

flow of blood or oxygen to sustain life in the critical organs. Compressions faster than 120 per minute prevent full chest recoil (expansion). During chest recoil, the release of pressure on the heart allows the heart chambers to refill with newly oxygenated blood in order to prepare for delivery to the brain and body during the next chest compression.

It is critical to minimize pauses between compressions. Every time compressions are interrupted, blood flow decreases significantly and several compressions are required to increase blood flow to the heart and brain- back to the level present before the interruption. Pauses should be limited to less than 10 seconds.

Do I need to find a pulse before starting CPR?

Checking a pulse is not necessary. The most recent guidelines recommend that lay rescuers (non-trained emergency responders) should not delay initiation of CPR by first checking for a pulse. If the victim is nonresponsive, breathing abnormally or not breathing at all, CPR should be started immediately.

CPR – One vs Two Rescuer Technique

Are there differences in rescue action steps based on a victim's age (adult vs child)?

Yes, there are subtle yet important differences between response actions for adult versus child victims. The difference occurs when a child is found unconscious (unwitnessed collapse) by a *single rescuer*.

This variation is small but important. Sudden collapse of an adult is almost always the result of an underlying heart condition, often requiring an AED. Collapse of a child is much more likely to be the result of an airway problem, such as choking. Therefore, when a child is found unconscious assessing and addressing the problem with immediate CPR should take place before leaving the child to call 911 or to get the AED. CPR may be enough to clear the child's airway.

Adult victim, WITNESSED or UNWITNESSED collapse with abnormal or no breathing

Two or more responders:

1. Check for responsiveness and breathing
2. One responder start CPR *while* second responder activates emergency response, calls 911, and gets the AED
3. Use the AED as soon as it's available
4. Transition care to EMS (emergency medical services)

Single responder: Activate emergency response, call 911, and get AED (if nearby) **before** starting CPR. The remaining steps are the same.

Pediatric victim (infant to pre-pubertal), WITNESSED collapse (child suddenly becomes unresponsive) with abnormal or no breathing

Two or more responders:

1. Check for responsiveness and breathing
2. One responder start CPR *while* second responder activates emergency response, calls 911, and gets the AED
3. Use the AED as soon as it's available
4. Transition care to EMS (emergency medical services)

Single responder: Activate emergency response, call 911, and get AED (if nearby) **before** starting CPR. The remaining steps are the same.

Pediatric victim (infant to pre-pubertal), UNWITNESSED collapse (child found unconscious) with abnormal or no breathing

Two or more responders:

1. Check for responsiveness and breathing
2. One responder start CPR *while* second responder activates emergency response, calls 911, and gets the AED
3. Use the AED as soon as it's available
4. Transition care to EMS (emergency medical services)

Single responder: Perform CPR for 2 minutes first*, **BEFORE** leaving the victim to activate emergency response, call 911 or get AED. The remaining steps are the same.

**Airway problems are the main cause of arrest in children. Assessing the child's airway and giving 2 minutes of CPR should occur before calling 911 or getting the AED.*

COMPRESSION-ONLY CPR TECHNIQUE, ADULT

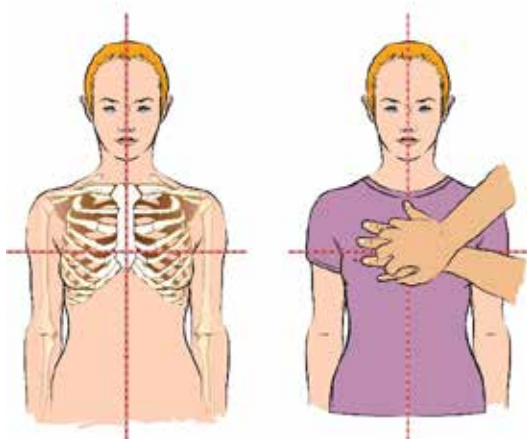
(AMERICAN HEART ASSOCIATION 2015 GUIDELINES)

Chest compressions are the key component to effective CPR. Hand positioning, rate, depth, and degree of recoil are critical components for effective compressions. Guidelines specify different hand placement for certain ages, but an effective general rule is that for an adult size victim (including a large child or teenager) adult hand placement should be used.

Remember: Push hard and fast in the center of the chest!
Minimize interruptions in chest compressions!

Adults and children above puberty:

1. Place the heel of one hand on the center of the chest (on the lower half of the sternum/breastbone) and place the other hand on top and interlock the fingers
2. Compress straight down with straight arms
3. Compress at *least 2 inches* (but less than 2.4 inches) deep, at a rate of 100-120 times per minute
4. Allow the chest to fully recoil (expand) between compressions and minimize interruptions between compressions



CPR hand position for adults and children above puberty

COMPRESSION-ONLY CPR TECHNIQUE, CHILD & INFANT

(AMERICAN HEART ASSOCIATION 2015 GUIDELINES)

Children (One-year-old to puberty/adolescence)

- 1A. For large children, place the heel of one hand on the center of the chest (on the lower half of the sternum/ breastbone) and place the other hand on top and interlock the fingers
- 1B. For small children, place the heel of one hand on the center of the chest (on the lower half of the sternum/ breastbone)
2. Compress straight down with a straight arm(s)
3. Compress 1/3 the chest diameter (about 2 inches deep) at a rate of 100-120 times per minute
4. Allow the chest to fully recoil (expand) between compressions, and minimize interruptions between compressions

Infants (birth to one year)

1. Place two fingers* on the breastbone slightly below the nipple line. Make sure baby is on a hard surface
2. Compress straight down with two fingers*
3. Compress 1/3 the chest diameter (about 1.5 inches deep) at a rate of 100-120 times per minute
4. Allow the chest to fully recoil (expand) between compressions and minimize interruptions between compressions

**For two-person rescue technique, one rescuer encircles hands around the infant's chest with both thumbs touching (but not overlapping) on the breastbone, slightly below the nipple line. Compress straight down with two thumbs. In traditional CPR the second rescuer would simultaneously position the infant's head to open its airway and give rescue breaths.*



Single hand chest compression technique for child-sized victim



Single responder infant chest compression technique

Remember..

Always minimize interruptions of chest compressions to increase chances of survival!!!

Chest compressions should always be given at a rate of 100-120 per minute, regardless of age or size of victim. AEDs often have a metronome to help maintain the proper compression rate. Refer to appendix G for a list of songs that are 100-120 beats per minute.



Two or more responder infant chest compression technique

AED BASICS



Example of an AED with its components



example of AED in wall case

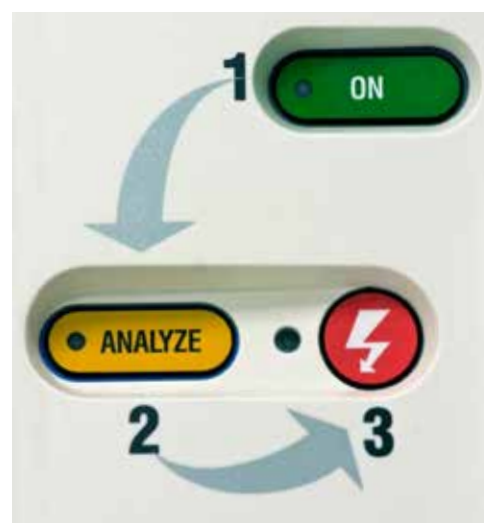
What is an automated external defibrillator (AED)?

An AED is a portable electronic device used to treat sudden cardiac arrest.

How does an AED work?

When properly applied, the AED *automatically* analyzes the heart rhythm and determines whether it is normal or abnormal. If an abnormal life threatening rhythm is found, the AED will recommend delivering a shock. Depending on the machine specifications, the AED will either automatically deliver a shock or instruct the rescuer to deliver a shock by pressing a clearly identified button on the AED. A shock delivers a controlled amount of external electricity from the AED to the victim to reset the heart rhythm. The AED will not harm the victim; it will not deliver a shock if shock is not necessary. However, if the victim's heart is quivering in ventricular fibrillation, the victim will not survive without use of an AED.

Unless the victim regains consciousness, CPR should resume immediately after the shock is delivered. The AED will prompt the rescuer to do so. After two minutes of CPR the AED will instruct the rescuer to stop CPR so that it can reanalyze the heart rhythm. The AED may recommend multiple shocks in an attempt to restore normal heart rhythm. The rescuer(s) should remain with the victim and continue CPR until emergency medical services arrive.



Example of labeled AED buttons

Even if the victim regains consciousness, the AED should remain properly attached to the victim until emergency medical services arrive. The heart muscle can, without warning, quickly fall back into an abnormal rhythm.

How to determine correct AED pad size?

AED pads are marked as adult or pediatric (child) and are different in size. Adult pads can be used for any age and size of victim, so when in doubt use adult pads. Pediatric pads are smaller than adult to better fit better to a child sized body.

Adult pads must be used on adult victims

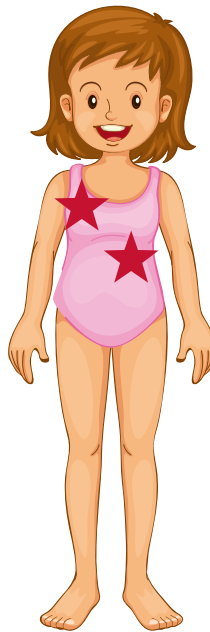
- Pediatric pads deliver less electrical energy, which is not enough to treat an adult heart arrhythmia

Pediatric pads (when available) should be used on children less than 8 years old or less than 55 pounds

- Children's bodies have less mass than adults, so they do not require as much energy to resuscitate. When pediatric pads are connected to the AED, it operates in pediatric mode, reducing the amount of energy delivered during the shock.

