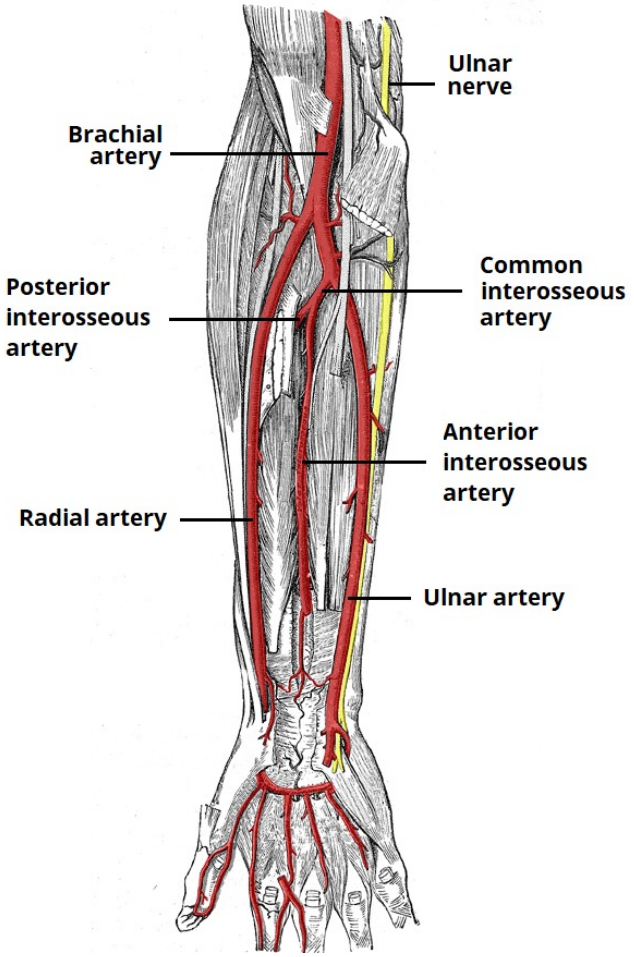
Management Considerations In Blunt and Penetrating Trauma

Two Types Of Severe Trauma

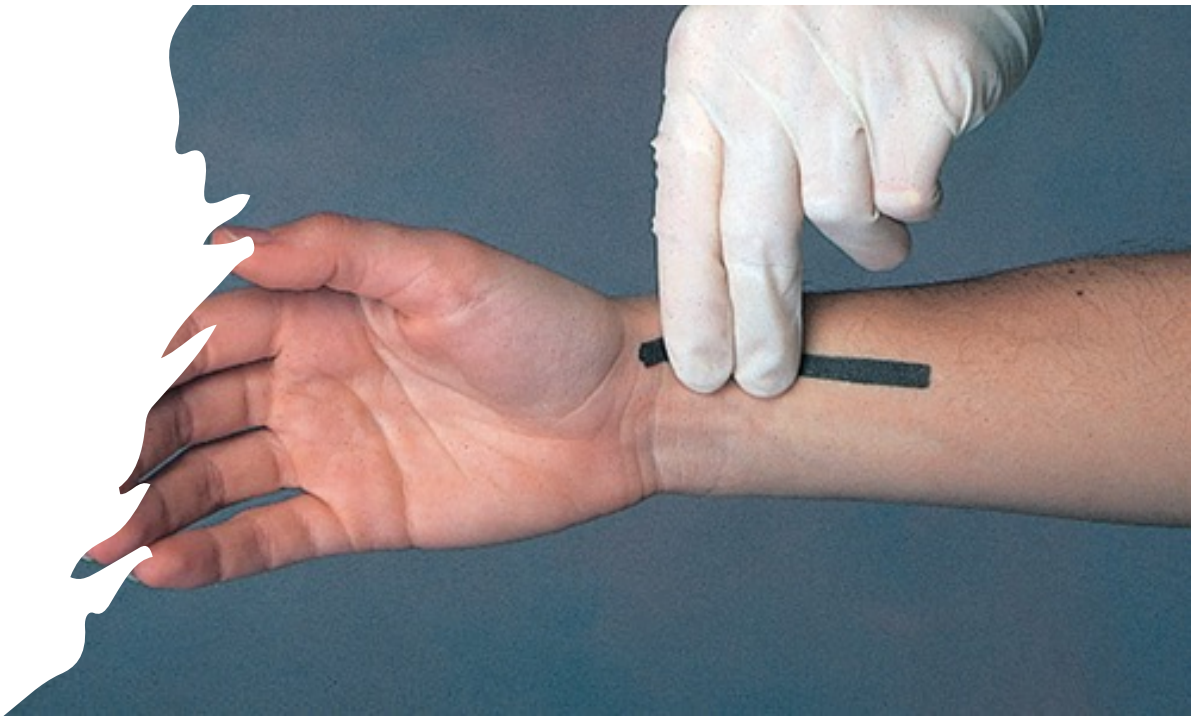
Blunt

Penetrating

Always Consider Underlying Tissues



Check Distal Pulse, Movement, and Sensation In The Injured Extremity



Think About Underlying Structures

Tourniquets Are Safe and Effective

35% of pre-hospital trauma deaths are a result of hemorrhage

When To Use A Tourniquet

- Uncontrolled extremity hemorrhage
  - Multiple bleeding areas
  - Pulsatile or brisk bleeding
- Mechanism
  - Limb amputation
  - Mangled extremity
  - Penetrating injury

True or False?

- Tourniquets are a last resort
  - **FALSE**
- Applying a tourniquet = loss of limb
  - **FALSE**
- Improvised tourniquets work as good as commercial ones
  - **FALSE**

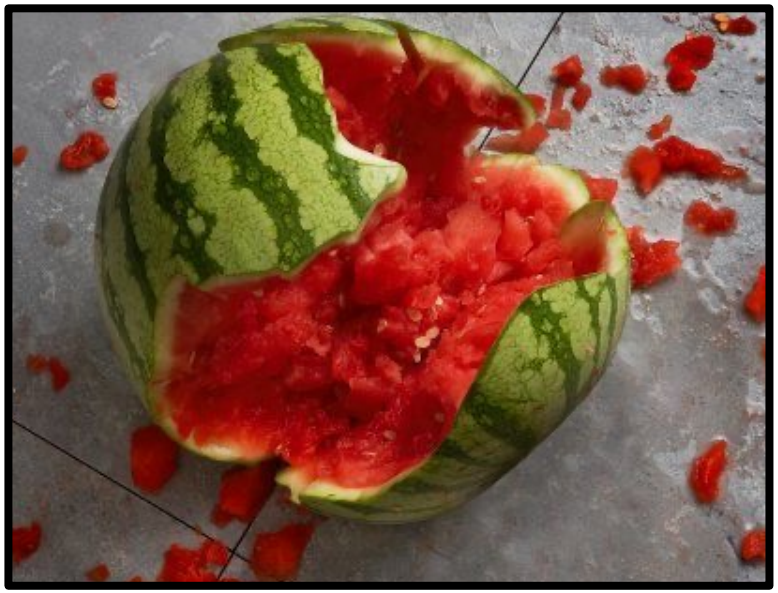
Tourniquet Mistakes

- Not using one when you should
- Not using a second one if needed
- Not making it tight enough
- Taking it off prior to definitive care

Evisceration

- Don’t try to replace contents
- Cover with moist dressing
  - Normal saline guaze
- Keep patient calm
  - Don’t increase intra-abdominal pressure
  - Treat pain

