









CARDIAC ARREST

INCLUSION Criteria: Patients who are unresponsive and without a palpable pulse with absent or gasping respirations

EXCLUSION Criteria: Neonates (infants <28 days old) see [Neonatal Resuscitation](#), patient who meets the criteria for [Termination of Withholding Resuscitative Efforts](#)

OTHER PROTOCOLS TO CONSIDER: [Airway Management](#), [Chest Pain/Acute Coronary Syndrome \(ACS\)](#), [Hypotension or Shock](#), [Overdose or Toxic Exposure](#), [Syncope](#)

EMR	<ul style="list-style-type: none"> • Request ALS Response • Initiate chest compressions 30:2 regardless of rhythm <ul style="list-style-type: none"> ○ Push hard, push fast 100-120 per minute ○ Compressions should be initiated and continued where the patient is found <ul style="list-style-type: none"> ▪ Move patient only as far as necessary for effective resuscitation or safety of the crew ○ Pediatric: 15:2 if 2 rescuers available • Apply AED and analyze for a shockable rhythm • Defibrillation, if indicated • Immediately resume chest compressions for an additional 2 minutes <ul style="list-style-type: none"> ○ Continuous compressions may be performed only if patient is in a shockable rhythm without a respiratory cause ○ Initiate apneic oxygenation <ul style="list-style-type: none"> ▪ 15 LPM via nasal cannula ▪ High flow via non-rebreather mask • Manage the airway: <ul style="list-style-type: none"> ○ Position patient in sniffing position utilizing padding, if needed to achieve ear to sternal notch and patient’s face parallel to ceiling ○ Initiate Suctioning, if indicated ○ Consider insertion of Basic Airway Adjunct – OPA ○ Ventilate with 100% Oxygen using Bag Valve Mask (BVM) Ventilation ○ Attach Waveform Capnography, if authorized ○ Consider i-gel® placement, if authorized, when appropriate to manage airway • If hypothermic, consider Hypothermia or Cold Exposure guideline • Deploy Mechanical CPR Device when adequate personnel are available to avoid compromising high-quality compressions and early defibrillation • Consider reversible causes: <ul style="list-style-type: none"> ○ Hypovolemia <ul style="list-style-type: none"> ▪ If evidence of traumatic etiology or concern for multisystem trauma, consider: ○ Hemorrhage Control <ul style="list-style-type: none"> ▪ Pelvic Binder, Tourniquet – Intentional ○ Hypoxia <ul style="list-style-type: none"> ▪ Ensure high-flow Oxygen is being delivered ▪ Perform Bag Valve Mask (BVM) Ventilation ▪ Do not hyperventilate ○ Hyperkalemia <ul style="list-style-type: none"> ▪ Albuterol <ul style="list-style-type: none"> • Adult and children over 12 years of age: <ul style="list-style-type: none"> ○ Nebulized: 10 mg via in-line nebulizer or mask; continuous with BVM ○ Hypothermia <ul style="list-style-type: none"> ▪ See Hypothermia or Cold Exposure 	<div style="text-align: right;">  </div> <div style="text-align: center;">  <h2 style="margin: 0;">McMAID Approach in Cardiac Arrest</h2> </div> <div style="margin-top: 10px;"> <p>M Metronome </p> <p>C Chest compressions </p> <p>M Monitor/Defibrillator </p> <p>A Airway (OPA, O2, ETCO2) </p> <p>I IV/IO access </p> <p>D Drugs </p> </div>
EMT	This section is merged into the EMR section above for better readability and to avoid repetition	

