

# Pediatric Treatment Protocols



MEMORIAL EMS SYSTEM  
PEDIATRIC PREHOSPITAL CARE MANUAL

**Pediatric Altered Level of Consciousness Protocol**

The EMS Professional needs to consider *all causes* of a child's altered level of consciousness. A good assessment is paramount to identify life-threatening injuries. Focus should also be on causes for the event and the child's past medical history. **If a drug overdose is suspected, refer to the "Pediatric Ingestion/ Overdose/ Toxic Exposure Protocol".**

**Emergency Medical Responder Care**

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial 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 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 assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all of the components of *First Responder Care*.
2. Perform **blood glucose level test**.
3. **Oral Glucose:** 15g PO if the patient's blood sugar is <60mg/dL, the patient is alert to verbal stimuli, is able to sit in an upright position, has good airway control and has an intact gag reflex.
4. Perform a **2<sup>nd</sup> blood glucose level test** to re-evaluate blood sugar 5 minutes after administration of Oral Glucose. If blood sugar remains <60mg/dl, administer a 2nd dose of Oral Glucose (15g).
5. Apply **Waveform Capnography** (if equipped).
6. Initiate ALS intercept if needed and transport as soon as possible.
7. Contact the receiving hospital as soon as possible.

## Pediatric Altered Level of Consciousness 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 of the components of *BLS Care*.
2. Perform **blood glucose level test**.
3. **Dextrose**: if blood sugar is < 60mg/dL
  - a) **D10W**: 5mL/ kg infusion. Max dose 250 mL.
  - b) If dose is less than 100 mL, medication should be administered via IVP rather than infusion.
  - c) At any point in time if patient LOC increases enough so that patient would be able to consume a meal, infusion can be stopped.
4. Perform a 2nd **blood glucose level test** to re-evaluate blood sugar 5 minutes after administration of Dextrose or Glucagon. Repeat dose of Dextrose if BS is still <60mg/dL.
5. **Glucagon**: 0.5 mg IM for patient  $\leq 6$  years of age. For all other patients 1mg IM if the patient's blood sugar is <60mg/dL and unable to establish an IV.

### 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 of the components of *ILS Care*.

#### Critical Thinking Elements

- ALOC in a child can range from trauma to a systemic infection (sepsis). A good medical history might provide clues as to the reason for the ALOC.
- Accidental overdose/ingestion of medications can be a cause of the ALOC.
- Make sure to check for or ask family about an insulin pump being on the patient.
- The thigh is the preferred site for IM medication administration in the infant patient population

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**Pediatric Seizure Protocol**

Seizures are common in childhood. About 5% of all children will have at least one seizure by the age of three. (Febrile seizures account for the largest percentage of pediatric seizures.) This condition can cause much concern and anxiety in the caregiver and EMS is called. Pediatric seizures are usually short-lived and stop before the arrival of EMS. Since there are many causes of pediatric seizures, treatment and transport to an appropriately equipped emergency department is necessary.

<i>Classification of Seizures (PEPP 2019)</i>	
<b>Generalized Seizure</b>	<b>Description</b>
<b>Tonic-Clonic (Grand Mal Seizure)</b>	Trunk rigidity and loss of consciousness with sudden, jerking movements of both arms and/or both legs; may be only tonic (rigidity) or clonic (jerking) seizure activity.
<b>Absence (Petit Mal Seizure)</b>	Brief loss of awareness without any abnormal movements; child may appear to be staring.
<b>Partial (Focal) Seizure</b>	<b>Description</b>
<b>Simple Seizure</b>	Focal motor jerking without loss of consciousness; may be sensory, autonomic or psychic without jerking.
<b>Complex Seizure</b>	Focal motor jerking with loss of consciousness; secondary generalization to a tonic-clonic seizure.

***Common Causes of Seizures in Pediatric Patients:***

- Fever
- Trauma
- Hypoxia
- Hypoglycemia
- Infection/Sepsis
- Ingestion of toxins
- Cerebral hemorrhage
- Metabolic disorders
- Congenital neurological problems

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**Pediatric Seizure Protocol**

**Emergency Medical Responder Care**

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
2. During active convulsive seizures: Protect the patient from harmful objects. Place the patient on left side and protect from head injury.
3. **Oxygen:** 10-15 L/min via non-rebreather mask/ or 4-6 L/min via nasal cannula if the patient cannot tolerate a mask. Be prepared to support the patient's respirations with BVM/ NPA if necessary and have suction readily available.

**BLS Care**

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Perform blood glucose level test. If blood glucose  $\leq 60$ mg/dL refer to ALOC Protocol.
3. Check Temperature if possible.
4. Apply **Waveform Capnography**
5. Initiate ALS intercept and **transport without delay**.
6. Check and record vital signs and GCS every **5 minutes**.

**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. **Midazolam (Versed):** 0.2mg/kg IM (preferred), Max single dose 5mg if the patient is actively seizing. May repeat the dose one time in 5 minutes if the patient is still seizing. Total maximum of 10mg.
3. **Midazolam (Versed):** Versed Intranasal may also be used if unable to give Versed IM.  
(See intranasal dosing sheet, page 30.D.1 in the appendix)

**Critical Thinking Elements**

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

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**Pediatric Seizure 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 for or providing patient transport.

1. ALS Care includes all components of *ILS Care*.
2. **Midazolam (Versed):** 0.2mg/kg IM *immediately if patient is still seizing and IV has not been established*, (Max single dose 5mg). May repeat the dose one time in 5 minutes if the patient is still seizing. Total maximum of 10mg.

