

Guideline: ED TRAUMA RESUSCITATION, ADULT

Updated: March 3, 2022

Clinical guideline summary

CLINICAL GUIDELINE NAME: ED Trauma Resuscitation

PATIENT POPULATION AND DIAGNOSIS: Patients who are defined as having injuries or potential injuries for which these guidelines apply are those who meet Level I or Level II criteria as defined in the “Trauma Team Activation” Guideline on pg. 1-2 and are placed in the Trauma Bay.

APPLICABLE TO: Spectrum Health Butterworth

BRIEF DESCRIPTION: The following outlines the priorities for managing the seriously injured or potentially seriously injured patient according to ATLS guidelines. This is a framework for the ongoing assessment and evaluation, although it must be recognized that deviations will be necessary according to the patient’s status and ongoing re-evaluation.

OVERSIGHT TEAM LEADER(S): Dr. Gaby Iskander, Dr. Patricia Pentiak

OWNING EXPERT IMPROVEMENT TEAM (EIT): None

MANAGING CLINICAL PRACTICE COUNCIL (CPC): Acute Health

CPC APPROVAL DATE: June 28, 2022

OTHER TEAM(S) IMPACTED: Emergency Department, Respiratory

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Clinical pathways clinical approach

TREATMENT AND MANAGEMENT:

Guidelines: The guidelines below list priorities in the primary survey, resuscitation, and secondary survey phases of trauma management as adapted from ATLS.

Triage/Pre-hospital Report: Coordination with EMS is critical in mobilizing the trauma team and resources for prompt availability in the ED on patient arrival. A structured EMS pre-arrival report and bedside 60 seconds of silence process is important to providing timely care.

Primary Survey (Life Support):

- **Airway:** guarantee patency and assure that the patient can protect his/her airway
 - Possible C-spine injury – maintain in-line stabilization if intubation required.
 - Rapid Sequence Induction (RSI) is appropriate in most patients when needed, possible exceptions below.
 - Anterior neck injury, stridor, but no acute airway obstruction: consider awake, fiberoptic intubation or urgent surgical airway under local anesthesia in OR.
 - Anterior neck injury, stridor, and acute airway obstruction: consider emergent surgical airway without prior attempts at intubation.
 - Head injury – intubate when GCS is less than or equal to 8, consider neurosurgical evaluation prior to intubation when feasible.
 - Apnea – immediate orotracheal intubation with in-line stabilization, RSI generally unnecessary.
 - If further airway resources are anticipated or needed, voalte message or call anesthesia to the trauma bay.

- **Breathing:** assess breath sounds bilaterally
 - Assist ventilation if ventilatory effort is inadequate.
 - Verify ET tube position via auscultation and end tidal CO₂ determination.
 - Tension Pneumothorax – immediate needle decompression or finger thoracostomy, followed by tube thoracostomy.
 - Simple Pneumothorax – tube thoracostomy after X-ray confirmation
 - Hemothorax – tube thoracostomy after fluid resuscitation, consider OR thoracotomy for initial chest tube output > 1500 cc.
 - Confirm position and function of all chest tubes with CXR.
 - E-FAST- consider for assessment of pericardial effusion/hemopericardium, pneumothorax and hemothorax

- **Circulation:** assess for signs of obvious and occult shock via signs of adequate organ perfusion (mental status, capillary refill, etc), vital signs, Arterial Blood Gas (ABG) analysis.
 - Hemostasis – direct pressure to bleeding wounds, consider immediate, rapid closure for intensely bleeding scalp wounds.
 - Consider tourniquet, pelvic sheet wrap, or direct pressure for extremity injuries or truncal injuries with hemorrhage.

Trauma Resuscitation: Resuscitation priorities for the Multiple or Seriously Injured Patient

- **Treat Shock**
 - Assess for etiology. Consider hypovolemic shock as most common cause.
 - Neurogenic shock considered if evidence of spinal cord injury. Shock state should never be assumed to result from head injury.
 - Initial therapy should consist of 2 liters of isotonic crystalloid solution, failure to respond or shock state that is difficult to correct should illicit a search for bleeding that requires operative or angiographic control. See specific injury related Guidelines.
 - Patients discovered to have sustained severe injury or who presented with signs of shock and are transient responder to initial therapy need to be reassessed frequently, this includes continuous monitoring of vital signs, continuous attendance by nursing staff and trauma provider team during all transports and while in CT/ IR.
 - Cardiac Tamponade – consider diagnosis with shock that does not respond to volume, especially in penetrating chest trauma, neck vein distension may or may not be present. FAST may confirm diagnosis. Consider ED thoracotomy with loss of vital signs; otherwise proceed emergently to OR for pericardial window or sternotomy/thoracotomy.
 - Indications for REBOA: Control of exsanguinating torso hemorrhage
 - Reserved for patients greater than or equal to 18 years old
 - Hypotension (SBP < 90) and partial/non-responder to resuscitation
 - Truncal hemorrhage (abdomen or pelvis)
 - Penetrating lower extremity injury
 - See REBOA policy
 - Indications for ED Thoracotomy:
 - Penetrating Chest Trauma and one of the following:
 - Loss of vital signs (pulse) en route to ED, with electrical activity on presentation.
or
 - Loss of vital signs or sustained BP <50 in ED.
- **Disability:**
 - Calculate GCS, consider intubation when GCS <9.
 - Brain Injury Guideline (BIG) criteria should be utilized to engage neurosurgical consults, need for repeat CT scanning, and admit service.
 - Traumatic Brain Injury (TBI) guidelines will be implemented in the ICU
- **Exposure:**
 - Remove clothing, log roll to examine back, remove backboard when present
 - Maintain normothermia – blankets, warm fluids, bair hugger, warm room

Secondary Survey (head to toe exam, adjuncts)

- **Head/Maxillofacial** – examine wounds, control bleeding, pupil exam, assess facial stability
- **Neck** – examine for wounds, palpate for tenderness, deformity, et
- **Chest** – examine for wounds, etc., re-evaluate breath sounds
- Abdomen see injury specific Guidelines focused exam
- Consider FAST in blunt trauma, if not done in primary survey
- Determine need for further evaluation (CT, laparotomy/oscopy)
- **Pelvis** – examine for wounds, assess for tenderness, avoid excessive motion/compression, x-ray to diagnose fracture
- **Extremities**
 - complete pulse exam
 - reduce fracture dislocations

- splint as needed
- **Spine** – assess for tenderness or deformity, Perineum/rectal exam and check for perineal muscle contraction. (I will go in and fix the alignment
- **Adjuncts:**
 - Naso/orogastric tube – consider placement in all blunt trauma victims
 - Foley – place after rectal exam, unless deemed unnecessary by team leader
 - X-rays – team leader to determine need and timing of x-rays, in general lateral c-spine, supine CXR and pelvic x-ray for blunt trauma

After Stabilization:

- Determine disposition: OR, Radiology, ICU, GMB
- Determine need and sequence of advanced radiographic studies (plain film, CT, angio)
- Consult specialty services
- Determine frequency of re-evaluation *i.e.* labs, x-rays etc.

Frequent Re-Assessment:

- Vital Signs should be documented no less then every 30 min. until initial work-up is complete and patient has stabilized.
- Outputs (chest tubes, urinary) – to be recorded at frequent intervals
- Patients with shock/blood loss or high base deficit need serial determinations of perfusion status *i.e.* ABG, Hb, LA
- Determine timing for tertiary exam

References:

Advanced Trauma Life Support (ATLS). American College of Surgeons Committee on Trauma. 2018. Pages 7-19.