

# EQUESTRIAN INJURIES

RECOGNITION, ASSESSMENT, & MANAGEMENT

# OVERVIEW

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- Equestrian injury statistics
- Head / Spine / Extremity injuries
  - Types
  - Recognition / Assessment
  - Management / Treatment
- General first aid kit suggestions

# STATS

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- Horse riding is considered a higher risk sport than motorcycle riding, automobile racing, football, and skiing
  - 1 severe accident requiring hospital admission per 2000 hours of riding
- Typical rider profile:
  - 27 years riding experience, Western style, riding for recreation.
  - Own horses, saddled their own horse, and inspected their own tack.
- Injuries happened mostly on sunny, summer afternoons in dirt or on uncultivated land
- Most prevalent were head injuries
- Two-thirds believed their accident was preventable
- Spine injuries are comparatively less common, however, when they occur they typically result in at least partial quadriplegia

# MECHANISM OF INJURY

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- How the accident happened
- Gives important insight into what type of injuries might be present
- Index of suspicion

# MECHANISM

## SUSPECTED INJURIES

NECK

HEAD

CLAVICLE/SHOULDER

RIBS

INTERNAL ORGANS



# MECHANISM



## SUSPECTED INJURIES

FOOT

UNLIKELY HEAD/NECK

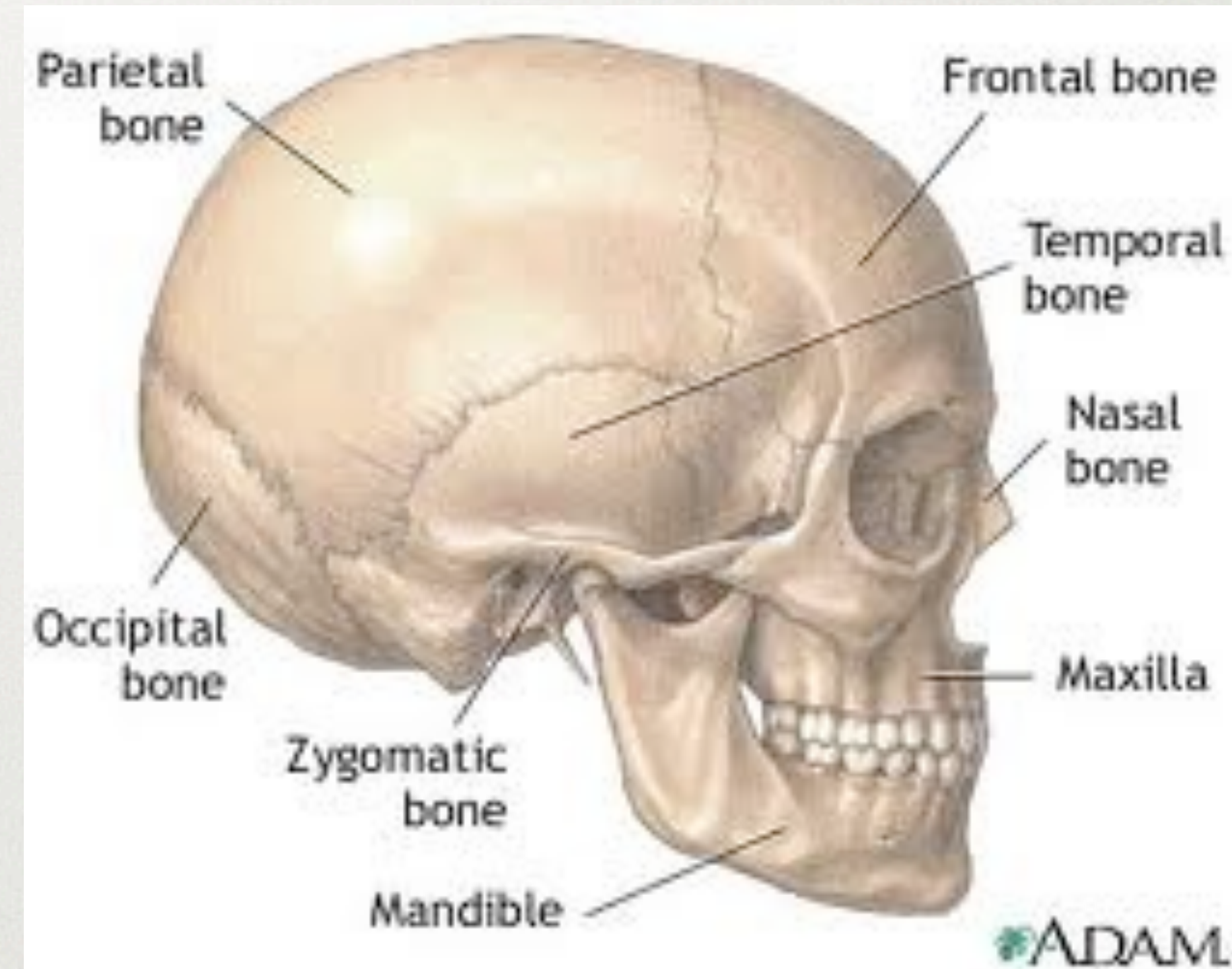


# HEAD INJURIES

# GENERAL TYPES OF HEAD INJURIES

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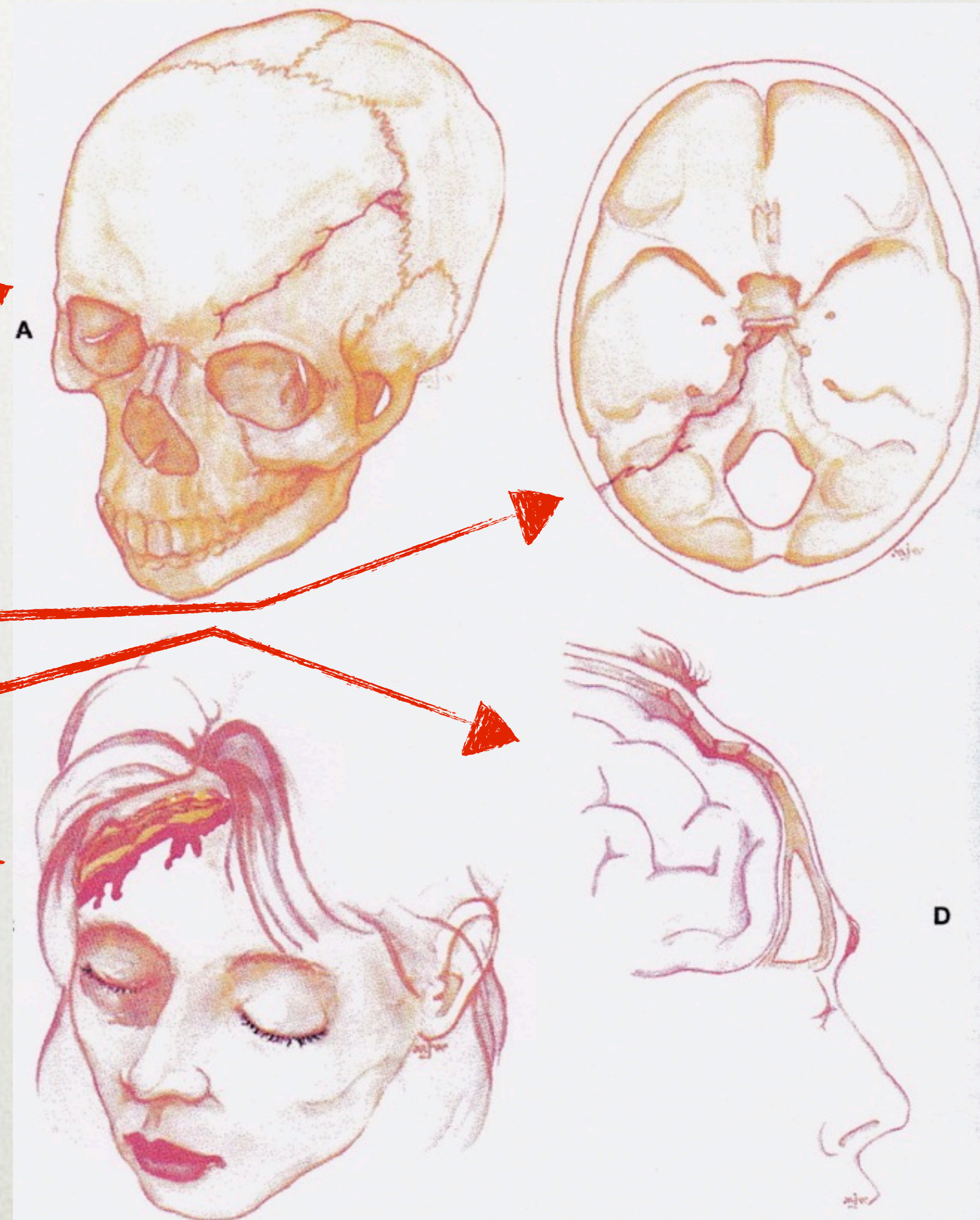
- Fractures
- Brain bleeds
- Brain injuries





