	Trauma and Environmental Emergencies		Released	Due	
2.1	Adult/Pediatric Trauma Triage	TBD			
2.2	General Trauma	**Ready**	**11-Jul**	**9-Sep**	Revised
2.3	Burns	**Ready**	**11-Jul**	**9-Sep**	Revised
2.4	General Crush Injury	**Ready**	**11-Jul**	**9-Sep**	Revised
2.5	Soft Tissue and Orthopedic Injuries	**Ready**	**11-Jul**	**9-Sep**	Revised
2.6	Spinal Injury Assessment	**Ready**	**11-Jul**	**9-Sep**	Revised
2.7	Traumatic Arrest	**Ready**	**11-Jul**	**9-Sep**	Complete Revision
2.8	Drowning/Submersion Injury	**Ready**	**11-Jul**	**9-Sep**	Revised
2.9	Poisoning/Overdose/Environmental Exposure	**Ready**	**11-Jul**	**9-Sep**	Revised
2.10	Heat Emergencies	**Ready**	**11-Jul**	**9-Sep**	Revised
2.11	Hypothermia/Frostbite	**Ready**	**11-Jul**	**9-Sep**	Revised
2.12	Hypothermia Cardiac Arrest	REMOVED			
2.13	Bleeding Control (BCON)	**Ready**	**11-Jul**	**9-Sep**	Revised
2.14	Hemorrhagic Shock	TBD			
2.15	Head Injury (TBI)	TBD			

General Trauma

This protocol should be followed for severely injured patients meeting trauma triage guidelines and methodology; including chest injuries, and patients with symptoms of spinal cord injury, along with extremity weakness, numbness or sensory loss. It consists of assessment, stabilization, extrication, initiation of resuscitation, and rapid transportation to the closest appropriate facility.

Aliases: Trauma, injury, injuries

GENERAL TRAUMA MANAGEMENT

1. Follow **General Pre-hospital Care Protocol**.
2. Stabilize spinal column while opening the airway, determine level of consciousness. Refer to **Spinal Injury Assessment Protocol**.
3. Manage airway and ventilation per **Emergency Airway Procedure**. Avoid Hyperventilation/Hyperoxygenation.
4. Control major external bleeding. Refer to **Soft Tissue and Orthopedic Injuries Protocol.**
5. If shock present, refer to **Shock Protocol**.
6. Refer to **Mass Casualty Incidents Protocol** if appropriate.
7. Initiate transport according to the **Trauma Triage Protocol** or refer to applicable **MCA Protocol**.
8. Alert receiving hospital as soon as appropriate. Include pertinent trauma triage criteria.
9. Obtain vascular access (in a manner that will not delay transport).
10. Refer to **Pain Management Procedure**.

CHEST INJURY

1. Control hemorrhage per **Soft Tissue and Orthopedic Injuries Protocol**.
2. Assess, monitor, and treat life threatening respiratory problems.
    A. Administer high-flow oxygen via non-rebreather mask if tolerated. *Avoid positive pressure ventilation if possible.*
    B. All open and/or sucking chest wounds should be covered with an MCA approved occlusive seal device, or improvised occlusive dressing.
        1. Release dressing if worsened shortness of breath, or signs of tension pneumothorax.
3. If tension pneumothorax suspected, perform needle decompression per **Pleural Decompression Procedure.**

ABDOMINAL INJURY

1. Cover intestinal eviscerations with a sterile dressing moistened with sterile saline or water; cover the area with an occlusive material (aluminum foil or plastic wrap). Cover the area with a towel or blanket to keep it warm. Transport with knees slightly bent, if possible. DO NOT PUSH VISCERA BACK INTO ABDOMEN.
2. If signs of shock see **Shock Protocol** and/or **Hemorrhagic Shock Protocol**

HEAD INURY

1. Avoid hypo or hyper ventilation. **See Head Injury Protocol**

General Trauma

This protocol should be followed for severely injured patients meeting trauma triage guidelines and methodology; including chest injuries, and patients with symptoms of spinal cord injury, along with extremity weakness, numbness or sensory loss. It consists of assessment, stabilization, extrication, initiation of resuscitation, and rapid transportation to the closest appropriate facility.

Aliases: Trauma, injury, injuries

GENERAL TRAUMA MANAGEMENT

1. Follow **General Pre-hospital Care Protocol**.
2. Stabilize spinal column while opening the airway, determine level of consciousness. Refer to **Spinal Injury Assessment Protocol**.
3. Manage airway and ventilation per **Emergency Airway Procedure**. Avoid Hyperventilation/Hyperoxygenation.
4. Control major external bleeding. Refer to **Soft Tissue and Orthopedic Injuries Protocol.**
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8. Alert receiving hospital as soon as appropriate. Include pertinent trauma triage criteria.
9. Obtain vascular access (in a manner that will not delay transport).
10. Refer to **Pain Management Procedure**.

CHEST INJURY

1. Control hemorrhage per **Soft Tissue and Orthopedic Injuries Protocol**.
2. Assess, monitor, and treat life threatening respiratory problems.
   A. Administer high-flow oxygen via non-rebreather mask if tolerated ~~to maintain a pulse oximetry (if available) of 94% to 99%~~. *Avoid positive pressure ventilation if possible.*
   B. All open and/or sucking chest wounds should be covered with an ~~FDA~~ **and** MCA approved occlusive seal device, or improvised occlusive dressing.
      1. Release dressing if worsened shortness of breath, or signs of tension pneumothorax.
3. If tension pneumothorax suspected, perform needle decompression per **Pleural Decompression Procedure.**

ABDOMINAL INJURY

1. Cover intestinal eviscerations with a sterile dressing moistened with sterile saline or water; cover the area with an occlusive material (aluminum foil or plastic wrap). Cover the area with a towel or blanket to keep it warm. Transport with knees slightly bent, if possible. DO NOT PUSH VISCERA BACK INTO ABDOMEN.
2. If signs of shock see **Shock Protocol** and/or **Hemorrhagic Shock Protocol**

HEAD INURY

1. Avoid hypo or hyper ventilation. **See Head Injury Protocol**

~~**HEAD TRAUMA**~~

~~1.~~ 1. ~~[BE(C1]~~

Note: Algorithm Removed

Burns

General Treatment:

1. Follow **General Pre-hospital Care Protocol**.
2. If evidence of possible airway burn, consider aggressive airway management per **Emergency Airway Procedure.**
3. Administer 100% O2 to all patients rescued from a confined space fire (i.e., building, automobile) regardless of pulse oximetry reading.
4. Determine burn extent & severity (rule of nines or palm = 1%).
5. Keep patient warm and avoid hypothermia.
6. If possibility of cyanide poisoning, refer to **Cyanide Exposure Protocol.**

THERMAL BURNS:

1. Stop the burning process. Remove smoldering and non-adherent clothing.
2. Consider potential for secondary contamination (i.e., methamphetamine).
3. Assess and treat associated trauma.
4. Remove any constricting items.
5. Cover burn with dry clean dressings to prevent hypothermia.

