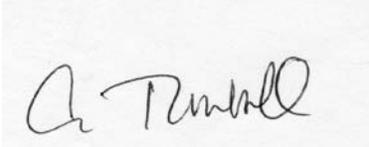




**City of Winchester
Fire & Rescue Department
STANDARD OPERATING PROCEDURE**



Section: EMS Operations	SOP: 9.6
Subject: High Performance Adult CPR	Executed: July 2, 2014 Revised:
Approved:  Fire Chief	
Approved:  Operational Medical Director	

PURPOSE

High Performance Cardio Pulmonary Resuscitation (HPCPR) employed with Code Resource Management (CRM) is a proven concept based on a team approach that ensures effective and efficient use of EMS resources. This systematic change in treatment and management of cardiac arrest patients is based on research and practices being used in many other high performance EMS systems across the country. The goal is to improve the overall survival rate of sudden out-of-hospital cardiac arrest patients within the service area of the WFRD.

SCOPE

This policy applies to all operational personnel of the Winchester Fire and Rescue Department (WFRD).

POLICY

1. The **Driver** of the first arriving unit shall go immediately to the patient to assess and initiate chest compressions if appropriate.
 - a. **Effective Compressions** – Manual chest compressions should be initiated immediately upon identification of cardiac arrest, as long as the scene is safe. When compressions are done manually, compressors should be rotated **every two (2) minutes** in order to maintain high-quality compressions. Ideally, one compressor is on each side of the patient’s chest; one person compressing the chest and the other person ready to start. Chest compressions will be performed at a depth of at least two (2) inches allowing for complete recoil of the chest after each compression.

Compressions should be accomplished with equal time for the down and up motions, and achieve a rate of 100-120/min.

- b. **Continuous Compressions** – Chest compressions will be performed at a rate of 100 to 120 per minute and will NOT be interrupted during the two minute cycle for any reason. Other treatments such as ventilations, IV/IO access, or intubation attempts will be done while compressions are ongoing. After completion of a two-minute cycle, a phase to assess pulses and/or defibrillate will be limited to < 10 seconds.
- c. **CPR Meter** – This is a device that will assist providers with ensuring proper depth/recoil are met during compressions through visual feedback. The CPR Meter also has an internal clock that displays during its use to show total CPR time, and total time off the chest.

***CPR Meter should only be used on patients 8 years of age or older.*

***Do not delay initiating compressions if complications are met while attempting to use the CPR meter.*

****CPR Meter does not need to be removed to defibrillate or to apply the LUCAS device.**

If the meter hinders the operation of the LUCAS device, stop LUCAS, remove the meter from patient's chest and restart LUCAS.

- d. **LUCAS Compression Device** – The LUCAS device shall not be considered a priority for HPCPR. Manual compressions by providers will be the foundation for HPCPR. The LUCAS device shall be applied when:
 - i. Transport decision has been made
 - ii. When personnel/resources are at a minimum of 3 personnel and will continue to remain so for an extended period of time.

***LUCAS shall not be used during the first 6 minutes of initial CPR*

***Application of LUCAS should be coordinated at pulse checks*

****LUCAS does not need to be stopped or removed during defibrillation**

- 2. **Defibrillation** – placement of the defibrillator pads will not interrupt chest compressions
 - a. Automated External Defibrillation (AED)
 - i. The AED will be powered on as soon as the cardiac arrest is confirmed. Do not interrupt chest compressions to remove clothing or to place defibrillation pads. If the AED charges after analyzing, chest compressions will be performed while the device charges, then the patient will be “cleared” and defibrillated. Compressors will hover over the patient with hands ready during defibrillation so compressions can immediately start after a shock. If the AED prompts “no shock advised” immediately resume CPR for two minutes.
 - b. Cardiac Monitor/Defibrillator

- i. Follow the AED process in a. above except when a manual defibrillator is in use, it will be charged to the appropriate energy level as the end of the compression cycle nears (approximately 1 minute and 45 seconds into a two-minute cycle).

3. Ventilations

- a. Ventilations will be performed without stopping chest compressions. One ventilation will be given every 10th compression during recoil (upstroke). Once an advanced airway is in place, ventilations will be asynchronous with compressions (1ventilation every 6-8 seconds). High Performance, continuous compressions remain the priority. Ensure ventilations are adequate with BVM attached to 100% oxygen. Providers will not interrupt compressions to obtain an advanced airway.

