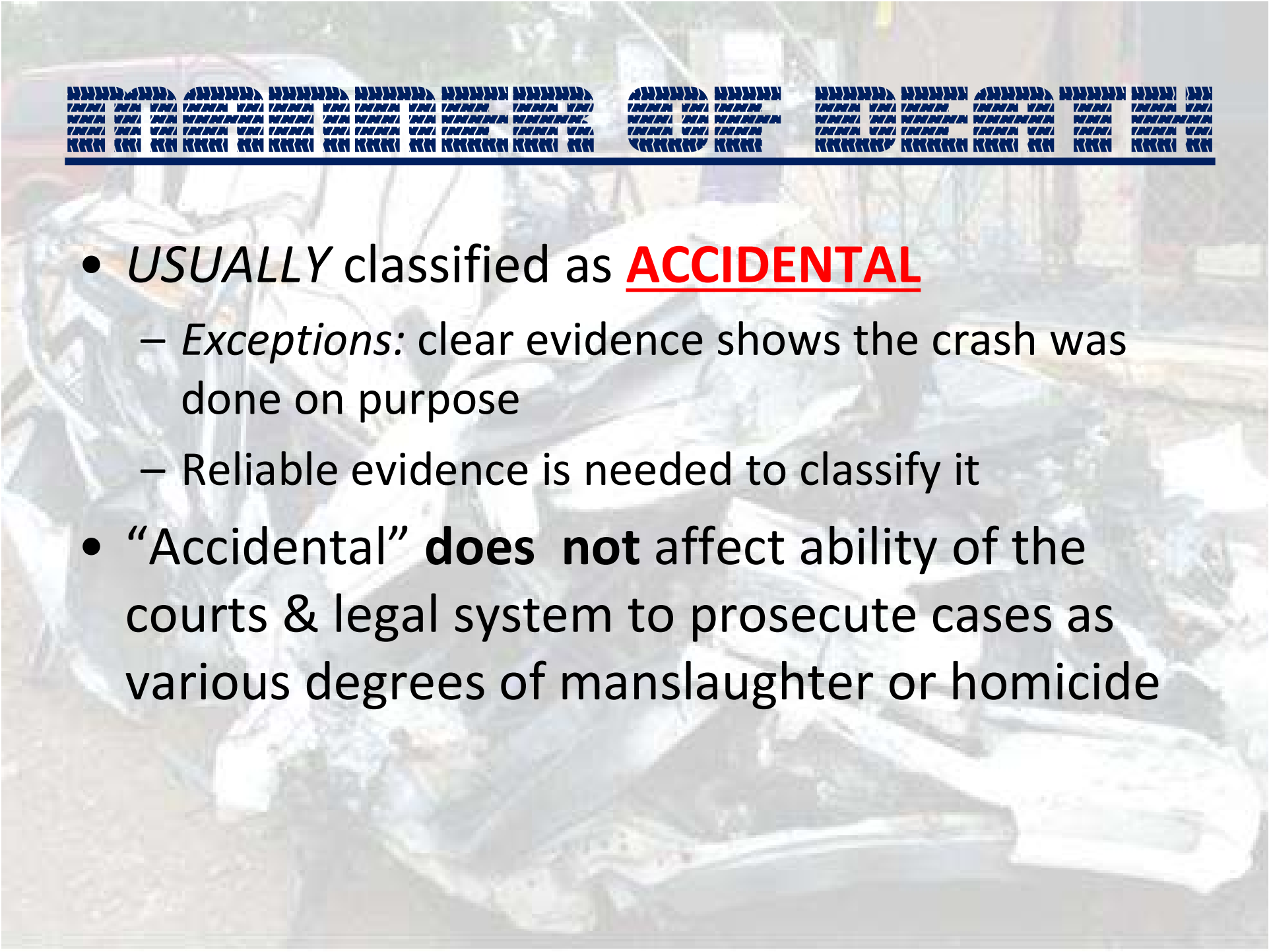




# ***FATAL CRASHES***

- In 2001: highway fatalities counted for 41,821 deaths in the US
- In 2003: In NV 361 of the 63,582 traffic crashes resulted in  $\geq 1$  fatality
- In 2012: In NV 235 fatal crashes occurred, in which 258 people died
- ~1.5 million weather-related crashes occur annually in the U.S.
  - ~75% of those crashes are caused by wet pavement

