



OSF
HEALTHCARE

Peoria Area EMS System Prehospital Care Manual

Adult Trauma
Protocols

Effective Oct 1, 2021

Adult Trauma Protocols


PAEMS Adult Trauma Protocols

Peoria Area EMS Adult Trauma Protocol Section

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Effective Oct 1, 2021	Traumatic Shock Protocol		3

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 treatments 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.


EMR & BLS 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 *Universal Patient Care Protocol* and *Universal 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.
4. Initiate ALS intercept and transport as soon as possible.
5. Contact Medical Control as soon as possible.

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

1. **IV Fluid Therapy: 20mL/kg** fluid bolus if needed to obtain a systolic BP of at least 100mmHg (avoid if signs of heart failure present, including dyspnea, JVD, orthopnea, rales).
2. **Norepinephrine infusion** (this medication is system optional for prolonged scene times or transports): 1-20 mcg/min. Start at 5 mcg/min, titrate every 5-10 min to maintain SBP > 90.
 - a. Administer through a confirmed patent, large bore (>18 gauge) IV in a proximal vein. (Antecubital preferred), as this medication may cause limb necrosis if extravasation occurs.
 - b. If extravasation occurs, notify stop medication, and notify receiving facility immediately.
 - c. Monitor blood pressure every 5 minutes
2. **Push-dose epinephrine (10 mcg/mL)** (for short transports)
 - a. To make: Draw up 1 mL of 1:10,000 cardiac epinephrine into a 10 mL syringe, and then draw up 9 mL of normal saline.
 - b. The syringe should be mixed by rolling it between the palms prior to administration.
3. Administration: **0.5-1 mL** slow IV infusion of push-dose epinephrine every 1-5 minutes to maintain SBP > 90
 - a. Caution while giving pressors in the setting of MI as they may worsen ischemia/infarct.

4. Transport as soon as possible (transport can be initiated at any time during this sequence) and Contact Medical Control as necessary.
5. Initiate ALS intercept if needed, transport as soon as possible, and contact medical control.

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Burn injuries vary depending on the *type* of burn (thermal, electrical, chemical) and the *amount* of exposure (time and depth). Burn injuries range from localized redness to deep tissue destruction and airway compromise. Signs of burn injury include: blisters, pain, tissue destruction, charred tissue and singed hair. The primary goal in the treatment of the burn patient is 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.

First Responder & BLS 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 *Universal Trauma Patient Care Protocol*.
2. Make sure the scene is safe to enter.
3. **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.
4. **Initiate transport asap and consider ALS intercept.**
5. **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.
6. **ELECTRICAL BURN TREATMENT:**
 - a) Assure that the power service has been cut off and remove the patient from the source of electricity.
 - b) Fully immobilize 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.
7. **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 and 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.

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

1. Be prepared to intubate if necessary.
2. **IV Fluid Therapy: 20mL/kg** fluid bolus. Repeat if necessary.
3. Manage the patient’s pain referencing the Pain Protocol.
4. Transport and **Contact Medical Control** as soon as possible for significant burns.

Fentanyl (ALS & ILS)	50 mcg IO, over <u>2 minutes</u> for pain. Fentanyl 50 mcg IO may be repeated every 5 minutes to a total of 200 mcg.
	May administer Fentanyl 50 mcg IM or IN. May be repeated as needed to a total of 200 mcg. (See dosing sheets for IN)


If the patient is **hemodynamically unstable** due to traumatic injury the provider should manage the patient’s pain by using the following medication.

Ketamine IV/IO	0.3mg/kg slow IV/IO Push every 20 minutes to a maximum 3 doses
Ketamine IM	0.5mg/kg slow IM Push

The most common adverse effects of Ketamine are hallucinations, anxiety, dysphoria and euphoria.

Critical Thinking Elements

- Monitor respiratory status, SPO2 and or Waveform Capnography if available.
- ***WaterJel® may be used for **THERMAL BURNS** (after the burn has been irrigated according to protocol) if it is available:
 1. Open the foil package, unfold dressing and apply to burn. **NOTE:** Do not remove burned clothing - apply gel-soaked dressing directly on top.
 2. Pour excess gel from the foil package directly onto the burn dressing or surrounding skin.
 3. Loosely wrap sterile gauze over the dressing to hold it in place.
- WaterJel® helps reduce pain from burns and cools the skin to help prevent burn progression and helps protect the burn against airborne contamination. It is the only approved commercial burn care product in the Peoria Area EMS System.
- BurnJel® contains Lidocaine and may **NOT** be used in the Peoria Area EMS System.
- Treat other symptoms or trauma per the appropriate protocol (e.g. if someone suffers from smoke inhalation along with being burned, refer to the *Smoke Inhalation Protocol*).
- IV access should not be obtained through burned tissue unless no other site is 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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Crush Syndrome occurs during prolonged entrapment where the victim's body tissue becomes poorly perfused. Lactic acid may build up in the affected tissues and when the circulation is improved the heart may suffer dysrhythmias and severe electrolyte imbalances.


EMR Care, BLS Care, ILS Care, ALS Care

Safety is paramount. Do not place yourself in harm's way. Access the patient only if it can be done safely.

1. Place a tourniquet proximal to the crush injury as close to the injury as possible.
2. Render care following the Universal Trauma Care procedure.
3. Record the patient's body temperature and treat for possible shock.
4. Call for ALS to meet on scene if possible-at minimum ALS intercept en route.
5. **ILS & ALS** initiate 2 large bore IV's if possible and begin IV fluid bolus of a minimum 500cc normal saline in order to maintain a Systolic blood pressure >90mmHg.
6. **ALS Only** administer **50mEq Sodium Bicarbonate mixed in 1000cc normal saline** at wide open rate.
7. Monitor the patient continuously and contact medical control as soon as possible.

Once the crush is relieved monitor the patient for cardiac dysrhythmias and treat per proper protocols.

Be prepared for sudden shifts in hemodynamic status when the crush is relieved and treat per proper protocols.

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Injuries from hazardous materials incidents vary depending on the *manner* of exposure (inhalation, ingestion, injection or absorption), the *type* of material involved (acids, ammonia, chlorine, hydrocarbon solvents, sulfides, organophosphates) and the *amount* of exposure (time & concentration).

