Trauma Management

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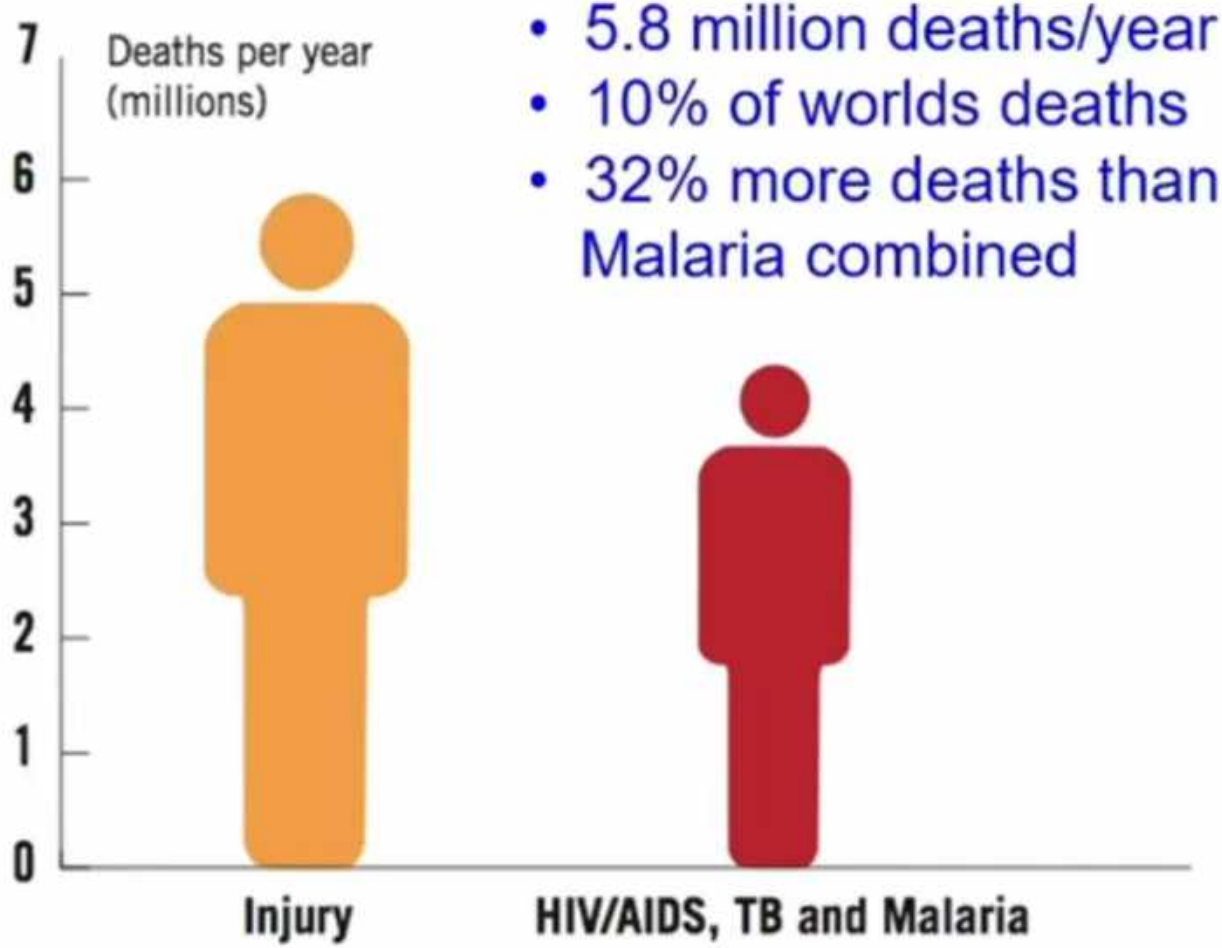
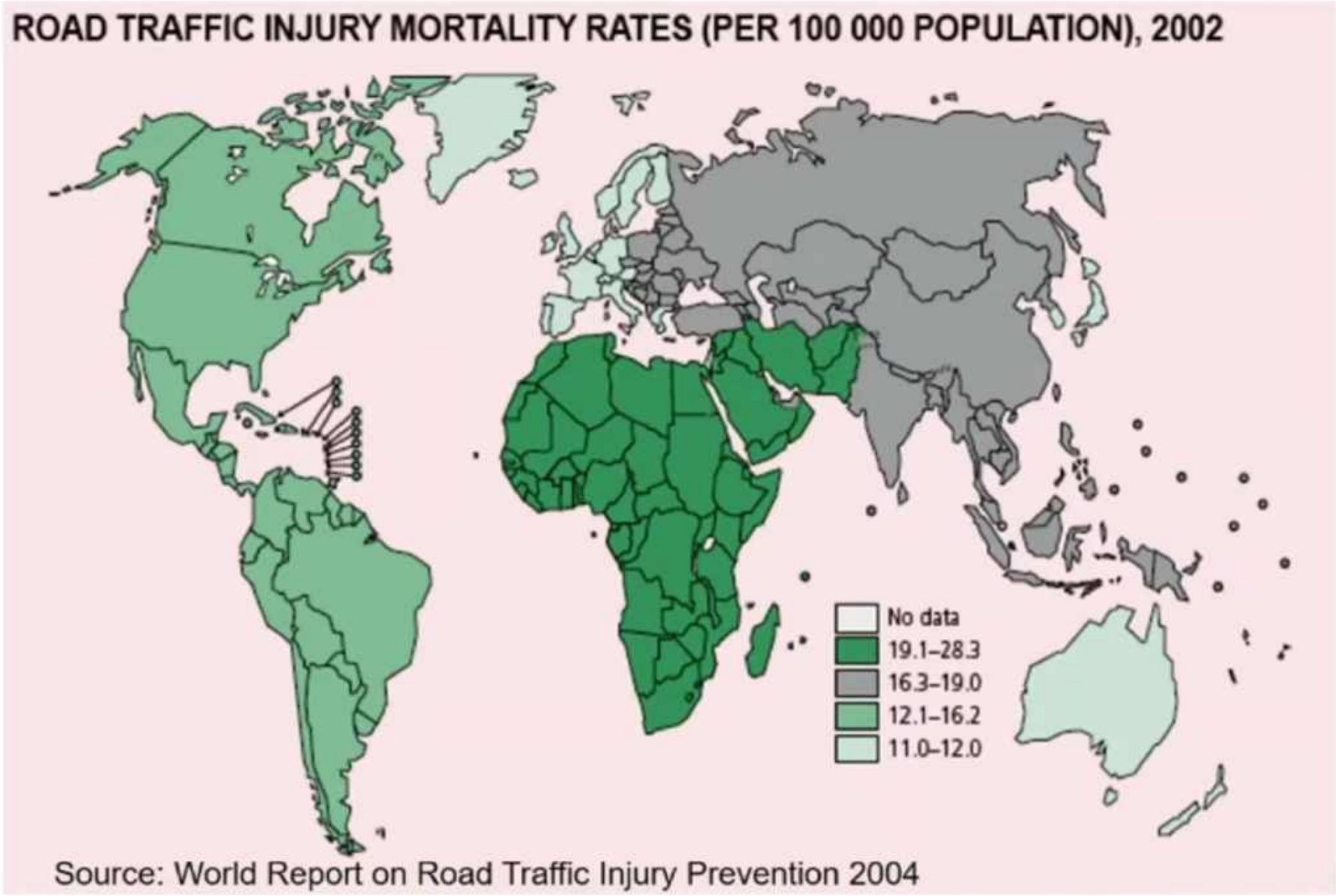
Injury: Scale of the Global Problem