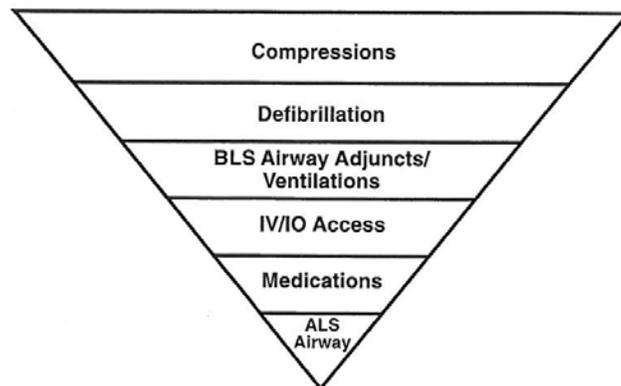
4. **Advanced Life Support** – ALS providers will address defibrillation, IV/IO access, medication administration, and advanced airway placement, as indicated within these protocols; however, the placement of an advanced airway is no longer a focus of cardiac arrest management and will not interrupt chest compressions.

5. Nasal capnography may be utilized to optimize CPR performance and evaluation of ROSC with use of bag-valve-mask ventilation.

6. **Return of Spontaneous Circulation (ROSC)** – Implement the hypothermic resuscitation protocol as indicated and transport to the closest cardiac interventional center. Following stabilization, post-ROSC, obtain a 12-lead ECG, maintain SpO2 >94%, ETCO2 35-45mmHg, administer 1-2 liters of cool Normal Saline if hypotensive.

Procedure: Code Resource Management (CRM)

Crews should coordinate their duties keeping the call priorities in mind. Intervention priorities are (in order of highest to lowest):



The number of personnel on a given incident and the qualifications of those personnel can vary; however, the priorities remain the same. Appropriate crew roles are outlined below:

2 provider crew:

Provider 1 – Chest compressions utilizing the CPR meter

Provider 2- Ventilate, attach/operate AED/defibrillator, assume crew leader responsibilities (providers rotate positions every two minutes)

Roles remain the same even if providers are ALS equipped.

3 provider crew:

Provider 1 – Chest compressions utilizing the CPR meter

Provider 2 – Ventilate

Provider 3 – Crew Leader, attach/operate AED/defibrillator
(Providers 1 and 2 rotate every two minutes)

Roles remain the same even if providers are ALS equipped

4 provider crew:

Provider 1 – Chest compressions utilizing the CPR meter

Provider 2 – Ventilate

Provider 3 – Attach/operate AED/defibrillator

Provider 4 – Crew Leader

(Providers 1, 2 and 3 rotate every two minutes)

***Once first two roles have begun treatment, ALS providers will establish IV/IO and administer medications*

Greater than 4 providers – Utilize the same initial assignments as the four provider crew. The crew leader will assign additional roles such as informing the family of patient status, gathering patient information, and documenting the medical interventions performed on the call. If resources allow, rotate additional providers to do chest compressions to achieve optimal performance.

Provider 1 – This role shall be assumed by the Driver/Operator of the first arriving unit initially. The Driver shall exit the apparatus and go straight to the patient's side to begin compression only CPR. This is to ensure EMS begins performing HPCPR as soon as possible.

All other personnel shall assist with getting the equipment to the patient's side upon their arrival.

Crew Leader – The crew leader will keep time, record interventions performed during the arrest, give compression feedback and ensure rotation of personnel performing compressions every two minutes. Verbal announcements of time should occur at one minute, 30 seconds before assessment, 15 seconds left, and countdown to reassessment at 10 seconds.

Termination of Resuscitation Efforts – Follow the current Lord Fairfax EMS Council Protocols for procedure to follow for termination of resuscitation efforts.

WINCHESTER FIRE AND RESCUE HIGH PERFORMANCE CPR CHECKLIST

START TIME:	END TIME:
PT NAME:	
D.O.B.:	AGE:
SEX: M / F	

	TIME	RHYTHM	SHOCK	MEDICATION
2 MIN				
4 MIN				
6 MIN				
8 MIN				
10 MIN				
12 MIN				
14 MIN				
16 MIN				
18 MIN				
20 MIN				

SKILLS	TIME	NOTES
BVM		
OPA		
IV/ IO		
Advanced Airway		
LUCAS		
DEXI		

NOTES

1. EMTs own CPR
2. Minimize interruptions in CPR at all times
3. Ensure proper depth of compressions (>2 inches)
4. Ensure full chest recoil/ decompression
5. Ensure proper chest compression rate (100-120/ min)
6. Rotate compressor every 2 minutes
7. Hover hands over chest during shock administration
8. Intubate or place advanced airway with ongoing CPR
9. Place IV or IO with ongoing CPR
10. Coordination and teamwork

Position 1: Compressor
Position 2: Ventilator
Position 3: Team Leader/ Monitor

Position 4: ALS
Position 5: 2nd Compressor
Position 6: Family Liaison