Trauma: Initial Survey

Primary and Secondary Surveys

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Prehospital Phase

- Prehospital information can be invaluable if available
Valuable Prehospital Information

- Victim age
- Mechanism of injury
- Vital signs
- IV access
- Glasgow Coma Score
- Obvious injuries (eg. Open fractures, eviscerated bowel)
Additional Paramedic Information

- Field blood loss
- Pre-hospital fluids
Primary Survey

- A
- B
- C
- D
- E

Should take no more than 2-5 minutes
Primary Survey

- **Airway** management with cervical spine protection
- **Breathing** and ventilation
- **Circulation** with hemorrhage control
Primary Survey

- Disability: Neurologic status
- Exposure/Environmental control: Completely expose patient
Glasgow Coma Scale (Adults)

- Quick neurologic assessment which provides the information about:
  - Prognosis
  - Victim’s ability to maintain patent airway on own
- Best score in three categories
- Total<8 = need for intubation
# Glasgow Coma Score (Adults)

<table>
<thead>
<tr>
<th>Eyes</th>
<th>Verbal</th>
<th>Motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1= do not open</td>
<td>1= nonverbal</td>
<td>1= none</td>
</tr>
<tr>
<td>2= open to pain</td>
<td>2= incomprehensible</td>
<td>2= extends to pain</td>
</tr>
<tr>
<td>3= open to voice</td>
<td>3= inappropriate</td>
<td>3= flexes to pain</td>
</tr>
<tr>
<td>4= open spontaneously</td>
<td>4= confused</td>
<td>4= withdraws to pain</td>
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<tr>
<td></td>
<td>5= orientated</td>
<td>5= localizes pain</td>
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<tr>
<td></td>
<td></td>
<td>6= follows commands</td>
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*Best EYE +*  
*Best VERBAL +*  
*Best MOTOR*
Airway Maintenance with Cervical Spine Protection

- Attempt to get verbal response from patient
- Inspect for foreign bodies
- Assess for facial, mandibular, tracheal / laryngeal injuries
- Oxygen
- Maintain cervical spine precautions
- Quick Glasgow Coma Score Assessment
Airway

- Jaw Thrust Maneuver
  - Place 2-3 fingers under each side of lower jaw angle
  - Lift jaw upward and outward
- Head tilt – Chin lift Maneuver
  - Do not perform if cervical injury suspected
Airway: Head tilt – Chin lift Maneuver

- Infant
  - Head in neutral position
  - Do NOT overextend head and neck

- Child and adult
  - Head and neck slightly extended
  - Line from chin to jaw angle perpendicular to floor

- Use other hand's fingers under bony part of chin
  - Do NOT use thumb to lift chin
  - Lift mandible upward and outward
Breathing and Ventilation

- Directed at acutely life-threatening disease processes that impair breathing
- Observe respiratory rate and use of accessory muscles
- Listen for breath sounds
- Inspect chest for crepitus and open wounds
Breathing and Ventilation: Life-Threatening Insults

- Tension Pneumothorax
- Open Pneumothorax
- Massive Hemothorax
- Flail chest with pulmonary contusion
Breathing and Ventilation: Tension Pneumothorax

● Diagnosis
  ● Absent breath sounds
  ● Tympanitic chest
  ● Distended neck veins
  ● Tracheal deviation

● Treatment
  ● Needle thoracostomy
  ● Tube thoracostomy
Breathing and Ventilation: Open Pneumothorax

- Open thoracic wound causes immediate equilibration between intra-thoracic and atmospheric pressure
  - This leads to lung collapse
- Close defect with large sterile occlusive dressing
- Remote placement of thoracostomy tube
Breathing and Ventilation: Massive Hemothorax

- **Diagnosis**
  - Diminished breath sounds
  - Dullness to percussion over thorax
  - Shock

- **Treatment**
  - Tube thoracostomy
  - >1500cc output=Thoracotomy
Flail Chest with Pulmonary Contusion

- Paradoxical movement between segment of chest wall with multiple contiguous rib fx and thorax
- Pulmonary dysfunction is due to the underlying pulmonary contusion and splinting secondary to discomfort
- Management is oxygen, pain control and if unable to maintain oxygenation, mechanical ventilation
Circulation with Hemorrhage Control

- Three aspects of circulation
  - Control of external bleeding
  - Efficiency of the cardiac pump
  - Volume status (degree of shock)
Circulation with Hemorrhage Control

- Must have adequate IV access
- Inadequate circulation is a clinical diagnosis augmented by vital signs.
- Young victims will often manifest a tachycardia when they are hypovolemic followed by hypotension
- Older patients or medicated patients may not be able to mount a tachycardia
Circulation with Hemorrhage Control

- Significant bleeding can only be found in a few anatomic locations
  - Chest: Massive hemothorax
  - Abdomen: Hemoperitoneum
  - Retroperitoneal bleed
  - Pelvis
  - Secondary to major closed fractures (pelvis or femur)
Circulation and Hemorrhage Control

- Additional locations of hemorrhage most often forgotten are:
  - Active external hemorrhage
  - Hemorrhage in the field
Circulation and Hemorrhage Control

- During the primary survey the goal is not to stop hemorrhage but to support the circulatory system with one exception.
- This is done by rapid infusion of IV fluids.
- Adult patients who do not respond to bolus of 2 liters IV fluids need blood products.
- Do stop all active external hemorrhage.
Disability: the Brief Neurologic Evaluation

- Glasgow Coma Score (GCS): re-evaluate
- Orientation
- Any change in level of consciousness or depreciation in the GCS should prompt examiner to return to the beginning of primary survey
Exposure/Environmental

- Important balance
  - Expose patient entirely to allow global assessment of patient as well as remove any detrimental coverings (e.g., wet clothes, smoldering coverings)
  - Cover patient with warm blankets following exposure to prevent hypothermia
The Secondary Survey

- Should not take more than 5 -10 minutes
- Examine patient from head to toe
The Secondary Survey

- **Head**
  - Scalp
  - Pupils
  - Auditory canals
  - Mouth

- **Neck**
  - Trachea
  - Neck veins

- **Chest**
  - Clavicles
  - Ribs Breath Sounds
  - Heart Tones
The Secondary Survey

- Abdomen
- Rectum
  - Prostate (in males)
  - Sphincter
- Genitalia
- Extremities
  - Bones
  - Soft tissues
The Secondary Survey

- Neurologic system
  - Reflexes
  - Sensation
  - Hemispheric function
  - Spinal function
Assignment of Priorities

- The goal in the first few hours after trauma is not to treat individual injuries but to determine and manage threats to the patient’s life.
Assignment of Priorities

- Airway management takes first priority
- Treatment of bleeding can be delayed for a few minutes if intensive resuscitation is necessary
Assignment of Priorities

- Any injuries which would lead to complications or loss of function if diagnosis or treatment is delayed
  - peripheral vascular injuries, tendon and nerves injuries, eye injuries, amputations of limbs
Assignment of Priorities

- Closed fractures, dislocation and small soft tissue wounds are the only lesions for which treatment can be delayed for several hours.