AEMT	<ul style="list-style-type: none"> • Initiate IV/IO Access <ul style="list-style-type: none"> ○ Adult: Consider peripheral IV attempt first if viable site identified. May proceed to Intraosseous (IO) Access after two (2) failed IV attempts. ○ Pediatric: Intraosseous (IO) Access should be attempted first • Consider additional reversible causes: <ul style="list-style-type: none"> ○ Hypovolemia <ul style="list-style-type: none"> ▪ Adult: Infuse normal saline wide open up to 2000 mL ▪ Pediatric: 20 mL/kg, may repeat as needed to maximum of 60 mL/kg
INT	<ul style="list-style-type: none"> • Manual Defibrillation if indicated: <ul style="list-style-type: none"> ○ Adult: Manufacturers recommendation or maximum joules ○ Pediatric: 2 J/kg initial shock; increase 2 J/kg for each subsequent shock (max of 10 J/kg or max energy setting) • Manage the Airway: <ul style="list-style-type: none"> ○ If an i-gel® or supraglottic airway is effectively managing the patient's airway and remains functional, continue its use to ensure ongoing ventilation and airway support ○ If an i-gel® or supraglottic airway device proves <i>inadequate</i> in managing or maintaining the airway proceed with Endotracheal Intubation to ensure proper airway control and ventilation • Cardiac Arrest, any rhythm: May or may not administer the following: <ul style="list-style-type: none"> ○ Epinephrine: <ul style="list-style-type: none"> ▪ Adult: <ul style="list-style-type: none"> • IV/IO: Epinephrine 1:10,000 1 mg; may repeat every 3-5 minutes for a maximum of 4 doses ▪ Pediatric < 50 kg: <ul style="list-style-type: none"> • IV/IO: Epinephrine 1:10,000 0.01 mg/kg; may repeat every 3-5 minutes for a maximum of 4 doses • Ventricular fibrillation (V-Fib) or pulseless ventricular tachycardia (pVT) may or may not administer the following: <ul style="list-style-type: none"> ○ Amiodarone <ul style="list-style-type: none"> ▪ Adult: <ul style="list-style-type: none"> • IV/IO: 300 mg rapid push • If ventricular fibrillation or pulseless ventricular tachycardia continues after subsequent defibrillation attempt or reoccurs after initially achieving return of spontaneous circulation, administer supplemental dose of 150 mg ▪ Pediatric (children less than 12 years of age): <ul style="list-style-type: none"> • IV/IO: 5 mg/kg rapid push (max dose 300 mg) ○ Lidocaine <ul style="list-style-type: none"> ▪ All ages: <ul style="list-style-type: none"> • IV/IO: 1.0 mg/kg initial dose (maximum dose 100 mg); may repeat 0.5 mg/kg every 5-10 minutes if refractory; total dose 3 mg/kg • Persistent or recurrent V-Fib or pVT that fails to convert after three (3) shocks: <ul style="list-style-type: none"> ○ Consider Double Sequential Defibrillation or if only one monitor/defibrillator consider changing pad placement • Consider additional reversible causes: <ul style="list-style-type: none"> ○ Tablets <ul style="list-style-type: none"> ▪ See Overdose or Toxic Exposure ○ Tension Pneumothorax <ul style="list-style-type: none"> ▪ Perform Needle Decompression bilaterally if chest trauma present and tension pneumothorax suspected

PARA	<ul style="list-style-type: none"> • Torsades de Pointes: <ul style="list-style-type: none"> ○ Magnesium Sulfate <ul style="list-style-type: none"> ▪ Adult: <ul style="list-style-type: none"> • IV/IO: Mix 2 grams in 10 mL and administer over 1-2 minutes, if ineffective may repeat a second dose immediately ▪ Pediatric: <ul style="list-style-type: none"> • IV/IO: 50 mg/kg in 10 mL and administer over 2 minutes; maximum single dose 2 grams; if ineffective may repeat a second dose immediately • Consider Additional Reversible Causes: <ul style="list-style-type: none"> ○ Hydrogen ion (preexisting acidosis leading to Cardiac Arrest e.g. tricyclic antidepressant overdose, ASA overdose); not to be given for prolonged downtime: <ul style="list-style-type: none"> ▪ Sodium Bicarbonate <ul style="list-style-type: none"> • Adult: <ul style="list-style-type: none"> ○ IV/IO: 100 mEq (2 amps) • Pediatric: <ul style="list-style-type: none"> ○ IV/IO: 1 mEq/kg; over 5-10 minutes; maximum initial dose 100 mEq; no repeat dose ○ Hyperkalemia <ul style="list-style-type: none"> ▪ If known or suspected dialysis patient, see <u>Hyperkalemia</u> guideline ○ Tamponade <ul style="list-style-type: none"> ▪ Perform Pericardiocentesis for traumatic Cardiac Arrest with suspected cardiac tamponade
NOTES	<ul style="list-style-type: none"> • Resuscitate the patient in the location found unless scene is unsafe or unmanageable • Do not interrupt chest compressions to place an airway • The first few minutes of resuscitation should have manual high-quality compressions and defibrillation prioritized prior to placement of a mechanical CPR device. Placement of the device should be deferred until adequate personnel are available to avoid compromising high-quality compressions and early defibrillation. <p>Termination of Resuscitation Without Online Medical Control May Proceed:</p> <ul style="list-style-type: none"> • After 20 minutes of resuscitation, provided all of the following criteria are met: <ul style="list-style-type: none"> ▪ The patient is an ADULT with an initial rhythm of asystole ▪ Cardiac arrest is unwitnessed by EMS personnel ▪ No shock has been administered by either automated or manual defibrillator ▪ Pulses are absent without CPR assistance throughout the resuscitation • After 30 minutes of resuscitation in ANY patient whose initial rhythm is not asystole or is unknown, provided all of the following criteria are met: <ul style="list-style-type: none"> ▪ Cardiac arrest is unwitnessed by EMS personnel ▪ No shock has been administered by either automated or manual defibrillator ▪ Pulses are absent without CPR assistance throughout the resuscitation • After 15 minutes of resuscitation for a <u>witnessed</u> traumatic arrest, provided all of the following criteria are met: <ul style="list-style-type: none"> ▪ The transport time to an emergency hospital exceeded 15 minutes from the initial assessment or the onset of arrest, necessitating the initiation of resuscitation at the scene ▪ Absence of pulses and other signs of life persists ▪ The patient develops asystole or a pulseless, wide complex rhythm (PEA) with a rate less than 30 beats per minute • Considerations for continuing resuscitation after 30 minutes include any of the following: <ul style="list-style-type: none"> ▪ PEA greater than 40 beats per minute ▪ Persistent ventricular tachycardia or ventricular fibrillation ▪ EtCO2 greater than 20

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