Pediatric Resuscitation & Respiratory Emergencies

Pediatric Cardiac Arrest Protocol

The successful resuscitation of a child in cardiac arrest is dependent of a systematic approach of initiating life-saving CPR, recognition of any airway obstructions, adequate oxygenation & ventilation, early defibrillation and transferring care to advanced life support providers in a timely manner. The majority of pediatric patients found in non-traumatic cardiac arrest are found to have some form of airway obstruction or respiratory failure. Providing good BLS care with regards to relieving foreign body airway obstructions and/or initiation of CPR, pediatric patients have a better chance at a positive outcome. Adequate ventilation is the most important step in pediatric resuscitation. **Always refer to your Broslowe Tape!**

First Responder Care

First Responder Care should be focused on confirming that the patient is in full arrest and in need of CPR. Resuscitative efforts should be initiated by opening the airway and initiating ventilations & chest compressions while attaching a defibrillator. It is important to assure that CPR is being performed correctly following AHA guidelines.

1. Determine unresponsiveness. Confirm that a transporting unit (and ALS intercept) has been activated).
2. Maintain patent airway and assess breathing. If breathing is absent or inadequate, give two (2) rescue breathe with a barrier device,
3. Check for a pulse (10 seconds). If pulseless, **begin CPR**. The patient should be ventilated at 20-30 breaths/min using **oxygen at 15 L/min via BVM**.
4. Apply an AED **after 2 min of CPR** to determine if defibrillation is needed.
   a) If PEDIATRIC PADS *are available*-apply as pictured on each of the AED electrodes with proper contact and without any overlap of the pads. If overlap of the pads occurs, use anterior (front)/ posterior (back) placement with cervical spine precautions if neck/back injury is suspected.
   b) If ADULT PADS *only*- apply anterior (front)/ posterior (back) with cervical spine precautions if neck/back injury is suspected (see diagram at the end of the protocol).
5. Continue CPR until the AED is attached and turned on. Stop CPR when the AED is analyzing:
   a) If the AED indicates “SHOCK ADVISED”, call out “CLEAR!” check for the safety of others, and push the shock button (or stand clear if the AED device does not require shock activation).
   b) Immediately **resume CPR for 2 minutes**.

Pediatric Cardiac Arrest Protocol

First Responder Care {Continued}

c) Reassess the patient and allow the AED to analyze
d) If the AED indicates "SHOCK ADVISED", call out "CLEAR!" check for the safety of others and push the shock button (or stand clear if the AED device does not require shock activation).
e) Check for a pulse if the AED states "NO SHOCK ADVISED".
f) Continue CPR if pulse is absent.
g) Reassess every 2 minutes. Shock if indicated.
h) If the patient regains a pulse at any time during resuscitation, then maintain the airway and assist ventilations.
i) Re-analyze the patient' rhythm with the AED if the patient returns to a pulseless state. Shock if indicated.

6. Immediately turn the patient over to the transporting provider or ALS intercept crew upon their arrival
7. Complete all necessary cardiac arrest documentation.

BLS Care

BLS Care should focus on maintaining the continuity of care by confirming the patient is in cardiac arrest and continuing resuscitative efforts initiated by the First Responders. Transporting BLS units should initiate an ALS intercept as soon as possible.

1. BLS Care includes all of the components of *First Responder Care*.
2. Shocks delivered to the patient prior to the transporting unit arriving on scene should be taken into consideration during the transition of care. Transporting crews may want to utilize the AED used by the non-transporting First Responders if circumstances allow for exchange of equipment or personnel ride-along.
3. Call for ALS intercept and initiate transport as soon as possible.
4. **Contact Medical Control**.

Pediatric Cardiac Arrest Protocol

ILS Care

ILS Care should focus on maintaining the continuity of care by confirming that the patient is in cardiac arrest and beginning resuscitative efforts or continuing efforts initiated by the First Responders.

1. ILS Care includes all components of *BLS Care*.
2. Apply Quick-Combo pads (or Fast Patches).
3. Evaluate rhythm.
4. If V-fib or pulseless V-tach, immediately **defibrillate at 2 J/kg**.
5. **Immediately resume CPR for 2 minutes**.
6. Evaluate the patient rhythm and **defibrillate if needed at 4J/kg. Continue CPR and re-evaluate patient rhythm every 2 minutes.**
7. Obtain **peripheral IV or IO** access when resources exist.
8. If BVM with OPA/NPA is adequately ventilating the patient, no additional airway is required If the patient is inadequately ventilated with a BVM and OPA/NPA then proceed with **Supraglottic Airway** insertion..