**Or if IV/IO has been established**

3. **Midazolam (Versed):** 0.1mg/kg IV/IO (Max single dose: 2.5 mg) over 1 minute for seizure activity. May repeat Midazolam (Versed) 0.1 mg/kg IV/IO every 5 minutes as needed to a total maximum of 10mg.
4. Contact Medical Control ASAP.

Memorial

**Critical Thinking Elements**

- Benzodiazepines can cause severe respiratory depression. Monitor the child's respiratory status, SPO2 and or Wave Form Capnography if available. Ventilate if needed.
- 30% of all pediatric seizures are febrile in nature. However, the presence of a fever may not necessarily be the cause of the seizure. The child needs to be transported to the hospital for further evaluation.
- Seizure activity usually indicates a serious underlying problem. Check the oxygenation and perfusion of the child along with the blood glucose level and temperature. Treat accordingly.

## Pediatric Allergic Reaction/ Anaphylaxis Protocol

### Emergency Medical Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial 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 if the patient cannot tolerate a mask. Be prepared to support the patient's respirations with BVM if necessary
3. **Epi-Pen Jr.:** If the patient has a history of allergic reactions and has in their possession a prescribed Epi-Pen Jr., is suffering from hives, wheezing, hoarseness, hypotension, ALOC, or indicated a history anaphylaxis, assist the patient with administering the Epi-pen Jr.

### BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Initiate ALS intercept and transport as soon as possible.
3. **Epinephrine 1: 1,000:** If  $\leq 30$  kg give 0.15 mg IM if the patient is suffering S/S of anaphylactic shock, If  $> 30$  kg 0.3 mg IM.
4. **Proventil (Albuterol):** If  $\geq 3$  months of age 2.5 mg in 3 mL of normal saline via nebulizer. May repeat Albuterol 2.5 mg every **15 minutes** as needed. In-line nebulizer may be utilized if patient is unresponsive or in respiratory arrest. If  $< 3$  months of age reduce to **Proventil (Albuterol)** 1.25 mg.
5. Apply **Waveform Capnography** (if equipped).

**\*Do not administer Ipratropium (Atrovent) to patients experiencing an allergic reaction/anaphylaxis.**

**\*\*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 Allergic Reaction/ Anaphylaxis 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 fluid bolus if patient is hypotensive. May repeat x2 to a maximum of 60mL/kg (**Note:** Exceeding 40mL/kg requires **Medial Control order.**)

### 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. **Benadryl:** 1 mg/kg IV or IM (Max single dose: 50mg) for severe itching and/or hives.
3. **Contact Medical Control** as soon as possible.

### Critical Thinking Elements

- Patients who have an allergic reaction can develop anaphylaxis over time. Monitor patients very closely.
- Avoid establishing an IV in the same extremity as a bee sting / allergy site.
- Both an allergic reaction & anaphylaxis can present with hives.
- Remember: An allergic reaction is localized while anaphylaxis is a systemic reaction.
- Do not waste time on scene – begin transport as soon as possible and treat en route.
- **Epinephrine is the treatment priority for true Anaphylaxis!**
- The thigh is the preferred site for IM medication administration in the infant patient



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**Pediatric Ingestion/ Overdose/ Toxic Exposure Protocol**

This protocol focuses on two problems. First, exposure to a chemical substance that causes adverse medical effects. Secondly, the protocol covers accidental or intentional ingestion of harmful substances into the body. Toddlers explore their environment with all five senses and ingestion of toxic substances is common for this age group. The adolescent age group deals mainly with intentional overdoses due to attempted suicide or recreational pharmaceuticals & alcohol use.

**General response information:**

1. If the scene is considered a *Hazardous Materials* incident, do not treat patients unless they are decontaminated or proper precautions have been implemented to protect EMS personnel.
2. In the event that the patient has not been decontaminated when EMS makes patient contact, removing all of patient's clothing take away 80-90% of the contaminated materials. Get patient to decontamination area as soon as possible.
3. If there is no patient contact but EMS has determined this to be a *Hazardous Materials* incident, **do not enter the scene under any circumstances**. Refer to Memorial EMS *Disaster Protocols*.

**Emergency Medical Responder Care**

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Consider possible scene & patient contamination and follow agency safety procedures.
2. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
3. **Oxygen:** 10-15 L/min via non-rebreather mask or 4-6 L/min via nasal cannula if the patient cannot tolerate a mask. Be prepared to support the patient's respirations with BVM if necessary.
4. If suspected narcotic overdose with associated respiratory depression,  
**Narcan:** 2 mg IN

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**Pediatric Ingestion/ Overdose/ Toxic Exposure Protocol**

**BLS Care**

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for providing transport.

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

**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 fluid bolus if the patient is hypotensive. May repeat bolus x 2 to a maximum of 60mL/kg (**Note: Exceeding 40mL/kg requires Medical Control order**).
3. If patient is seizing, follow the *Pediatric Seizure Protocol*.
4. If suspected narcotic overdose with associated respiratory depression,  
**Narcan:** 1 mg IV/IO (if patient is  $\leq 5$  yr old) or 2mg IV/IO (if patient is  $\geq 6$  yr old).