CHEMICAL BURNS:

1. Protect personnel from contamination.
2. Remove all clothing and constricting items.
3. Decontaminate patient prior to transport, brushing off dry chemicals prior to irrigation.
4. Assess and treat for associated injuries.
5. Evaluate for systemic symptoms, which might be caused by chemical contamination.
6. Notify receiving hospital of possible chemical contamination.
7. Cover burned area in clean, dry dressing for transport.

ELECTRICAL INJURY:

1. Protect rescuers from live electric wires.
2. When energy source is removed, remove patient from electrical source.
3. Treat associated injuries provide spinal precautions per **Spinal Injury Assessment Protocol** and **Spinal Precautions Procedure** when indicated.
4. Assess and treat contact wound(s).

5. Monitor patient ECG for possible arrhythmias. Treat as per specific arrhythmia protocol.

FOR ALL TYPES OF BURNS:

1. Obtain vascular access if indicated for pain management or fluid therapy.
2. Administer NS IV/IO fluid bolus up to 1 liter wide open for hypotension (20 ml/kg for pediatrics)

3. For burns without hypotension administer Lactated Ringers (LR) according to age (Normal Saline acceptable if LR not available):
    a. <1 year Contact Medical Control
    b. 1-5 years old: 125 mL/hour
    c. 6-13 years old: 250 mL/hour

d. 14 years or older 500 mL/hour

4. Administer Analgesic Medication. Refer to **Pain Management Procedure.**

Transport:

5. Follow local MCA **Transport Protocol**.
6. Special Transport Considerations
    a. The most appropriate facility may be a trauma center when there is airway or respiratory involvement, or when multi-trauma or blast injury is suspected.
    b. Consider transport directly to burn center if BSA > 20% partial thickness, BSA > 10% full thickness, involvement of hands/feet, genitalia, face: circumferential burns
    c. Consider air ambulance transportation for long transport times, pain control requiring deep sedation, and airway concerns that might necessitate advanced airway management.

Thermal Burns and Electrical Injury:

1. Transport directly to burn center per MCA destination protocol or medical control direction.
2. Additional NS IV/IO fluid bolus, up to 2 liters, wide open**.**
3. For severe burns, consider:
    a. Additional fluid needs
    b. Airway support

Burns

General Treatment:

1. Follow **General Pre-hospital Care Protocol**.
2. If evidence of possible airway burn, consider aggressive airway management per **Emergency Airway Procedure.**
3. Administer 100% O2 to all patients rescued from a confined space fire (i.e., building, automobile) regardless of pulse oximetry reading.
4. Determine burn extent & severity (rule of nines or palm = 1%).
5. Keep patient warm and avoid hypothermia.
6. If possibility of cyanide poisoning, refer to **Cyanide Exposure Protocol.**

THERMAL BURNS:

1. Stop the burning process. Remove smoldering and non-adherent[BE(C1)] clothing. ~~Irrigate with sterile water or saline, if available.~~
2. Consider potential for secondary contamination (i.e., methamphetamine).
3. Assess and treat associated trauma.
4. Remove any constricting items.

~~4.~~

~~5.~~ 5. Cover burn with dry clean dressings to prevent hypothermia. ~~If burn is~~

~~a. Less than 15% of total body surface area (TBSA), consider covering with wet dressings for comfort.~~

~~b. More than 15% of total body surface area (TBSA), cover wounds with dry clean dressings to avoid hypothermia.~~

CHEMICAL BURNS:

1. Protect personnel from contamination.
2. Remove all clothing and constricting items.
3. Decontaminate patient prior to transport, brushing off dry chemicals prior to irrigation.
4. Assess and treat for associated injuries.
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6. Notify receiving hospital of possible chemical contamination.
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5. Monitor patient ECG for possible arrhythmias. Treat as per specific arrhythmia protocol.

FOR ALL TYPES OF BURNS:

1. Obtain vascular access if indicated for pain management or fluid therapy.

2. Administer NS IV/IO fluid bolus up to 1 liter wide open for hypotension[BE(C2)] ~~or burn greater than 15% TBSA. Repeat as indi ed~~. (20 ml/kg for pediatrics)
3. For burns without hypotension administer Lactated Ringers (LR) according to age (Normal Saline acceptable if LR not available):
    a. <1 year Contact Medical Control
    b. 1-5 years old: 125 mL/hour
    c. 6-13 years old: 250 mL/hour
    ~~2.~~d. 14 years or older 500 mL/hour

~~3.~~4. Administer Analgesic Medication. Refer to **Pain Management Procedure.**

Transport:

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    a. The most appropriate facility may be a trauma center when there is airway or respiratory involvement, or when multi-trauma or blast injury is suspected.
    b. Consider transport directly to burn center if BSA > 20% partial thickness, BSA > 10% full thickness, involvement of hands/feet, genitalia, face; circumferential burns[BE(C3)]
    c. Consider air ambulance transportation for long transport times, pain control requiring deep sedation, and airway concerns that might necessitate advanced airway management.

Thermal Burns and Electrical Injury:

1. Transport directly to burn center per MCA destination protocol or medical control direction.
2. Additional NS IV/IO fluid bolus, up to 2 liters, wide open.
3. For severe burns, consider:
    a. Additional fluid needs
    b. Airway support

NOTE: ALGORITHM REMOVED

General Crush Injury

Purpose:

This protocol should be considered when the patient has been entrapped at the scene for more than one hour, one or more full extremities trapped by an object capable of causing a crush injury, including machinery, dirt, rock, and rubble or there is entrapment of patient with history of previous cardiac or renal disease or dialysis treatment.

Crush Syndrome:

Should be suspected in patients with entrapment/compression of greater than one hour, especially when a large muscle mass/group is involved. Treatment of the patient at risk for Crush Syndrome **should begin before the patient is removed when practical.**

Treatment:

1. Follow **General Trauma Protocol**, identify and treat life threats.
2. Assess for signs of Compartment Syndrome or Crush Syndrome.
3. Use tourniquet as indicated (see **Tourniquet Application** procedure).
4. Administer **Oxygen** to patient if environment allows.
5. Administer Albuterol 2.5 mg continuous NMT if IV access is not immediately available. May be continued to a maximum dose of 20 mg or IV is established.

