



Abdominal Injury

Austin County
EMS Protocol & Guideline

Version: 1.0

Date: 04/2019

Medical Director: Benjamin Oei, M.D.

Overview: Trauma to the abdomen requires a thorough and careful assessment for any immediate life threatening injuries. Rapid transport to an appropriate level facility is necessary due to limited resolution in the field. Thorough assessments should frequently be performed for early identification of any potential life threats that may not immediately be evident.

Definition: Any patient who experienced an insult to the abdomen with the potential of causing obvious or suspected injury to the structures within the abdominal cavity

EMT

- Immediately stop any significant bleeding
- Evaluate MOI
- Place patient on the **Cardiac Monitor**
- Obtain **12 Lead EKG**
- **CPR & AED** as appropriate to patient presentation
- **Oxygen** administration as appropriate to the patient presentation
- **Airway Adjuncts** (Supraglottic Airway, OPA, NPA), EtCO₂ monitoring appropriate to patient presentation
- Obtain **BGL**
- Monitor vital signs, closely, including MAP & SPO₂
- **Assess** for any bruising & distention

Treatment options may be prioritized based on patient condition

AEMT

- Establish IV of Normal Saline – Bilateral large bore IV's are preferred
 - Infuse a 250 cc bolus to maintain a SBP of 90 mmHg – May repeat as needed
- **Tranexamic Acid (TXA)** IV Infusion - 1 Gram over 10 minutes – If hemodynamically unstable

Paramedic

- **Ketamine** 0.1-0.25 mg/kg IV/IO **OR** 0.5 -1 mg/kg IM: may repeat every 10 minutes as needed

PEARLS

- It is important to understand the anatomy of the abdomen and how it corresponds with the various quadrants. It will help you provide a better report, even though you aren't going to be able to determine the exact location or extent of the bleeding.
- The major contributing factor in mortality from abdominal trauma is hemorrhage because of the large number of blood vessels and organs packed into the abdominal area. These patients are at an increased risk of significant hemorrhage even with a seemingly small wound, because blood can pool in the pelvis and retroperitoneum. Each of these areas can hold well over 1 L of fluid without exhibiting external signs. Because of this, any early visible contusions should be taken as a late sign of severe internal bleeding.
- The abdomen consists of two types of organs, hollow and solid. Hollow organs are reservoirs of bodily fluids or conduits for excretion of body waste. Injuries to these organs can result in spillage of bacteria, partially digested food, and other waste products. Besides hemorrhage, there is also a great risk of peritoneal infection.
- Solid organs, such as the kidney and spleen, are organs of filtration, which means they're dense and contain massive amounts of blood vessels. The biggest risk in injuries to these solid organs is hemorrhage, and the only course of treatment is surgical intervention. This is why rapid transport is paramount.



Amputated Extremity

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Date:	04/2019

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Amputation is the removal of an appendage of the body, usually a limb. An amputation can be complete or partial, and is a life changing injury. With the advances of modern medicine, it is possible to reattach or “save” a severed body part, if the body part cannot be saved, the skin can be used as a skin graft for the remaining limb. However, this is a time sensitive event, and will require hours of detailed surgical intervention. These patients require a Level 1 or 2 trauma center.

EMT

- Airway/Oxygen appropriate for condition
- General trauma guideline
- Wrap body part or tissue in sterile gauze moistened with sterile saline.
- Place in to a plastic bag or container.
- Place bag or container into another container filled with ice water.
- Do not allow body part or tissue to contact ice directly
- All tissues or body parts must be transported with the patient to the hospital.
- Do not delay transport of patient for prolonged extrication of body parts or tissue. Transport separately if needed.
- Tourniquet and/or Quick Clot if needed

AEMT

- Establish IV of Normal Saline – Bilateral large bore IV’s are preferred
- **Tranexamic Acid (TXA)** IV Infusion - 1 Gram over 10 minutes

Paramedic

- **Ketamine** 0.1-0.25 mg/kg IV/IO **OR** 0.5 -1 mg/kg IM: may repeat every 10 minutes as needed

PEARLS

- Cooling may increase the prospect of successful reimplantation, because it decreases the metabolic rate and inhibits bacterial growth.
- Immediate cooling as outlined above can extend the Ischemic period to 24 hours in some patients.
- With partial amputations, the injured appendage should be splinted in position of function.
- A tourniquet should be considered as a last resort; however the use of tourniquets is becoming a popular treatment choice for these patients.