ALS Care

ALS Care should focus on maintaining the continuity of care by confirming that the patient is in cardiac arrest and beginning resuscitative efforts or continuing resuscitative efforts initiated by the First Responders.

1. ALS Care includes all components of *ILS Care*.
2. Obtain **peripheral IV or IO** access.
3. Identify and treat cardiac dysrhythmias according to the appropriate protocol.
4. If BVM with OPA/NPA or a Supraglottic Airway is adequately ventilating the patient, no additional airway is required. If the patient is inadequately ventilated with a BVM and OPA/NPA or a Supraglottic Airway then proceed with **intubation**.

Anterior/Posterior pad placement: Placement of the anterior AED pad (electrode) on the front of the patient mid-chest and the posterior pad of the back of the patient mid-back. (Always follow manufacturer's recommendations and diagrams for pad placement). –see following diagram**

**Use the anterior/posterior pad placement if no pediatric pads are available and adult Quick Combos or Fast Patches are being utilized for a pediatric patient.

Pediatric Cardiac Arrest Protocol

Critical Thinking Elements

- If the cardiac arrest is witness by EMS personnel, start CPR and defibrillate immediately after the Fast Patches or Quick Combos are placed.
- Treat the patient- not the monitor. A rhythm present on the monitor screen should NOT be used to determine pulse. If the monitor shows a rhythm and the patient has no pulse, begin CPR (the patient is in PEA- *pulseless electrical activity*.)

Resuscitation of Pediatric Pulseless Rhythms Protocols

The successful resuscitation of patients in cardiac arrest is dependent on a systematic approach to resuscitation. ACLS medications are an important factor in successful resuscitation of the pulseless patient when the initial rhythm is not ventricular fibrillation (V-fib) or in cased when defibrillation has been unsuccessful. It is important that BLS providers understand the value of effective CPR and an ALS intercept is providing the patient with ACLS therapy.

First Responder Care

Not applicable. First Responders are not equipped with ACLS medications and shall treat the patient in accordance with the *Pediatric Cardiac Arrest Protocol*.

BLS Care

Not applicable. BLS Providers are not equipped with ACLS medications and shall treat the patient in accordance with the *Pediatric Cardiac Arrest Protocol*.

Ventricular Fibrillation (V-fib) or Pulseless Ventricular Tachycardia (V-tach)

ILS Care

1. Initiate *Pediatric Cardiac Arrest Protocol.*
2. Evaluate the rhythm after 2 minutes of CPR. If V-Fib or pulseless V-Tach: **Defibrillate at 2 J/Kg****
   - **If the patient converts to a perfusing rhythm (with a heart rate > 80 bpm), administer **Lidocaine:** 1mg/ kg IV/IO **(with Medical Control order only)**.
3. **Immediately resume CPR for 2 minutes** and re-evaluate the patient/rhythm.
4. **Obtain IV/IO access.**
5. **Epinephrine 1:10,000:** 0.01mg/kg IV/IO Minimum dose 0.1 mg (**Max single dose: 1 mg**) and repeat every **3 to 5 minutes** as needed.
6. If pulseless F-fib/V-tach persists: **Defibrillate at 4J/kg.**
7. **Immediately resume CPR for 2 minutes** and re-evaluate patient/rhythm every 2 minutes.

Resuscitation of Pediatric Pulseless Rhythms Protocols

Ventricular Fibrillation (V-fib) or Pulseless Ventricular Tachycardia (V-tach) {Continued}

ILS Care {Continued}

8. **Lidocaine:** 1 mg/kg IV/IO. Repeat bolus: 1 mg/kg IV/IO in ***3-5 minutes*** to a total of 3 mg/kg for refractory V-fib/ V-tach.
   OR
   Amiodarone: 5mg/kg IV/IO. Max single does 300 mg.
9. If pulseless V-fib/ V-tach persists: **Defibrillate at 4J/ kg.**
10. **Immediately resume CPR** and re-evaluate patient rhythm every 2 minutes.
11. **IV Fluid Therapy**: 20 mL/kg fluid bolus for suspected hypovelemia.
12. If blood sugar is < 60mg/dL, refer to ALOC Protocol
13. If suspected narcotic ingestion, refer to Ingestion/Overdose Protocol.
14. Initiate ALS intercept and transport as soon as possible.
15. **Contact Medical Control** as soon as possible.