Due to the magnitude and multiplicity of hazardous materials, this protocol focuses on a general approach to the patient involved in a hazardous materials incident. The substance container may have vital information for resuscitation of an exposed patient. Communication with Medical Control is the best way to obtain rapid and accurate advice on treatment guidelines for specific materials.


First Responder & BLS 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. Remain uphill, upwind, upstream, and upgrade of the incident. Stay out of the “Hot Zone” unless trained, equipped and authorized to enter.

1. Render initial care in accordance with the *Universal Patient Care Protocol*.
2. Look for possible scene and patient contamination. Follow agency safety procedures.
3. Notify IEMA if needed at 1-800-782-7860.
4. 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.
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 support the patient’s respirations with BVM if necessary.
6. **Proventil (Albuterol): 2.5mg** in 3mL normal saline mixed with
BLS only: Ipratropium (Atrovent): 0.5mg via nebulizer over 15 minutes if the patient has been
exposed to an irritant gas (acids, ammonia, chlorine, carbon monoxide). Repeat **Albuterol 2.5mg with Atrovent 0.5mg** in **15 minutes** as needed. **(With Medical Control Order)**.
7. Initiate ALS intercept if needed and transport as soon as possible. Be alert for suspected organophosphate poisoning (OPP). Signs & symptoms include “SLUDGE” (salivation, lacrimation, urination, defecation, gastroenteritis & emesis).
8. **Contact Medical Control** and make sure the receiving hospital is aware of **(prior to arrival at the facility)** the patient’s exposure to hazardous materials and what decontamination procedures were followed at the scene.

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

Remain uphill, upwind of the incident. Stay out of the “Hot Zone” unless trained, equipped and authorized.

1. **Atropine: 2mg IV** or IM **(with Medical Control order only)** if suspected organophosphate poisoning (OPP) and signs & symptoms of “SLUDGE” are present (salivation, lacrimation, urination, defecation, gastroenteritis & emesis). Repeat **Atropine 2mg IV** or IM every **5 minutes (with Medical Control order)** or until signs & symptoms of “SLUDGE” subside.
2. Initiate ALS intercept and transport as soon as possible. **Contact Medical Control** and make sure the receiving hospital is aware of the patient’s exposure to hazardous materials **(prior to arrival at the facility)** and what decontamination procedures were followed at the scene.

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Injury and illness from environmental exposure varies depending on the *manner* of exposure (wet or dry) and the *amount* of exposure (time, temperature, wind chill factor, and ambient air). Cold weather emergencies range from localized frostbite to severe hypothermia with unresponsiveness and unconsciousness. Heat exposure emergencies range from localized cramping to severe hyperthermia (heat stroke) with unresponsiveness and unconsciousness. The primary goal in the treatment of the patient at risk for hyperthermia is to cool the patient and restore body fluids.


The patient's health and predisposing factors may increase the likelihood of environmental illness and injury. Patients suffering from trauma, shock, hypoglycemia and stroke are at greater risk of developing hypothermia. Newborns, infants, drug & alcohol abuse patients and the elderly have increased predisposition to hypothermia. The primary goal in the treatment of the patient at risk for hypothermia is to insulate the patient and prevent further heat loss.

First Responder & BLS 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 *Universal Patient Care Protocol*.
2. Handle the patient as **gently** as possible.
3. **Cold exposure** 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, groin, and along the thorax. Do not rub frostbitten or frozen body parts. Protect injured parts (e.g. blisters) with light, sterile dressings and avoid pressure to the area.
4. **Heat exposure** 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, groin, and along the thorax. Do not cool the patient to a temperature that causes shivering. . Do not rub burned body parts. Protect injured parts (e.g. blisters) with light, sterile dressings and avoid pressure to the area.
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 support the patient's respirations with BVM if necessary.
6. Initiate transport and ALS intercept if needed.

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

1. **IV Fluid Therapy: 20mL/kg** fluid bolus of .9% Normal Saline.
2. Treat other symptoms per the appropriate protocol.
3. Initiate ALS intercept if needed and transport as soon as possible.

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Near drowning results from submersion in water or other liquid for a period of time that does not result in irreversible death. The time interval of submersion that causes irreversible death is dependent on several factors such as: temperature of the water, the health of the victim and any trauma suffered during the event. All persons submerged 1 hour or less should be vigorously resuscitated in spite of apparent death. Initial care of the near drowning victim should begin in the water.

First Responder & BLS 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 *Universal Patient Care Protocol* and *Universal Trauma Care Protocol*.
2. Make sure the scene is safe. Use appropriate personnel and equipment for rescue.
3. Establish and maintain spinal immobilization.
4. **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.
5. Initiate **CPR** if indicated.
6. Treat respiratory and/or cardiac symptoms per the appropriate protocol.
7. Consider **Proventil (Albuterol): 2.5 mg** in 3mL of normal saline via nebulizer over 15 min. May repeat **Albuterol 2.5 mg** every 15 minutes as needed. (If wheezes still present)
8. Consider Pulse Oximetry and Capnography if available.
9. Initiate ALS intercept, transport, contact the receiving hospital as soon as possible.

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

1. Consider CPAP if available for respiratory distress: If the systolic BP > 100mmHg.
 - a. If systolic B/P is between 90-100mmHg, contact Medical Control prior to initiating CPAP.
 - b. **Do not** initiate CPAP if the systolic B/P is less than 90mmHg.
2. Consider Pulse Oximetry or Capnography if available.
3. Consider 12 lead EKG.
4. Transport and contact the receiving hospital as soon as possible.

Critical Thinking Elements:

- Recommended exam: Trauma Survey, Head, Neck, Chest, Abdomen, Pelvis, Back Extremities, Skin, Neuro.
- **Have a high index of suspicion for possible spinal injuries. All Drowning/Near Drowning patients should be immobilized.**
- With Cold water no time limit (resuscitate all). These patients have an increased chance of survival.
- Some patients may develop delayed respiratory distress.
- All victims should be transported for evaluation due to potential for worsening over the next several hours.