If pediatric pads are not available, adult pads can be used for children and infants

- AED pads should never overlap or touch. If the victim's body is too small causing the pads to overlap, the pads should be positioned with one on the center of the victim's chest and one on the center of the victim's back. Hands can be positioned on top of pad to give chest compressions.
- AED pads should never be cut or altered in any way.



Correct pad placement for small children (so long as pads do not touch*)

- One pad on upper right chest
- One pad on lower left chest

**If pads risk touching, use front-to back pad placement (refer to next image)*



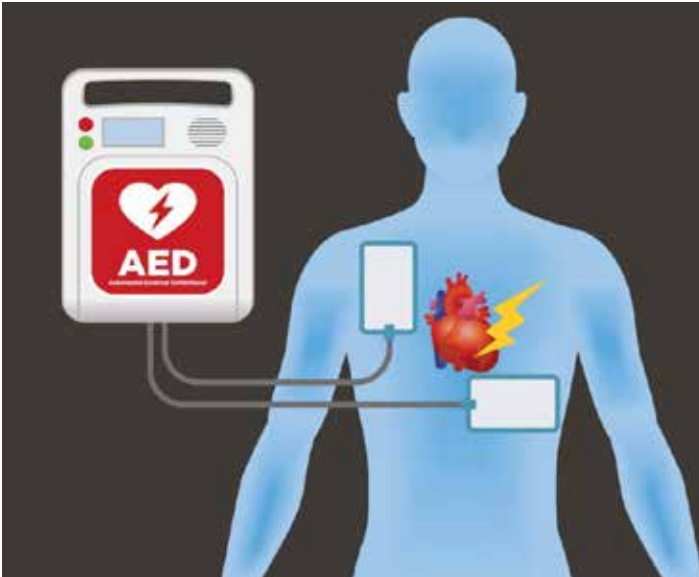
Correct pad placement for adults and large children

- One pad on upper right chest
- One pad on lower left chest



Correct pad placement for infants, as well as small children when AED pads risk touching

- One pad on center of chest
- One pad on center of back



AED pads are strategically placed to pass electricity through the heart.

How to use an AED?

1. Turn on the AED and follow voice prompts
2. Remove victim from water (moisture under the victim is ok, but victim must not be submerged in water)
3. Remove victim's shirt, shave body hair as necessary with razor in accessory kit and remove all jewelry, patches on skin, or other items on victim's chest (can use scissors in accessory kit to cut off victim shirt; do not use scissors to alter pads)
4. Dry all water or sweat from chest as needed
5. Select appropriate sized pads, remove from packaging and apply so that entire pad adheres to skin. Do not reposition the electrodes once applied. If the position must be changed, remove and replace with new pads. Pad placement depends on size of victim.
6. Plug in pad cable/wire to AED (if not done already)
7. Make sure no one is touching the victim, allowing the AED to analyze the victim's heart rhythm
8. If a shock is advised, announce "clear" and make sure no one is touching the victim
9. Push the shock button on the AED device if prompted to do so by AED
10. After shock is delivered, immediately resume CPR
 - a. If no shock is advised, follow the prompts given by the AED and immediately resume CPR until victim is conscious and/or EMS arrives.
11. The AED will prompt the responder to stop CPR every 2 minutes. This pause allows the AED to reanalyze the heart rhythm and determine if a shock is needed
12. Stay with the victim, continuing CPR and using the AED as needed. Keep AED device powered on and AED pads properly attached to the victim until emergency medical services arrive

CPR & AED FLOWSHEET

WITNESSED collapse of adult or child, check for responsiveness

Assess scene safety	Call out, rub arms/chest, ask 'are you ok?'	If responsive, no CPR needed. Place patient on left side and protect airway until help arrives.
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If unresponsive, call 9-1-1 and get AED

If second responder available, send them to call for help and obtain AED	For single rescuer on UNWITNESSED COLLAPSE: ADULT: obtain AED, if nearby, then begin CPR CHILD: start CPR then obtain AED	If second responder available, send them to activate Cardiac Emergency Response
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Begin Chest Compressions at a rate of 100-120/minute

<p>INFANT: 2 fingers/thumbs in middle of breast bone and compress approximately 1.5 inches</p> 	<p>SMALL CHILD: use heel of hand, compress approximately 2 inches</p> 	<p>LARGE CHILD & ADULT: use both hands – one on top of the other in the middle of the breast bone and compress 2 to 2.4 inches</p> 
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Turn on AED as soon as it is available and follow directions

Attach AED pads in correct position. Do not touch victim while AED analyzes the heart rhythm	If AED determines shock is needed, follow the prompts to deliver shock (do not touch victim)
--	--



Follow instructions from AED until EMS arrives

Resume CPR for 2 minutes until further instructed by AED device or EMS	If victim becomes responsive, place on left side and protect airway. Keep AED device on and AED pads in place on victim's chest
--	---

CARDIAC EMERGENCY PREPAREDNESS

Watch Chapter 3: Being Prepared in a Cardiac Emergency (4:50)

Online: <http://www.projectadam.com/Heartsafeschools>

What is the Cardiac Emergency Response Plan (CERP)?

The Cardiac Emergency Response Plan is a document that outlines appropriate actions to take in preparation of, and in response to, a cardiac emergency. Project ADAM, in collaboration with the American Heart Association and other national health and safety organizations, helped create a School Cardiac Emergency Response Plan template, which can be tailored to meet the needs of individual school and/or community organizations.

*Complete Cardiac Emergency Response Plan templates can be found Online: <http://www.projectadam.com/Heartsafeschools>

Cardiac Emergency Response Plans should include (but are not limited to) the following:

1. Development of a cardiac emergency response team (CERT) or select group of first responders
 - a. First responders should be certified in CPR with AED
 - b. Names and contact information of first responders should be readily available to staff and students
2. Activation of the CERT during cardiac emergencies
 - a. A communication system should be established for immediate notification of the response team
3. Automated External Defibrillators (AEDs) Placement and Maintenance
 - a. Identify location of AEDs. Place appropriate signage and instructions for use
 - b. Plan for maintenance of AEDs
4. Communication of plan throughout campus
 - a. Plan posted throughout school and copy of plan made available to administration, staff and students, to assure understanding of appropriate response actions
5. CPR and AED Training Recommendations
 - a. 10% (at minimum) of staff members have current CPR/AED certification
 - b. Every year (at minimum) complete SCA, CPR and AED awareness training for staff
 - c. Every year (at minimum) complete SCA, CPR and AED awareness training for students
 - d. Every year (at minimum) conduct a cardiac emergency response drill to practice
 - e. appropriate response to a cardiac emergency
6. Integration with local Emergency Medical Services (EMS)

- a. A copy of the plan should be provided to local EMS, and implementation of the plan should be coordinated with local EMS
7. Annual review of the Cardiac Emergency Response Plan
 - a. Every school year, as well as each time the AED is deployed during an emergency (regardless of use), the emergency response plan should be reviewed and modified, as needed, to improve the response processes.
 8. Protocol for Cardiac Emergency Response Team (see below)

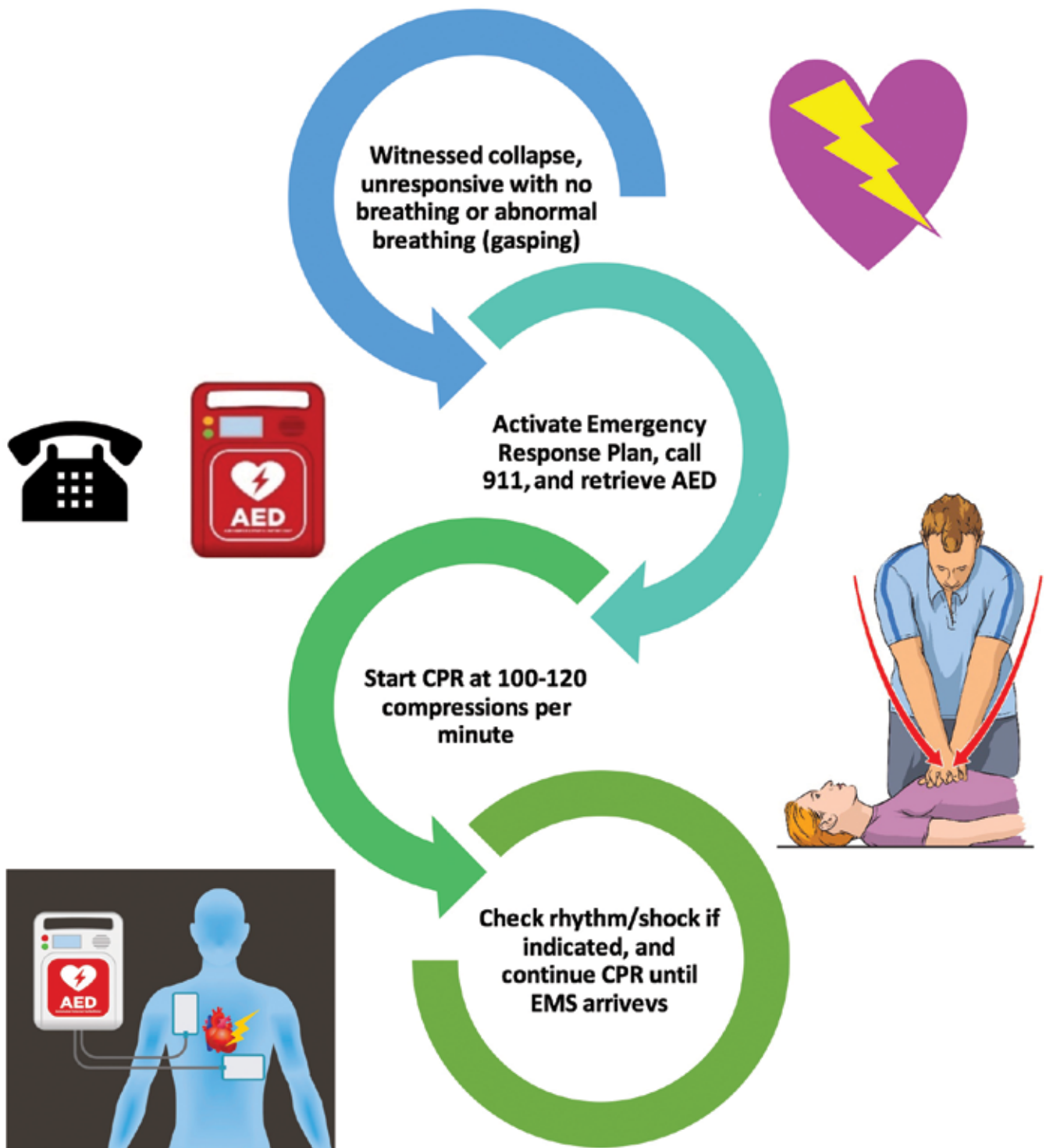
Example Protocol for Cardiac Emergency Response Team