ALS Care

1. ALS Care includes all components of *ILS Care*.

Resuscitation of Pediatric Pulseless Rhythms Protocol

Pulseless Electrical Activity and Asystole

ILS Care

1. Initiate *Pediatric Cardiac Arrest Protocol.*
2. Evaluate rhythm after 2 minutes of CPR.
3. **Epinephrine 1:10,000**: 0.01 mg/kg IV/IO (*Minimum does 0.1mg)* ***(Max single dose: 1mg***) every 3-5 minutes as needed.
4. **Continue CPR** and re-evaluate patient/rhythm every 2 minutes.
5. **IV Fluid Therapy**: 20 mL/kg fluid bolus for suspected hypovelemia.
6. If blood sugar is < 60mg/dL, refer to ALOC Protocol
7. If suspected narcotic ingestion, refer to Ingestion/Overdose Protocol.
8. Initiate ALS intercept and transport as soon as possible.
9. **Contact Medical Control** as soon as possible.

ALS Care

1. ALS Care includes all components of *ILS Care*.
2. **Needle chest decompression** for a patient in ***traumatic*** cardiac arrest with suspected tension pneumothorax. Use a 14ga angiocath 2 inches or less in length. Ensure that the specific safety mechanism will allow for the release of air.

Critical Thinking Elements

- Pediatric cardiac arrest is often related to hypoxia and poor ventilation. Ensure proper oxygenation and ventilation.
- CPR and good BVM are the only procedures needed initially.
- Broselow tapes are an effective means to estimate weight. Refer to the Memorial EMS protocols for medication doses.

Pediatric Bradycardia Protocol

Pediatric bradycardia is defined as a heart rate less than the normal beats per minute for a given age group. Determining the stability of the pediatric patient with bradycardia is an important factor in patient care decisions. The assessment of the patient with bradycardia should include evaluation for signs and symptoms of hypoperfusion and hypoventilation.

First Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to treat for shock.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
2. Assess the pediatric for signs and symptoms of hypoperfusion and possible causes, including:
   - Respiratory difficulty
   - Cyanosis
   - Cool/Cold Skin
   - Hypotension/ Lack of palpable blood pressure
   - Decreasing level of consciousness
3. **Oxygen:** 15 L/min via BVM if the child is in respiratory distress. If the child is alert, 10-15 via non-rebreather mask or 4-6 L/min via nasal cannula if the child will not tolerate a mask.
4. For children **< 12 months of age**: If, despite oxygen and ventilation the child continues to appear hypoperfused and has a pulse **< 60 beats per minute**, **initiate chest compressions**.
5. *Immediately* turn patient care over to the transporting provider or ALS intercept upon their arrival.

BLS Care

BLS Care should be directed at conduction a thorough patient assessment, initiating routine patient care to treat for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Place defib pads on those patients exhibiting S/S of hypoperfusion.
3. **Apply Capnography** (if equipped).
4. Initiate ALS intercept and transport as soon as possible. (*Transport can be initiated at any time during this sequence*.)
5. **Contact Medical Control** as soon as possible.

Pediatric Bradycardia Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **IV Fluid Therapy**: 20mL/kg bolus if hypovelemia is suspected.
3. **Epinephrine 1:10,000:** 0.01mg/kg (*Minimum does 0.1mg*) (***Max single dose: 1mg***) (**with Medical Control order only**) and repeat every ***3 to 5 minutes*** as needed.
4. **Atropine**: 0.02mg/kg IV **(with Medical Control order only)** (*Minimum dose: 0.1mg*) (***Max single dose: 1mg***) for children **greater than 6 months of age**.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. **Immediate Transcutaneous Pacing**: If the patient remains bradycardic with continued signs of hypoperfusion
   a) **Set the rate based on age appropriate guidelines. Contact Medical Control if assistance is needed.**
   b) Current should be set at minimum to start and increase until capture is achieved
   c) Refer to the *Transucaneous Pacing Procedure* for additional information.
3. **Midazolam (Versed):** 0.1mg/kg IV/IO (***Max single dose: 2.5mg***) for patient comfort after pacing is initiated. Re-check vital signs 5 minutes after administration. May repeat dose one time if systolic BP > 100 mmHg and respiratory rate > 10 RPM. Additional doses require **Medical Control order**.
4. **Midazolam (Versed):** Versed Intranasal may also be used if unable to give IV/IO Versed. (See intranasal dosing sheet, pg 45 of *Pediatric Prehospital Care Manual*).
5. **Contact Medical Control** regarding destination choice.

