

# Trauma: Initial Survey

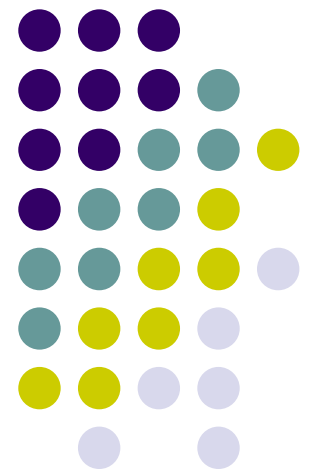
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Primary and Secondary Surveys

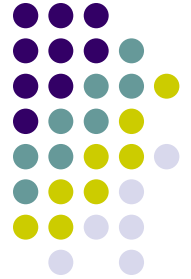
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# Prehospital Phase



- 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

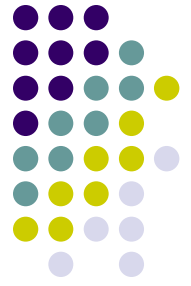


- Field blood loss
- Pre-hospital fluids



# Primary Survey

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



# Primary Survey

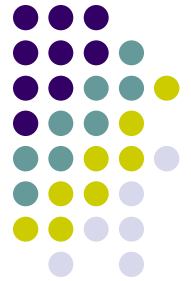
- **A**irway management with cervical spine protection
- **B**reathing and ventilation
- **C**irculation with hemorrhage control

# Primary Survey



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

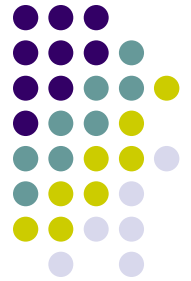
# Glasgow Coma Scale (Adults)



- 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)



<b>Eyes</b>	<b>Verbal</b>	<b>Motor</b>
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
<b><i>Best EYE +</i></b>	<b><i>Best VERBAL +</i></b>	<b><i>Best MOTOR</i></b>

# 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



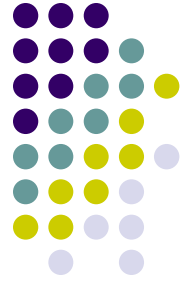
- Infant
  - Head in neutral position
  - Do NOT overextend head and neck
- Child and adult
  - Head and neck slightly extended
  - Line from chin to jaw angle perpendicular to floor
- Use other hand's fingers under bony part of chin
  - Do NOT use thumb to lift chin
  - Lift mandible upward and outward



# 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



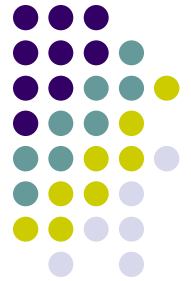
- Tension Pneumothorax
- Open Pneumothorax
- Massive Hemothorax
- Flail chest with pulmonary contusion

# Breathing and Ventilation: Tension Pneumothorax



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

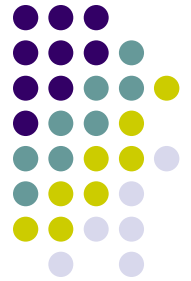
# Breathing and Ventilation: Open Pneumothorax



- 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



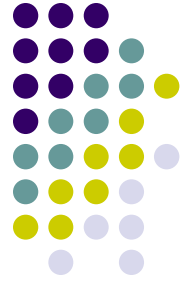
- Must have adequate IV access
- Inadequate circulation is a clinical diagnosis augmented by vital signs.
- Young victims will often manifest a tachycardia when they are hypovolemic followed by hypotension
- Older patients or medicated patients may not be able to mount a tachycardia

# 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

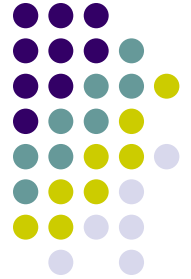




# Exposure/Environmental

- 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

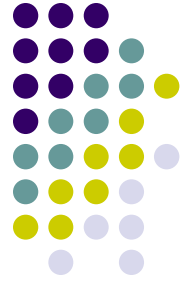
- Abdomen
- Rectum
  - Prostate (in males)
  - Sphincter
- Genitalia
- Extremities
  - Bones
  - Soft tissues

# The Secondary Survey

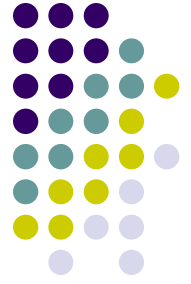


- Neurologic system
  - Reflexes
  - Sensation
  - Hemispheric function
  - Spinal function

# 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

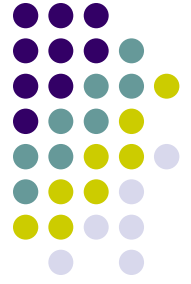
# Assignment of Priorities



- 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