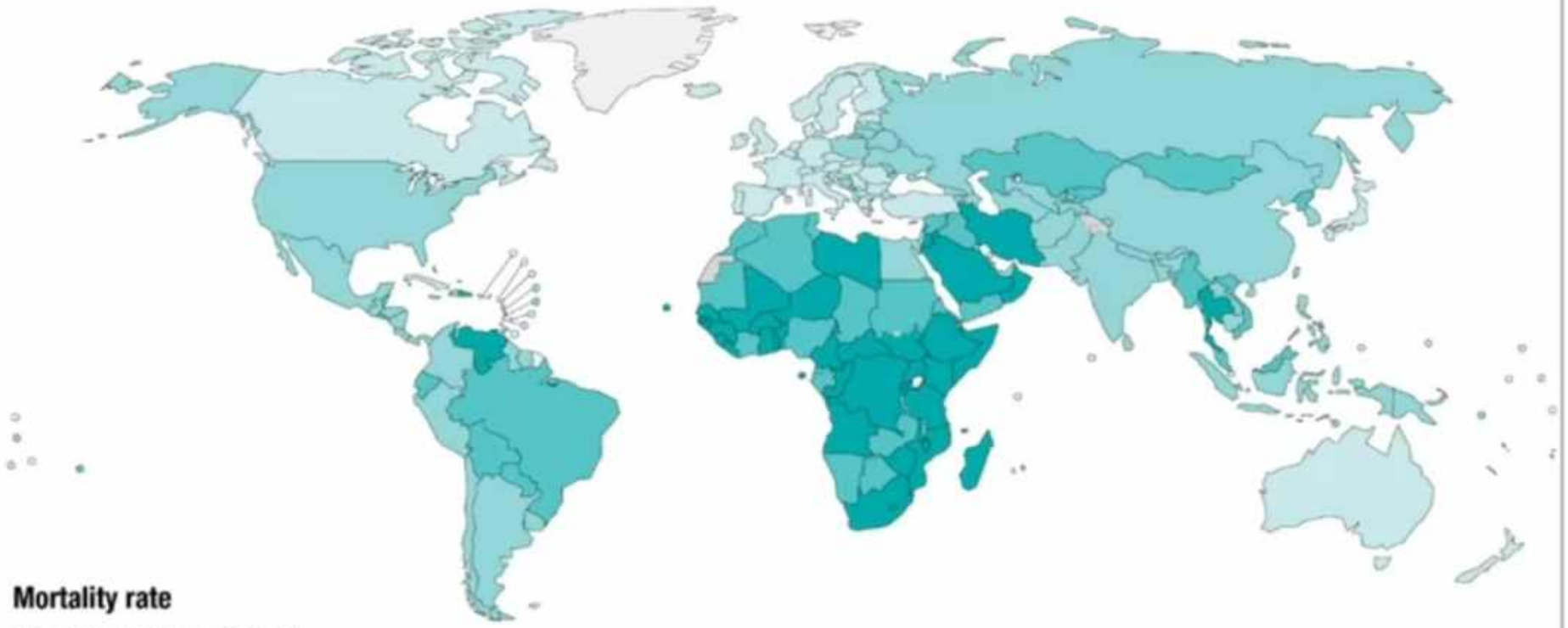


- 5.8 million deaths/year
- 10% of worlds deaths
- 32% more deaths than HIV, TB and Malaria combined

Injury: Scale of the Global Problem



Road traffic mortality rate, 2013*



Mortality rate
(per 100 000 population)

- <10.0
- 10.0–19.9
- 20.0–24.9
- ≥25.0
- Data not available
- Not applicable

0 750 1500 3000 Kilometres

* WHO Member States with a population of less than 90 000 in 2015 who did not participate in the survey for the Global status report on road safety 2015 were not included in the analysis.

Data Source: World Health Organization
Map production: Information Evidence and Research (IER)
World Health Organization

World Health Organization


1,350,000
ROAD TRAFFIC DEATHS
IN THE WORLD, EVERY YEAR
#RoadSafety
World Health Organization

Low-income countries
have 1% of the **world's vehicles**
but 13% of **road traffic deaths**

High-income countries
have 40% of the **world's vehicles**
but 7% of **road traffic deaths.**

#RoadSafety
Fourth Year Lectures

World Health Organization

ROAD TRAFFIC INJURIES ARE THE 8TH LEADING CAUSE OF DEATH GLOBALLY.

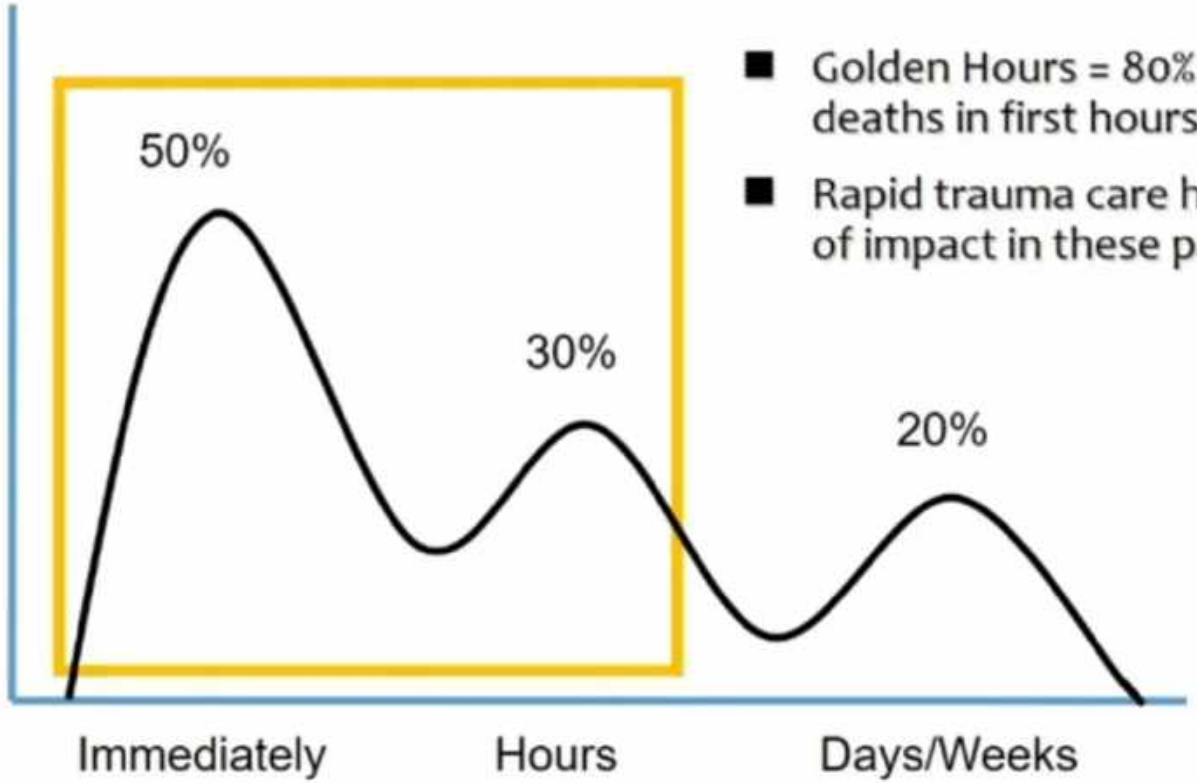
#RoadSafety

Fourth Year Lectures

World Health Organization

Epidemiology

Trimodal Distribution of Trauma Deaths



- Golden Hours = 80% of trauma deaths in first hours after injury
- Rapid trauma care has greatest level of impact in these patients