Pediatric Bradycardia Protocol

Critical Thinking Elements

- Monitor the child's respiratory status, SPO2 and or Waveform Capnography if available.
- Assess for the possibility of foreign body.
- Hypothermia-warm the patient
- Assess for mechanical problems with oxygen delivery
- Hypoxemia
- Hypoglycemia, severe dehydration and narcotic effects may produce bradycardia
- Most maternal medication passes through breast milk to the infant.

Pediatric Narrow Complex Tachycardia Protocol

Tachycardia may be a nonspecific sign of fear, anxiety, pain, fever or shock in the pediatric patient. The heart rate needs to be assessed in conjunction with the PAT & ABCDEs. As with all cardiac dysrhythmias, assess the heart rate and EKG with knowledge based on PALS principles and normal ranges for children. Always ask the child/caregiver about history of illness, congenital heart disease or cardiac surgery. Pediatric Supraventricular Tachycardia is defined as a narrow QRS (<0.08 seconds) and a heart rate greater than 220 BPM.

First Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to treat for shock.

1. Render initiate care in accordance with the *Routine Pediatric Care Protocol*.
2. Oxygen: 10-15 L/min via non-rebreather mask or 4-6 L/min via nasal cannula is the patient cannot tolerate a mask.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to treat for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. **Capnography** (if equipped).
3. Initiate ALS intercept and transport as soon as possible.

Pediatric Narrow Complex Tachycardia Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing transport.

1. ILS Care includes all components of *BLS Care.*
2. **IV Fluid Therapy**: 20 mL/kg fluid bolus.
3. **Vagal Maneuvers**: if the patient is alert and oriented, has an age appropriate BP, has a HR greater than 220 bpm, and is *obviously* not in atrial fib or atrial flutter. Having the patient attempt to move the plunger of a 12 or 20ml syringe by blowing from the small end is one technique. Splashing the face with ice cold water or carotid massage are other techniques for younger patients who may not be able to follow directions.
4. **Contact Medical Control** as soon as possible.
5. **Adenosine (Adenocard)**: 0.1 mg/kg IV/IO {Rapid IV push} (**Max single dose: 6 mg**) (**with medical control order only**) if the child is alert and still has a HR greater than 220 BPM. If no response after **2 minutes**, administer 0.2 mg/kg IV/IO {Rapid IV/IO push} (**Max single dose: 12 mg**) (**with Medical Control order only**).

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care.*
2. **Midazolam (Versed):** 0.1mg/kg IV/IO ***(Max single dose: 2mg*) in preparation for synchronized cardioversion** if the patient has a respiratory rate > 10 RPM. If the patient's respiratory rate is < 10 RPM, proceed to immediate synchronized cardioversion without sedation.
3. **Midazolam (Versed):** Versed Intranasal may also be used if unable to give IV/IO Versed. (See intranasal dosing sheet, pg 45 of *Pediatric Prehospital Care Manual*).
4. **Synchronized Cardioversion:** If the patient has an altered level of consciousness, diaphoresis, pale/mottled skin and/or is hypotensive:
   a) Synchronized Cardioversion at **1 J/kg** if tachycardia persists.
   b) Synchronized Cardioversion at **2 J/kg** if tachycardia persists.
   Reactivate Synchronizer before any subsequent attempt at Cardioversion.

Pediatric Wide Complex Tachycardia Protocol

Tachycardia should be assessed in conjunction with the PAT and ABCDEs. Pediatric ventricular tachycardia is defined as a wide complex QRS and a heart rate > 180 BPM. The child may have a history of serious systematic illness/ congenital heart defects.

First Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to treat for shock.

1. Render care in accordance with the *Routine Pediatric Care Protocol*.
2. **Oxygen:** 10-15L/min via non-rebreather mask or 4-6 L/min via nasal cannula if the patient cannot tolerate a mask.

BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to treat for shock and preparing the patient for or proving transport.