Blunt Trauma

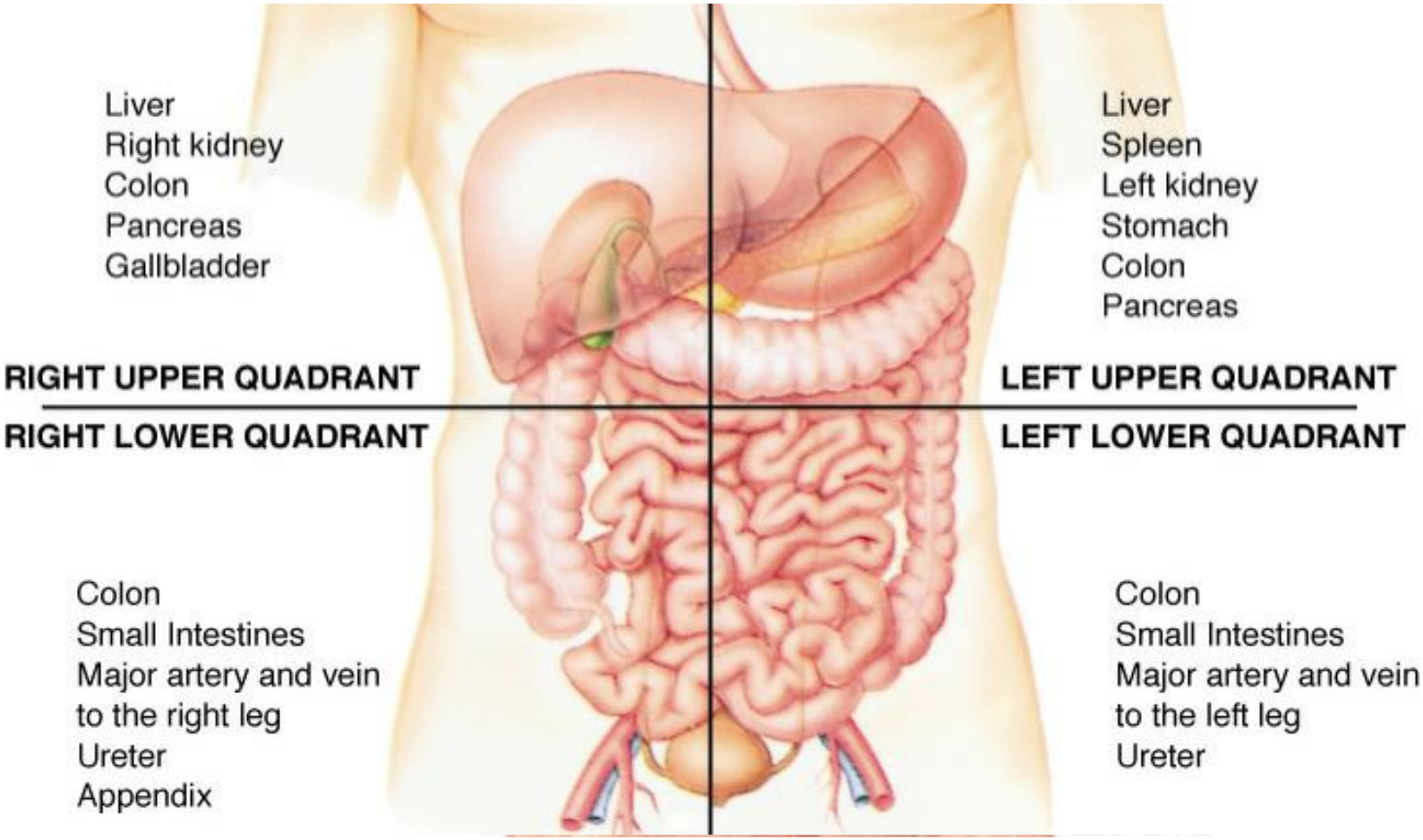


Solid organs bleed

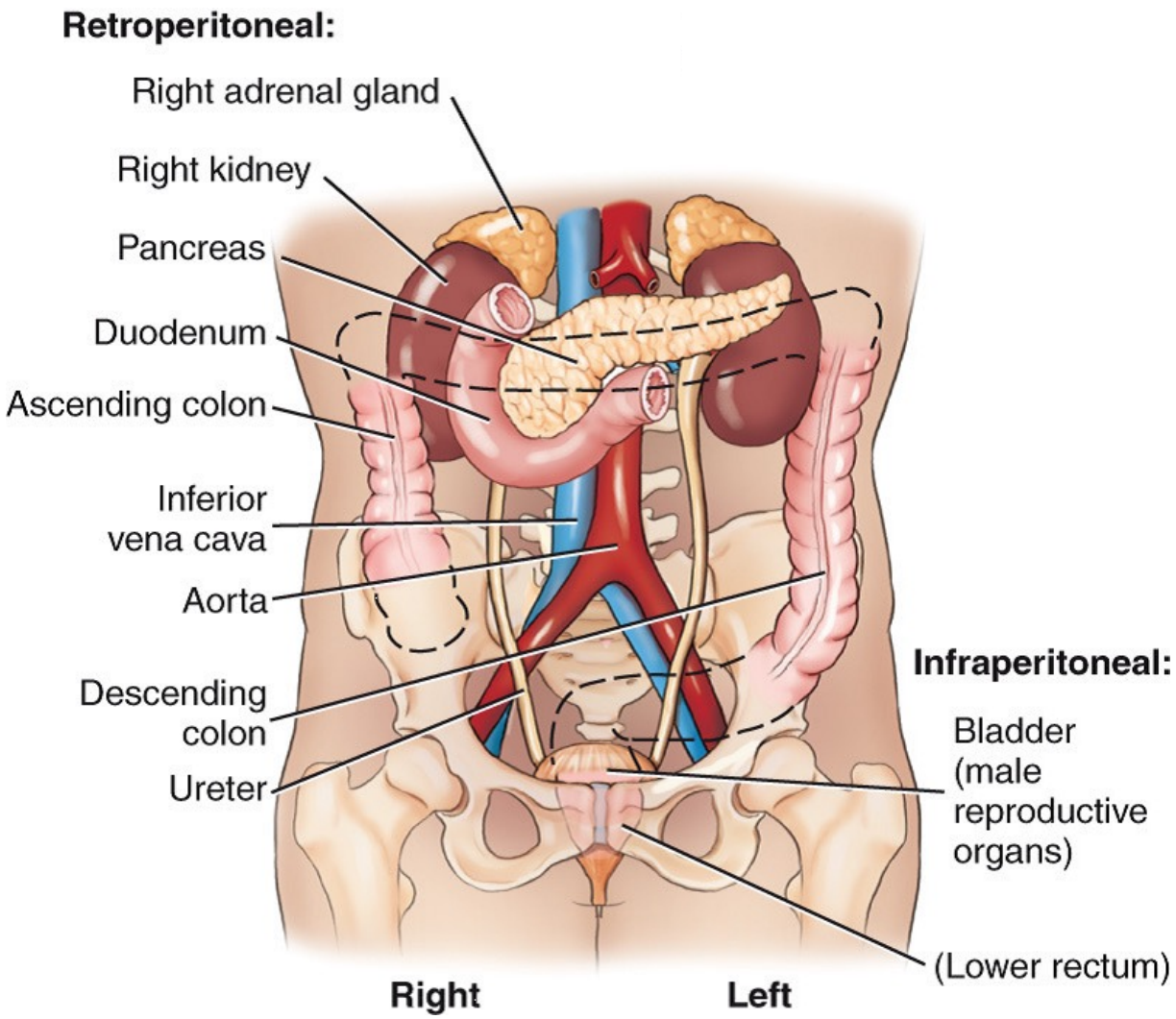
Hollow organs rupture

Blunt Abdominal Trauma Accounts for 15-20% of Trauma Deaths

Anatomy Review

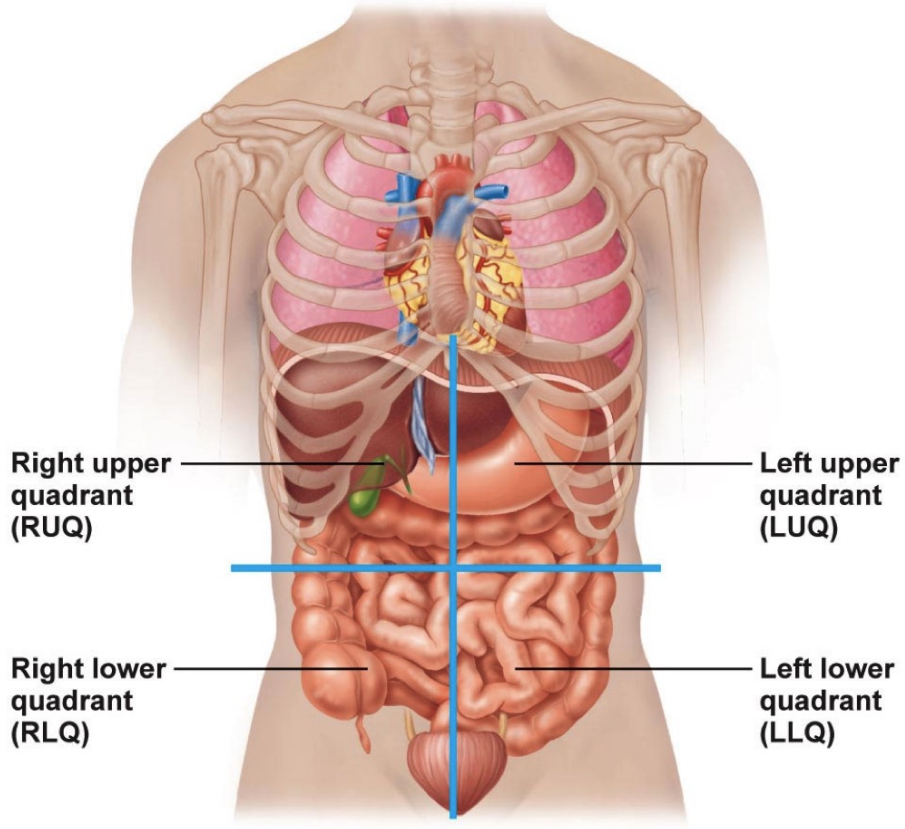


Retroperitoneal Abdominal Organs

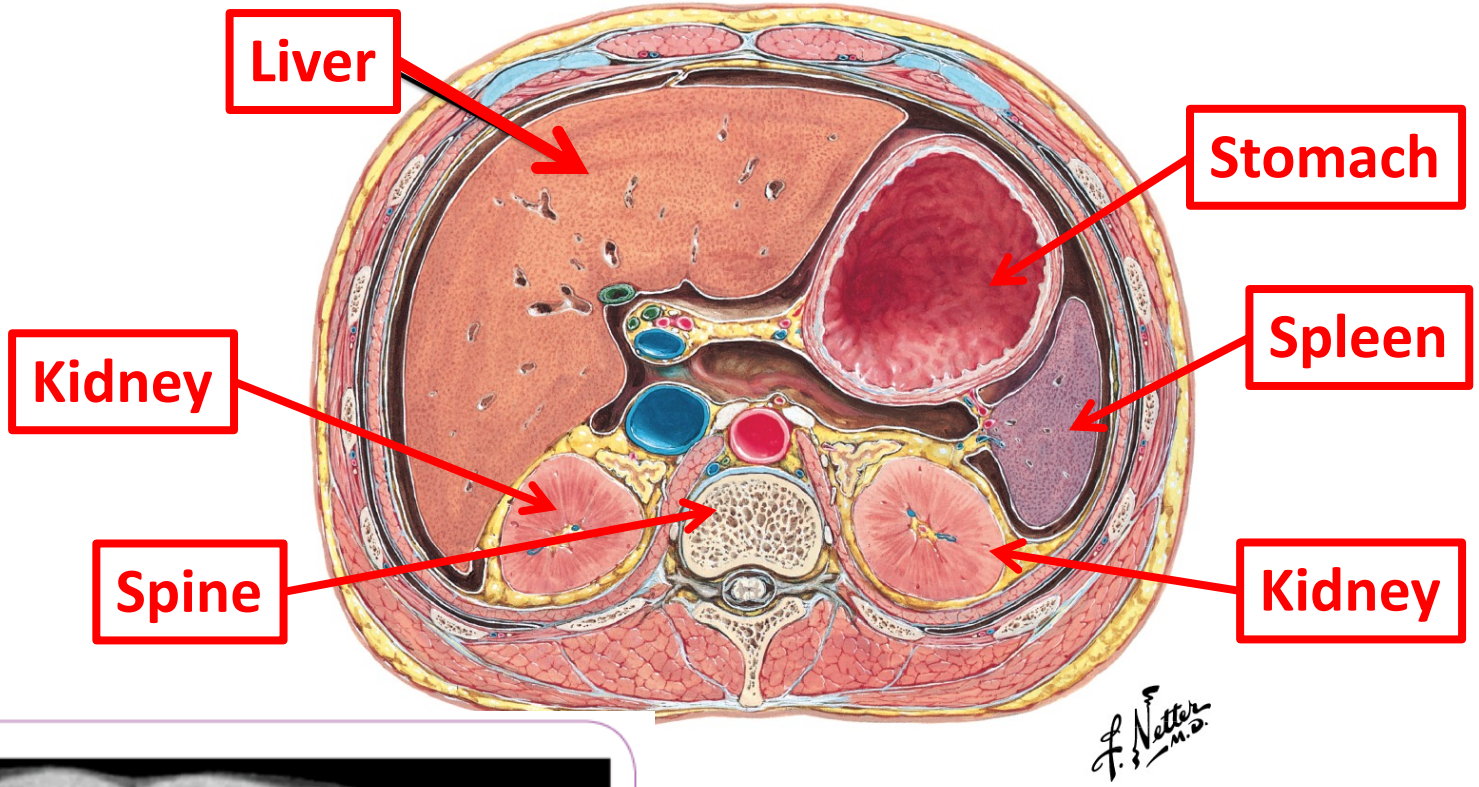


Injury Patterns

- Lower rib cage:
  - Spleen or Liver injury
- Upper abdomen:
  - Chest injury
- Pelvic fracture:
  - Bladder, GU injury
- Penetrating wound below the nipple line
  - Intra-abdominal injury



(c) The four abdominopelvic quadrants



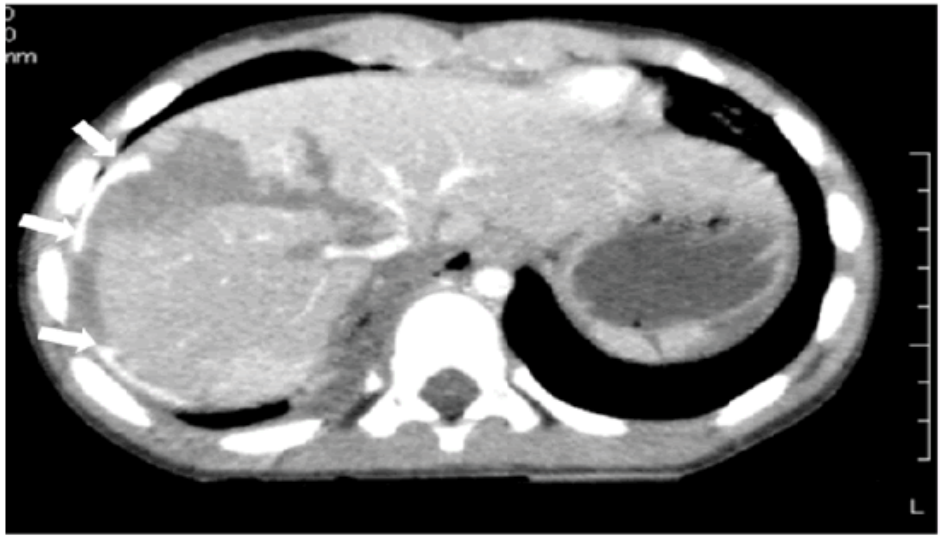
