



Base Hospital Contact Required.

1. For patients meeting [Ref. 814](#) Section I criteria for determination of death in the field – document *DOA – Obvious Death* ❶
2. Resuscitate cardiac arrest patients on scene ❷
3. Assess airway and initiate bag-mask ventilation; escalate to advanced airway per ([MCG 1302; 1309](#)) ❸ ❹
Monitor waveform capnography throughout resuscitation
4. Assist respirations with bag-mask-ventilations (BMV) with viral filter, using **high-flow Oxygen 15L/min**; squeeze bag just until chest rise and then release - state “squeeze, release, release” to avoid hyperventilation ❹
5. For advanced airway, Supraglottic airway is preferred when indicated ❸
6. For suspected foreign body (no chest rise with BMV): ❺
Perform direct laryngoscopy and use pediatric Magill forceps to remove visible obstruction(s)
7. Initiate chest compressions at a rate of 100-120 compressions per minute with a compression to ventilation rate of 15:2 ❻
8. Initiate cardiac monitoring ([MCG 1308](#))
Briefly assess rhythm every 2 minutes, minimizing pauses, or continuously via rhythm display technology ❷ ❸
9. Establish vascular access ([MCG 1375](#)) ❾
10. **CONTACT BASE** concurrent with ongoing management

ASYSTOLE/PEA

11. **Epinephrine (0.1mg/mL) 0.01mg/kg IV/IO**, dose per [MCG 1309](#)
May repeat every 5 min x2, maximum single dose 1mg ❿

CONTACT BASE for additional epinephrine doses

12. Consider and treat potential causes ⓫
13. **Normal Saline 20mL/kg IV/IO** per [MCG 1309](#)
May repeat x2

V-FIB/PULSELESS V-TACH

14. **Defibrillate at 2J/kg**, dose per [MCG 1309](#)
Repeat at **4J/kg** at each 2-minute cycle as indicated



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If persistent shockable rhythm after three shocks, change the pad position when feasible and without pads touching ¹²

15. **Epinephrine (0.1mg/mL) 0.01mg/kg IV/IO**, dose per [MCG 1309](#)
Begin after second defibrillation
May repeat every 5 min x2, maximum single dose 1mg ¹⁰

CONTACT BASE for additional epinephrine doses

16. For persistent or recurrent V-Fib/V-Tach without pulses:
Amiodarone (50mg/mL) 5 mg/kg IV/IO, dose per [MCG 1309](#)

RETURN OF SPONTANEOUS CIRCULATION

17. Initiate post-resuscitation care on scene to stabilize the patient prior to transport ^{13 14}

18. For hypotension per [MCG 1309](#):
Normal Saline 20mL/kg IV/IO rapid infusion per [MCG 1309](#)
Repeat x1 for persistent poor perfusion

If no response after **Normal Saline 20mL/kg**, or worsening hypotension and/or bradycardia:
Push-dose Epinephrine – mix 9mL Normal Saline with 1mL Epinephrine (0.1mg/mL) IV formulation in a 10mL syringe; administer **Push-dose Epinephrine (0.01mg/mL)** per [MCG 1309](#) every 1-5 minutes as needed to maintain normal SBP per [MCG 1309](#) ¹⁵

19. Continue ventilation at 20 breaths per minute or every 2-3 seconds
20. Establish advanced airway per ([MCG 1302](#); [1309](#)) ¹⁶
21. Raise head of stretcher to 30 degrees if blood pressure allows, otherwise maintain supine
22. Check blood glucose
For blood glucose < 60mg/dL
Dextrose 10% 5mL/kg IV/IO
≤24kg: **Dextrose 10%, 5mL/kg IV/IO** per [MCG 1309](#). Administer slow IVP. Recheck glucose per
>24 kg: **Dextrose 10%, administer 125mL IV/IO** and reassess, continue infusion as needed with maximum dose of 5mL/kg

CONTACT BASE for persistent hypoglycemia for repeat dose of Dextrose 10% 5mL/kg IV, maximum total dose 10mL/kg, not to exceed 250mL

23. For suspected narcotic overdose: ¹⁷
Naloxone (1mg/mL) 0.1mg/kg IM/IN/IO/IV, dose per [MCG 1309](#)
24. Contact **Public Health 213-989-7140** for all submersion incidents involving pools or spas after transfer of patient care in the emergency department or upon termination of resuscitation in the field (this requirement is effective 10/1/21). ¹⁸