The cardiac emergency response should be reviewed and practiced annually (at minimum) by conducting a cardiac emergency response drill. Although this overview outlines step-by-step actions, when appropriate some steps should take place simultaneously. For example, when more than one responder is present, one responder should call 9-1-1 *while* another responder initiates CPR and another responder retrieves the AED.

First responders should follow these steps when a cardiac emergency is suspected (sequence may vary depending upon age of victim and number of responders):

1. Recognize the signs and symptoms of SCA
 - a. All staff and students should be able to identify symptoms of SCA, know how to alert the cardiac emergency response team and know the location of the AED(s) on campus.
2. Call 9-1-1 and alert Cardiac Emergency Response Team (CERT)
 - a. Using a landline to call 911 is best, but using a cell phone is OK if it's quicker. Communication devices (cell phones, walkie-talkies, etc.) should be used to spread the alert.
 - b. Be prepared to give details including: the facility's full address, classroom or specific location, and tell them you have an unresponsive victim.
3. All CERT members should proceed immediately to the scene of the cardiac emergency.
 - a. The closest team member should retrieve the AED and leave the AED cabinet door open; the alarm will serve as another notification that a cardiac emergency is underway
4. Initiate CPR immediately
5. Use the nearest AED *as soon as* it is available
6. Transition to EMS
7. Debrief, review plan, complete incident reports

CARDIAC EMERGENCY REPOSENSE FLOWSHEET



EMERGENCY RESPONSE PRACTICE SCENARIOS

Scenario #1: Collapse while playing basketball

Natasha is a 17-year-old star basketball player in her senior year of high school. Her team is playing their cross-town rivals and the game is tied. Natasha is fouled, and when she approaches the free-throw line she suddenly collapses. Natasha has no prior history of medical issues.

One of Natasha's coaches just finished his Project ADAM CPR/AED training and runs to assess Natasha. She is not responding when he talks to her or shakes her. She is gasping and her body starts shaking.

Q What should the coach do?

A Activate the Cardiac Emergency Response: send someone to call 9-1-1 and notify the cardiac emergency response team (first responders), send someone to get the AED and immediately start CPR.

Q What are some signs/symptoms that indicate Natasha may be suffering from SCA?

A Sudden collapse, unresponsiveness, abnormal breathing, seizure-like activity (shaking)

Q Natasha is an athlete and is in great physical shape. Does being in great shape prevent her from having a sudden cardiac arrest?

A No: SCA can happen to anyone, regardless of age, race, gender, or fitness level.

Scenario #2: Science teacher collapse after heart surgery

Mr. Bell is a 53-year-old junior high school science teacher. His health history is significant for recent heart surgery. While lecturing during his first day back to school after surgery, Mr. Bell becomes very pale and sweaty; then sits down, complaining of chest pain and dizziness.

One of the students just completed a Project ADAM course. The student goes to Mr. Bell to check on him, when suddenly Mr. Bell slumps over in his chair and falls to the floor. Mr. Bell is responsive to his name but he continues to hold his chest and is breathing abnormally.

Q What should the student do?

A Activate the Cardiac Emergency Response: send someone to call 9-1-1 and notify the cardiac emergency response team (first responders), send someone to get the AED and remain by Mr. Bell's side.

Q Did Mr. Bell experience an SCA?

A No, Mr. Bell likely had a heart attack. Recent heart surgery, paleness, dizziness, chest pain and weakness are all indicators of a possible heart attack. Mr. Bell is responsive therefore his vital organs are still receiving blood and oxygen; he is not in sudden cardiac arrest.

Q Is this a cardiac emergency?

A ***This IS a cardiac emergency*** and the student should activate Cardiac Emergency Response. A heart attack requires medical attention and it can also lead to SCA. Trained first responders and the AED should immediately be brought to Mr. Bell.



Scenario #3: Racing heart while running

Xavier is a healthy 12-year-old boy who is participating in the White House Mile challenge at school. Xavier likes to run but sometimes feels like he is going to pass out, especially when he sprints. Xavier is sprinting the last 100 yards when he feels his heart racing too fast and feels like he might pass out. He decides to stop and sit down on the ground.

The supervising school nurse witnesses Xavier's actions and rushes to his side to see if he is ok. She recalls that Xavier's older sister has a history of heart problems and has exercise restrictions. The school nurse is concerned that Xavier might be at risk for SCA.

- Q** What risk factors does Xavier have for SCA?
- A** A sibling with heart problems. A family history of heart problems, especially one that limits exercise, could be a risk factor for SCA. It is possible that Xavier may have an underlying heart condition that compromises the structure or electrical conduction through his heart.
- Q** What signs and symptoms did Xavier demonstrate that are worrisome for SCA?
- A** Feeling like he is going to pass out (especially during exercise), feeling like his heart is racing too fast (heart palpitations).
- Q** What next steps should the nurse take?
- Q** Xavier is responsive and breathing normal, therefore the cardiac emergency response does not require activation. Due to identified risk factors for SCA, the nurse should discuss her concerns and review cardiac emergency preparedness with Xavier's teachers. She should definitely assure the AED is on site and functional. The nurse should notify Xavier's parents and follow up to make sure Xavier receives the appropriate medical attention.

PROJECT ADAM CPR & AED CURRICULUM: POST-TEST

Facilitators/Faculty/Staff

Today's Date: _____

I am: Faculty _____ Staff _____ Student in grade _____ Other _____

I have taken a previous course in CPR/AED (circle one): Yes No

I am certified in CPR/AED (circle one): Yes No

1. What is Sudden Cardiac Arrest (SCA)?

- Abrupt, unexpected loss of heart function, preventing blood and oxygen supply to the vital organs
- A clogged blood vessel in the heart, with sudden sharp pain in the chest
- The sensation of pounding in one's chest when their heart is beating too fast
- The sudden rupture of a blood vessel within the heart

2. What are the *possible* causes of sudden cardiac arrest (SCA)?

- Electrical abnormality within the heart
- Oxygen deprivation to the heart muscle
- A blow to the chest at a critical time in the cycle of the heart (commotio cordis)
- Abuse of certain drugs and/or stimulants
- All of the above

3. Among youth, SCA is most likely to occur during which of the following?

- A scary movie or show
- A fast amusement park ride, like a roller coaster
- Sports or athletic activities
- Emotionally stressful events, like arguing with friends

4. Which of the following are symptoms of SCA? (circle all that apply)

- Sudden, unexplained collapse
- Loss of consciousness
- Irregular breathing or no breathing
- Seizure-like activity

5. When performing CPR on an adult victim (puberty and older), how deep should you deliver chest compressions?

- Less than 2 inches
- At least 2 inches, but no more than 2.4 inches
- At least 3 inches, but no more than 3.4 inches
- More than 4 inches

6. Identify the correct number of hand(s) or digits used to deliver chest compressions, depending on age of victim.

- Infant – 2 hands, Child – 1 or 2 hands, Adult – 2 fingers/thumbs
- Infant – 2 fingers/thumbs, Child – 2 fingers/thumbs, Adult – 1 hand
- Infant – 1 hand, Child – 2 hands, Adult – 2 hands
- Infant – 2 fingers/thumbs, Child – 1 or 2 hands, Adult – 2 hands

7. What is the correct number of compressions to be given per minute, for victims of any age?

- a. 80-100
- b. 100-120
- c. 150-180
- d. 180-200

8. What is the 'Cardiac Emergency Response Plan?' (write-in your answer)

9. What is the purpose of an AED?

- a. To activate the Cardiac Emergency Response Plan and call 911
- b. To provide instructions on how to perform CPR
- c. I don't know
- d. To automatically analyze the heart rhythm, determine if a shock is advisable and deliver a shock when needed

10. Draw the correct placement on the chest and/or back of AED pads for an adult and infant, assuming **only adult pads** are available.