History of Trauma System Development

- Standardized Trauma Assessment
  - Nebraska Cornfield, 1976
  - Orthopedic Surgeon
  - Lead to development of ATLS
- Trauma Systems Development
  - First developed my military in wartime
    - i.e. MASH Units
  - Expanded in US to Level 1, 2, 3 Trauma Centers
    - Urban Systems
    - Statewide networks of systems
    - Level 1 – Highest level of care, Leaders in research, clinical care and education
    - Level 2 – Provides definitive care in wide range of complex traumatic patients
    - Level 3 – Provides initial stabilization and treatment. May care for uncomplicated trauma patients
    - Level 4 – Provides initial stabilization and transfers all trauma patients for definitive care

Mechanisms of Injury

Blunt Trauma

- MVC motor vehicle collisions
- Pedestrian vs Vehicle
- Falls

Mechanisms of Injury

- Blunt Trauma
  - Compression Forces
    - Cells in tissues are compressed and crushed
    - E.g. Spleen
  - Shear Forces
    - Acceleration/Deceleration Injury
    - E.g. Aorta
      - Shearing force = Spectrum from Full thickness tear (Exsanguination) to Partial tear (Pseudoaneurysm)
  - Overpressure
    - Body cavity compressed at a rate faster than the tissue around it, resulting in rupture of the closed space
    - E.g. Plastic bag
    - E.g. in trauma = diaphragmatic rupture, bladder injury

frontal brain contusion
pneumothorax
rupture of left hemidiaphragm
small bowel rupture

deceleration injury
-aortic tear - fixed descending aorta
-acute subdural brain hematoma
-kidney avulsion
-splenic pedicle

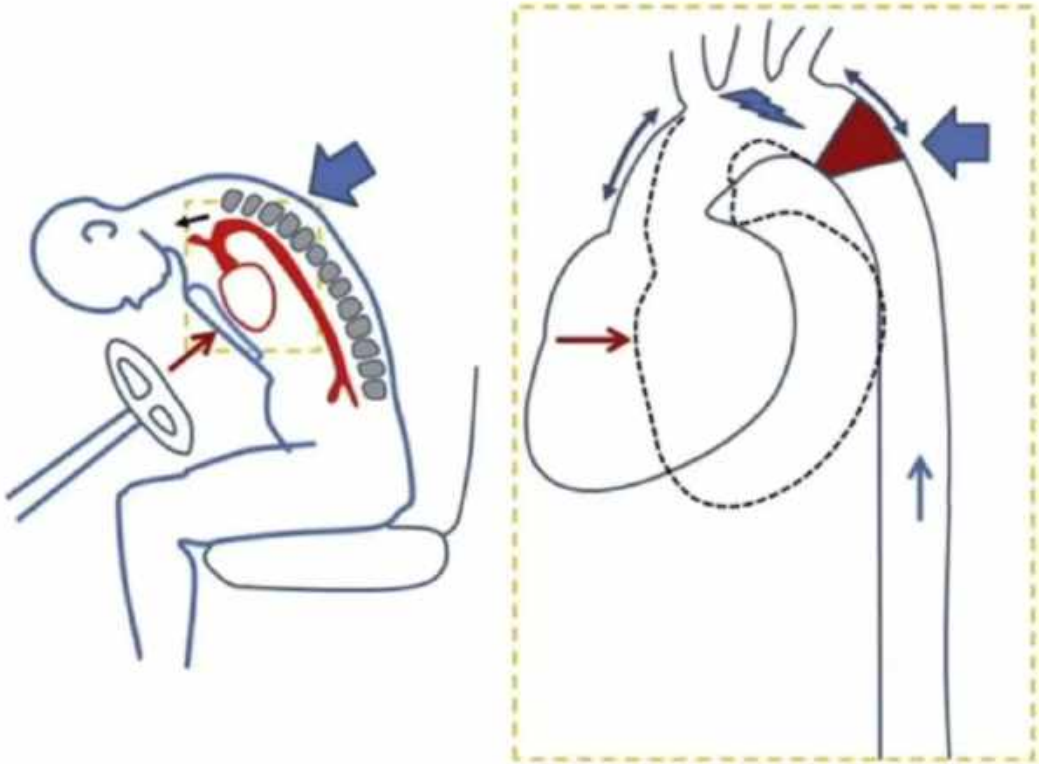
Compression injury
Tissues are compressed and crushed

- Frontal brain contusion
- Pneumothorax
- Rupture of Left hemidiaphragm
- Small bowel rupture

Figure 9.1 Major points of injury to an unrestrained driver of a vehicle in deceleration impact.

Deceleration Injury

- Aortic tear – Fixed descending aorta
- Acute subdural brain hematoma
- Kidney avulsion
- Splenic pedicle

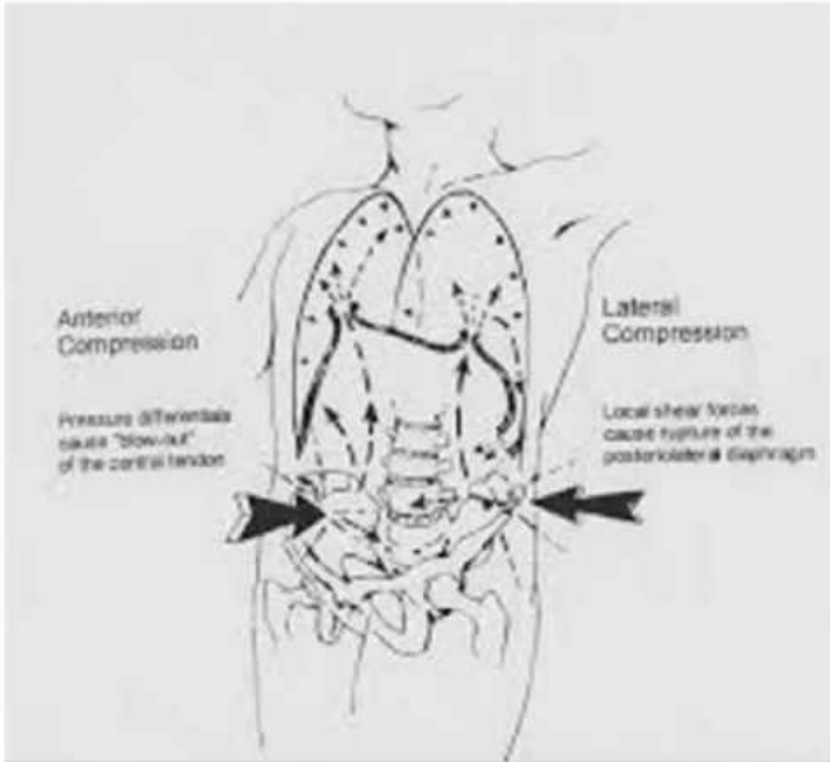


Overpressure

- Body cavity compressed at a rate faster than the tissue around it, resulting in rupture of the closed space