**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.

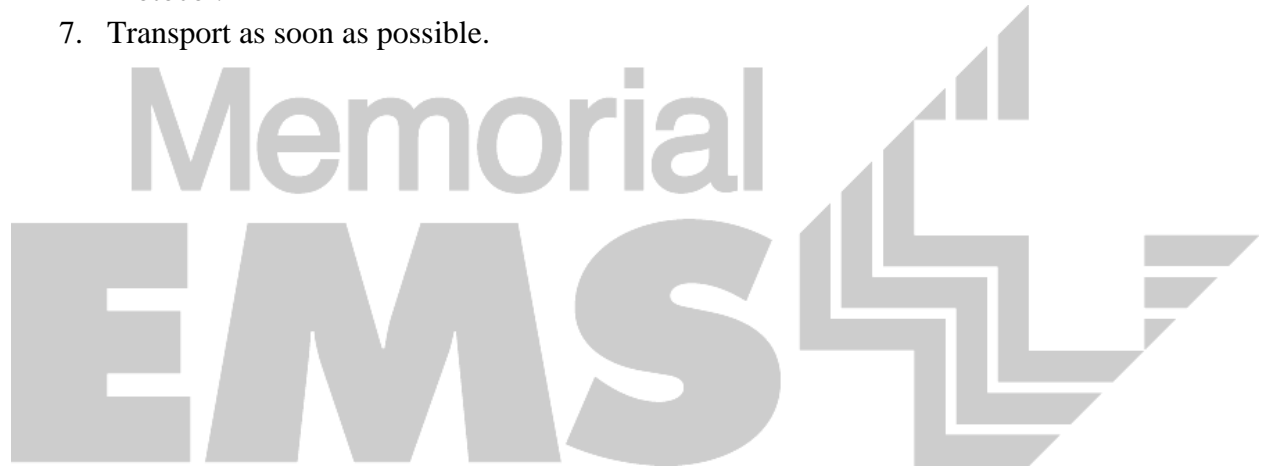
1. ALS Care includes all components of *ILS Care*.
2. **Sodium Bicarbonate:** 1mEq/kg IV (**Max single dose: 50meq**) (**with Medical Control order only**) if known tricyclic antidepressant (TCA) or Aspirin (ASA) overdose.
3. If the patient has signs & symptoms of *organophosphate poisoning* or *nerve agent exposure*, **contact Medical Control:**
  - a) Ensure that the patient has been decontaminated prior to transport.
4. **Contact Medical Control** as soon as possible.

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**Pediatric Ingestion/ Overdose/ Toxic Exposure Protocol**

**ALS Care {Continued}**

5. **Atropine:** 0.02mg/kg IV (Max single dose: 2mg) every 5 minutes until symptoms are suppressed.  
OR  
**Atropine:** 0.05mg/kg IM (Max single dose: 2mg) every 5 minutes until symptoms are suppressed.
6. If patient is actively seizing due to nerve agent exposure, refer to Pediatric Seizure Protocol.
7. Transport as soon as possible.



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## Routine Pediatric Trauma Care Protocol

The majority of pediatric contacts the prehospital professional will face involve traumatic injuries. Trauma care in the pediatric patient must be aggressive, due to the child's ability to compensate and mask otherwise obvious signs and symptoms of shock. Early recognition of potential life-threatening injuries due to trauma will help save the pediatric patient. In addition, pediatric patients may not always have obvious injuries. The anatomical position and size of internal organs are drastically different compared to the adult trauma patient. Children may not bruise or show marks of impact, thus disguising underlying life-threatening problems. When the pediatric patient presents as a possible trauma patient, treat them as such. Stay within the "platinum 10 minutes" of scene time, effectively immobilize the spine, keep the child warm and treat pain and anxiety.

EMR Care, BLS Care, ILS Care, ALS Care

1. Scene Assessment (Scene Size-Up)

- Ensure scene safety – identify any hazards (e.g. fire, downed power lines, unstable vehicle, leaking fuel, weapons).
- Determine the number of patients.
- Identify the mechanism of injury (gunshot wound, vehicle rollover, high speed crash, ejection from the vehicle).
- Identify special extrication needs, if any.
- Call for additional resources if needed.

2. Primary Survey (Initial Assessment)

*The purpose of the primary assessment is for the prehospital provider to rapidly identify and manage life-threatening conditions:*

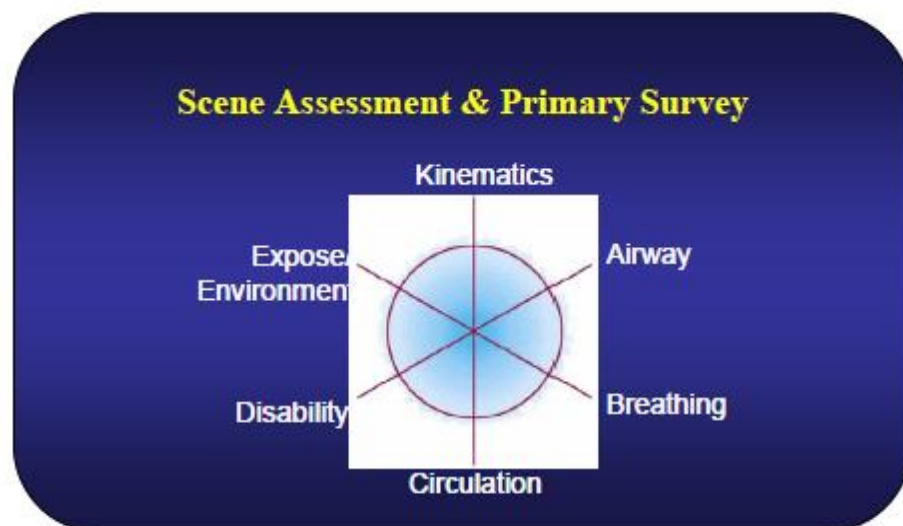
- Obtain a general impression of the patient's condition
- Assess, secure and maintain a patent airway while simultaneously using C-spine precautions.
- Assess breathing and respiratory effort:
  - Approximate respiratory rate.
  - Assess quality of respiratory effort (depth of ventilation and movement of air).
  - **Oxygen:** 15 L/min via non-rebreather mask. Be prepared to suction the airway and support the patient's respirations with BVM if necessary.
- Assess circulation:
  - Evaluate carotid and radial pulses.
  - Evaluate skin color, temperature and condition.
  - Immediately control major external bleeding.

