Pediatric Advanced Life Support Helpful Hints for the 2025 Guidelines

The Chain of Survival

- Recognition and Emergency Activation → High-Quality CPR → Defibrillation → Advanced Resuscitation → Post-Cardiac Arrest Care → Recovery and Survivorship (p. 10)

The Newborn Chain of Survival

- Prevention →Recognition and Emergency Activation → Initial Steps → Ventilation → Advanced Resuscitation → Postnatal Care → Recovery (p. 10)

BLS and AED for Infants and Children

- CPR has been initiated on a child without a pulse by two healthcare professionals; the appropriate compression-to-ventilation ratio is 15:2 (p. 16).
- An unresponsive infant is not breathing and does not have a pulse. No mobile device is available, and no one is around to assist. Begin CPR for 2 minutes before leaving to activate the emergency response system (p. 16).
- CPR has been initiated on a child without a pulse by a single healthcare professional; the appropriate compression-to-ventilation ratio is 30:2 (p. 22).
- A patient continues to snore and exhibit poor chest rise and poor air entry bilaterally despite placing an oropharyngeal airway; the next most appropriate action is to provide bag-mask ventilation (p. 24).

High-Performance Teams

- When a team member realizes a task is beyond their scope of practice, they should ask for a new task or role instead (p. 43).
- Allowing complete chest wall recoil after each compression is an element of high-quality CPR (p. 40).
- During a resuscitation attempt, anyone on a high-performance team may need to intervene tactfully if a team member is about to take an inappropriate action, for instance, if a team leader asks for an initial dose of epinephrine to be drawn up as 0.1 mg/kg to be given IO, the appropriate response should be, "I think the correct dose is 0.01 mg/kg. Should I give that dose instead?" (p. 44).

Systematic Approach to the Seriously Ill or Injured Child

- An infant is being evaluated for irritability and poor feeding with a blood pressure of less than 72/37 with a 5-second capillary refill time. The infant is considered hypotensive (p. 79).
- The finding needing immediate intervention for a child involved in a motor vehicle collision would be any signs of a life-threatening condition that would require immediate intervention, including airway (complete or severe airway obstruction); breathing (apnea, significant increased work of breathing, bradypnea); circulation (weak or absent pulses, poor perfusion, hypotension, bradycardia); disability (unresponsiveness, decreased level of consciousness); and Exposure (significant hypothermia or hyperthermia, significant bleeding, petechiae, or purpura consistent with septic shock or coagulation problem (p. 49).
- A child who has had a high fever and cough is having increasing lethargy, grunting, and sleepiness, is difficult to arouse, and is unresponsive to voice commands, and his oxygen saturation is in the 70s on room air and under 90% when on a non-rebreathing oxygen mask with shallow respirations. The oxygen saturation is consistent with respiratory failure (p. 72).
- A child who presents with respiratory failure and a fever may have an infection and an early need for an antibiotic (p. 87).
- If an infant is unresponsive, you have 10 seconds to check for a pulse and breathing simultaneously before starting CPR (p. 57).
- A normal heart rate for a school-age child is between 75 and 118 beats per minute, such as 88/min (p 76).
- Audible inspiratory stridor can cause difficulty breathing and respiratory distress in children (p. 71).
- A toddler is in the emergency department and is lethargic with retractions and nasal flaring. He has a rapid respiratory rate, with warm extremities and brisk capillary refill. If left untreated, this child's condition can most likely progress to respiratory failure (p. 72).
- A toddler has been vomiting and had diarrhea for the past 2 days, and he is becoming more lethargic; he will need his blood glucose checked as soon as possible (p. 83).

