ADULT

TRAUMA

EMERGENCIES

Revised: August 2016

Reviewed 2023

GLASGOW COMA SCALE

Indicator	Response	Score
Eye Opening	Spontaneous	4
	To voice	3
	To pain	2
	None	1
Verbal Response	Oriented	5
	Confused	4
	Inappropriate words	3
	Incomprehensible	2
	None	1
Motor Response	Obeys command	6
	Localizes pain	5
	Withdraws to pain	4
	Flexion to pain	3
	Extension to pain	2
	No response	1

Total GCS: _____

INITIAL TRAUMA CARE

NOTE: Appropriate body substance isolation precautions must be used.

FR/BLS TREATMENT:

1. Assure scene is safe.
2. Control C-spine.
3. Perform a trauma (ITLS) primary patient assessment.
4. Control any major external bleeding. Consider the need for a tourniquet. Refer to HEMORRHAGE CONTROL Protocol.
5. Administer OXYGEN by appropriate method when indicated and attempt to maintain oxygen saturation at 94-99%.
6. If patient has inadequate ventilation or respiratory effort refer to the UNIVERSAL AIRWAY ALGORITHM.
7. Apply spinal motion restriction (immobilization) as indicated. Refer to SPINAL MOTION RESTRICTION Protocol.
8. If patient meets category A or B criteria from the Region 6 Trauma Triage Algorithm:
    a. Transport rapidly** and call for intercept per INTERCEPT CRITERIA. Appropriate patient destination should be determined by the Region 6 Trauma Triage Algorithm.
    b. Perform a secondary (detailed) survey if patient is packaged and ambulance has not arrived or during transport.
    c. Scene time should be limited to 10 minutes or less unless entrapment exists.
9. If category A or B criteria from the Region 6 Trauma Triage Algorithm is not present:
    a. Continue with the secondary survey and provide supportive care.
    b. Transport** and consider intercept per INTERCEPT CRITERIA.
10. Reassess frequently; every 5 minutes for unstable patients and every 15 minutes for stable patients.
11. Contact Medical Control.

ILS/ALS TREATMENT:

1. Continue **FR/BLS TREATMENT**.
2. Perform trauma (ITLS) primary patient assessment.
3. Consider the need for advanced airway; refer to the UNIVERSAL AIRWAY ALGORITHM.
4. Obtain vascular access if needed. Do not delay transport to obtain vascular access.
5. Apply cardiac monitor if needed.
6. Assess for treatable causes of shock and treat according to the appropriate protocol.

**** Only if transporting agency.**

Direct Trauma Transport Triage Criteria

Purpose: To define patients who need rapid transport to a trauma or specialty center.

Policy: Any patient meeting the criteria below should strongly recommend transport directly to the facility most capable of meeting their needs as defined by the criteria groupings or algorithm. If prolonged scene time or transport is anticipated, refer to "Use of Aeromedical Transport Vehicles" policy. Contact the Resource Hospital for direction as soon as possible if questions exist regarding a specific patient or situation.

Patients meeting criteria A or B: Initiate rapid transport with scene time no greater than 10 minutes.

Airway compromise or management by a Basic level EMS provider without ALS intercept should be transported to the nearest facility.

Criteria A:

Presence of any of the following should strongly recommend direct transport to a Level I trauma or specialty center capable of immediate surgery / targeted invasive intervention:

a. Sustained hypotension (Adult ≤ 90mmHg; Peds ≤ 80mmHg) with mechanism or exam findings suggesting ongoing blood loss
b. GCS (Glasgow Coma Scale) 10 or less
c. GSW to the abdomen, back, chest or neck with suspicion of significant injury
d. Stab wound to the abdomen, back, chest or neck with suspicion of significant injury
e. Uncontrolled bleeding
f. Pulseless extremity
g. Unstable pelvis fracture (hemodynamically or anatomically unstable)
h. Paralysis (spinal cord injury)
i. Burns, 2nd or 3rd degree >24% TBSA or involving face / airway not meeting other Category A criteria (Direct to Burn Center)
j. Amputation proximal to wrist or ankle not meeting other Category A criteria (direct to Re-Implant Center)
k. Cardiac Tamponade / Tension Pneumothorax

Criteria B:

