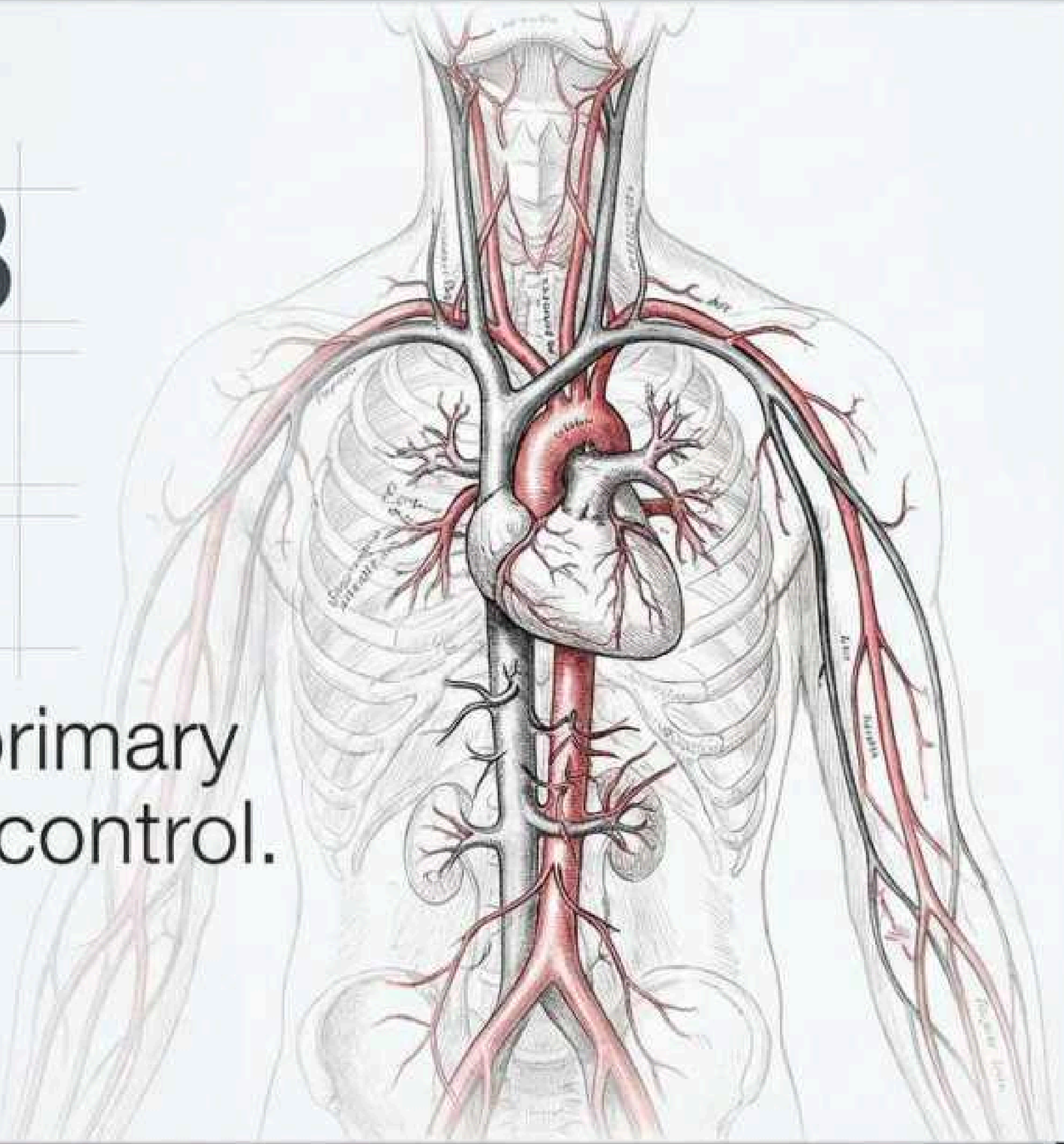
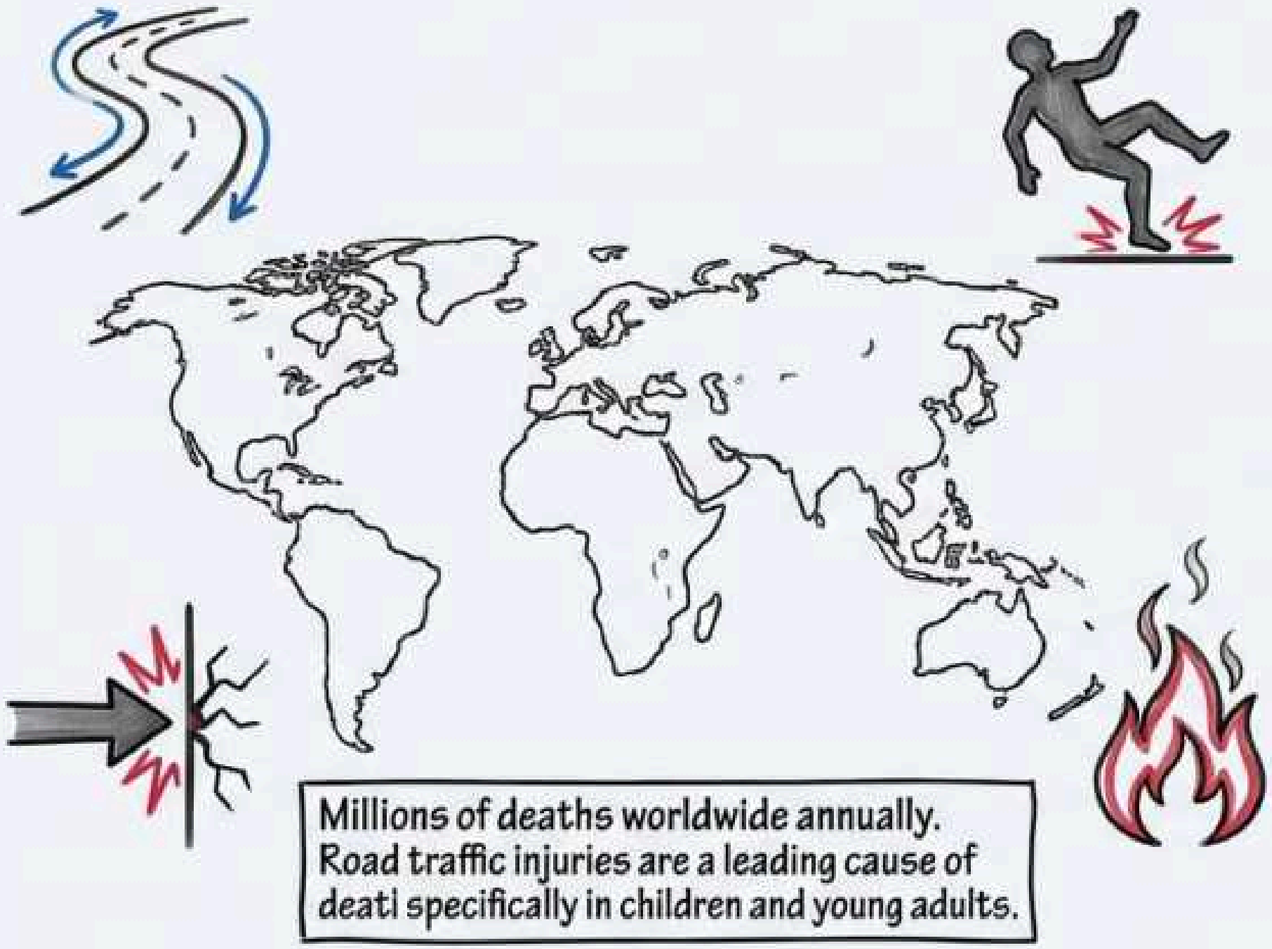
MED 542 B
Lecture 5: Trauma