An amputation is a compressible bleed, and can be difficult to control due to the manner in which the arteries and vessels are severed



Burns

Trauma

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Burns can be generally categorized as three types: Chemical, Electrical, and Thermal. Each offers a similar pathophysiology of tissue damage; however the medical consequences can be dramatically different. The eyes are extremely vulnerable to chemical burns. Electrical burns are mostly internal, focusing on the heart. Voltage below 400 volts focuses damage on the heart, while higher voltage causes internal burns. Thermal burns can be internal (inhalation) and external. The focus in all burns should be provider safety, cooling the burn, while protecting body heat. Shock in the early stages of a burn is not generally due to a burn, look for other causes.

EMT

- Airway/Oxygen appropriate for condition
- Stop the burning process.
- Dress wounds.
- 2nd or 3rd degree <10% BSA use wet sterile dressing.
- 2nd or 3rd degree >10% BSA use dry sterile dressing.
- Identify potential entry and exit wounds
- Remove any items that constrict with swelling. (Rings). Do not remove items that have bonded with skin. Cut from around these areas.
- Mark for swelling
- Brush off dry chemical and flush with copious amounts of water.
- Flush other chemicals with copious amounts of water.
- Eyes should be flushed for a minimum of 20 minutes.
- Maintain body heat – Wrap with burn sheet or blanket

Critical Burns

- 2° > 30% BSA
- 3° > 10% BSA
- Respiratory injury, facial burn
- Associated injuries, electrical or deep chemical burns, underlying PMH (cardiac, DM), age < 10 or > 50 yrs.

AEMT

- Establish IV of Normal Saline
- Early intubation if airway compromise develops or is expected to develop.
- Suspect respiratory compromise if facial burns, sooty sputum and/or singed facial hair is present

Paramedic

- Pain Management: **Morphine Preferred**
- **Morphine** 2 to 10 mg IVP, may repeat to a total dose of 20 mg as long as BP remains above 100 systolic.
- May administer **Midazolam** 2 mg – 4 mg IVP, may repeat to a total dose of 10 mg as needed.
- **Ketamine** 0.1-0.25 mg/kg IV/IO **OR** 0.5 -1 mg/kg IM: may repeat every 10 minutes as needed – **For severe pain**
- **RSI Procedure (If needed)**

Pearls

- First-degree burns (Superficial)—affect only the outer layer of the skin (epidermis), causing pain and redness
- Second-degree burns (Partial Thickness)—extend to the layer below the epidermis (the dermis), causing pain, redness, and blisters that may ooze
- Third-degree burns (Full Thickness)—involve all layers of the skin and may also damage the underlying bones, muscles, and tendons. The burn site appears pale, charred, or leathery and there is generally no sensation in the area because the nerve endings are destroyed.
- Infection is the most common complication of burns and is the major cause of death in burn victims. More than 10,000 Americans die every year from infections caused by burns.
- Compromised immune system, functional or cosmetic damage (reconstructive surgery may be necessary), increased risk of developing cancer at the burn site, carbon monoxide poisoning (in the case of a fire), cardiopulmonary arrest are just a few factors facing the burn patient.
- First-degree burns generally heal on their own in 10 to 20 days if no infection develops.
- In rare cases, first-degree burns spread more deeply to become second degree (this spread is caused by infection).



Crush Injuries

Trauma

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Version:	1.0
Date:	04/2019

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Acute (myoglobin) (rhabdomyolysis) Crush Syndrome is defined as the adverse effects from skeletal muscle death caused from prolonged and continuous pressure on the extremities, and the release of its cellular contents into the plasma. After this “syndrome” the object is removed causing the release of toxins into circulation. The possibility of lethal cardiac arrhythmias is high, in addition to acute renal failure, and sudden death. The systemic effects only occur with the removal of the object, when the extremity is reperfused. This reperfusion also can lead to hypovolemia due to the fluid absorption in interstitial spaces.

EMT

- Airway/Oxygen appropriate for condition
- Maintain provider safety

AEMT

- Establish IV of Normal Saline

Paramedic

- During Extrication consider- **Sodium Bicarbonate** 1 mEq/kg added to IV fluid (NS) and infused wide open.

Pearls

- Sodium Bicarbonate should only be given for crush injury under great pressure or lasting 2 hours or greater.
- Evidence of distal ischemia: Pain, Pallor, Pulselessness, Paralysis, Paresthesia, Poikilothermia (cool to touch).



Drowning / Near Drowning Trauma

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Version:	1.0
Date:	04/2019

Medical Director: Benjamin Oei, M.D.