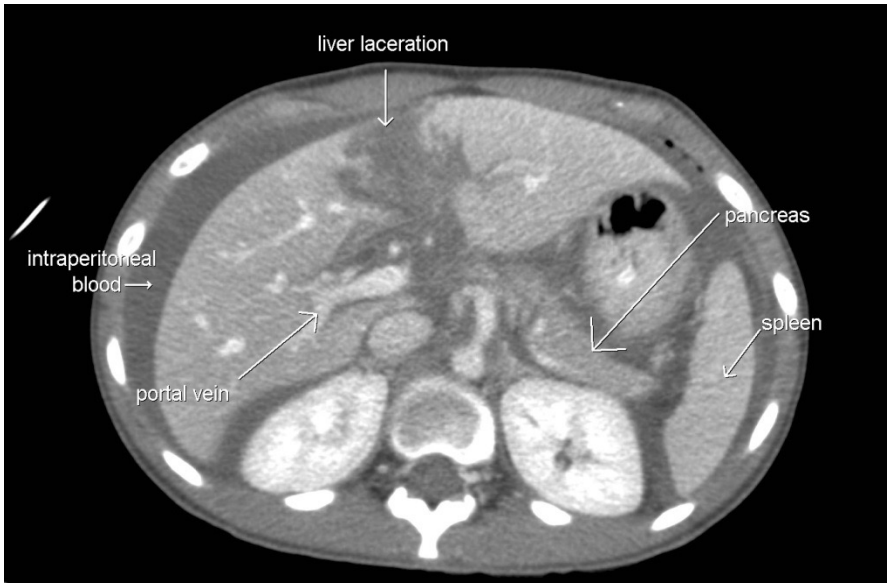
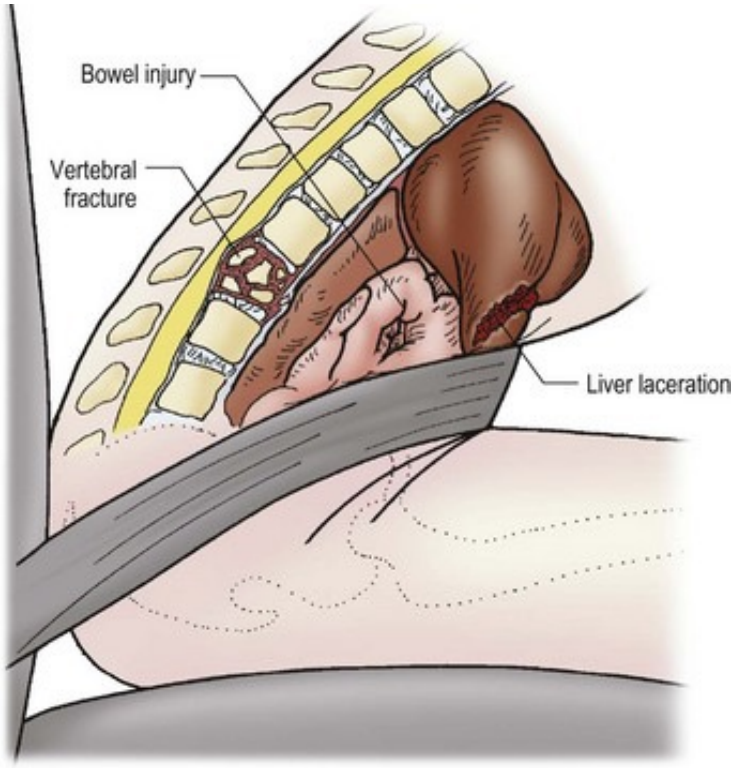


Figure 1a CT scan with intravenous contrast demonstrates grade III liver injury in the right lobe with extravasation (white arrow).



Most common cause of severe abdominal injury involves motor vehicles



Compression, shearing, acceleration/deceleration forces

Common Serious Pediatric Injury Patterns

Source: Robert Schafermeyer, Milton Tenenbein, Charles G. Macias, Ghazala Q. Sharieff, Loren G. Yamamoto: *Strange and Schafermeyer's Pediatric Emergency Medicine*, 4th Edition: www.accessemergencymedicine.com