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**Routine Pediatric Trauma Care Protocol**

EMR Care, BLS Care, ILS Care, ALS Care {Continued}

- Critical Decision (based on mechanism of injury & initial exam):
  - Limit scene time to 10 minutes or < if the patient has a significant mechanism of injury or meets “Load & Go” criteria.
- Determine disability:
  - T – Tone
  - I – Interactiveness
  - C – Consolability
  - L – Look / Gaze
  - S – Speech / Cry
- Expose the patient:
  - Cut the patient’s clothing away quickly to adequately assess for the presence (or absence) of injuries.



3. Secondary Survey (Focused History & Physical Exam)

*The secondary survey is a head-to-toe evaluation of the patient. The object of this survey is to identify injuries or problems that were not identified during the primary survey.*

- Examine the head:
  - Search for any soft tissue injuries.
  - Palpate the bones of the face & skull to identify deformity, depression, crepitus or other injury.
  - Check pupils for size, reactivity to light, equality, accommodation, roundness and shape.

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**Routine Pediatric Trauma Care Protocol**

EMR Care, BLS Care, ILS Care, ALS Care {Continued}

3. Secondary Survey {Continued}

- Examine the neck:
  - Examine for contusions, abrasions, lacerations or other injury.
  - Check for JVD, tracheal deviation, deformity.
  - Palpate the c-spine for deformity & tenderness.
- Examine the chest:
  - Closely examine for deformity, contusions, redness, abrasions, lacerations, penetrating trauma or other injury.
  - Look for flail segments, paradoxical movement & crepitus.
  - Auscultate breath sounds.
  - Watch for supraclavicular and intercostals retractions.
- Examine the abdomen:
  - Examine for contusions, redness, abrasions, lacerations, penetrating trauma or other injury.
  - Palpate the abdomen and examine for tenderness, rigidity and distention.
- Examine the pelvis:
  - Examine for contusions, redness, abrasions, lacerations, deformity or other injury.
  - Palpate for instability and crepitus.
- Examine the back:
  - Log roll with a minimum of 2 rescuers protecting the spine.
  - Look for contusions, abrasions, lacerations, penetrating trauma, deformity or any other injury.
  - Log roll onto long spine board with padding or approved pediatric spinal immobilization device.
  - Log roll onto long spine board and immobilize based on *Field Immobilization Decision Scheme*.
- Examine the extremities:
  - Examine for contusions abrasions, lacerations, penetrating trauma, deformity or any other injury.
  - Manage injuries en route to the hospital.
- Neurological exam:
  - Calculate Glasgow Coma Scale (GCS)
  - Reassess pupils
  - Assess grip strength & equality and sensation.
  - Calculate Revised Trauma Score (RTS)

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**Routine Pediatric Trauma Care Protocol**

EMR Care, BLS Care, ILS Care, ALS Care {Continued}

3. Secondary Survey {Continued}

- Vital signs:
  - Blood pressure
  - Pulse
  - Respirations
  - Capnography
  - Pulse Oximetry
- History:
  - Obtain a SAMPLE history if possible.
  - Signs & symptoms
  - Allergies
  - Medications
  - Past medical history
  - Last oral intake
  - Events of the incident
- Interventions (en route)
  - Cardiac monitor
  - Blood glucose level
  - IV access / fluid bolus
  - Wound care
  - Splinting

4. Monitoring and Reassessment (Ongoing Assessment)

- Evaluate effectiveness of interventions
- Vital signs every *5 minutes*
- Reassess mental status (GCS) every *5 minutes*
- *Reassess Revised Trauma Score (RTS) every 5 minutes*

5. **CONTACT MEDICAL CONTROL AS SOON AS POSSIBLE**

**Transporting Units**

1. Destination decisions must be informed decisions based on local and regional destination capabilities, time since onset and transportation distances.
  - a. See *EMS Triage Destination Plan*.
  - b. Patient refusal of recommended destination must be documented as a refusal of care prior to the patient being transported to a facility that is not certified to meet the patient's clinical needs.

## **Routine Pediatric Trauma Care Protocol**

### **Critical Thinking Elements**

- Prompt transport with EARLY Medical Control contact & receiving hospital notification will expedite the care of the trauma patient.
- IVs should be established en route to the hospital thereby not delaying transport of critical trauma patients (unless scene time is extended due to prolonged extrication).





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**Pediatric Shock Protocol**

The pediatric patient in shock can pose a challenge to the prehospital professional. Since pediatric patients have young, strong cardiovascular systems, they can compensate extremely well. This can mask the signs and symptoms of shock until the child's cardiovascular system tires and begins to decompensate. Once the pediatric patient enters into a state of decompensated shock, prognosis for a full recovery is poor.

Conditions that may indicate impending shock include:

- Significant mechanism of injury
- Tender and/or distended abdomen
- Pelvic instability
- Bilateral femur fractures

“Load & Go” with any trauma patient with signs and symptoms of shock – on scene treatment should be minimal. Conduct a *Primary Survey*, manage the airway, take C-spine precautions & immobilize and control any life-threatening hemorrhage. Contact Medical Control as early as possible.

**Emergency Medical Responder Care**

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol* and *Routine Pediatric Trauma 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. Be prepared to support the patient's respirations with BVM if necessary.
3. Control bleeding using direct pressure, pressure dressings and pressure points. If bleeding is severe immediately move to combat application tourniquet and/ or wound packing to control bleeding.

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## Pediatric Shock Protocol

### BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Apply **Waveform Capnography** (if equipped).
3. Repeat vital signs, GCS & RTS every **5 minutes**.
4. Initiate ALS intercept and transport as soon as possible.