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Systematic Approach to the Seriously Ill or Injured Child

- A child is brought to the emergency department by ambulance after being involved in a motor vehicle collision. When assessing the child's neurologic status, he has spontaneous eye opening, is fully oriented, and can follow commands. This child's Alert, Voice, Painful, Unresponsive (AVPU) Pediatric Response Scale finding is Alert (p. 83).
- A child appears increasingly lethargic and continues to have severe subcostal retractions. Based on an assessment, the most likely reason for this change in the child's condition is signs of respiratory failure (p. 72).
- Upon the airway component of the primary assessment, the finding of inspiratory stridor would lead to the conclusion of an upper airway obstruction (p. 70).
- For a child in septic shock, in addition to oxygen administration and appropriate fluid resuscitation, an additional early intervention to provide is antibiotic administration (p. 87).
- An O2 saturation (SpO2) of 94% or more while a child is breathing room air usually indicates that oxygenation is adequate; conversely, an SpO2 less than 94% when the child is breathing room air indicates hypoxemia, and immediate intervention is required if the child has an SpO2 less than 90% on 4 L/min of nasal oxygen (p. 73).
- A respiratory rate of 24 breaths per minute is a normal finding for a 3-year-old child (p. 64).
- Hypoxia is the most likely cause of bradycardia for an infant (p. 77).

Recognizing Respiratory Problems

- A child who has grunting respirations requires immediate intervention. Grunting is a compensatory mechanism to maintain positive airway pressure and prevent collapse of the alveoli and small airways. Grunting is an ominous sign of impending respiratory failure (p. 105).
- Increased inspiratory effort with retractions would most likely lead you to suspect an upper airway obstruction in a child having difficulty breathing, such as in cases of foreign body obstruction, croup, and epiglottitis (p. 103).
- A child with difficulty breathing and a history of asthma and nut allergies who recently ate cookies with unknown ingredients is most likely to have an upper airway obstruction (p. 103).
- The presence of crackles on auscultation will help identify children with acute respiratory distress caused by lung tissue disease (p. 104).
- The major clinical signs of upper airway obstruction in an infant, such as stridor, hoarseness, or a change in voice or cry, typically occur during the inspiratory phase of the respiratory cycle. Inspiratory retractions, increased work of breathing, use of accessory muscles, and nasal flaring are often present. The respiratory rate is often only mildly elevated because upper airway obstruction is worse with faster breathing. Examples include foreign body obstruction, croup, and epiglottitis (p. 103).
- A lower airway obstruction is characterized by a prolonged expiratory phase and wheezing (p. 104).
- A child is brought to the emergency department for seizures that stopped a few minutes ago, but the child continues to have slow and irregular respirations, known as disordered control of breathing (p. 105).

Managing Respiratory Problems

- In an upper airway obstruction caused by edema from infection (e.g., croup) or allergic reaction, carefully weigh the potential benefits vs risks of suctioning. Suctioning may further agitate the child and increase respiratory distress, so consider allowing the child to assume a position of comfort. Give nebulized epinephrine, particularly if the swelling is beyond the tongue (p. 111).
- After rectal administration of diazepam, a school-aged child with a history of seizures is now unresponsive to painful stimulation, and respirations are shallow. Upon examination, the child is snoring, with poor chest rise and bilateral poor air entry, and requires repositioning with an oral airway to be inserted (p. 123).

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Recognizing Shock

- A child who is febrile and tachycardic has a capillary refill time of 5 seconds. The blood pressure will determine if the child is in compensated shock (p. 143).
- An infant with a 2-day history of vomiting and diarrhea has been sleeping much more and has mottled, cool extremities. The assessment that indicates hypotensive (decompensated) shock is a blood pressure (p.144).
- An infant with a 2-day history of vomiting and diarrhea has been sleeping much more and has mottled, cool extremities and is in hypovolemic shock (p. 146).
- A child with lymphoblastic leukemia is responsive, but does not feel well and appears flushed with an elevated temperature, with a normal oxygen saturation on room air. A mild increase in work of breathing and bounding pulses is revealed upon further assessment and requires 100% oxygen by nonrebreathing mask. A distributive or septic form of shock is suspected (p. 148).
- When managing a child in shock, the assessment finding most important in determining the severity of the patient's condition is blood pressure (p. 143).

