

Cardiac Arrest – General

This protocol should be followed for adult cardiac arrests. Medical cardiac arrest patients undergoing attempted resuscitation should not be transported unless return of spontaneous circulation (ROSC) is achieved, transport is ordered by medical control or otherwise specified in protocol.

- If an arrest is of a known traumatic origin, refer to the **Traumatic Arrest Protocol**.
 - If it is unknown whether the arrest is traumatic or medical, continue with this protocol.
 - Patients displaying a Do Not Resuscitate order or bracelet – follow **DNR Procedure**.
 - Initiate ALS response if available.
 - CPR should be consistent with current guidelines established by the American Heart Association.
 - Focus should be on prompt defibrillation and effective chest compressions.
1. Confirm Arrest
 - A. Assess breathing (Cardiac arrest patients may have gasping or agonal breathing).
 - B. Check a carotid/femoral pulse for not more than 10 seconds.
 2. Initiate CPR or continue CPR; apply and use AED/defibrillator (per **Electrical Therapy Procedure**) as soon as available.
 3. Ensure high quality CPR
 - A. Chest compression rate is 100 to 120/min.
 - B. Chest compression depth for adults is 2 inches (5 cm) but not greater than 2.4 inches (6 cm).
 - C. Allow complete chest recoil after each compression,
 - D. Minimize interruptions in compressions.
 - E. Avoid excessive ventilation.
 - F. Restart CPR immediately after any defibrillation attempts.
 - G. Keep pauses in CPR to a minimum. Immediately after AED recommends shock resume compressions until AED is fully charged, then immediately after shock, resume compressions without checking pulse or rhythm. Avoid pauses in CPR during airway management.
 - H. CPR sequence is CAB (Compressions, Airway, Ventilation) for all ages, except the ABC sequence should be used in drowning.
 - I. For pregnant patients, a rescuer should manually displace the uterus to the patient's left during CPR.
 - J. Change rescuer doing compressions every 1-2 minutes (100-200 compressions) to avoid fatigue.
 4. Establish a patent airway, maintaining C-Spine precaution if indicated, using appropriate airway adjuncts and high flow oxygen. See **Emergency Airway Procedure**.
 5. Reassess ABC's as indicated by rhythm or patient condition change. Pulse checks should take no more than 10 seconds. If no pulse after 10 seconds, assume pulselessness, continue CPR.



6. If Return of Spontaneous Circulation (ROSC) has not been achieved after three, two minute cycles of CPR and ALS is not available or delayed, contact medical control, initiate transport.



7. Start an IV/IO NS KVO. If IV is attempted and is unsuccessful, after 2 attempts start an IO line per **Vascular Access & IV Fluid Therapy Procedure**. IO may be first line choice.

8. If hypovolemia suspected: Give one liter bolus, may repeat as necessary, Normal Saline Solution.



9. If quantitative waveform capnography is available and ETCO₂ is < 10 mm Hg, attempt to improve CPR quality.

10. Administer Epinephrine 1 mg/10 ml 1 mg IV/IO every 3 to 5 minutes

11. Prior to advanced airway placement, utilize ventilation periods to visualize the ECG rhythm without compression artifact, this will allow you to plan ahead for the assessment period at the end of the two minute CPR cycle.

12. Administer antidysrhythmic according to rhythm check

A. For Ventricular Fibrillation (VF) or pulseless Ventricular Tachycardia (VT), per MCA selection, administer Amiodarone 300 mg IV/IO OR Lidocaine 100mg IV/IO

Per MCA Selection

Amiodarone 300mg IV/IO (May repeat once 150 mg IV/IO)

or

Lidocaine 100mg IV/IO (May repeat, every 5-10 minutes, 0.5 mg/kg, up to total dose of 3 mg/kg)

B. For suspected torsades de pointes administer Magnesium Sulfate 2 g IV/IO

13. Consider and treat reversible causes of cardiac arrest.

a. If suspected hyperkalemia or tricyclic antidepressant overdose, administer Sodium Bicarbonate 1mEq/kg IV/IO

b. If hyperkalemia suspected in dialysis patient administer:
Calcium Cl (10%) 1gm/10 mL IV/IO

c. Assess for tension pneumothorax or misplaced ETT:

i. If tension pneumothorax suspected, perform needle decompression per procedure for pleural decompression.

d. Hypothermia, follow **Hypothermia Cardiac Arrest Protocol**.

14. After insertion of advanced airway, monitor capnography to confirm appropriate tube placement and deliver continuous CPR, without pauses for ventilation. Ventilations delivered at 8-10 breaths per minute or 1 breath every 6 - 8 seconds.



15. Additional basic and/or advanced life support care as appropriate.

16. Consider termination of resuscitation per **Termination of Resuscitation Protocol**.

Notes:

1. Excellent CPR is a priority:
 - A. 30 compressions: 2 ventilations in groups of 5 cycles, over 2 minutes.
 - B. Push hard ≥ 2 inches and fast (≥ 100 /min) and allow full recoil of chest during compressions.
 - C. Change rescuer doing compressions every 2 minutes to avoid fatigue or utilize automated mechanical CPR devices, if available.
 - D. Restart CPR immediately after any defibrillation attempts.
 - E. Keep pauses in CPR to a minimum by checking rhythm when rotating rescuer doing compressions and by avoiding pauses in CPR during airway management and other interventions.
 - F. If AED has been applied by BLS personnel, skip to appropriate place in protocol that incorporates previous care. ALS personnel should switch to manual defibrillator after initial AED shock or place AED in manual mode.
 - G. For biphasic devices shock with energy levels following manufacturers' recommendations (120 – 200 J). If unknown use the maximum available. For monophasic devices use 360 J.
 - H. Confirm and document tube placement by physical exam, measurement of exhaled CO₂ and/or use of other MCA approved secondary confirmation device.
 - I. If possible, contact medical control prior to moving or transporting patient.
 - J. Continue resuscitation attempts and initiate transport, unless field termination is ordered by Medical Control.
 - K. Treat reversible causes.
 - L. Manual chest compressions remain the standard of care for the treatment of cardiac arrest. Mechanical chest compression devices may be a reasonable alternative to conventional CPR in specific settings where the delivery of high-quality manual compressions may be challenging or dangerous for the provider (eg, limited rescuers available, prolonged CPR, CPR during hypothermic cardiac arrest, CPR in a moving ambulance).
 - M. Supraglottic airways are an acceptable alternative for endotracheal intubation.
 - N. An impedance threshold device may be utilized during CPR, if available. Device should be discontinued immediately upon return of spontaneous circulation.