The burden of injury, primary surveys, and damage control.



¶ 5.1

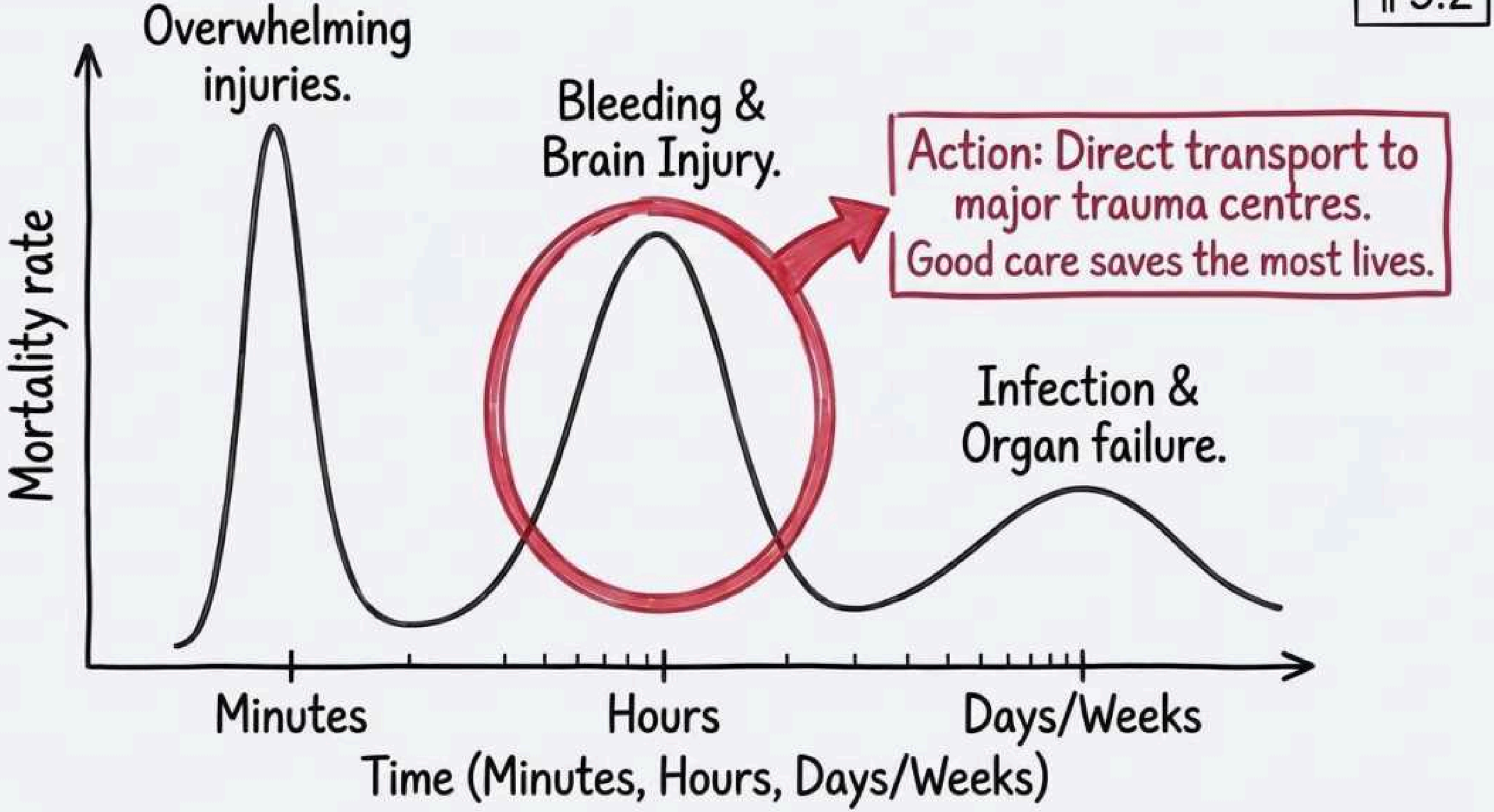


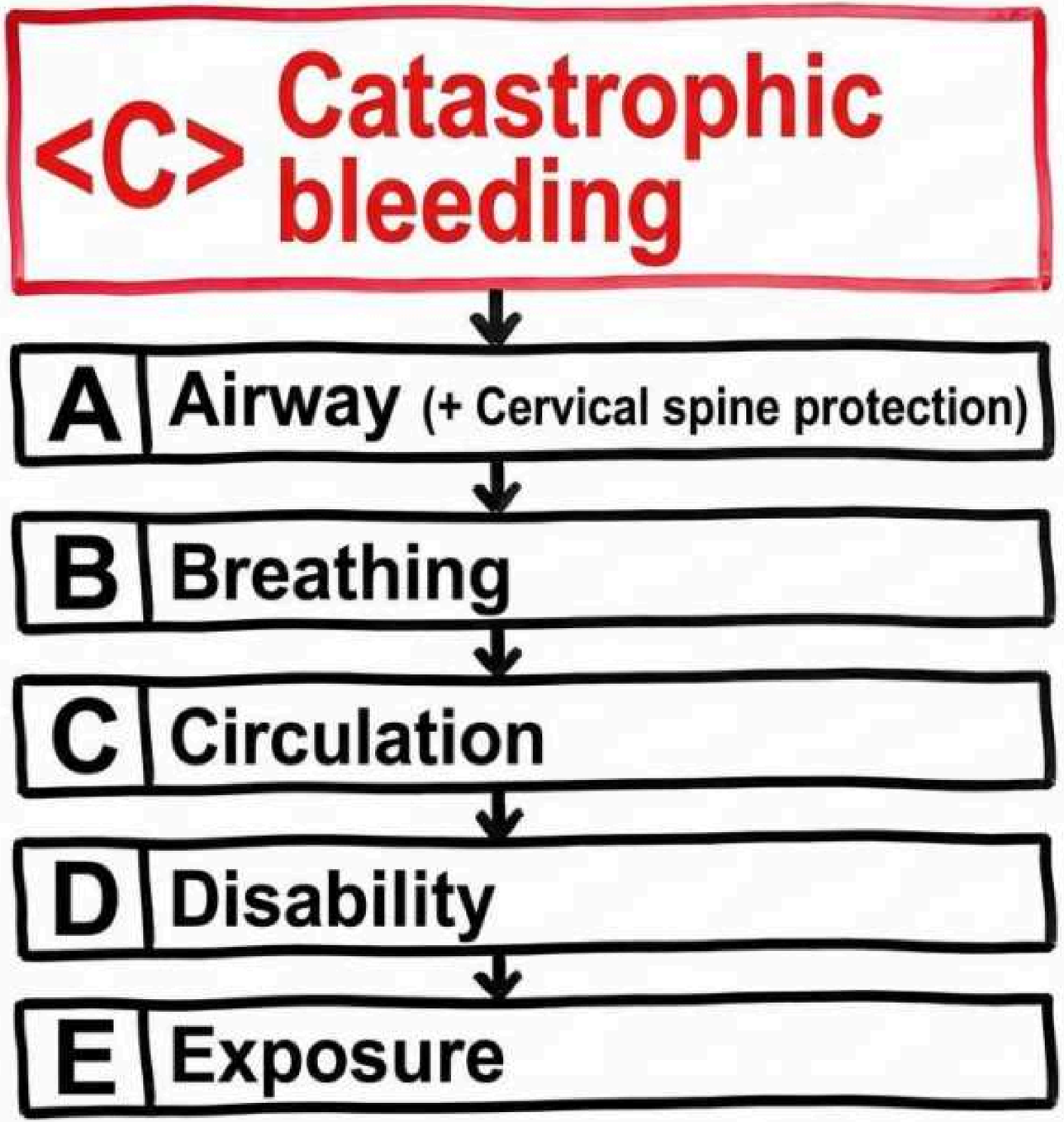
Millions of deaths worldwide annually.
Road traffic injuries are a leading cause of
death specifically in children and young adults.



