Adult Cardiac Protocol Section

Adult Asystole / Pulseless Electrical Activity

**History**
- SAMPLE
- Estimated downtime
- See Reversible Causes below
- DNR, MOST, or Living Will

**Signs and Symptoms**
- Pulseless
- Apneic
- No electrical activity on ECG
- No heart tones on auscultation

**Differential**
- See Reversible Causes below

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**Cardiac Arrest Protocol AC 3**

**Criteria for Death / No Resuscitation**
Review DNR / MOST Form

**CPR Procedure**
- AED Procedure if available
- Consider reversible causes

**Consider Chest Decompression Procedure in setting of possible chest trauma**

**Cardiac Monitor**
- place Zoll Stat Padz and secondary set of pads

**IV / IO Procedure**
- **Epinephrine 0.1mg/mL (1:10,000) 1 mg IV / IO**
  - Every 5 minutes

**Normal Saline Bolus 500 mL IV / IO**
- May repeat as needed
- **Maximum 2 L**

**Airway protocols as indicated**

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**After four (4) cycles of CPR after initial ALS in place consider LUCAS3 placement**

**ROSC?**
- **YES**
- **Termination on scene Protocol**
- **Post Resuscitation Protocol**

**Notify Destination or Contact Medical Control**

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**Decomposition**
- Rigor mortis
- Dependent lividity
- Blunt force trauma
- Injury incompatible with life
- Extended downtime with asystole
- Do not begin resuscitation
- Follow Deceased Subjects Policy

**Reversible Causes**
- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypothermia
- Hypo / Hyperkalemia
- Tension pneumothorax
- Tamponade; cardiac
- Toxins
- Thrombosis; pulmonary (PE)
- Thrombosis; coronary (MI)

**Consider Early for PEA**
1. Repeated NS boluses for possible hypovolemia
2. Glucagon 4 mg IV/IO/IM for suspected beta blocker or calcium channel blocker overdose
3. Calcium chloride 1 g IV/IO for suspected hyperkalemia/hypocalcemia
4. Sodium bicarbonate 50 mEq IV/IO for possible overdose, hyperkalemia, renal failure
5. Consider dopamine drip
6. Consider chest decompression
No medications are permitted to be administered through an ET tube

Early administration of Epinephrine has been shown to have some benefit. If effective CPR is being performed, IO placement with early administration of Epinephrine can be initiated.

Potential association of PEA with hypoxia so early airway management with oxygenation early may provide benefit.

PEA caused by sepsis or severe volume loss may benefit from higher volume of normal saline administration.

Return of spontaneous circulation after asystole / PEA requires continued search for underlying cause of cardiac arrest.

Treatment of hypoxia and hypotension are important after resuscitation from asystole / PEA.

Asystole is commonly an end-stage rhythm following prolonged VF or PEA with a poor prognosis.

Naloxone has no role in the management of cardiac arrest.

Sodium bicarbonate should be considered in the dialysis / renal patient, known hyperkalemia, or tricyclic overdose at 50 mEq total IV / IO.

Potential protocols used during resuscitation include Overdose / Toxic Ingestion, Diabetic and Dialysis / Renal Failure.

**Pearls:**

- Team Focused Approach / Pit-Crew Approach recommended; assigning responders to predetermined tasks.
- Efforts should be directed at high quality and continuous compressions with limited interruptions and early defibrillation when indicated.
- DO NOT HYPERVENTILATE: Maintained controlled ventilations at rate of 10 per minute or as guided by EtCO$_2$, with continuous uninterrupted compressions. Administer controlled ventilations of 400-600 mL air volume. This can be accomplished by providing a half squeeze of the adult BVM or a full squeeze of a pediatric BVM.
- Do not interrupt compressions to place endotracheal tube. Consider BIAD first to limit interruptions.
- Reassess and document BIAD and / or endotracheal tube placement and EtCO2 frequently, after every move, and at transfer of care.
- IV / IO access and drug delivery is secondary to high-quality chest compressions and early defibrillation.
- **End Tidal CO$_2$ (EtCO$_2$)**
  - If EtCO$_2$ is < 10 mmHg, improve chest compressions.
  - If EtCO$_2$ spikes, typically > 40 mmHg, consider Return of Spontaneous Circulation (ROSC)
- **Special Considerations**
  - Maternal Arrest - Treat mother per appropriate protocol with immediate notification to receiving hospital and safe transport preferably to obstetrical center if available and proximate. Place mother supine and perform Manual Left Uterine Displacement moving uterus to the patient’s left side. IV/IO access preferably above diaphragm. Defibrillation is safe at all energy levels.
  - Renal Dialysis / Renal Failure - Refer to Dialysis / Renal Failure protocol caveats when faced with dialysis / renal failure patient experiencing cardiac arrest.
  - Opioid Overdose - Naloxone cannot be recommended in opioid-associated cardiac arrest. If suspected, attention to airway, oxygenation, and ventilation increase in importance. Naloxone is not associated with improved outcomes in cardiac arrest.
  - Drowning / Suffocation / Asphyxiation / Hanging / Lightning Strike – Hypoxic associated cardiac arrest and prompt attention to airway and ventilation is priority followed by high-quality and continuous chest compressions and early defibrillation.
- **Transcutaneous Pacing:** Pacing is NOT effective in cardiac arrest and pacing in cardiac arrest does NOT increase chance of survival.
- Success is based on proper planning and execution. Procedures require space and patient access. Make room to work.
- Discussion with Medical Control can be a valuable tool in developing a differential diagnosis and identifying possible treatment options.
- Sodium bicarbonate should be considered in the dialysis / renal patient, known hyperkalemia, or suspected tricyclic overdose at 50 mEq IV / IO.
- Consider placement of LUCAS3 after four (4) rounds of CPR after implementation of initial ALS.