Resuscitation: Asystole/Pulseless Electrical Activity (PEA)

**Goals:** Return of Spontaneous Circulation (ROSC) with preserved neurologic function  
**Inclusion Criteria:** Patients in cardiac arrest with “non-shockable” cardiac rhythm  
**Exclusion Criteria:** Severe hypothermia (see Cold Emergencies CPG); valid out-of-hospital DNR order; blunt traumatic cardiac arrest with confirmed asystole (not PEA); neonates (refer to Neonatal Care CPG)

Refer to: Cardiac Arrest, VFib/pulselessVTach and Post-Cardiac Arrest CPGs; Determination of Death Policy

NOTE: ALS units may discontinue resuscitation efforts for victims of blunt or penetrating traumatic cardiac arrest, **IF** no signs of life are present **AND** the patient remains in asystole.

### Basic Level

1. Assess and support ABCs according to UNIVERSAL CARE – ADULT or UNIVERSAL CARE – PEDIATRIC, as clinically indicated, using the modified “CAB” sequence for cardiac arrest:
   a. **C (Circulation):** Immediately begin high-quality, minimally-interrupted CPR, starting with chest compressions:  
      i. Place the patient supine on a firm surface with adequate space to perform team-based CPR  
      ii. Power on AED/defibrillator and apply hands-free defibrillation pads to patient’s bare chest  
      iii. A metronome shall be used for all CPR incidents (chest compression rate: 100-120/minute)  
   b. **A (Airway):** Ensure airway patency, using OPA and/or NPA adjunct and suctioning  
      i. Jaw thrust is preferred if trauma is suspected; refer to Spinal Motion Restriction Policy  
   c. **B (Breathing):** Assist ventilations with 100% FiO2 and 8-10 gentle, one-handed BVM breaths per minute over 1-1.5 seconds each, just enough to cause chest rise (avoid over-ventilation)

2. If time permits, perform a POC Glucose analysis and treat according to the Diabetic Emergencies CPG
   a. Do not administer glucose unless there is documented hypoglycemia

3. Perform a focused Secondary Survey and SAMPLE history, as conditions permit
   a. Look for signs of traumatic injury (including drowning), drug overdose and other special conditions

### Advanced Level

1. Assess and support vital functions, focusing on immediate, high-quality, minimally-interrupted CPR:  
   a. Initiate PetCO2 monitoring as soon as possible:

![](https://via.placeholder.com/150)

[Diagram of resuscitation process with key steps and guidelines]
1. Low PETCO2 value may indicate overly aggressive ventilation or inadequate chest compressions
   ii. Normal or high PETCO2 value may indicate ROSC, even before a pulse is palpable
b. Ensure that manual monitor/defibrillator is in MANUAL mode and in PADDLES lead:
   i. Exception: some agencies may use a manual device in “AED mode” for ADULTS only, depending
      on AED mode configuration, agency MOP/SOP, and specific Medical Direction authorization.

2. Confirm asystole (if suspected) by checking lead connections, monitor power and signal gain:
   a. However, do not waste time to confirm asystole by checking multiple leads

3. Do not attempt advanced airway placement for at least 6 minutes (three, 2-minute cycles of CPR), unless
   necessary because of regurgitation:
   a. Minimize interruption to chest compressions during advanced airway insertion

4. Establish IV/IO access as soon as possible, but NOT before CPR or AED/defibrillator application

5. Administer epinephrine (0.1 mg/mL):
   a. ADULT at least 14 years of age: 1 mg (10 mL) IVP or IO, with normal saline (NS) flush
   i. May repeat up to two more doses, every 3 to 5 minutes as needed (maximum total = 3 doses)
   ii. Contact BioTel for authorization for additional doses, if needed

   b. Pediatric patients less than 14 years of age: 0.01 mg/kg (0.1 mL/kg) IVP or IO, with NS flush
   i. May repeat up to two more doses, every 3 to 5 minutes, as needed (maximum total = 3 doses)
   ii. Contact BioTel for authorization for additional doses, if needed

6. Search for and treat potentially reversible causes and special circumstances:
   a. Hypoxia: Assist ventilations with 100% FiO2; confirm airway patency and/or proper advanced airway
      placement with continuous PETCO2 monitoring
   b. Hypothermia: Protect from further heat loss; refer to Cold Emergencies CPG
   c. Overzealous ventilation: Provide only 8 to 10 gentle breaths over 1-1.5 seconds each during CPR
   d. Hypovolemia: Infuse 20 mL/kg (up to 1000 mL maximum per bolus) Normal Saline IV/IO
      i. May repeat twice, as needed, if no signs of volume overload (rales, JVD, frothy sputum)
   e. Hyperkalemia (renal failure or dialysis) OR pre-existing metabolic acidosis (e.g. methanol
      ingestion, aspirin overdose) OR tricyclic antidepressant overdose: Sodium bicarbonate 1
      mEq/kg IVP or IO
   f. Opioid overdose (known or suspected): Administer naloxone after starting CPR
      i. ADULT at least 14 years of age: 0.4 mg IV/IO/IM or 2 mg IN; repeat once after 4 minutes, if needed
      ii. Pediatric patients less than 14 years of age: 0.1 mg/kg IV/IO/IM; repeat once after 4 min, if needed
   g. Beta-Blocker overdose:
      i. ADULT at least 14 years of age: Administer Glucagon 1-2 mg IV/IO/IM/IN
         1. May repeat once after 20 minutes, if needed
      ii. Pediatric patients less than 1 year of age: Glucagon 0.5 mg IV/IO/IM/IN
      iii. Pediatric patients 1 to 13 years of age: Glucagon 1 mg IV/IO/IM/IN
         1. May repeat once after 20 minutes, if needed
   h. Calcium-Channel Blocker overdose:
      i. ADULT at least 14 years of age: Administer Calcium Chloride (10%) 10-15 mg/kg (0.1 mL/kg-0.15
         mL/kg) IVP or IO (optional medication)
      ii. Pediatric patients less than 14 years of age: Contact BioTel for authorization and dosing
   i. Tension pneumothorax (known or suspected): Perform needle thoracostomy on affected side and
      contact BioTel as soon as possible (Refer to Needle Thoracostomy Procedure)
   j. Cardiac tamponade (suspected, based on history/mechanism): Infuse 20 mL/kg (up to 1000 mL
      maximum per bolus) Normal Saline IV/IO
   k. Prolonged resuscitation (greater than 15 minutes):
      i. Consider Sodium bicarbonate 1 mEq/kg IVP or IO
      ii. Consider Calcium chloride (as above, section 6.h.)

7. In the event of return of spontaneous circulation (ROSC), refer to Post-Cardiac Arrest Care CPG
8. If there is no response to therapy and no evidence of reversible causes of asystole or PEA, consider
   terminating resuscitation efforts in the field: Refer to Termination of Resuscitation Efforts section of the
   Determination of Death Policy
9. For additional patient care considerations not covered under standing orders, consult BioTel