Prevention (Seatbelts + Helmets + Safer Roads + Speed Limits) > Treatment

¶ 5.2

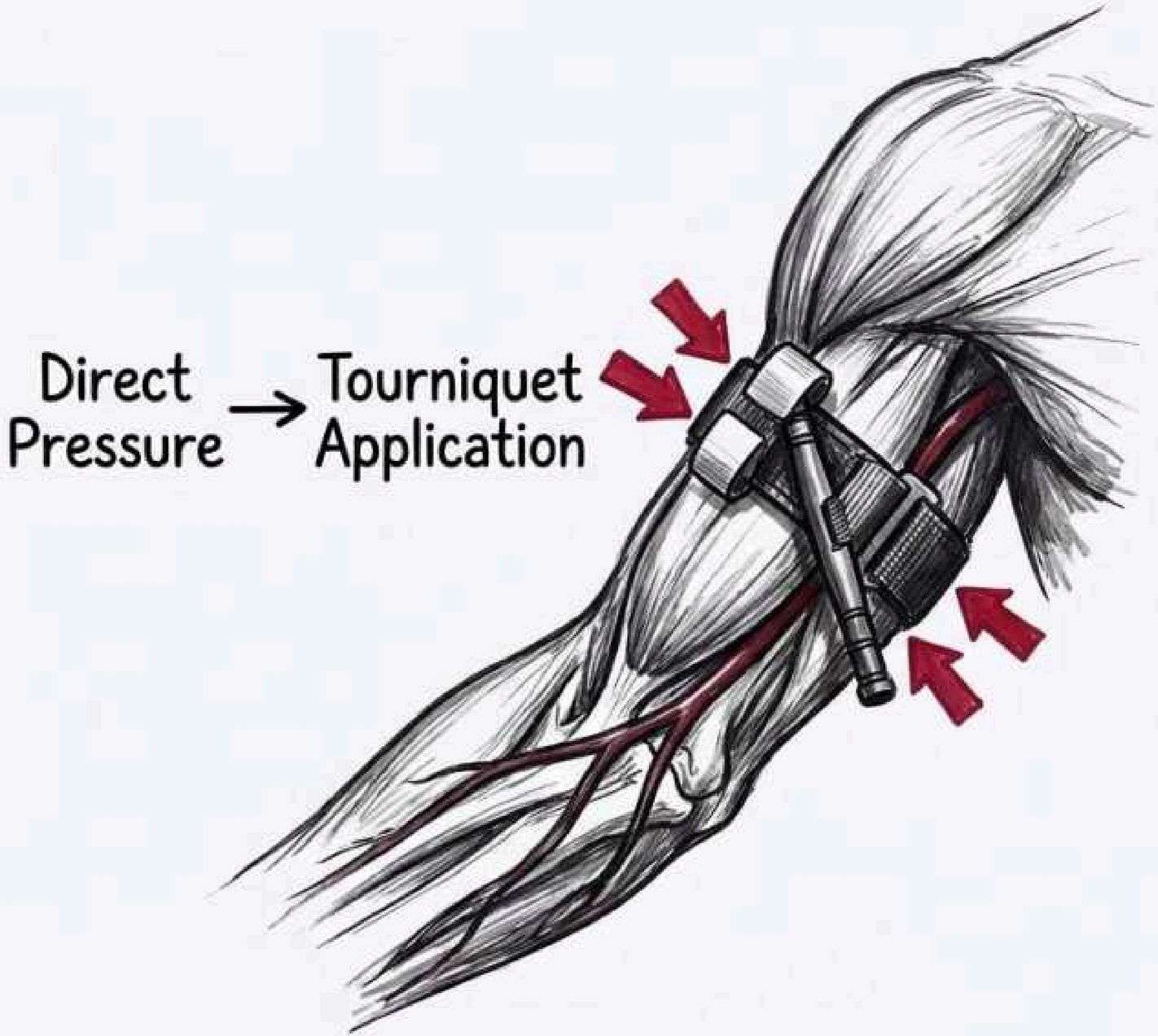

Overwhelming injuries.
Bleeding & Brain Injury.
Action: Direct transport to major trauma centres.
Good care saves the most lives.
Infection & Organ failure.
Mortality rate
Minutes
Hours
Days/Weeks
Time (Minutes, Hours, Days/Weeks)



Advanced Trauma Life Support (ATLS) approach:

Developed post-1976 after an orthopaedic surgeon's family received poor care following a plane crash.

Designed to treat life-threatening problems in strict sequential order.



Lessons from Military Medicine:

Data from Iraq and Afghanistan
Afghanistan proved that early use of tourniquets definitively saves lives, successfully reversing historical medical caution against them.