### 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 fluid bolus. May repeat x 2 to a maximum of 60mL/kg (**Note:** Exceeding 40mL/kg requires **Medical Control order**).

### 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. **Contact Medical Control** as soon as possible.

#### Critical Thinking Elements

- Pediatric patients will compensate for shock as long as they have the energy to do so. Once pediatric patients start to decompensate due to shock, it is exceedingly difficult to reverse the process. Therefore, it is **imperative** that shock is identified and treated early!

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## Pediatric Closed Head Injury Protocol

The causes of closed head injuries in pediatric patients are numerous. Injuries resulting from vehicular accidents or failure to wear proper safety gear (e.g. helmets) are common. The most effective way of determining the extent of closed head injury is mechanism of injury and level of consciousness.

The head is the largest body part of a pediatric patient which makes him/her “top heavy” and quick to fall head first during a trauma. The head is usually more seriously injured than any other area of the body in pediatric trauma. Proper management of a closed head injury patient can impact long term damage.

Priorities for the treatment of head injury patients include airway management, maintenance of adequate oxygenation & blood pressure as well as appropriate C-spine control & immobilization.

**Hypotension, hypoxia, and hyperventilation should be avoided at all costs as they significantly increase the mortality of head injury patients.**

### Emergency Medical Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol* and *Routine Pediatric Trauma Care Protocol*.
2. Be prepared for vomiting and have suction readily available.
3. **Oxygen:** 15 L/min via non-rebreather mask. Be prepared to support the patient's respirations with BVM if necessary. **Avoid hyperventilation when doing so!**
4. Control bleeding using direct pressure, pressure dressings and pressure points.

### BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Apply **Waveform Capnography** (if equipped).
3. Repeat vital signs, GCS & RTS every **5 minutes**.
4. Initiate ALS intercept and transport as soon as possible.

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**Pediatric Closed Head Injury Protocol**

**ILS Care**

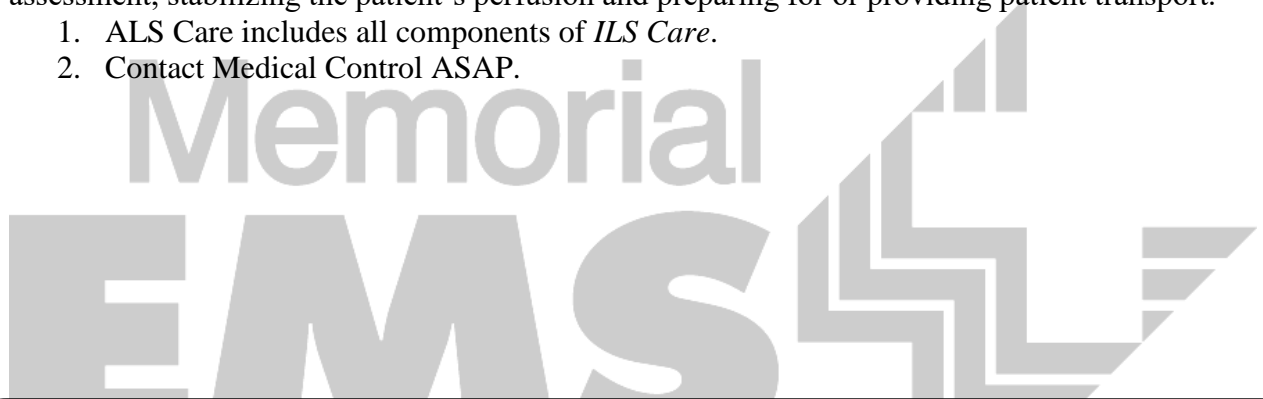
ILS Care should be directed at continuing or establishing care, conducting a thorough patient assessment, stabilizing the patient's perfusion and preparing for or providing patient transport.

1. ILS Care includes all components of *BLS Care*.
2. **IV Fluid Therapy:** 20mL/kg fluid bolus **only if needed** to a maximum of 60mL/kg (*Note: Exceeding 40mL/kg requires Medical Control order*).

**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. Contact Medical Control ASAP.



**Critical Thinking Elements**

- Head trauma patients should receive oxygen to keep SpO<sub>2</sub> > 94%, preferably via NRM. Even just one SPO2 reading below 90% can double the mortality in a patient with significant TBI.
- Deeply comatose patients may require advanced airway placement (GCS < 8). Consider a Supraglottic Airway or BVM.
- Avoid hyperventilation, If any assisted ventilations (BVM, Supraglottic, ETI) are required goal directed ETCO<sub>2</sub> should be 35- 45.
- Treat for hemorrhagic shock if the patient's systolic BP is below age appropriate normal. Hypotension decreases cerebral perfusion, worsens brain injury, and must be corrected.

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**Pediatric Closed Head Injury Protocol**

**Pediatric Glasgow Coma Scale**

ACTIVITY	SCORE	INFANT	CHILDREN
<b>Eye Opening</b>	4	Spontaneous	Spontaneous
	3	To speech or sound	To Speech
	2	To painful stimuli	To painful stimuli
	1	None	None
<b>Verbal</b>	5	Appropriate words or sounds, social smile, fixes and follows	Oriented
	4	Cries, but consolable	Confused
	3	Persistently irritable	Inappropriate words
	2	Restless, agitated	Incomprehensible sounds
	1	None	None
<b>Motor</b>	6	Spontaneous movement	Obeys commands
	5	Localizes to pain	Localizes to pain
	4	Withdraws to pain	Withdraws to pain
	3	Abnormal flexion (decorticate)	Abnormal flexion (decorticate)
	2	Abnormal extension (decerebrate)	Abnormal extension (decerebrate)
	1	None	None
13-15 Minor head injury 9-15 Moderate head injury ≤ 8 Severe head injury / Coma			