Pediatric Considerations

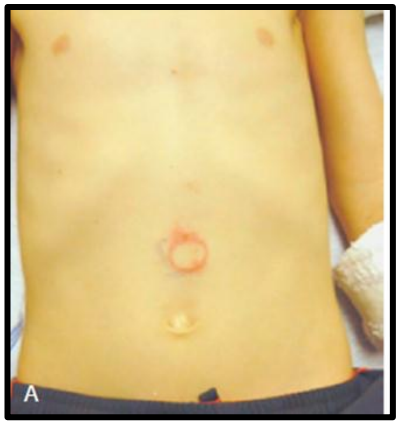
Very susceptible to abdominal injury

Compliant bones, larger organs, less fat protection

Can lose 45% of blood volume and only be tachycardic

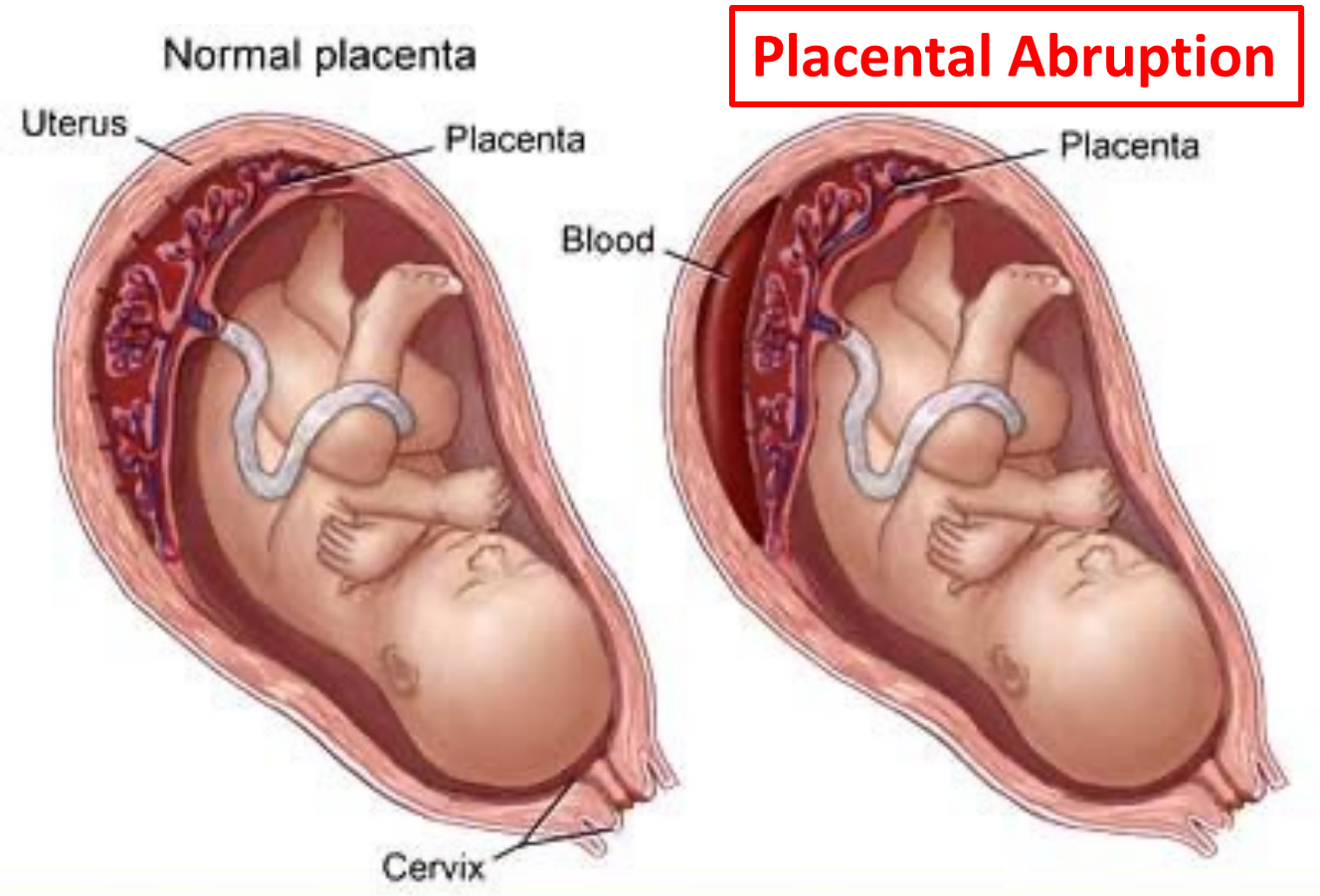
Kids are very susceptible to abdominal organ injury

Compliant bones, larger organs, less fat protection



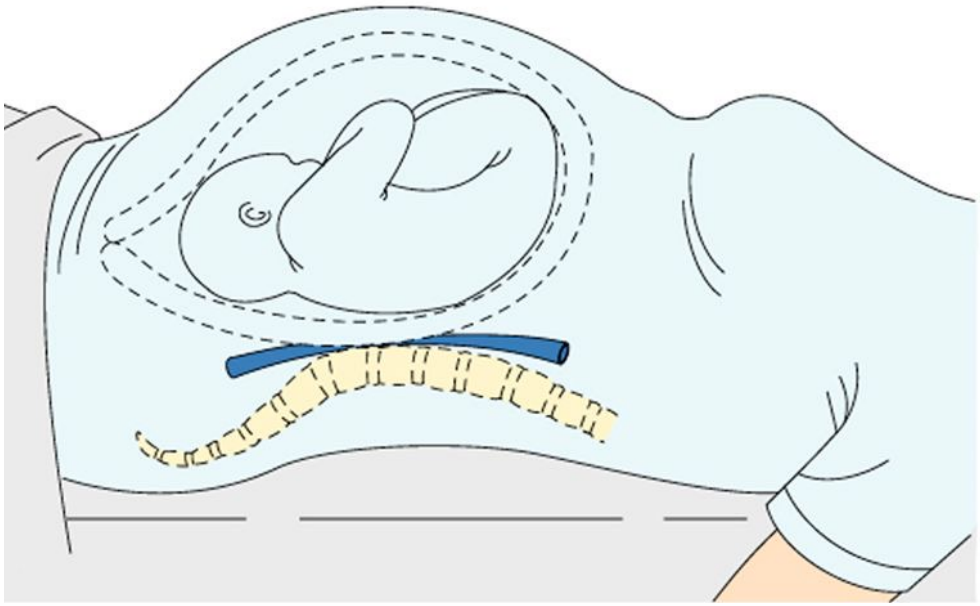
Can lose 45% of blood volume and only be tachycardic