Presence of any of the following should strongly recommend transport to a hospital capable of urgent surgery:

l. Respiratory Rate <10 or >29
m. GCS (Glasgow Coma Scale) 11 – 12 and loss of consciousness > 5 minutes
n. Full arrest not meeting Region 6 Field Death Declaration Criteria
o. Stabbing or Gunshot wound to abdomen, back, chest or neck (stable)
p. Flail chest / Chest wall instability

q. Head injury with seizure activity, unilaterally dilated pupil, or open / depressed skull fracture
r. Two or more proximal long bone fractures
s. MVC (motor vehicle crash) with ejection
t. Death of occupant in same passenger compartment
u. Falls ≥ 20 ft (Children: >10 ft or 2- 3 x height of the child)
v. Separation of rider from motorcycle
w. Pedestrian / bicyclist struck by vehicle and thrown or run over
x. Vehicle rollover with unbelted passengers

Treatment:

1. BLS and ILS units should activate a tiered response or aeromedical transport to gain ALS level skills for the patient if they anticipate prolonged scene or transport time.
2. BLS units without mutual aid / rapid tiered response option should transport the patient to the nearest local hospital.
3. Consider aeromedical transport if quicker and of clinical benefit.
4. Pre-determined landing zones should be utilized whenever feasible for patient handoff to aeromedical teams. The landing zones should be available to all aeromedical transport agencies.

Region 6 Guideline for the Field Triage of Injured Patients

RED CRITERIA
High Risk for Severe Injury

Injury Patterns

- Penetrating injuries to head, neck, torso, and proximal extremities
- Skull deformity, suspected skull fracture
- Suspected spinal injury with new motor or sensory loss
- Chest wall instability, deformity, or suspected flail chest
- Suspected pelvic fracture
- Suspected fracture of two or more proximal long bones
- Crushed, degloved, mangled or pulseless extremity
- Amputation proximal to wrist or ankle
- Active bleeding requiring a tourniquet or wound packing with continuous pressure

Mental Status & Vital Signs

All Patients
- Unable to follow commands (Motor GCS < 6)
- RR < 10 or > 29 breaths/min
- Respiratory distress or need for respiratory support
- Room-air pulse oximetry < 90%

Age 0-9 years: SBP < 70mmHg + (2 x age years)

Age 10-64 years: SBP < 90 mmHg or HR > SBP

Age ≥ 65 years: SBP < 110 mmHg or HR > SBP

Patients meeting any one of the above RED criteria should be transported to a trauma center available within the geographic constraints of the regional trauma system.

YELLOW CRITERIA
Moderate Risk for Severe Injury

Mechanism of Injury

- High Risk Auto Crash
  - Partial or complete ejection
  - Significant Intrusion (including roof)
    - >12 inches occupant site OR
    - >18 inches any site OR
    - Need for extrication for entrapped patient
  - Death in passenger compartment
  - Child (Age 0-9) unrestrained or in unsecured child safety seat
  - Vehicle telemetry data consistent with severe injury
- Rider separated from transport vehicle with significant impact (e.g. Motorcycle, ATV, Horse, etc)
- Pedestrian/Bicycle rider thrown, run over, or with significant impact
- Fall from height > 10 feet (all ages)

EMS Judgment**

Consider additional risk factors including:
- Low level falls in young children (age ≤ 5 years) or older adults (age ≥ 65 years) with significant head impact
- Anticoagulation use
- Suspicion of child abuse
- Special, high resource healthcare needs^
- Pregnancy > 20 weeks
- Burns in conjunction with trauma^^

If concerned, take to a trauma center

Patients meeting any one of the YELLOW CRITERIA WHO DO NOT MEET RED CRITERIA should be preferentially transported to a trauma center, as available within the geographic constraints of the regional trauma system.

Revised 2/14/2023

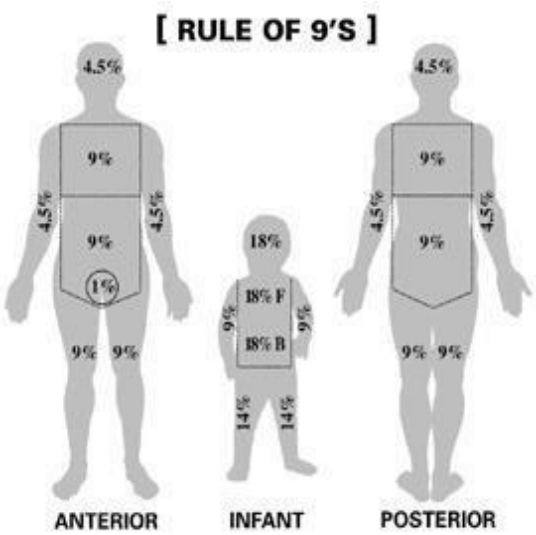
AMPUTATION

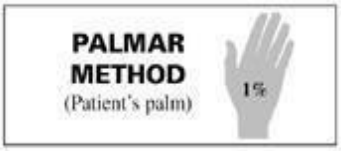
NOTE: **Do not delay transport of patient to retrieve an entrapped or lost part. Do not complete partial amputations.**