Overview: Submersion in water, regardless of its depth, can result in a drowning or near drowning incident. When approaching and assessing these patients consider: possible history of trauma (diving board), duration of immersion, temperature of water (hypothermia), and the degree of water contamination.

Definition: Drowning: cardiopulmonary arrest as a result from submersion in and inhalation of water.
Near Drowning: survival after suffocation caused by submersion in water or other fluid.

EMT

- Immediately **Remove** patient from the water
- **Remove** wet clothing and dry/warm patient
- **C-spine Immobilization**
- Place patient on the **Cardiac Monitor**
- Obtain **12 Lead EKG**
- **CPR & AED** as appropriate to patient presentation
- **Oxygen** administration as appropriate to the patient presentation
- **Airway Adjuncts** (Supraglottic Airway, OPA, NP), EtCO₂ monitoring appropriate to patient presentation
- Obtain **BGL**
- **Evaluate and Identify** possible injuries
- **Conscious near Drowning with Diffuse Crackles**
- **USE CPAP or BVM** with PEEP as appropriate to patient presentation
- **Drowning**
- **Follow** the appropriate **CPR** protocol

AEMT

- Establish **IV** or **IO** access with **normal saline** at **20 ml/kg** (without the presence of pulmonary edema),
- **Intubate** as appropriate to patient presentation

Paramedic

- **RSI Procedure (If needed)**

PEARLS

- Ensure scene safety. Drowning is a leading cause of death among would-be rescuers. Allow appropriately-trained and certified rescuers to remove victims from areas of danger whenever possible.
- External rewarming should be utilized on all near drowning and drowning patients in cases of submersion in cold water.
- Resuscitate all patients who have been submerged in cold water (less than 70 degrees F) unless there are signs clearly incompatible with life. Cold water drownings require the patient to be rewarmed to an internal temperature between 86 and 93 degrees F. This is essential before discontinuing resuscitative measures. Patients have been revived as long as an hour after cold water submersion because of the multifactorial influences the hypothermic state entails (mammalian diving reflex).
 - Blood shunts to the heart and brain
 - Heart rate lowers
 - Metabolism drastically decreases, conserving energy and oxygen
- Take note of fluid patient was submersed in with consideration that salt water pools have become more popular, and that young children can drown in buckets that may contain chemicals or other fluids.
- Transport should be encouraged to all patients who have had a near drowning incident, even if they are asymptomatic. Observation is required for these patients in order to identify and treat “dry drowning” or “delayed drowning” that may develop after the incident. These can occur because:
 - Small amount of water can remain in the lungs and causes edema 1-24 hours after the incident
 - Inhaled pool water can cause chemical pneumonitis
 - Salt water is hypertonic to the ion concentration in lung cells, so water from the bloodstream enters the lungs to compensate for the concentration difference causing edema



Envenomation Trauma

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EMS Protocol & Guideline

Version: **1.0**
Date: **04/2019**

Medical Director: Benjamin Oei, MD

Overview: There are many animals that can injure patients with bites and/or stings. Our region is home to only two venomous spiders, the Black Widow and Brown Recluse, and four venomous snakes, Copperheads, Cottonmouths, Rattlesnakes, and the Coral Snake. Be familiar with these animals for easy recognition. NEVER transport a live animal in the unit to the hospital. You may take a picture of the animal within reason and with safety as number one priority.



Definition: Bites can pose a serious threat in terms of trauma as well as infection from introduction of bacteria into the wound from the mouth; this is especially true in cases of human bites. Envenomation is the process of venom being injected into the patient by means of a bite and/or sting. Proper identification of the animal is key in cases of envenomation for appropriate definitive treatment.

EMT

- Immediately stop any significant bleeding
- Airway appropriate to patient presentation.
- Maintain provider safety
- Remove pt. From danger of repeated stings or bites.
- Identify insect that caused injury if possible.
- Watch for anaphylactic reaction.
- Transport pt. as rapidly as possible.
- Contact Poison Control & OLMC.