6. Establish large bore IV(s) and infuse one (1) to two (2) liters of Normal Saline *just prior to removal of patient when practical*.
7. Treat patient pain per the **Pain Management Procedure**.
8. Initiate cardiac monitoring and assess for hyperkalemia, i.e. wide QRS or peaked T waves.
9. Perform 12-Lead ECG, if conditions allow.
10. Administer **Sodium Bicarbonate**
    a. Adults 100 mEq IVP prior to extrication and 50 mEq/hr IVPB or slow IVP if extrication is prolonged, and hyperkalemia is suspected.
    b. Pediatrics 1 mEq/kg (max dose 50 mEq) IV
11. Administer **Calcium Chloride** if hyperkalemia is suspected (peaked T waves, widened QRS, hypotension)
    a. Adults 1 gram slow IVP over 5 minutes
    b. Pediatrics 20 mg/kg, max dose 1 gram over 5 minutes

Commented [BE(C1]: Find reference on albuterol. How much does it take and does it work at lower doses? References indicate albuterol at any amount if no IV available. 8.13.2021

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~~5.~~7. Treat patient pain per the **Pain Management Procedure**.

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~~7.~~9. Perform 12-Lead ECG, if conditions allow.

~~8.1. Administer **Oxygen** to patient if environment allows.~~

~~9.~~10. Administer **Sodium Bicarbonate**

a. Adults 100 mEq IVP prior to extrication and 50 mEq/hr IVPB or slow IVP if extrication is prolonged, and hyperkalemia is suspected.

b. Pediatrics 1 mEq/kg (max dose 50 mEq) IV

~~10. Consider **Albuterol** 2.5 mg via NMT (nebulized mist treatment[BE(C1)]) during extrication process.~~

11. Administer **Calcium Chloride** if hyperkalemia is suspected (peaked T waves, widened QRS, hypotension)

a. Adults 1 gram slow IVP over 5 minutes

~~b.~~ Pediatrics 20 mg/kg, max dose 1 gram over 5 minutes

b.

Soft Tissue & Orthopedic Injuries

1. Follow **General Pre-hospital Care Protocol**.
2. Control bleeding.
    A. Utilize direct pressure.
    B. Consider early tourniquet use (refer to **Tourniquet Application Procedure**).
    C. Consider MCA approved hemostatic agents and hemorrhage control devices.
    D. Consider use of pressure dressings with deep wound packing.
    E. Consider pelvic binding for suspected unstable pelvic fracture.
3. If appropriate, maintain spinal precautions for patient per **Spinal Injury Assessment Protocol.**
4. Assess pain on 1-10 scale.
5. Immobilize/splint orthopedic injuries as appropriate.
    A. Special Considerations
        i. Consider traction splinting for femur fractures (excluding hip/femoral neck).
        ii. Straighten severely angulated fractures if distal extremity has signs of decreased perfusion.
        iii. Evaluate and document neurovascular status before and after splinting.
6. Partial/complete amputations and open fractures
    A. Control bleeding as above.
    B. Cover wounds with sterile dressings moistened with sterile solution.
    C. Splint extremity.
7. Major soft tissue injuries and/or open fractures.
    A. Obtain IV access per **IV Therapy Protocol.**
    B. Administer IV antibiotics, per MCA selection

MCA Selection for Antibiotics
☐No antibiotic selection
☐Ceftriaxone 1gm diluted in 5 ml sterile water or NS, slow IVP
☐Cefazolin 1gm diluted in 5 ml sterile water or NS, slow IVP

    C. Recoverable amputated parts should be brought to hospital as soon as possible.
    D. Wrap amputated part in sterile dressing moistened with sterile solution. Seal in a plastic bag and, if available, place bag in container of ice and water. DO NOT place part directly on ice.
    E. Frequent monitoring of circulation, sensation, and motion distal to the injury during transport.
8. For severe crush injuries, refer to **General Crush Injury Protocol**.
9. Impaled objects are left in place and stabilized. Removal of impaled objects is only with approval of medical control.

10. Follow local MCA transport protocol.
11. Provide pain management per **Pain Management Procedure.**
12. Consideration sedation per **Patient Sedation Procedure**.

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   A. Utilize direct pressure.
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   A. Special Considerations
      i. Consider traction splinting for femur fractures (excluding hip/femoral neck).
      ii. Straighten severely angulated fractures if distal extremity has signs of decreased perfusion.
      iii. Evaluate and document neurovascular status before and after splinting.
      ~~iv. Dress open fractures.~~
6. Partial/complete amputations and open fractures
   A. Control bleeding as above.
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~~8.~~9. Impaled objects are left in place and stabilized. Removal of impaled objects is only with approval of medical control.

~~9.~~10. Follow local MCA transport protocol.

~~10.~~11. Provide pain management per **Pain Management Procedure.**

~~11.~~12. Consideration sedation per **Patient Sedation Procedure**.

NOTE: ALGORITHM REMOVED

Spinal Injury Assessment

1. Follow **General Pre-hospital Care protocol**.
2. Assess the mechanism of injury.
    A. Negative mechanism does not need a spine injury clinical assessment
    B. Patients with significant mechanism of injury with the potential for causing spine injury shall have a spine injury clinical assessment performed.
3. Clinical criteria are used as the basis for assessment. If any of the clinical criteria are present or if the assessment cannot be completed, the patient has a positive spine injury assessment.
4. If the mechanism of injury with the potential for causing spine injury exists, the following clinical criteria are assessed:
    A. Altered mental status
    B. Use of intoxicants
    C. Suspected extremity fracture
    D. Motor and/or sensory deficit
    E. Spine pain and/or tenderness
5. If any of the clinical criteria are present the patient has a positive spine injury assessment. If none of the clinical criteria are present the patient has a negative spine injury assessment.
6. Patients with a positive spine injury assessment should have spinal precautions maintained during movement and transport. Refer to **Spinal Precautions Procedure.**
7. Patients over the age of 65 with a significant mechanism of injury and evidence of a head strike will have a rigid extrication collar applied even if the spinal injury clinical assessment is negative.

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7. Patients over the age of 65 with a significant mechanism of injury ~~with the potential for causing spine injury~~ and evidence of a head strike will have a rigid extrication collar applied even if the spinal injury clinical assessment is negative.

NOTE: ALGORITHM REMOVED

Traumatic Arrest

Purpose: The patient in cardiac arrest from a traumatic cause requires rapid assessment and treatment for any chance of meaningful recovery. Standard ACLS is not the optimal approach. Successful resuscitation of the traumatic cardiac arrest patient requires rapid identification and correction of specific entities and rapid transport to an appropriate facility.

