

Speed Kills

(or does it?)

Provider Perspective

John K. Cumming, M.D.
Hennepin County Medical Center

Speed Kills

 Overview

Speed Kills

 Overview

 It's not the speed

Speed Kills

☒ Overview

- ☒ It's not the speed
- ☒ Types and patterns of injury

Speed Kills

☒ Overview

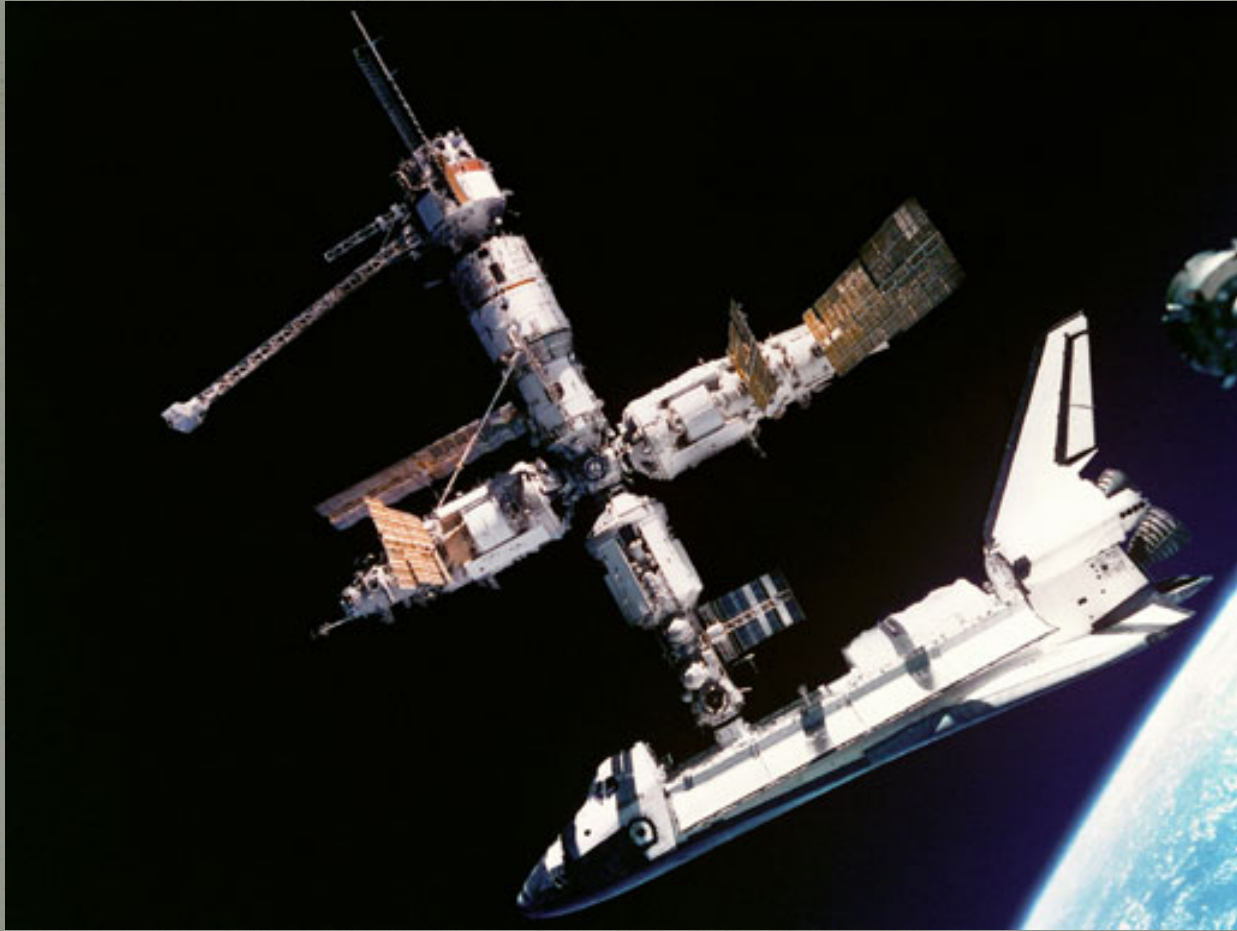
- ☒ It's not the speed
- ☒ Types and patterns of injury
- ☒ The scene and transport