1. BLS Care includes all components of *First Responder Care.*
2. **Apply Capnography** (if equipped).
3. Initiate ALS intercept and transport as soon as possible.

ILS Care

ILS Care should be directed at continuing or establishing a thorough patient assessment, stabilizing the patient's perfusion and preparing the patient for or proving transport.

1. ILS Care includes all components of *BLS Care.*
2. **IV Fluid Therapy**: 20 mL/kg fluid bolus.
3. If the patient becomes pulseless at any times, refer to the *Resuscitation of Pediatric Pulseless Rhythms Protocol (V-fib or Pulseless V-tach).*
4. **Lidocaine**: 1mg/kg IV/ IO slowly over 2 minutes if the child is alert (**with medical control order only**). If no response, administer Lidocaine 0.5mg/kg every *5 minutes* as needed to a total of 3 mg/kg (**with Medical Control order only**).

Pediatric Wide Complex Tachycardia Protocol

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing the patient for or providing transport.

1. ALS Care includes all components of *ILS Care.*
2. **Contact Medical Control** as soon as possible.
3. **Lidocaine:** 1 mg/kg IV/IO. Repeat bolus: 0.5 mg/kg IV/IO in ***3-5 minutes*** to a total of 3 mg/kg for refractory V-fib/ V-tach. If not given by ILS provider.
   OR
   Amiodarone: 5mg/kg IV/IO. Max single dose 150 mg given IVP over 10 minutes. If Lidocaine has not been given.
4. **Midazolam (Versed):** 0.1 mg/kg IV/IO (***max single dose: 2 mg***) for patient comfort prior to cardioversion. Re-check vital signs 5 minutes after administration. Additional doses also require Medical Control order.
5. **Midazolam (Versed):** Versed intranasal may also be used if unable to give IV Versed. (See intranasal dosing sheet, pg 45 of *Pediatric Prehospital Care Manual*).
6. **Synchronized Cardioversion:** If the patient has an altered level of consciousness, is in shock, and is in V-Tach with a heart rate > 180 BPM:
   a) Synchronized Cardio version at **1 J/kg** if tachycardia persists.
   b) Synchronized cardio version at **2 J/kg** if tachycardia persists
   Reactivate Synchronizer before any subsequent attempt at Cardioversion.

Critical Thinking Elements

- Monitor the child's SPO2 and or Waveform Capnography if available.
- Cardiac dysrhythmias such as V-tach are rare in children. Ask the caregiver if the child has a chronic or genetic cardiac condition.
- V-tach with a pulse could be from a serious illness, hypoxia or dehydration.

Pediatric Respiratory Distress Protocol

Respiratory Distress is common in the pediatric patient. The small airways of children are compromised more quickly during medical and traumatic problems. Identifying the degree of respiratory distress is crucial for stopping a process that can lead into respiratory failure. At that point, the child has lost the ability to compensate for the lack of oxygen. If not treated immediately, respiratory failure will lead to arrest.

First Responder Care

First Responder Care should be focused on assessing the situation and initiated routine patient care to treat for shock.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
2. **Oxygen:** 15 L/min via non-rebreather mask or 6 L/min via nasal cannula if the patient cannot tolerate a mask.
3. Utilize the *Pediatric Assessment Triangle* to gain a general impression.
4. Assess abnormal airway sounds.
5. If wheezing is noted and the child has their **prescribed inhalers** present, suggest and/or help with the self- administration of those medicines by the patient.
6. Place patient in a position of comfort.

BLS Care

BLS Care should be directed at conduction a thorough patient assessment, initiating routine patient care to treat for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care.*
2. **Proventil (Albuterol):** For patients ≥ 1 year old, 2.5 mg in 3 mL of normal saline via nebulizer over 15 minutes for wheezing or absent/diminished breath sounds. May repeat Albuterol 2.5 mg every **15 minutes** as needed.
3. **Apply Capnography** (if equipped).
4. Initiate ALS intercept and transport as soon as possible.