AEMT

- Establish IV of Normal Saline

Paramedic

Muscle spasms

- **Diazepam** 2-10 mg IV, IM or IN. May repeat one time in 10 minutes.
- **Manage pain** – See Pain Management protocol

Snake Bite

- Immobilize the injured extremity
- Elevate wound location to a neutral position if able
- Remove any constricting clothing/bands/jewelry
- DO NOT apply ICE
- Mark margin of swelling, redness and time
 - If significant swelling continues, trend by marking off subsequent margins with corresponding time.
- If snake has been identified, notify the hospital

Insect Sting/Spider Bite

- Immobilize the injured extremity
- Elevate the wound to a neutral position if able
- Apply ice packs (maximum of 20 minutes)
- Remove any constricting clothing/bands/jewelry
- If Anaphylaxis: See **Allergic Reaction** protocol
- If **Muscle Spasms** occur:
 - **Midazolam 0.5 – 2 mg IV or 5 mg IM**
 - **Max total dose 5 mg**

Dog/Cat/Human Bite

- Irrigate wound
- Bandage appropriate to patient
- Immobilize

PEARLS

- Always inquire about any known environmental allergies, especially in cases of insect bites/stings.
- Be aware that with snakes some reflexes can remain intact after death for a period of time. This can result in a bite even after it has been killed.
- A honey bee can sting only once because the stinger and attached venom sac is ripped away from the bee's body (see photo below). The venom then continues to pump through the stinger into the wound. This is why it is important to remove the stinger as quickly as possible to decrease the amount of venom injected. To properly remove a bee stinger, use a straight edge, such as that of a credit card, and scrape the stinger out.





Eye Injuries Trauma

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Version:	1.0
Date:	04/2019

Medical Director: Benjamin Oei, M.D.

Overview: Eye emergencies need to be assessed carefully for immediate threat to sight, potential threat to sight and not threatening to sight. Any immediate or potential threats to sight require a level 1 trauma facility.

Definition: Any patient presenting with a complaint of acute deterioration of vision either medical or traumatic in origin.

EMT

- Airway/Oxygen appropriate for condition
- Spinal Motion Restriction as needed
- **Irrigation:** PRN to patient condition
- **Bandage:** PRN to patient condition (Cover both eye)
- **Tetracaine 0.5%:** 1 – 2 Drops - May repeat PRN; max of 3 doses – Globe has to be intact

AEMT

- Establish IV / IO of **Normal Saline** as needed
- **Ondansetron** 4 mgs IV – May repeat once
- **Diphenhydramine** 25-50 mg IV – 12.5 IM, **Max** dose 50 mgs - Use half dose in elderly patients

Paramedic

Moderate to Severe Pain

- **Morphine** 2-10mg IV/IO; repeat PRN: Max dose of 20 mgs
- **Fentanyl** 1-2 mcg/kg IV/IO/IN; repeat PRN: Max total dose 400 mcg

Severe Pain

- **Ketamine** 0.1-0.25 mg/kg IV/IO **OR** 0.5 -1 mg/kg IM: may repeat every 10 minutes as needed

***** Consider Transport to a Level 1 Trauma Center*****

PEARLS

- Establishing a baseline of vision status is important in trending for the crew and hospital staff to help identify patient's vision status and developing a care plan.
- Orbital fractures raise concern of globe or nerve injury and need repeated assessments of visual status.
- Normal visual acuity can be present even with severe eye injury.
- If the eye should become dislodged from the socket, cover with a saline moistened gauze. Cover the unaffected eye and elevate the head of the bed by 30 degrees.
- In an object is impaled in the eye, do not remove it. Stabilize the object and cover the unaffected eye. Elevate the head of the bed by 30 degrees.
- Remove contact lenses whenever possible.
- Only opiate-based analgesics should be used for pain management. Avoid use of Ketorolac or other NSAIDs due to their platelet-inhibiting properties.
- Do all possible to prevent the patient from vomiting due to the increase in intraocular pressure. Consider the use of Ondansetron.



General Trauma Management

Trauma

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Version: **1.0**

Date: **04/2019**

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Overview: The primary goal of trauma care remains as: airway stabilization, breathing protection, circulation support and cervical spine stabilization. Work to rapidly identify severe life-threatening conditions, including the potential for severe internal bleeding, throughout the care of the patient experiencing major trauma. This is a critical step in determining appropriate transport destinations, including bypassing the local hospital for a level 1 or 2 trauma center.

Definition: Any patient who experienced an extrinsic event which led to an injury or possibility of injury.