Speed Kills

☒ Overview

- ☒ It's not the speed
- ☒ Types and patterns of injury
- ☒ The scene and transport
- ☒ Case review

It's not the speed



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 - ❖ Orientation
 - ❖ Deformability
 - ❖ Use of restraints
 - ❖ Occupant characteristics

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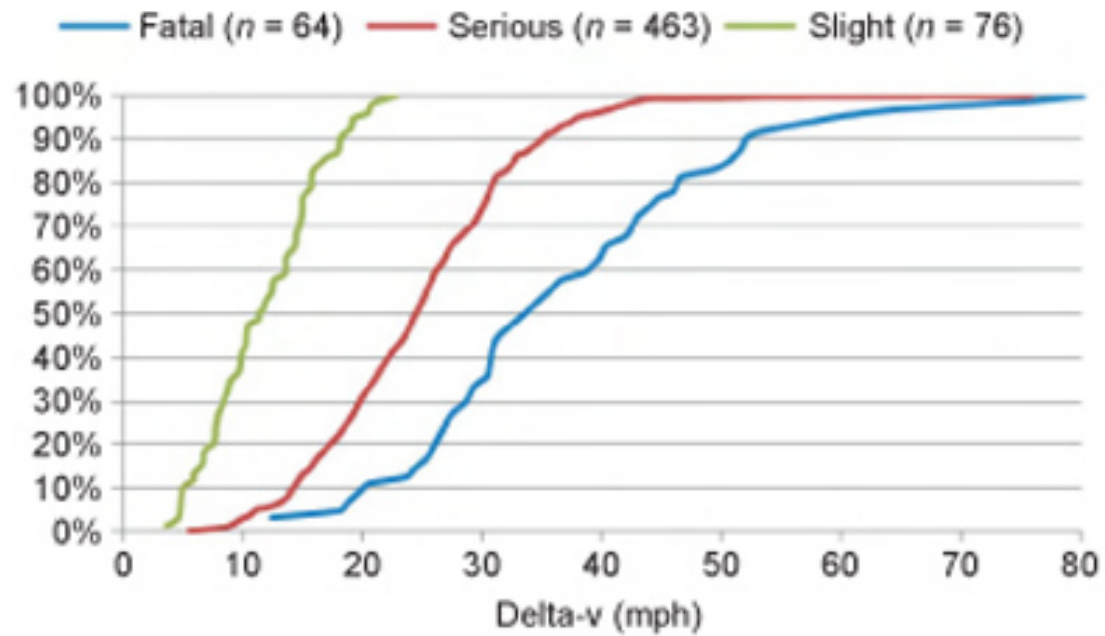
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$$F=MA$$