1. Indications:
    a. Patients in cardiac arrest from a traumatic source (blunt or penetrating)
2. Contraindications:
    a. Patient that meets DOA criteria, refer to **Dead on Scene Protocol.**
    b. Suspected traumatic cardiac arrest of more than 10 minutes prior to any interventions
    c. If the trauma appears to be minor and a medical condition appears to be the cause of the cardiac arrest, follow the appropriate cardiac arrest protocol.
3. Procedures
    a. CPR - high quality CPR needs to be maintained refer to **General Cardiac Arrest Protocol**
        i. It is permissible to interrupt CPR briefly for life saving interventions like needle decompression and hemorrhage control.\
    b. MEDICATIONS - Standard ACLS medications are not useful in this scenario and should be deferred for finding and reversing life threatening injuries.
    c. AIRWAY - Rapid establishment of an airway, ETT or supraglottic with 100% oxygen administration refer to **Emergency Airway Protocol**
    d. CHEST DECOMPRESSION - Refer to **Pleural Decompression Procedure** Protocol
        i. Even in the absence of definite proof of tension pneumothorax the provider is strongly advised to do bilateral needle decompression. This should be done with a 3 inch angiocath (10g,12g,14g).
    e. HEMORRHAGE CONTROL - Bleeding control is essential refer to **Bleeding Control (BCON) Protocol** and **Tourniquet Procedure Protocol.**
        i. Blunt Trauma - Areas not amenable to tourniquet should have a pressure dressing. For any blunt trauma a pelvic binder (commercial or a sheet), should be applied. If using a sheet it should be wrapped around the greater trochanters
    f. VOLUME ADMINISTRATION - Rapid vascular access should be obtained. If large bore IV access cannot be rapidly obtained, IO access preferably in the proximal humerus should be obtained and 1 liter of NS rapidly infused. Refer to **Vascular access & Iv Fluid Therapy Protocol**

g. These interventions are not a substitute for rapid transport to an appropriate facility.

i. If these interventions fail to correct any of the issues, contacting medical control for consultation to possibly termination of efforts should be considered.

4. Termination of efforts should be considered if:
   a. Blunt traumatic arrest in asystole
   b. No signs of life for greater than 10 minutes of intervention
   c. Transport time greater than 15 minutes
   d. Injuries incompatible with life.

5. Continuation of care should be considered with:
   a. Penetrating trauma with signs of life (reactive pupils), PEA with HR greater than 100
   b. ROSC
   c. Hypothermia
   d. Pregnant females with gestational age estimated at greater than 20 weeks
   e. Patients under 18 years of age.
   f. When possible these patients should be transported to a facility with surgical capability, preferably to a designated trauma center, although in areas where a provider faces a transport time greater than 15 minutes the closest facility is the most appropriate.
      i. Prepare for transport per MCA Trauma Triage Destination Protocol.
6. Post arrest care:
   a. If pulses are obtained, normal post arrest care, including ETCO2, should be done. Additionally TXA should be administered. Post arrest 12 lead is not mandatory, nor is cooling.

Traumatic Arrest

Purpose: **The patient in cardiac arrest from a traumatic cause requires rapid assessment and treatment for any chance of meaningful recovery. Standard ACLS is not the optimal approach. Successful resuscitation of the traumatic cardiac arrest patient requires rapid identification and correction of specific entities and rapid transport to an appropriate facility.** ~~To facilitate management of patients in cardiac arrest from a suspected traumatic cause. Successful resuscitation of the traumatic cardiac arrest patient requires rapid identification and correction of specific injuries, (blunt or penetrating) with prompt transport to appropriate facility.~~

1. Indications:
    a. Patients in cardiac arrest from a traumatic source (blunt or penetrating)
2. Contraindications:
    a. Patient that meets DOA criteria, refer to **Dead on Scene Protocol.**
    ~~1.~~b. Suspected traumatic cardiac arrest of more than 10 minutes prior to any interventions[wv1]
    c. If the trauma appears to be minor and a medical condition appears to be the cause of the cardiac arrest, follow the appropriate cardiac arrest protocol.
3. Procedures
    ~~2.~~a. CPR - high quality CPR needs to be maintained refer to **General Cardiac Arrest Protocol**
        i. It is permissible to interrupt CPR briefly for life saving interventions like needle decompression and hemorrhage control.\~~If appropriate, begin high performance CPR, if witnessed arrest or arrest was within a few minutes of EMS arrival.~~
    ~~3.~~b. MEDICATIONS - Standard ACLS medications are not useful in this scenario and should be deferred for finding and reversing life threatening injuries.
    c. AIRWAY~~irway~~ - Rapid establishment of an airway, ETT or supraglottic with 100% oxygen administration refer to **Emergency Airway Protocol** ~~establish patent airway with 100% oxygen administration.~~
    d. CHEST DECOMPRESSION [KK(C2)]- Refer to Pleural Decompression Procedure Protocol
        ~~4.~~i. Even in the absence of definite proof of tension pneumothorax the provider is strongly advised to do bilateral needle decompression. This should be done with a 3 inch angiocath (10g,12g,14g).
    e. HEMORRHAGE CONTROL - Bleeding control is essential refer to **Bleeding Control (BCON) Protocol** and **Tourniquet Procedure Protocol.**

i. Blunt Trauma - ~~Control bleeding, any extremity injury with significant bleeding should have a tourniquet applied. If tourniquet application is not possible, apply a pressure dressing. For blunt trauma, considerations should be made for a pelvic fracture apply a pelvic binder (commercial or sheet).~~ Areas not amenable to tourniquet should have a pressure dressing. For any blunt trauma a pelvic binder (commercial or a sheet), should be applied. If using a sheet it should be wrapped around the greater trochanters

f. VOLUME ADMINISTRATION [KK(C3]- Rapid vascular access should be obtained. If large bore IV access cannot be rapidly obtained, IO access preferably in the proximal humerus should be obtained and 1 liter of NS rapidly infused. Refer to **Vascular access & Iv Fluid Therapy Protocol**

g. These interventions are not a substitute for rapid transport to an appropriate facility.

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   e. Patients under 18 years of age.
   f. When possible these patients should be transported to a facility with surgical capability, preferably to a designated trauma center, although in areas where a provider faces a transport time greater than 15 minutes the closest facility is the most appropriate.
      i. Prepare for transport per MCA Trauma Triage Destination Protocol.

6. Post arrest care:
   a. If pulses are obtained, normal post arrest care, including ETCO2, should be done. Additionally TXA should be administered. Post arrest 12 lead is not mandatory, nor is cooling.

These interventions are not a substitute for rapid transport to an appropriate facility. If these interventions fail to correct any of the issues, contacting medical control for consultation to possibly termination of efforts should be considered.

5.