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**Pediatric Closed Head Injury Protocol**

**Pediatric Trauma Score**

Components	+2	+1	-1	SCORE
<b>Weight</b>	> 20 kg (44 lbs)	10-20 kg (22-44 lbs)	< 10 kg (22 lbs)	
<b>Airway</b>	Patent	Maintainable	Un-maintainable	
<b>Systolic BP Pulses</b>	> 90 Radial	50-90 Carotid	< 50 Non-palpable	
<b>CNS</b>	Awake	+LOC (responsive)	Unresponsive	
<b>Fractures</b>	None	Closed or suspected	Multiple closed or open	
<b>Wounds</b>	None	Minor	Major, penetrating or Burns > 10%	
<b>TOTAL SCORE</b>				
9 -12    Minor Trauma (Use local guidelines/protocols) 6 – 8    Potentially Life Threatening (Suggests need for Trauma Center) 0 – 5    Life Threatening (Need for Trauma Center) < 0      Usually Fatal (Transport to Nearest Facility)				

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## Pediatric Burn Protocol

The primary goal in the treatment of the pediatric burn patient is the same as when caring for an adult – to stop the acute burning process by removing the patient from direct contact with the source of the burn and maintaining the patient's body fluids. Special attention should be given to limit further pain and damage of the burn to the patient. However, burn care should not interfere with lifesaving measures.

One aspect of pediatric burn care is different and prehospital providers need to be aware of it – **suspicious burns**. Suspicious burns include burns that have a familiar pattern (e.g. circumferential burns, burns from a cigarette lighter, etc.) or a story that does not fit the injury sustained. Pediatric burns carry a high index of suspicion for abuse and neglect. Follow local protocol for reporting abuse and neglect if suspected.

### Emergency Medical Responder Care

First Responder Care should be focused on assessing the situation, removing the child from harm and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Make sure the scene is safe to enter.
2. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
3. **Oxygen:** 15 LPM via non-rebreather mask. Be prepared to support the patient's respirations with BVM if necessary.
4. **THERMAL BURN TREATMENT:**
  - a) If the burn occurred within the last 20 minutes, reverse the burning process and cool the area by flushing the area with **1 Liter of Sterile Saline** (or Sterile Water if Sterile Saline is not available). The goal of cooling is to extinguish the burning process – not to systemically cool the patient. Fluid application should be held to a minimum and discontinued if the patient begins shivering.
  - b) Remove jewelry and loose clothing. Do not pull away clothing that is stuck to the burn.
  - c) Cover the wound with sterile dressings\*\*\*
  - d) Place a sterile burn sheet on the stretcher. If the patient's posterior is burned, place a sterile burn pad on top of the sheet with the absorbent side toward the patient.
  - e) Place patient on the stretcher.
  - f) Cover the patient with additional sterile burn sheets and blanket to **conserve body heat**.

### Transporting Units

The management of a pediatric burn patient is especially complex. Determining the most appropriate destination for a pediatric patient suffering burn trauma is a complex decision and should include online direction from **Medical Control**.

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**Pediatric Burn Protocol**

**Emergency Medical Responder Care {Continued}**

3. **ELECTRICAL BURN TREATMENT:**

- a) Assure that the power service has been cut off and remove the patient from the source of electricity.
- b) Consider full immobilization of the patient due to forces of electrical current and possible trauma.
- c) Assess for entry and exit wounds. No cooling or flushing is necessary due to the type of burn.
- d) Cover the burn with dry, sterile dressings.
- e) Closely monitor the patient.

4. **CHEMICAL BURN TREATMENT:**

- a) Consider possible scene and patient contamination and follow agency safety procedures.
- b) Note which chemical agent caused the burn and obtain the MSDS for that chemical (if possible.)
- c) The patient's clothing should be completely removed to prevent continued exposure and the patient decontaminated **prior to** being placed in the ambulance for transport.
- d) **Dry chemical powder** should be brushed off before applying water.
- e) Irrigate the patient with Sterile Water **IF** the MSDS indicates use of water will not cause an adverse reaction. Body parts should be flushed for at least 1-2 minutes. Do not use Sterile Saline on chemical burns.
- f) Irrigate burns to the eye with Sterile Water for at least 20 minutes. Alkaline burns should receive continuous irrigation throughout transport.

**BLS Care**

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

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



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## Pediatric Burn 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 fluid bolus to a maximum of 60mL/kg (**Note:** Exceeding 40mL/kg requires **Medical Control order**).

### 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. **Manage pain** based upon *Pediatric Pain Control Protocol*.
3. Transport and **Contact Medical Control** as soon as possible for significant burns.

### Transporting Units

1. Destination decisions must be informed decisions based on local and regional destination capabilities, time since onset and transportation distances.
  - a. See *EMS Triage Destination Plan*.
  - b. Patient refusal of recommended destination must be documented as a refusal of care prior to the patient being transported to a facility that is not certified to meet the patient's clinical needs.

### Critical Thinking Elements

- Pediatric patients will lose body heat much faster than adults, **keep them warm!**
- Treat other symptoms or trauma per the appropriate protocol.
- IV access should not be obtained through burned tissue unless no other site is available.
- Closely monitor the patient's response to IV fluids and assess for pulmonary edema.
- **Closely monitor the patient's airway** – have BVM and suction readily available.
- Do not delay transport of a "Load and Go" trauma patient to care for burns.
- For chemical/powder burns, be aware of inhalation hazards and closely monitor for changes in respiratory status.