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Effective Oct 1, 2021	TXA-Tranexamic Acid Protocol		11

Tranexamic Acid (TXA) is a synthetic amino acid (lysine) that blocks plasminogen from being converted to the enzyme plasmin. Plasmin works to break down already-formed blood clots in the human body by attacking and breaking down fibrin destroying clots in a process known as fibrinolysis. TXA is now being used to treat severely injured trauma patients who have or are at risk for severe hemorrhage.

Indications:

Any trauma patient ≥ 14 years of age, at high risk for ongoing internal hemorrhage and meeting one or more of the following criteria:

- Systolic BP < 90mmHg or Patients ≥ 65 years of age with systolic BP < 110mmHg.
- Tachycardia > 120 beats per minute with signs of hypoperfusion (confusion, altered mental status, cool extremities, etc.)
- **Expanded indications** for TXA usage include acute uncontrolled epistaxis, acute Post Partum hemorrhage, severe menstrual bleeding, and acute lower GI hemorrhage with signs of hypo perfusion as listed above.


Contraindications:

- Injuries > 3 hours old.
- Evidence of Disseminated Intravascular Coagulation (DIC)
- Patients < 14 years of age.
- Hypersensitivity to the drug.

1. **How Supplied:** 10mL vial containing 1000mg
2. **Preparation:** Mix 1000mg of TXA in 250 mL of 0.9% Normal Saline.
3. **Administration:** Infuse over 10 minutes
 - 10 gtts/mL tubing at a drip rate of 4 gtts/second. Or Infusion pump (if available) at 1500mL/hr.
4. Notify receiving hospital of TXA administration.
5. Clearly document mechanism of injury, time injury/incident occurred, indications for use and time TXA was administered.

Critical Thinking Elements

- **TXA should never be administered at a “wide open” rate**
- **Female patients taking or using any form of birth control containing estrogen and progestin are at increased risk for blood clots and this medication significantly increases that risk.**
- Hypotension has been observed when TXA is administered too rapidly.

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Injuries to the head: may cause underlying brain tissue damage. Increased intracranial pressure from bleeding or swelling tissue is a common threat after head trauma.

Common signs and symptoms of increased intracranial pressure include:

- Confusion
- ALOC
- Dilated or unequal pupils
- Markedly increased systolic blood pressure
- Decreased pulse (bradycardia)
- Abnormal respiratory patterns

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.

First Responder & BLS Care

First Responder & BLS 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 *Universal Patient Care Protocol*.
2. Be prepared for vomiting and have suction readily available.
3. **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.
4. Control bleeding using direct pressure, pressure dressings and pressure points.
5. If patient has an alerted mental status, perform **blood glucose level test**.
6. **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.
7. **BLS only: Glucagon: 1mg IM or 2mg IN** (1mg per nostril) if blood sugar is less than 60mg/dL, the patient is unresponsive and/or has questionable airway control or absent gag reflex.
8. Initiate ALS intercept and transport as soon as possible.
9. **Contact Medical Control** as soon as possible.

ILS & ALS Care

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

1. **IV Fluid Therapy:** 20mL/kg fluid bolus if needed to obtain a systolic BP of 100mmHg.

If signs of increased ICP are not present and the patient has an altered mental status:

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.
Dextrose 50%: 25g IV if blood sugar is < 60mg/dL.
Glucagon: 1mg IM or (if available) 2mg IN if blood sugar is less than 60mg/dL, the patient is unresponsive and/or has questionable airway control or absent gag reflex.

8. **Narcan: 2mg IV/IM** if no response to Dextrose or Glucagon within 2 minutes and narcotic overdose is suspected. May repeat 2mg IV or IM if no response in **5 minutes (with Medical Control order)**.
Narcan: 2mg IN if unable to obtain IV access.
4. Initiate ALS intercept if needed and transport as soon as possible.
5. **Contact Medical Control** as soon as possible.

Critical Thinking Elements

- Head trauma patients should receive oxygen to keep SpO₂ > 95%, preferably via NRM. Patients with poor respiratory effort may require ventilation with a BVM at 8-10 breaths/min.
- *Cushing's response* refers to the ominous combination of markedly increased arterial blood pressure and resultant bradycardia indicating cerebral herniation.
- Avoid prophylactic hyperventilation of a head trauma patient as this can cause cerebral vasoconstriction. However, if s/s of increased ICP are present, then controlled hyperventilation may be needed (with Medical Control order) until s/s of increased ICP have subsided:
 - 20 breaths/min for adults
 - 25 breaths/min for children
 - 30 breaths/min for infants
- Deeply comatose patients may require advanced airway placement (GCS < 8). Refer to the *BLS Airway Procedure*.
- Treat for hemorrhagic shock if the patient's systolic BP is < 110mmHg. Hypotension decreases cerebral perfusion and worsens brain injury and must be corrected.

Injuries to the spine: commonly result from mechanism of injury involving high kinetic energy. Any neurovascular impairment or spinal deformities are indicative of possible spinal trauma.

Mechanisms of injury suggesting possible spinal injury include:

- Falls
- Motor vehicle crashes (MVCs)
- Gunshot wounds to the head, neck or back
- Forceful blows to the head and neck

First Responder & BLS Care

First Responder & BLS 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. BLS should initiate transport asap.

1. Render initial care in accordance with the *Universal Patient 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. Frequently reassess the patient's airway & ventilatory status.
4. Assess and record any pain on palpation of the spine, any motor/sensory deficits of the extremities, abnormal arm position, ptosis and/or priapism.
5. Assess skin for temperature which will initially be warm, flushed and dry (below the point of injury). Cover the patient and keep him/her warm.
6. Assess for neurogenic shock: decreased BP, decreased pulse, & decreased respiratory rate.
7. Fully immobilize the patient and protect paralyzed limbs by securing the patient to the backboard.
8. Repeat vital signs, GCS & RTS every **5 minutes**.
9. Initiate ALS intercept and transport as soon as possible.

