

SECTION: C-1

TITLE: Adult Cardiac and Respiratory Arrest

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Attention to “the basics” during cardiac arrest is equally important as ALS drug therapies.

BLS-Specific Care

- For an **unwitnessed arrest**: Consider 2 minutes of good, sustained, and effective CPR prior to defibrillation or AED attachment
- For a **witnessed arrest**, or after 2 minutes of good, effective and sustained CPR: AED use per AHA guidelines and manufacturer recommendations
 - Single shocks are recommended to reduce interruption of CPR
- When possible reduce interruptions of chest compressions
- When VF/pulseless ventricular tachycardia (VT) is present, deliver 1 shock and **immediately** resume CPR, beginning with chest compressions. **Do not delay resumption of chest compressions to recheck the rhythm or pulse**
- After 5 cycles (about 2 minutes) of CPR, analyze the cardiac rhythm and deliver another shock if indicated. If a non-shockable rhythm is detected, resume CPR immediately
- Careful use of BVM, airway adjuncts. Ventilations should occur over 1-2 seconds
- Avoid hyperventilation/hyperinflation
- Notify responding ALS unit ASAP
- Apply LUCAS Chest Compression system when available

ILS-Specific Care

- King Airway/Supraglottic Airway as appropriate
- Obtain peripheral vascular access
 - IV: 200-500 ml crystalloid solution. Repeat PRN

ALS-Specific Care

- Advanced airway management as appropriate
- Rhythm-specific therapy (*see appropriate protocols*)
- The precordial thump may be considered for patients with witnessed, monitored, unstable VT (including pulseless VT) if a defibrillator is not immediately ready for use, but it should not delay CPR and shock delivery
- Epinephrine
 - IV/IO: 1 mg 1:10,000 IVP every 3-5 minutes, or
 - ETT: 2-2.5 mg of 1:1,000 diluted to 8-10 ml every 3-5 minutes.
- Consider underlying causes of cardiac arrest and treat accordingly.

Consider as appropriate:

- Sodium bicarbonate for known hyperkalemia, suspected acidosis, TCA toxicity, and prolonged resuscitation.
 - IV: 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**
- Albuterol sulfate (high dose) for suspected hyperkalemia
 - ETT: 10 mg (4 unit-doses) directly instilled into the ETT, followed by brief hyperventilation
- Narcan (naloxone) for suspected narcotic overdose
 - IV, IO or ETT: 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: Outside of the Comfort One/DNR situations (see Appendix 26), once ALS intervention is initiated, Medical Control should be called prior to ceasing efforts. In addition, BLS interventions, an advanced airway, and at least 10 minutes of rhythm-appropriate therapy should have been performed prior to considering termination of efforts.

The American Heart Association (AHA) 2010 Guidelines for CPR and Emergency Cardiac Care recommends:

- Good, sustained, and effective CPR. **“Push hard and fast.”**
- **Sustained coronary perfusion is believed essential for the heart to respond to defibrillation; any interruption in compressions should be minimized or avoided.** Even brief interruptions of compressions, such as those seen in the pause for ventilations or defibrillation, result in a rapid decrease of coronary perfusion.
- Change to a one-shock protocol. Frequent or long interruptions in precordial chest compressions for rhythm analysis or rescue breathing were associated with post resuscitation myocardial dysfunction and **reduced survival rates**. According to the AHA, “... if one shock fails to eliminate VF, the incremental benefit of another shock is low, and **the resumption of CPR is likely to confer a greater value than another shock.**” Therefore, when a shockable rhythm is found, **only one shock instead of three stacked shocks is recommended.**
- Use waveform ETCO₂ as a gauge for effectiveness of resuscitation as well as monitoring ETT placement.