- 
- A photograph of a car crash scene, showing a severely damaged white vehicle. A blue police tape with white text is stretched across the top of the image. The background is slightly blurred, showing other vehicles and debris.
- *USUALLY* classified as **ACCIDENTAL**
    - *Exceptions:* clear evidence shows the crash was done on purpose
    - Reliable evidence is needed to classify it
  - “Accidental” **does not** affect ability of the courts & legal system to prosecute cases as various degrees of manslaughter or homicide

# **Types of crashes**

- 1. Front impact crashes**
- 2. Side impact crashes**
- 3. Rollover crashes**
- 4. Rear impact crashes**

1

# FRONT IMPACT

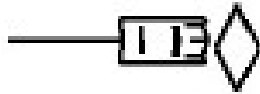
## CRASH TEST

- Head-on collision of 2 vehicles, or a vehicle crashes into a fixed object

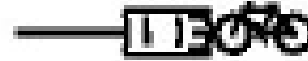
*\*\* The most common type of MVA*



HEAD-ON COLLISION



COLLISION WITH ANIMAL



PEDAL CYCLE



TRAIN





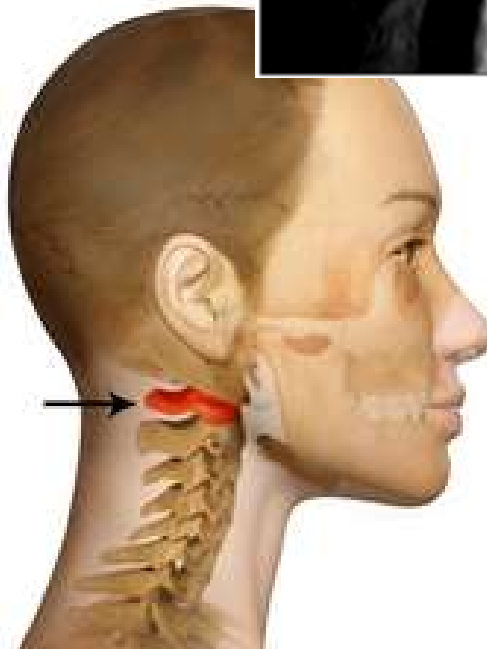
# ***INJURIES TO UNRESTRAINED DRIVER***

**INJURIES due to DRIVER'S HEAD impacting  
the WINDSHIELD/SUN VISOR**

- abrasions, contusions, lacerations, & avulsions of the face & scalp
- Fractures of skull
  - **hinge fracture**: @ base of skull



In neck injuries, the most common fatal injuries are upper cervical fractures or dislocation at the atlanto-occipital junction



### Atlanto-Axial Dislocation And Fracture

The atlanto-axial joint is one of the complex and important joint in the body.

Displaced fracture or dislocation of the Atlanto-axial joint may cause life-threatening complications.

#### Causes:

- Direct Trauma
- Bone Disorders

Airbags deploy at a maximum speed of 200 mph, faster than a blink of an eye. Having your feet on the dash can send your legs through your eye sockets.

**#SafetyFirst**





# GLASS INJURIES

- **Windshield** consists of 2 planes of glass that are **laminated** to either side of a flexible plastic
  - Meant to prevent windshield from completely fragmented when damaged
  - Limits likelihood that occupants will penetrate into or thru the pane during a crash
- Occupants who impact glass may break outer layers, deform plastic layer, & sustain only relatively minor incised wounds
  - ~vertically oriented & clustered on the forehead

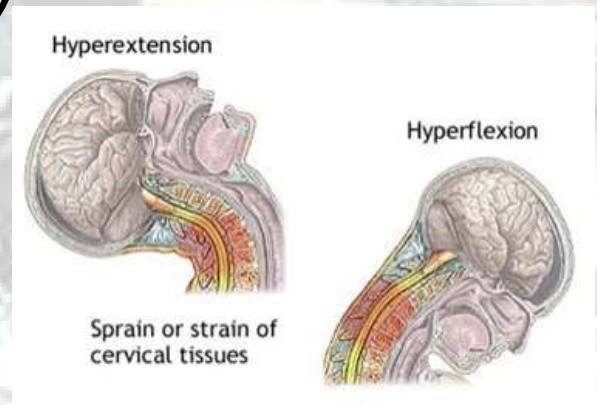


# **GLASS INJURIES**

- If the windshield is penetrated, the penetrating body part may sustain deep incised wounds as it bobs against the broken edge of the glass