- E.g. in trauma = diaphragmatic rupture

  bladder injury



Mechanisms of Injury

- Frontal Impact Collisions
- Lateral Impact Collisions (T bone)
- Rear Impact Collisions
- Rollover Mechanism
- Open Vehicle or Motorcycle/Moped
- Pedestrian Vs. Car
- Penetrating Injury (Guns vs. Knives)

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- Depending on the severity, it can be
- a puncture wound (sharp object pierces the skin and creates a small hole without entering a body cavity, such as a bite),
- a penetrating wound (a sharp object pierces the skin, creating a single open wound, AND enters a tissue or body cavity, such as a knife stab),
- Perforating wound (object passes completely through the body, having both an entry and exit wound, and Trajectory such as a gunshot wound)

Mechanisms of Injury: Penetrating Trauma

- **Gunshot injuries**
- **Mechanisms of injury**
  - Medium-velocity or high-velocity injuries
  - Damage also caused to structures adjacent to the path of the bullet
  - Dense organs (e.g., liver, spleen) undergo more damage because they absorb more energy, resulting in greater injury.
- **Other penetrating injuries**
- **Mechanism of injury**
  - Usually caused by a sharp, impaling object (e.g., knife, ice pick, broken bottle)
  - Low-velocity injuries
  - Hemorrhage and infection are the most significant mechanisms responsible for morbidity and mortality

Mechanisms of Injury: Special Situations

- Explosions – Blunt + penetrating + burns
- Burns
- Crush injuries

Basics of Trauma Assessment

- Preparation
  - Team Assembly
  - Equipment Check
- Triage
  - Sort patients by level of acuity
- Primary Survey
  - Designed to identify injuries that are immediately life threatening and to treat them as they are identified
- Resuscitation
  - Rapid procedures and treatment to treat injuries found in primary survey before completing the secondary survey
- Secondary Survey
  - Full History and Physical Exam to evaluate for other traumatic injuries
- Monitoring and Evaluation, Secondary adjuncts
- Transfer to Definitive Care
  - ICU, Ward, Operating Theatre, Another facility

Prehospital information ATMIST

- **A**ge, sex and relevant history
- **T**ime of incident
- **M**echanism of incident
- **I**njuries suspected
- **S**igns and symptoms
- **T**reatment given
- **E**stimated **T**ime of **A**rrival

Preparation

- Universal precautions

Preparation

- Universal precautions
- Task allocation:
  - Role
  - Competency

Preparation

- Universal precautions
- Task allocation:
  - Role
  - Competency
- Check of all equipment

Team organisation

Airway

Breathing

Circulation

TEAM LEADER

Patient reception

Team Leader's initial actions:

- Safe transfer
- "5-sec round"
- Handover from prehospital team

"5-sec round"

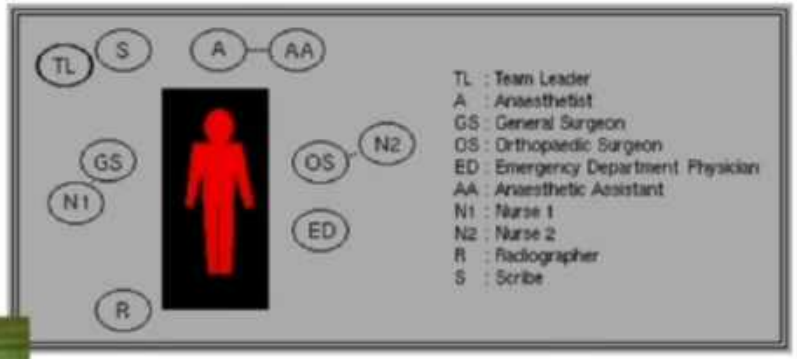
- On arrival of the patient, the Team Leader checks:
  - Airway clear?
  - Any massive external bleeding?
  - Pulse?

Change of plan?

Primary survey and resucitation

To identify and treat all immediately life-threatening injuries

Preparation for Patient Arrival



Organize Trauma Response Team

Top and bottom images:
http://www.trauma.org/archive/resus/traumateam.html

An introduction to teamwork

- **Technical skills**

- **Non-technical skills**

Technical skills on the ETC

Airway

Spinal care

Thoracostomy

Pelvic splint

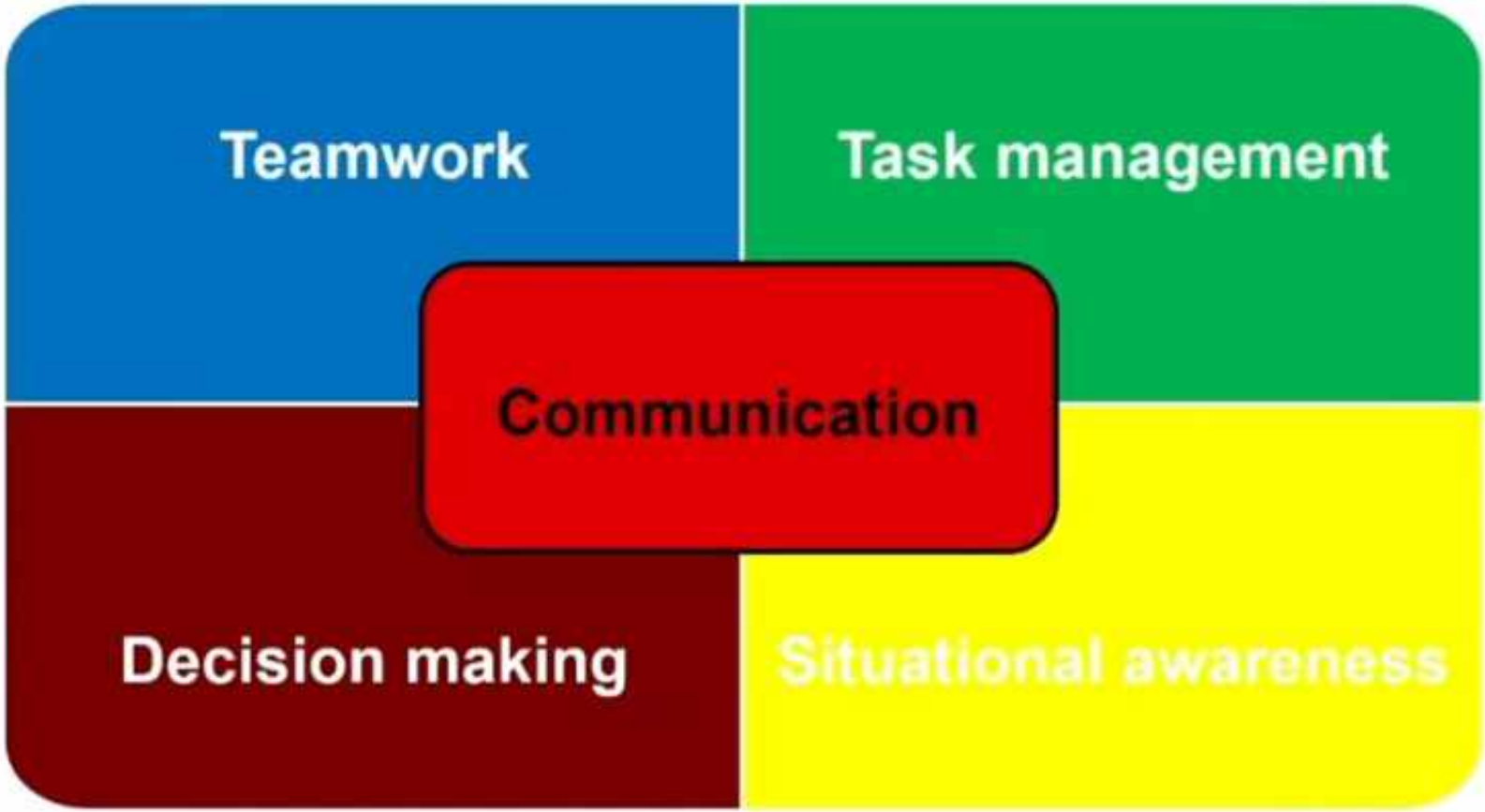
Radiology

Neurological assessment

Paediatrics

IO access

Non-technical skills on the ETC




Teamwork

Teamwork

- Coordinating activities with team
- Exchanging information
- Using authority & assertiveness
- Assessing capabilities
- Supporting others