FRONT



BACK



FRONT



BACK

11. During a two-rescuer response, number the steps in order (1-4) to be performed after WITNESSING the sudden collapse of an adult or child.

- ___ Check for responsiveness
- ___ Transfer care to EMS
- ___ Use AED as soon as it's available by opening the cover and following the prompts
- ___ Start cardiopulmonary resuscitation (CPR) and send 2nd rescuer to call 911 and get AED

*How would the steps differ if you were the **only** rescuer on the scene of this witnessed collapse?*

Sudden Cardiac Arrest Awareness in Schools Flyer

Sudden Cardiac Arrest Awareness in Schools

Recommended for all school staff members because *anyone* can witness a cardiac emergency

Goal: Work together to save lives – prevention of sudden cardiac death through cardiac emergency preparedness, including CPR and AED

It is critical for all school staff members to:

1. Recognize the signs and symptoms of a sudden cardiac arrest.
2. Know that time is critical – a shock delivered by an automated external defibrillator (AED) within 3-5 minutes may save a life. After 5 minutes, survival rates decrease by 10% with each minute of delay.
3. Know who the first responders are and how to contact them.
4. Know where the AED is located and how to use it.
5. Be knowledgeable about the emergency plan and know how to initiate it.
6. ***Do not hesitate! Survival rates can only increase with your help. SCA victims will not survive without help.***

What is sudden cardiac arrest (SCA)?

1. Sudden cardiac arrest is the abrupt, unexpected loss of heart function, usually resulting from an electrical problem within the heart. When this happens the heart stops beating and blood stops flowing to the brain and other vital organs. SCA results in death if not treated within minutes.
2. Sudden cardiac arrest differs from a heart attack (myocardial infarction). A heart attack is a plumbing problem, caused by one or more blockages in the heart's blood vessels, thereby preventing proper blood flow to parts of the heart muscle. A heart attack in itself usually does not cause the heart to stop beating. However, if left untreated a heart attack can lead to sudden cardiac arrest.

What is an AED?

An AED is a portable electronic device which, when properly applied, ***automatically*** diagnoses potentially life-threatening heart rhythms. The AED decides whether or not a shock is needed, then delivers a shock to restore normal heart rhythm.

Statistics and facts about sudden cardiac arrest:

1. Sudden cardiac arrest is indiscriminate to age, race or gender. Each year approximately 600,000 persons in the United States suffer a sudden cardiac arrest. Roughly 320,000 of these arrests occur outside of the hospital in a community setting and only 90% of the victims will survive.
2. In the U.S., cardiovascular disease is among the top three medical causes of death in children, with increasing incidences in adolescence and adulthood. Evidence suggests that over 6,000 children experience an out of hospital SCA each year. The true prevalence of death related to SCA in children is unknown due to the lack of a mandatory and systematic national registry.
3. SCA in youth is usually attributable to a previously undiagnosed heart disorder, which more than half of the time is genetic or hereditary. SCA can also be caused by a blow to the chest during a critical time in the cycle of the heart (*Commotio cordis*), or can occur after certain drugs or stimulants are taken.
4. Rapid, appropriate action increases chances of survival from SCA. Steps include: activate the cardiac emergency response by calling 9-1-1 and alerting the school's emergency response team, start cardiopulmonary resuscitation (CPR), use the automated external defibrillator (AED), and continue care until emergency medical services (EMS) arrive

Sudden Cardiac Arrest Awareness in Schools

What does sudden cardiac arrest look like?

1. Symptoms of SCA are immediate and drastic, and can include:
 - a. Sudden collapse
 - b. Loss of consciousness
 - c. No breathing or irregular breathing
 - d. No Pulse
 - e. Seizure-like activity
2. Sometimes early signs may indicate potential for SCA. The following signs, especially with exercise, should be reported to the school nurse, school administrator, parents and medical provider:
 - a. Sudden, unexplainable fatigue, weakness, paleness, wobbly appearance, fainting, dizziness, chest pain or discomfort, heart palpitations, vomiting, shortness of breath, irregular or noisy breathing.
 - b. Family history of sudden, unexpected, unexplained death
3. There may be no warning signs. The victim may collapse suddenly-
4. Remember- SCA can happen anytime, but is most likely to occur during physical activity. Sudden unresponsiveness should be treated as sudden cardiac arrest until proven otherwise.

How can I help a victim of sudden cardiac arrest?

1. Recognize the signs and the symptoms of SCA.
2. Alert the cardiac emergency response team on campus
 - a. Emergency responders should be certified in CPR with AED at least every two years

3. Call 9-1-1 and send for, or retrieve, the AED
 - a. Using a landline is best, but using a cell phone is OK if it's quicker.
 - b. Be prepared to give the school's full address and tell them you have an unresponsive victim.
 - c. Send one person to go outside or stay near the front door to direct EMS responders to the scene.
4. Initiate CPR immediately
 - a. Push hard and fast in the center of the chest, allowing the chest to rise to neutral between compressions and minimizing interruptions between compressions
 - b. If trained and willing, administer chest compression and rescue breaths in a 30:2 ratio, otherwise give compressions only CPR until the AED and/or help arrives.
5. Use the AED as soon as it is available
 - a. Press the power button and follow the prompts.
6. Remain with the victim until emergency medical services arrives
7. Secure a safe scene.
 - a. Remove children from the scene and ensure safety for all. Use communication tools (walkie-talkie, cell phone, etc.) to notify others and communicate needs

Note: All faculty and staff can be part of the chain of survival. Rapid response is critical! Seconds count! This emergency response should be practiced regularly, with drills conducted at least once a year.

If you have additional questions, please talk to your school nurse or AED coordinator.

Project ADAM CPR & AED Curriculum Outline for Facilitators

(target audience: Administrators, Educators & Staff)

This is an outline of the comprehensive facilitator manual. Other grade levels have modified outlines listed in their respective appendices.

Introduction

- What is Project ADAM? (Automated Defibrillators in Adam's Memory)
- A non-profit program that focuses on cardiac emergency preparedness in school and community settings through education and implementation of cardiopulmonary resuscitation (CPR) and automated external defibrillator (AED) programs
- A program that was created in memory of Adam Lemel, a 17-year-old high school student who collapsed and died from sudden cardiac arrest (SCA) while playing basketball at school
- **Administer Pre-Test Questionnaire**

Learning Objectives

1. Recognize signs/symptoms of SCA
2. Know how to perform hands-only CPR
3. Know how to use an AED
4. Know how to activate the Cardiac Emergency Response

Understanding Sudden Cardiac Arrest (SCA)

- What is Sudden Cardiac Arrest
 - › Sudden unexpected loss of heart function, usually resulting from an electrical problem in the heart
 - › The heart stops beating and blood and oxygen stop flowing to the brain and body
- Symptoms of SCA
 - › Sudden, unexpected collapse (usually during exercise)
 - › Not moving, unresponsive, or appears unconscious
 - › Abnormal breathing or not breathing
 - › Seizure-like activity
- Possible warning signs of SCA
 - › Fainting (during or after exercise)
 - › Dizziness/lightheadedness
 - › Vision changes
 - › Chest pain, high blood pressure, heart palpitations/abnormal heart rate and/or rhythm
 - › Excessive fatigue or shortness of breath associated with exercise
- What are the risk factors for SCA?
 - › SCA can happen to anyone, regardless of age, race, gender, or fitness level
 - › Congenital heart anomalies (known & unknown)
 - › Family history of heart problems or sudden death
 - › Smoking, poor diet & exercise habits, drug use, obesity, diabetes, *commotio cordis*

- How to improve survival from SCA?
 - › Early recognition of SCA
 - › Activate Cardiac Emergency Response
 - » Call 9-1-1, give CPR & use nearest AED
 - › Fast and effective actions
 - » A shock delivered by an AED within 3-5 minutes may save a life. Survival rates decrease by 10% with each minute of delay

Cardiopulmonary Resuscitation (CPR) Basics

- What is CPR?
 - › CPR is the coordinated process of delivering chest compressions and rescue breaths to an unconscious victim to support oxygen delivery
 - › For the purpose of this class we will focus on compression-only (hands-only) CPR. Chest compressions are the act of pushing down hard and fast on the chest of another, in order to directly compress their heart. This squeezing action on the heart will help move blood through the heart muscle, lungs, brain, and body, thereby continuing oxygen delivery.
- Proper CPR technique
 - › Survival depends on the quality of chest compressions, including proper depth, rate and recoil
 - › Those certified, competent and willing, should perform chest compressions with rescue breaths on all victims, otherwise compression only CPR is recommended
 - › Checking for a pulse is not recommended for untrained non-emergency medical providers due to delayed initiation of CPR.
- Differences between Adults and Children:
 - › Sudden collapse of an adult is almost always the result of an underlying heart condition, often requiring an AED. Collapse of a child is much more likely to be the result an airway problem, such as choking. Therefore, when a child is found down, assessing and addressing the problem with immediate CPR should take place before leaving the child to call 911 or to get the AED, as CPR may be enough to clear the child's airway.

