

Advanced Cardiac Resuscitation (ACR) Clinical Core Beliefs

ACR Sudden Cardiac Arrest Care (SCA) Methodology is specific for Adult Non-traumatic SCA

The ACR Consortium believes providing focused care to optimize these four pressures in SCA patient helps to improve rates of neurologically intact survival (NIS),
Intracranial pressure (ICP) Intrathoracic Pressure (ITP) Cerebral Perfusion Pressure (CerePP) Coronary Perfusion Pressure (CorPP)

Manual CPR

- ✓ All SCA resuscitations begin w/ high quality manual CPR (HQ-CPR)
- ✓ Real-Time CPR feedback has demonstrated improvement in NIS¹
- ✓ SCA witnessed by EMS should receive immediate defibrillation if rhythm is shockable. HQ-CPR should be performed while device is prepared

Use of an Impedance Threshold Device (ITD)

- ✓ ITD selectively prevents air from entering the lungs during chest wall recoil phase (except when intended during ventilation)
- ✓ This pulls more blood back into the heart and lowers ICP²

Clinically Appropriate Airway and Ventilation

- ✓ Avoid hyperventilation (volume and rate)
- ✓ Consider Real-Time Ventilation Feedback (VFD) or Mechanical Ventilators
- ✓ VFD can ensure ventilation is within evidence-based recommendations³
- ✓ Excessive Positive Pressure Ventilation prohibits development of negative intrathoracic pressure during chest wall recoil (↓ venous return to heart)⁴
- ✓ Unrecognized and inadvertent hyperventilation may be contributing to the currently dismal survival rates from cardiac arrest⁴

Clinically Appropriate Epinephrine

- ✓ Consider minimizing the use of epinephrine as it is associated with higher rates of ROSC but not NIS⁷
- ✓ In large, randomized trials, the use of epinephrine has shown improvement in survival at 30 days compared to placebo, but no significant difference in neurologically intact survival (NIS)
- ✓ In the epinephrine group, more survivors had severe neurologic impairment⁷

Continuous Uninterrupted Compressions using Mechanical CPR (MCPR)

- ✓ Goal >95% Chest Compression Fraction (CCF)
- ✓ Control deployment with minimal pauses. No "Crash" Deployment
- ✓ Goal ≤5 sec when transitioning to MCPR
- ✓ All pauses <3 sec. No pausing for airway or patient movement
- ✓ If possible, interpret rhythm / deliver shock without pause for pulse checks

Expanded use of Waveform Capnography (ETCO₂)

- ✓ ETCO₂, when used appropriately, can guide the management of cardiac arrest
- ✓ If ETCO₂ is very low after prolonged resuscitation, consider terminating efforts
- ✓ ETCO₂ can be used to make improved decisions regarding defibrillation and medication administration
- ✓ Sudden Spikes of ETCO₂, should be used in conjunction with changes in blood pressure to detect Return of Spontaneous Circulation (ROSC)

Clinically Appropriate Defibrillation

- ✓ Defibrillate VF or VT if ETCO₂ is >20 (N/A for EMS-witnessed SCA from VF/VT)
- ✓ Defibrillation more successful when administered immediately after onset of VF/VT. However, when VF/VT is more prolonged, depletion of the heart's energy reserves can compromise the efficacy of defibrillation unless replenished by CPR⁵
- ✓ Higher ETCO₂ values were associated with an increased likelihood of conversion to a perfusing rhythm following the first attempted defibrillation⁶

Quality Assurance

- ✓ 100% of SCAs should be reviewed. QA should include review of PCR and Clinical and Biometric Feedback
- ✓ Education and Training should be developed from lessons learned during QA

References:

Bobrow et al., 2013 - ²Metzger AK, et al., 2012 - ³Charlton et al., 2021 - ⁴Aufderheide et al., 2004 - ⁵Panchal et al., 2020 - ⁶Hubble et al., 2021 - ⁷Perkins et al., 2018

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