Primary Survey

- **A**irway and Protection of Spinal Cord
- **B**reathing and Ventilation
- **C**irculation
- **D**isability
- **E**xposure and Control of the Environment

Primary Survey

- Key Principles
  - When you find a problem during the primary survey, FIX IT.
  - If the patient gets worse, restart from the beginning of the primary survey
  - Some critical patients in the Emergency Department may not progress beyond the primary survey

Airway and Protection of Spinal Cord

- Why first in the algorithm?
  - Loss of airway can result in death in < 3 minutes
  - Prolonged hypoxia = Inadequate perfusion, End-organ damage
- Airway Assessment
  - Vital Signs = RR, O2 sat
  - Mental Status = Agitation, Somnolent, Coma
  - Airway Patency = Secretions, Stridor, Obstruction
  - Traumatic Injury above the clavicles
  - Ventilation Status = Accessory muscle use, Retractions, Wheezing
- Clinical Pearls
  - Patients who are speaking normally generally do not have a need for immediate airway management
  - Hoarse or weak voice may indicate a subtle tracheal or laryngeal injury
  - Noisy respirations frequently indicates an obstructed respiratory pattern

Airway Interventions

- Maintenance of Airway Patency
  - Suction of Secretions
  - Chin Lift/Jaw thrust
  - Nasopharyngeal Airway
  - Definitive Airway
- Airway Support
  - Oxygen
  - NRBM (100%)
  - Bag Valve Mask
  - Definitive Airway
- Definitive Airway
  - Endotracheal Intubation
    - In-line cervical stabilization
  - Surgical Crichothyroidotomy

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PD-GOV

Ignis, Wikimedia Commons

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U.S. Navy photo by Photographer's Mate 2nd Class Timothy Smith.

Protection of Spinal Cord

- General Principle: Protect the entire spinal cord until injury has been excluded by radiography or clinical physical exam in patients with potential spinal cord injury.
- Spinal Protection
  - Rigid Cervical Spinal Collar = Cervical Spine
  - Long rigid spinal board or immobilization on flat surface such as stretcher = T/L Spine
- Etiology of Spinal Cord Injury (U.S.)
  - Road Traffic Accidents (47%)
  - High energy falls (23%)
- Clinical Pearls
  - Treatment (Immobilization) before diagnosis
  - Return head to neutral position
  - Do not apply traction
  - Diagnosis of spinal cord injury should not precede resuscitation
  - Motor vehicle crashes and falls are most commonly associated with spinal cord injuries
  - Main focus = Prevention of further injury

C-spine Immobilization

- Return head to neutral position
- Maintain in-line stabilization
- Correct size collar application
- Blocks/tape
- Sandbags

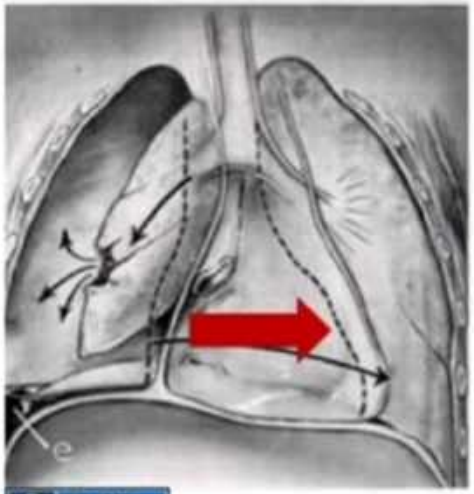
James Heilman, MD, Wikimedia Commons

Paladinsf

Breathing and Ventilation

- General Principle: Adequate gas exchange is required to maximize patient oxygenation and carbon dioxide elimination
- Breathing/Ventilation Assessment:
  - Exposure of chest
  - General Inspection
    - Tracheal Deviation
    - Accessory Muscle Use
    - Retractions
    - Absence of spontaneous breathing
    - Paradoxical chest wall movement
  - Auscultation to assess for gas exchange
    - Equal Bilaterally
    - Diminished or Absent breath sounds
  - Palpation
    - Deviated Trachea
    - Broken ribs
    - Injuries to chest wall

Breathing and Ventilation



PD-GOV Delldot (wikimedia)

PD-INEL
Author unknown,
www.meddean.luc.edu/lumenMedEd/medicine/pulmonar/cxr/pneumo1.ht

- Identify Life Threatening Injuries
  - Tension Pneumothorax
    - Air trapping in the pleural space between the lung and chest wall
    - Sufficient pressure builds up and pressure to compress the lungs and shift the mediastinum
    - Physical exam
      - Absent breath sounds
      - Air hunger
      - Distended neck veins
      - Tracheal shift
    - Treatment
      - Needle Decompression
        - 2nd Intercostal space, Midclavicular line
      - Tube Thoracostomy
        - 5th Intercostal space, Anterior axillary line

Breathing and Ventilation

- Hemothorax
  - Blood collecting in the pleural space and is common after penetrating and blunt chest trauma
  - Source of bleeding = Lung, Chest wall (intercostal arteries), heart, great vessels (Aorta), Diaphragm
  - Physical Exam
    - Absent or diminished breath sounds
    - Dullness to percussion over chest
    - Hemodynamic instability
  - Treatment = Large Caliber Tube Thoracostomy
    - 10-20% of cases will require Thoracostomy for control of bleeding

Author unknown, http://www.trauma.org/index.php/main/images/C11/

Breathing and Ventilation

Figure Flail chest occurs when three or more adjacent ribs fracture in two or more places.

http://images1.clinicaltools.com/images/trauma/flail_chest_wounded.gif

- Flail Chest
  - Direct injury to the chest resulting in an unstable segment of the chest wall that moves separately from remainder of thoracic cage
  - Typically results from two or more fractures on 2 or more ribs
  - Typically accompanied by a pulmonary contusion
  - Physical exam = paradoxical movement of chest segment
  - Treatment = improve abnormalities in gas exchange
    - Early intubation for patients with respiratory distress
    - Avoidance of overaggressive fluid resuscitation

Breathing and Ventilation

Author unknown,
http://www.trauma.org/index.php/main/image/902/

- Open Pneumothorax
  - Sucking Chest Wound
  - Large defect of chest wall
    - Leads to rapid equilibration of atmospheric and intrathoracic pressure
    - Impairs oxygenation and ventilation
  - Initial Treatment
    - Three sided occlusive dressing
    - Provides a flutter valve effect
    - Chest tube placement remote to site of wound
    - Avoid complete dressing, will create a tension pneumothorax

PD-GOV

Middle and bottom images:
Author unknown,

Needle Thoracostomy

- Needle Thoracostomy
  - Midclavicular line
  - 14 gauge angiocath
  - Over the 2nd rib
  - Rush of air is heard