Managing Shock

- An IO serves as a safe and reliable route for administering medications, crystalloids, colloids, and blood during resuscitation. One can achieve IO access in children of all ages, and it can be used in an extremity with a slow capillary refill time, but not when an extremity has signs of a crush injury, infection, or unsuccessful IO attempts (p. 199).
- The amount of fluid resuscitation an infant needs is 20 mL/kg of normal saline. In general, isotonic crystalloid should be given as a bolus over 5 to 20 minutes: 10 to
20 mL/kg for children with suspected septic shock, 20 mL/kg for hypovolemic shock, and 5 to 10 mL/kg for cardiogenic shock. In children with severe, hypotensive, hypovolemic shock, fluid should be given over 5 to 10 minutes. Carefully monitor for signs of pulmonary edema or worsening tissue perfusion (p. 170).
- For a child in septic shock, the most appropriate amount to administer for the first normal saline fluid bolus is 10 to 20 mL/kg (p. 170).
- A child who is undergoing chemotherapy has been febrile and has not been feeling well, with the recent onset of lethargy. The assessment reveals that the child is difficult to arouse, with pale skin color. Capillary refill time is 5 to 6 seconds, and temperature is 39.4 °C (103 °F). An IV has been established, and blood cultures have been obtained. The most appropriate intervention would be to administer 10 to 20 mL/kg of isotonic crystalloid over 5 to 10 minutes (p. 170).

Recognizing Arrhythmias

- An unresponsive child is pale and cool to the touch, with low blood pressure and a heart rate greater than 180, with narrow QRS complexes without discernible P or T waves on the monitor. The rhythm is most likely Supraventricular tachycardia (p. 297).
- A child has been given valium for prolonged seizures and is now unresponsive and cyanotic with a heart rate of less than 50, narrow QRS complexes on the monitor, with clearly defined normal T and P waves for each complex. The rhythm most consistent with this patient is sinus bradycardia (p. 208).

Managing Arrhythmias

- During an episode of supraventricular tachycardia, if pharmacological interventions are unavailable or delayed, synchronized cardioversion is indicated (p. 231).
- A child has been given valium for prolonged seizures and is now unresponsive and cyanotic with a heart rate of less than 50, showing sinus bradycardia on the monitor. Providing bag-mask ventilation with 100% oxygen is needed (p. 220).

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Recognizing and Managing Cardiac Arrest

- When attempting defibrillation, provide compressions until the defibrillator is charged, deliver 1 shock, and immediately resume CPR, starting with chest compressions (p. 246).
- While high-quality CPR is being provided to a child during ventricular fibrillation, the dosage range for initial defibrillation should be 2 to 4 J/kg (p. 247).
- The initial defibrillation dose for a 20kg child should be set at 2 to 4 J/kg, equaling 40 J (p. 247).
- A child is brought into the emergency department by ambulance with no palpable pulses detected, and the ECG shows sinus bradycardia, indicating pulseless electrical activity (p. 240).

Post-Cardiac Arrest Care

- After post–cardiac arrest patients, to avoid a reperfusion injury, oxygen saturation of 94% to 99% should be ideally maintained (p. 268).

PALS Pearls

- If the patient is comatose, apply targeted temperature management (32 °C – 34 °C) followed by (36 °C – 37.5 °C) or only TTM (36 °C – 37.5 °C) for up to 5 days (p. 265).
- Use a color-coded length-based Tape to determine the child's weight (if not known) for calculating medication doses and for selecting the correct sizes of resuscitation equipment (p. 172).

