**CARDIAC ARREST**

**INCLUSION Criteria:** Patients who are unresponsive and without a palpable pulse with absent or gasping respirations

**EXCLUSION Criteria:** Neonates (infants <28 days old) see Neonatal Resuscitation, patient who meets the criteria for Termination of Withholding Resuscitative Efforts

**OTHER PROTOCOLS TO CONSIDER:** Airway Management, Chest Pain/Acute Coronary Syndrome (ACS), Hypotension or Shock, Overdose or Toxic Exposure, Syncope

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| - Request ALS Response  
  - Initiate chest compressions 30:2 regardless of rhythm  
  - Push hard, push fast 100-120 per minute  
  - Compressions should be initiated and continued where the patient is found  
  - Move patient only as far as necessary for effective resuscitation or safety of the crew  
  - Pediatric: 15:2 if 2 rescuers available  
  - Apply AED and analyze for a shockable rhythm  
  - Defibrillation, if indicated  
  - Immediately resume chest compressions for an additional 2 minutes  
  - Continuous compressions may be performed only if patient is in a shockable rhythm without a respiratory cause  
  - Initiate apneic oxygenation  
  - 15 LPM via nasal cannula  
  - High flow via non-rebreather mask  
  - Manage the airway:  
    - Position patient in sniffing position utilizing padding, if needed to achieve ear to sternal notch and patient’s face parallel to ceiling  
    - Initiate Suctioning, if indicated  
    - Consider insertion of Basic Airway Adjunct – OPA  
    - Ventilate with 100% Oxygen using Bag Valve Mask (BVM) Ventilation  
    - Attach Waveform Capnography, if authorized  
    - Consider i-gel® placement, if authorized, when appropriate to manage airway  
  - If hypothermic, consider Hypothermia or Cold Exposure guideline  
  - Deploy Mechanical CPR Device when adequate personnel are available to avoid compromising high-quality compressions and early defibrillation  
  - Consider reversible causes:  
    - Hypovolemia  
      - If evidence of traumatic etiology or concern for multisystem trauma, consider:  
      - Hemorrhage Control  
        - Pelvic Binder, Tourniquet – Intentional  
      - Hypoxia  
        - Ensure high-flow Oxygen is being delivered  
        - Perform Bag Valve Mask (BVM) Ventilation  
        - Do not hyperventilate  
    - Hyperkalemia  
      - Albuterol  
        - Adult and children over 12 years of age:  
          - Nebulized: 10 mg via in-line nebulizer or mask; continuous with BVM  
    - Hypothermia  
      - See Hypothermia or Cold Exposure |
**AEMT**

- **Initiate IV/IO Access**
  - **Adult:** Consider peripheral IV attempt first if viable site identified. May proceed to Intraosseous (IO) Access after two (2) failed IV attempts.
  - **Pediatric:** Intraosseous (IO) Access should be attempted first

- **Consider additional reversible causes:**
  - **Hypovolemia**
    - **Adult:** Infuse normal saline wide open up to 2000 mL
    - **Pediatric:** 20 mL/kg, may repeat as needed to maximum of 60 mL/kg

- **Manual Defibrillation** if indicated:
  - **Adult:** Manufacturers recommendation or maximum joules
  - **Pediatric:** 2 J/kg initial shock; increase 2 J/kg for each subsequent shock (max of 10 J/kg or max energy setting)

- **Manage the Airway:**
  - **If an i-gel® or supraglottic airway is effectively managing the patient’s airway and remains functional, continue its use to ensure ongoing ventilation and airway support**
  - **If an i-gel® or supraglottic airway device proves inadequate in managing or maintaining the airway proceed with Endotracheal Intubation to ensure proper airway control and ventilation**

- **Cardiac Arrest, any rhythm:** May or may not administer the following:
  - **Epinephrine**:
    - **Adult:** IV/IO: **Epinephrine 1:10,000** 1 mg; may repeat every 3-5 minutes for a maximum of 4 doses
    - **Pediatric < 50 kg:** IV/IO: **Epinephrine 1:10,000** 0.01 mg/kg; may repeat every 3-5 minutes for a maximum of 4 doses