FR/BLS/ILS TREATMENT:

1. **INITIAL TRAUMA CARE**.
2. Treat for shock if indicated.
3. Tissue Preservation:
   a. Rinse part gently with normal saline if gross contamination **(DO NOT SCRUB)**
   b. Wrap part in moist sterile gauze (part should never be immersed in water).
   c. Place wrapped part in water tight bag and seal.
   d. Label bag with name, date and time.
   e. Place sealed bag into container filled with water and ice and transport with patient. **(DO NOT PLACE DIRECTLY ON ICE)**
4. Call for intercept per INTERCEPT CRITERIA.

BURNS





CRITERIA: Any may be present:

1. Inhalation injury.
2. Electrical injury.
3. Significant partial or full thickness burns.
4. Chemical injury.

FR/BLS TREATMENT:

1. Assure scene and rescuer safety; remove patient from source of burn.
2. **INITIAL TRAUMA CARE**.
3. Obtain burn history:
   a. Type of burn / causative agent / time of burn.
   b. Location of burn / Injury environment
   c. Estimate degree and percent of surface area burned (Use palm of patient's hand to represent 1% of body surface area.)
4. Assess and treat burn according to burn type:
   a. Superficial thermal burns: Cool with sterile water or saline then cover with moist sterile dressings.
   b. Partial and full thickness thermal burns: Cover burns with DRY sterile dressings.
   c. Chemical burns: Flush with water or saline (brush off dry chemical first).
   d. Electrical burns: Note any secondary fractures or exit wounds caused by the current.

ILS/ALS TREATMENT:

1. Continue **FR/BLS TREATMENT**.
2. Consider the need for an advanced airway if signs of inhalation injury are present.
3. Administer 20 ml/kg NS or LR fluid bolus to maintain SBP 90-100.
4. Treat any dysrhythmia per appropriate protocol.

CHEST INJURIES

CRITERIA: Any may be present

1. Penetrating or sucking chest wounds.
2. Unstable chest wall segment.
3. Signs of blunt trauma to chest.
4. Paradoxical movement.
5. Tachypnea or respiratory distress with suspected chest injury.

FR/BLS TREATMENT:

1. **INITIAL TRAUMA CARE**.
2. Treat any obvious chest injuries, as indicated:
    a. Apply occlusive dressing to sucking chest wounds, leaving one corner open.
    b. Support any unstable chest wall segments with bulky dressings or hand.
    c. Control bleeding.
4. Call for intercept per INTERCEPT CRITERIA.

ILS/ALS TREATMENT:

1. Continue **FR/BLS TREATMENT**.
2. NS KVO or saline lock.
3. Consider the need for a needle decompression:
    a. Signs of shock
    b. Decreased or absent breath sounds on affected side.
    c. Tracheal deviation. (late sign)

CRUSH INJURIES

CRITERIA:

1. Patient with one or more extremities trapped by an object, capable of causing a crush injury, for more than 1 hour
2. Evidence of distal ischemia *(6 P's)*:
    a. Pain, Pallor, Pulselessness, Paralysis, Paresthesia, Poikilothermia (cool to touch)

FR/BLS TREATMENT:

1. **INITIAL TRAUMA CARE**
2. Place approved tourniquet on the affected extremity (-ies) just proximal, but as close as possible to the crushed area.
3. If possible, call for ALS intercept per INTERCEPT CRITERIA.

ILS TREATMENT:

1. Continue **FR/BLS TREATMENT**
2. Establish 2 large bore IVs (not in the injured extremity).
3. Treat pain based on "PAINFUL, SWOLLEN, DEFORMED EXTREMITY" Protocol.
4. Administer 1 Liter NORMAL SALINE bolus.
    a. Use with caution in patient with history of CHF. STOP fluids if signs of pulmonary edema (increasing shortness of breath or rales/crackles on lung exam)
5. If possible, call for ALS intercept per INTERCEPT CRITERIA.

HEAD OR SPINE TRAUMA

CRITERIA: Any may be present:

1. Unresponsive or GCS $\leq$ 13.
2. Posturing.
3. Unequal pupils.
4. Loss of motor and/ or sensory function.
5. Mechanism that indicates significant potential for injury.