# SKULL FRACTURES

- Types:
- Linear
- Basilar
- Depressed
- Open vault



# SKULL FRACTURES

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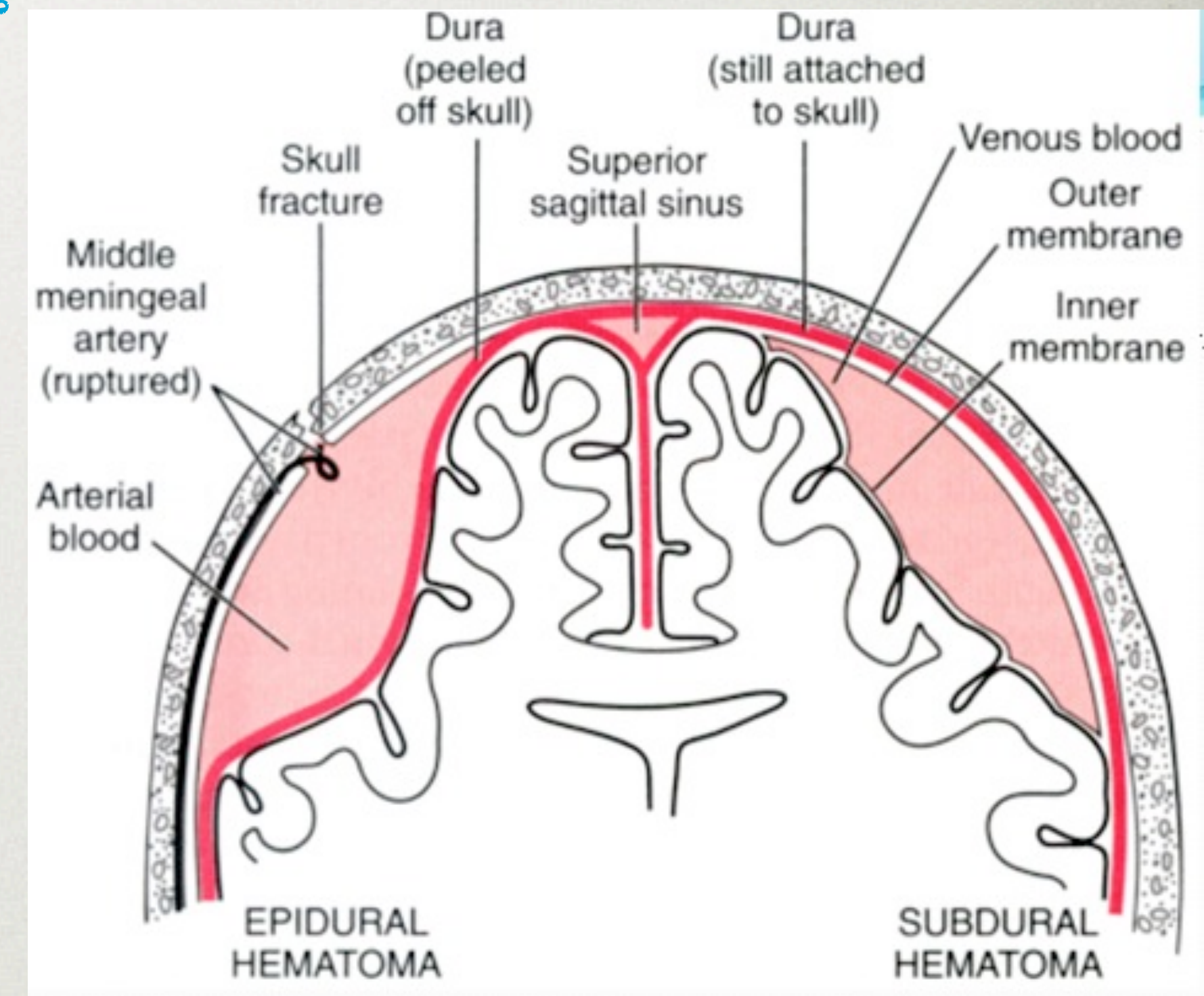
- Structure problem
  - Brain bleed can occur from broken bones
  - Strong impact required to fracture the skull could be an indication that there is another brain injury

# BRAIN BLEEDS

usually FAST onset of symptoms

usually SLOW onset of symptoms

- Common types: epidural / subdural
- Terms of location / rate
