Purpose

As part of a quality Cardiopulmonary Resuscitation program, the emphasis should always remain on excellent Basic Life Support with quality compressions and accurate ventilations. The utilization of an Impedance Threshold Device, Active Compression and Decompression CPR, Automatic Compression system and other advanced life support procedures have clearly demonstrated an improvement in patient survival. Though no single procedure is 100% effective alone, a combination of quality, consistent BLS skills coupled with ALS skills has been shown to increase the likelihood of an out of hospital survival.

Interruptions during CPR should be minimal – when compressions stop, blood flow stops.

Indications

Known or impending cardiopulmonary arrest

Important Considerations

1. During Ventilations
   a. The volume delivered is sufficient to produce visible chest rise.
   b. An Impedance Threshold Device is utilized appropriately with a BVM or the Transport Ventilator.
   c. If the patient is intubated: End-Tidal Capnography is used continuously. With values charted after intubation and as the patient is turned over to emergency department staff at a minimum.
   d. Auscultation of breath sounds is verified and re-verified whenever the patient is moved.
   e. The automatic transport ventilator is used to assure accurate ventilation rates and volumes whenever possible.

2. During Compressions
   a. Compressions are performed during the preparation and application of a defibrillator, and defibrillation is performed as soon as possible.
   b. Compressions are performed at a rate of 100 - 120 per minute.
   c. Compression depth is appropriate for the age of the patient
      i. Greater than 2 inches for adults
      ii. At least 1/3 of the AP Diameter of the chest for children, or approx. 2 inches.
      iii. At least 1/3 of the AP diameter of the chest for Infants, or approx. 1.5 inches.
      iv. The compressor allows the chest to recoil fully after each compression.
      v. Compressors switch every 2 minutes or more frequently if fatigued
vi. An automatic compression system is utilized during movement and transport of the patient to assure consistent, quality compressions. **NOTE: AT ANY TIME DURING THE RESUSCITATION, IF THE PATIENT REGAINS A PULSE REMOVE THE IMPEDANCE THRESHOLD DEVICE IMMEDIATELY.**

Procedure:

1. Assess responsiveness, breathing and circulation
2. Taking at least 5 but no more than 10 seconds to perform concurrently
3. If not breathing and without pulse, begin CPR
   a. 30:2 compression to ventilation ratio for adults
   b. 15:2 compression to ventilation ratio for a child or infant
4. Perform high-quality chest compressions while a defibrillator is applied
5. Perform defibrillation immediately if indicated
6. Ventilate patient at a 30:2 ratio and assure ventilation volume is enough to provide chest rise
7. Apply an impedance threshold device to BVM as early as possible
8. Monitor and assure that depth and rate of compressions are appropriate for patient
   a. Rate of 100-120 compressions per minute
   b. Switch compressors every 2 minutes or sooner if compressor is fatigued
9. Begin Active Compression/Decompression CPR using a commercially available purpose-built device, such as the ResQPump at the rate specified by manufacturer.
10. Continue CPR until AED advises to shock, or a manual defibrillator arrives.
   a. If shock advised, continue compressions while charging defibrillator
   b. If NO shock advised, resume CPR, starting with compressions first.
11. Repeat Compression/Ventilation cycle, checking for shockable rhythm or pulse after 5 cycles (approx. 2 minutes)
12. Follow current American Heart Association Pulseless Arrest Guidelines
13. Consider utilizing Double-Sequential Defibrillation protocol when there is a persistent ventricular arrhythmia refractory to defibrillation.

**Resuscitation and Transport Considerations**

Movement of the patient during extrication from their position on scene, in preparation for transportation, or during transportation, creates an environment in which the efficacy of BLS measures (particularly compressions) is negatively affected.

1. In-Place Resuscitation
   a. When there is enough access to a patient in cardiopulmonary arrest, resuscitation efforts will be continued in place for 5 rounds (5 cycles of 30:2 CPR), or 10 minutes, using an Active Compression/Decompression method when available.
   b. In the event there is not enough access to the patient or scene safety disallows, the patient should be moved to the nearest accessible location to begin resuscitation efforts as outlined above.
2. An automated CPR device (such as the Lucas 2) will be deployed only when immediate patient extrication and transport are indicated due to safety, traumatic etiology or inability to effectively resuscitate patient in-place.

3. Presumed Traumatic Etiology of Arrest
   a. Traumatic Cardiac Arrests should be moved immediately to the ambulance for rapid transportation to the nearest trauma center.