Minor – Moderate Bleeding

- **Direct Pressure**
- **Bandaging:** Appropriate to injury

Penetrating Injuries

- **Stabilize the object in place**
 - NEVER remove a penetrating object unless it impedes airway management and/or CPR

Airway Management

- **See RSI Procedure (If needed)**
 - Maintain EtCO₂ at 35-40 mm/Hg
- **If RSI is needed:**
 - 1st attempt may be with ET Tube
 - 2nd Attempt **King Tube Placement**
 - **If King Unsuccessful = ET Tube
 - **If appropriate, See **Cric Procedure**

Pain Management

- ***See **Pain management Procedure**
- ***Consider **Ketamine** for extreme pain

Hemorrhage/Significant Bleeding Control

- **Tourniquet:** Place > 2 inches above the amputation
 - **2nd Tourniquet:** May be placed PRN, preferable above initial Tourniquet

AND/OR

- **Wound Packing:** Using quick clot gauze pack the wound starting with pressure at the sight of the bleed. Then bandage with Israeli Bandage as needed

Controlled Bleeding

Fluid Resuscitation to maintain baseline/adequate perfusing pressures

Uncontrolled / Internal Bleeding

Fluid resuscitation to maintain mental status or systolic BP of 80-90 mmHg (permissive Hypotension)

Consider TXA 1 gram over 10 mins

Fractures/Deformities

- **Splint:** Using appropriate device
 - Pain Control First (when possible)
 - PMS Pre & Post procedure
 - Place grossly deformed extremities into an anatomical normal position

Amputation

- **Tourniquet:** Place > 2 inches above the amputation
 - **2nd Tourniquet:** May be placed PRN, proximal if possible

Pearls

- Emergency transport is indicated for injuries to vascular compromise & amputation; time is particularly critical in these cases. Consider Air Medical
- Uncontrolled
- Geriatric patients should be evaluated with a high index of suspicion, particularly if they are taking anticoagulant medication. Often occult injuries are more difficult to recognize and these patients can decompensate unexpectedly with little warning.
- A bag-valve-mask with airway adjunct (NPA/OPA, if needed) is an acceptable method of managing the airway if pulse oximetry can be maintained $\geq 92\%$ and there is no foreseeable risk for aspiration.
- Law Enforcement or Fire Department may bandage injuries prior to your arrival. Thorough assessment is required; this includes removing bandaging so that you may properly assess the injury.
- Tourniquets are extremely painful. Address the patient's pain management needs as soon as safely feasible.
- Mass casualty incident or obvious life-threatening hemorrhage: Consider Tourniquet/ITClamp Procedure FIRST.
- **Do NOT:** ◇ Soak amputated part in fluid (water/saline/etc.) ◇ Cover with wet gauze/towels ◇ Place directly on ice (causing frost bite)
- Amputated parts should be (when possible): ◇ Rinsed with Normal Saline ◇ Place in plastic bag ◇ Transported with the patient, or immediately upon discovery if patient is already transported.
- Surgical reattachment technology is advancing rapidly. Assumptions of what is viable to be reattached should generally be assumed as "possible".
- Amputated tooth should be transported in milk if possible; otherwise, keeping the tooth in moist in gauze is acceptable.



Head Injury Trauma

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Version: **1.0**

Date: **04/2019**

Medical Director: Benjamin Oei, M.D.

Overview: Head injuries are significant in any patient, even minor head injuries with the focus on the effects of single and aggregate TBI's. Good, thorough evaluation of the patient's neurologic and cognitive status is imperative. More severe head injuries with potential swelling and/or intracranial bleeding require acute-specialized care from a level 1.

Definition: Any patient who experienced an insult directly to the head or as a secondary injury with the potential of causing an injury to the structures of the head/brain.

EMT

- Airway/Oxygen appropriate for condition
- Spinal Motion Restriction as needed
- **HYPER**tension: Elevate patient head 20-45 degrees

AEMT

- Establish IV / IO of **Normal Saline**
- **HYPO**tension: 20 ml/kg of Normal Saline PRN to maintain BP
- **Intubation** if appropriate to the patient's condition - Maintain intubated patients EtCO₂ at 35-40 mm/Hg

Paramedic

- **RSI Procedure (If needed)**

PEARLS

- If intubation is necessary, action must be taken to reduce the stimulation associated with intubation.
- Head Injury patients with increasing ICP can become combative. RSI facilitates reducing the patient exertion and rapidness of rising ICP.
- Remove helmet, using appropriate technique, for airway management if clinically indicated.

Any change in patient condition refer to appropriate protocol



<h1>Musculoskeletal Injuries</h1> <h2>Trauma</h2>
Medical Director: Benjamin Oei, M.D.