6. Prepare for transport per MCA **Trauma Triage Destination Protocol**.
7. Follow **Emergency Airway Procedure**.

8. When indicated, volume administration with 2 large bore IV / IO with normal saline wide open.
9. Chest decompression for relief of tension pneumothorax. Use at least 3" catheter either (12g, 14g, or 16g angiocath).
10. If there is no response to resuscitation efforts, consult with online Medical Control for termination of resuscitation.

Drowning/Submersion Injury

Drowning is defined as**, "**A process resulting in primary respiratory impairment from submersion or immersion in a liquid medium." (American Heart Association, 2010).

For patients who have been submerged:

1. In cold water (temperature is less than 43° F (6° C)) with evidence of cardiac arrest:
    A. Survival is possible for submersion time less than 90 minutes and resuscitative efforts should be initiated, but is rare in times greater than 60 minutes
    B. Survival is not likely for submersion time greater than 60 minutes and providers may consider not initiating resuscitation or termination of resuscitation on scene
2. In warm water (temperature is greater than 43° F (6° C)) with evidence of cardiac arrest:
    A. Survival is possible for submersion time less than 30 minutes and resuscitative efforts should be initiated
    B. Survival is not likely for submersion time greater than 30 minutes and providers may consider not initiating resuscitation or termination of resuscitation on scene.
3. It may often be impractical to determine water temperature; subsurface water temperatures may be considerably colder than surface temperature. When in doubt, consider water to be cold.
4. Time estimation begins when the patient is presumed to be submersed.

If SCUBA incident with rapid ascent, transport the patient in the left lateral recumbent position.

1. Follow **General Pre-hospital Care Protocol**.
    A. Primary survey should include aggressive airway management and restoration of adequate oxygenation and ventilation.
    B. Exam should include consideration of possible c-spine injury.
    C. Assess for other associated injury such as injury to the head or dive-related emergency.
    D. Assess patient's temperature.

2. **If pulse is absent:**
    A. If pulse is absent, consider submersion time and temperatures as indicated above. Refer to the **Dead on Scene/Terminations of Resuscitation Protocol** as indicated.
    B. Initiate CPR and refer to **Cardiac Arrest – General Protocol (Adult or Pediatric)**.

3. If pulse is present:

A. If patient is hypothermic, go to **Hypothermia/Frostbite Protocol**.
B. Prevent further heat loss by transport in a warm environment.
C. Patient should be dry.
D. Patients may develop subacute respiratory difficulty after drowning and therefore all victims of drowning should be transported for observation.
E. Consider CPAP/BiPAP (if available) per **CPAP/BiPAP Procedure**.
F. Contact Medical Control if no transport is considered or requested.

*Note: For SCUBA incident with rapid ascent, medical control can consider contacting the Divers Alert Network (DAN) @ 919-684-9111 to arrange evacuation and hyperbaric re-compression at a properly equipped and staffed chamber.

Drowning/Submersion Injury

Drowning is defined as**, "**A process resulting in primary respiratory impairment from submersion or immersion in a liquid medium." (American Heart Association, 2010).

~~Uncertainty exists regarding survival in cold water drowning, however, recent literature suggests the following~~For patients who have been submerged:

1. In cold water (temperature is less than 43° F (6° C)) ~~and the patient is submerged~~ with evidence of cardiac arrest:
   A. Survival is possible for submersion time less than 90 minutes and resuscitative efforts should be initiated, but is rare in times greater than 60 minutes
   B. Survival is not likely for submersion time greater than ~~90~~ 60 minutes and providers may consider not initiating resuscitation or termination of resuscitation on scene
2. I~~f~~n warm water (temperature is greater than 43° F (6° C)) ~~and the patient is submerged~~ with evidence of cardiac arrest:
   A. Survival is possible for submersion time less than 30 minutes and resuscitative efforts should be initiated
   B. Survival is not likely for submersion time greater than 30 minutes and providers may consider not initiating resuscitation or termination of resuscitation on scene.
3. It may often be impractical to determine water temperature; subsurface water temperatures may be considerably colder than surface temperature. When in doubt, consider water to be cold.
4. Time estimation begins when the patient is presumed to be submersed.

If SCUBA incident with rapid ascent, transport the patient in the left lateral recumbent position.

1. Follow **General Pre-hospital Care Protocol**.
   A. Primary survey should include aggressive airway management and restoration of adequate oxygenation and ventilation.
   B. Exam should include consideration of possible c-spine injury.
   C. Assess for other associated injury such as injury to the head or dive-related emergency.
   D. Assess patient's temperature.

2. **If pulse is absent:**
   A. If pulse is absent, consider submersion time and temperatures as indicated above. Refer to the **Dead on Scene/Terminations of Resuscitation ~~Procedure~~ Protocol** as indicated.

B. ~~In normothermic, (> 34 C or 93F) patients i~~Initiate CPR and refer to **Cardiac Arrest – General Protocol (Adult or Pediatric)**.

~~C. If patient is hypothermic, (< 34C or 93F) go to Hypothermia Cardiac Arrest Protocol.~~

3. **If pulse is present:**
   A. If patient is hypothermic, go to **Hypothermia/Frostbite Protocol**.
   B. Prevent further heat loss by transport in a warm environment.
   C. Patient should be dry.
   D. Patients may develop subacute respiratory difficulty after drowning and therefore all victims of drowning should be transported for observation.
   E. Consider CPAP/BiPAP (if available) per **CPAP/BiPAP Procedure**.
   F. Contact Medical Control if no transport is considered or requested.

*Note: For SCUBA incident with rapid ascent, medical control can consider contacting the Divers Alert Network (DAN) @ 919-684-9111 to arrange evacuation and hyperbaric re-compression at a properly equipped and staffed chamber.

NOTE: ALGORITHM REMOVED

Poisoning/Overdose/Environmental Exposure

GENERAL MANAGEMENT OF TOXIC EXPOSURE (INCLUDING INGESTION)

1. Follow **General Pre-hospital Care Protocol.**
2. Use proper personal protective equipment and prepare for decontamination if necessary.
3. Remove clothing exposed to chemical (dry decon).
4. Identification of the substance (patient has been exposed to).
5. If altered mental status, refer to **Altered Mental Status Protocol**.
6. If suspected opioid overdose, refer to Opioid Treatment and Prevention Protocol **.**

7. If respiratory distress, refer to **Respiratory Distress Protocol.**
8. If the patient is seizing, refer to **Seizure Protocol**.

9. Alert receiving hospital if patient may present HAZMAT risk.
10. Sample of drug or substance and any medication or poison containers should be brought in with patient if it does NOT pose a risk to rescuers.

11. Refer to **Pain Management Procedure**

12. For inhalation exposures, ensure high concentration of oxygen is provided.
13. If suspected cyanide gas exposure, refer to **Cyanide Exposure Protocol** and contact medical control immediately.