- In the simplest terms, both refer to bleeding inside your skull

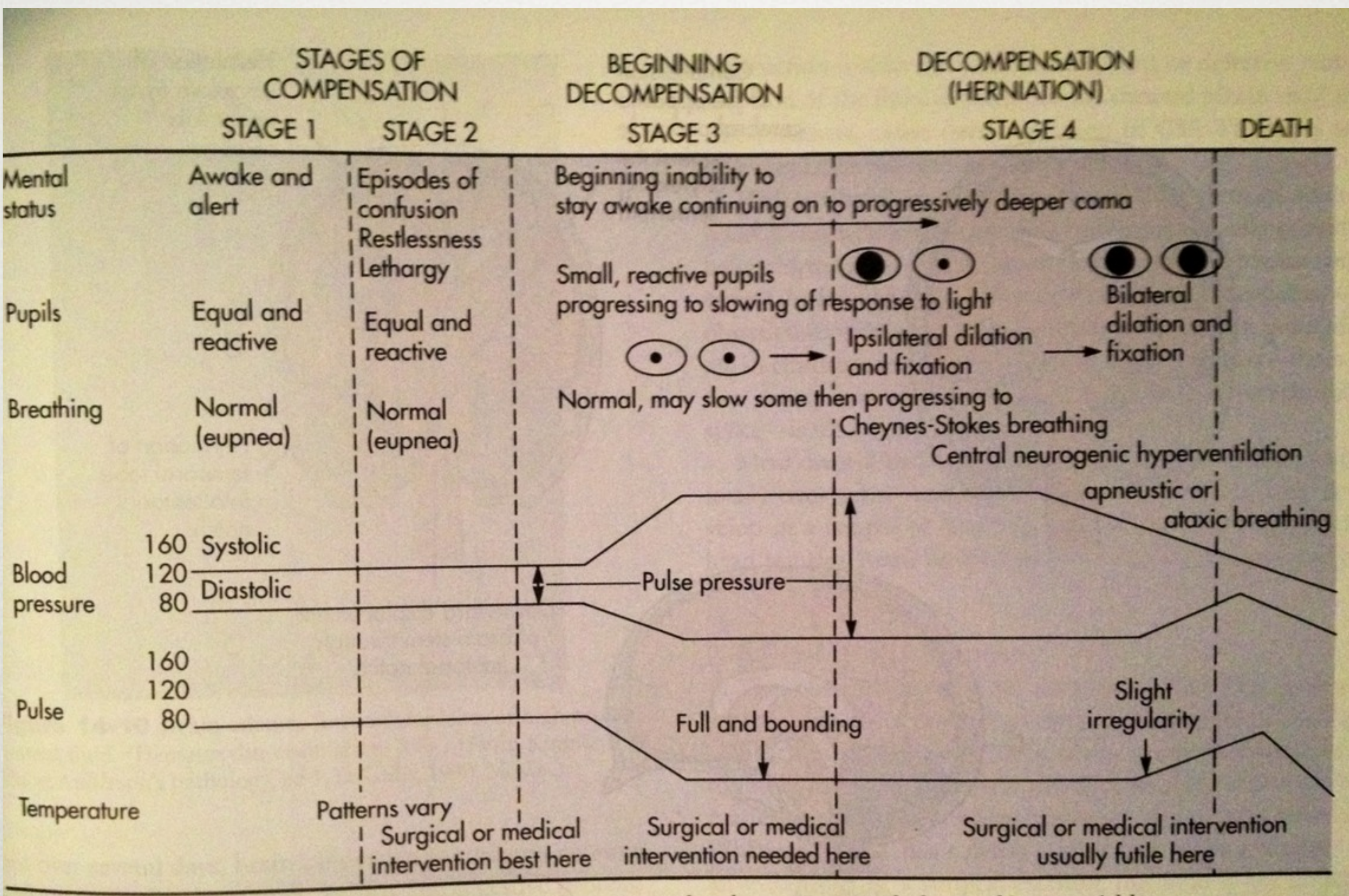


# WHY ARE BRAIN BLEEDS BAD?

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- Pressure problem
- Increased intra-cranial pressure
  - Pressure build-up precludes blood from getting up to supply the brain
  - Increased pressure forces the brain downward through the foramen magnum (hole at the base of the skull)
    - This is called brain herniation (AKA death)

