

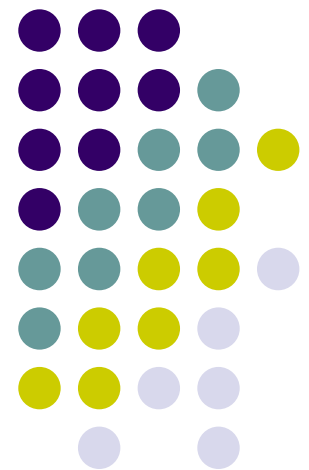
Trauma: Initial Survey

Primary and Secondary Surveys

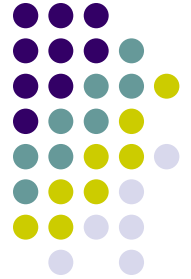
Dr. Jason Alexander

Dr. Melanie Walker

Huntington Memorial Hospital



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

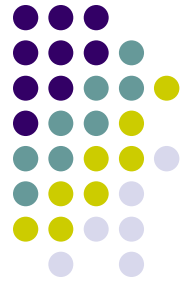


- Field blood loss
- Pre-hospital fluids



Primary Survey

- A
- B
- C
- D
- E
- Should take no more than 2-5 minutes



Primary Survey

- **A**irway management with cervical spine protection
- **B**reathing and ventilation
- **C**irculation with hemorrhage control

Primary Survey



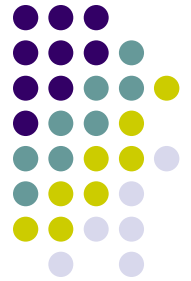
- **Disability:** Neurologic status
- **Exposure/Environmental control:** Completely expose patient

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)



Eyes	Verbal	Motor
1= do not open	1= nonverbal	1= none
2= open to pain	2= incomprehensible	2= extends to pain
3= open to voice	3= inappropriate	3= flexes to pain
4= open spontaneously	4= confused	4= withdraws to pain
	5= orientated	5= localizes pain
		6= follows commands
<i>Best EYE +</i>	<i>Best VERBAL +</i>	<i>Best MOTOR</i>

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



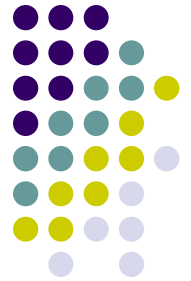
- Infant
 - Head in neutral position
 - Do NOT overextend head and neck
- Child and adult
 - Head and neck slightly extended
 - Line from chin to jaw angle perpendicular to floor
- Use other hand's fingers under bony part of chin
 - Do NOT use thumb to lift chin
 - Lift mandible upward and outward



Breathing and Ventilation

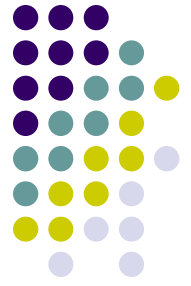
- Directed at acutely life-threatening disease processes that impair breathing
- Observe respiratory rate and use of accessory muscles
- Listen for breath sounds
- Inspect chest for crepitus and open wounds

Breathing and Ventilation: Life-Threatening Insults



- Tension Pneumothorax
- Open Pneumothorax
- Massive Hemothorax
- Flail chest with pulmonary contusion

Breathing and Ventilation: Tension Pneumothorax



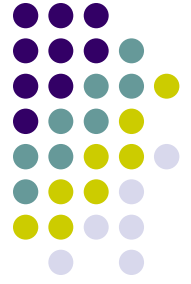
- Diagnosis
 - Absent breath sounds
 - Tympanitic chest
 - Distended neck veins
 - Tracheal deviation
- Treatment
 - Needle thoracostomy
 - Tube thoracostomy

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



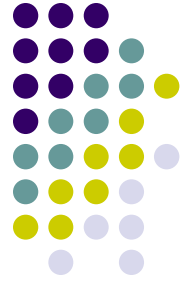
- Must have adequate IV access
- Inadequate circulation is a clinical diagnosis augmented by vital signs.
- Young victims will often manifest a tachycardia when they are hypovolemic followed by hypotension
- Older patients or medicated patients may not be able to mount a tachycardia

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



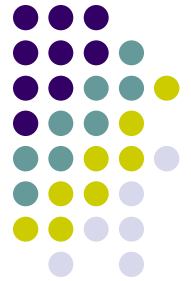
- Additional locations of hemorrhage most often forgotten are:
 - Active external hemorrhage
 - Hemorrhage in the field

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 (eg. 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

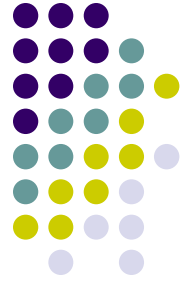
- Abdomen
- Rectum
 - Prostate (in males)
 - Sphincter
- Genitalia
- Extremities
 - Bones
 - Soft tissues

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



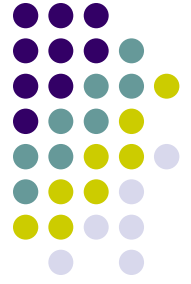
- Airway management takes first priority
- Treatment of bleeding can be delayed for a few minutes if intensive resuscitation is necessary

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