# Cardiopulmonary Resuscitation
## AHA 2010 Standard

## Recommendations

<table>
<thead>
<tr>
<th></th>
<th>Adult</th>
<th>Children</th>
<th>Infant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recognition</strong></td>
<td>Unresponsive (for all ages)</td>
<td>No breathing or no normal breathing (i.e. only gasping)</td>
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<tr>
<td><strong>CPR sequence</strong></td>
<td>C-A-B (Compression – Airway – Breathing)</td>
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<tr>
<td><strong>Compression rate</strong></td>
<td>At least 100/min</td>
<td></td>
<td></td>
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<tr>
<td><strong>Compression Depth</strong></td>
<td>At least 2”</td>
<td>About 2”</td>
<td>About 1½”</td>
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<tr>
<td><strong>Chest wall recoil</strong></td>
<td>Allow complete recoil between compressions</td>
<td>HCPs rotate compressors every 2 minutes</td>
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<tr>
<td><strong>Compression</strong></td>
<td>Minimize interruptions in chest compressions</td>
<td>Attempt to limit interruptions to &lt;10 seconds</td>
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<tr>
<td><strong>Airway</strong></td>
<td>Head tilt-chin lift (HCP suspected trauma; jaw thrust)</td>
<td></td>
<td></td>
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<tr>
<td><strong>One-rescuer CPR</strong></td>
<td>30:2</td>
<td>30:2</td>
<td>30:2</td>
</tr>
<tr>
<td><strong>Two-rescuer CPR</strong></td>
<td>30:2</td>
<td>15:2</td>
<td>15:2</td>
</tr>
<tr>
<td><strong>Ventilations with</strong></td>
<td>1 breath every 6-8 seconds (8-10 breaths/min)</td>
<td>Not synchronized with chest compressions</td>
<td>About 1 second per breath</td>
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<tr>
<td><strong>advanced airway</strong></td>
<td>Visible chest rise</td>
<td></td>
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<tr>
<td><strong>Defibrillation</strong></td>
<td>Attach &amp; use AED as soon as available. Minimize interruptions in chest compressions before and after shock; resume CPR beginning with compressions immediately after each shock</td>
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</table>
Cardiopulmonary Protocols
CARDIAC ARREST

I. General orders
A. Assess patient for responsiveness
B. Notify ALS

II. Signs and symptoms
A. Squeezing, dull pressure, chest pain often radiating down the arms or to the jaw
B. Sudden onset of sweating (diaphoresis)—this in and of itself is a significant finding
C. Difficulty breathing (dyspnea), shortness of breath
D. Anxiety, irritability
E. Feeling of impending doom
F. Abnormal pulse rate (may be irregular)
G. Abnormal blood pressure
H. Epigastric pain
I. Nausea/vomiting
J. Change in skin color

Note: It is possible to have heart failure with no chest pain.

III. Role of the first responder / emergency medical care
A. Circulation - Pulse Absent
   1. Start CPR, beginning with compressions.
   2. Turn on and attach AED
   3. Complete 30 compressions
   4. Ventilate with 100% oxygen by BVM
   5. Analyze if shock indicated
      a) Deliver single shock
      b) Immediately perform 2 minutes of uninterrupted CPR
      c) After 2 minutes of CPR, analyze rhythm and shock if indicated
   6. If available Intubate patient (per King Airway) as soon as possible
   7. Analyze in NO shock indicated
      a) Immediately begin chest compression for 2 minutes
      b) Re-analyze if no shock is indicated check pulse, if pulse is present, check BP, airway & breathing
      c) If no pulse perform 2 minutes of Uninterrupted CPR

B. Patient regains consciousness
   1. Place patient in position of comfort
   2. Provide supplemental oxygen and/or ventilatory assistance, as necessary,

Note: Unresponsive patient with a pulse present, refer to the Altered Mental Status Protocol
Cardiopulmonary Emergencies - Revised 1/11

I. Scene size-up & initial patient assessment

II. Focused history and physical exam
   A. Onset / Provocation / Quality / Radiation / Severity / Time
   B. Signs and Symptoms
      1. Chest pain
      2. Difficulty breathing
      3. Skin changes (pale, sweaty, and cyanotic)
      4. Anxiety / irritability (feeling of impending doom)
      5. Circulatory (irregular pulse/BP, shock, pulse less)
      6. Nausea / vomiting
   C. Allergies / Medications / Previous Hx / Last Intake / Events Prior

III. MANAGEMENT
   A. Patient Responsive, c/o Chest Pain / Pressure / SOB / Sweating
      1. Provide supplemental oxygen and / or ventilatory assistance as necessary, if not done during Initial Patient Assessment.
      2. Patient’s own, physician prescribed Nitroglycerin available; assist patient with self administration of Nitroglycerin, after consulting on or off line medical control
         a) Nitroglycerin
         b) Aspirin
      3. If patients own, physician prescribed Nitroglycerin not available or appropriate;
         a) Continue oxygen .
         b) Allow patient to achieve safe position of comfort
   B. Patient Unresponsive
      1. If patient becomes unresponsive, no pulse, no respirations, initiate Cardiac Arrest Protocol
Cardiopulmonary Resuscitation Protocol
Death In The Field (DIF) Protocol

I. Except as detailed below, patient resuscitation (including CPR if necessary) should be initiated immediately by the first on-scene EMS personnel, and advanced life support carried out per county protocols.