# OUTWARD SYMPTOMS OF INCREASED INTRA-CRANIAL PRESSURE

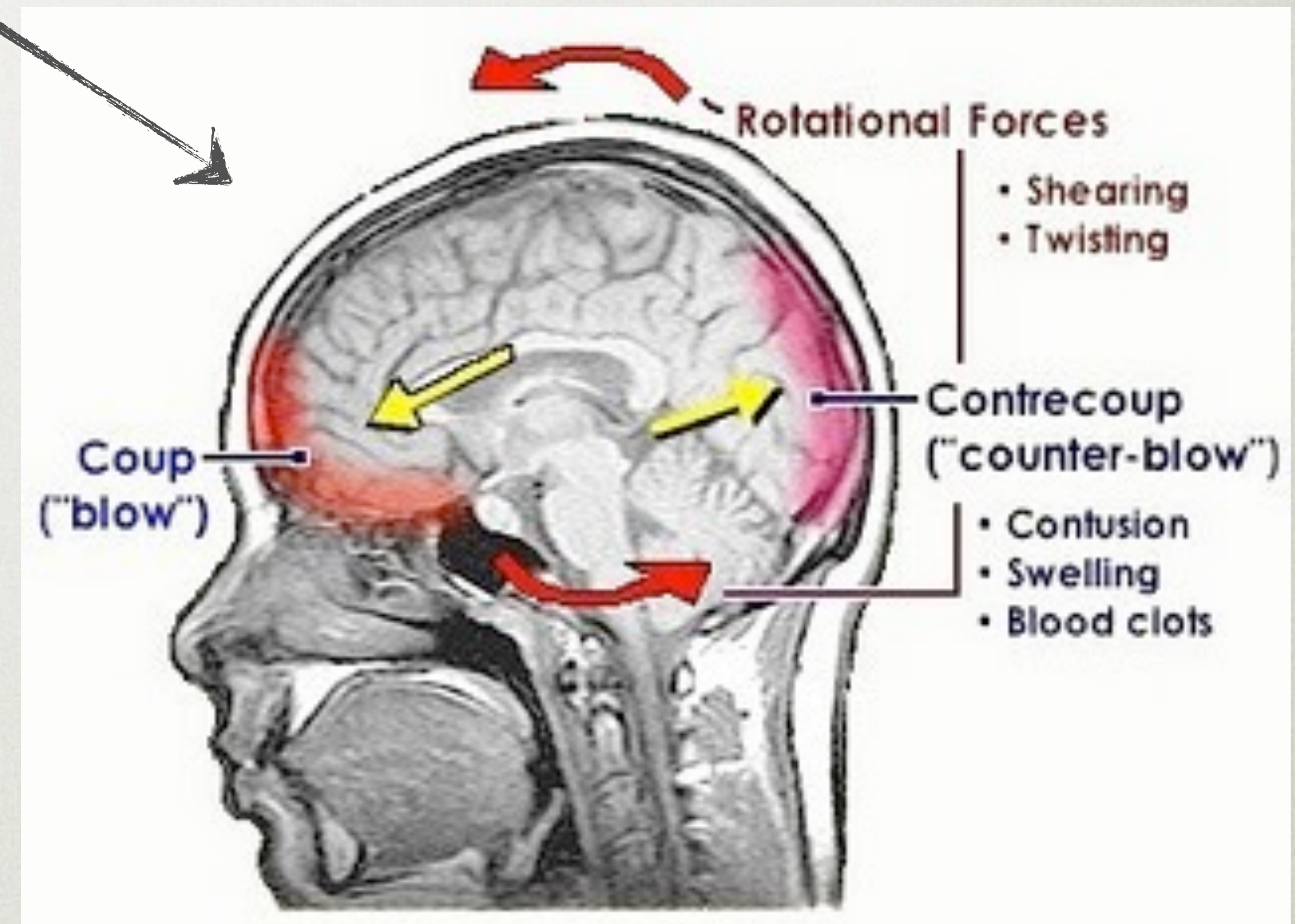


Notice the first signs could be as seemingly benign as restlessness or lethargy

# BRAIN INJURIES

- General types: axonal injuries, contusions
  - Coup - Contrecoup
- Problem of function

You don't have to get knocked out to have a brain injury!



# BRAIN INJURIES

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- Axonal Injuries
  - Connections between neurons are sheared / disrupted
    - the concept is similar to cutting the electric line between a light switch and a light
  - A concussion is a very mild type of axonal injury
- Contusions
  - Bruised brain

# HOW TO RECOGNIZE HEAD INJURIES

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- High index of suspicion based on mechanism!
  - May be no outwardly visible signs
- Skull fractures
  - Deformities, crepitus (bone movement), blood / clear fluid from ears
- Altered level of consciousness / mental status



# GRADING MENTAL STATUS

- Glasgow Coma Scale (GCS)

ASSESSMENT AREA	SCORE
Eye Opening (E) Spontaneous To speech To pain None	4 3 2 1
BEST Motor Response (M) Obeys commands Localizes pain Normal flexion (withdrawal) Abnormal flexion (decorticate) Extension (decerebrate) None (flaccid)	6 5 4 3 2 1
Verbal Response (V) Oriented Confused conversation Inappropriate words Incomprehensible sounds None	5 4 3 2 1

GCS Score = (E+M+V); Best possible score = 15; Worst possible score = 3.