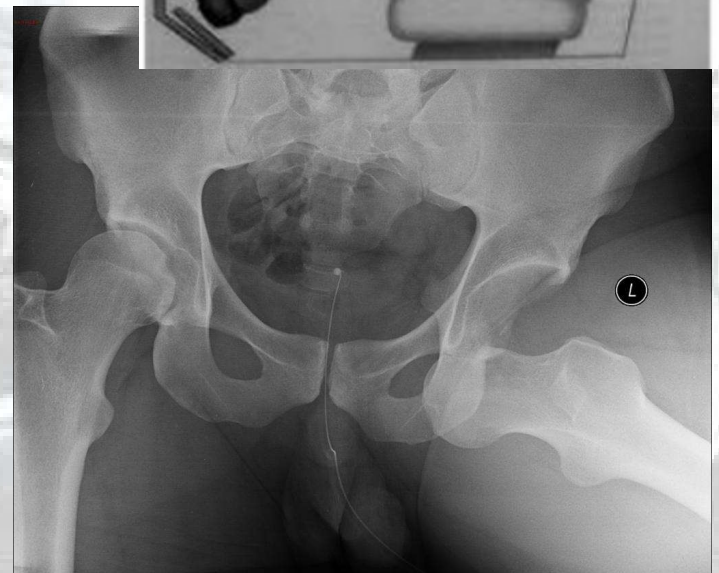
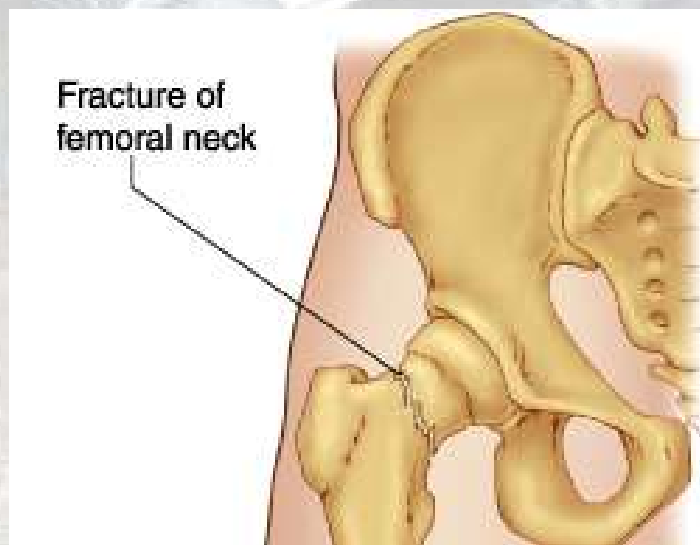
# ***INJURIES DUE TO CHEST IMPACTING THE STEERING WHEEL***

- Neck injuries (*hyperflexion of neck*)
- Injuries to the torso
  - Pattern contusion
  - Fractures of sternum
  - Impaling injuries of lungs b/c fractured ribs
  - Contusions & lacerations of lungs
  - Contusions & lacerations of heart
  - Transection of the aorta
  - Lacerations of liver & spleen



# ***INJURIES DUE TO KNEES IMPACTING THE DASHBOARD***

- Fractures of patella and/or distal femur
- Dislocation of hip joints
- Femoral neck fracture



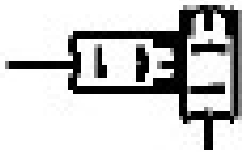




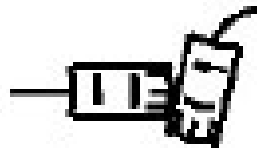
# PERPENDICULAR

## COLLISIONS

- Usually occur @ intersections when a car is struck on the side by another vehicle going thru the intersection at right angles to the 1<sup>st</sup> car



ANGLE COLLISION



LEFT-TURN COLLISION



CHAIN REACTION COLLISION



# Side Impact

## Crashes

- Injury pattern indicate the impact site & location of the occupants in the car @ the time of crash
- Seat belts are less effective in preventing injuries b/c the sides of the vehicle are less protective than the front & rear



# ***DICING INJURIES***

- Superficial cuts & bruises of the skin due to the fragments of glass produced when the side & back windows of a car shatters
- Glass used in side & back windows is **tempered glass** which is designed to shatter into little pieces
- The marks produced by these little cubes of glass tend to be linear, right angled, L-shaped, & very superficial (**dicing wound**: dice shaped pieces of glass)