10. Contact Medical Control as soon as possible.

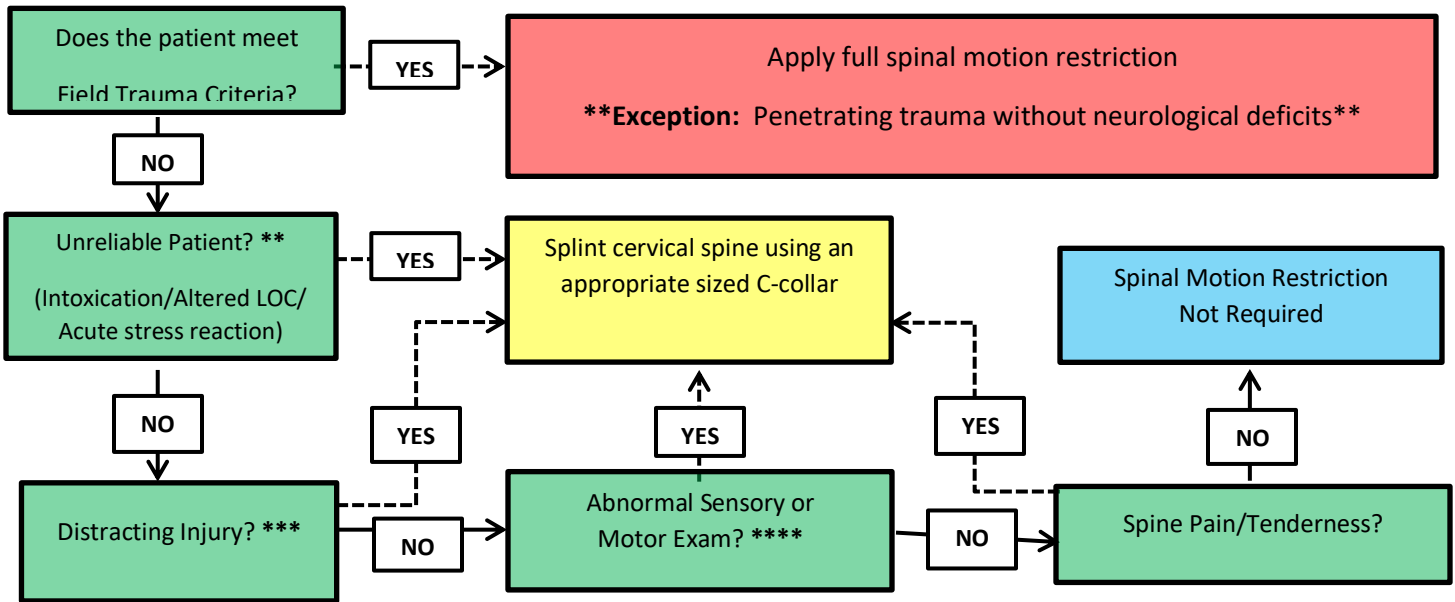
ILS & ALS Care


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

1. **IV Fluid Therapy:** 20mL/kg fluid bolus if needed to obtain a systolic BP of at least 100mmHg.
2. Initiate ALS intercept if needed and transport as soon as possible.
3. **Contact Medical Control** as soon as possible.
4. **ALS only: Norepinephrine** infusion (this medication is system optional for prolonged scene times or transports): 1-20 mcg/min. Start at 5 mcg/min, titrate every 5-10 min to maintain SBP > 90.
5. Administer through a confirmed patent, large bore (>18 gauge) IV in a proximal vein. (Antecubital preferred), as this medication may cause limb necrosis if extravasation occurs.
6. If extravasation occurs, notify stop medication, and notify receiving facility immediately.
7. Monitor blood pressure every 5 minutes
8. **ALS only: Push-dose epinephrine (10 mcg/mL)** (for short transports)
9. Transport as soon as possible.
10. **Contact Medical Control** as soon as possible.

If a C-collar is applied, the patient needs to remain supine. If patient comfort is a factor, the head can be elevated to a maximum of 30 degrees.

Clinical indications: patients with traumatic neck/back pain, head injury or facial trauma, or with a significant or uncertain MOI or high index of suspicion for spinal trauma (e.g. axial load (diving), MVC or bicycle, falls...). In high-risk patients (e.g. elderly, osteoporotic, degenerative disorders) less forceful mechanisms can cause significant injuries.



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Attention should be given to extremity injuries to limit further damage and discomfort for the patient. However, extremity care should never interfere with lifesaving decisions or interventions and should not delay transport of trauma patients.

Signs of extremity injury include:

- Pain
- Deformity
- Contusion
- Tenderness
- Swelling
- Instability
- Crepitus
- Absence of distal pulses

EMR Care, BLS Care, ILS Care, ALS Care

Care should be focused on assessing the situation and initiating care to assure the patient is maintaining an airway, is breathing, and has a perfusing pulse and beginning treatment for shock.

1. Render initial care in accordance with the *Universal Patient 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 any external bleeding:
 - a) Apply direct pressure and pressure dressing.
 - b) Elevate the extremity if possible.
 - c) Use pressure points.
 - d) Assess distal pulse, motor & sensation.
4. Splint musculoskeletal injuries:
 - a) Immobilize the joints with a rigid splint above and below the injury for long bone injuries.
 - b) Immobilize the long bones with a rigid splint above and below the injured site for joint injuries.
 - c) Assure the joints and bones are immobilized sufficiently to stabilize the injured structures (especially when using a soft splint or pillow).
 - d) Assess distal pulse, motor & sensation.
5. If the extremity is angulated and no distal pulse is present, reduce by gently applying manual traction until the pulse returns.
 - a) Reassess distal pulse, motor and sensation.
6. Amputation cases:
 - a) Control external bleeding.
 - b) Dress, bandage and/or splint the injured extremity.
 - c) Attempt to recover the severed part:
 - Wrap in sterile gauze, towel or sheet.
 - Wet dressing with sterile water or .9% Normal Saline.
 - Place severed part in waterproof bag or container and seal.
 - Place the bag/container in another container filled with ice or cold water.
 - DO NOT immerse the amputated part in any solutions.
 - DO NOT allow the tissue to freeze.

- Transport the container with the patient.
- 7. Initiate ALS intercept if needed and transport as soon as possible.
- 8. **BLS, ILS, ALS only: Ondansetron (Zofran):** 4mg PO orally disintegrating tablet for nausea and vomiting
- 9. Contact the receiving hospital as soon as possible or Medical Control if necessary.