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## Pediatric Heat-Related Emergencies Protocol

Heat-related emergencies can often be seen in the pediatric population involved in intense sporting activities. When the body loses the ability to cool itself off, the body will retain heat, elevating core body temperature. If the core body temperature rises above normal, physiological consequences can develop. These can range from muscle cramps up to loss of consciousness and death. The treatment of heat related emergency is basic if caught early.

### Emergency Medical Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
2. Move the patient to a cool environment. Remove clothing as necessary to make the patient comfortable. Cold packs may be utilized for the neck (posterior), armpits, and groin and along the thorax. Utilize AC, fans, cool misting, etc. Do not cool the patient to a temperature that will cause them to shiver.
3. **Oxygen:** 10-15 L/min via non-rebreather mask or 4-6 L/min via nasal cannula if the patient cannot tolerate a mask. Be prepared to support the patient's respirations with BVM if necessary.

### BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Monitor the patient temperature.
3. Treat other symptoms per the appropriate protocol.
4. Apply **Waveform Capnography** (if equipped).
5. Initiate ALS intercept if needed and transport as soon as possible.

### 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 fluid bolus if the patient is hypotensive. May repeat x 2 to a maximum of 60mL/kg (**Note: Exceeding 40mL/kg requires Medical Control order**).

## Pediatric Heat-Related Emergencies Protocol

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**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. Contact Medical Control as soon as possible.

**Heat Disorders**

**Heat (Muscle) Cramps** – Heat cramps are muscle cramps caused by overexertion and dehydration in the presence of high temperatures. Signs & symptoms include: *Normal or slightly elevated body temperature; generalized weakness; dizziness; warm, moist skin and cramps in the fingers, arms, legs or abdominal muscles.*

**Heat Exhaustion** – Heat exhaustion is an acute reaction to heat exposure and the most common heat-related illness a prehospital provider will encounter. Signs & symptoms include: *Increased body temperature; generalized weakness; cool, diaphoretic skin; rapid, shallow breathing; weak pulse; diarrhea; anxiety; headache and possible loss of consciousness.*

**Heatstroke** – Heatstroke occurs when the body's hypothalamic temperature regulation is lost. Cell death and damage to the brain, liver and kidneys can occur. Signs & symptoms include: *Cessation of sweating; very high core body temperature; hot, usually dry skin; deep, rapid, shallow respirations (which later slow); rapid, full pulse (which later slows); hypotension; confusion, disorientation or unconsciousness and possible seizures.*

**Fever (Pyrexia)** – A fever is the elevation of the body temperature above the normal temperature for that person (~98.6° F +/-2 degrees). Fever is sometimes difficult to differentiate from heatstroke; however, there is usually a history of infection or illness with a fever.

**Pediatric Hypothermia Protocol**

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Hypothermia in children is common at any time of the year. Children dissipate heat faster than adults due to their body mass compared to the surface area of skin. EMS providers must suspect an onset of hypothermia in all cold environmental emergencies, child neglect and trauma. Rapid identification and treatment of hypothermia can have a significant effect on the outcome of the pediatric patient.

### Emergency Medical Responder Care

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
2. Handle the patient as **gently** as possible.
3. Create a warm environment for the patient. Remove wet or frozen clothing and cover the patient with warm blankets. Prevent re-exposure to cold. Warm packs may be utilized for the neck (posterior), armpits, and groin and along the thorax.
4. **Oxygen:** 10-15 L/min via non-rebreather mask or 4-6 L/min via nasal cannula if the patient cannot tolerate a mask. Be prepared to support the patient's respirations with BVM if necessary.
5. Do not rub frostbitten or frozen body parts. Protect injured parts (e.g. blisters) with light, sterile dressings and avoid pressure to the area.

### BLS Care

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Treat other symptoms per the appropriate protocol.
3. Apply **Waveform Capnography** (if equipped).
4. Initiate ALS intercept if needed and transport as soon as possible.

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**Pediatric Hypothermia 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 fluid bolus only if hypotensive for age range.

**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. Transport as soon as possible.

**Critical Thinking Elements**

- Fluid bolus's will cause a decrease in temp, run fluids only if hypotensive.
- Do not thaw frozen parts in the field if there is a chance of refreezing. Protect frostbitten areas from refreezing.
- **In cases of cardiac arrest due to suspected hypothermia, EMS providers should limit defibrillation and medications to the first rounds only. High quality CPR, airway management, re-warming, and transport are the priority.**
- Patients with hypothermia should be considered at high risk for ventricular fibrillation. It is imperative that these patients be handled gently and not re-warmed aggressively.

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**Pediatric Near Drowning Protocol**

Drowning remains one of the top five reasons pediatric patients are killed each year. EMS efforts need to focus on airway control and hypothermia management. Complications may arise from the fluid the child has drowned in. Remember – children can drown in as little as two inches of fluid. Children not only drown in rivers or pools but also mop buckets and bathtubs. Until the patient's temperature can be validated to be normal range, patient resuscitation measures should be started

**Emergency Medical Responder Care**

First Responder Care should be focused on assessing the situation and initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock.

1. Render initial care in accordance with the *Routine Patient Care Protocol* and *Routine Trauma Care Protocol*.
2. Unless able to guarantee that patient did not suffer trauma, treat as a trauma patient.
3. Make sure the scene is safe. Use appropriate personnel and equipment for rescue.
4. Establish and maintain spinal immobilization.
5. **Oxygen:** 15 L/min via non-rebreather mask or 6 L/min via nasal cannula if the patient cannot tolerate a mask. Be prepared to clear the airway and support the patient's respirations with **BVM** if necessary.
6. Initiate **CPR** if indicated.
7. Treat respiratory and/or cardiac symptoms per the appropriate protocol.

**BLS Care**

BLS Care should be directed at conducting a thorough patient assessment, initiating routine patient care to assure that the patient has a patent airway, is breathing and has a perfusing pulse as well as beginning treatment for shock and preparing the patient for or providing transport.