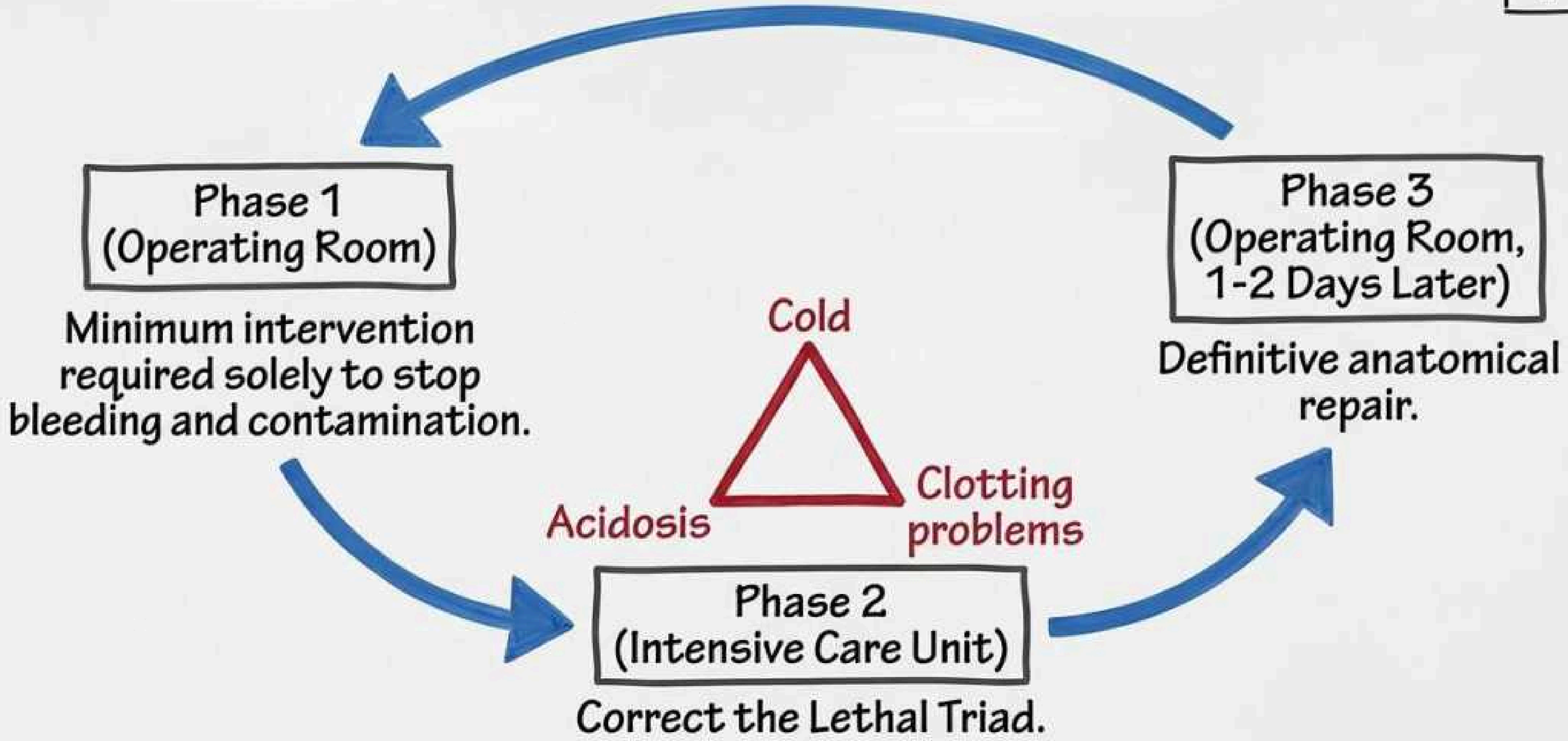
Signs of Major Internal Bleeding	
↑	Heart Rate
↓	Blood Pressure
↓	Cold skin
↑	Confusion

Damage Control Resuscitation:

Blood Products + **Early TXA** > **Large Volumes of Clear Fluids**

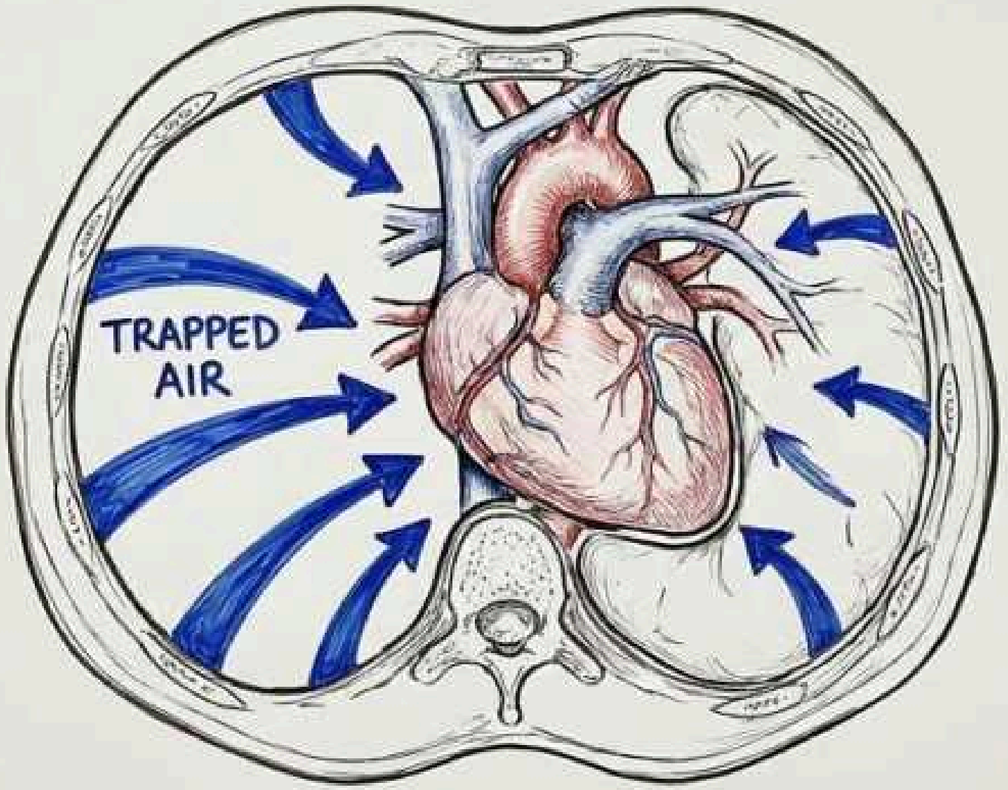
CRASH-2 Trial (2010):
Established that early administration of tranexamic acid (TXA) significantly reduces deaths from bleeding.