ILS & ALS Care

1. **IV Fluid Therapy:** 20mL/kg fluid bolus if the patient is hypotensive to obtain a systolic BP of at least 100mmHg.
2. **Ondansetron (Zofran):** 4mg IV over 2 minutes for nausea and/or vomiting.
 - a. **Ondansetron (Zofran):** 4mg IM
 - b. **Ondansetron (Zofran):** 4mg PO orally disintegrating tablet
3. Manage the patient’s pain.
4. Contact the receiving hospital as soon as possible or Medical Control if necessary.

Fentanyl	50 mcg IV, over <u>2 minutes</u> for pain. Fentanyl 50 mcg IV may be repeated every 5 minutes to a total of 200 mcg.
	If unable to establish IV access, may administer Fentanyl 50 mcg IM or IN. May be repeated as needed to a total of 200 mcg. (See dosing sheets for IN)

4. Contact the receiving hospital as soon as possible or Medical Control if necessary.


If the patient is **hemodynamically unstable** due to traumatic injury the provider should manage the patient’s pain by using the following medication.

Ketamine IV/IO	0.3mg/kg slow IV/IO Push every 20 minutes to a maximum 3 doses
Ketamine IM	0.5mg/kg slow IM Push

The most common adverse effects of Ketamine are hallucinations, anxiety, dysphoria and euphoria.

Critical Thinking Elements

- **In patients with known renal failure, the Fentanyl dose must be reduced to 25mcg. The dose may be repeated one time to a maximum dose of 50mcg.**
- Avoid use of Zofran in patients with congenital long QT syndrome as these patients are at particular risk for Torsades de Pointes

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Effective Oct 1, 2021	Drug Overdose/ Poisoning Protocol		17

Poisoning may occur by ingesting, injecting, inhaling or absorbing a harmful substance or a substance in harmful quantities. Due to the magnitude and multiplicity of agents that are toxic or could be used as toxins, this protocol focuses on a general approach to the patient who has taken an overdose or has been exposed to a toxic agent. The substance container may have vital information for resuscitation of a poisoned patient.

First Responder & BLS 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 *Universal Patient Care Protocol*
3. **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.
4. **Narcan: 2mg IN** (1mg per nostril) if suspected narcotic overdose with respiratory depression (≤ 8 breaths per minute)

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

1. **Narcan: 2mg IV/IM** if no response to Dextrose or Glucagon within 2 minutes and narcotic overdose is suspected. May repeat 2mg IV or IM if no response in **5 minutes (with Medical Control order)**. **Narcan: 2mg IN** if unable to obtain IV access.
2. **ALS Only: Sodium Bicarbonate: 50meq IV/IO** if known tricyclic antidepressant (TCA) or known Aspirin (ASA) overdose.
3. **IV Fluid Therapy: 20mL/kg** fluid bolus if the patient is hypotensive to achieve a systolic BP of at least 100mmHg.
4. Transport as soon as possible and contact the receiving hospital as soon as possible.

Critical Thinking Elements

- Overdose patients should not be allowed to refuse treatment and transport.
- **DO NOT** give a suspected poisoning patient anything by mouth.
- Caustic substances are those which have strong acid or alkali properties and usually cause intra-oral burns, painful swallowing or burning/painful regurgitation.
 - **Common Acids:** Hydrochloric Acid (swimming pool and toilet bowl cleaners), Sulfuric Acid (battery acid), Acetic Acid and Phenol.
 - **Common Bases (Alkali):** Lye (washing powders and paint removers), drain pipe cleaners (Drano), disk batteries, bleach, ammonia, polishes, dyes and jewelry cleaners.
- Patients who overdose on TCAs may initially appear well but may rapidly deteriorate. Monitor closely for ALOC and cardiovascular instability. Tachycardia and a widened QRS complex are generally signs of a life-threatening ingestion.
 - **Common TCAs:** Amitriptyline, Elavil, Doxepin, Imipramine, Clomipramine, etc.
- Narcotic and benzodiazepine overdoses do not generally cause abrupt changes in consciousness except when combined with alcohol use.
 - **Common Benzodiazepines:** Valium, Diazepam, Ativan, Lorazepam, Xanax, etc.

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Effective Oct 1, 2021	Excited Delirium Protocol		18

Excited delirium is a condition in which a person is in a psychotic state and extremely agitated. Mentally the subject is unable to focus and process any rational thought or direct his/her attention to any one thing. Physically, the organs with the subject are functioning at such an excited rate that they begin to shut down. These two factors occurring at the same time cause a person to act erratically enough that they become a danger to themselves and to the public.

Common Signs	Possible Causes
Aggressive, bizarre behavior	Overdose
Nakedness	(stimulant or hallucinogenic drugs)
Hyperthermia	Hypoglycemia
Dilated pupils	Drug withdrawal
Incoherent speech	Head Trauma
Fear and panic	Illness
Profuse Sweating	Psychosis
Shivering	Other Metabolic Conditions
Inconsistent breathing patterns	Psychiatric patient on/off medications
High pain tolerance	
Excessive Strength	
Restlessness	

First Responder & BLS 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. Ensure Scene Safety – Responder safety is the top priority.
2. Render initial care in accordance with the **Universal Patient Care Protocol**.
3. **Oxygen:** Administer utilizing the **Oxygen Therapy Procedure**.
4. Obtain blood glucose level, if < 60mg/dL, treat hypoglycemia according to the Altered Level of Consciousness Protocol.
5. Maintain control of the scene and request law enforcement if needed.
6. Demonstrate Professionalism and Courtesy
7. **BLS Only:** If restraints are needed, apply them in accordance with the Behavioral Emergencies/Chemical Restraints Protocol.
8. If patient exhibits signs of excited delirium (above) call for an intercept with higher level of care.

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

1. If patient exhibits signs of excited delirium, provide sedation using **Midazolam (Versed): 5mg IM** or via the Mucosal Atomizing Device®. This can be repeated once to a maximum dose of 10mg. Larger doses may be required – this is by **Medical Control order only**.
2. If the patient is hyperthermic, actively cool by placing cold packs to the posterior neck, armpits, groin and along the thorax.