# HEAD INJURY ASSESSMENT

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- What to look for
  - Deformities, blood / fluid drainage, Battle's sign, Raccoon eyes, unequal pupils, irregular respirations, seizures, unconsciousness
- What to be aware of
  - Confusion, retrograde / anterograde amnesia, severe headache, nausea, vomiting, photosensitivity / visual disturbances, ringing in ears
  - Basically ANYTHING that's new since the accident
- Maintain a high index of suspicion even if initially asymptomatic
  - Re-assess frequently

# BATTLE'S SIGN

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**RACCOON EYES**

# MANAGEMENT FOR A HEAD INJURY

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- CALL 911 ASAP!
- C-spine stabilization & try to minimize movement

# SPINE INJURIES

Before



Back View

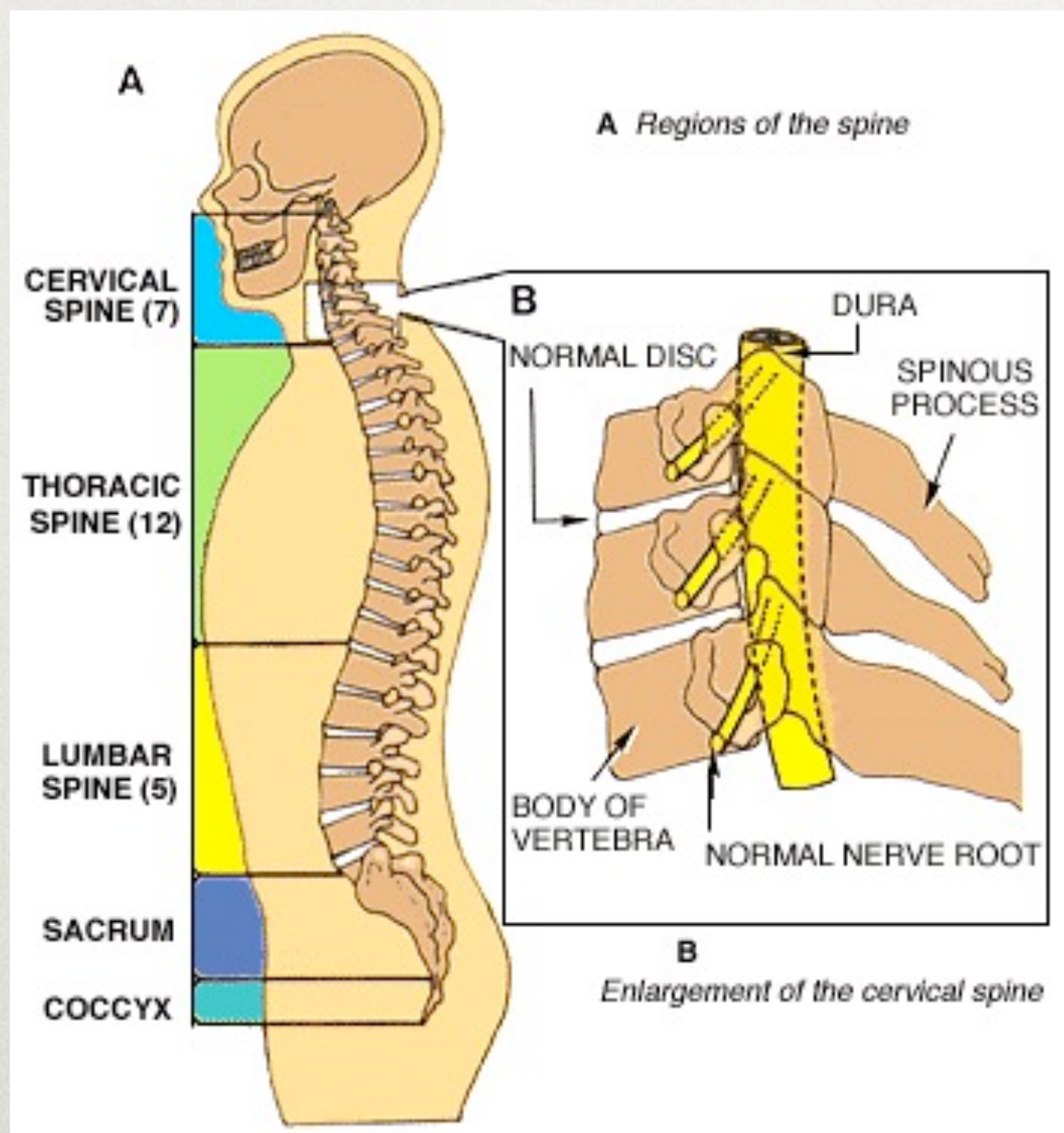
After Deployment



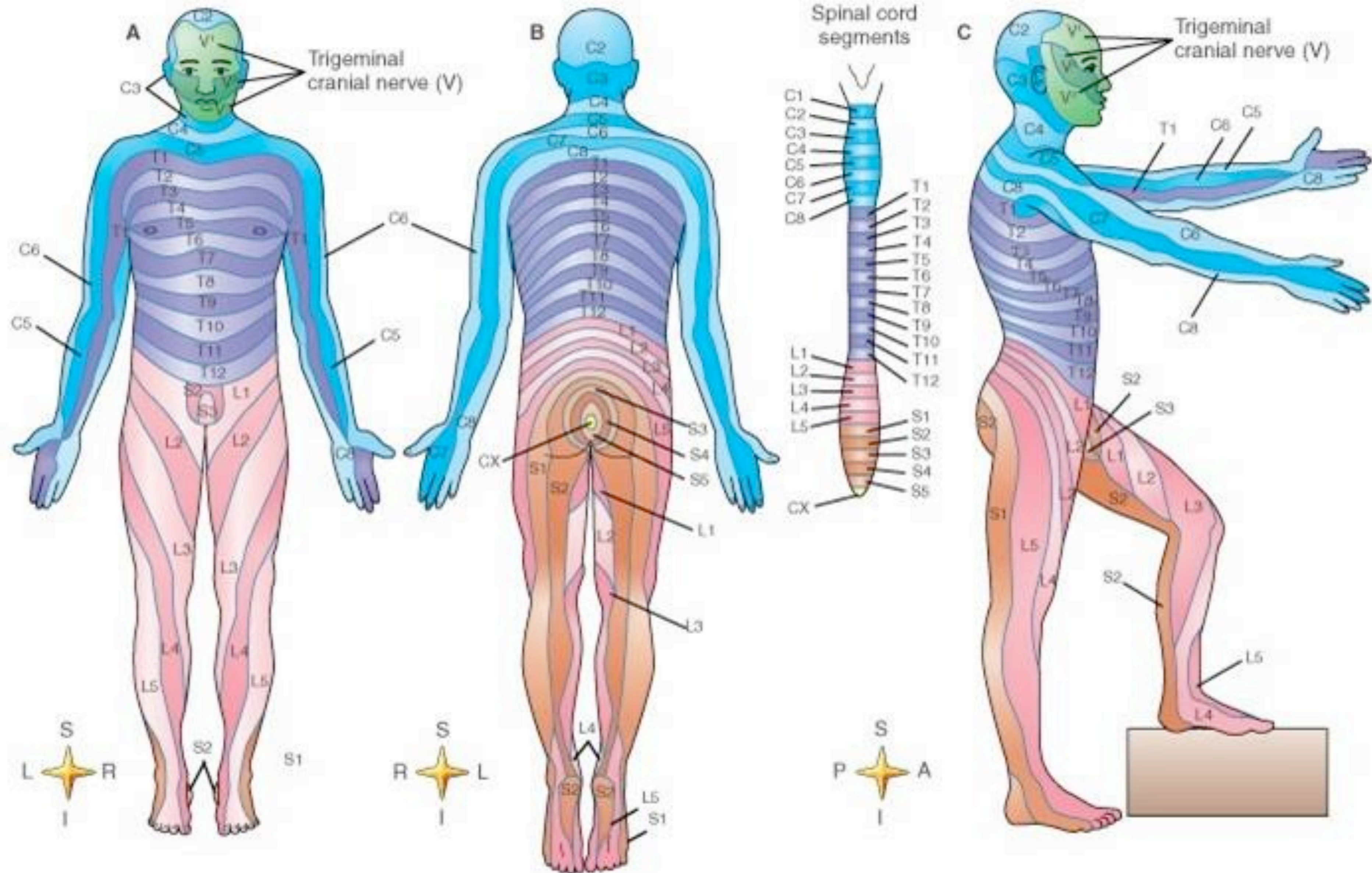