Pediatric Respiratory Distress Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care.*
2. **Proventil (Albuterol):** If ≥ 3 months of age, 2.5 mg in 3 mL of normal saline mixed with **Ipratropium (Atrovent):** 0.5 mg via nebulizer over 15 minutes for wheezing or absent/diminished breath sounds. If < 3 months of age, reduce to Proventil (Albuterol) 1.25 mg in 1.5 mL **without** Ipratropium (Atrovent)**.**
3. **Epinephrine** 1:1,000 If ≤ 30 kg 0.15 mg IM if the patient is suffering status asthmasticus and does not improve with nebulizer treatment. If > 30 kg 0.3 mg IM. May repeat every ***20 minutes.***
    a. Administer based on *Medication Administration Procedure*
4. Obtain peripheral IV or IO access.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient perfusion and preparing for or providing patient transport.

1. ALS Care includes all components of *ILS Care.*
2. In-line nebulizer may be utilized if the patient is unresponsive or in respiratory arrest.
3. **Contact Medical Control** as soon as possible.

****Epi IM Kits**, as an alternative to Epi-Pen auto-injectors, use epinephrine IM injection kits. These kits contain an ampule or vial of 1mg of 1:1000 epinephrine, syringes, IM needle and filter needle, and alcohol swabs as well as instructions for adults and children.

Critical Thinking Elements

- The thigh is the preferred site for IM medication administration in the infant patient population

Pediatric Respiratory Distress Protocol

Epiglottitis

Symptoms of epiglottitis may include:

- ALOC
- Fever
- Hoarseness
- Brassy cough
- Inspiratory stridor
- Drooling
- Tripod position

If Epiglottitis is suspected:

First Responder, BLS, ILS Care

1. Initiate *Routine Pediatric Care Protocol.*
2. **Do not look in the child's mouth or attempt to visualize the interior of the throat.**
3. **Do not agitate the child**. He/she should be kept as calm as possible- do not attempt to obtain IV access.
4. **Oxygen:** 10-15 L/min via non-rebreather mask or by best means tolerated by the patient (i.e. blow-by or 4-6 L/min via nasal cannula).
5. **Apply Capnography** (if equipped) and as tolerated.
6. Transport the child sitting up.

ALS Care

1. ALS Care includes all components of *ILS Care.*
2. **Epinephrine** 1:1,000: If ≤ 30 kg 0.15 mg IM if the patient is suffering **severe** S/S of Epiglottitis. If > 30 kg 0.3 mg IM. May repeat every ***20 minutes.***

Critical Thinking Elements

- The thigh is the preferred site for IM medication administration in the infant patient population

Pediatric Tracheostomy Protocol

With today's technology and improving home health care, more critical care patients are being sent home early. Home health care professionals and family members can duplicate the care the child receives in the hospital. This allows the patient to return home, spending less time in the hospital. EMS is activated when there is a problem with complex medical equipment, or the patient relapses into a more critical condition. EMS providers need to gain knowledge of critical medicine not previously needed.

First Responder Care

First Responder Care should be focused on ensuring a patent airway.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
2. **Oxygen:** 15 L/min via tracheostomy collar.
3. Assess work of breathing.
4. Assess abnormal airway sounds.
5. Place patient in a position of comfort.
6. If the tracheostomy tube is obstructed with secretions **direct the caregiver to:**
   a. Suction with whistle-tip catheter.
   b. Repeat suction after removing inner catheter of tracheostomy tube.
   c. Change the tracheostomy tube.
7. If the airway continues to be obstructed or if ventilatory effort is inadequate, **ventilate with 100% oxygen** by attaching a BVM to the tracheostomy tube.
8. If the tracheostomy tube is still not patent, ventilate **mask to mouth** while covering the stoma.
   - The balloon on the trach must be deflated prior to attempting mask to mouth ventilation.
9. Initiate ALS intercept as soon as possible.
10. Take patient's tracheotomy care bag with patient.

BLS Care

BLS Care should be directed as conduction a thorough patient assessment and ensuring that the child has a patent airway.

1. BLS Care includes all components of *First Responder Care*.
2. BLS level and above caregivers may suction with a whistle-tip catheter, remove inner catheter of the tracheostomy tube, and change the tracheostomy tube.
3. If BVM ventilations, then **apply in-line capnography** (if equipped).
4. Initiate transport ASAP.

Pediatric Tracheostomy Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment and ensuring a patent airway.

1. ILS Care includes all components of *BLS Care*.

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment and ensuring a patent airway.

