

CARDIAC ARREST (VF/PVT/Asystole/PEA) Adult & Peds

General expectations:

- **Don appropriate PPE for contact/droplet/airborne exposure: N95, facial mask/glasses, gown, gloves**
- Use “Pit crew” or “Team” approach and bundles of care to resuscitate pt. per SOPs/local policy/procedure.
- **Minimize crew exposure to patient (max. crew exposure recommendation= 5 members)**
- All care is organized around 2 minute cycles in C-A-B priority order unless arrest is caused by hypoxic event
- Multiple steps may be done simultaneously if personnel/resources allow:

<p>Determine UNRESPONSIVENESS; manually open airway; assess breathing/gasping; SUCTION prn Simultaneously: Attempt to determine down time: Electrical (0–5 min); Circulatory (6–10 min); Metabolic (> 10 min) phases.</p>	
CPR	
<ul style="list-style-type: none"> ▪ Assess pulse: If not definitively felt in <10 sec: Determine if CPR is contraindicated: DNR, Triple Zero? Blunt trauma? If DNR status is unclear, start CPR; stop if valid POLST is presented or per OLMC order ▪ Disconnect LifeVest® batteries; remove vest if present; DO NOT disconnect VAD batteries ▪ If pulseless & VAD placed: ✓ SpO₂. See VAD SOP; Call VAD Coordinator for instructions 	
<ul style="list-style-type: none"> ▪ If indicated, begin high perfusion minimally interrupted CPR with MANUAL COMPRESSIONS per guidelines w/in 10 seconds of arrest recognition. Use audible prompt to ensure correct rate. ▪ Use a real-time CPR feedback device until an automated CPR device is deployed ▪ As soon as possible (13 and older), transition to an approved automated CPR device (if available and meets protocol) to maintain uninterrupted chest compressions. Pause compressions < 5 sec to place device. Ideally – pause or D/C CPR device only for TOR or ROSC; see approved pauses below ▪ If no CPR device available or is contraindicated: Continue 2 person CPR (adult, child, infant) 	
APNEIC OXYGENATION: 13 and older (first 6 minutes unless contraindicated) Place surgical mask over patients face.	
<ul style="list-style-type: none"> ▪ Insert NPA/OPA; place nasal cannula ETCO₂ sensor/NRM at 15 L O₂ immediately after initiating CPR Exceptions: cardiac arrest caused by hypoxic event (asthma, anaphylaxis, submersion etc.) and/or peds: Early O₂/BVM with inline ETCO₂ indicated for these pts. ▪ As able: Place SpO₂ central sensor; observe (trend) reading and pleth waveform 	
<p>APPLY DEFIB PADS without interrupting compressions as soon as available: Cardiac monitor [ALS]/AED [BLS]</p> <p>✓ RHYTHM: Know your monitor – Does it sense native rhythm with CPR in progress?</p> <ul style="list-style-type: none"> ▪ CPR DEVICE + monitor senses ECG: No pause unless cannot determine rhythm ▪ NO CPR DEVICE or monitor does not sense ECG: Palpate femoral pulse for 5 sec while compressions in progress; pause compressions ≤ 5 sec. Resume compressions immediately. <i>If can't ID rhythm during pause; print strip during pause; resume compressions. Read ECG from printed strip.</i> 	
NOT SHOCKABLE: Resume compressions immediately	
SHOCKABLE? TIMING:	
<ul style="list-style-type: none"> ▪ Downtime ≤ 5 min (electrical phase), coarse VF/PVT, ETCO₂ >20: DEFIB immediately ▪ If meets one or more criteria below: Consider need for DELAYED DEFIBRILLATION 	
<ul style="list-style-type: none"> ▪ Prolonged downtime in cardiac arrest (≥6 min) ▪ Very fine VF (hard to distinguish from asystole) ▪ ETCO₂ < 20 mmHg 	<p>If present; pt. is acidic; heart is less responsive to electrical therapy. Perform high quality CPR; ventilate/BVM at 10 BPM (asthma 6-8) for 2 min and/or until ETCO₂ >20 before defib.</p>
JOULES	PERI-SHOCK PAUSE
<p>Adult/child ≥50 kg: Device-specific joule setting Child < 50 kg: 4 J/kg <u>not to exceed 10 J/kg</u> <u>max adult dose.</u> (chart in appendix)</p>	<p>WITH CPR device: None NO CPR device: ≤ 5 sec</p>
<ul style="list-style-type: none"> ▪ NO CPR DEVICE: Without checking ECG or pulse, change compressors and resume compressions (≤ 5 sec) ▪ NO rhythm/pulse check until after 2 min of CPR unless evidence of ROSC ▪ Continue to assess – Defibrillate shockable rhythms per above procedure in 2 minute cycles 	
Equal but separate priorities	
Advanced Airway	Vascular access
ADVANCED Airway – without interrupting compressions [ALS]	