Tube Thoracostomy

Author unknown,
http://www.trauma.org/images/image_library/chest0051a.jpg

- Insertion site
  - 5th intercostal space,
  - Anterior axillary line
- Sterile prep, anesthesia with lidocaine
- 2-3 cm incision along rib margin with #10 blade
- Dissect through subcutaneous tissues to rib margin
- Puncture the pleura over the rib
- Advance chest tube with clamp and direct posteriorly and apically
- Observe for fogging of chest tube, blood output
- Suture the tube in place
- Complications of Chest Tube Placement
  - Injury to intercostal nerve, artery, vein
  - Injury to lung
  - Injury to mediastinum
  - Infection
  - Allergic reaction to lidocaine
  - Inappropriate placement of chest tube

Circulation

- Shock
  - Impaired tissue perfusion
  - Tissue oxygenation is inadequate to meet metabolic demand
  - Prolonged shock state leads to multi-organ system failure and cell death
- Clinical Signs of Shock
  - Altered mental status
  - Tachycardia (HR > 100) = Most common sign
  - Arterial Hypotension (SBP < 120)
    - Femoral Pulse – SBP > 80
    - Radial Pulse – SBP > 90
    - Carotid Pulse – SBP > 60
  - Inadequate Tissue Perfusion
    - Pale skin color
    - Cool clammy skin
    - Delayed cap refill (> 3 seconds)
    - Altered LOC
    - Decreased Urine Output (UOP < 0.5 mL/kg/hr)

Circulation

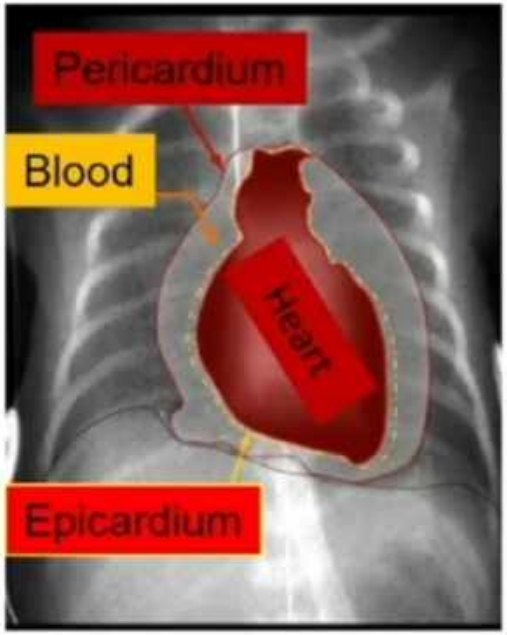
- Types of Shock in Trauma
  - Hemorrhagic
    - Assume hemorrhagic shock in all trauma patients until proven otherwise
    - Results from Internal or External Bleeding
  - Obstructive
    - Cardiac Tamponade
    - Tension Pneumothorax
  - Neurogenic
    - Spinal Cord injury
- Sources of Bleeding
  - Chest
  - Abdomen
  - Retroperitonium
  - Pelvis
  - Bilateral Femur Fractures

Circulation

- Emergency Nursing Treatment
  - Two Large IV Lines
  - Cardiac Monitor
  - Blood Pressure Monitoring
- General Treatment Principles
  - Stop the bleeding
    - Apply direct pressure
    - Temporarily close scalp lacerations
  - Close open-book pelvic fractures
    - Abdominal pelvic binder/bed sheet
  - Restore circulating volume
    - Crystalloid Resuscitation (2L)
    - Administer Blood Products
  - Immobilize fractures
- Responders vs. Nonresponders
  - Transient response to volume resuscitation = sign of ongoing blood loss
  - Non-responders = consider other source for shock state or further steps for control of massive hemorrhage

Circulation

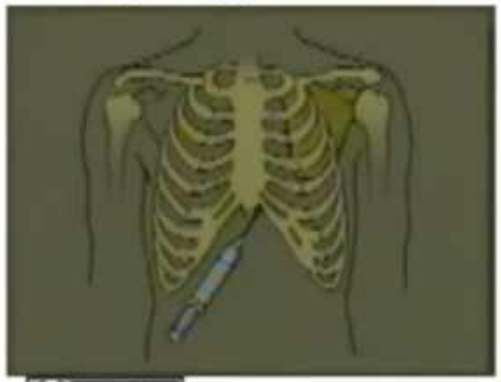
- Pericardial Tamponade
  - Pericardium or sac around heart fills with blood due to penetrating or blunt injury to chest
  - Beck's Triad
    - Distended jugular veins
    - Hypotension
    - Muffled heart sounds
  - Treatment
    - Rapid evacuation of pericardial space
    - Performed through a pericardiocentesis (temporizing measure)
    - Open thoracotomy



Aceofhearts1968(Wikimedia)

Pericardiocentesis

Author unknown,
http://www.trauma.org/images/image_library/chest0054_thumb.jpg



Author unknown.

- Puncture the skin 1-2 cm inferior to xiphoid process
- 45/45/45 degree angle
- Advance needle to tip of left scapula
- Withdraw on needle during advance of needle
- Preferable under ultrasound guidance or EKG lead V attachment
- Complications
  - Aspiration of ventricular blood
  - Laceration of coronary arteries, veins, epicardium/myocardium
  - Cardiac arrhythmia
  - Pneumothorax
  - Puncture of esophagus
  - Puncture of peritoneum

Disability

- Baseline Neurologic Exam
  - Pupillary Exam
    - Dilated pupil – suggests transtentorial herniation on ipsilateral side
  - AVPU Scale
    - Alert
    - Responds to verbal stimulation
    - Responds to pain
    - Unresponsive
  - Gross Neurological Exam – Extremity Movement
    - Equal and symmetric
    - Normal gross sensation
  - Glasgow Coma Scale: 3-15
  - Rectal Exam
    - Normal Rectal Tone
- Note: If intubation prior to neuro assessment, consider quick neuro assessment to determine degree of injury

Disability

GCS ≤ 8
Intubate

- Glasgow Coma Scale
  - Eye
    - Spontaneously opens 4
    - To verbal command 3
    - To pain 2
    - No response 1
  - Best Motor Response
    - Obeys verbal commands 6
    - Localizes to pain 5
    - Withdraws from pain 4
    - Flexion to pain (Decorticate Posturing) 3
    - Extension to pain (Decerebrate Posturing) 2
    - No response 1
  - Verbal Response
    - Oriented/Conversant 5
    - Disoriented/Confused 4
    - Inappropriate words 3
    - Incomprehensible words 2
    - No response 1

Disability

- Key Principles
  - Precise diagnosis is not necessary at this point in evaluation
  - Prevention of further injury and identification of neurologic injury is the goal
  - Decreased level of consciousness = Head injury until proven otherwise
  - Maintenance of adequate cerebral perfusion is key to prevention of further brain injury
    - Adequate oxygenation
    - Avoid hypotension
  - Involve neurosurgeon early for clear intracranial lesions

Disability

- Cervical Spinal Clearance
  - Patients must be alert and oriented to person, place and time
  - No neurological deficits
  - Not clinically intoxicated with alcohol or drugs
  - Non-tender at all spinous processes
  - No distracting injuries
  - Painless range of motion of neck