14. If cardiac dysrhythmia, refer to appropriate dysrhythmia protocol.

15. For extrapyramidal dystonic reactions, administer Diphenhydramine
    a. For adults, 50 mg IV.
    b. For pediatrics 1 mg/kg IV (max dose 50 mg).
16. For symptomatic tricyclic antidepressant ingestions (tachycardia, wide complex QRS), administer sodium bicarbonate
    a. Adults 50 mEq IV, repeat as needed.
    b. Pediatrics 1mEq/kg IV, repeat as needed.
17. For symptomatic calcium channel blocker overdose, consider Calcium Chloride
    a. Adults 1 gm IV.
    b. Pediatrics 20 mg/kg IV (max dose 1 gm).
18. For other specific medications in overdose (i.e. beta blockers), consider contacting medical control for further guidance.

EYE CONTAMINATION:

1. Irrigate continuously with Normal Saline or tap water for 15 minutes (attempt to continue enroute) or as directed by Medical Control.
2. For alkali exposure, maintain continuous irrigation.

3. If available, administer Tetracaine, 1-2 drops per eye to facilitate irrigation. Ensure patient does not rub eye.

Tetracaine Included?

☐Yes ☐No

SKIN ABSORPTION:

1. Brush off dry chemicals before irrigation
2. Irrigate continuously with Normal Saline or tap water for 15 minutes or as directed by Medical Control.

MANAGEMENT OF BITES AND STINGS

SPIDERS, SNAKES AND SCORPIONS:

1. Protect rescuers. Bring in spider, snake or scorpion if captured and contained or if dead for accurate identification.
2. Ice for comfort on spider or scorpion bite; DO NOT apply ice to snake bites.

BEES AND WASPS:

1. Remove stinger by scraping out. Do not squeeze venom sac if this remains on stinger.
2. Provide wound care.
3. Observe patient for signs of systemic allergic reaction. Treat anaphylaxis per **Anaphylaxis/Allergic Reaction Protocol.**

NERVE AGENT/ORGANOPHOSPHATE EXPOSURE

1. **Evaluate for signs and symptoms of exposure:** Salivation, Lacrimation, Urination, Defecation, Gastrointestinal hypermotility, Emesis, Muscle twitching or spasm (seizures)
   a. ***Minor symptoms only*** – alert, salivation, eye watering, dim vision, drooling, nasal drainage, constricted pupils, abdominal cramps, diaphoresis
   b. ***Moderate symptoms*** – alert, vomiting, muscle twitching, increase in minor symptoms
   c. ***Severe signs & symptoms*** – decline in LOC, urinary incontinence, defecation, severe muscle twitching, seizure, respiratory distress/wheezing
2. Evaluate and maintain the airway, provide oxygenation and support ventilation as needed.
3. NOTE: Anticipate need for extensive suctioning
4. Antidote administration per Mark I Kit/Duo Dote auto-injector Dosing Directive – See Chart

5. Establish vascular access

6. Atropine 2-6 mg IV/IM per Mark I Kit Dosing Directive if Mark I Kit is not available (each Mark I Kit/Duo Dote auto-injector contains 2 mg of atropine)
7. Treat seizures
   a. **Adult**
      a. Administer **Midazolam** 10 mg IM OR 5 mg IN prior to IV start **see Adult Seizure Protocol**
      b. If available, **Valium** auto-injector

   b. **Pediatrics**
      a. **Midazolam** 5 mg IM or IN.
      b. If available, **Valium** auto-injector
8. Monitor EKG

9. Additional **Atropine** 2 mg IV/IM for continued secretions (0.05 mg/kg for pediatrics)

*NA Kit Dosing Directive				
	Clinical Findings	**Signs/Symptoms**	**Required Conditions**	**NA Kits To Be Delivered**
SELF-RESCUE	**Threshold Symptoms**	• Dim vision • Increased tearing • Runny nose • Nausea/vomiting • Abdominal cramps • Shortness of breath	Threshold Symptoms *-and-* Positive evidence of nerve agent or OPP on site	1 NA Kit (self-rescue)
ADULT PATIENT	**Mild Symptoms and Signs**	• Increased tearing • Increased salivation • Dim Vision • Runny nose • Sweating • Nausea/vomiting • Abdominal cramps • Diarrhea	Medical Control Order	1 NA Kit
	Moderate Symptoms and Signs	• Constricted pupils • Difficulty breathing • Severe vomiting	Constricted Pupils	2 NA Kits
	Severe Signs	• Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing	Constricted Pupils	3 NA Kits (If 3 NA Kits are used, administer 1st dose of available benzodiazepine)
PEDIATRIC	**Pediatric Patient with Non-Severe Signs/Symptoms**	*Mild or moderate symptoms as above*	Positive evidence of nerve agent or OPP on site	Age ≥8 years old: • As Above Age <8 years old • Per Medical Control
	Pediatric Patient with Severe Signs/Symptoms	• Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing	Severe breathing difficulty Weakness	Age ≥ 8 years old: • 3 NA Kits Age < 8 years old: • 1 NA Kit Contact Medical Control as needed

***NOTE: Nerve-agent Antidote (NA) =1 Duo Dote or 1 Mark I (found in CHEMPAK)**

NOTE: ALGORITHM REMOVED

Poisoning/Overdose/Environmental Exposure

GENERAL MANAGEMENT OF TOXIC EXPOSURE (INCLUDING INGESTION)

1. Follow **General Pre-hospital Care Protocol.**
2. Use proper personal protective equipment and prepare for decontamination if necessary.
3. Remove clothing exposed to chemical (dry decon).
4. Identification of the substance (patient has been exposed to).
5. If altered mental status, refer to **Altered Mental Status Protocol**.
6. If suspected opioid overdose, refer to Opioid Treatment and Prevention Protocol ~~**Naloxone Administration Procedure.**~~
   ~~5.~~
6.~~7.~~ If respiratory distress, refer to **Respiratory Distress Protocol.**
7.~~8.~~ If the patient is seizing, refer to **Seizure Protocol**.

8.~~9.~~ Alert receiving hospital if patient may present HAZMAT risk.
9.~~10.~~ Sample of drug or substance and any medication or poison containers should be brought in with patient if it does NOT pose a risk to rescuers.

10.~~11.~~ Refer to **Pain Management Procedure**

~~**INHALATION EXPOSURES:**~~

~~1.~~ ~~1~~12. For inhalation ~~exporsures~~exposures, ~~E~~ensure high concentration of oxygen is provided.

~~2.~~ 13. If suspected cyanide gas exposure, refer to **Cyanide Exposure Protocol** and contact medical control immediately.

