



SAFETY STANDARD OPERATING PROCEDURES

Automated External Defibrillator (AED) Protocol Risk Division

Date: September 15, 2015

1.0 Purpose

The purpose of the Sudden Cardiac Arrest Protocol is to provide a medical emergency response that includes basic first aid, cardio-pulmonary resuscitation (CPR), and defibrillation as described in this document at facilities, Public Buildings, and work locations throughout the City of Hickory.

2.0 Organizations Affected

All Departments within the City of Hickory

3.0 Definitions

- 3.1 Sudden Cardiac Arrest (SCA): A significant life-threatening event when a person's heart stops or fails to produce a pulse.
- 3.2 Advanced Life Support: Catawba County EMS, (ALS)
- 3.3 Automated external defibrillator (AED): A semi-automatic computerized medical device programmed to analyze heart rhythm, recognize rhythms that require defibrillation, and provide visual and voice prompts for the device operator. The AED instructs the operator to deliver an electric shock if indicated after ensuring all personnel are clear.
- 3.4 Basic Life Support: Hickory Fire, Hickory Rescue, (BLS)
- 3.5 Care provider: City of Hickory Employee who provides medical assistance until EMS arrival.
- 3.6 Catawba County Emergency Medical Service (EMS): Professional community responder agency for emergency events, which provide medical assistance and/or ambulance transport.
- 3.7 Emergency Action Plan (EAP): Document describing the actions an employee should take in the event of an emergency.
- 3.8 Emergency Medical Technician: (EMT)
- 3.9 Risk: The chance of injury or illness as determined by the presence of hazards and/or the probability of an adverse event occurring.
- 3.10 SCA Program Coordinators: The City of Hickory Risk Manager, and City of Hickory Fire Departments EMS Officer, are responsible for departmental SCA protocol implementation.

4.0

Cardiac Chain of Survival

The greatest chance of survival from sudden cardiac arrest occurs when the following sequence of events happens as rapidly as possible:

- 4.1 Early recognition and early access. The sooner 911 is called, the sooner advanced medical care arrives.
- 4.2 Early CPR. Early CPR helps circulate oxygenated blood to vital organs until an AED is ready to use or advanced medical personnel arrive.
- 4.3 Early defibrillation. Most persons with sudden cardiac arrest need an electric shock called defibrillation. Each minute that defibrillation is delayed reduces the chance of survival by about ten percent.
- 4.4 Early advanced medical care. This is given by trained medical professionals who give further care and transport to hospital facilities.
- 4.5 Integrated post cardiac arrest care. This is started by EMS personnel and continued at the hospital.

Each link of the chain depends on and is connected to the other links. It is very important to recognize and start CPR promptly and continue until an AED becomes available or EMS personnel arrive and take over. Any delay in calling 911, starting CPR, and using an AED makes it less likely the person will survive.



5.0

AED Equipment and Maintenance

The equipment listed is to be used in the event of an SCA. This equipment shall not be used outside the parameters of the SCA protocol. Each device should be maintained according to policy and following manufacturer's guidelines.

- 5.1 The Heartstart FRx AED's are located throughout the City of Hickory, and on all Fire Apparatus.

Equipment for Heartstart FRx	Quantity
5.1.1 AED with battery installed	1
5.1.2 Carrying case	1
5.1.3 Defibrillation Pads	2 sets
5.1.4 Pediatric Key	1
5.1.5 Accessories (Sponge, Razor, gloves)	1 set

- 5.2 Location
 - 5.2.1 The location of each AED is central and known by all employees who report to that location for work.
 - 5.2.2 All accessory equipment must remain with the AED unit.
- 5.3 Equipment Maintenance. The AED requires no calibration or verification of energy delivery. The AED has no user-serviceable parts. The AED performs regular self-tests to assure that it is ready for use. While the maintenance required for the AED is minimal, regular checks of the AED must be performed to assure readiness.
 - 5.3.1 The Risk Manager is responsible for ensuring that all monthly and quarterly equipment checks, including accessories, are performed and documented. The monthly equipment checklist are located in the appendix.
 - 5.3.2 When necessary, clean the AED using the recommended cleaning agents, per the manufacturer owner's manual.
 - 5.3.3 Report any performance discrepancies, device defects, or missing, expired, frequent short beeps, and/or damaged equipment or accessories to the Risk Manager immediately.