ALS Care should be directed at continuing or establishing care, continuing EMR, BLS, & ILS Care, conducting a thorough patient assessment, ensuring personal safety and preparing for or providing patient transport.

1. If patient exhibits signs of excited delirium, provide sedation using;
2. **Ketamine 4mg/kg IM**
3. If the patient is hyperthermic;
 - Mix **Sodium Bicarbonate 50mEq with 1L of Normal Saline** and infuse at a wide open rate. **And**
 - Actively cool the patient by placing cold packs to the posterior neck, armpits, groin, and along the thorax.


Critical Thinking Elements

- High body temperature is a key finding in predicting a high risk of sudden death. Another key symptom to the onset of death while experiencing excited delirium is “instant tranquility”. This is when the person has been very violent and vocal then suddenly becomes quiet and docile.
- It is paramount that patients exhibiting symptoms of this syndrome be effectively and quickly physically restrained, and then calmed using sedation and verbal coaching. *The likelihood of sudden apnea and death increases the longer these patients are allowed to struggle against restraint.* Managing these patients therefore requires a coordinated effort among all responders and Law Enforcement personnel.
- Haldol is for use in a mild to moderate behavioral emergency psychotic event.
- Ketamine may precipitate psychosis in a patient with a history of schizophrenia
- When using Ketamine, be aware of Side Effects
 - **Laryngospasm:** this very rare adverse reaction presents with stridor and respiratory distress.

After every administration of ketamine:

- a. Prepare to provide respiratory support including bag-valve-mask ventilation and suction which are generally sufficient in rare cases of laryngospasm.
- b. Institute cardiac monitoring, pulse oximetry and continuous waveform capnography
- c. Establish IV or IO access, check blood glucose
- d. Establish and maintain physical restraint.

Emergence reaction: presents as anxiety, agitation, apparent hallucinations or nightmares as ketamine is wearing off. For severe reactions, consider Versed 2mg IM or IV.

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All levels of providers in the System should do the following when encountering these patients:

1. Ensure that the scene has been secured by law enforcement personnel and that the scene is safe to enter.
2. Ensure no cross contamination occurs to providers or equipment.
3. Ensure that the patient is subdued and is no longer a threat to EMS personnel.

Teargas / Oleoresin Capsicum (Pepper Spray) Exposure

First Responder and BLS 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 *Universal Patient Care Protocol*.
2. **Oxygen**: For agitation, shortness of breath or chest pain: 15 L/min via non-rebreather mask or 6 L/min via nasal cannula if the patient cannot tolerate a mask.
3. **Flush eyes (if affected) with sterile water** to get rid of gross contamination and to aid in recovery.
4. **Proventil (Albuterol): 2.5mg** in 3mL of normal saline via nebulizer over 15 minutes ***if the patient is short of breath and wheezing***. May repeat **Albuterol 2.5mg** every **15 minutes** as needed (**with Medical Control order**).
5. Assess for secondary trauma that may be present and treat appropriately per trauma protocols.
6. Assess for any secondary causes of patient behavior which lead to law enforcement subduing the patient. These secondary causes include:
 - a. Alcohol intoxication
 - b. Drug abuse
 - c. Hypoglycemia or other medical disorder
 - d. Psychotic disorder
7. **Contact Medical Control** if restraints are needed. An order for restraint is a MUST.
8. If the patient has an altered mental status, then the patient must be assumed incompetent to refuse care. **Contact Medical Control** for ALL refusal issues.
9. Initiate ALS intercept if needed and transport as soon as possible.
10. Contact receiving hospital as soon as possible or Medical Control if necessary.

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

1. Render initial care in accordance with the *Universal Patient Care Protocol*.
2. **Contact Medical Control** if restraints are needed. An order for restraint is a MUST.
3. **IV Fluid Therapy: 20mL/kg** fluid bolus if the patient is cooperative and if the vital signs reflect tachycardia or hypotension to achieve a systolic BP of at least 100mmHg.
4. Initiate cardiac monitoring per *Routine Care* or if the patient appears agitated.
5. If the patient has an altered mental status, then the patient must be assumed incompetent to refuse care. **Contact Medical Control** for ALL refusal issues.
6. Initiate ALS intercept if needed and transport as soon as possible.
7. Contact receiving hospital as soon as possible or Medical Control if necessary.

Taser-Related Injuries


A taser is an electrical device that is capable of shooting out two small barbed probes that are designed to pierce a subject's skin for the purpose of delivering a subduing pulse of electricity that causes the subject to lose voluntary muscular control. Anecdotal and theoretical consequences of taser use include *cardiac arrhythmias* and *seizures* (especially if the subject is under the influence of alcohol and/or illegal drugs).

First Responder & BLS 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 *Universal Patient Care Protocol*.
2. **Oxygen**: For agitation, shortness of breath or chest pain: 15 L/min via non-rebreather mask or 6 L/min via nasal cannula if the patient does not tolerate a mask.
3. Ask law enforcement to remove taser probes. **EMS personnel are not to remove the probes unless** specifically trained and are comfortable doing so.
4. If the probes are in a sensitive area such as the **face, eye, neck, genitalia** or a **female's breast**, leave the probes in place and bandage.
5. Assess for any secondary causes of patient behavior which lead to law enforcement subduing the patient. These secondary causes include:
 - a. Alcohol intoxication
 - b. Drug abuse
 - c. Hypoglycemia or other medical disorder
 - d. Psychotic disorder
6. **Contact Medical Control** if restraints are needed. An order for restraint is a MUST.
7. If the patient has an altered mental status, then the patient must be assumed incompetent to refuse care. **Contact Medical Control** for ALL refusal issues.
8. Initiate ALS intercept if needed and transport as soon as possible.
9. Contact receiving hospital as soon as possible or Medical Control if necessary.