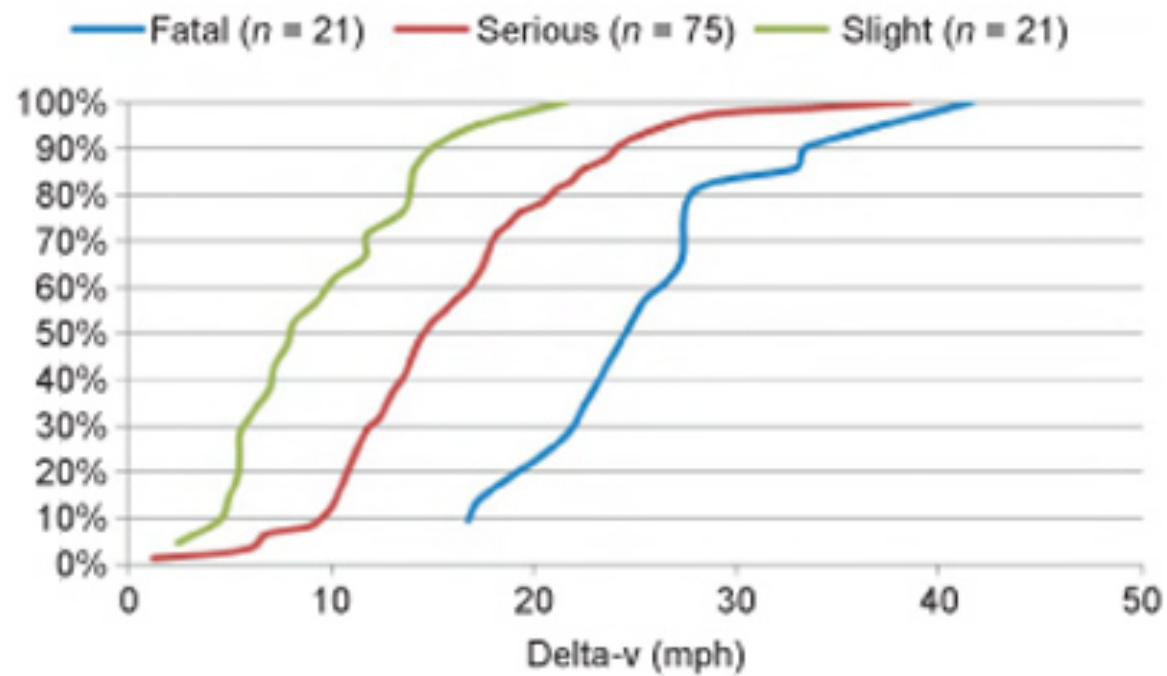
It's not the speed

Figure 3.1: Cumulative speed curves for drivers in frontal impacts



It's not the speed

Figure 3.3: Cumulative speed curves for drivers in side impacts



It's not the speed

Table 1.
Rollover Exposed Front Seat Occupants by Belt Use and Ejection Status

OCCUPANTS	Belted	Unbelted
NO EJECTION	1,958,515	577,096
COMP. EJECT	4,113	102,357
PART EJECT	44,688	35,815
EJECT DEG UNK	545	3,413
TOTAL	2,007,861	718,681

It's not the speed

Table 2.
MAIS 3+ Injured Front Seat Occupants by Belt Use and Ejection Status

MAIS 3+	Belted	Unbelted
NO EJECTION	23,373	23,644
COMP. EJECT	397	26,450
PART EJECT	2,121	3,454
EJECT DEG UNK	0	654
TOTAL	25,891	54,202