Clinical Rule:
Tolerate lower blood pressure until bleeding is controlled.



This phased approach is responsible for major survival improvements in severe abdominal injuries.

Immediate release of trapped air > Waiting for X-Ray.
(To treat tension pneumothorax and massive chest bleeding).

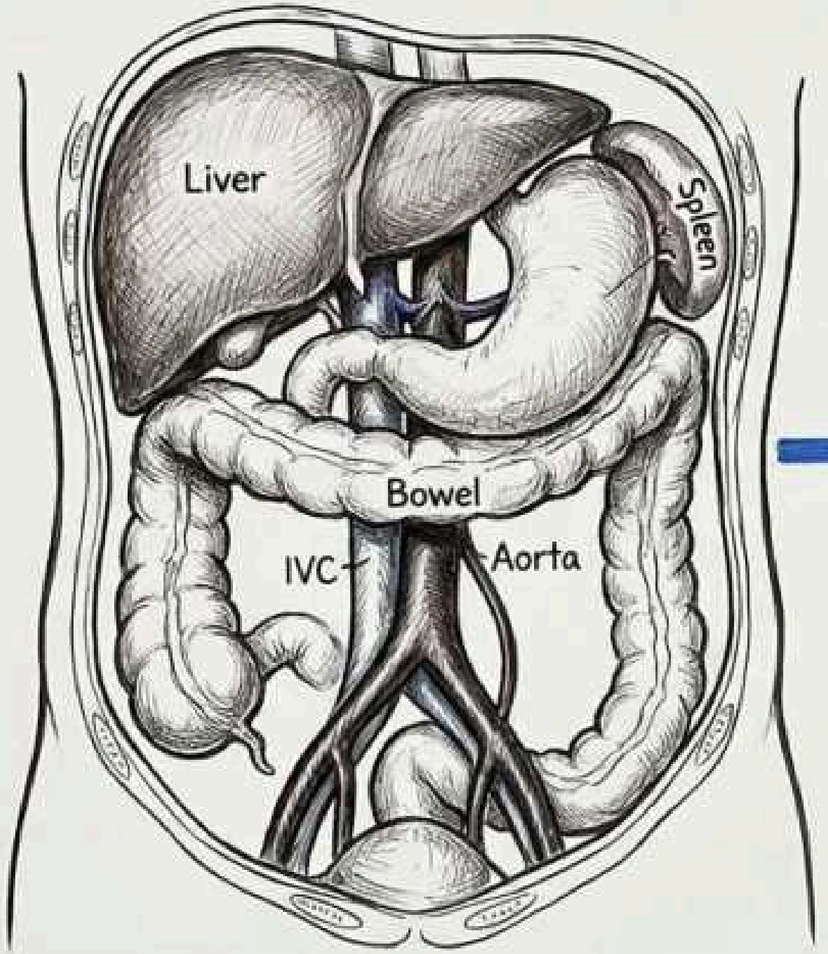


Rib Fractures:

High Pain → Reduced Breathing
→ Pneumonia Risk
(especially in older adults).

Good pain relief is essential.

