



**REGION 11
CHICAGO EMS SYSTEM
PROTOCOL**

Title: General Trauma Management – BLS/AS

Section: Trauma

Approved: EMS Medical Directors Consortium

Effective: July 10, 2024

GENERAL TRAUMA MANAGEMENT – BLS/ALS

I. PATIENT CARE GOALS

1. Rapid assessment and management of life-threatening injuries.
2. Safe movement of patient to prevent worsening of injury severity.
3. Rapid and safe transport to the appropriate level of trauma care.

II. PATIENT MANAGEMENT

A. Initial Assessment

1. Primary Survey using the “MARCH” algorithm.
 - a. Massive Hemorrhage
 - i. Initial visual and body sweep to assess for penetrating wounds and severe life-threatening hemorrhage (see Extremity Trauma/External Hemorrhage Management Protocol).
 - b. Airway
 - i. Assess airway patency by asking the patient basic questions to assess stridor and ease of air movement.
 - ii. Look for injuries that may lead to airway obstruction including unstable facial fractures, expanding neck hematoma, blood or vomitus in the airway, facial burns/inhalation injury.
 - iii. Evaluate mental status for ability to protect airway (patients with a GCS less than or equal to 8 are likely to require airway support).
 - c. Respiratory/Breathing
 - i. Assess respiratory rate and pattern.
 - ii. Assess for tracheal deviation.
 - iii. Assess symmetry of chest wall movement.
 - iv. Listen bilaterally on lateral chest wall for breath sounds.
 - d. Circulation
 - i. Assess blood pressure and heart rate.
 - ii. Assess for signs of hemorrhagic shock including tachycardia, hypotension, pale, cool clammy skin, or capillary refill greater than 2 seconds.
 - e. Head Injury/Hypothermia



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- i. Perform initial neurologic status assessment of GCS/AVPU (Alert, Verbal, Painful, Unconscious) and pupillary size and responsiveness. See Appendix 1 for Neurologic Status Assessment.
- ii. Assess gross motor movement of extremities.
- iii. Evaluate for clinical signs of traumatic brain injury with herniation including:
 - Unequal pupils
 - Lateralizing motor signs
 - Posturing
- iv. Prevent hypothermia.

B. Immediate Treatment and Interventions

1. Massive or exsanguinating hemorrhage control
 - a. First stop severe external and extremity hemorrhage with pressure dressing, extremity tourniquets, or appropriate wound packing with hemostatic gauze (see Extremity Trauma/External Hemorrhage Management Protocol).
 - b. Be sure to roll the patient and examine the back as well.
2. Airway
 - a. If airway compromise or altered mental status resulting in inability to maintain airway patency, immediately ensure airway patency per the Airway Management Protocol and Spinal Care Protocol.
 - b. Consider airway adjuncts as appropriate avoiding nasal airway adjuncts in patients with significant facial injury.
 - c. If impending airway obstruction or altered mental status resulting in inability to maintain airway patency, secure definitive airway.
3. Respiratory/Breathing
 - a. If absent or diminished breath sounds in a hypotensive patient with chest trauma and respiratory distress and/or tracheal deviation, consider tension pneumothorax and perform Needle (Pleural) Decompression Procedure.
 - b. For open chest wound, place chest seal.
 - c. Monitor oxygen saturation and, if indicated, provide supplemental oxygen to maintain saturation above 94% and respiratory support if needed.
4. Circulation
 - a. If pelvis is unstable and patient is hypotensive, place sheet to stabilize pelvis.
 - b. Establish IV access.
 - c. Fluid resuscitation:
 - i. Adults
 - If SBP greater than 90 mmHg and the heart rate is less than 120 beats per minute, no IV fluids required.



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- If SBP less than 90 mmHg or the heart rate is greater than 120 beats per minute, administer 500 ml bolus of IV fluids and reassess.
- Trauma resuscitation target SBP 90 mmHg (palpable radial pulse or alert mental status).
- Head injury target SBP greater than 110 mmHg. Hypotension should be avoided to maintain cerebral perfusion.
- Reassess SBP after bolus given.

ii. Pediatrics

- If child demonstrates tachycardia for age with signs of poor perfusion (low blood pressure, greater than 2 second capillary refill, altered mental status, hypoxia, weak pulses, pallor, or mottled/cool skin), give 20 ml/kg crystalloid bolus and reassess.
- Target normal BP for age (see Pediatric Initial Assessment Protocol).

d. Tranexamic Acid (TXA) may be considered within three hours of injury and signs of hemorrhagic shock.

5. Disability/Head/Hypothermia

- a. If clinical signs of traumatic brain injury, see Head Trauma Protocol.
- b. Avoid or treat hypothermia:
 - i. Remove wet clothing.
 - ii. Cover patient to warm and prevent further heat loss.

6. **NOTE:** Patients with major hemorrhage, hemodynamic instability, penetrating torso trauma, or signs of traumatic brain injury often require rapid surgical intervention. Minimize scene time (goal is under 10 minutes) and initiate rapid transport to a Level 1 Trauma Center or Level 1 Pediatric Trauma Center.