Injury Pattern/Mechanism

 Frontal Impact

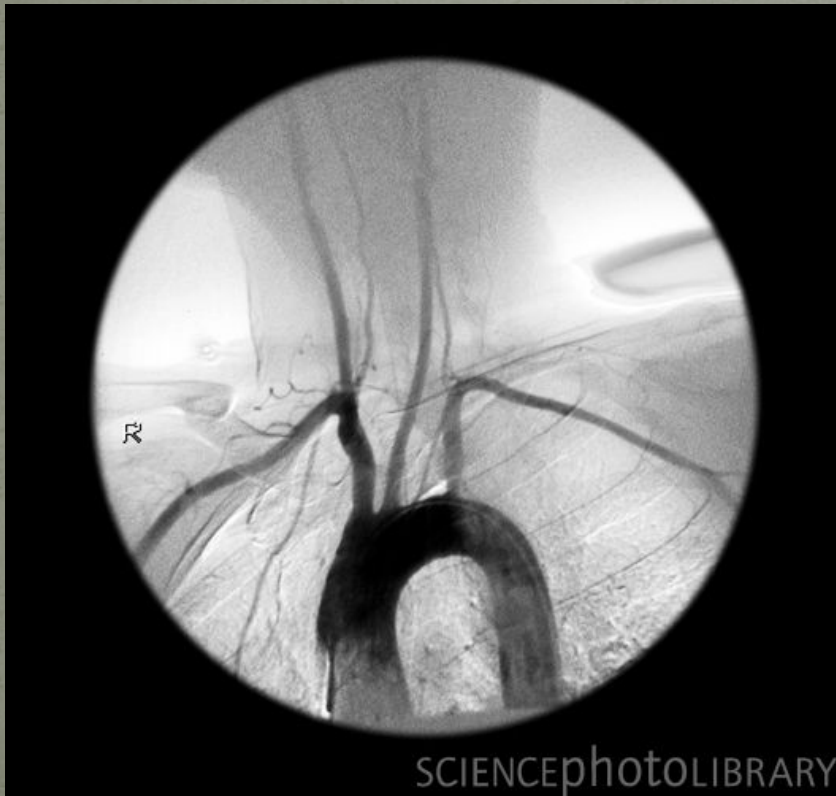
Injury Pattern/Mechanism

Frontal Impact

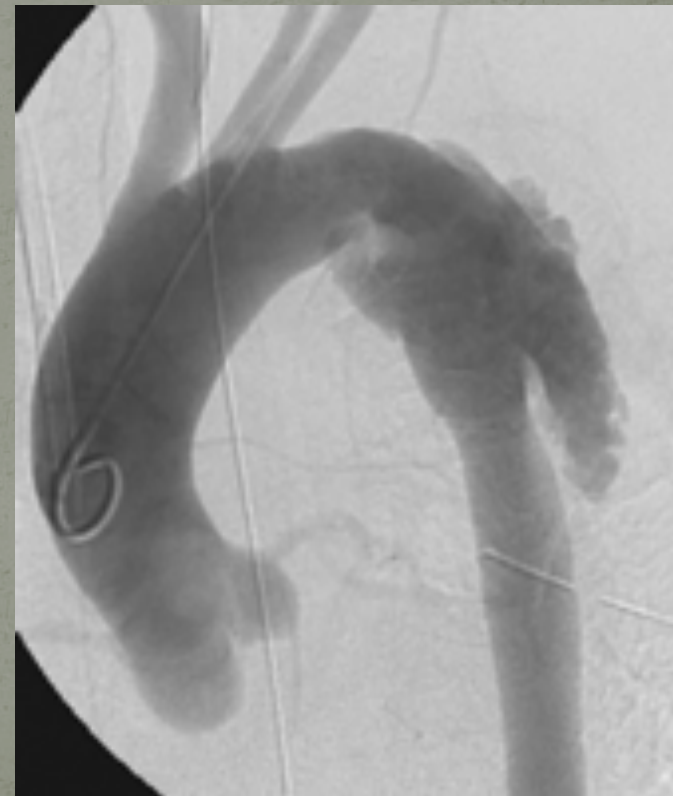
Rapid deceleration injury

Injury Pattern/Mechanism

Normal



Aortic Injury



Injury Pattern/Mechanism

- ☒ Frontal Impact
 - ☒ Rapid deceleration injury
 - ☒ Seatbelt injury
 - ☒ Compressive/shear/blowout injuries

Injury Pattern/Mechanism

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- ☒ Rapid deceleration injury