6.0

Sudden Cardiac Arrest (SCR) Protocol Guidelines

- 6.1 Care Providers must stay within their level of training and the guidance provided in this protocol while responding to a sudden cardiac arrest.
- 6.2 **Heartstart FRx AED.** An AED device should be applied to anyone with no signs of life. The pediatric key will be inserted into the AED device if the patient is between birth and eight (8) years old and less than fifty-five (55) pounds.
- 6.3 Once the AED is turned on and the pads applied to the patient's bare chest, the AED operator does not remove the pads or turn off the device unless so prompted by the device itself or so directed by a higher medical authority.
- 6.4 Wet environments and metal surfaces. The AED can be used in wet environments, for example rain or a wet pool deck, and on metal surfaces that are wet or dry. The AED should not be used in standing water. Always follow AED recommended safety precautions. Specifically, care should be taken to ensure that no one is touching the patient when the shock button is pressed.
- 6.5 Excessive chest hair. If required for proper defibrillation pad adhesion, any excess hair on the patient's chest is shaved with a prep razor supplied in the accessory kit. A smooth shave is not required.
- 6.6 Medication Patches. Using a gloved hand, remove any medication patches, if present, from the patient's chest prior to pad placement and wipe the skin clean with a cloth.
- 6.7 Implantable pacemakers, defibrillators and port-a-catheters. If the patient has an implanted pacemaker, internal defibrillator, or port-a-catheter, do not place the defibrillation pads directly over the implanted device. If the presence of an implanted device affects pad placement, place the

defibrillation pad as close to the recommended pad placement as possible. If you are unable to place pads on the chest due to implanted devices, you can place one pad on the chest just below the nipple line and to the left of the breastbone. The second pad should be placed on the back in a mirror position of the first.

6.7.1 Excessive sweat or moisture. If the patient has excessive sweat or moisture on their chest, the skin should be wiped before applying the AED pads. Poor pad adhesion can result in decreased effectiveness of the shock and may result in electrical burns to the chest.

6.8 AED abuse or vandalism. No abuse or vandalism of the AED is to be tolerated. If abuse or vandalism is suspected, report it to the City of Hickory's Risk Manager immediately so that the AED can be evaluated for proper operation.

7.0

Sudden Cardiac Arrest (SCA) Protocol

7.1 Initiation of the Emergency Action Plan and Initial Assessment

7.1.1 Any employee who recognizes a medical emergency initiates the Emergency Action Plan immediately by calling 911 with the following information: reporting employee's name, type of emergency, location of emergency and brief description of patient.

7.1.2 The first employee responding conducts an initial assessment to determine the level of response required from the team and outside responding agencies. This initial assessment includes:

7.1.2.1 Verification that the Emergency Action Plan has been activated and that 911 has been called. If the facility has an AED, verification that the AED is on scene or being brought to the scene.

7.1.2.2 Assessment of the scene for safety of self and other responders.

7.1.2.3 Use of gloves, and other universal precautions prior to patient contact.

7.1.2.4 Assessment of the patient for absence of responsiveness and signs of life.

7.1.2.5 Assessment for additional information about the patient or scene.

7.2 CPR Procedures. In the absence of the AED, the care providers initiates CPR – compressions at a rate of 100 times per minute until the AED arrives or advanced medical personnel take over.

7.3 AED Application and Heart Rhythm Analysis

7.3.1 The AED is to be used **ONLY** when you are performing CPR. Do **NOT** apply the AED to anyone who is conscious or breathing. Turn on the AED as soon as it arrives at the scene and follow its prompts. If more than one care provider is present, one can apply the defibrillation pads while the other continues CPR at a rate of 100 time a minute, or until told to stop. Perform any special procedures required (removal of medication patches, shaving of excessive chest hair, etc.) prior to placing the pads on the patient's bare chest.