Austin County EMS Protocol & Guideline	
Version:	1.0
Date:	04/2019

Musculoskeletal injuries requiring pharmacological intervention/pain management are generally limited to fractures, amputations, high or low velocity penetrations, lacerations, and crush injuries of the extremities involving the femur, tibia-fibula, humerus, radius ulna or the digits in which there is obvious swelling, deformity and associated pain involved. The key factor to maintain is that we will not totally alleviate the pain in the Pre-Hospital Setting, but have the capability of placing our patients in a state of comfort until we can deliver them to a Higher Level of Care.

EMT

- Airway/Oxygen appropriate for condition
- Bleeding Control; severe bleeding controlled with Quick Clot Gauze, Israeli Bandage, and/or trauma tourniquet as needed. Apply second tourniquet should bleeding persist.
- Spinal Motion Restriction as needed
- Splinting

AEMT

- Establish IV of Normal Saline
- **Tranexamic Acid (TXA)** should all other means to control bleeding fail. Adult: 1 gram IV infusion over 10 minutes. TXA should be administered as soon as possible if internal bleeding is considered.

Paramedic

After 10 minutes if pain is 4 or greater

- **Fentanyl** 2 mcg/kg IV/IN – Max dose 400 mcg
- **Morphine Sulfate** 2-10 mg IVP- *If allergic to Fentanyl:*
- Consider **Ondansetron** 4 IV/IO mg or **Diphenhydramine** 12.5 -25 mgs IV/IO - to prevent narcotic-induced nausea and vomiting
- **Ketamine** 0.1-0.25 mg/kg IV/IO **OR** 0.5 -1 mg/kg IM: may repeat every 10 minutes as needed

PEARLS

In extreme cases, utilization of Normal Saline, Dopamine and Epinephrine infusions may be necessary. If possible ensure at least 2, if not 3 IV sites to independently flow each treatment, however, if necessary to piggyback, attempt to keep the vasopressors separate. All 3 may be given through 1 IV site if absolutely necessary in consideration of risk/benefit to the patient



Sexual Assault

Adult Trauma

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Version:	1.0
Date:	04/2019

Medical Director: Benjamin Oei, M.D.

Primary Intervention

- Ask victims if they would like family members or friends to be contacted.
- Take measures to preserve crime scene evidence, including evidence on victims.

History and Documentation

- Document victims' demeanor and statements related to the assault (e.g., time, date, place of attacks).
- Obtain medical history, including the possibility of pregnancy.
- Document physical areas violated in the attack (if patients volunteer the information). Include all marks or evidence of trauma and other significant physical findings.
- Record information about whether victims bathed since the attack.
- Document all treatment given.

Physical Exam (unless a life-threatening condition occurs)

- Physical exams need to be limited and conducted without causing further emotional distress to victims.
- Explain to victims the importance of preserving bodily evidence until it can be collected (e.g., do not wash, change clothes, urinate, defecate, smoke, drink, eat, brush hair or teeth, rinse mouth).

Treatment

- Obtain vital signs.
- Stabilize injuries that need immediate attention (e.g., fractures, bleeding).

Transport

- If victims are wearing clothing worn during their assaults, make sure that they bring replacement clothing to the hospital because victims' clothing is taken into evidence.
- If victims changed clothes after their attacks, make sure that they bring the clothing they were wearing while assaulted. Use paper rather than plastic bags as plastic bags trap moisture and promote mildew, which destroys vital evidence. Follow law enforcement procedures for retrieving clothing or other items from a crime scene so that evidence is not inadvertently destroyed or contaminated).
- Transport victims to designated facilities where rape evidence exams are performed, unless medical conditions dictate otherwise.
- Victims with disabilities may have equipment (e.g., wheelchairs) or service animals that also need to be transported.

Scott & White in College Station have both Pediatric and Adult SANE nursing available at all times. They also have a forensic unit.