- Place extraglottic airway (*i-gel*) or ETT per local procedure when safely able; (*no OLMC needed for i-gel*)
- Confirm placement with 5 point auscultation; ETCO₂; secure tube, stabilize head and neck

REGULATE INTRATHORACIC PRESSURE (Age 13 and older)

- Place **RQP ITD** directly on BVM mask or advanced airway adaptor; attach inline ETCO₂ sensor to BVM
- After advanced airway: **VENTILATE** adult at 10 BPM (asthma 6-8 BPM); child (1 breath every 6 sec) with volume only to see visible chest rise and hear bilateral breath sounds midaxillary lines with continuous chest compressions.

VASCULAR ACCESS: IV/ IO per procedure: NS TKO; when placed, give meds with no interruption in compressions

DRUGS

EPINEPHRINE (1mg/10mL) Repeat every **5 min** as long as CPR continue

- Adult:** 1 mg IVP/IO. If cardiac arrest occurs with anaphylaxis: high dose epi per SOP
- Peds:** 0.01 mg/kg (0.1 mL/kg) (Max 1 mg) IVP/IO. See dose chart in appendix.

If SHOCKABLE RHYTHM:

- AMIODARONE**
 - Adult: 300 mg IVP/IO
 - Peds: 5 mg/kg IVP/IO (Max 300 mg)
- After 5 min:
 - Adult: 150 mg IVP/IO
 - Peds: 2.5 mg/kg IVP/IO (Max 150 mg)

If persistent/refractory VF:

- Change defib pad location to A-P and defibrillate per procedure.
- If 2 monitors available: consider **dual sequential defibrillation** at device-specific joule settings

As time allows: **Consider Hs & Ts** (Rx appropriately)

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| <ul style="list-style-type: none"> Hypoxia (ventilate/O₂) Hypovolemia/dehydration (IVF boluses) Hypoglycemia (✓ glucose; D10% per protocol) Hypo/hyperkalemia & H ion (bicarb-responsive acidosis (DKA/TCA /ASA OD, cocaine, diphenhydramine):
SODIUM BICARB 1 mEq/kg up to 50 mEq IVP/IO | <ul style="list-style-type: none"> Tamponade, cardiac Thrombosis (coronary/pulmonary) Tension pneumothorax (pleural decompression) Toxins Opioid OD: NALOXONE
Adult: 1 mg IVP/IO; repeat q. 30 sec up to 4 mg
Peds 0.1 mg/kg IVP/IO (max 1 mg); repeat as above |
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Return of spontaneous circulation (ROSC): Rapid, sustained rise in ETCO₂; pt moves; wakes up

- Remove RQP ITD;** Assess VS; ECG, SpO₂, ETCO₂ q. 5 min
- Palpate **pulse & watch SpO₂ pleth for 5 minutes** to detect PEA
- Support ABCs;** Target normal oxygenation (avoid hyper or hypoxia), normocapnia, and normal BP (Goal MAP 90-100)
Assist ventilations prn; do not hyperventilate even if ↑ ETCO₂; titrate O₂ to SpO₂ 94%.
- Obtain 12 L ECG** ASAP after ROSC (call alert if STEMI)
✓ **glucose** level (Rx hypoglycemia; avoid hyperglycemia)

BP support is a high priority: Start 2nd IV if needed

Reassess q. 2 min until desired BP reached, then every 5 min. Don't overshoot target BP

Adults: If SBP < 90 (MAP < 65): IV WO while prepping:
Dopamine IVPB initiate at 5mcg/kg/min titrate to response-(max 10 mcg/kg/min mL/min)

Peds: If SBP < 70: IV WO while prepping:
Dopamine IVPB initiate at 5mcg/kg/min titrate to response - (max dose 10 mcg/kg/min)

TARGETED TEMPERATURE MANAGEMENT (TTM) after ROSC

If patient remains unresponsive to verbal commands w/ no contraindications: Chemical cold packs (CCP) to cheeks, palms, soles of feet; if additional CCP available, apply to neck, lateral chest, groin, axillae, temples, and/or behind knees

TERMINATION OF RESUSCITATION (TOR)

Seek OLMC physician's direction if patient is failing to respond to steps above after 10 minutes of resuscitation.

If pt. presents in persistent asystole, following an unwitnessed arrest, with no reversible causes of arrest identified, contact OLMC physician for TOR after 6 minutes of resuscitative efforts.

Most OLMC physicians will be reluctant to declare TOR in patients ≤12 years

If TOR denied, transport with CPR in progress