1. BLS Care includes all components of *First Responder Care*.
2. Apply **Waveform Capnography** (if equipped).
3. Initiate ALS intercept and transport as soon as possible.
4. Treat respiratory and/or cardiac symptoms per the appropriate protocol.

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**Pediatric Near Drowning 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. Obtain **IV or IO access** as appropriate.
3. **IV Fluid Therapy:** 20mL/kg fluid bolus if the patient is hypotensive. May repeat x 2 to a maximum of 60mL/kg (**Note:** Exceeding 40mL/kg requires **Medical Control order**).

**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. **Contact Medical Control** as soon as possible.

**Critical Thinking Elements**

- A near-drowning victim should **always** be transported to the E.D. for further evaluation despite an unremarkable assessment. These patients can appear to be fine following the event only to rapidly decline after EMS has left the scene.
- Contact Medical Control for any refusal of transport as these patients are considered very high-risk.

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**Suspected Child Maltreatment Protocol**

Illinois state law mandates that EMS providers report any suspicious acts of suspected maltreatment. There is no profile of the “typical” family in which abuse is taking place. Maltreatment of children affects all socio-economic classes. As EMS professionals, we need to be aware of the warning signs, treat the injuries of the child and report accordingly.

EMR Care, BLS Care, ILS Care, ALS Care

1. Consider scene safety issues:
  - a) If the offender is present and interferes with transportation of the patient, or is influencing the patient’s acceptance of medical care, contact law enforcement and Medical Control for consultation on the appropriate action to take.
  - b) If the parent/guardian refuses to allow transportation of the child, contact law enforcement and Medical Control for consultation on the appropriate action to take.
2. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
3. Treat obvious injuries or illnesses.
4. Survey the scene for evidence of factors that could adversely affect the child’s welfare:
  - a) Environmental
  - b) Interaction with parents/guardians
  - c) Discrepancies in the history of events
  - d) Injury patterns inconsistent with history of events or anticipated motor skills based on the child’s growth and development stage
  - e) Signs of intentional injury or emotional harm
5. Transport regardless of extent of injuries.
6. Upon arrival at the ED, notify the receiving physician or nurse of the suspected maltreatment. **Remember** – healthcare workers (including EMR, EMT, and Paramedics) are mandated by Illinois state law to report cases of suspected abuse or neglect to the Department of Children and Family Services (DCFS) by calling 1-800-252-2873. Notifying the receiving facility of concerns does not meet this requirement.
7. **Thoroughly document** the child’s history & physical exam findings.
8. The following information / telephone numbers regarding services available to victims of abuse shall be offered to all victims of abuse:

***Crime Victims Compensation Program***

Phone (800) 228-3368  
TTY (877)398-1130

***Illinois Child Abuse Hotline***

Phone (800) 252-2873  
TTY (800) 358-5117



## Suspected Child Maltreatment Protocol

### Critical Thinking Elements

- At no time should EMS confront the caregivers about the abuse.
- Do not make accusations on the PCR. Document objective physical findings, not opinion.
- A copy of the *Manual for Mandated Reporters* can be downloaded at [www.state.il.us/dcfs](http://www.state.il.us/dcfs).
- Willful failure to report suspected incidents of child abuse/neglect is a misdemeanor (1st violation) or a class 4 felony (2nd or subsequent violations).
- Reports must be confirmed in writing to the local investigation unit within 48 hours of the Hotline call.



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## Sudden Infant Death Syndrome (SIDS) Protocol

Sudden Infant Death Syndrome (SIDS) and the death of a child are among the most difficult patient care experiences for the prehospital professional. SIDS is the leading cause of infant mortality in the United States and the causes are not known.

The death of a child is a horrible event and creates difficult emotional issues for the caregivers as well as the prehospital professional. The infant may be in the care of a parent/caregiver or babysitter at the time of death and may not be at home. Absence of one or both parents may complicate field management and interactions at the scene (PEPP 2001).

### EMR Care, BLS Care, ILS Care, ALS Care

1. Render initial care in accordance with the *Routine Pediatric Care Protocol*.
2. **If obvious signs of biological death are present** (*pulseless, apneic, cold skin, frothy/blood tinged fluid in the mouth, lividity, dark red mottling on the body, rigor mortis*):
  - a) Confirm absence of breathing and pulse.
  - b) Confirm asystole in two (2) or more leads.
  - c) **Contact Medical Control** and follow procedure for death at scene.
  - d) Provide for the needs of the family:
    - Have at least one prehospital professional stay with the family until a support network is established.
    - Contact support personnel:
      - Clergy
      - Other family members
      - Friends
      - Professional counselors
3. Consider the possibility of child maltreatment:
  - a) Refer to *Suspected Child Maltreatment Protocol*.
  - b) Obtain past medical history and the history of events.
    - Refrain from asking judgmental or leading questions.
    - Do not place blame or accusations.
4. Consider CISM for prehospital personnel.

## Sudden Infant Death Syndrome (SIDS) Protocol

### Critical Thinking Elements

- The decision of staying on scene or transporting a dead infant to the ED is a difficult one.  
Consider these factors:
  - Could this be a crime scene?
  - Am I giving false hope to the family?
- The prehospital caregiver cannot determine the true cause of death in an infant. Therefore, do not rush to judgment. Treat every caregiver as a grieving parent regardless of the situation.
- There are nearly 3,000 SIDS cases per year in the United States:
  - 90-95% of SIDS cases are less than 6 months old.
  - Premature infants are at higher risk for SIDS.
  - SIDS cases occur more frequently in males & during the winter months.
  - 5% of SIDS cases are actually due to child neglect.