7.3.2 When the pads are properly attached to the patient and connected to the AED, the device will automatically analyze the patient's heart rhythm. If the rhythm is shockable, the AED will prompt you to administer a shock. If it is not a shockable rhythm, you will be prompted to begin chest compressions (CPR). Follow the device's prompts in treating the patient.

7.4 AED Shock Sequence

7.4.1 If the AED gives a **"Shock Advised"** prompt, first ensure that no one is touching by examining the patient area and loudly stating **"I'm clear, you're clear, everyone clear!"** Then press the shock button to deliver a shock to the patient as prompted. Shock delivery will be followed by resuming chest compressions immediately. If additional shocks are advised by the AED, follow the above sequence until the AED prompts otherwise or EMS arrives.

7.4.2 In accordance with AED prompts, administer 1 shock, followed by two (2) minutes of CPR. The AED will count down to 2 minutes, and advise you to stop compressions after 2 minutes. Compressions should resume immediately after the patient is shocked, without delay.

7.4.3 If the AED gives a **"No Shock Advised"** prompt and the patient is not breathing, administer CPR at a rate of 100 times a minute until the patient starts breathing, the AED advises to stop CPR for analysis, or EMS arrives and assumes care of the patient. Conduct continuous monitoring of the patient's condition and evaluation of rescue in accordance with first responder training.

7.5 Patient Monitoring. Once the AED has been applied to the patient, do not turn off the AED or remove the defibrillation pads unless so prompted by the device (e.g., "Replace battery" or "Replace pads"). The AED will continue background monitoring of the patient's heart rhythm and alert the rescuers if additional shocks are required.

7.6 Transfer of Patient Care to EMS/Fire

7.6.1 Upon arrival of EMS/Fire, transfer patient care to EMS/Fire personnel. If requested by EMS/Fire, assist in patient care; otherwise, initiate post-incident procedures.

7.6.2 Give the EMS/Fire agency a complete oral report of the event and any significant findings.

8.0

Post Sudden Cardia Arrest (SCA) Event Procedures

8.1 Confidentiality. All patient information is confidential to both the patient and City of Hickory. The accident report or any other emergency paperwork must be completed within twenty-four (24) hours, and not be altered once it is completed. Care must be taken to protect the patient's rights under the Health Insurance Portability and Accountability Act (HIPPA). To prevent violation of patient confidentiality and liability, care providers are to refrain from open discussion about any aspects of the medical event.

8.2 Post event AED Check. Before returning the AED to service, contact the City of Hickory Risk Manager, who will perform the following post-event procedures:

10.2.1 Check the AED visually for damage or missing parts.

10.2.2 Replace all supplies used during the event.

10.2.3 Run a battery insertion test and replace the battery if indicated. In order to do an insertion test, you must remove the AED from the case, remove the battery then reinsert it. The machine will perform a self-test then reset to ready mode

10.2.4 Return the AED to its designated area for future use.

8.3 SCA Debriefing Procedures. A debriefing, headed by the City of Hickory's Risk Manager, and/or fire department EMS Officer, is to be conducted with all care providers who responded to the event. The immediate supervisor/s will be provided with a list of signs to look for long-term emotional stress.

8.4 A Post Event Protocol Assessment form should be completed at the end of an incident to evaluate the response, protocols and to assist in the debriefing of the responders. These findings of the post event evaluation are designed to discover strengths and weaknesses of the SCA protocol. This form will be discussed openly in the debriefing session with care providers.

8.5 Post Event Protocol Assessment and Evaluation. At the conclusion of an SCA emergency, the City of Hickory's Risk Manager, Occupational Health Nurse, and/or fire department EMS Officer will lead an assessment and evaluation of the event response and protocol implementation for effectiveness and any protocol review or changes needed.

8.6 AED Defects and Protocol Deviations. Any defects in the AED operation or deviations from protocol in the SCA event are to be reported to the Risk Manager.

9.0

Training and Drill Procedures

9.1 Training in CPR, Basic First Aid, and AED usage will be conducted at different times and locations throughout the year, and is voluntary for all employees, **with the exception** of those employees that must hold their certification as part of their job description, or job related duties.