¶ 5.8

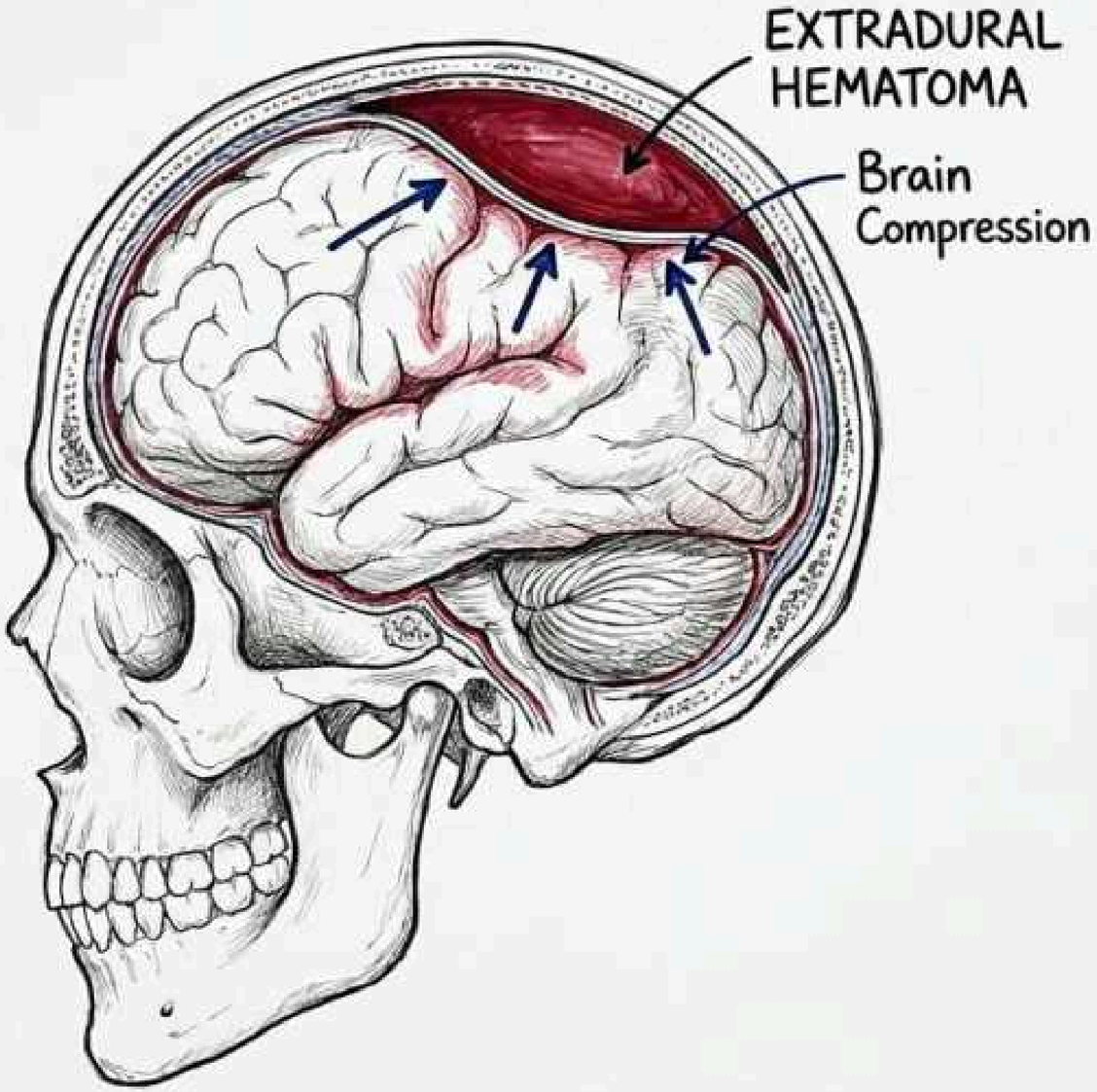


Trigger:

Blunt force (collisions) OR Penetrating wounds (stabbings).

→ Patient Stable → CT Scan → Non-operative management or Embolization (Reference: Med 534 B).

→ Patient Unstable → Bedside Ultrasound.