**Equine Airbag!!**



# SPINAL COLUMN ANATOMY



# Regions of the Body Innervated by Each Spinal Nerve



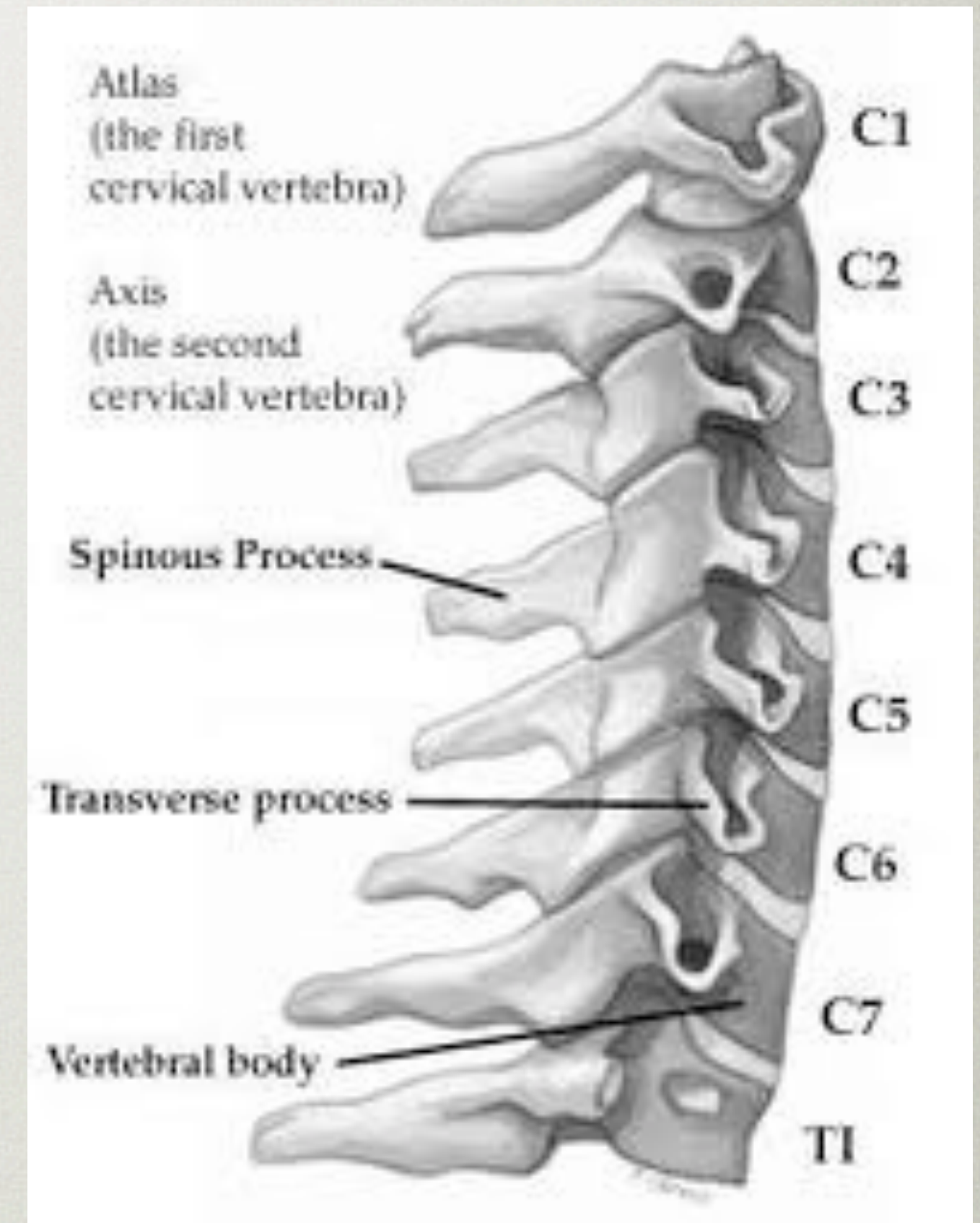
- Cervical (C1-C8)
- Thoracic (T1-T12)
- Lumbar (L1-L5)
- Sacral (S1-S5)



# SPINE INJURES

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- General types: vertebrae fractures, cord injuries
- Remember: It's possible to have a cord injury without any fracture present
- Fracture
  - Problem of structure
- Cord Injury
  - Problem of function



# RECOGNITION & ASSESSMENT OF SPINAL INJURIES

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- Maintain a high index of suspicion based upon the mechanism!
  - May be no outwardly visible signs
- What to pay attention to:
  - Neck / back pain, numbness / altered sensation / motor control in extremities, incontinence

# SPINAL INJURY RULE-OUT FLOW CHART

SUSPECTED SPINE INJURY  
FROM MECHANISM

NORMAL MENTAL STATUS,  
ANSWERS ALL QUESTIONS  
PROMPTLY AND APPROPRIATELY,  
GCS = 15

NO NECK/BACK PAIN  
(EITHER COMPLAINT OR UPON PALPATION)