Abdominal Trauma In A Pregnant Patient

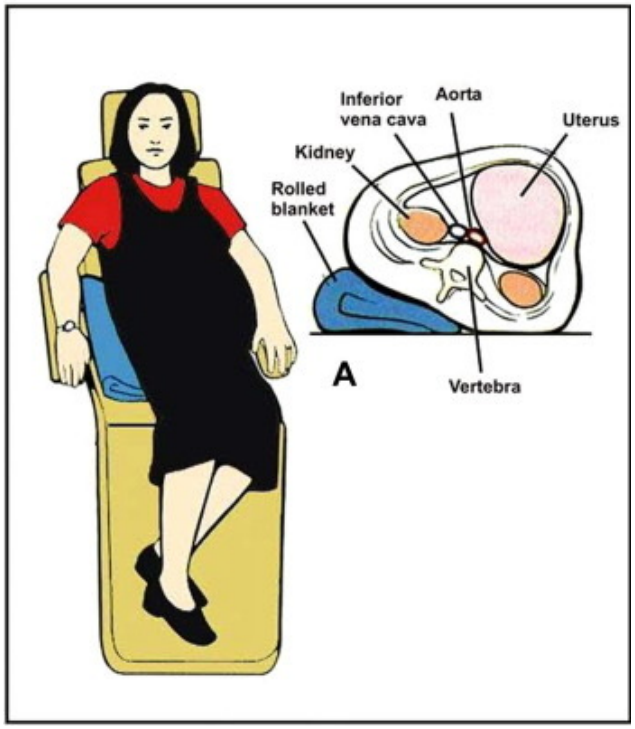


Can be delayed up to 48 hours, most common cause of fetal death

Transporting a Pregnant Patient

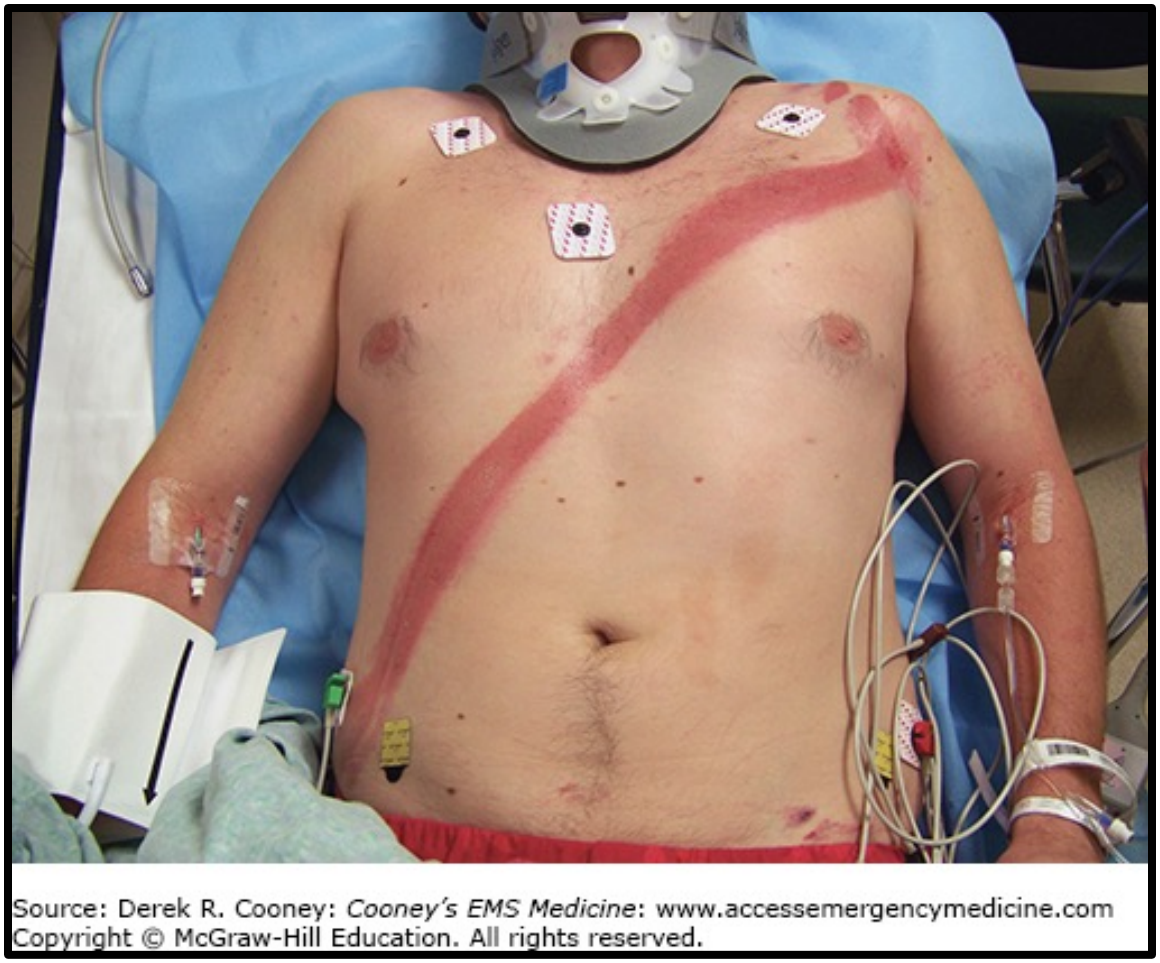


Beware of IVC compression



Tilt Patient To Her Left For Transport

Clues To Serious Injury

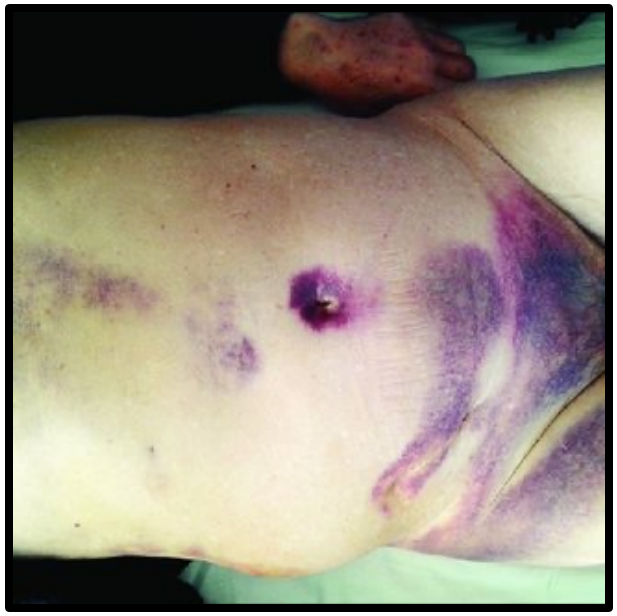


Source: Derek R. Cooney: *Cooney's EMS Medicine*: www.accessemergencymedicine.com

Pain, tenderness, distension, bruising

Retroperitoneal Injury?

Pancreatic and duodenal injuries occur from rapid deceleration or handle bar injuries



Cullen Sign: Periumbilical

Grey Turner Sign: Flank

Pediatric Chest Trauma

- Pulmonary Contusions
- Pneumothorax
- Rib fractures
- Cardiac contusion
- Cardiac Tamponade

Falls

Severity of injury determined by distance, landing surface, and angle of impact

Hollow viscous, retroperitoneal injury most common

Strongly Consider Cervical Collar For Elderly Patients that Fall

Neuro exam, mental status, and neck pain should drive your decision



Falls: Severity of injury determined by distance, landing surface, and angle of impact

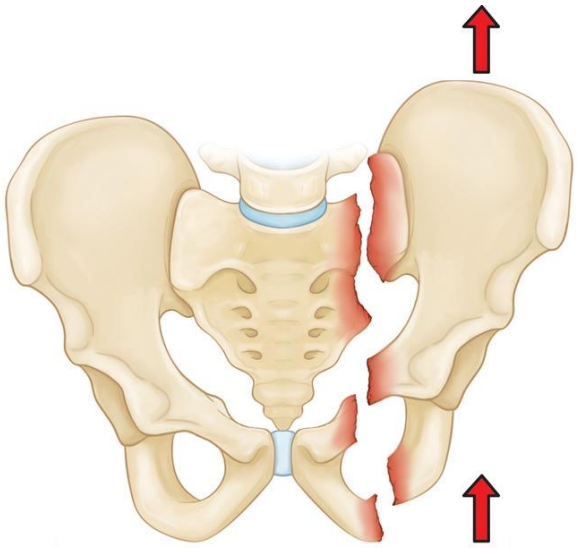
Head Injury Complications

- Vomiting
- Seizures
- Combativeness
- C-spine injuries

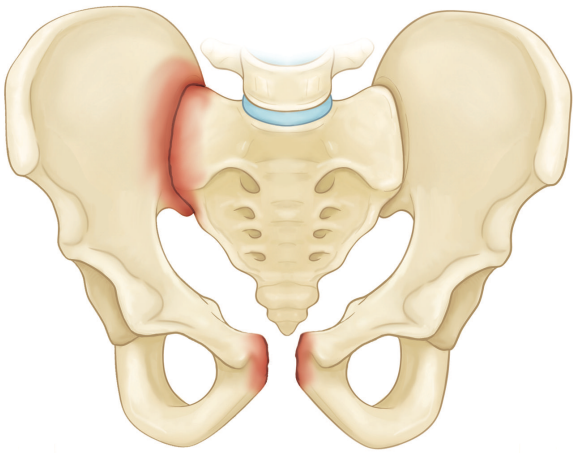
Protect The Airway!


Torso
Ears
Neck
4 years or younger
Any bruising anywhere
if the baby is not yet
pulling up or taking steps