- ☒ Seatbelt injury

 - ☒ Compressive/shear/blowout injuries

- ☒ Steering wheel

 - ☒ Chest and cardiac

Injury Pattern/Mechanism

☒ Frontal Impact

- ☒ Rapid deceleration injury

- ☒ Seatbelt injury

 - ☒ Compressive/shear/blowout injuries

- ☒ Steering wheel

 - ☒ Chest and cardiac

- ☒ Dashboard and windshield

 - ☒ Lower ext fractures, head and neck injuries

Injury Pattern/Mechanism

 Side Impact

Injury Pattern/Mechanism

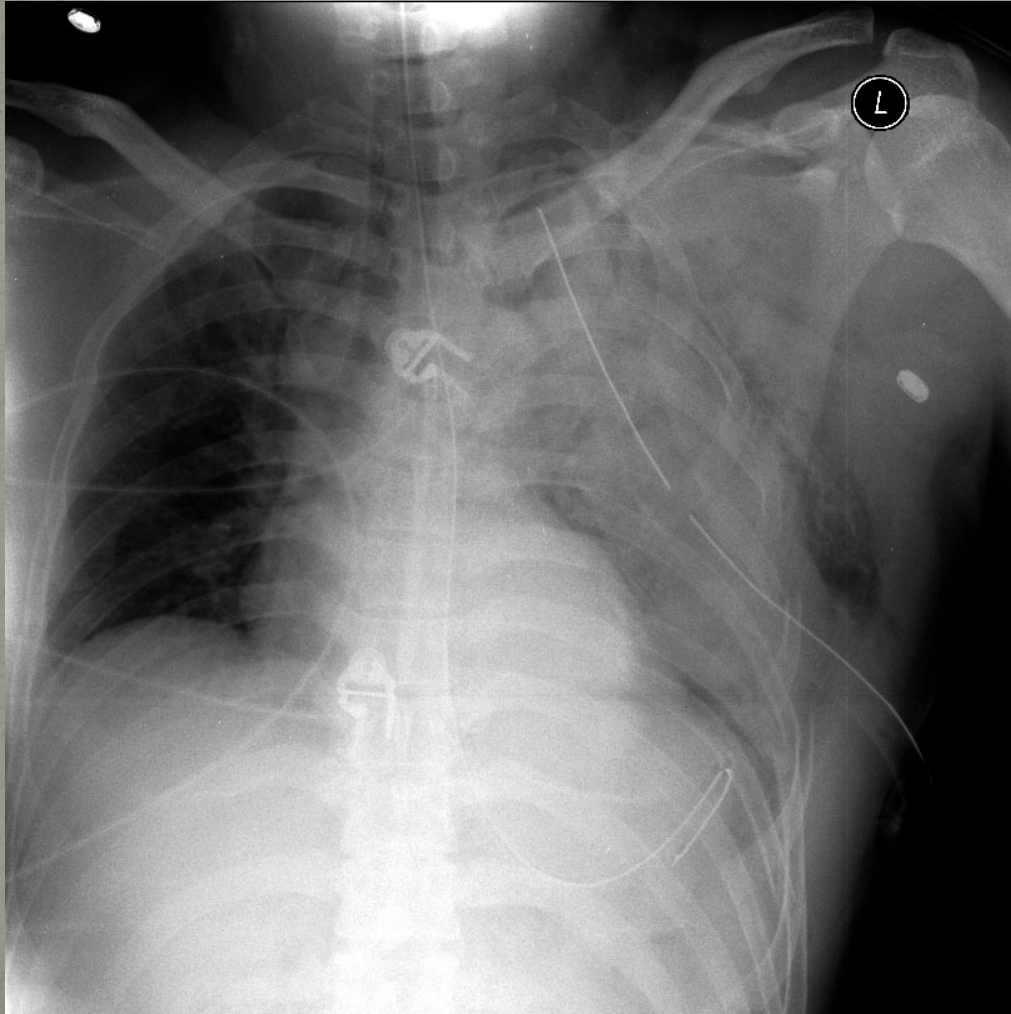
Side Impact

Head and neck

Injury Pattern/Mechanism

- ☒ Side Impact
 - ☒ Head and neck
 - ☒ Thoracic

Injury Pattern/Mechanism



Injury Pattern/Mechanism

- ☒ Side Impact
 - ☒ Head and neck
 - ☒ Thoracic
 - ☒ Solid organ injury
 - ☒ Liver
 - ☒ Spleen
 - ☒ Kidney