• **Adult victim, WITNESSED or UNWITNESSED collapse with abnormal or no breathing**

- › *Two or more responders:*
 1. Check for responsiveness and breathing
 2. One responder start CPR **while** second responder activates emergency response, calls 911, and gets the AED
 3. Use the AED as soon as it's available
 4. Transition care to EMS (emergency medical services)
- › *Single responder:* Activate emergency response, call 911, and get AED (if nearby) **before** starting CPR. The remaining steps are the same.

• **Pediatric victim (infant to pre-pubertal), WITNESSED collapse (child suddenly becomes unresponsive) with abnormal or no breathing**

- › *Two or more responders:*
 1. Check for responsiveness and breathing
 2. One responder start CPR **while** second responder activates emergency response, calls 911, and gets the AED
 3. Use the AED as soon as it's available
 4. Transition care to EMS (emergency medical services)
- › *Single responder:* Activate emergency response, call 911, and get AED (if nearby) **before** starting CPR. The remaining steps are the same.

- **Pediatric victim (infant to pre-pubertal), UNWITNESSED collapse (child found unconscious) with abnormal or no breathing**

- › *Two or more responders:*

1. Check for responsiveness and breathing
2. One responder start CPR **while** second responder activates emergency response, calls 911, and gets the AED
3. Use the AED as soon as it's available
4. Transition care to EMS (emergency medical services)

- › *Single responder: **Perform CPR for 2 minutes first***, **BEFORE** leaving the victim to activate emergency response, call 911 or get AED. The remaining steps are the same.*

**This difference in sequence is because airway problems are the main cause of arrest in children. Giving 2 minutes of CPR first, in attempt to correct the problem and clear the airway, takes precedent over calling 911 or getting the AED.*

- Hand positioning

- › Adult – 2 hands, one on center of chest, other hand on top with interlocking fingers. Push down with straight arms.
- › Pediatric (less than puberty):
 - » Child – 1 or 2 hands
 - » Infant – 2 fingers or 2 thumbs with hands encircling infant chest

- Chest compression depth

- › Adult – 2 to 2.4 inches
- › Pediatric (younger than puberty)- 1/3 the chest diameter
 - » Child – about 2 inches
 - » Infant – about 1.5 inches

- Rate of chest compressions is the same for all ages!

- › 100-120 compressions per minute
- › Remember: push hard, push fast in the center of the chest with straight arms
- › Importance of recoil
- › Allow the chest to rise to neutral between compression. Compressions that are too fast do not allow time for the chest to rise and the heart to refill with blood

- CPR demonstration

- › Adult demonstration
- › Pediatric demonstration: Child & infant

- CPR review & practice with class

AED Basics

- What is an AED & how does it work?

- › A portable electronic device that automatically detects abnormal heart rhythms, and delivers a shock if needed to restore normal heart rhythm.

- Steps for AED use

- › Turn it on, follow the voice instructions given by the AED

- AED review & practice with class



Cardiac Emergency Preparedness

- What is the Cardiac Emergency Response Plan (CERP)
 - › A document that outlines appropriate actions to take in preparation of, and in response to, a cardiac emergency
- Who is involved and what should they do?
 - › Everyone is involved. All staff & students should be able to:
 - » Identify symptoms of SCA
 - » Know the who first responders/Cardiac Emergency Response Team (CERT) are and how to notify them of the emergency, including calling 911
 - » Know where the AED is located in the building and/or on campus
 - › Cardiac Emergency Response Team (CERT) should give CPR and use AED
- Review and discuss your school/district's Cardiac Emergency Response Plan

SCA Practice Scenarios

- Scenario #1: Collapse while playing basketball
- Scenario #2: Science teacher collapse after heart surgery
- Scenario #3: Racing heart while running

Wrap-up

- Review learning objectives & answer questions
- Administer Post-test Questionnaires & review answers
- Provide any hand-outs or materials for students to take home

Project ADAM CPR & AED Curriculum: Pre & Post-Test Answers

Facilitators/Faculty/Staff

1. What is Sudden Cardiac Arrest (SCA)?

- a. Abrupt, unexpected loss of heart function, preventing blood and oxygen supply to the vital organs
- b. A clogged blood vessel in the heart, with sudden sharp pain in the chest
- c. The sensation of pounding in one's chest when their heart is beating too fast
- d. The sudden rupture of a blood vessel within the heart

2. What are the possible causes of sudden cardiac arrest (SCA)?

- a. Electrical abnormality within the heart
- b. Oxygen deprivation to the heart muscle
- c. A blow to the chest at a critical time in the cycle of the heart (commotio cordis)
- d. Abuse of certain drugs and/or stimulants
- e. All of the above

3. Among youth, SCA is most likely to occur during which of the following?

- a. A scary movie or show
- b. A fast amusement park ride, like a roller coaster
- c. Sports or athletic activities
- d. Emotionally stressful events, like arguing with friends

4. Which of the following are symptoms of SCA? (circle all that apply)

- a. Sudden, unexplained collapse
- b. Loss of consciousness
- c. Irregular breathing or no breathing
- d. Seizure-like activity

5. When performing CPR on an adult victim (puberty and older), how deep should you deliver chest compressions?

- a. Less than 2 inches
- b. At least 2 inches, but no more than 2.4 inches
- c. At least 3 inches, but no more than 3.4 inches
- d. More than 4 inches

6. Identify the correct number of hand(s) or digits used to deliver chest compressions, depending on age of victim.

- a. Infant – 2 hands, Child – 1 or 2 hands, Adult – 2 fingers/thumbs
- b. Infant – 2 fingers/thumbs, Child – 2 fingers/thumbs, Adult – 1 hand
- c. Infant – 1 hand, Child – 2 hands, Adult – 2 hands
- d. Infant – 2 fingers/thumbs, Child – 1 or 2 hands, Adult – 2 hands

7. What is the correct number of compressions to be given per minute, for victims of any age?

- a. 80-100
- b. 100-120
- c. 150-180
- d. 180-200

8. What is the 'Cardiac Emergency Response Plan?' (write-in your answer)

A document that outlines the appropriate actions to take in preparation of and in response to a cardiac emergency. The plan should include, but is not limited to, the following: Call for help, call 911, activate school emergency response team, start CPR, retrieve & use AED, transition care to Emergency Medical Services

9. What is the purpose of an AED

- a. To activate the Cardiac Emergency Response Plan and call 911
- b. To provide instructions on how to perform CPR
- c. I don't know
- d. To automatically analyze the heart rhythm, determine if a shock is advisable and deliver a shock when needed

10. Draw the correct placement on the chest and/or back of AED pads for an adult and infant, assuming only adult pads are available.



FRONT



BACK



FRONT



BACK

11. During a two-rescuer response, number the steps in order (1-4) to be performed after WITNESSING the sudden collapse of an adult or child.

- 1 Check for responsiveness
- 4 Transfer care to EMS
- 3 Use AED as soon as it's available by opening the cover and following the prompts
- 2 Start cardiopulmonary resuscitation (CPR) and send 2nd rescuer to call 911 and get AED

How would the steps differ if you were the *only* rescuer on the scene of this witnessed collapse?

As a single rescuer responding to a witnessed collapse you should call 911 and get the AED before giving CPR (as long as you know where the AED is located and can quickly retrieve it).

Example Cardiac Emergency Response Plan

The following is only an example to be used for practice in the educational setting.

*Project ADAM recommends every facility refer to the complete Written Plan for SCA in Schools, located at www.projectadam.com/Heartsafeschools for additional guidance when creating their plan

Name of School

Cardiac Emergency Response Team Members & Contact Information:

Joe Smith 444-555-4567
Sally McCormick 222-333-2345
Tom Stewart 666-777-6789
Sue Thompson 555-666-5678

Emergency Medical Services (EMS) Contact Information:

EMS **911**
Little School Fire Station 999-111-0123

Location Information:

School Name: _____

Complete Address: _____

Nearest Cross Streets: _____

School Contact Phone:

During School hours (7-4): _____

After school hours: _____

AED #1 Location: _____

AED #2 Location: _____

AED #3 Location: _____

AED #4 Location: _____

Example Scenario:

Individual is found on the floor and is not responding to name or shaking

Responder Actions

- First responder calls for help.
- First responder begins CPR and instructs second responder to immediately call 911 and tell the office staff that there is an unresponsive child/adult at (location).
- Office staff calls 911 and uses notification system to alert Cardiac Emergency Response Team (CERT) that there is an unresponsive child/adult at (location).
- CERT team immediately responds to victim and brings AED en route, if it has not already been retrieved.
- AED is immediately applied and used, when available.
- Assign someone to remain at the main entrance to guide emergency medical services to the victim.

Teacher Actions

- Secure a safe scene by instructing students to clear the area.
- Assure students remain in the classroom until there is an "all clear" announcement. If teacher assistance is not required at the scene, continue teaching to maintain 'normalcy.'
- Assure all students are accounted for. Instruct any students who may be temporarily away from the classroom to return promptly.
- Debrief with students after the event, as it is shocking and scary to all. Refer students to counseling services as appropriate.
- Seize the opportunity to review education about SCA, CPR and AEDs, as well as the importance of not tampering with the AEDs on campus.
- **Pertinent Location Information**

IN ALL EMERGENCY SITUATIONS DIAL 911

Project ADAM CPR & AED Curriculum Outline for High School

(target audience: grades 9-12)

This is a simplified version of the comprehensive facilitator manual. Facilitators may edit the outline as needed, however should not omit any of the topics listed in the curriculum below.