9.2 Annual re-certification in CPR, and AED usage is required for those employees that must hold their certification as part of their job description, or job related duties. These training classes will be scheduled at the request of the Department Head or his/her designee.

9.3 Annual training of the SCA protocol and Emergency Action Plan will be conducted to evaluate the effectiveness of the SCA protocol. This training may comprise a live re-enactment of an SCA event or classroom discussion of the overall response plan and protocol.

10.0

Appendices

- 10.1 AED Brands in-service throughout the City of Hickory
- 10.2 North Carolina Good Samaritan Law
- 10.3 AED Location and Equipment Inventory
- 10.4 Site Monthly Equipment Checklist
- 10.5 Post Event Assessment and Evaluation Form

10.1 **AED's in-service throughout the City of Hickory**



(1) Cardiac Science AED, Police Department

(13) Phillips HeartStart FRX in facilities, & All Fire Apparatus



Meotronic Physio-Control, Lifepak 500,
(6) Parks and Recreation Facilities



(1) Heartsine AED, Police Firing Range

10.2 Good Samaritan Law

North Carolina's Good Samaritan law is codified in N.C.G.S. 90-21.14. The law confers insulation from damage liability for reasonable actions taken by non-professional or volunteer medical/health care providers that receive no compensation for their services who render first aid or emergency health care treatment to a person who is unconscious, ill, or injured. The treatment must be reasonably required by the circumstances of the ill or injured person. If the treatment is reasonably required, the person rendering treatment shall not be liable for damages for injuries alleged to have been sustained by the injured person or for damages for the death of the injured person alleged to have occurred by reason of an act or omission in the rendering of treatment. N.C.G.S. 90-21.14(a) explicitly includes protection for emergency care providers who use an automated external defibrillator (AED).

North Carolina's Good Samaritan Law does not protect professional health care providers. The law does not provide protection for anyone who provides treatment when, through gross negligence, wanton conduct, or intentional wrongdoing, the treatment causes injury or death to the person receiving treatment.

N.C.G.S. 20-166(d) provides additional protection for first aid or emergency assistance at motor vehicle accidents, but does not provide protection for treatment that amounts to wanton conduct or intentional wrongdoing.

N.C.G.S. 90-21.14

(a) Any person, including a volunteer medical or health care provider at a facility of a local health department as defined in G.S. 130A-2 or at a nonprofit community health center or a volunteer member of a rescue squad, who receives no compensation for his services as an emergency medical care provider, who renders first aid or emergency health care treatment to a person who is unconscious, ill or injured,

- (1) When the reasonably apparent circumstances require prompt decisions and actions in medical or other health care, and
- (2) When the necessity of immediate health care treatment is so reasonably apparent that any delay in the rendering of the treatment would seriously worsen the physical condition or endanger the life of the person,

shall not be liable for damages for injuries alleged to have been sustained by the person or for damages for the death of the person alleged to have occurred by reason of an act or omission in the rendering of the treatment unless it is established that the injuries were or the death was caused by gross negligence, wanton conduct or intentional wrongdoing on the part of the person rendering the treatment. The immunity conferred in this section also applies to any person who uses an automated external defibrillator (AED) and otherwise meets the requirements of this section.

(b) Nothing in this section shall be deemed or construed to relieve any person from liability for damages for injury or death caused by an act or omission on the part of such person while rendering health care services in the normal and ordinary course of his business or profession. Services provided by a volunteer health care provider who receives no compensation for his services and who renders first aid or emergency treatment to members of athletic teams are deemed not to be in the normal and ordinary course of the volunteer health care provider's business or profession.

N.C.G.S. 20-166(d)

Any person who renders first aid or emergency assistance at the scene of a motor vehicle accident on any street or highway to any person injured as a result of the accident, shall not be liable in civil damages for any acts or omissions relating to the services rendered, unless the acts or omissions amount to a wanton conduct or intentional wrongdoing.