Injury Pattern/Mechanism



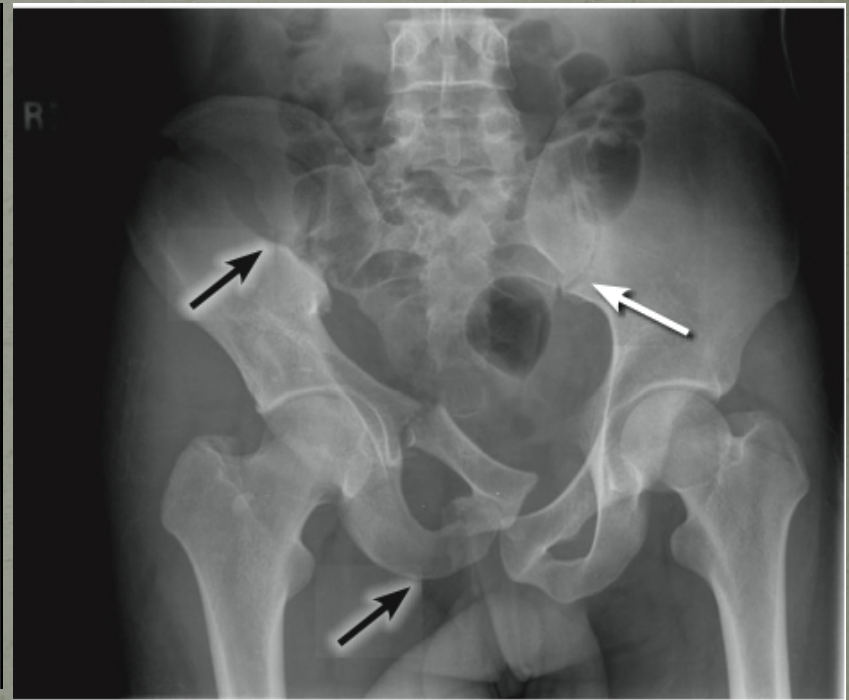
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 - ☒ Solid organ injury
 - ☒ Liver
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 - ☒ Kidney
 - ☒ Pelvis