SPECIAL CONSIDERATIONS



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- ① EMS Personnel are mandated reporters of child abuse and neglect, and a report should be made when suspected as per [Ref. 822](#). Communicate suspicion for child abuse and/or neglect to accepting ED staff when home suggests children could be at risk for harm (e.g., unkept home, evidence of drug or alcohol abuse, unsafe living conditions, known or suspected domestic violence), when the history does not match with the severity of physical findings (e.g., child posturing after a roll off the couch), when patterned injury or burns are noted (e.g., circular burns as from a cigarette, whip marks on the skin, burns of both hands or feet), or when child reports physical or sexual abuse. Children < 3 years of age and those with developmental delay are at increased risk of abuse. This must also be accompanied by notification to the Department of Children and Family Services (DCFS).
- ② Maintaining perfusion with high-quality CPR throughout resuscitation is essential to ensuring good patient outcome. Chest compressions are the most important aspect of cardiac arrest resuscitation. Maintaining chest compressions should take priority over any medication administration or transport. Transporting the patient in cardiac arrest causes interruptions in CPR and reduces CPR quality. Similar to adults in OHCA, pediatric patients who are resuscitated on scene have higher neurologically intact survival. Transport may be initiated sooner if scene safety concerns.
- ③ Bag-mask ventilation (BMV) with a viral filter is the preferred initial method of airway management for pediatric patients. BMV in cardiac arrest has been associated with improved patient outcomes; the role of the supraglottic airway (SGA) in pediatric patients is still unknown. SGA placement should be performed if BMV is ineffective and otherwise deferred until initial resuscitation priorities are complete (i.e., at least 2 defibrillations for shockable rhythms and first dose of epinephrine IV for nonshockable rhythms). Sizing of the SGA per *MCG 1309*. When authorized, intubation should not be performed until after return of spontaneous circulation (ROSC) unless ventilation with BMV and SGA is ineffective and/or contraindicated.
- ④ Hyperventilation reduces venous return and worsens patient outcomes. Both continuous and interrupted (15:2) compressions/ventilations are acceptable. Regardless of ventilation method used, ventilations should be no more frequent than 10 per minute with a volume just enough to see chest rise and then release the bag to allow for exhalation ("squeeze, release, release"). Once ROSC is achieved ventilation rates can increase to 20 per minute.
- ⑤ Children < 3 years of age are at high risk for foreign body aspiration. Foreign body aspiration should be suspected if there is a history of possible aspiration or when there is no chest rise with BMV after repositioning of the airway.
- ⑥ EMS personnel should remain on scene up to 20 minutes to establish chest compressions, vascular access and epinephrine administration for nonshockable rhythms or until return of spontaneous circulation (ROSC) is achieved; for shockable rhythms, remain on scene until 3 defibrillations or until ROSC is achieved. The best results occur when resuscitation is initiated and maintained on scene, and post ROSC care is initiated.
- ⑦ If you are able to observe the underlying rhythm during compressions via rhythm display technology, do not pause for the rhythm check.
- ⑧ ETCO₂ should be > 10 with a "box-shaped" waveform during effective CPR. A flat or wavy waveform or ETCO₂ < 10 may indicate ineffective compressions or airway obstruction. A sudden increase in ETCO₂ is suggestive of ROSC. The waveform can also be used to confirm ventilation rate if an advanced airway or asynchronous ventilation with continuous compressions is used.



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- 9 Peripheral venous access may be difficult to obtain in infants and small children. Consider IO placement as primary vascular access in patients for whom venous access is unlikely to be achieved rapidly. For older children, make two attempts at venous access and, if unsuccessful, place an IO for vascular access.
- 10 Epinephrine may improve outcomes if given *early* in nonshockable rhythms and should be given within 5 minutes of the resuscitation. For shockable rhythms, where defibrillation is the preferred initial treatment, epinephrine should be given after the second defibrillation. Epinephrine is most likely to be effective if it is given early and after chest compressions have begun. The likelihood of meaningful survival declines after three (3) doses of epinephrine. Resuscitation should continue focused on quality CPR, defibrillation, and identifying reversible causes. Additional doses of epinephrine should only be administered with Base order if indicated, based on the individual patient.
- 11 Potential causes that can be treated in the field include hypoxia, hypovolemia, hyperkalemia, hypothermia, toxins, and tension pneumothorax. Hypoxia and Hypovolemia are common causes of PEA arrest in children. Hypoglycemia is a very rare cause of cardiac arrest and should not be assessed until after ROSC.
- 12 Changing the pad position, called vector change, from anterior-lateral to anterior-posterior or vice versa in patients who do not respond to initial defibrillation attempts, increases the chances of converting to a perfusing rhythm.
- 13 Re-arrest shortly after ROSC is common. Early indicators of impending re-arrest include falling EtCO₂ and progressive bradycardia. Initiate post-resuscitation care prior to transport, if the scene allows, in order to reduce chances of re-arrest en route. Fluid resuscitation, vasopressor support, and avoidance of hyperventilation are recommended to decrease the risk of re-arrest. Transport considerations include suspected cause of arrest and anticipated transport time to a Pediatric Medical Center. Pediatric patients with ROSC should be transported to a Pediatric Medical Center if within 30 minutes.
- 14 ETCO₂ can help guide your ventilation rate; target ETCO₂ 35-45 mmHg. Just after ROSC, the ETCO₂ may be transiently elevated. This will decrease appropriately with ventilation and does not require hyperventilation to normalize. Persistently elevated ETCO₂ and/or “sharkfin” waveform may indicate respiratory failure as cause of the cardiac arrest. Falsely low ETCO₂ measurements can occur if there is a leak with BMV or shock.
- 15 **Push-dose Epinephrine** is appropriate for non-traumatic shock including cardiogenic shock. Additional doses beyond 10mL may need to be prepared for prolonged transports. For patients < 10kg, transfer the diluted **Push-dose Epinephrine** to a smaller (1mL or 3mL) syringe in order to administer the dose accurately.
- 16 Consider SGA placement if needed to facilitate effective ventilations during transport. In patients longer than the length-based resuscitation tape (e.g., Broselow tape) or > 40 kg body weight for whom intubation is also in scope of practice, SGAs are the preferred advanced airway unless specifically contraindicated. Paramedics should use judgment based on patient characteristics, circumstances, and skill level when selecting the advanced airway modality for pediatric patients in whom multiple modalities are authorized.



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- ⑰ Narcotic overdose should be suspected in cases where there is drug paraphernalia on scene or there is a witness report. Pinpoint pupils may be present, but hypoxia during cardiac arrest more often causes mydriasis (dilated pupils) instead.
- ⑱ EMS is assisting the Department of Public Health (DPH) in promptly investigating fatal or nonfatal drownings at public pools or spas in order to ensure safety can be verified before reopening. Contacting the on-call DPH officer will allow timely investigation of these incidents and prevent future incidents.