1. ALS Care includes all components of *ILS Care*.
2. If the airway is still obstructed:
   a. Reassess patency of the airway
   b. Suction as needed
   c. **Contact Medical Control**

Pediatric Respiratory Arrest Protocol

When the pediatric patient enters respiratory arrest, cardiac arrest (and poor outcome) is sure to follow. Assisted ventilations with a BVM can be the most useful skill in resuscitation of the child in respiratory arrest. Remember- the pediatric patient responds to oxygen very favorably. Therefore, it is important to try to identify the cause of the respiratory arrest after securing the patient airway and providing proper ventilation.

First Responder Care

First Responder Care should be focused on ensuring a patent airway and proper ventilation

1. Assess airway. If agonal respirations are present or the child is not breathing at all
   a. Perform jaw thrust
   b. Suction airway
   c. Insert **oropharyngeal or nasopharyngeal airway**
2. Administer **100% oxygen** using appropriately sized **BVM**
3. If chest rise in inadequate:
   a. Relieve upper airway obstruction
   b. Reposition airway
   c. Refer to *Basic Airway Management of the Pediatric Patient Protocol.*
4. Refer to *Pediatric Respiratory Distress Protocol* if breathing resumes.
5. If hypoperfusion is present, refer to *Pediatric Shock Protocol.*
6. Follow *Routine Pediatric Care Protocol* for general treatment guidelines.
7. Ensure ALS has been dispatched.

BLS Care

BLS Care should be directed as conducting a thorough patient assessment, ensuring that the child has a patent airway and proper ventilation.

1. BLS Care includes all components of *First Responder Care*.
2. Apply **pulse oximetry** and document oxygen saturation.
3. Apply **Waveform Capnography** (if equipped).
4. Transport as soon as possible.

Pediatric Respiratory Arrest Protocol

ILS Care

ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, ensuring a patent airway and proper ventilation.

1. ILS Care includes all components of *BLS Care*.
2. Consider underlying etiologies and treat according to the appropriate protocol:
   - Airway obstruction
   - Cardiac dysrhythmias
   - CNS injury
   - Anaphylaxis
   - Poisoning/Overdose
   - Suffocation
   - Metabolic (refer to *Pediatric ALOC Protocol*)
   - Hypovolemia (refer to *Pediatric Shock Protocol*)
   - Near Drowning
   - Carbon monoxide exposure
3. Initiate **IV access**, if possible.
4. Initiate ALS intercept and transport as soon as possible.
5. If BVM with OPA/NPA is adequately ventilating the patient, no additional airway is required. If the patient is inadequately ventilated with a BVM and OPA/NPA then proceed with **Supraglottic Airway** insertion.

Pediatric Respiratory Arrest Protocol

ALS Care

ALS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, ensuring a patent airway and proper ventilation.

1. ALS Care includes all components of *ILS Care*.
2. If BVM with OPA/NPA or a Supraglottic Airway is adequately ventilating the patient, no additional airway is required. If the patient is inadequately ventilated with a BVM and OPA/NPA or a Supraglottic Airway then proceed with **intubation**.
3. **Needle chest decompression** of the affected side with a 14g angiocath (≤ 2inch in length) if tension pneumothorax is suspected. **(With Medical Control order only)**
4. Contact Medical Control as soon as possible.

Critical Thinking Elements

- Gastric distention is very common in pediatric patients and may cause poor compliance.
- **Ventilation too fast or giving too much tidal volume are the top two reasons for distention**.
- Use proper ventilation techniques and an appropriately sized BVM for the pediatric patient.

Pediatric ALTE/ BRUE

Apparent life threatening events (ALTE)/ Brief Resolved Unexplained Events are challenging for both parents and emergency rooms. Infants with these events are defined as having an episode that is frightening to the observer and characterized by some combination of apnea, color change, change in muscle tone, and choking or gagging that requires vigorous stimulation. Typically the patient has returned to baseline upon EMS arrival.

The EMS care for a suspected pediatric ALTE patient will be based upon presentation and the signs/ symptoms that are discovered during assessment. Follow the most appropriate care protocol based upon this assessment.

Over 50% of these patients are admitted to the hospital after evaluation in the Emergency Department. **These patients should be evaluated at the closest appropriate facility.** The EMS provider must not dismiss the caregivers' story and should reiterate the danger of not getting this patient evaluated by a physician.

The consistent result of an emergency room visit for ALTE is a complex evaluation that results in no clear answer as to what caused the ALTE in most cases. We still do not know what causes ALTE.

****** "BRUE" is now replacing the term "ALTE"******