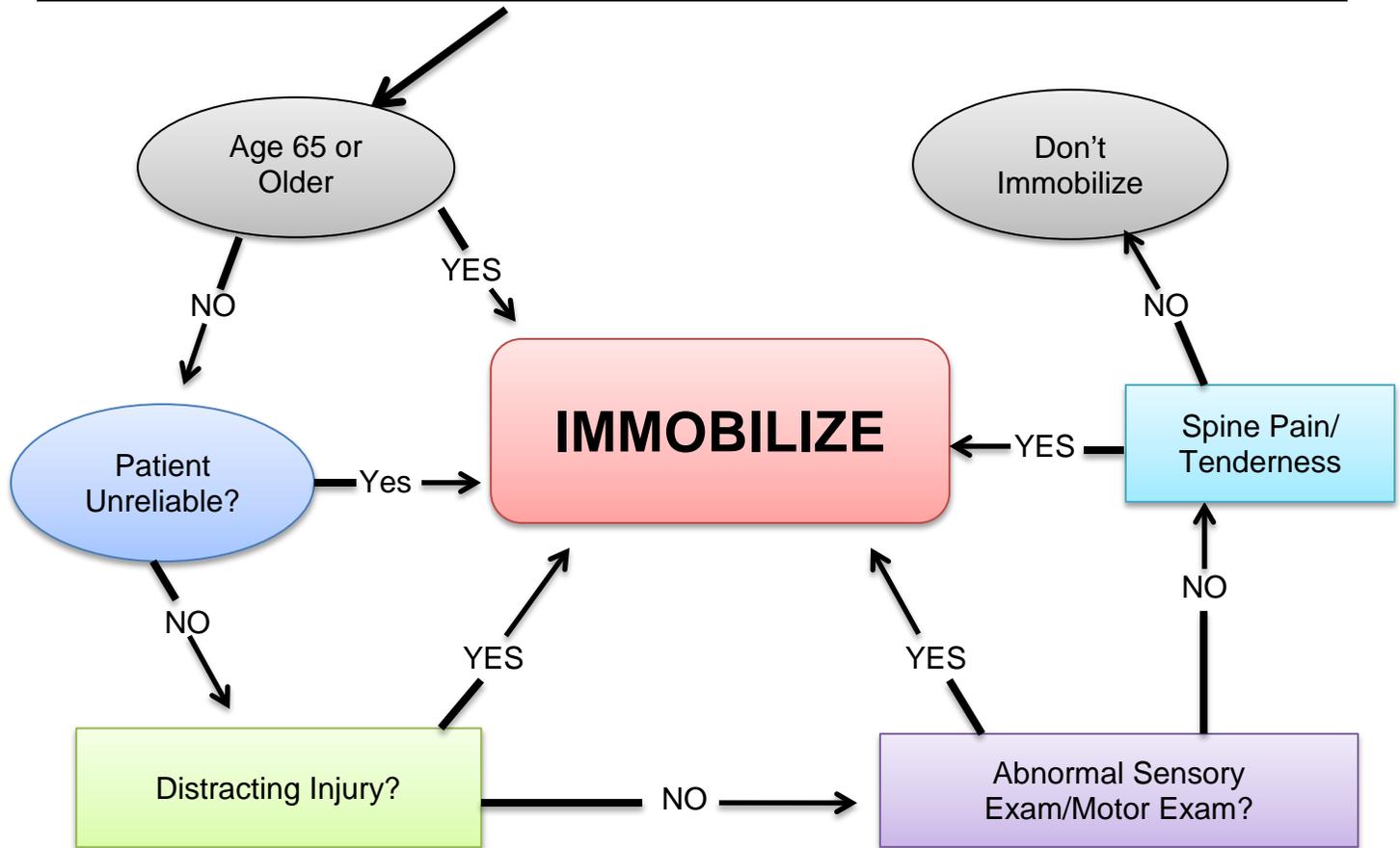
Memorial Hermann System has SANE nursing available but may have to come in from another location

Scott & White in College Station and Memorial Hermann & Texas Children's in the Medical Center have 24 hour Pediatric SANE Nursing.

All pediatric sexual assaults must be transported to a facility that has a pediatric SANE nurse available unless patient has a life threatening condition that requires transport to the nearest facility.



**Mechanism of Injury: Blunt Trauma, MVC, Bicycle Accident, Fall > 3ft,
Adult Fall From Standing Position**



Abnormal Sensory/Motor Exam? If, based on the assessment, the patient has any abnormal neurological findings, including, but not limited to, paresthesia or loss of sensation in extremities, weakness, or paralysis of extremities, loss of urethral or sphincter control, etc. **Immobilize**

Distracting Injury? Distracting injuries include any injury that produces clinically apparent pain that might distract the patient from pain of the spine injury. Pain would include medical as well as traumatic etiologies. **Immobilize**

Complaints of Pain or Examination Tenderness? Complete an assessment of the patient's spine for pain or tenderness. The assessment should include, but not limited to, palpation of the entire spine (posterior, midline spine, and cervical spine), range of motion (if appropriate). **Immobilize**

Patient Reliability? Is the patient intoxicated, have an altered mental status, having an acute stress reaction, at the extremes of age or any other reason that results in an inability to either adequately perceive or communicate symptoms, etc. **Immobilize**



Thoracic Trauma

Trauma

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Version: **1.0**

Date: **04/2019**

Medical Director: Benjamin Oei, M.D.