EXCLUSION:

1. SBP < 90 – See SHOCK FROM TRAUMA protocol.

FR/BLS TREATMENT:

1. **INITIAL TRAUMA CARE**.
2. Assessment factors to consider:
    a. Restlessness can be a sign of hypoxia.
    b. Assume cervical injury in all patients with significant head injury.
    c. Observe patient closely for changes in LOC.
    d. Avoid the use of nasal airways with suspected facial fractures.
    e. Do not treat hypertension in the head-injured patient.
3. Call for intercept per INTERCEPT CRITERIA.

ILS TREATMENT:

1. Continue **FR/BLS TREATMENT**.
2. If unconscious or semi-conscious, intubate according to the UNIVERSAL AIRWAY ALGORITM; if signs of elevated intracranial pressure (posturing, unilateral pupil dilation, GCS ≤8 with hypertension/bradycardia), initiate controlled ventilations at 14-20 breaths/min with 100% oxygen, keeping end-tidal CO2 at 30-35%, if able to monitor.

HEMORRHAGE CONTROL

CRITERIA:

1. Traumatic external hemorrhage

FR/BLS/ILS/ALS TREATMENT:

1. **INITIAL TRAUMA CARE**
2. Control bleeding by applying **DIRECT PRESSURE** to the bleeding site.
    a. If bleeding soaks through the dressing, apply additional dressings and do not remove dressings from the injured site to ensure that direct pressure is continued
    b. Cover the dressed site with a pressure bandage.
3. If severe bleeding persists from an extremity despite applying direct pressure and is amenable to tourniquet use, apply a **TOURNIQUET** to affected extremity.
    a. Apply commercially made tourniquet approximately 2-3 cm proximal to the wound/injury.
        i. Recommended commercially made tourniquets include the combat Application Tourniquet (CAT) and the Special Operations Forces Tourniquet (SOFT-T)
    b. Tighten tourniquet until bleeding stops and/or distal pulse is absent.
    c. Document time of application and location of tourniquet and ensure that receiving facility is aware of time of placement.
    d. Do NOT apply tourniquet over a joint. If wound is over a joint or just distal to a joint, apply the tourniquet just proximal to the joint.
    e. Do NOT apply tourniquet over a fracture.
    f. Do NOT release tourniquet until the patient reaches definitive care.
    g. Do NOT obscure a tourniquet with clothing or bandages.
4. If severe bleeding persists from the trunk, neck, head or other location where a tourniquet cannot be used, **HEMOSTATIC GAUZE** dressings, in addition to wound packing, should be used.
5. Manage pain per the "PAINFUL, SWOLLEN, DEFORMED EXTREMITY" Protocol.

PAINFUL, SWOLLEN, DEFORMED EXTREMITY

CRITERIA: Any may be present:

1. Obvious open fracture.
2. Deformity.
3. Swelling.
4. Point tenderness.
5. History of injury consistent with a fracture.

FR/BLS/ILS TREATMENT:

1. **INITIAL TRAUMA CARE**.
2. Evaluate PMS (pulse, movement, sensation) distal to the injury.
3. Immobilize fracture, covering open injuries with sterile dressing.
4. Re-assess PMS distal to the injury.
5. Call for intercept per INTERCEPT CRITERIA.

SHOCK FROM TRAUMA

CRITERIA: Any may be present:

1. Systemic hypotension
2. Altered LOC
3. Inadequate perfusion (pale, cool & mottled)
4. Massive blood loss
5. Crush Syndrome
6. Suspected pelvis or long bone fractures

FR/BLS TREATMENT:

1. **INITIAL TRAUMA CARE**.
2. If suspected pelvic fracture, consider pelvic wrap.

ILS TREATMENT:

1. Continue **FR/BLS TREATMENT**.
2. Administer 20 ml/kg NS or LR fluid bolus to maintain SBP 90-100 or MAP >65.
    a. STOP fluids if signs of pulmonary edema (increasing shortness of breath or rales/crackles on lung exam)
3. Consider the potential cause for shock:
    a. Tension Pneumothorax - Needle decompression
    b. Hemorrhage - Control bleeding, IV fluids. Refer to HEMORRHAGE CONTROL Protocol.
    c. Pericardial tamponade

TRAUMATIC ARREST

CRITERIA:

1. Pulseless and apneic trauma patient not meeting the **Trauma Field Death Declaration** criteria (refer to the TRAUMA FIELD DEATH DECLARATION Protocol).