Introduction

- What is Project ADAM? (Automated Defibrillators in Adam's Memory)
 - › A non-profit program that focuses on cardiac emergency preparedness in school and community settings by way of education and implementation of cardiopulmonary resuscitation (CPR) and automated external defibrillator (AED) programs
 - › A program that was created in memory of Adam Lemel, a 17-year-old high school student who collapsed and died from sudden cardiac arrest while playing basketball at school
- **Administer Pre-Test Questionnaire**

Learning Objectives

1. Recognize signs/symptoms of SCA
2. Know how to perform hands-only CPR
3. Know how to use an AED
4. Know how to activate the Cardiac Emergency Response

Understanding Sudden Cardiac Arrest (SCA)

- What is Sudden Cardiac Arrest
 - › Sudden unexpected loss of heart function, usually resulting from an electrical problem in the heart.
 - › The heart stops beating and blood and oxygen stop flowing to the brain and body
- Symptoms of SCA
 - › Sudden, unexpected collapse (usually during exercise)
 - › Not moving, unresponsive, or appears unconscious
 - › Abnormal breathing or not breathing
 - › Seizure-like activity
- Possible warning signs of SCA
 - › Fainting (during or after exercise)
 - › Dizziness/lightheadedness
 - › Vision changes
 - › Chest pain, high blood pressure, heart palpitations/abnormal heart rate and/or rhythm
 - › Excessive fatigue or shortness of breath associated with exercise
 - › What are the risk factors for SCA?
 - › SCA can happen to anyone, despite age, race, gender, or fitness level
 - › Congenital heart anomalies (known & unknown)
 - › Family history of heart problems or sudden death
 - › Smoking, poor diet & exercise habits, drug use, obesity, diabetes, *commotio cordis*
- How to improve survival from SCA?

- Early recognition of SCA
 - › Activate Cardiac Emergency Response
 - » Call 9-1-1, give CPR & use nearest AED
 - › Fast and effective actions
 - » A shock delivered by an AED within 3-5 minutes may save a life. Survival rates decrease by 10% with each minute of delay

Cardiopulmonary Resuscitation (CPR) Basics

- What is CPR?
 - › CPR is the coordinated process of delivering chest compressions and rescue breaths to an unconscious victim to support oxygen delivery.
 - › For the purposes of this class we will focus on compression-only (hands-only) CPR. Compressions are the act of pushing down hard and fast on the chest of another, in order to directly compress their heart. This squeezing action on the heart will help move blood through the heart muscle, lungs, brain, and body, thereby continuing oxygen delivery.
- Proper CPR technique
 - › Survival depends on the quality of CPR. Depth, rate and recoil determine the quality of chest compression
 - › For the purposes of this class we will focus on compression-only (hands-only) CPR. But those certified, confident in their skills and willing, should perform rescue breaths *on all victims*
 - › Checking for a pulse is not recommended for the untrained non-emergency medical provider due to delayed initiation of CPR.
- Differences between Adults and Children:
 - › Sudden collapse of an adult is almost always the result of an underlying heart condition, often requiring an AED. Collapse of a child is much more likely to be the result an airway problem, such as choking. Therefore, when a child is found down, assessing and addressing the problem with immediate CPR should take place before leaving the child to call 911 or to get the AED, as CPR may be enough clear the child's airway.

- **Adult victim, WITNESSED or UNWITNESSED collapse with abnormal or no breathing**

- › *Two or more responders:*
 1. Check for responsiveness and breathing
 2. One responder start CPR **while** second responder activates emergency response, calls 911, and gets the AED
 3. Use the AED as soon as it's available
 4. Transition care to EMS (emergency medical services)
- › *Single responder:* Activate emergency response, call 911, and get AED (if nearby) **before** starting CPR. The remaining steps are the same.

- **Pediatric victim (infant to pre-pubertal), WITNESSED collapse (child suddenly becomes unresponsive) with abnormal or no breathing**

- › *Two or more responders:*
 1. Check for responsiveness and breathing
 2. One responder start CPR **while** second responder activates emergency response, calls 911, and gets the AED
 3. Use the AED as soon as it's available
 4. Transition care to EMS (emergency medical services)
- › *Single responder* Activate emergency response, call 911, and get AED (if nearby) **before** starting CPR. The remaining steps are the same.

- **Pediatric victim (infant to pre-pubertal), UNWITNESSED collapse (child found unconscious) with abnormal or no breathing**

- › *Two or more responders:*

1. Check for responsiveness and breathing
2. One responder start CPR **while** second responder activates emergency response, calls 911, and gets the AED
3. Use the AED as soon as it's available
4. Transition care to EMS (emergency medical services)

- › *Single responder: **Perform CPR for 2 minutes first***, BEFORE leaving the victim to activate emergency response, call 911 or get AED. The remaining steps are the same.*

*This difference in sequence is because airway problems are the main cause of arrest in children. Giving 2 minutes of CPR first, in attempt to correct the problem and clear the airway, takes precedent over calling 911 or getting the AED.

- Hand positioning

- › Adult – 2 hands, one on center of chest, other hand on top with interlocking fingers. Push down with straight arms.
- › Pediatric (less than puberty):
 - » Child – 1 or 2 hands
 - » Infant – 2 fingers or 2 thumbs with hands encircling infant chest

- Chest compression depth

- › Adult – 2 to 2.4 inches
- › Pediatric (younger than puberty)- 1/3 the chest diameter
 - » Child – about 2 inches
 - » Infant – about 1.5 inches

- Rate of chest compressions is the same for all ages!

- › 100-120 compressions in a minute
- › Remember: push hard, push fast in the center of the chest with straight arms
- › Importance of recoil
- › Allow the chest to rise to neutral between compression. Compressions that are too fast do not allow time for the chest to rise and the heart to refill with blood

- CPR demonstration

- › Adult demonstration
- › Pediatric demonstration: Child & infant

- CPR review & practice with class

AED Basics

- What is an AED & how does it work?

- › A portable electronic device that automatically detects abnormal heart rhythms, and delivers a shock if needed to restore normal heart rhythm.

- Steps for AED use

- › Turn it on, follow the voice instructions given by the AED

- AED review & practice with class

Cardiac Emergency Preparedness

- What is the Cardiac Emergency Response Plan (CERP)
 - › A document that outlines appropriate actions to take in preparation of, and in response to, a cardiac emergency
- Who is involved and what should they do?
 - › Everyone is involved. All staff & students should be able to:
 - » Identify symptoms of SCA
 - » Know the who first responders/Cardiac Emergency Response Team (CERT) are and how to notify them of the emergency, including calling 911
 - » Know where the AED is located in the building and/or on campus
 - » Cardiac Emergency Response Team (CERT) should
 - » Give CPR and Use the AED
- Goal of CERP: increase survival of SCA victims
- Review and discuss your own school/district's Cardiac Emergency Response Plan

SCA Practice Scenarios

- Scenario #1: Collapse while playing basketball
- Scenario #2: Science teacher collapse after heart surgery
- Scenario #3: Racing heart while running

Wrap-up

- Administer Post-test Questionnaires & review answers
- Review learning objectives & answer questions
- Provide any hand-outs or materials for students to take home

APPENDIX D2

Project ADAM CPR & AED Curriculum: Pre & Post-Test Questions

High School (grades 9-12)

Today's Date: _____

Student in grade _____

I have taken a previous course in CPR/AED (circle one): Yes No

I am certified in CPR/AED (circle one): Yes No

1. What is Sudden Cardiac Arrest (SCA)?

- a. When a heart suddenly stops beating or pumping blood to a person's brain and body
- b. When a blood vessel in the heart gets clogged
- c. When the heart is beating too fast and the person can feel it pounding in their chest

2. What are the signs and symptoms of sudden cardiac arrest (circle all that apply)

- a. Breathing that is not normal or no breathing
- b. Falling to the ground (sudden collapse)
- c. Unconsciousness or not responding to noise or touch

3. When giving hands-only CPR how fast should you compress the chest?

- a. 50-70 times per minute
- b. 100-120 times per minute
- c. 150-200 times per minute

4. What is the proper way to give chest compressions?

- a. Push hard and fast in the center of the chest, with **bent** arms, and allow for chest rise between each compression
- b. Push hard and fast in the center of the chest, with **straight** arms, and allow for chest rise between each compression
- c. Push hard and fast in the center of the chest with **straight** arms, and **do not** allow the chest to rise between compressions

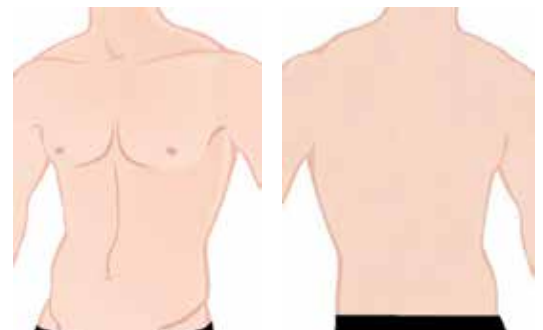
5. What are the proper steps for using an AED (circle all that apply)?