7. Repeat primary assessment or secondary assessment should be conducted enroute to the trauma center.

8. Decisions regarding transport destination should be based on the Region 11 Trauma Field Triage Criteria Policy.

C. Secondary Assessment, Treatment, and Interventions

1. Assessment

- a. Obtain medical history from patient or family including:
 - i. Allergies
 - ii. Medications
 - iii. Past medical and surgical history
 - iv. Events leading up to the injury



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2. Secondary Survey: Head to toe physical exam including re-assessment of interventions from primary survey.
 - a. Head/Face
 - i. Palpate head, scalp and face and evaluate for soft tissue injury or bony crepitus.
 - ii. Assess for globe injury and subjective changes in vision.
 - iii. See Facial/Dental Trauma Protocol.
 - b. Neck
 - i. Check for:
 - Contusions
 - Abrasions
 - Hematomas
 - Jugular Vein Distension (JVD)
 - Tracheal deviation
 - ii. Palpate for crepitus.
 - iii. Spinal assessment per the Spinal Care Protocol.
 - c. Chest
 - i. Palpate for instability/crepitus.
 - ii. Listen to breath sounds.
 - iii. Inspect for penetrating or soft tissue injuries.
 - d. Abdomen
 - i. Palpate for tenderness.
 - ii. Inspect for penetrating or soft tissue injuries.
 - iii. Any intra-abdominal organs visible (evisceration) should be covered with saline soaked dressing and then covered with occlusive dry or plastic dressing.
 - e. Pelvis
 - i. Inspect for penetrating or soft tissue injuries.
 - ii. Palpate once for instability by applying medial pressure on the iliac crests bilaterally.
 - f. Back
 - i. Maintain spinal alignment. Refer to Spinal Care Protocol.
 - ii. Inspect for penetrating or soft tissue injuries.
 - g. Neurologic Status Assessment
 - i. Serial assessment of mental status.
 - ii. Gross exam of motor strength and sensation in all four extremities.
 - h. Extremities
 - i. Assess for fracture/deformity and splint as indicated by the Extremity Trauma/External Hemorrhage Management Protocol.



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ii. Assess peripheral pulses/capillary refill.

3. Additional treatment considerations

- a. Maintain spine precautions per the Spinal Care Protocol.
- b. Provide pain medication per the Pain Management Protocol.
- c. Pregnant patients at greater than 20 weeks of estimated gestational age should be placed with their right side elevated 15 degrees (left side down) to relieve pressure on the great vessels, preventing supine hypotension and subsequent significant loss of preload and cardiac output.
- d. Traumatic cardiac arrest patients should be assessed for signs of life including respirations, pulse, and spontaneous movement. If there are no signs of life, the cardiac monitor should be applied. Asystolic patients may have resuscitation withheld. If there is cardiac activity or signs of life, resuscitation should be initiated with transport to the closest Level 1 Trauma Center (see Determination of Death/Withholding of Resuscitative Measures Policy).

D. Patient Safety Considerations

1. Life-threatening injuries identified on primary survey should be managed immediately with rapid transport to a trauma center, while the secondary survey is performed enroute.
2. Monitor patient for deterioration over time with serial vital signs and repeat neurologic status assessment.
 - a. Patients with compensated shock may not manifest hypotension until severe blood loss has occurred.
 - b. Patients with traumatic brain injury may deteriorate as intracranial swelling and hemorrhage increase.
3. Anticipate potential for progressive airway compromise in patients with trauma to the head and neck.

III. NOTES/EDUCATIONAL PEARLS

- A. Optimal trauma care requires a structured approach to the patient emphasizing first control of massive hemorrhage using MARCH (Massive Hemorrhage, Airway, Respiratory/Breathing, Circulation, Head Injury/Hypothermia).
- B. Target scene time less than 10 minutes for unstable patients or those likely to need surgical intervention.
- C. Frequent reassessment of the patient is important.
 1. If patient develops difficulty with ventilation, reassess breath sounds for development of tension pneumothorax.



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2. If extremity hemorrhage is controlled with pressure dressing or tourniquet, reassess for evidence of continued hemorrhage.
3. If mental status declines, reassess ABCs and repeat neurologic status assessment.

APPENDIX 1 - Neurologic Status Assessment

Neurological status assessment involves establishing a baseline and then trending any change in patient neurological status. Glasgow Coma Scale (GCS) or AVPU may be used for this.

Glasgow Coma Score

	Points	Pediatric	Adult
Eyes	1	No eye opening	
	2	Eye opening to pain	
	3	Eye opening to verbal	
	4	Eyes open spontaneously	
Verbal	1	No vocalization	No verbal response
	2	Inconsolable, agitated	Incomprehensible sounds
	3	Inconsistently consolable, moaning	Inappropriate words
	4	Cries but consolable, inappropriate interactions	Confused
	5	Smiles, oriented to sounds, follows objects, interacts	Oriented
Motor	1	No motor response	
	2	Extension to pain	
	3	Flexion to pain	
	4	Withdraws from pain	
	5	Localizes pain	
	6	Obeys commands	

AVPU

- A:** The patients is alert
- V:** The patient responds to verbal stimulus
- P:** The patient responds to painful stimulus
- U:** The patient is completely unresponsive