10.3 AED Location and Equipment Inventory

AED Location and Equipment Inventory

Site	Located In	AED		Accessories		
		Model	Serial #	Pads Exp. Dates	Battery Expiration Date	In-service/ Inspection Date
Henry Fork River Regional Recreation Park	- 5655 Sweet Bay Lane	Heartstart FRx AED	B14J-00767	Nov-17	Jan-2021	7/27/2013
Neill Clark Recreation Park	- 3404 6 th St Dr NW	Heartstart FRx AED	B15F-02856	Nov-17	Jan-2021	7/27/2013
Kiwanis Park Fields # 1 and # 2 (at the concession stands)	- 805 6 th St SE	Heartstart FRx AED	B14J-00693	Nov-17	Jan-2021	7/27/2013
Kiwanis Park Fields # 3 and # 4 (at the concession stands)	- 805 6 th St SE	Heartstart FRx AED	B15F-02855	Nov-17	Jan-2021	7/27/2013
Stanford Park (at the ball field concession stand)	- 1451 8 th St Dr NE	Heartstart FRx AED	B14J-00672	Nov-17	Jan-2021	7/27/2013
Jaycee Park - (at the ball field score booth)	- 1515 12 th St Dr NW	Heartstart FRx AED	B14J-00692	Nov-17	Jan-2021	7/27/2013
City of Hickory Water Treatment Plant	Main Entrance, 2 nd Floor Lobby	Heartstart FRx AED	B14G-01940	11/2016 3/2017	May-2020	10/2014
NE WWTP	Office Lobby	Heartstart FRx AED	B14F-03259	11/2016 3/2017	May-2020	12/2014
HF WWPT	Office Lobby	Heartstart FRx AED	B14G-03822	11/2016 4/2017	May-2020	12/2014
Catawba WWTP	Control Room, RH Wall	Heartstart FRx AED	B14F-03826	11/2016 4/2017	May-2020	12/2014
Public Services	Next to Time Clock, down Stairs	Heartstart FRx AED	B14G-03438	11/2016 11/2016	May-2020	12/2014
City Hall	2 nd Floor outside Collections	Heartstart FRx AED	B14F-03272	10/2016 10/2016	May-2020	10/2014
District Courthouse	Across from Clerks Office	Heartstart FRx AED	B14G-01936	10/2016 11/2016	May-2020	10/2014
Police HQ, 347 2 nd Ave SW	Outside Booking	Cardiac Science	4402111	11/2016	Installed new	Inspected 8/1/-2014 8/07/2015

10.3 AED Location and Equipment Inventory

AED Location and Equipment Inventory

Site	Located In	AED		Accessories		
		Model	Serial #	Pads Exp. Dates	Battery Expiration Date	In service/ Inspection Date
HPD Firing Range 2280 1 st St. SE	Tower @ Range	Heartsine Samaritan	13C00417998	7/2017	Installed new	Inspected 8/07/2015
Westmont Recreation Gym	1316 Main Avenue Drive NW front desks	Meotronic Physio- Control, Lifepak 500	SN: 12852304	4/2015	3/2019	8/21/2015
Westmont Senior Citizens Building	1316 Main Avenue Drive NW front desks	Meotronic Physio- Control, Lifepak 500	SN: 12852308	4/2015 4/2015	3/2017	8/21/2015
Neill Clark Recreation Gym	3404 6 th Street Drive NW front desks	Meotronic Physio- Control, Lifepak 500	SN: 12852306	4/2015	4/2018	8/21/2015
Neill Clark Main Building	3404 6 th Street Drive NW front desks	Meotronic Physio- Control, Lifepak 500	SN: 12846406	4/2015	4/2018	8/21/2015
Ridgeview Recreation Center	115 7 th Avenue SW front desks	Meotronic Physio- Control, Lifepak 500	SL: 12852307	4/2015	11/2017	8/21/2015
Brown Penn Recreation Center	735 3 rd Street SW front desks	Meotronic Physio- Control, Lifepak 500	SL: 12852311	4/2015	4/2018	8/21/2015
Highland Recreation Center	- 1451 8 th St Dr NE front desks	Meotronic Physio- Control, Lifepak 500	SL: 12852305	4/2015	4/2018	8/21/2015