- a. Turn on the AED
- b. Follow the instructions given by the AED
- c. Remove all clothing, jewelry and items from the chest

6. How can you save the life of someone who has had a sudden cardiac arrest?

- a. Recognize the signs of SCA, call 911 and **wait** for help to arrive
- b. Recognize the signs of SCA, call for help, call 911, give CPR and use an AED
- c. **Do not** touch the person to avoid hurting them or disturb their heart

7. Draw the correct placement on the chest and/or back of AED pads for an adult victim



Project ADAM CPR & AED Curriculum: Pre & Post-Test Answers

High School (grades 9-12)

1. What is Sudden Cardiac Arrest (SCA)?

- a. When a heart suddenly stops beating or pumping blood to a person's brain and body
- b. When a blood vessel in the heart gets clogged
- c. When the heart is beating too fast and the person can feel it pounding in their chest

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- c. Push hard and fast in the center of the chest with **straight** arms, and **do not** allow the chest to rise between compressions

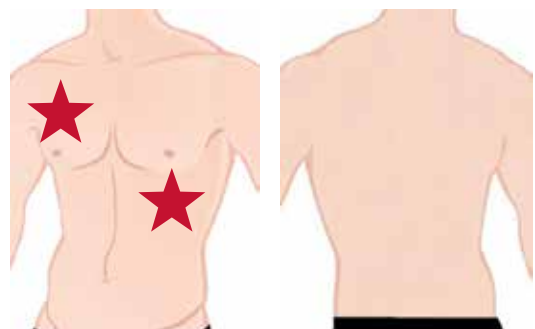
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- a. Turn on the AED
- b. Follow the instructions given by the AED
- c. Remove all clothing, jewelry and items from the chest

6. How can you save the life of someone who has had a sudden cardiac arrest?

- a. Recognize the signs of SCA, call 911 and **wait** for help to arrive
- b. Recognize the signs of SCA, call for help, call 911, give CPR and use an AED
- c. **Do not** touch the person to avoid hurting them or disturb their heart

7. Draw the correct placement on the chest and/or back of AED pads for an adult victim



Project ADAM CPR & AED Curriculum Outline for Middle School

(Target Audience: Grades 6-8)

This is a simplified version of the comprehensive facilitator manual, appropriate for those approximately 10-14 years old. Facilitators may edit the outline as needed, however should not omit any of the topics listed in the curriculum below

Introduction

- What is Project ADAM? (Automated Defibrillators in Adam's Memory)
 - › A non-profit program that focuses on cardiac emergency preparedness in school and community settings through education and implementation of cardiopulmonary resuscitation (CPR) and automated external defibrillator (AED) programs
 - › A program that was created in memory of Adam Lemel, a 17-year-old high school student who collapsed and died from sudden cardiac arrest while playing basketball at school
- **Administer Pre-Test Questionnaire**

Learning Objectives:

1. Recognize signs/symptoms of SCA
2. Know how to perform hands-only CPR
3. Know how to use an AED
4. Know how to activate the Cardiac Emergency Response

Heart Basics

- Your heart is a muscle in your chest that is responsible for pumping blood and oxygen to every cell in your brain and your body

Sudden Cardiac Arrest (SCA)

- Sudden cardiac arrest is the sudden loss of heart function. The heart stops pumping blood and oxygen to the brain and body as it normally should.

Symptoms of SCA

- › Sudden, unexpected collapse (usually during exercise)
- › Not moving, unresponsive, or appears unconscious
- › Abnormal breathing or not breathing
- › Seizure-like activity
- There are warning signs that doctors should know about. You should tell an adult if you, or someone you know experiences any of the following:
 - › Fainting or passing out
 - › Dizziness, gets a bad head ache or feels weird during or after exercise
 - › Problems seeing (blurred vision)
 - › Chest pain
 - › Heart beating too fast or abnormally

What is CPR?

- CPR is the coordinated process of delivering chest compressions and rescue breaths to continue oxygen delivery in a person whose heart is not pumping normally.
- For the purposes of this class we will focus on compression-only (hands-only) CPR without rescue breaths.

Hands-only CPR

- Compressions are the act of pushing down hard and fast on the chest of another, in order to help move blood through the heart muscle to the lungs, brain and body.
- Push hard and fast in the center of the chest
 - › Hand position is different for adults, children and infants, but we will focus on adults:
 - » Use the heel of one hand on the chest and place the other hand on top with interlocking fingers (demonstrate)
 - » Use straight arms
 - » Push at least 2 inches (but do not exceed 2.4 inches)
 - This is hard to do, so many of you must push as hard as you can to compress the heart that's protected by the bony ribcage and breastbone (sternum)
- Push 100-120 times per minute (demonstrate)

What is an AED & how does it work?

- An AED is an electronic machine that automatically reads what the heart is doing inside a person's chest. If the heart is not beating right the AED can send the heart a shock of electricity in an attempt to correct the heart's activity.
- Steps for AED use:
 - › Turn it on, follow the instructions given by the AED
 - › AED demonstration & practice with the students
- Review where your school's AED is located
 - › If your school does not have an AED, then inform the students that by calling 911 and explaining that a person is unconscious, an AED will be brought to the scene by EMS (emergency medical services)

Cardiac Emergency Preparedness

- Who is involved and what should they do?
 - › Everyone is involved. All staff & students should be able to:
 - » Identify symptoms of SCA
 - » Know the who the first responders/Cardiac Emergency Response Team (CERT) are and how to notify them of the emergency, including calling 911
 - » Know where the AED is located in the building and/or on campus
 - › Cardiac Emergency Response Team (CERT) should
 - » Give CPR and Use the AED
 - › Action Steps
 - » Call 911 or go to the nearest adult and tell them to call 911. Report there is an unconscious child or adult on the ground. Explain that an AED is needed.
 - » If you know where it is, go get the AED or show an adult where it is.
 - » Do not touch the AED unless it is a true cardiac emergency.



How to improve survival from SCA?

- Early recognition of SCA: know the signs and symptoms of sudden collapse, unresponsiveness, abnormal breathing, seizure-like activity
- Activate Cardiac Emergency Response: Call 9-1-1, give CPR & use nearest AED
- Fast and effective actions: A shock delivered by an AED within 3-5 minutes may save a life. Survival rates decrease by 10% with each minute of delay

SCA Practice Scenarios

- Develop practice scenarios appropriate for your grade level and encourage their participation in answering questions.

Wrap-up

- Administer Post-test Questionnaires & review answers
- Review learning objectives & answer questions
- Provide any hand-outs or materials for students to take home

Project ADAM CPR & AED Curriculum: Pre & Post-Test Questions

Middle School (Grades 6-8)

Today's Date: _____

Test Taker Age or grade level: _____

1. **What is Sudden Cardiac Arrest?**
 - a. When the heart stops beating or squeezing blood to a person's brain and body
 - b. When a person stops breathing because they are choking on an object or food
 - c. When the heart is beating too fast and the person can feel it pounding in their chest

2. **How can you tell if someone is having sudden cardiac arrest (circle all that apply)?**
 - a. Not breathing at all or breathing abnormally
 - b. Falling to the ground and not getting up (sudden collapse)
 - c. Unconscious, or not responding to sound or touch

3. **What is the proper way to give hands-only CPR?**
 - a. Push hard and fast in the middle of the chest, with **straight** arms, and let the chest rise between every push
 - b. Push hard and fast in the center of the chest, with **bent** arms
 - c. Push gently in center of the chest so you don't hurt anyone

4. **What is the correct rate of chest compressions for any aged victim?**
 - a. 80-100
 - b. 100-120
 - c. 150-180

5. **What are the proper steps for using an AED?**
 - a. Only adults should use the AED, children should never touch it
 - b. Turn on the AED by pushing the power button and follow instructions given by the AED
 - c. Get the AED from the alarmed cabinet then push every button on the AED many times until it starts beeping

6. **How can you save the life of someone who has had a sudden cardiac arrest?**
 - a. Recognize the signs of SCA, call 911 and **wait** for help to arrive
 - b. Recognize the signs of SCA, call for help, call 911, give CPR and use AED
 - c. **Do not** touch the person to avoid hurting them or disturb their heart

Project ADAM CPR & AED Curriculum: Pre & Post-Test Answers

Middle School (Grades 6-8)

1. What is Sudden Cardiac Arrest?

- a. When the heart stops beating or squeezing blood to a person's brain and body
- b. When a person stops breathing because they are choking on an object or food
- c. When the heart is beating too fast and the person can feel it pounding in their chest

2. How can you tell if someone is having sudden cardiac arrest (circle all that apply)?

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3. What is the proper way to give hands-only CPR?

