REGION 11 CHICAGO EMS SYSTEM PROTOCOL	Title: Blast Injury
	Section: Trauma
	Approved: EMS Medical Directors Consortium
	Effective: July 1, 2021

BLAST INJURY

I. PATIENT CARE GOALS

1. Maintain patient and provider safety by identifying ongoing threats at the scene of an explosion.

2. Identify multi-system injuries, which may result from a blast, including possible toxic contamination.

3. Prioritize treatment of multi-system injuries to minimize patient morbidity.

II. PATIENT MANAGEMENT

A. Assessment

1. Hemorrhage Control:

    a. Assess for and stop severe hemorrhage [per Extremity Trauma/External Hemorrhage Management protocol].

2. Airway:

    a. Assess airway patency.
    b. Consider possible thermal or chemical burns to airway.

3. Breathing:

    a. Evaluate adequacy of respiratory effort, oxygenation, quality of lung sounds, and chest wall integrity.
    b. Consider possible pneumothorax or tension pneumothorax (as a result of penetrating/blunt trauma or barotrauma).

4. Circulation:

    a. Look for evidence of external hemorrhage.
    b. Assess blood pressure, pulse, skin color/character, and distal capillary refill for signs of shock.

5. Disability:

    a. Assess patient responsiveness (AVPU) and level of consciousness (GCS).
    b. Assess pupils.
    c. Assess gross motor movement and sensation of extremities.

6. Exposure:

    a. Rapid evaluation of entire skin surface, including back (log roll), to identify blunt or penetrating injuries.

B. Treatment and Interventions

1. Hemorrhage Control:

    a. Control any severe external hemorrhage (per Extremity Trauma/External Hemorrhage Management protocol).

2. Airway:

    a. Secure airway, utilizing airway maneuvers, airway adjuncts, supraglottic device, or endotracheal tube (per Advanced Airway Management protocol).
    b. If thermal or chemical burn to airway is suspected, early airway control is vital.

3. Breathing:

    a. Administer oxygen as needed to maintain an oxygen saturation of > 94%.
    b. Assist respirations as needed.
    c. Cover any open chest wounds with semi-occlusive dressing or chest seal.
    d. If absent or diminished breath sounds with chest trauma in a hypotensive patient with respiratory distress, consider tension pneumothorax and perform pleural (needle) decompression as per procedure.

4. Circulation:

    a. Establish IV access:
        i. Administer fluid bolus, per the General Trauma Management protocol;
        ii. If patient is burned, administer fluid per the Burn protocol.

5. Disability:

    a. If evidence of head injury, treat per the Head Injury protocol.
    b. Apply spinal precautions, per the Spinal Care protocol.
    c. Monitor GCS during transport to assess for changes.

6. Exposure:

    a. Keep patient warm to prevent hypothermia.

C. Patient Safety Considerations

1. Ensuring scene safety is especially important at the scene of an explosion.

a. Consider possibility of subsequent explosions, structural safety, possible toxic chemical contamination, the presence of noxious gasses, and other hazards.
b. In a possible terrorist event, consider the possibility of secondary explosive devices.

2. Remove patient from the scene as soon as is practical and safe.

III. NOTES/EDUCATIONAL PEARLS

A. Key Considerations

1. Scene safety is of paramount importance when responding to an explosion or blast injury.

2. Patients sustaining blast injury may sustain complex, multi-system injuries including: blunt and penetrating trauma, shrapnel, barotrauma, burns, and toxic chemical exposure.

3. Consideration of airway injury, particularly airway burns, should prompt early airway management.

4. Minimize IV fluid resuscitation in patients without signs of shock.

5. Consider injuries due to barotrauma:

    a. Tension pneumothorax
        i. Hypotension or other signs of shock associated with decreased or absent breath sounds, jugular venous distension, and/or tracheal deviation.
    b. Tympanic membrane perforation resulting in deafness, which may complicate the evaluation of their mental status and their ability to follow commands.
    c. Blast injuries to lung or bowel can take time to manifest, asymptomatic patients can develop symptoms with time.

6. Transport to a Level 1 Trauma Center.

B. Pertinent Assessment Findings

1. Evidence of multi-system trauma, especially:

    a. Airway injury/burn
    b. Barotrauma to lungs
    c. Toxic chemical contamination