II. EMT’s may withhold resuscitation of patients only if:
   A. The patient is in cardio/respiratory arrest and there is a written DNR/POLST order signed by a physician
   B. There is an obvious sign of death, e.g., rigor mortis, decomposition, decapitation, dependent lividity, evisceration, or incineration
   C. The patient is a pulse less, apneic victim of a multiple casualty incident where resources of the EMS system are required for stabilization of other patients
   D. A victim of trauma should be determined dead and should not be transported if:
      NOTE: Determine if medical condition may have occurred prior to traumatic event
      1. The patient is a victim of blunt trauma or penetrating trauma to the head and has no vital signs in the field (pulse less, apneic, fixed and dilated pupils); or
      2. In instances prior to transport and where scene time combined with transport time will exceed six minutes, and the patient declines to the point that no vital signs (i.e. pulse/respiration) are present; the patient should be declared DIF unless the paramedic elects to resuscitate the patient

III. The patient experiencing a medical (non-traumatic) cardiac arrest should be determined to be dead in the field (DIF) and should not be transported if:
   A. Patient is pulse less, apneic, and has a DNR/POLST
   B. Patient is pulse less, apneic and patient has been that way for an extended period of time
   C. Other obvious signs of death are present

IV. DOCUMENTATION
   A. All patient encounters will be recorded on an MIR with time and procedures documented
   B. All non-resuscitation and termination of resuscitation will have an AED available and will have an ECG strip documenting cardiac rhythm with time and date recorded on the strip. (Exception: traumatic arrest when monitor not used). Attach ECG strips to original, agency and hospital MIR forms
   C. All conversations with Medical Control to be documented, to include time, physician’s name, nurse’s name, and instructions
V. PRECAUTIONS

A. All hypothermic patients, possible drug overdoses, patients of electrocution, lightning, and drowning victims - should have resuscitative efforts begun and transported to the hospital (unless contraindicated by “obvious sign of death” as in II. B above)

B. If questions exist about the appropriateness of resuscitation - initiate, and when possible, contact Medical Control for consultation

C. If the family insists on resuscitation despite the presence of a DNR/POLST order - begin CPR, initiate transport of the patient, and consult the destination hospital or Medical Control for guidance

D. Consider the needs of survivors when discontinuing a code:
   1. Clearly communicate with them that the patient is dead
   2. Arrange for someone to be with the family—offer to call a neighbor, or other family member, clergyman, chaplain
   3. Leave clear information about follow-up contacts for the family when you have gone (i.e., chaplain, counselor, social worker, etc.)
   4. Cover the body with a sheet or blanket. Do not remove ET tube or I.V. lines unless authorized to do so by coroner. Treat the deceased body with respect.
   5. Notify dispatch of "Code C" and have them relay information to coroner
   6. If suspicious circumstances exist, have dispatch notify law enforcement
   7. Make certain law enforcement or EMS is available until the Coroner arrives
II. Protocol

A. When the patient’s family, friends, or nursing home personnel state that the patient is not to be resuscitated:
   1. Protocols will be followed while attempts to determine if a written DNR / POLST order from the patient's physician is in the patient's medical file
   2. In the absence of a written DNR / POLST order, initiate full resuscitation
   3. The EMS personnel must document the DNR / POLST order in the patient care report
   4. If a Living Will is present, initiate resuscitation and immediately consult Medical Control for advice

B. No BLS or ALS procedures should be performed on a patient who is the subject of a confirmed DNR order and who is **PULSE LESS AND NON-BREATHING**

Clinical death exist when a patient is pulse less and non-breathing. Biological death has occurred when no CNS signs of life exist.
Cardiac Arrest in Adults & Children > 8 yrs old

**Shock Indicated (VF or pulseless VT)**
- Deliver Single Shock. Then immediately begin chest compressions.
- Perform 2 minutes of uninterrupted CPR.
- Do not delay CPR for pulse check or post-shock rhythm analysis.

**No Shock Indicated**
- Immediately begin chest compressions.
- Perform 2 minutes of uninterrupted CPR.
- Do not delay CPR for pulse check.

After 2 minutes of CPR, Analyze rhythm.
Do not check pulse before analyzing rhythm.

**Shock Indicated (VF or pulseless VT)**
- Deliver SINGLE Shock. Then immediately begin chest compressions.
- Perform 2 minutes of uninterrupted CPR.
- Do not delay CPR for pulse check or post-shock rhythm analysis.

**No Shock Indicated**
- Check Pulse.
- If pulse, assess blood pressure, airway, and breathing.
- If no pulse, perform 2 minutes of uninterrupted CPR.

After 2 minutes of CPR, Analyze rhythm.
Do not check pulse before analyzing rhythm.

Cardiac Arrest in Children & Infants < 8 yrs old

Begin CAB. If unconscious/unresponsive, not breathing normally & no pulse – immediately perform chest compressions turn on & attach defibrillator. If available, use pediatric key or pediatric pads. If not available, use adult pads. Make sure pads are at least 1” apart if placed on chest and side or may be placed on the chest and back. Complete 30 compressions; analyze rhythm.

Continue as indicated in the above adult algorithm.