- a. Push hard and fast in the middle of the chest, with **straight** arms, and let the chest rise between every push
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- b. Recognize the signs of SCA, call for help, call 911, give CPR and use AED
- c. **Do not** touch the person to avoid hurting them or disturb their heart

Project ADAM CPR & AED Curriculum Outline for Elementary School

(target audience: grades K-6)

This is a simplified version of the comprehensive facilitator manual, appropriate for those < 10 years of age. Facilitators may edit the outline as needed, however should not omit any of the topics listed in the curriculum below

Introduction

- Introduce yourself and why you're here
- Simply explain who Adam Lemel was and what project ADAM does

Learning Objectives

1. Recognize signs/symptoms of SCA
2. Know how to perform hands-only CPR
3. Know what an AED does, how to use an AED, & your school's AED is located
4. Know what to do if you find someone who needs help

Heart Basics

- Where is your heart?
- What does your heart do?
- What would happen if someone's heart suddenly stopped beating or pumping blood?
- Simply explain SCA

Recognizing the Signs and Symptoms of SCA

**Note: it is important to speak at the learners' developmental level and help them understand that SCA is very rare in children, as we do not want to instill fear*

- What would I look like if my heart stopped pumping blood and oxygen to my brain and body? (good time to incorporate silliness)
 - › Would I be standing here talking to you?
 - › Would I be dancing around like this? (be silly)
- Symptoms of SCA
 - › Sudden, unexpected collapse (demonstrate)
 - › Not moving, not waking up, not answering to name
 - › Not breathing normally (demonstrate)
 - › Making strange movements (demonstrate seizure-like activity)
- There are warning signs that doctors should know about. You should tell an adult if you, or someone you know, has any of the following things:
 - › Fainting or passing out
 - › Dizzy, gets a bad head ache or feels weird during or after exercise
 - › Problems seeing (blurred vision)
 - › Chest pain
 - › Heart beating too fast or abnormally

CPR Basics

- When a person's heart stops beating, or squeezing, it cannot pump blood out to the body. But an adult or YOU can squeeze their heart for them by doing CPR.
- Push hard and fast in the center of the chest
 - › Use the heel of one hand on the chest and place the other hand on top
 - › Use straight arms
- Push as hard as you can (tell them we need to push at least 2 inches to squeeze the heart and show them 2 inches on a ruler)
- Push 100-120 times per minute, hard and fast
 - › CPR demonstration
 - › CPR practice

AED Basics

- What is an AED & how does it work?
 - › This is an AED. (show class) it is a machine that **automatically** (*it does it all by itself*) reads what the heart is doing inside a person's chest and decides if the heart is beating right.
 - › If the heart is not beating right the AED can send the heart a shock of electricity to try to make the heart beat right.
- Steps for AED use
 - › 1. Turn it on, follow the instructions given by the AED
- AED demonstration & practice with class
- Where is your school's AED? (must be identified prior to delivery of curriculum)
- Why is it important to only touch the AED if there is an emergency?

Saving a life

- Review: if someone has a sudden cardiac arrest their heart stops beating the way it's supposed to so the body does not get any oxygen. This can cause the person to die
- Who can help?
 - › We all can. Teachers, principal, parents, babysitter and YOU
 - › The first step is to know what someone looks like when they are having a sudden cardiac arrest. What would they look like?
- The second step is to activate your school's emergency response plan
 - › Call for help "HELP!"
 - › Call 911 or go to the nearest adult and tell them to call 911. Tell the adult that there is a child or adult that is on the ground and is not waking up
 - › Tell the nearest adult to get the AED and show them where it is. You can even help teach them how to use it if they don't know how.
- It is also important for you and your friends to never touch the AED unless there is an emergency.

Wrap up

- Practice Scenarios – Develop practice scenarios appropriate for your grade level and encourage their participation in answering questions.
- Review learning objectives, Answer questions & Administer post test

Project ADAM CPR & AED Curriculum: Pre & Post-Test Questions

Elementary School (Grades K-6)

Note to Instructors: Please consider the age and developmental level of your students and administer the test questions verbally, as needed.

Today's Date: _____

Test Taker Age or grade level: _____

1. What is Sudden Cardiac Arrest?

- a. When a heart stops beating or squeezing blood to a person's brain and body
- b. When a person stops breathing because they are choking on an object or food
- c. When the heart is beating too fast and the person can feel it pounding in their chest

2. How can you tell if someone is having sudden cardiac arrest (circle all that apply)?

- a. Breathing that is not normal or no breathing
- b. Falling to the ground and not getting up (sudden collapse)
- c. Not waking up when you yell their name or shake them

3. How do you give CPR?

- a. Push hard and fast in the middle of the chest, with **straight** arms, and let the chest rise between every push
- b. Push hard and fast in the center of the chest, with **bent** arms
- c. Push gently in center of the chest so you don't hurt anyone

4. How do you use an AED?

- a. Only adults should use the AED, children should never touch it
- b. Turn on the AED by pushing the power button and follow instructions given by the AED
- c. Get the AED from the alarmed cabinet then push every button on the AED many times until it starts beeping

5. How can you help if someone is having a sudden cardiac arrest (circle all that apply)?

- a. Pay attention. See that someone is in trouble and needs help
- b. Tell an adult and call 9-1-1
- c. Give CPR
- d. Tell an adult to get the AED and show when where it is

Project ADAM CPR & AED Curriculum: Pre & Post-Test Answers

Elementary School (Grades K-6)

1. What is Sudden Cardiac Arrest?

- a. When a heart stops beating or squeezing blood to a person's brain and body
- b. When a person stops breathing because they are choking on an object or food
- c. When the heart is beating too fast and the person can feel it pounding in their chest

2. How can you tell if someone is having sudden cardiac arrest (circle all that apply)?

- a. Breathing that is not normal or no breathing
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- a. Only adults should use the AED, children should never touch it
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5. How can you help if someone is having a sudden cardiac arrest (circle all that apply)?

- a. Pay attention. See that someone is in trouble and needs help
- b. Tell an adult and call 9-1-1
- c. Give CPR
- d. Tell an adult to get the AED and show when where it is

APPENDIX G

CPR Song Playlist

A list of songs that are 100-120 beats per minute. The songs tempo can help rescuers maintain ideal chest compression rate while performing CPR.

Song Title	Artist	Song Title	Artist
Attention	Charlie Puth	Okay	Holy Ghost!
Body Movin'	Beastie Boys	One Week	Barenaked Ladies
Can't Feel My Face	The Weekend	Paradise City	Guns and Roses
Closer.....	POWERS	Photograph.....	Ed Sheeran
Cold	Maroon 5	Quit Playin Games (With My Heart)....	Backstreet Boys
Coming Out Strong	Future	Ride Wit Me	Nelly
Crazy.....	Gnarls Barkley	Rock Your Body.....	Justin Timberlake
Crazy in Love.....	Beyoncé, JAY Z	Rumor Has It.....	Adele
The Cure	Lady Gaga	Set Fire	Adele
Float On	Modest Mouse	Slide.....	Calvin Harris
Girls Just Want to Have Fun.....	Cyndi Lauper	Some Nights	Fun
Goodies	Ciara	Something Just Like This.....	The Chainsmokers, Coldplay
Hard to Handle.....	The Black Crowes	Sorry.....	Justin Bieber
Hips Don't Lie	Shakira, Wyclef Jean	Spirit in The Sky	Norman Greenbaum
Into You	Ariana Grande	Stay.....	Alessia Cara
Issues	Julia Michales	Stayin' Alive	Bee Gees
I will Survive – Remastered	Gloria Gaynor	Sweet Home Alabama	Lynyrd Skynyrd
Just Dance.....	Lady Gaga, Colby O'Donis	What's Going On.....	Marvin Gaye
Let Me Love You	DJ Snake	Work It.....	Missy Elliott
No Promises	Demi Lovato		

APPENDIX H

Project ADAM Heart Safe School Designation Checklist

A comprehensive school program for prevention of sudden cardiac death.

Instructions: This tool is used as an initial assessment of your school. Please fill out one checklist per school and return to your Project ADAM Program Coordinator.

Name of School:

Name of District:

Elementary school Middle school High school Private Other:

Student enrollment:

CPR-AED site coordinator or contact person:

Email:

Phone:

Main school phone:

Number of staff trained as CPR-AED rescuers:

PROGRAM QUALITY	YES	NO	NEED HELP	COMMENTS
A CPR-AED site coordinator is identified, who oversees the CPR-AED program activities and training.				
The placement of the AED(s) makes it accessible from any part of the building or campus within 2-3 minutes.				
AED(s) have clear signage.				
There is a designated cardiac emergency response team comprised of at least 10% of staff or 5-10 people.				
CPR-AED training for the cardiac emergency response team is updated annually (or every 2 years) and there is a system in place to track retraining.				
All faculty and staff know where the AED(s) are located and how to access them.				
All faculty and staff have annual awareness training on sudden cardiac arrest (warning signs, recognition, communication procedures, other staff roles, etc.) and our school's cardiac emergency response plan.				
We have a cardiac emergency communication code (overhead page or other) to notify responders and others in the area that an incident is occurring. Staff outside always carry a communication device.				

PROGRAM QUALITY	YES	NO	NEED HELP	COMMENTS
The AED(s) is checked for performance readiness at least monthly, or per manufacturer's directions and documented each time.				
We keep a first responder kit near or attached to the AED which includes: CPR barrier device, scissors, gloves, razor, and towel.				
We conduct at least one annual cardiac emergency response drill (AED drill) to test our emergency plan and communication.				
We have a written cardiac emergency response plan that is reviewed annually.				
Local emergency medical services have been notified of our CPR-AED program.				
Our school's written cardiac emergency response plan has been shared with extracurricular activities and community groups who utilize our school campus.				
Other comments about your program:				

It is recommended but not required that your program has oversight by a physician medical director. If you have questions, please let us know.

Once all criteria are met:

Please have your school administrator sign at the bottom and email this checklist to your Project ADAM Program Coordinator and he/she can assist you in processing Project ADAM Heart Safe School Designation.

I hereby attest that the above statements are true and correct to the best of my knowledge.

School Administrator: _____ Date: _____

{A copy should be returned to Project ADAM and a copy retained in school files with the CPR-AED site coordinator}.

If your AED is used:

- Conduct an incident debrief meeting with the cardiac emergency response team.
- AED maintenance should occur within 24 hours.
- The School Incident form should be completed and returned to your Project ADAM Program Coordinator.

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In loving memory of Greg Murphy, for his unwavering commitment to saving lives.





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