Exposure

- Remove all clothing
  - Examine for other signs of injury
  - Injuries cannot be diagnosed until seen by provider
- Logroll the patient to examine patient's back
  - Maintain cervical spinal immobilization
  - Palpate along thoracic and lumbar spine
  - Minimum of 3 people, often more providers required
- Avoid hypothermia
  - Apply warm blankets after removing clothes
  - Hypothermia = Coagulopathy
    - Increases risk of hemorrhage

Exposure

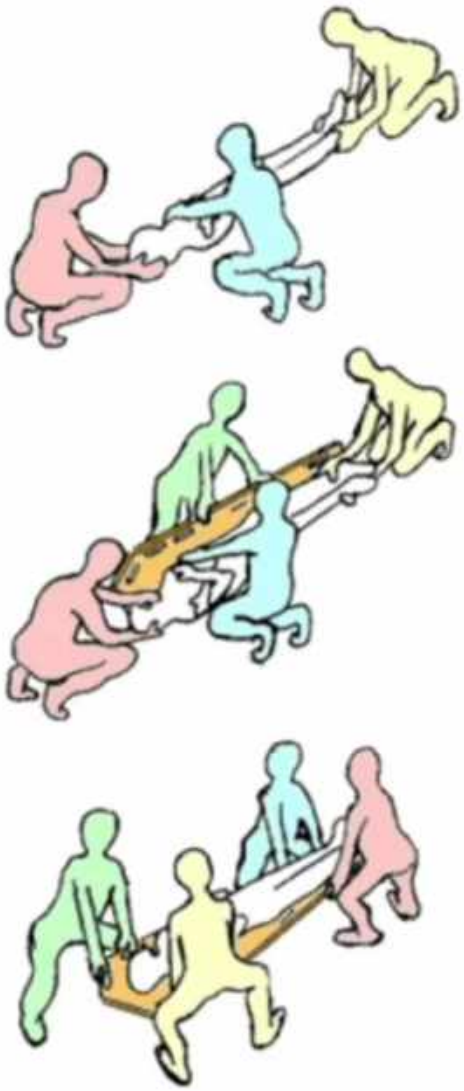
Author unknown,
http://www.trauma.org/index.php/main/image/98/C11

Exposure

Author unknown,
http://www.trauma.org/images/image_library/chest0044b.jpg

Trauma Logroll

- One person = Cervical spine
- Two-Three people = Roll main body
- One person = Inspect back and palpate spine



Adjuncts to Primary Survey

- Radiology
  - Standard emergent films
    - C-spine, CXR, Pelvis
  - Focused Abdominal Sonography in Trauma (FAST)
  - Additional films
    - Cat scan imaging
    - Angiography

- Foley Catheter
  - Blood at urethral meatus = No Foley catheter
- Pain Control
- Tetanus Status
- Antibiotics for open fractures

Secondary Survey

- Secondary Survey is completed after primary survey is completed and patient has been adequately resuscitated.
- No patient with abnormal vital signs should proceed through a secondary survey
- Secondary Survey includes a brief history and complete physical exam

Secondary survey

ONLY WHEN

ALL IMMEDIATELY LIFE-THREATENING CONDITIONS

HAVE BEEN TREATED!

Secondary survey

- Examine head to toe, front and back
- Request further investigations as needed
- Review all documentation
- Full medical history
- Review current treatment plan
- Develop a definitive care plan

May be delayed because of transfer to the operating room, ICU, or another hospital

History

- AMPLE History
  - **A**llergies
  - **M**edications
  - **P**ast Medical History, Pregnancy
  - **L**ast Meal
  - **E**vents surrounding injury, Environment
- History may need to be gathered from family members or ambulance service

Physical Exam

- Head/HEENT
- Neck
- Chest
- Abdomen
- Pelvis
- Genitourinary
- Extremities
- Neurologic

FAST Exam

- Focused Abdominal Sonography in Trauma

- 4 views of the abdomen to look for fluid.
  - RUQ/Morrison's pouch between liver and kidney / first place where the fluid collect in supine patient
  - Sub-xiphoid – view of heart search for fluid between the heart and the pericardium
  - LUQ – view of spleno-renal junction between spleen and kidney / we can also see diaphragm
  - Bladder – view of pelvis posterior to bladder in douglas pouch

FAST

- Has largely replaced deep peritoneal lavage (DPL)
- Bedside ultrasound looking for blood collection in an unstable patient.
- If the patient is unstable and a blood collection is found, proceed emergently to the operating theater.

FAST

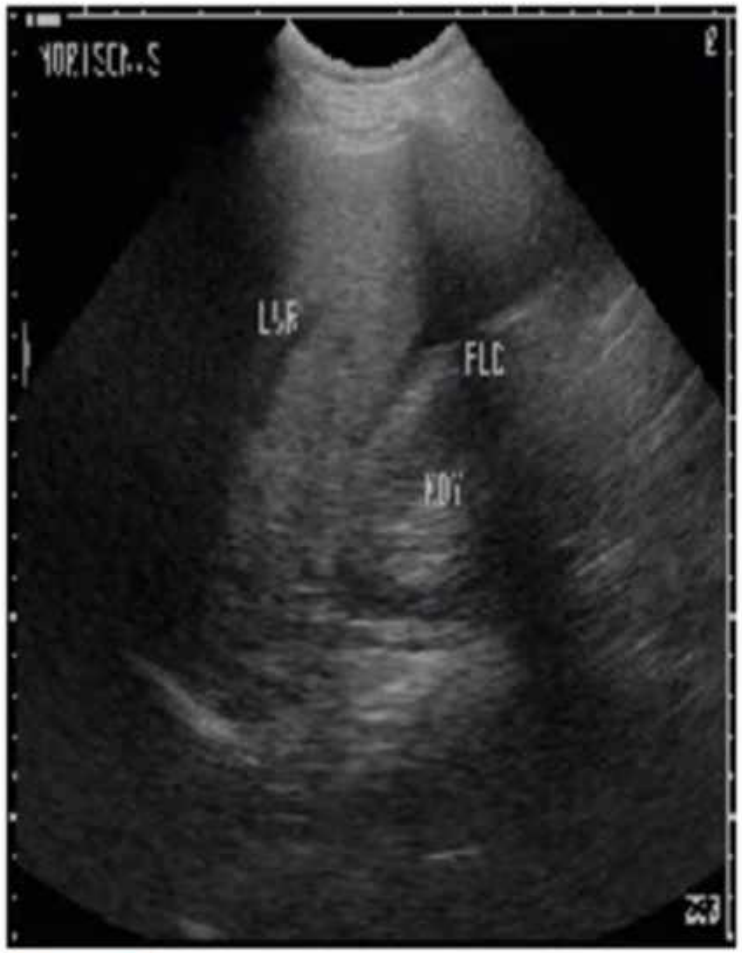
- Sensitivity of 94.6%
- Specificity of 95.1%
- Overall accuracy of 94.9% in identifying the presence of intra-abdominal injuries.
  - Yoshil: J Trauma 1998; 45

FAST
Right Upper Quadrant - Morrison's Pouch

- Between the liver and kidney in RUQ.
- First place that fluid collects in supine patient.