~~**INGESTION:**~~

~~1. Use protective eye equipment.~~

~~2.~~1. ~~If suspected opioid overdose, refer to **Naloxone Administration Procedure.**~~

3.~~14.~~ If cardiac dysrhythmia, refer to appropriate dysrhythmia protocol.

4.~~15.~~ For extrapyramidal dystonic reactions, administer Diphenhydramine
   a. For adults, 50 mg IV.
   b. For pediatrics 1 mg/kg IV (max dose 50 mg).

5.~~16.~~ For symptomatic tricyclic antidepressant ingestions (tachycardia, wide complex QRS), administer sodium bicarbonate
   a. Adults 50 mEq IV, repeat as needed.
   b. Pediatrics 1mEq/kg IV, repeat as needed.

6.~~17.~~ For symptomatic calcium channel blocker overdose, consider Calcium Chloride
   a. Adults 1 gm IV.
   b. Pediatrics 20 mg/kg IV (max dose 1 gm).

~~b.~~ For other specific medications in overdose (i.e. beta blockers), consider contacting medical control for further guidance. ~~Beta Blocker~~

18.

EYE CONTAMINATION:

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2. For alkali exposure, maintain continuous irrigation.

3. If available, administer Tetracaine, 1-2 drops per eye to facilitate irrigation. Ensure patient does not rub eye.

Tetracaine Included?

☐Yes ☐No

SKIN ABSORPTION:

1. Brush off dry chemicals before irrigation
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   b. ***Moderate symptoms*** – alert, vomiting, muscle twitching, increase in minor symptoms
   c. ***Severe signs & symptoms*** – decline in LOC, urinary incontinence, defecation, severe muscle twitching, seizure, respiratory distress/wheezing
2. Evaluate and maintain the airway, provide oxygenation and support ventilation as needed.
3. NOTE: Anticipate need for extensive suctioning
4. Antidote administration per Mark I Kit/Duo Dote auto-injector Dosing Directive – See Chart

5. Establish vascular access

6. Atropine 2-6 mg IV/IM per Mark I Kit Dosing Directive if Mark I Kit is not available (each Mark I Kit/Duo Dote auto-injector contains 2 mg of atropine)
7. Treat seizures
   a. **Adult**
      ~~a. Administer **Diazepam** 2-10 mg IV/IM **OR** Midazolam 0.05 mg/kg to max 5 IV/IM~~
      ~~b.~~a. Administer **Midazolam** ~~0.1 mg/kg to max~~ 10 mg IM OR 5 mg IN prior to IV start **see Adult Seizure Protocol**
      ~~c.~~b. If available, **Valium** auto-injector

   b. **Pediatrics**
      a. **Midazolam** ~~0.15 mg/kg IV/IM (maximum individual dose 5 mg)~~ 5 mg IM or IN.
      b. If available, **Valium** auto-injector
8. Monitor EKG

9. Additional **Atropine** 2 mg IV/IM for continued secretions (0.05 mg/kg for pediatrics)

*NA Kit Dosing Directive				
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	Moderate Symptoms and Signs	• Constricted pupils • Difficulty breathing • Severe vomiting	Constricted Pupils	2 NA Kits
	Severe Signs	• Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing	Constricted Pupils	3 NA Kits (If 3 NA Kits are used, administer 1st dose of available benzodiazepine)
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***NOTE: Nerve-agent Antidote (NA) =1 Duo Dote or 1 Mark I (found in CHEMPAK)**

NOTE: ALGORITHM REMOVED

Heat Emergencies

1. Follow **General Pre-hospital Care Protocol**.
2. Determine history/evidence of heat exposure.
3. Check blood glucose and treat hypoglycemia per **Altered Mental Status Protocol**.

HEAT CRAMPS:

1. Move the patient to a cool environment and attempt oral liquids (may use commercial sports/rehydration).
2. Contact medical control.

HEAT EXHAUSTION:

1. Move the patient to a cool environment.
2. Remove tight clothing.
3. Cool patient, provide air conditioning/fanning. Avoid chilling/shivering.
4. NS IV/IO fluid bolus up to 1 liter, wide open.
   A. Patient may take oral fluid replacement rather than IV if no nausea. Allow oral intake of cool fluids or water (may use commercial sports/rehydration drinks). Do not permit patient to drink if altered mental status, abdominal pain or nausea. Avoid carbonated, alcoholic and caffeinated beverages.
   B. Treat nausea according to **Nausea/Vomiting Protocol**.
5. Contact medical control.

HEAT STROKE:

1. Move the patient to a cool environment.
2. Remove tight clothing.
3. Immediate cooling – provide air conditioning and fanning. Avoid chilling/shivering.
4. Place patient in semi-reclining position with head elevated.
5. NS IV/IO fluid bolus up to 1 liter, wide open, repeat as indicated.
6. Treat nausea according to **Nausea/Vomiting Protocol**.
7. Contact medical control.

MANAGEMENT OF PATIENT WITH EXERTIONAL HEAT STROKE

8. Cool as quickly as possible via ice or cool-water immersion, if possible. Alternative means, such as continually misting the exposed skin with tepid water while fanning the victim, may be used if immersion is not possible.
   A. Cool as much of the body as possible, especially the torso.
9. **Cool first, transport second when possible.**
10. Obtain vascular access; consider resting the patient's arm on the side of immersion tub to start IV while patient is still immersed.
11. If patient experiences seizures, refer to **Seizures Protocol**.

12. Monitor ECG (lead cables can go in the water).
13. If uncontrolled shivering occurs during cooling, consider midazolam per **Patient Sedation Protocol.**

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   ~~A.~~B. Treat nausea according to **Nausea/Vomiting Protocol**.
5. Contact medical control.

HEAT STROKE:

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MANAGEMENT OF PATIENT WITH EXERTIONAL HEAT STROKE

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~~11.~~12. Monitor ECG (lead cables can go in the water).

13. If uncontrolled shivering occurs during cooling, consider midazolam per **Patient Sedation Protocol.**

NOTE: ALGORITHM REMOVED

Hypothermia/Frostbite

1. Follow **General Pre-hospital Care Protocol**

HYPOTHERMIA:

1. If cardiac arrest develops follow **General Cardiac Arrest Protocol**.
2. Move patient to a warm dry place, remove wet clothing & wrap in warm blankets and protect from wind exposure.
3. If the patient's temperature is greater than 30° C (86° F) or patient shivering & conscious:
   A. Apply heat packs to groin, axillae, and neck if possible.
   B. Use warmed humidified oxygen if available.
4. If patient is alert, administer warm non-caffeinated beverages (if available) by mouth, slowly.
5. If patient temperature is less than 30° C (86° F)
   A. Gentle handling is required.
   B. Facilitate transport immediately.
6. If alterations in mental status, check blood glucose and treat as indicated per **Altered Mental Status Protocol** and assess for other causes of alterations of mentation.