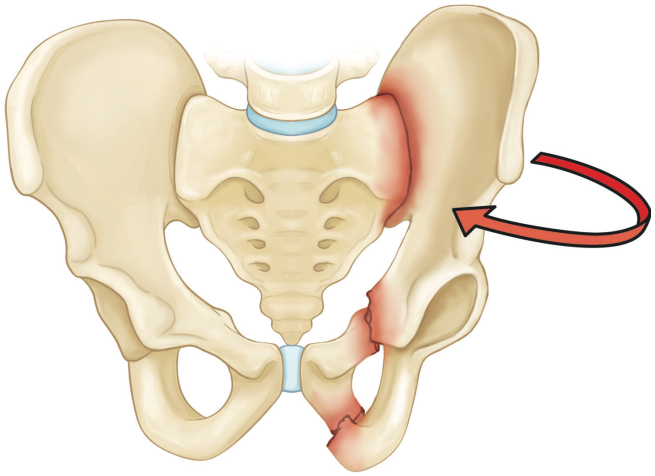
Types Of Pelvic Fractures



Vertical Shear

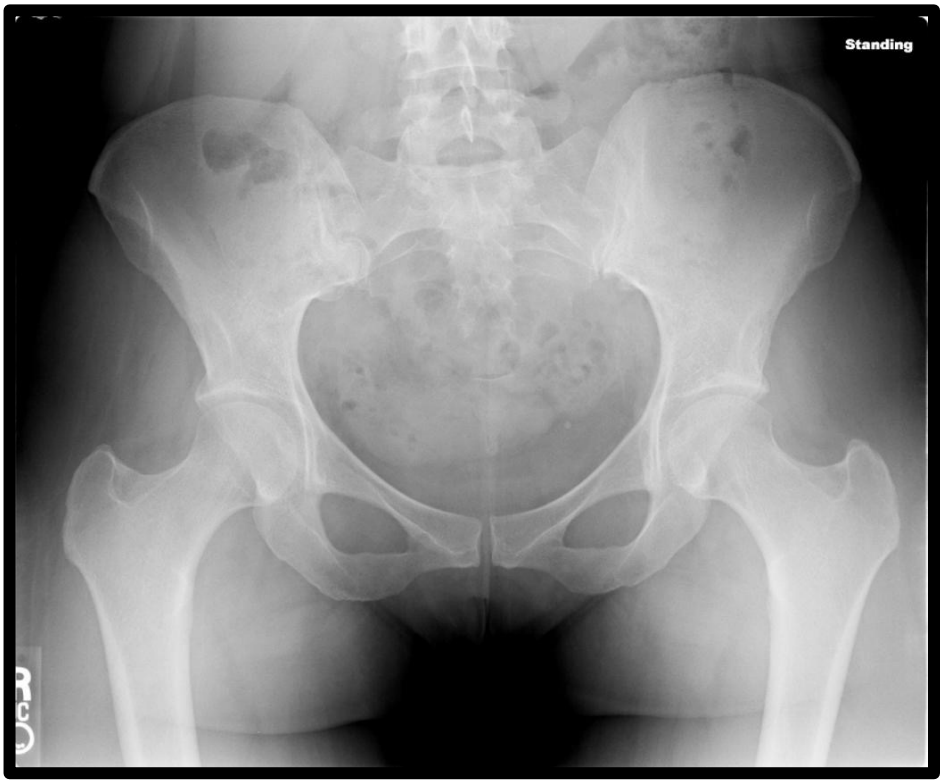


Anterior-Posterior Compression

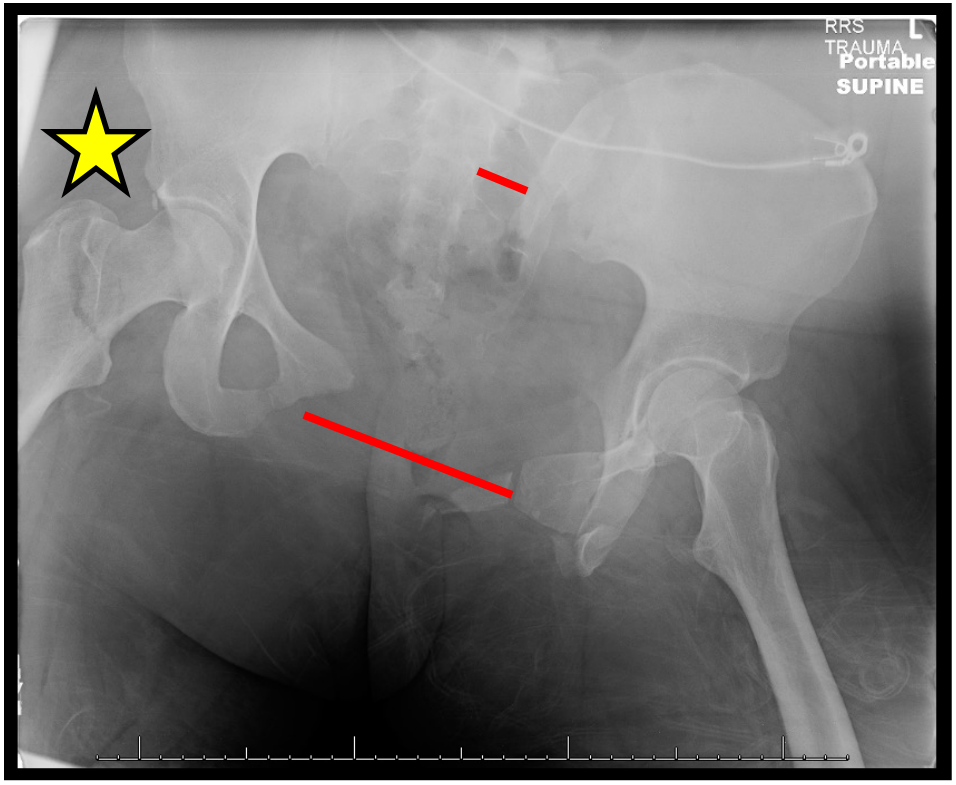


Lateral Compression

Open Book Pelvic Fractures

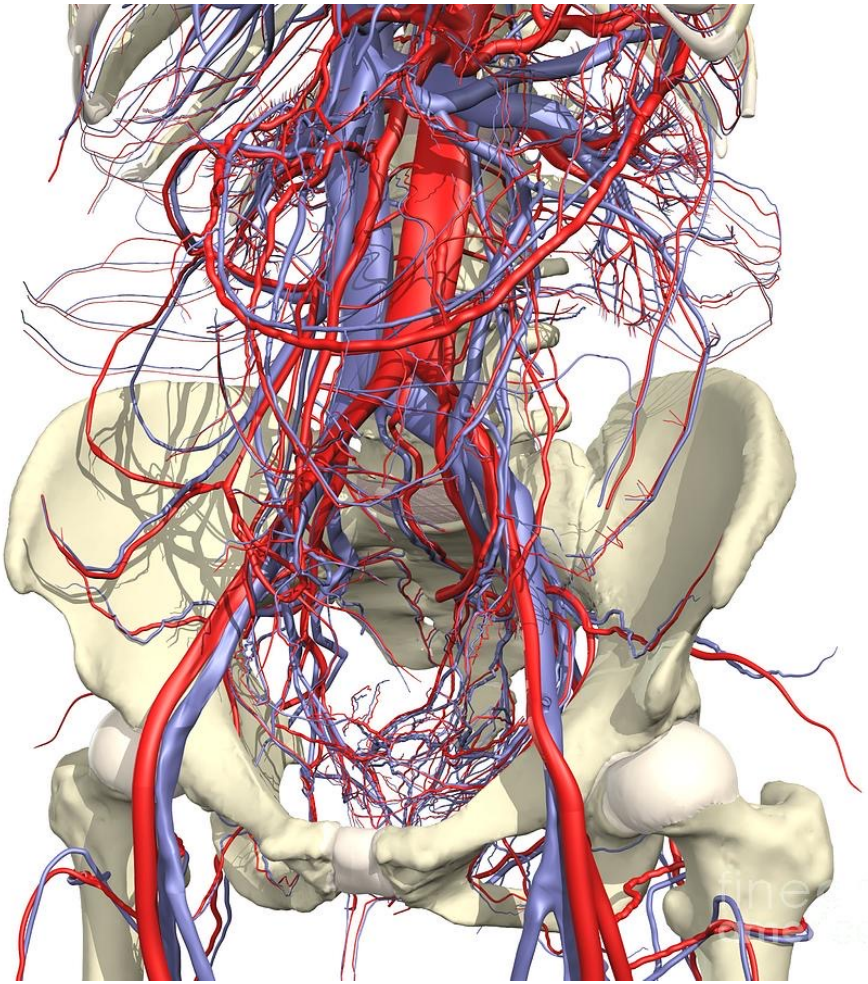


Normal

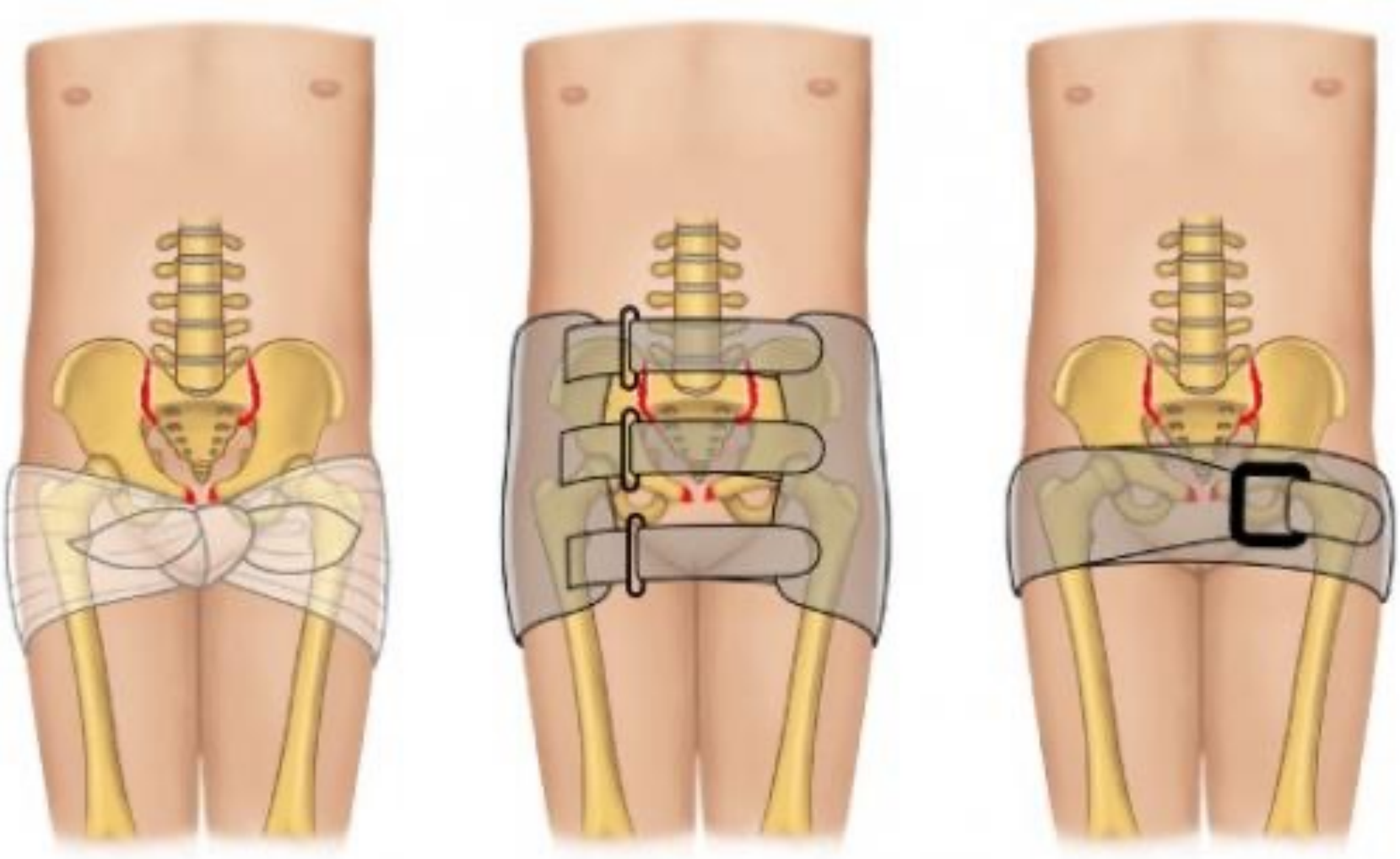


Open Book

The Pelvis Is VERY Vascular!



