Protocol
C-01

SECTION: C-01

TITLE: Adult Cardiac and Respiratory Arrest

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ADULT CARDIAC/RESPIRATORY ARREST

Attention to "the basics" during cardiac arrest is equally important (if not more important than) as ALS drug therapies and interventions.

BLS-Specific Care

- Perform High-Performance CPR (see *Appendix 30: High-Performance Resuscitation)*
  - For an **unwitnessed arrest**: Perform approximately 2 minutes/200-220 compressions of good, sustained, and effective CPR prior to defibrillation or AED attachment
  - For a **witnessed arrest**, or after approximately 2 minutes/200-220 compressions of good, effective, and sustained CPR: AED use per AHA guidelines and manufacturer recommendations
  - Emphasis on minimizing interruptions and maximizing the compression fraction of high-quality compressions.
  - Apply LUCAS Chest Compression system (if/when available) as described in Appendix 30.
- Careful use of BVM and airway adjuncts. Ventilations should occur over 1-2 seconds. Avoid hyperventilation/hyperinflation
- Reduce interruptions of compressions, particularly the "peri-shock pause" as much as possible.
- Use AED as indicated. (See *Appendix 11: Electrical Therapy*).
- Notify the responding ALS unit ASAP

AEMT/O.M. Specific Care

- Supra-glottic Airway as appropriate
- Obtain peripheral vascular access
  - IV: 200-500 ml crystalloid solution. Repeat PRN

ALS-Specific Care

Consider as appropriate:

Electrical Therapy

- Deliver manual defibrillation as indicated. (See Appendix 11: Electrical Therapy).

Vasopressors (for all cardiac arrest rhythms unless contraindicated)

- Epinephrine
  - IV/IO: 1 mg 1:10,000 IVP every 3-5 minutes,

Airway Management:

- Secure the airway using means best determined by good clinical decision making.
- See "*Appendix 2: Advanced Airway Support Supplement* " for guidelines for current and anticipated clinical needs

Anti-arrhythmic therapy: (For maintenance infusions, see protocol C-09 – "Post-ROSC Care")

- Lidocaine (Xylocaine)
  - IV/IO: 1.0 to 1.5 mg/kg IV bolus, can repeat in 3-5 minutes not to exceed 3 mg/kg or 300 mg in 30 minutes (not including infusion)

- Amiodarone
  - IV/IO 300 mg initial dose.
  - Consider repeat x1 150 mg 3-5 min.

- Magnesium Sulfate
  - IV/IO: 2 g every 5 minutes,
  - 1st line for Torsades or refractory V-Fib/Pulseless V-Tach.
  - Administer in conjunction with lidocaine if hypomagnesemia is suspected.
  - Consider for refractory VF/pulseless VT.

Treat underlying causes:

- *Treat underlying causes simultaneously with High-Performance CPR but do not sacrifice the quality of CPR while doing so. High-Performance CPR remains the top priority.*

Sedation for CPR-induced consciousness (Confirm continued pulseless-ness):

- Ketamine:
  - IV/IO 1-2 mg/kg for CPR-induced consciousness. May repeat if needed in 5-10 minutes.

Other specific therapy:

- Sodium bicarbonate for known hyperkalemia, suspected acidosis, TCA toxicity, and prolonged resuscitation.
  - IV/IO: 1 mEq/kg repeated in 10 minutes (if still in arrest) at 0.5 mEq/kg. Minimum initial dose is 50 mEq.
  - Follow TCA recommendations if TCA overdose is suspected
  - Consider dilution of Bicarb if given IO

- Calcium chloride for suspected hyperkalemia, calcium channel blocker OD, or suspected hypocalcemia
  - IV/IO: 500-1000 mg IVP
  - Administer sodium bicarbonate at 1 mEq/kg afterward for suspected hyperkalemia. **Flush line thoroughly between medications**

- Narcan (naloxone) for suspected narcotic overdose *with cardiac arrest*
  - IV/IO: 2 mg repeated PRN

- Dextrose 50% for hypoglycemia
  - IV/IO: 12.5-50 g
  - (Consider dilution of Dextrose if given IO or through small veins)

Physician Pearls:

Continue the High-Performance CPR (see *Appendix 30: High-Performance Resuscitation)* sequence until:

1. Transfer to a higher level of care occurs.
2. Patient regains a pulse
    a. Initiate supportive care (i.e. oxygen via non-rebreather or BVM assisted breaths if necessary.)
    b. Monitor for rearrest closely
3. Resuscitative efforts are terminated (See *Protocol G-04: Special Resuscitation Situations*)

* In addition to BLS interventions, an advanced airway, and *at least* 20 minutes of rhythm-appropriate therapy should have been performed before considering termination of efforts. See *Protocol G-04: Special Resuscitation Situations* for further considerations.

ETCO2: Use waveform ETCO2 as a gauge for the effectiveness of resuscitation as well as monitoring ETT placement.

Treat underlying causes simultaneously with High-Performance CPR (see *Appendix 30: High-Performance Resuscitation) but do not sacrifice the quality of CPR while doing so.* *High-Performance CPR remains the top priority.* Search for, consider, & treat possible contributing factors (as the scope of practice allows):

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/hyperkalemia
- Hypothermia
- Toxins
- Tamponade, cardiac
- Tension Pneumothorax
- Thrombosis (coronary or pulmonary)
- Other potential precipitating causes (i.e. Hypoglycemia, etc)
    - Obtain a BG as soon as feasible.

VASCULAR ACCESS: IV access is the preferred method of vascular access with IO as a secondary option if IV access is unsuccessful.

ENERGY SETTINGS: See *Appendix 11: Electrical Therapy Procedures and Guidelines.* Most ACCESS AEDs and Monitors have been set to deliver max energy settings (200 j), though this does not preclude the use of different devices/settings when needed.

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