Vital Signs (p. 74, 79):

Age	Pulse (awake)	Pulse (asleep)	Respirations	Systolic BP	Diastolic BP
Neonate	100-205	90-160	40-60	67-84	37-57
Infant	100-180	90-160	30-53	72-104	42-63
Toddler	98-140	80-120	22-37	86-106	46-72
Preschooler	80-120	65-100	20-28	89-112	57-76
School-aged	75-118	58-90	18-25	97-115	61-80
Adolescent	60-100	50-90	12-20	110-131	64-83

Medication	Dose	Concentrate	mL / 5 Kg Patient
0.9% Normal Saline (p.120)	20mL / Kg	→	100mL
Adenosine (p.224)	0.1-0.2 mg / Kg	3 mg / mL	0.1666mL (x2 for 2nd)
Amiodarone (p. 252, 254)	5mg / Kg	50mg / mL	0.5mL
Atropine (p. 218, 220)	0.02mg/Kg	0.1mg/mL	1mL
Defibrillation (p. 245)	2J, 4J, 6J, 8J / Kg	→	10J, 20J, 30J, 40J
Dextrose 10 (p. 180)	5-10 mL / Kg	100 mg / mL	25-50mL
Epinephrine (p. 220, 252)	0.01mg / Kg	0.1mg / mL	0.5mL
Lidocaine (p. 252)	1mg / Kg	20mg / mL	0.25mL
Magnesium Sulfate (p. 254)	25-50mg / Kg	500mg / mL	0.25-0.5mL
Sync Cardioversion (p. 229)	0.5J – 1J / Kg	→	2.5J-5J → 10J MAX

Sudden Deterioration in an Intubated Patient (p. 126).

- **D** Displacement of the tube/distension of the abdomen
- **O** Obstruction of the tube
- **P** Pneumothorax/PEEP requirement
- **E** Equipment Failure

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Increase Chest Compression Fraction (CCF) Performance (p. 36):

- ✓ Pre-charge the defibrillator 15 seconds before a 2-minute rhythm analysis (deliver shock immediately in VF or pulseless ventricular tachycardia [pVT] on the monitor).
- ✓ Palpate a pulse during the pre-charge phase in anticipation of an organized rhythm during analysis (a pulse check during compressions is not a reliable indicator of CPR quality).
- ✓ The compressor hovers over the chest (not touching it), ready to start chest compressions immediately after a shock, a rhythm analysis, or other necessary pauses in compressions.
- ✓ Have the next compressor ready to take over immediately
- ✓ If placing an advanced airway, do so without pausing compressions
- ✓ Deliver medications during compressions

Pediatric Assessment Triangle (p. 48)

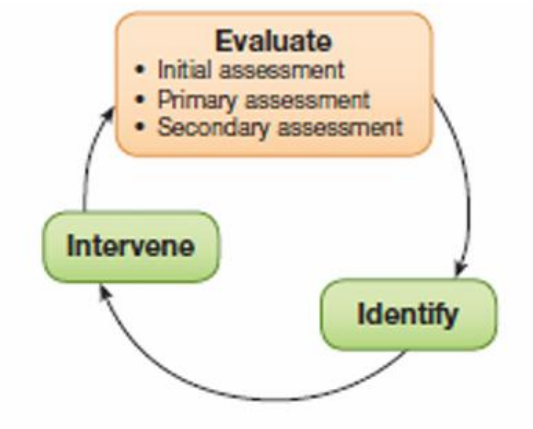
Work of Breathing
- ✓ Tripod or Sniffing Position
- ✓ Retractions
- ✓ Audible Breath Sounds

Circulation (Color)
- ✓ Pale
- ✓ Mottled
- ✓ Cyanotic

Appearance

T – Tone
I – Interactiveness
C - Consolability
L – Look or Gaze
S – Speech or Cry

Evaluate – Identify – Intervene Sequence (p. 52)



Primary Assessment (p. 54)

- **A** Airway
- **B** Breathing
- **C** Circulation
- **D** Disability
- **E** Exposure

Reversible Causes (p. 237):

- ✓ Hypovolemia
- ✓ Hypoxia
- ✓ Hydrogen Ion (acidosis)
- ✓ Hypoglycemia
- ✓ Hypo-/hyperkalemia
- ✓ Hypothermia
- ✓ Tension pneumothorax
- ✓ Tamponade, cardiac
- ✓ Toxins
- ✓ Thrombosis, pulmonary
- ✓ Thrombosis, coronary

NOTES:

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