



# DEPARTMENT OF FIRE AND RESCUE SERVICES

	<h1>GENERAL ORDER</h1> 320.15	
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Originating From	Issue Date	Revision Date	Attachments
<b>Emergency Medical Services</b>	<b>4/12/12</b>		<b>A</b>

**SUBJECT: Code Resource Management/Improving Out-of-Hospital Cardiac Arrest Survival**

**APPLICABILITY: All Uniformed Personnel**

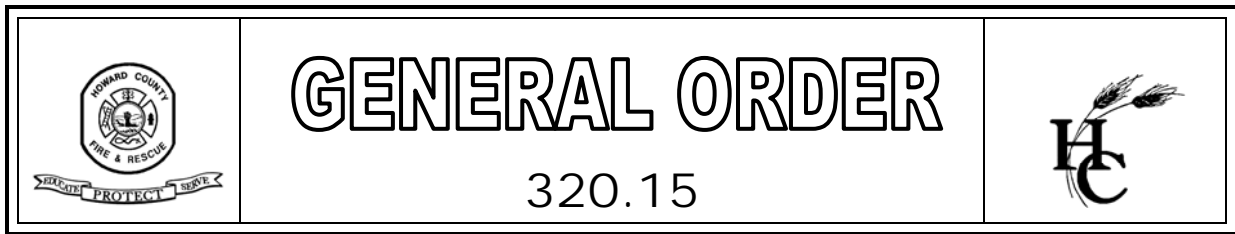
## **POLICY**

This policy defines how Howard County Department of Fire and Rescue Services (DFRS), Bureau of Emergency Services will manage cardiac arrest by implementing the use of “Code Resource Management” (CRM). The end users, based upon research and practices in use by the Seattle/King County Medic One program, developed this approach. The procedures described herein contain variations from American Heart Association standards, which are supported by medical evidence and the State EMS Medical Director for MIEMSS. Its success in the short term has been remarkable. Everyone has a role in the resuscitation and emphasis is placed on good CPR with minimal interruptions.

## **PRIORITIES/KEY POINTS**

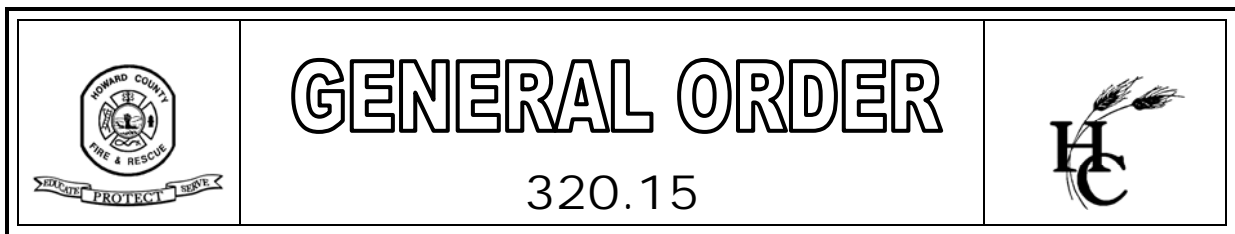
1. Faster Launch Times.
2. Continuous Compressions.
  - 2.1. Compressions to be performed at a rate of at least 100 compressions per minute for two minutes.
    - 2.1.1. A range of 100 - 125 compressions per minute is also acceptable.
    - 2.1.2. Compressions should not decrease below 100 per minute nor exceed 125 per minute as a goal.
  - 2.2. There will be no pauses in compressions for ventilations.
  - 2.3. Do NOT interrupt chest compressions during the two-minute cycle.
  - 2.4. If possible, change chest compressor every 2 minutes.
  - 2.5. Limit interruptions in chest compressions to less than 10 seconds, occurring only after two minutes of effective CPR.
3. Effective Compressions.
  - 3.1. Aggressively maintain compression depth of 1 ½ - 2 inches (deeper on larger individuals).
  - 3.2. Compressions should be smooth and balance 50% down with 50% up motion.
  - 3.3. Completely release pressure on the up motion of each cycle for maximum blood flow.
  - 3.4. Do not bounce off the chest.