Pelvic Binders = Tourniquet For Pelvis

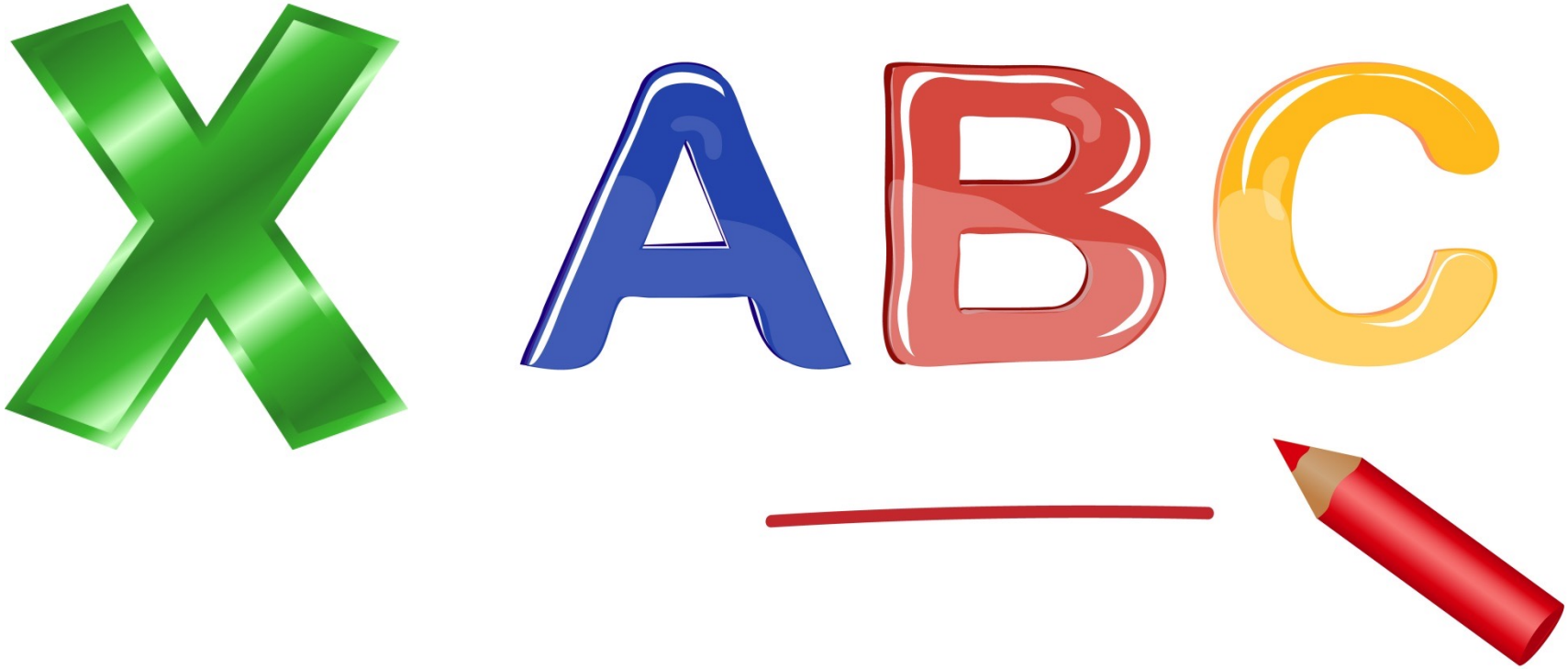


Treatments

1. **X-ABCs**
2. **Quick Transport Decision**
3. **En Route:**
   - Prevent hypoxia
   - Prevent hypothermia
   - IV access and Permissive Hypotension
4. **Consider pelvic binder**
5. **Repeat vitals and monitor**


SIMPLE

Primary Survey



Stop The Bleeding!

Direct Pressure or Tourniquet

5 Places to Bleed to Death

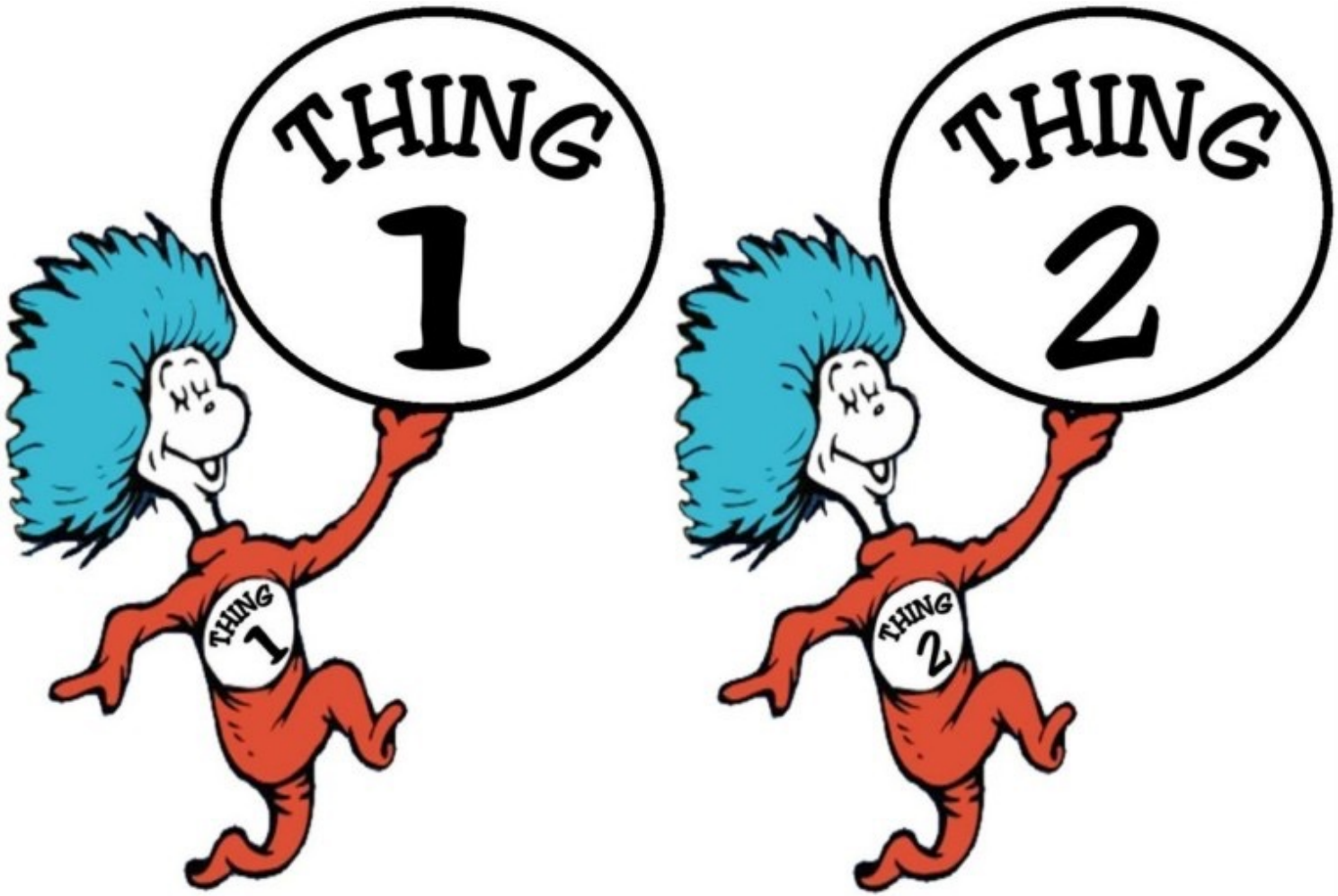
Chest

Abdomen

Pelvis

Femur

The Street



Control Bleeding

Treat Hypoxia

Vital Signs Are Vital

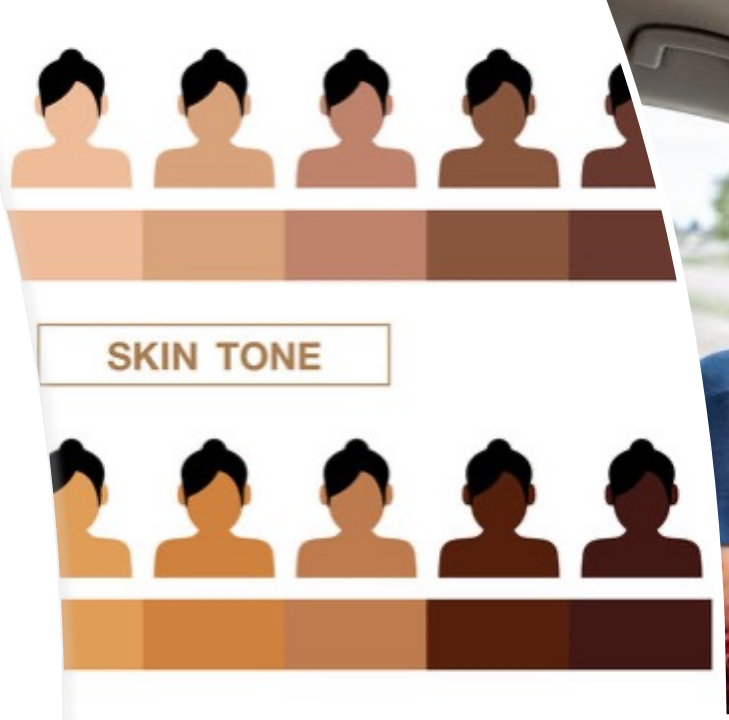
Continually Re-Assess Them

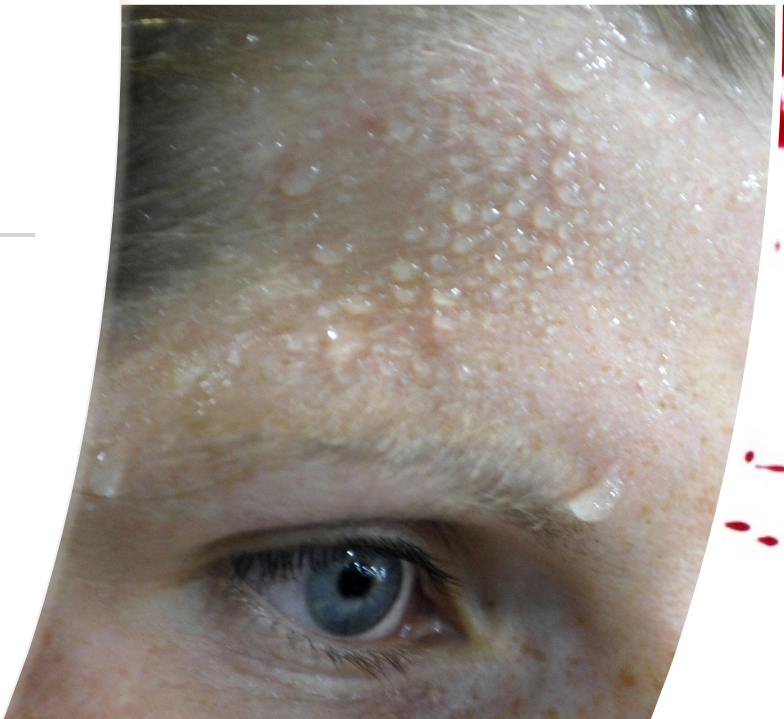
Trauma Is
A Time
Sensitive
Emergency

It Takes About 3-5 Minutes To Bleed To Death

What Signs And Symptoms Suggest A Sick Trauma Patient?