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

1. Initiate cardiac monitoring.
2. **IV Fluid Therapy**: 20mL/kg fluid bolus if the patient is cooperative and if the vital signs reflect tachycardia or hypotension to achieve a systolic BP of at least 100mmHg
3. **Midazolam (Versed)**: **2mg IV** over 1 minute for seizure activity. May repeat Midazolam (Versed) 2mg IV every 5 minutes as needed to a total of 10mg.
Midazolam (Versed): **5mg IM** if the patient is seizing and attempts at IV access have been unsuccessful. May repeat dose one time in 15 minutes if needed. **Midazolam (Versed)**: Intranasal if unable to obtain IV access. (See **intranasal dosing sheet in the Prehospital Care Manual**).
4. If the patient has an altered mental status, then the patient must be assumed incompetent to refuse care. **Contact Medical Control** for ALL refusal issues.
5. Initiate ALS intercept if needed and transport as soon as possible.
6. Contact receiving hospital as soon as possible or Medical Control if necessary.

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Effective Oct 1, 2021	OB/ Childbirth Protocol		22

Childbirth is a natural process. EMS providers called to a woman in labor should determine whether there is enough time to transport the expected mother to the hospital or if deliver is imminent. If childbirth appears imminent, immediately prepare to assist with the delivery.

EMR Care, BLS Care, ILS Care, ALS Care

First Responder, **BLS**, **ILS** & **ALS** Care should be focused on assessing the situation, initiating routine patient care and preparing for or providing patient transport. Special attention should be given to the privacy of the mother and concerns of immediate family members should be addressed.

1. Render initial care in accordance with the *Universal Patient 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. Obtain a history on the patient including:
 - Gravida (# of pregnancies)
 - PARA (# of live births)
 - Expected delivery date
 - Length of previous labor
 - Complications of previous pregnancies
 - Onset of contractions
 - Prenatal care (if any)
4. Allow the expectant mother to remain in a position that is most comfortable.
5. If delivery is not imminent, transport the patient on her left side.
6. Determine if there is adequate time to transport:
 - a) Assess the nature, extent and time of contractions.
 - b) Assess the patient for high-risk factors.
 - c) Assess the status of the membranes and any discharge.
 - d) Assess for pushing with contractions.
 - e) Take into consideration the length of previous labor.
7. If delivery is imminent:
 - a) DO NOT ATTEMPT TO RESTRAIN OR DELAY DELIVERY
 - b) Position the mother supine on a flat surface if possible.
 - c) Use full PPE – gloves, gown & goggles.
8. (**ILS** & **ALS**) **IV Fluid Therapy:** 20mL/kg fluid bolus if the patient is hypotensive to obtain a systolic BP of at least 100mmHg.
9. Prepare for delivery:
 - a) Control delivery of the head so that it does not emerge too quickly. Support the infant's head as it emerges and protect the perineum with gentle hand pressure.
 - b) Puncture the amniotic membrane with gentle finger pressure if it is still intact and visible outside the vagina.
 - c) Assess for nuchal cord and, if present, gently remove the cord from around the newborn's neck.
 - d) Suction the mouth, then nose of the newborn with a bulb syringe as soon as the head is delivered.
 - e) As the shoulders emerge, guide the head & neck downward to deliver the anterior shoulder. Support and lift the head & neck slightly to deliver the posterior shoulder.
 - f) Ensure a firm hold on the baby as the rest of the newborn's body delivers.
 - g) Keep the newborn level with the mother's vagina until the cord stops pulsating and is double clamped.

Infant Post-Partum Care

1. Begin the *Emergency Childbirth Record*.
2. Continue to suction the nose and mouth. Spontaneous respirations should begin within *15 seconds*.
 - If spontaneous respirations are not present, begin artificial ventilations with BVM & 100% O₂ at 30-40 vpm.
 - If no brachial pulse is present **OR** the pulse is less than 100 bpm, begin CPR.
3. Dry the newborn and wrap in a warm blanket, keeping the baby at the level of the mother's vagina until the cord is clamped and cut.
4. After the umbilical cord stops pulsating, clamp the cord at 3" & at 4" from the newborn's abdomen and cut between the clamps with the sterile scalpel found in the OB kit.
5. Assess the cord for bleeding and note the number of vessels present.
6. Obtain an APGAR score at **1 minute** and again at **5 minutes** after delivery.
7. Place ID tags on the mother and infant with the following information:
 - Name of the mother
 - Sex of the infant
 - Date and time of delivery
8. **DO NOT** separate the mother and infant unless both have ID tags.

Post-Partum Care for the Mother

1. The placenta should deliver within 5-20 minutes. Collect the placenta in a plastic bag and bring it to the hospital with the mother. **DO NOT** pull on the cord to facilitate delivery of the placenta.
2. Do not delay transport for delivery of the placenta.
3. If the perineum is torn and bleeding, apply direct pressure with a 5x9 dressing or trauma dressing and have the patient bring her legs together.
4. Massage the uterus until firm.
To massage the uterus, place one hand with fingers fully extended just above the mother's pubic bone and use the other hand to press down into the abdomen and gently massage the uterus approximately 3 to 5 minutes until it becomes firm.
5. For uncontrolled hemorrhage consider **TXA: Mix 1000mg of TXA in 250 mL of 0.9% Normal Saline**. Infuse over 10 minutes.

Documentation Requirements

1. Completed *Emergency Childbirth Record*. Document the date, time and place of delivery
2. Presence or absence of a nuchal cord--*If nuchal cord is present, document how many times the cord was wrapped around the baby's neck.*
3. Appearance of the amniotic fluid. Time the placenta was delivered and its condition
4. APGAR score at **1 minute** and **5 minutes**. Any resuscitation / treatment rendered and newborn response to treatment.

Critical Thinking Elements

- Lower than normal blood pressure and higher than usual heart rate are normal vital sign changes with pregnancy.
- The desire to push during contractions is an indicator that delivery is imminent.
- Be respectful of the expected mother's privacy.
- Assess the patient for peripheral edema. This may indicate Pre-eclampsia / Eclampsia. Monitor patient closely and watch for seizure activity.
- Tag the mother and baby with the same information by wrapping tape around their wrists.
- Green or brown amniotic fluid indicates the presence of Meconium (fetal stool) and should be reported

Obstetrical complications: can rapidly lead to hypovolemic shock and threaten the life of the mother and child. Care should be focused on assessing the situation, initiating routine patient care and beginning treatment for shock. Monitor vitals closely.