10.4 Monthly Maintenance Checklist for (Month & Year): _____/20_____

AED Model:		AED Serial Number:	
AED Location:			
Date			
AED and Carrying Case Clean, no dirt or contamination; no signs of damage		<input type="checkbox"/> Yes <input type="checkbox"/> No Comments: _____	
Status Indicator Flashing green ready light; self-test passed, no chirps or beeps.		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Supplies Available <ul style="list-style-type: none"> • 2 sets defibrillation pads, sealed, undamaged, within expiration date • Ancillary supplies (hand towel, wipes, razor, gloves) • Battery, within "Install Before" date • Pediatric Key 	# of sets of pads:	Expiration dates on pads:	Comments:
	All ancillary supplies present:		Comments:
	Battery present:	"Install Before" date on battery:	Comments:
	Pediatric Key present:		Comments:
AED Cabinet Cabinet alarm functional, clean, no signs of abuse		<input type="checkbox"/> Yes <input type="checkbox"/> No Comments: _____	
Inspected by (print name and sign)		Print: _____ Signature: _____	

10.5 Post Event Assessment and Evaluation Form

Incident Data

Incident Date: ___/___/___	Incident Time: ___:___:___
Incident Location: _____	
Care Provider: _____	Care Provider: _____
Care Provider: _____	Care Provider: _____

Call Notification (include hour: minute: second for times recorded)

How was care provider notified? _____	Dispatch time: ___:___:___
Who initiated 911 call? _____	Time 911 called: ___:___:___
Care Provider arrival time: ___:___:___	AED arrival time: ___:___:___

SCA Event Report

Collapse/recognition: ___:___:___	Responder CPR started: ___:___:___
Patient unresponsive: <input type="checkbox"/> Yes <input type="checkbox"/> No	Time CPR Resumed: ___:___:___
Rescue breathing started: <input type="checkbox"/> Yes <input type="checkbox"/> No	Time CPR Resumed: ___:___:___
CPR started: <input type="checkbox"/> Yes <input type="checkbox"/> No	Time CPR Resumed: ___:___:___
AED applied: <input type="checkbox"/> Yes <input type="checkbox"/> No	Time CPR Resumed: ___:___:___
First shock advised: <input type="checkbox"/> Yes <input type="checkbox"/> No	Time CPR Resumed: ___:___:___
Additional shocks: <input type="checkbox"/> Yes <input type="checkbox"/> No	Total # of shocks delivered: _____
Return of pulse: <input type="checkbox"/> Yes <input type="checkbox"/> No	Time Shock delivered: ___:___:___
Return of respiration: <input type="checkbox"/> Yes <input type="checkbox"/> No	Time Shock delivered: ___:___:___
EMS scene arrival: ___:___:___	EMS arrival at patient: ___:___:___
Patient condition at EMS hand-off: _____	
Care Given by EMS/FIRE: <input type="checkbox"/> EMS <input type="checkbox"/> FIRE/RESCUE	Patient transported: ___:___:___
Transported to: <input type="checkbox"/> Frye Regional Medical Center <input type="checkbox"/> Catawba Valley Medical Center	



SAFETY STANDARD OPERATING PROCEDURES

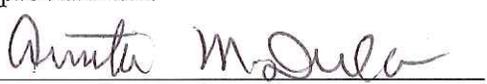
Automated External Defibrillator (AED) Protocol Risk Division

Date: September 15, 2015

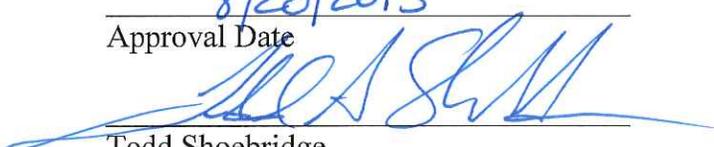
Approval Date


Mick Berry
City Manager

9/1/15
Approval Date:


Arnita Dula
Deputy City Attorney

8/28/2015
Approval Date


Todd Shoebridge
Risk Manager