FAST Exam - RUQ

PD-INEL University of Louisville ED, www.louisville.edu/medschool/emergmed/ultrasoundfast.htm



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FAST – Sub-xiphoid

- Evaluate for pericardial fluid
- View through liver
  - Transhepatic or Parasternal
- Searches for fluid between heart and pericardium

FAST – Sub-xiphoid

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www.louisville.edu/medschool/emergmed/ultrasoundfast.htm

University of Louisville ED.
www.louisville.edu/medschool/emergmed/ultrasoundfast.htm

FAST – Left Upper Quadrant

- View between the spleen and kidney
- Another dependent place that fluid collects
- Also see diaphragm in this view

FAST - LUQ

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FAST – Bladder View

- Evaluates for fluid in the pouch of Douglas
  - Posterior to bladder
- Dependent potential space

FAST – Bladder View

PD-INEL University of Louisville ED, www.louisville.edu/medschool/emergmed/ultrasoundfast.htm

PD-INEL University of Louisville ED, www.louisville.edu/medschool/emergmed/ultrasoundfast.htm

Interpret this FAST Image:

PD-INEL

University of Louisville ED,
www.louisville.edu/medschool/emergmed/ultrasoundfast.htm

- eFAST
- Extended fast to include chest cavity.

Trauma in Special Populations

- Pregnancy
  - Supine Hypotensive Syndrome
    - After 20 weeks, enlarged uterus with fetus and amniotic fluid compresses inferior vena cava
    - Decreases venous return and decrease cardiac output
    - Keep pregnant patients in left lateral decubitus position to avoid excessive hypotension
  - Optimal maternal and fetal outcome is determined by adequate resuscitation of mother
  - Fetal Monitoring

Trauma in Special Populations

- Pediatric Trauma Resuscitation
  - Differences in head to body ratio and relative size and location of anatomic features make children more susceptible to head injury, abdominal injury
  - Underdeveloped anatomy leads to chest pliability and less protection of thoracic cage
  - Cardiac Arrest
    - Typically result from respiratory arrest degrading into cardiac arrest
  - Resuscitation
    - Broselow Tape
    - ABCDE

PD-INEL

Author unknown,
http://dukehealth1.org/images/deps_tape4_sm.gif

Classic Radiographical Findings

- Pelvic Fracture

Author unknown,
http://www.itim.nsw.gov.au/images/Open_book_pelvic_fracture_xray.jpg

Classic Radiographic Findings

- Femur Fracture

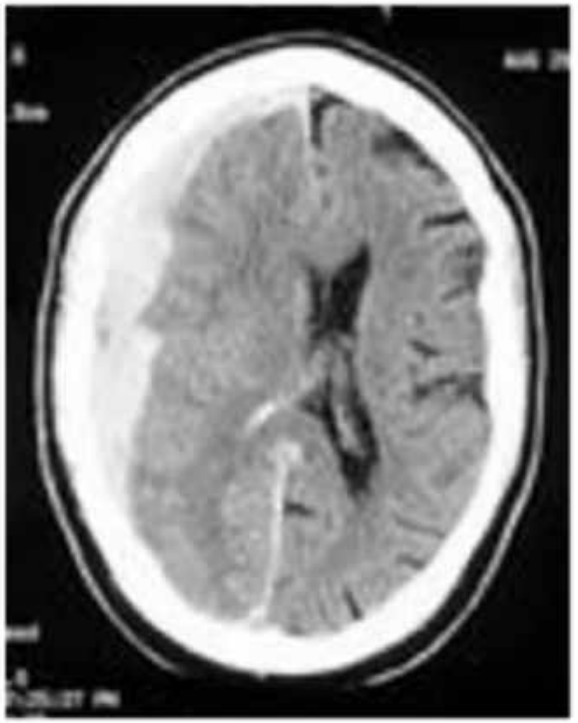
Author unknown,
www.flickr.com/photos/40939239@N08/3771820

Classic Radiographic Findings

- Epidural Hematoma
  - Middle Meningeal Artery

PD-INEL Author unknown, http://rad.usuhs.mil/medpix/tachy_pics/thumb/synpic4098.jpg

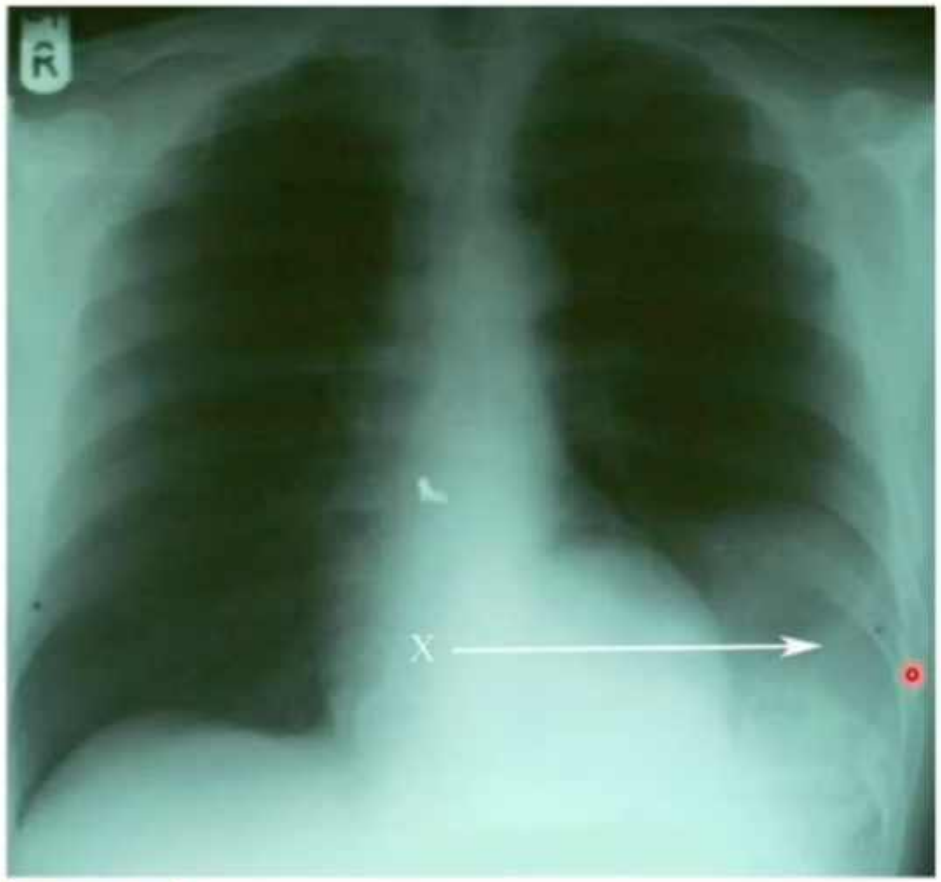
- Subdural Hematoma
  - Bridging Veins



PD-INEL Author unknown, http://rad.usuhs.edu/medpix/tachy_pics/thumb/synpic519.jpg

Classic Radiographic Findings

- Diaphragmatic rupture w/ spleen herniation



PD-INEL
Author unknown.

Classic Radiographic Findings

- Widened Mediastinum – Aortic Injury

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Author unknown,
www.trauma.org/index.php/main/image/45/print

Definitive Care

- Secondary Survey followed by radiographic evaluation
  - CatScan, MRI
  - Consultation
    - Neurosurgery
    - Orthopedic Surgery
    - Vascular Surgery
- Transfer to Definitive Care
  - Operating Room
  - ICU
  - Higher level facility

Conclusion

- Assessment of the trauma patient is a standard algorithm designed to ensure life threatening injuries do not get missed
- Primary Survey + Resuscitation
  - Airway
  - Breathing
  - Circulation
  - Disability
  - Exposure
- Secondary Survey
- Definitive Care

Any Questions?

Thank You!!