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4. Automated External Defibrillator (AED).
  - 4.1. Turn on the AED as soon as the cardiac arrest has been verified.
  - 4.2. Do not interrupt chest compressions to remove clothes or place multifunction pads.
5. Interposed ventilations.
  - 5.1. Do NOT interrupt chest compressions. Insert one ventilation asynchronously every 10 compressions (on release or the ‘up’ motion following the 10<sup>th</sup> compression). Ventilate just enough to accomplish chest rise.
6. Pulse checks.
  - 6.1. No pulse checks after shock.
  - 6.2. Check pulse only after the AED prompts “No Shock Advised.” If no pulse, immediately begin 2 minutes of CPR. Do not wait for prompts.
  - 6.3. Continue to monitor the effectiveness of chest compressions during CPR.
7. ALS Arrival.
  - 7.1. Continue 2 minute cycle of CPR. Do NOT stop.
  - 7.2. Paramedics will pre-charge the defibrillator, analyze and shock at the end of two minutes of CPR. The pause should be no longer than 10 seconds.
  - 7.3. Paramedics using the LifePak 12 or 15 can analyze and shock faster than the AED.
  - 7.4. Continue the two minute cycle of CPR followed by a brief analysis/treatment period by the ALS provider.
  - 7.5. Continue to count compressions and interpose one ventilation every 10 compressions.
  - 7.6. IV and intubation attempts should occur with CPR in progress. Timing should be synchronized with the two minute CPR cycle; at no time should pauses between two-minute cycles of CPR exceed 10 seconds.
8. Cardiac arrest after DFRS Arrival (Witnessed Arrest).
  - 8.1. The main priority is to deliver a shock as soon as possible.
  - 8.2. Perform continuous compressions while applying the AED. Compressions provided until the shock is delivered will maximize the likelihood of success.
  - 8.3. Once the AED is in place, push the button to analyze.
  - 8.4. Continue care as outlined above in Priorities 1 – 6.
9. Perform CPR and run the code on-scene as much as possible.
  - 9.1. Recent evidence demonstrates that CPR quality is much better on-scene than enroute to the hospital in the ambulance.
  - 9.2. Assess response to treatment. If no response, consider consult at approximately 20 – 25 minutes into the resuscitation to evaluate physician-directed field termination of the code.

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10. Download all the Code information to the Code-Stat program.
  - 10.1. After care is completed, transmit the Code Summary to Code-Stat for CPR analysis and Quality improvement review.
  - 10.2. Transfer is accomplished via digital modem by selecting Report: All and Site: Code-stat on the transmit menu of the Lifepak 12 or 15.
  - 10.3. Data collection supports improved performance and will help determine the most effective interventions in cardiac arrest.
  
11. If an AED was used, notify the MDO.
  - 11.1. For a DFRS or Howard County PAD AED, the MDO will pick up the device; coordinate with the EMS Data Analyst for download of the AED Code Summary to Code-Stat.
  - 11.2. For an AED from another location, the MDO will contact the AED manufacturer field rep or sales staff to arrange downloads of the device and delivery of the download to the EMS Data Analyst.
  
12. Effective CPR is primary. Interruptions for ALS/BLS interventions shall not take any longer than 10 seconds.

## **RETURN OF SPONTANEOUS CIRCULATION (ROSC) IN THE FIELD**

13. Following stabilization, post-ROSC, attempt to obtain a 12 lead ECG to evaluate STEMI as a cause for the VF arrest.
  
14. Notify HCGH to alert the cath lab team for a ROSC (Consider this ROSC condition equivalent to a STEMI).
  - 14.1. Notify HCGH to alert the cath lab team, regardless whether a 12 lead ECG was able to be obtained, and even if the 12 lead ECG did not demonstrate a STEMI pattern.
  - 14.2. This notification is based upon the request of HCGH Cardiology, resulting from the recent experience with patients who had a near normal neurological outcome after Sudden Cardiac Arrest, field ROSC, cath lab intervention for severe Coronary Artery Disease (CAD) despite a non-STEMI pattern on the post-ROSC 12 lead ECG.

## **RESUSCITATION ASSIGNMENTS**

15. Crew duties will be assigned at shift change or, as needed, by the OIC using the CRM checklist (Attachment A). All personnel shall be accountable for knowing the duties for all assignment positions on the checklist. Assignments may be adjustable based upon the order of personnel arriving at the patient's side.

