Blast Injury/ Incident

History
- Type of exposure (heat, gas, chemical)
- Inhalation injury
- Time of Injury
- Past medical history/ Medications
- Other trauma
- Loss of Consciousness
- Tetanus/Immunization status

Signs and Symptoms
- Hearing loss (TM rupture)
- Ocular burns/vision changes
- Multiple trauma/ penetrating trauma
- Hypotension/ shock
- Airway compromise/distress could be indicated by hoarseness/ wheezing
- Pneumothorax/ hemothorax
- Traumatic amputation (tourniquet)

Differential
- Thermal / Chemical / Electrical Burn Injury
  - Superficial
    - (1st Degree) red – painful (Don't include in TBSA)
  - Partial Thickness
    - (2nd Degree) blistering
  - Full Thickness
    - (3rd Degree) painless/charred or leathery skin
- Radiation injury

Nature of Device: Agent/ Amount. Industrial Explosion. Terrorist Incident. Improvised Explosive Device.
Method of Delivery: Incendiary/ Explosive
Nature of Environment: Open / Closed.
Distance from Device: Intervening protective barrier. Other environmental hazards,
Evaluate for: Blunt Trauma/ Crush Injury/ Compartment Syndrome/ Traumatic Brain Injury/ Concussion/ Tympanic Membrane Rupture/ Abdominal hemorrhage or Evisceration, Blast Lung Injury and Penetrating Trauma.

Scene Safety/ Quantify number and Triage Patients/ Load and Go with Assessment/ Treatment Enroute

Call for help/ additional resources
Stage until scene safe

Accidental/ Intentional Explosions
(See Pearls)

- Triage Protocol UP 2 ***as indicated***
- Age Appropriate Airway Protocol(s) AR 1, 2, 3, 5, 6 ***as indicated***
- Multiple Trauma Protocol TB 6 ***if indicated***
- IV and IO Access Protocol UP 6 ***if indicated***
- P — Cardiac Monitor ***if indicated***
- Thermal Burn Protocol TB 9
  Chemical and Electrical Burn Protocol TB 2 ***if indicated***
- Crush Injury Protocol TB 3 ***if indicated***
- Radiation Incident Protocol TB 7 ***if indicated***
- Decontamination Procedure USP 2 ***if indicated***
- Pain Control Protocol UP 11 ***if indicated***

Blast Lung Injury — YES → Age Appropriate Airway Protocol(s) AR 4, 7 ***as indicated***

NO

Rapid Transport to appropriate destination using
Trauma and Burn:
EMS Triage and Destination Plan

Notify Destination or Contact Medical Control

Trauma and Burn Protocol Section

Blast Injury/ Incident

Pearls

- **Types of Blast Injury:**
  - Primary Blast Injury: From the blast pressure (air) wave.
  - Secondary Blast Injury: Impaled objects. Debris which becomes missiles/ shrapnel.
  - Tertiary Blast Injury: Patient falling or being thrown/ pinned by debris.
  - Most Common Cause of Death: Secondary Blast Injuries.
- **Triage of Blast Injury patients:**
  - Blast Injury patients with burn injuries should be triaged using the Thermal Burn/ Chemical and Electrical Burn Protocol Guidelines for Critical/ Serious/ Minor Trauma and Burns and the Trauma and Burn: EMS Triage and Destination Plan.
  - Patients may be hard of hearing due to tympanic membrane rupture.
- **Care of Blast Injury Patients:**
  - Patients may suffer multi-system injuries including blunt and penetrating trauma, shrapnel, barotrauma, burns, and toxic chemical exposure.
  - Consider airway burns, which should prompt early and aggressive airway management as indicated.
  - Cover open chest wounds with semi-occlusive dressing or commercial chest seal product.
  - Use Lactated Ringers (if available) for all Critical or Serious Burns.
  - Minimize IV fluids resuscitation in patients with no signs of shock or poor perfusion.
- **Blast Lung Injury:**
  - Blast Lung Injury is characterized by respiratory difficulty and hypoxia. Can occur (rarely) in patients without external thoracic trauma. More likely to occur in an enclosed space or in close proximity to explosion.
  - Symptoms: Dyspnea, hemoptysis, cough, chest pain, wheezing, and hemodynamic instability.
  - Signs: Apnea, tachypnea, hypopnea, hypoxia, cyanosis, and diminished breath sounds.
  - Air embolism should be considered and patient transported in left-lateral decubitus position.
  - Blast Lung Injury patients may require early intubation but positive pressure ventilation may worsen the injury, avoid hyperventilation, which can cause further injury.
  - Air transport may worsen lung injury, monitor oxygenation and ventilation closely. Tension pneumothorax may occur requiring chest decompression. Be judicious with fluids as volume overload may worsen lung injury.
- **Accidental Explosions or Intentional Explosions:**
  - **All explosions or blasts should be considered intentional until determined otherwise.**
  - **Greatest concern is potential threat for a secondary device.**
  - Attempt to determine the source of the blast to include any potential threat for aerosolization of hazardous materials.
  - Evaluate scene safety including the source of the blast, which may continue to spill explosive liquids or gases.
  - Consider structural collapse, environmental hazard, and fire.
  - Conditions that led to the initial explosion may reoccur and lead to a second explosion.
  - Patients who physically able, typically will attempt to move as far away from the explosive source.
  - Evaluate surroundings for suspicious items; unattended back packs or packages, or unattended vehicles.
  - **If patient(s) is unconscious or there is fatalities and you are evaluating patient(s) for signs of life:**
    - **Before moving, note if there are wires coming from the patient(s), or if it appears the patient(s) is lying on a package/ pack, or bulky item. If so, do not move the patient(s), quickly back away and immediately notify a law enforcement officer.**
  - If there are no indications the patient is connected to a triggering mechanism for a secondary device, expeditiously remove the patient(s) from the scene and begin transport to the hospital.
  - Protect the airway and cervical spine, however beyond the primary survey, care and a more detailed assessment should be deferred until rapid transport begins.
  - If there are signs the patient was carrying the source of the blast, notify law enforcement immediately, and most likely a law enforcement officer will accompany your patient to the hospital.