Clues You Can See





Clues They Tell You

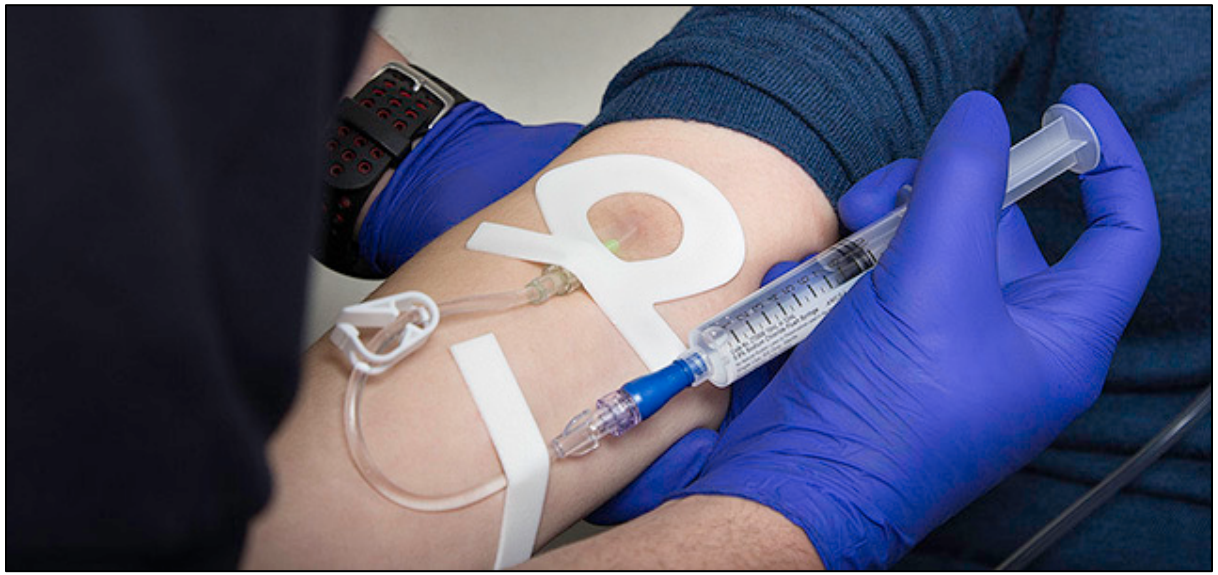
Stages of Shock

Class of haemorrhagic shock				
	I	II	III	IV
Blood loss (mL)	Up to 750	750–1500	1500–2000	> 2000
Blood loss (% blood volume)	Up to 15	15–30	30–40	> 40
Pulse rate (per minute)	< 100	100–120	120–140	> 140
Blood pressure	Normal	Normal	Decreased	Decreased
Pulse pressure (mm Hg)	Normal or increased	Decreased	Decreased	Decreased
Respiratory rate (per minute)	14–20	20–30	30–40	> 35
Urine output (mL/hr)	> 30	20–30	5–15	Negligible
Central nervous system/ mental status	Slightly anxious	Mildly anxious	Anxious, confused	Confused, lethargic

Is there a radial pulse?

https://lifeinthefastlane.com/wp-content/uploads/2011/06/Class-of-haemorrhagic-shock-JPEG2.jpg

IV/IO Access En Route

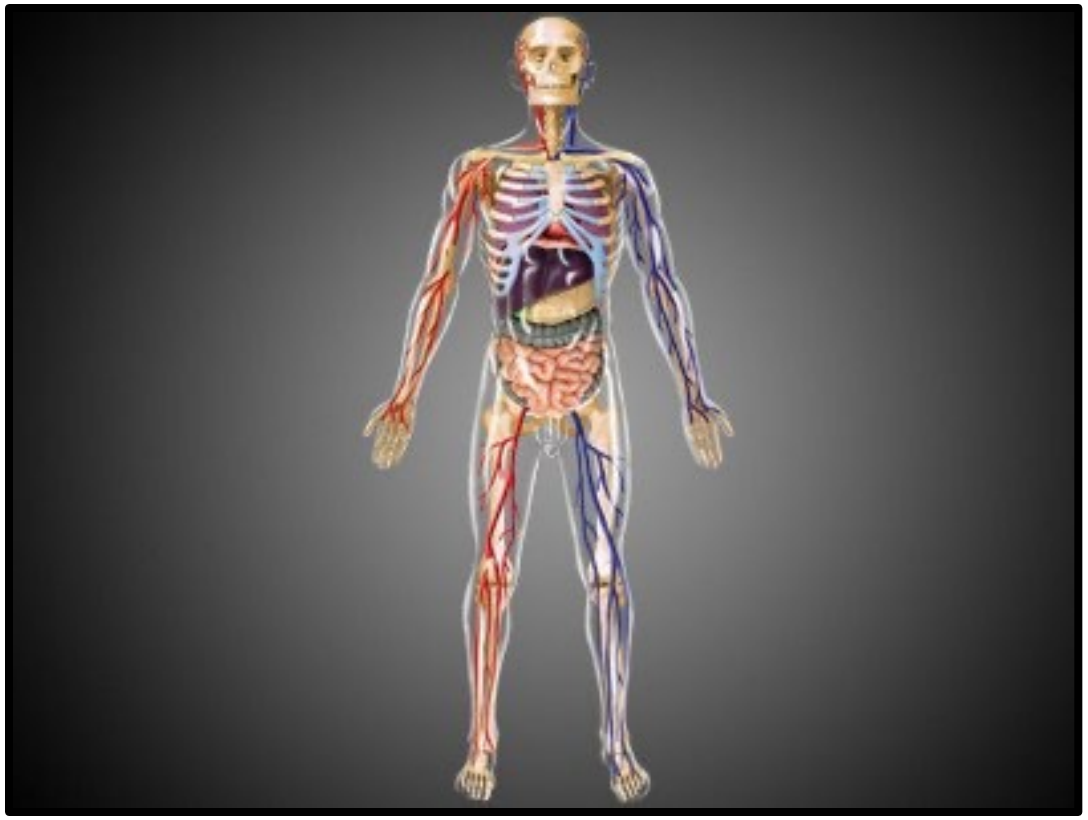


Permissive Hypotension:

Goal SBP is 90-100

TXA For Patient's In Shock With Bleeding You Cannot Control?

Head To Toe Secondary Survey

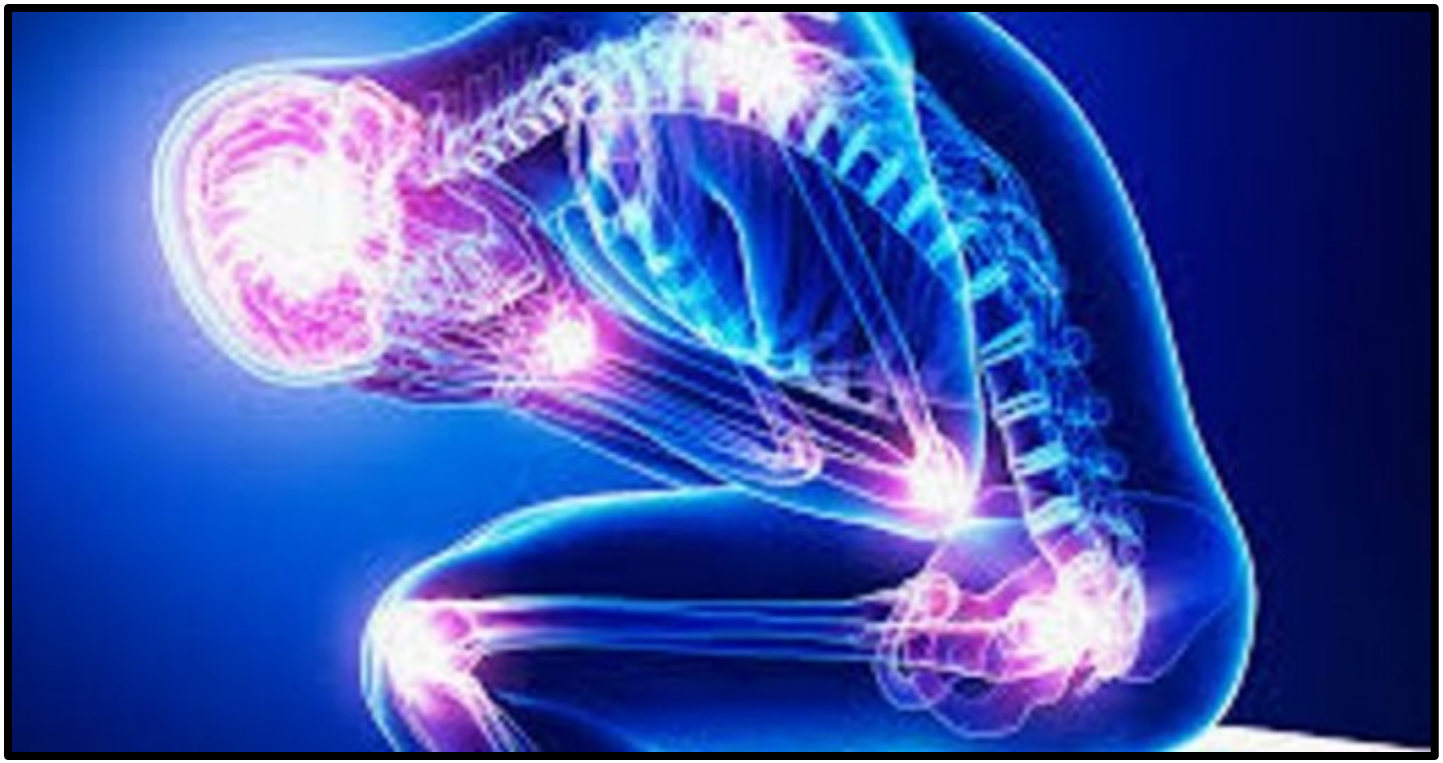


Expose Your Patient

Keep Them Warm!

Be careful with elderly and peds!

Treat Pain



Splint Injuries

Check Pulse, Movement, Sensation

5 Steps For Great Trauma Care

1. Control bleeding
2. Control airway
3. **Prevent hypoxia**
4. Prevent hypotension
5. Prevent hypothermia

Stop Secondary Injury