First Responder Care, BLS Care, ILS Care, ALS Care

1. Render initial care in accordance with the *Universal Patient 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. Frequently reassess the patient's airway & ventilatory status.

Placenta Previa & Abruption Placenta

Placenta previa occurs as a result of abnormal implantation of the placenta on the lower half of the uterine wall. Bleeding occurs when the lower uterus begins to contract and dilate in preparation for labor and pulls the placenta away from the uterine wall. The hallmark of *placenta previa* is the onset of painless bright red vaginal bleeding, usually in the 3rd trimester of pregnancy.

Abruption placentae is the premature separation of a normally implanted placenta from the uterine wall. Signs and symptoms can vary depending on the extent and character of the abruption.

Central Abruption (partial abruption): Characterized by a sudden sharp, tearing pain and development of a stiff, board like abdomen but no vaginal bleeding (blood is trapped between the placenta and the uterine wall).

Complete Abruption Placentae: Characterized by massive vaginal bleeding and profound maternal hypotension.

1. Note the amount of bleeding.
2. Place the patient on her left side.
3. Load and transport as soon as possible.
4. **(ILS & ALS) IV Fluid Therapy:** 20mL/kg fluid bolus if the patient is hypotensive to obtain a systolic BP of at least 100mmHg.
5. **Contact Medical Control** as soon as possible.

Pre-Eclampsia and Eclampsia

Pre-eclampsia is defined as an increase in systolic blood pressure by 30mmHg and/or a diastolic increase of 15mmHg over baseline on at least two occasions at least 6 hours apart. *Pre-eclampsia* is most commonly seen in the last 10 weeks of gestation and is thought to be caused by abnormal vasospasm.

Pre-Eclampsia: Characterized by hypertension and edema to the hands and face (and protein in the urine).

Severe Pre-Eclampsia: Characterized by marked hypertension (160/100 or higher), generalized edema, headache, visual disturbances, pulmonary edema and a dramatic decrease in urine output (along with a significant increase of protein in the urine).

Eclampsia: Characterized by generalized tonic-clonic seizure activity often preceded by flashing lights or spots before the eyes. The development of right upper quadrant pain or epigastric pain can also indicate impending seizure.

Note: The risk of fetal mortality increases by 10% with each maternal seizure.

1. Assure minimal CNS stimulation to prevent seizures (*i.e.* do not check papillary light reflex).
2. Place the patient on her left side.
3. Load and transport as soon as possible.
4. **(BLS)** Initiate ALS intercept.
5. **(ILS & ALS) IV Fluid Therapy:** TKO.
6. **(ILS & ALS) Midazolam (Versed):** 2mg IV over 1 minute for seizure activity. May repeat Midazolam (Versed) 2mg IV every 5 *minutes* as needed to a total of 10mg.
 - **Midazolam (Versed):** Versed Intranasal may also be used if unable to give IV Versed. (See [intranasal dosing sheet](#)).

7. **(ALS only) Magnesium Sulfate***: Rapid infusion of 4 gm (mixed 50 ml D5W and administer using macro drip, 2 gtts/sec). May repeat once, 2 gm (mixed 50 ml D5W and administer using macro drip, 2 gtts/sec).
8. **Contact Medical Control** as soon as possible.

Ectopic Pregnancy

Ectopic Pregnancy refers to the abnormal implantation of the fertilized egg outside of the uterus, usually in the fallopian tube. It can be a life-threatening condition and accounts for approximately 10% of maternal mortality. Ectopic pregnancy presents as abdominal pain which starts out as diffuse tenderness and then localizes as a sharp pain in the lower abdomen on the effected side. Assume that any female of childbearing age with lower abdominal pain is experiencing an ectopic pregnancy.

1. Place the patient on her left side.
2. Load and transport as soon as possible.
3. **(BLS)** Initiate ALS intercept.
4. **(ILS & ALS) IV Fluid Therapy**: 20mL/kg fluid bolus if the patient is hypotensive to obtain a systolic BP of at least 100mmHg

Breech Presentation

A *breech* presentation is the term used to describe a situation in which either the buttocks or both feet present first.

1. Render initial care in accordance with the *Universal Patient Care Protocol*.
2. **Oxygen**: 15 L/min via non-rebreather mask or 6 L/min via nasal cannula if the patient does not tolerate a mask. Be prepared to support the patient's respirations with BVM if necessary.
3. Load and transport as soon as possible.
4. **(BLS)** Initiate ALS intercept.
5. Never attempt to pull the baby from the vagina by the trunk or legs.
6. As soon as the legs are delivered, support the baby's body (wrapped in a towel).
7. After the shoulders are delivered, gently elevate the trunk and legs to aid in the delivery of the head.
8. The head should deliver in 30 seconds. If it does not – reach 2 fingers into the vagina to locate the infant's mouth. Press the vaginal wall away from the baby's mouth to provide unrestricted respirations.
9. **Contact Medical Control** as soon as possible.

Prolapsed Cord

Limb Presentation

A *prolapsed cord* occurs when the umbilical cord precedes the fetal presenting part. This causes the cord to be compressed between the fetus and the pelvis and blocks fetal circulation. Fetal death will occur quickly without prompt intervention. Although relatively uncommon, the baby may be lying transverse across the uterus. In these cases, an arm or leg is the presenting part protruding from the vagina and will require delivery by cesarean section. Under no circumstances should you attempt a field delivery with a limb presentation.

1. Render initial care in accordance with the *Universal Patient Care Protocol*.
2. **Oxygen**: 15 L/min via non-rebreather mask or 6 L/min via nasal cannula if the patient does not tolerate a mask. Be prepared to support the patient's respirations with BVM if necessary.
3. **(BLS)** Initiate ALS intercept.

1. In the event of prolapsed cord place a gloved finger/hand in the vagina between the pubic bone and the presenting part with the cord between the fingers and exert counter pressure against the presenting part.

2. Palpate the cord for pulsations.
3. Keep the exposed cord warm and moist.
4. Keep the hand in position and transport immediately.
5. **Contact Medical Control** as soon as possible.

*Optional medication