- **Ventricular fibrillation (V-Fib) or pulseless ventricular tachycardia (pVT) may or may not administer the following:**
  - **Amiodarone**
    - **Adult:** IV/IO: 300 mg rapid push
    - If ventricular fibrillation or pulseless ventricular tachycardia continues after subsequent defibrillation attempt or reoccurs after initially achieving return of spontaneous circulation, administer supplemental dose of 150 mg
    - **Pediatric (children less than 12 years of age):**
      - IV/IO: **Epinephrine 1:10,000** 0.01 mg/kg; may repeat every 3-5 minutes for a maximum of 4 doses
  - **Lidocaine**
    - **All ages:**
      - IV/IO: 1.0 mg/kg initial dose (maximum dose 100 mg); may repeat 0.5 mg/kg every 5-10 minutes if refractory; total dose 3 mg/kg
  - **Persistent or recurrent V-Fib or pVT that fails to convert after three (3) shocks:**
    - Consider Double Sequential Defibrillation or if only one monitor/defibrillator consider changing pad placement

- **Consider additional reversible causes:**
  - **Tablets**
    - See **Overdose or Toxic Exposure**
  - **Tension Pneumothorax**
    - Perform **Needle Decompression** bilaterally if chest trauma present and tension pneumothorax suspected
• **Torsades de Pointes:**
  - **Magnesium Sulfate**
    - **Adult:**
      - IV/IO: Mix 2 grams in 10 mL and administer over 1-2 minutes, if ineffective may repeat a second dose immediately
    - **Pediatric:**
      - IV/IO: 50 mg/kg in 10 mL and administer over 2 minutes; maximum single dose 2 grams; if ineffective may repeat a second dose immediately

• **Consider Additional Reversible Causes:**
  - **Hydrogen ion** (preexisting acidosis leading to Cardiac Arrest e.g. tricyclic antidepressant overdose, ASA overdose); not to be given for prolonged downtime:
    - **Sodium Bicarbonate**
      - **Adult:**
        - IV/IO: 100 mEq (2 amps)
      - **Pediatric:**
        - IV/IO: 1 mEq/kg; over 5-10 minutes; maximum initial dose 100 mEq; no repeat dose
  - **Hyperkalemia**
    - If known or suspected dialysis patient, see Hyperkalemia guideline
  - **Tamponade**
    - Perform Pericardiocentesis for traumatic Cardiac Arrest with suspected cardiac tamponade

• **Resuscitate the patient in the location found unless scene is unsafe or unmanageable**
• **Do not interrupt chest compressions to place an airway**
• **The first few minutes of resuscitation should have manual high-quality compressions and defibrillation prioritized prior to placement of a mechanical CPR device. Placement of the device should be deferred until adequate personnel are available to avoid compromising high-quality compressions and early defibrillation.**

**Termination of Resuscitation Without Online Medical Control May Proceed:**
• **After 20 minutes of resuscitation, provided all of the following criteria are met:**
  - The patient is an ADULT with an initial rhythm of asystole
  - Cardiac arrest is unwitnessed by EMS personnel
  - No shock has been administered by either automated or manual defibrillator
  - Pulses are absent without CPR assistance throughout the resuscitation
• **After 30 minutes of resuscitation in ANY patient whose initial rhythm is not asystole or is unknown, provided all of the following criteria are met:**
  - Cardiac arrest is unwitnessed by EMS personnel
  - No shock has been administered by either automated or manual defibrillator
  - Pulses are absent without CPR assistance throughout the resuscitation
• **After 15 minutes of resuscitation for a witnessed traumatic arrest, provided all of the following criteria are met:**
  - The transport time to an emergency hospital exceeded 15 minutes from the initial assessment or the onset of arrest, necessitating the initiation of resuscitation at the scene
  - Absence of pulses and other signs of life persists
  - The patient develops asystole or a pulseless, wide complex rhythm (PEA) with a rate less than 30 beats per minute
• **Considerations for continuing resuscitation after 30 minutes include any of the following:**
  - PEA greater than 40 beats per minute
  - Persistent ventricular tachycardia or ventricular fibrillation
  - EtCO2 greater than 20