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16. These assignments do not cover all possible responses. There will be times when the officer will need to use judgment in the assignment or flexibility, always keeping in mind that CPR should be started quickly and there should be minimal interruptions. Example:

16.1. First person “at patient side” (APS) regardless of assignment assesses and initiates compressions.

16.2. Second person APS initiates and begins CRM protocol.

### QUALITY IMPROVEMENT/DATA COLLECTION

17. Provider feedback will include the compression rate and the “Compression Fraction,” which is the percentage of time the crew did CPR, compared to the total time available to do CPR during the resuscitation.

17.1. The feedback is provided constructively to allow crews the ability to evaluate their performance and improve it. Our goal is to provide CPR 95% of each two-minute cycle and to perform chest compressions at a rate of at least 100 compressions/minute.

17.2. Providers are responsible for Data Download (including voice if/when present) from LifePak 12/15 monitor/defibrillators to the Code Stat software program, effective immediately.



Approved:



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Kevin G. Seaman  
Medical Director

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	<h2 style="margin: 0;">GENERAL ORDER</h2> <h3 style="margin: 0;">320.15</h3>	
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Attachment A

<p><b>Howard County Fire and Rescue</b>  <b>Resuscitation Assignments</b>                  Unit _____</p>	
<p><b>TIME/OIC</b> _____</p>	
<p><b>Equipment</b></p>	<p><b>Responsibility</b></p>
<ul style="list-style-type: none"> <li><input type="checkbox"/> Fanny Pack (Gloves, gown, eye protection)</li> <li><input type="checkbox"/> Stat Pad</li> <li><input type="checkbox"/> Pen</li> <li><input type="checkbox"/> Watch</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Assign next Compression/airway person</li> <li><input type="checkbox"/> Rotate compression person every 2 minutes</li> <li><input type="checkbox"/> Monitor time and provider warnings @ <b>1min, 30 sec, 15 sec and countdown last 10 sec</b></li> <li><input type="checkbox"/> Gather patient information and keep family informed</li> <li><input type="checkbox"/> Ensure proper compression and ventilation rates</li> <li><input type="checkbox"/> Be prepared to rotate</li> </ul>
<p><b>MONITOR</b> _____</p>	
<ul style="list-style-type: none"> <li><input type="checkbox"/> Fanny Pack (Gloves, gown, eye protection)</li> <li><input type="checkbox"/> Monitor</li> <li><input type="checkbox"/> ALS Bag</li> <li><input type="checkbox"/> Watch</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Turn on Monitor</li> <li><input type="checkbox"/> Connect Electrodes / Expose Chest / Attach Monitor</li> <li><input type="checkbox"/> Be ready charge after countdown. If ALS precharge @15 second warning</li> <li><input type="checkbox"/> Be prepared to rotate</li> </ul>
<p><b>AIRWAY</b> _____</p>	
<ul style="list-style-type: none"> <li><input type="checkbox"/> Fanny Pack (Gloves, gown, eye protection)</li> <li><input type="checkbox"/> Airway bag</li> <li><input type="checkbox"/> Suction unit</li> <li><input type="checkbox"/> Watch</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Measure and insert OPA, Suction @ head</li> <li><input type="checkbox"/> Maintain tight seal w/BVM</li> <li><input type="checkbox"/> Interpose (1) ventilation / 6 sec-10 compression <b>If PED (1) ventilation/3 sec-6 compression</b></li> <li><input type="checkbox"/> Be prepare to rotate</li> </ul>
<p><b>COMPRESSION</b> _____</p>	
<ul style="list-style-type: none"> <li><input type="checkbox"/> Fanny Pack (Gloves, gown, eye protection)</li> <li><input type="checkbox"/> Watch</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>CAB</b> check (circulation, airway breathing)</li> <li><input type="checkbox"/> Expose Chest</li> <li><input type="checkbox"/> 2 minutes of Chest Compression @ 100 -120 minute</li> <li><input type="checkbox"/> Hand Placement</li> <li><input type="checkbox"/> Compress 2" or more. <b>If infant 1 ½"</b></li> <li><input type="checkbox"/> Compress &amp; Release equally, No Bouncing</li> <li><input type="checkbox"/> Be prepared to rotate</li> <li><input type="checkbox"/> Perform compression while monitor is charging</li> </ul>