Road traffic accidents
Road traffic injuries classification

Vehicle occupants
- Driver
- Front seater
- Rear seaters

Outsiders
- Pedestrians
• Depends on type of impact crash
• Front impact crash
• Side impact crash
• Rear impact crash
• Roll over crash
• Other types of mishap
Front impact crash

- Car strike to another car
- Strike to some stationary object
  - Vehicle decelerate
  - Occupant continue to move forward
Injuries pattern

• Driver
  – Fracture of wrist and arms
  – Fracture of leg and pelvis from pressure against the foot pedals
  – Knee impact
  – Chest against steering wheel

• Impact of head
  – Abrasion and vertical cuts

• Severe impact
  – avulsion
  – basilar skull fracture
  – closed head injury
  – dislocation of atlanto-axial joint
• Front seat passenger
  – Without seat belt
• Rear seat passenger
Side impact crash

• Dicing injuries
  – Right angle or v–shape cuts caused by diced or cubical fragments
  – Cervical spinal fracture
  – Left side
    • Lacerate spleen, kidney, liver
    • Right side
      – Right lobe of liver, right kidney
Rear impact injuries

• Whiplash injuries
  – Muscle spasm and ligamentous injuries
  – Neck fractures are rare
Roll-over crash

• Non-belted occupants

  – Identification of driver
Other mishap

- Ejection
- Fire
- Submersion
Seat belt injuries

• Lap belt
  – Double shoulder harness

• Three point harness (diagonal and transverse strap)

• Abrasion and bruising to chest and abdomen
Air bags injuries

• A sensitive deceleration device triggers the ignition of sodium azide, a solid and highly toxic explosive propellant, which is converted in milliseconds to nitrogen gas.
• facial bruising
• Partial or complete amputation of fingers
• dislocated and fractured arms or cervical spine
  fatal head injuries.
• Eye injuries are common and range from mild corneal
  abrasions and chemical burns from contact
Pedestrian injury
Primary impact injuries

• Impact between vehicle and pedestrian
• Height determine site and nature of injuries
  – In children's head
  – Trunk and legs in adults
  – Projecting parts
    • Bumper, fender, lights, radiator or bonnet
    • If struck from behind
      – Thoracic spine or lumber spine
Bumper fracture

• Tibia and fibula of one or both legs

• Spiral or wedge shape fracture
  – Triangular base indicate site of impact
  – Apex points the direction

• Measure distance from heel to fracture site

• Unilateral fracture when hits from the side

• Scaled photography is important
Secondary impact injuries

- Point of impact above center of gravity
- Below center of gravity
Secondary injuries
Run-over injuries

- Depend on part of body run-over
- Weight and speed of vehicle
- Degloving injuries
- Tyre marks
Factors contributing accidents

- Environmental factors
- Mechanical factors
- Antecedent factors
Autopsy
• External injuries
• Internal injuries
  – Pneumothorax
  – Flail chest
  – Ladder tear at junction of aortic arch and descending aorta
  – Traumatic rupture of heart
  – Transverse tear of right atrium
• Abdomen
• peritoneal cavity
• Laceration of organs
• Crushing of tissue acid metabolites
Laboratory specimens
Railway injuries