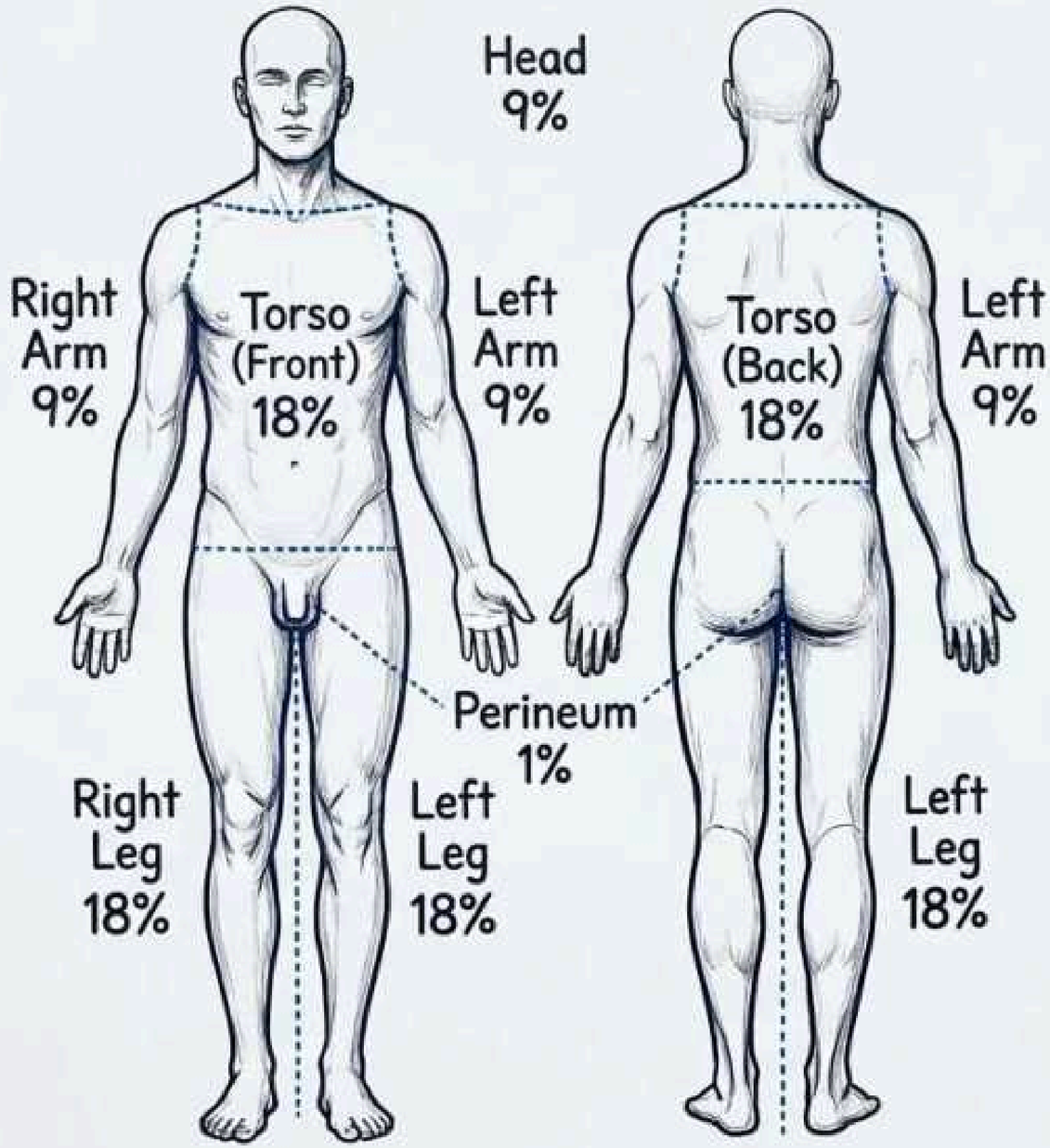


$$GCS = \text{Eye Opening} + \text{Speech} + \text{Movement}$$

(Devised 1974 by Graham Teasdale and Bryan Jennett).

Treatment Imperatives

1) Urgent surgery required to relieve brain compression.
2) Prevent ↓ O_2 and ↓ BP to aggressively protect the injured brain.



Assessment Equation

Severity = Burn Depth × Percentage of Body Surface Affected