FR/BLS TREATMENT:

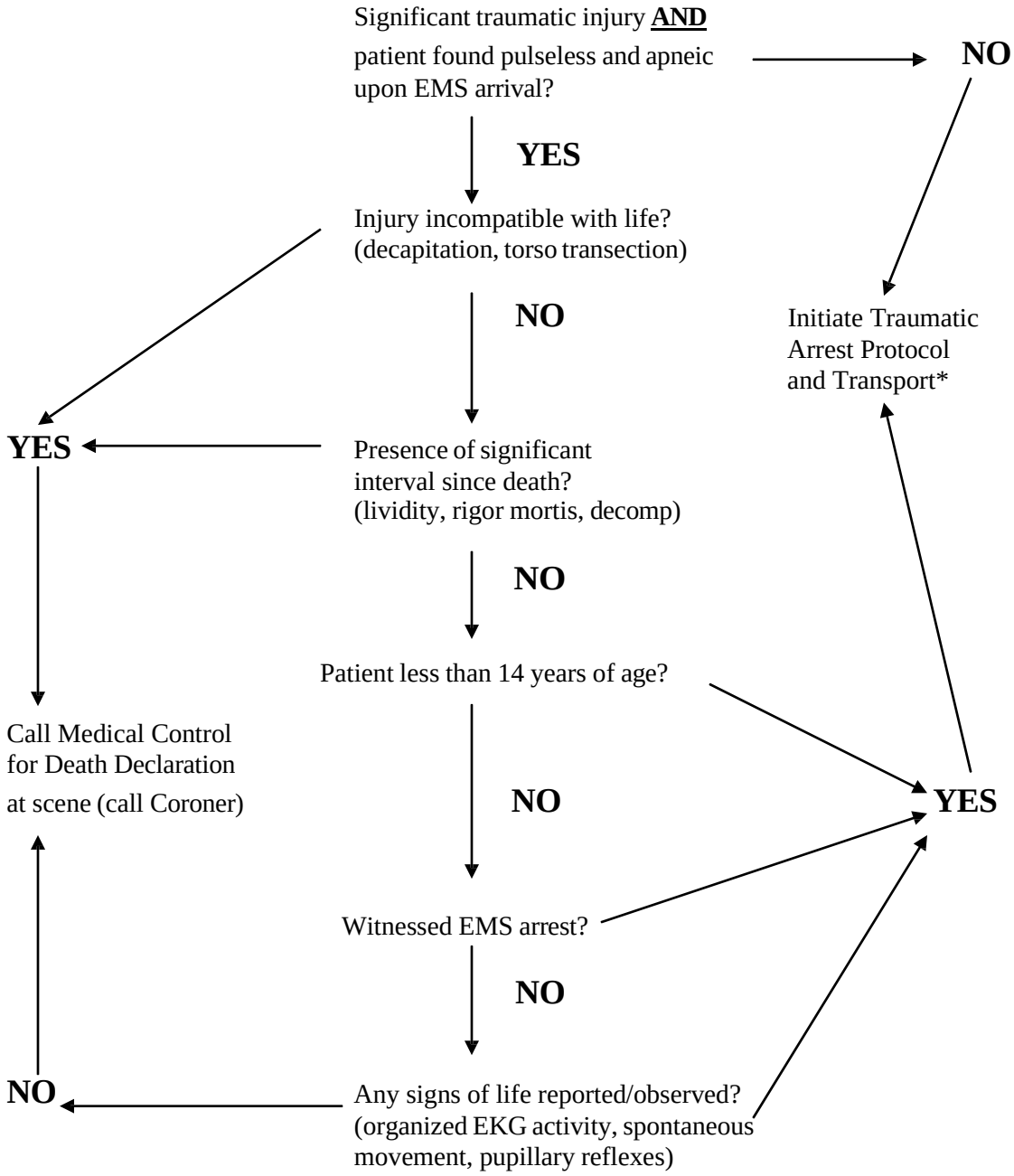
1. Begin CPR. Reference CARDIOPULMONARY ARREST Protocol.
2. **INITIAL TRAUMA CARE**.
3. Attempt to maintain inline stabilization throughout assessment and treatment.
4. Rapid extrication should be utilized if patient is entrapped.
5. Apply AED.
6. Load and Go within **10 minutes** of extrication if ambulance has arrived.

ILS/ALS TREATMENT:

1. Continue **FR/BLS TREATMENT**.
2. Administer EPINEPHRINE 1:10,000 1mg IVP every 3-5 minutes as long as patient remains pulseless.
3. Treat subsequent dysrhythmias per appropriate protocol.

TRAUMA FIELD DEATH DECLARATION

TREATMENT: ALL LEVELS



*EMS witnessed cardiopulmonary arrest and 15 minutes of unsuccessful resuscitation and CPR per protocol may be pronounced dead in the field as per Medical Control.