Overview: Trauma to the chest requires a thorough and careful assessment for any immediate life threatening injuries. Rapid transport to an appropriate level facility is necessary due to limited resolution in the field. Thorough assessments should frequently be performed in order to early identify any potential life threats that may not immediately be evident.

Definition: Any patient who experienced an insult to the chest with the potential of causing obvious or suspected injury to the structures within the chest cavity.

EMT

- Place patient on the **Cardiac Monitor**
- Obtain **12 Lead EKG**
- **CPR & AED** as appropriate to patient presentation
- **Oxygen** administration as appropriate to the patient presentation
- **Airway Adjuncts** (Supraglottic Airway, OPA, NPA), EtCO₂ monitoring appropriate to patient presentation
- Obtain **BGL**
- Monitor **SPO₂**
- **Open Chest Wound** - Apply an occlusive dressing
- Monitor the patient closely for development of a tension pneumothorax
- Large flail segment with respiratory distress - Provide positive pressure ventilation
- **Penetrating Chest Wound** - Stabilize the object in place
- NEVER remove an object unless it is impeding airway management or CPR
- Monitor the patient closely for development of a tension pneumothorax

AEMT

- Establish IV / IO of **Normal Saline**
- **Intubation** if appropriate to the patient condition - Maintain intubated patients EtCO₂ at 35-40 mm/Hg
- **Tranexamic Acid (TXA)** IV Infusion - 1 Gram over 10 minutes – is suspected internal bleeding

Paramedic

- See **Chest Decompression Procedure**
- **RSI Procedure (If needed)**

PEARLS

- Although rarely dangerous in and of itself, subcutaneous emphysema is often one of the first signs of pneumothorax in the unresponsive patient.
- Tracheal deviation is a late finding and should NOT be used to eliminate the possibility of a tension pneumothorax. Should these findings be present, the chest must be decompressed immediately to prevent circulatory collapse.
- A simple closed pneumothorax requires no immediate treatment and is often not discovered in the prehospital setting.
- Vascular injuries can occur in penetrating chest trauma leading to a hemothorax, even with only minor vascular injuries. Each pleural space can hold about 1/3 of the total blood volume. Out-of-hospital treatment of a hemothorax is limited, therefore rapid transport and early surgical intervention is the definitive management.



Traumatic Arrest Trauma

Austin County
EMS Protocol & Guideline

Version:	1.0
Date:	04/2019

Medical Director: Benjamin Oei, M.D.

Overview: To provide guidelines for terminating resuscitation, or withholding resuscitative efforts, for patients that have suffered a cardiac arrest due to traumatic injury.

- This procedure is reserved for those patients 18 years of age or older.
- This procedure is also reserved for those patients that are not hypothermic

Definition: Any patient who experienced cardiac arrest 2nd to trauma, treatable causes have been addressed and ruled out, and/or anticipation of viability is absent.

EMT

- Immediately stop any significant bleeding
- Place patient on the **Cardiac Monitor**
- Obtain **12 Lead EKG**
- **CPR & AED** as appropriate to patient presentation
- **Oxygen** administration as appropriate to the patient presentation
- **Airway Adjuncts** (Supraglottic Airway, OPA, NPA), EtCO₂ monitoring appropriate to patient presentation
- Obtain **BGL**
- Monitor **SPO₂**
- Evaluate **MOI**
- Identify Index of Suspicion

AEMT

- **IV / IO** – Normal Saline – 2 Large Bore
- **Airway** – ETT- with EtCO₂ monitoring
- **Vent** – if applicable

Paramedic

- Defibrillation at 360 joules - as indicated by patient presentation
- Pericardiocentesis

Traumatic Arrest Considerations

- 1) Blunt, or penetrating traumatic cardiac arrest: Resuscitation may be terminated or withheld if the patient presents with all the following:
 - i) Apneic and Pulseless
 - ii) No pupillary reflexes
 - iii) No organized ECG activity / Asystole
 - iv) Primary treatable causes have been addressed without response (tension pneumothorax, volume depleted, external hemorrhage)
- 2) Consider termination of resuscitation in those patients receiving resuscitative efforts from first responders when the above criteria are found.
- 3) Consider traumatic cardiac arrest patients with transport time of greater than 15 minutes to be non-salvageable.

PEARL

- Patients presenting with injuries incompatible with life occasionally will present with a persistent organized rhythm especially in younger patients. Resuscitation may be terminated or withheld in these cases.