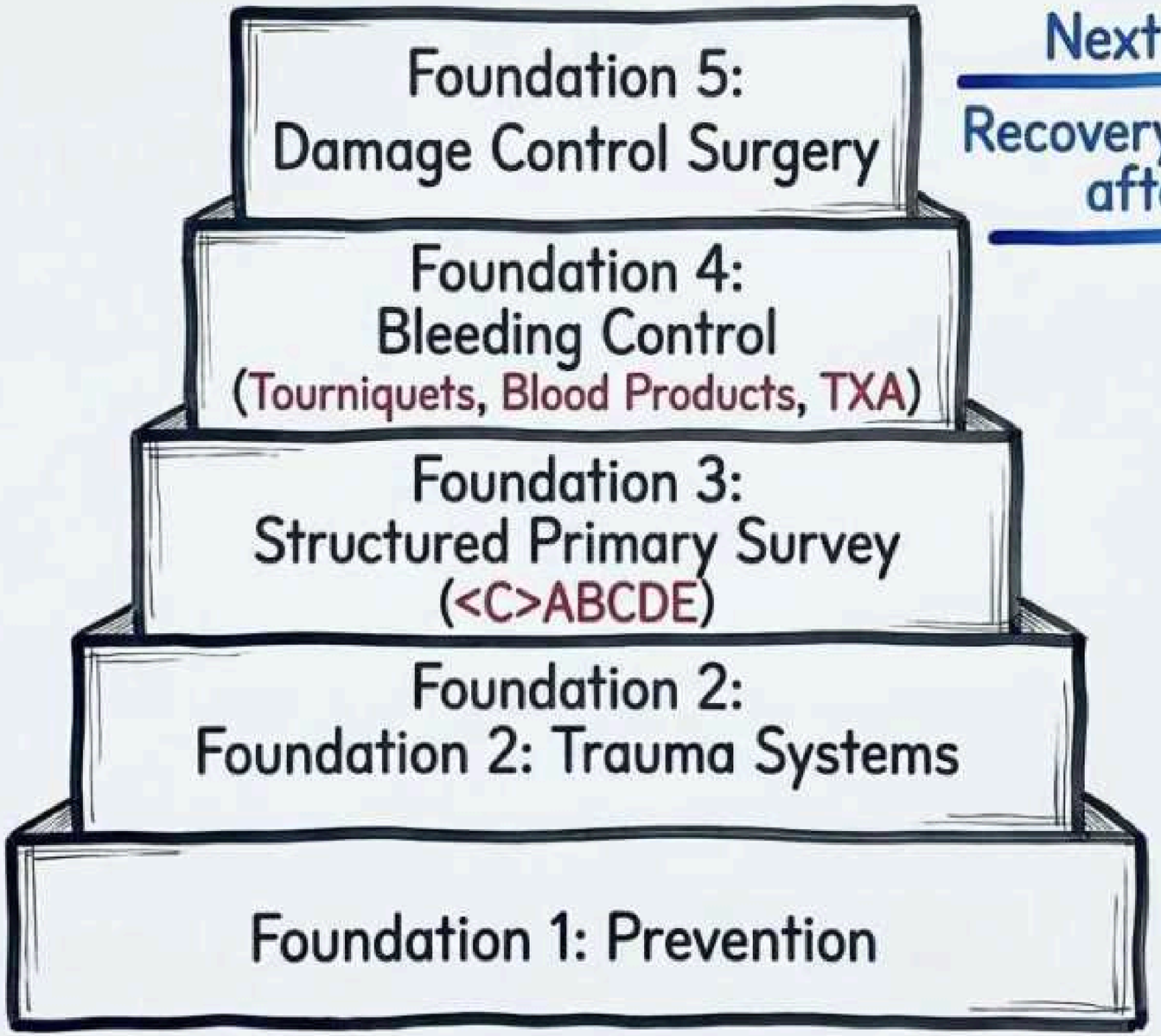
Critical Actions

- ☑ Careful fluid replacement (to counter massive loss).
- ☑ Early airway protection (if smoke inhalation suspected).
- ☑ Specialist burns unit care.

First Aid Rule

Cooling = 20 mins under running water ASAP (Significantly reduces tissue damage).

Trauma Care Pillar



Next Lecture:
Recovery & Complications after surgery.