


Introduction to Emergency Trauma Care


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Learning Objectives:

- Approach to Emergency Trauma Care: Primary & secondary Surveys
- Primary Survey: Components
- Primary Survey: Assessment, Adjuncts & Management
- Primary Survey: Adjustments for Extremes of Age
- Primary Survey: Adjustments for Pregnancy
- Overview of Secondary Survey




Principles of Emergency Trauma Care - General




History & Progression

- Trauma care is as old as War.
- It has come a long way in the last half a century.
- Major Paradigm Shifts:
 - Un-organized >>> Organized
 - Disease/Organ-Oriented >>> Patient-Oriented
 - Single Operator >>> Team Work
 - Surgical Field >>> Multidisciplinary Field




Emergency Trauma Surveys

Primary	Secondary
<ul style="list-style-type: none">▪ Addresses Life-Threatening Injuries in order of priority▪ Mostly Hands-On Exam▪ Limited Diagnostics▪ Aimed at Survival	<ul style="list-style-type: none">▪ Addresses Potentially Life-Threatening Injuries▪ Focused History & Full Exam▪ Sophisticated Diagnostics▪ Aimed at Definitive Therapies



Primary Survey: Components


Airway	▪ Conducted Simultaneously.
Breathing	▪ If Priorities compete, Use the order.
Circulation	▪ Repeat whenever patient deteriorates.
Disability	▪ May last minutes, hours or days.
Exposure	▪ Reassess before moving to secondary survey.



Primary Survey: Assessment, Adjuncts & Management

- Airway
 - Obstruction
 - Aspiration
 - Obtundation
 - Inadequate Oxygenation/Ventilation
- Breathing
- Circulation
- Disability
- Exposure


- **Assessment:**
 - LOC, Noise, Effort
 - Talking /Managing secretions
 - Head & Neck exam
- **Adjuncts:**
 - Respiratory Rate & Pulse Oxymetry
- **Management:**
 - C-Spine Immobilization
 - Maneuvers & Supplementary O₂
 - Definitive Airway (surgical)



Primary Survey: Assessment, Adjuncts & Management

- Airway
- Breathing
 - Tension Pneumothorax
 - Massive Hemothorax
 - Open Pneumothorax
 - Tracheal/Bronchial Injury
- Circulation
- Disability
- Exposure


- **Assessment:**
 - Deformity, asymmetry, trachea
 - Crepitus, percussion note
 - Breath sounds
- **Adjuncts:**
 - Chest X-Ray
 - US (eFAST)
- **Management:**
 - Decompression
 - Chest Tube insertion
 - Surgical Repair



Primary Survey: Assessment, Adjuncts & Management

- Airway
- Breathing
- Circulation
 - External Bleeding
 - Tamponade
 - Intraoperative Bleeding
 - Retroperitoneal Bleeding
 - Long Bone Fractures
- Disability
- Exposure


- **Assessment:**
 - Wounds
 - Abdomen, pelvic stability
 - Long bone Deformity
- **Adjuncts:**
 - FAST
 - Pelvis X-ray
- **Management:**
 - Pressure, Pelvic binder, splint
 - Blood transfusion
 - Surgical source control
 - Interventional source control



Primary Survey: Assessment, Adjuncts & Management

Airway	<ul style="list-style-type: none">▪ Assessment:<ul style="list-style-type: none">- Glasgow Coma Scale- Pupillary response- Lateralizing signs▪ Adjuncts:<ul style="list-style-type: none">-▪ Management:<ul style="list-style-type: none">- Prevent 2nd Injury- Control ICP- Surgical Decompression / evacuation
Breathing	
Circulation	
Disability	
Exposure	


- Extra-Axial Hematoma
- Brain Edema & High ICP
- Spinal Cord injury




Primary Survey: Assessment, Adjuncts & Management

Airway	<ul style="list-style-type: none">▪ Assessment:<ul style="list-style-type: none">- Log-roll- Wounds, step-offs▪ Adjuncts:<ul style="list-style-type: none">-▪ Management:<ul style="list-style-type: none">- Injury-specific- Cover, warm blanket, warm IV fluids.
Breathing	
Circulation	
Disability	
Exposure	

- Hidden Injuries
- Hypothermia



Principles of Emergency Trauma Care - Pediatric



Highlights

- *Priorities are still the same.*
- Trauma is No.1 cause of death & disability in children.
- Multi-system injury pattern is the rule.
- Mechanisms vary by age & are mostly preventable.
- Vital signs, medication doses & equipments vary by age / weight.
- Initial aggressive compensation then sudden decline.



Pediatric Differences & Adjustments:

Airway

- Larger head & Tongue, Short Trachea

Breathing

- more lung contusions, less rib fractures

Circulation

- Shock masked by aggressive compensation

Disability

- Less focal lesions, more edema & high ICP

Exposure

- More prone to hypothermia

- A: Position, equipment, No surgical airway.
- B: Early intervention, Ant. Decompression.
- C: Early intervention, Non-operative Management.
- D: Modified GCS or AVPU.
- E: Keep warmth, ?child maltreatment.



Principles of Emergency Trauma Care – Geriatric



Highlights

- *Priorities are still the same.*
- More prone to Traumatic injuries due to senility.
- Mostly low energy mechanisms compounded by reduced physiological reserve.
- Mortality is proportional to the number of comorbidities.
- Comorbidities & Medication effects may confound the assessment.
- Early & liberal use of advanced diagnostics is recommended.



Geriatric Differences & Adjustments:

- Airway
 - **No teeth, Stiff neck**
- Breathing
 - **More Rib fractures**
- Circulation
 - **Blunted response to shock**
- Disability
 - **More Intra-cranial bleeding**
 - **More spinal fractures**
- Exposure
 - **More extremity injuries**

- A: no force, proper equipment.
- B: Early intervention.
- C: Early intervention, Early advanced monitoring.
- D: Liberal use of CT-scan, reversal of anticoagulation.
- E: ? Elder Maltreatment.



Principles of Emergency Trauma Care – Pregnancy



Highlights

- *Priorities are still the same.*
- The best care of the fetus is optimal resuscitation of the mother.
- The fetus is very sensitive to maternal hypoxia & hypovolemia.
- Gravid uterus occupying the abdomen is pivotal consideration.
- Physiological changes may mask maternal shock.
- If necessary, radiological studies shouldn't be withheld.



Pregnancy Differences & Adjustments:

- Airway
- Breathing
 - Reduced Reserve
- Circulation
 - Signs of shock may be delayed
- Disability
- Exposure
- Fetal Assessment
 - Uterine Rupture
 - Placental Abruption

- A: use class B medications.
- B: Early intervention, chest tube 1-2 spaces higher.
- C: Displace Uterus, Early intervention, Obst. Evaluation before surgery.
- D: Shield & Scan.
- E: ? Domestic violence.
- F: U/S, CTG & Rh-IG



Secondary Survey

- Focused History:
 - Allergies - Medications - Past illness - Last meal - Events
- Head-to-toe Exam:
 - Full Exam including detailed Neurological & musculoskeletal exams.
- Diagnostics:
 - Mainly CT-scans: -Pan-Scan - Special studies
- Adjuncts:
 - Catheters -Traction - Extremity X-rays.