Injury Pattern/Mechanism



Injury Pattern/Mechanism

 Rollover

Injury Pattern/Mechanism

Rollover

-  Broad range of injury

-  Very high incidence of head and neck injury

Injury Pattern/Mechanism



Scene and Transport

- ☒ Safety first
- ☒ Secure the scene

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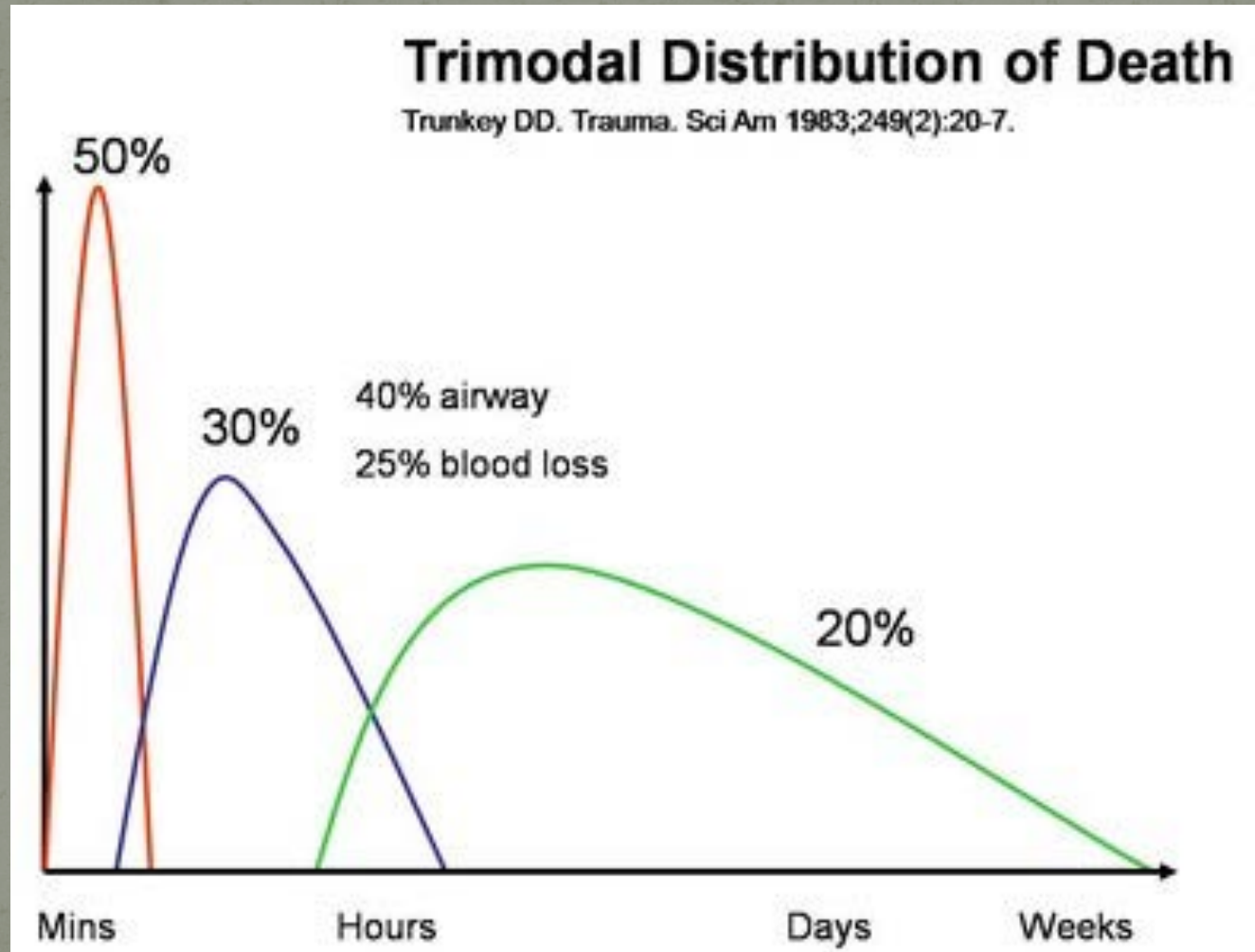
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 - ☒ Golden hour
- ☒ Scene info

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- ☒ Extrication time
 - ☒ Golden hour
- ☒ Scene info
 - ☒ Mechanism
 - ☒ Approx speed/delta V
 - ☒ Amount of vehicle damage and location
 - ☒ Position of occupant(s)
 - ☒ Cell phone picture
 - ☒ Additional info – fire, electrical, etc

Case Review



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☒ 33 y.o. female belted front seat passenger

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- ❑ Reportedly traveling at approx 80mph on city street
- ❑ Struck light pole?
- ❑ Unbelted driver dead at scene – near decapitation
- ❑ Pt conversant at scene and en route

Case Review

- ☒ Called for level one activation with response time of approx 5 minutes.
- ☒ Pt was passenger in vehicle that was traveling at high speeds and lost control. Reported fatality in same vehicle (driver). She arrives with initial SBP in 80's, resuscitation instituted and ongoing at this time with apparent response. SBP now in the upper 90's.
- ☒ Pt with tender abdomen and seat belt sign across lower abdomen.

Case Review



Case Review

- ☒ Continued to respond to resuscitation
- ☒ Responding appropriately to questioning.
- ☒ Plan to CT scanner...

Case Review



Case Review



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Case Review



Case Review

☒ Pt taken to OR for exploratory laparotomy

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- ☒ Pt taken to OR for exploratory laparotomy
- ☒ Found to have significant ongoing hemorrhage
 - ☒ Proximal branch off SMA
 - ☒ Near arrest on table
- ☒ Multiple small bowel transections, sigmoid and cecal injury

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- ❑ Multiple trips to OR
- ❑ Discharge to rehab facility after 30 days

Case Summary

- ☒ Scene info exceedingly important
 - ☒ Estimated speed/delta V
 - ☒ Mechanism-head on, rollover, T-bone, etc
 - ☒ Description of scene
 - ☒ Description of occupants on first responder arrival
 - ☒ Extrication time
 - ☒ Vital signs at scene and en route
- ☒ Seatbelts save lives

Questions ?