7. If hypotensive, follow **SHOCK PROTOCOL**. Preferentially, administer warm NS IV/IO fluid bolus up to 1 liter, wide open, if available. Warmed fluids should only be administered if utilizing a commercial device designed for warmed IV fluids.
   A. Pediatrics 20 ml/kg

8. Use warmed humidified oxygen if available.

SUSPECTED FROSTBITE:

1. Remove wet or constricting clothing. Keep skin dry and protected from wind.
2. Do not allow the limb to thaw if there is a chance that limb may re-freeze before evacuation is complete or if patient must walk to transportation.
3. Dress injured areas lightly in clean cloth to protect from pressure, trauma or friction. Do not rub. Do not break blisters.
4. Keep patient warm.
5. Frostbitten areas should be supported and elevated during transport.

6. Treat pain per **Pain Management Procedure**.

Hypothermia/Frostbite

1. Follow **General Pre-hospital Care Protocol**

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5. If patient temperature is less than 30° C (86° F)
   A. Gentle handling is required.
   B. Facilitate transport immediately.
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   A. Pediatrics 20 ml/kg

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SUSPECTED FROSTBITE:

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2. Do not allow the limb to thaw if there is a chance that limb may re-freeze before evacuation is complete or if patient must walk to transportation.
3. Dress injured areas lightly in clean cloth to protect from pressure, trauma or friction. Do not rub. Do not break blisters.
4. Keep patient warm.
5. Frostbitten areas should be supported and elevated during transport.

6. Treat pain per **Pain Management Procedure**.

NOTE: REMOVED ALGORITHM

Bleeding Control

Indications:

Patients with significant traumatic or non-traumatic (i.e. hemodialysis access) external hemorrhage

1. Follow **General Pre-hospital Care Protocol** and **Soft Tissue & Orthopedic Injuries Protocol.**
2. Apply direct pressure to the wound with clean gauze using universal precautions.
3. If the bleeding is not controlled with direct pressure, treat according to the location of the wound.
   - **a.** Extremity bleeding - apply tourniquet:(Refer to **Tourniquet Application Procedure Protocol)**
     - i. Check neurovascular status prior to tourniquet application (pulse, sensation, motor function distal to hemorrhage).
     - ii. Apply tourniquet directly to the skin, proximal to the area of bleeding, at least 2-3 inches (5-8 centimeters) from the wound margins.
     - iii. Secure the tourniquet in place; continue to tighten the tourniquet until arterial occlusion (bleeding stops).
     - iv. A successfully placed tourniquet may cause significant pain. (Refer to **Pain Management Procedure Protocol**)
     - v. Document the time the tourniquet was applied.
     - vi. Note neurovascular status every five minutes post application.
     - vii. Notify the receiving hospital that a tourniquet is in place.
     - viii. Do not adjust or remove tourniquet once bleeding is controlled.
     - ix. Consider a second tourniquet immediately adjacent to the first tourniquet if bleeding not controlled.
     - x. If tourniquet unsuccessful or unavailable, treat as a neck, shoulder, or groin bleeding.
   - b. Neck, shoulder, or groin bleeding:
     - i. Pack wound with MCA approved hemostatic dressing, if available, following manufacturer's instructions.
     - ii. If no hemostatic gauze, utilize clean dressing or gauze to pack the wound.
     - iii. Use as much of the dressing as needed to stop the blood flow.
     - iv. Quickly apply pressure until the bleeding stops. (Approximately 3-5 minutes)
     - v. Leave the dressing in place and wrap area with bandaging to secure the dressing.
4. Do not remove the bandage or hemostatic dressing
5. Elevate the injury, if possible.
6. Reassess for bleeding through or around the dressing.
7. For patients who have signs or symptoms of shock, secondary to hemorrhage, refer to **Hemorrhagic Shock Protocol**.
8. Transport according to **Adult and Pediatric Trauma Triage Protocol** and local **Destination and Diversion Guidelines Protocol .**

Notes:

If hemostatic dressing is used, contact medical control to advise of application, document time of use, and send packaging from dressing to hospital with patient for removal instructions.

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2. Apply direct pressure to the wound with clean gauze using universal precautions.
3. If the bleeding is not controlled with direct pressure, treat according to the location of the wound.
   - **a.** Extremity bleeding - apply tourniquet:[KK(C1](Refere to **Tourniquet Application Procedure Protocol)**
     - i. Check neurovascular status prior to tourniquet application (pulse, sensation, motor function distal to hemorrhage).
     - ii. Apply tourniquet directly to the skin, proximal to the area of bleeding, at least 3-5 centimeters[KK(C2], 2-3 inches (5-8 centimeters) from the wound margins[KK(C3]as proximal as possible on the limb.
     - iii. Secure the tourniquet in place; continue to tighten the tourniquet until arterial occlusion (bleeding stops). [KK(C4]
     - iv. A successfully placed tourniquet may cause significant pain. (Refer to **Pain Management Procedure Protocol**)
     - v. Document the time the tourniquet was applied.
     - vi. ReassNoteess neurovascular status every five minutes post application[KK(C5].
     - vii. Notify the receiving hospital that a tourniquet is in place.
     - viii. Do not adjust or remove tourniquet once bleeding is controlled.
     - ix. Consider a second tourniquet immediately adjacent to the first tourniquet if bleeding not controlled.
     - x. If tourniquet unsuccessful or unavailable, treat as a neck, shoulder, or groin bleeding.
   - b. Neck, shoulder, or groin bleeding:
     - i. Pack wound with MCA approved hemostatic dressing[KK(C6], if available, following manufacturer's instructions.
     - ii. If no hemostatic gauze, utilize clean dressing or gauze to pack the wound.
     - iii. Use as much of the dressing as needed to stop the blood flow.
     - iv. Quickly apply pressure until the bleeding stops. (Approximately 3-5 minutes)
     - v. Leave the dressing in place and wrap area with bandaging to secure the dressing.
4. Do not remove the bandage or hemostatic dressing
5. Elevate the injury, if possible.
6. Reassess for bleeding through or around the dressing.
7. For patients who have signs or symptoms of shock, secondary to hemorrhage, refer to **Hemorrhagic Shock Protocol**.
8. Transport according to **Adult and Pediatric Trauma Triage Protocol** and local **Destination and Diversion Guidelines Protocol .**

Notes:

If hemostatic dressing is used, contact medical control to advise of application, document time of use, and send packaging from dressing to hospital with patient for removal instructions.