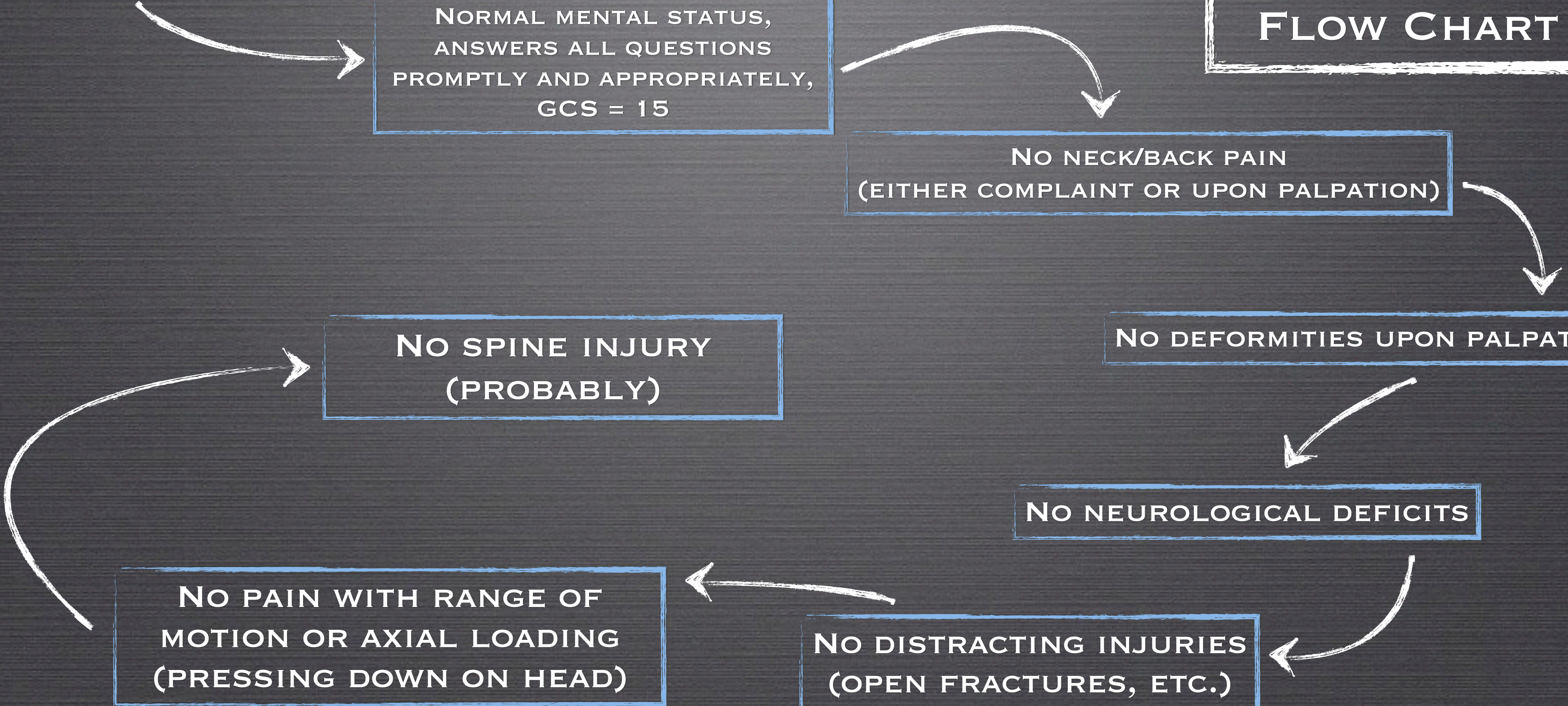
NO DEFORMITIES UPON PALPATION

NO NEUROLOGICAL DEFICITS

NO DISTRACTING INJURIES  
(OPEN FRACTURES, ETC.)

NO PAIN WITH RANGE OF  
MOTION OR AXIAL LOADING  
(PRESSING DOWN ON HEAD)

NO SPINE INJURY  
(PROBABLY)



# SPINAL INJURY ASSESSMENT

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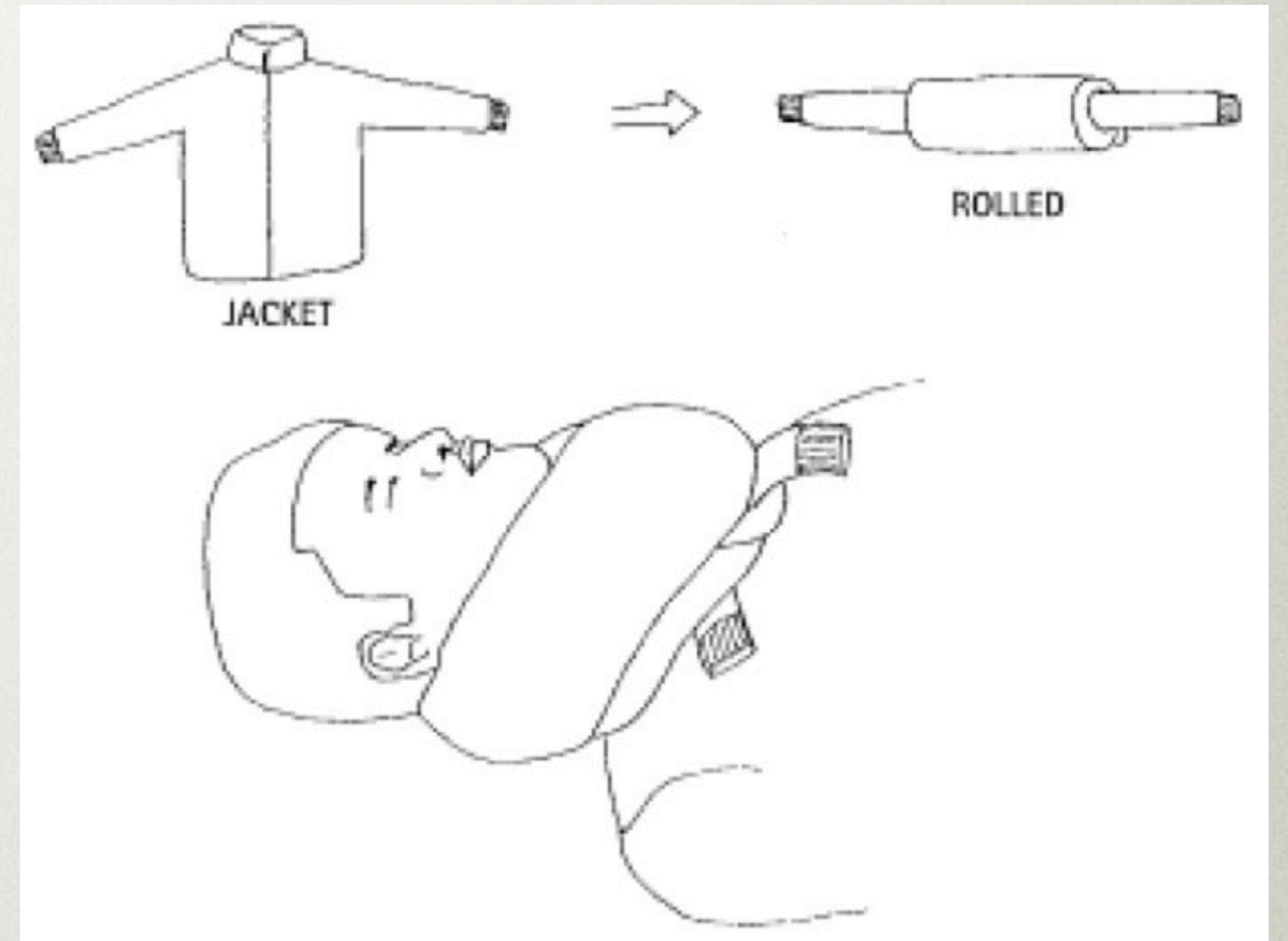
- Use the rule-out criteria (previous slide)
- **IMPORTANT:** Just because they meet the rule-out criteria does not mean they do not have a neck / spine injury
  - Re-Assess!
- Maintain a high index of suspicion

# WHAT TO DO IF A SPINE INJURY IS SUSPECTED

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- Maintain c-spine stabilization
- Try to minimize movement
- CALL 911!



# EXTREMITY INJURIES

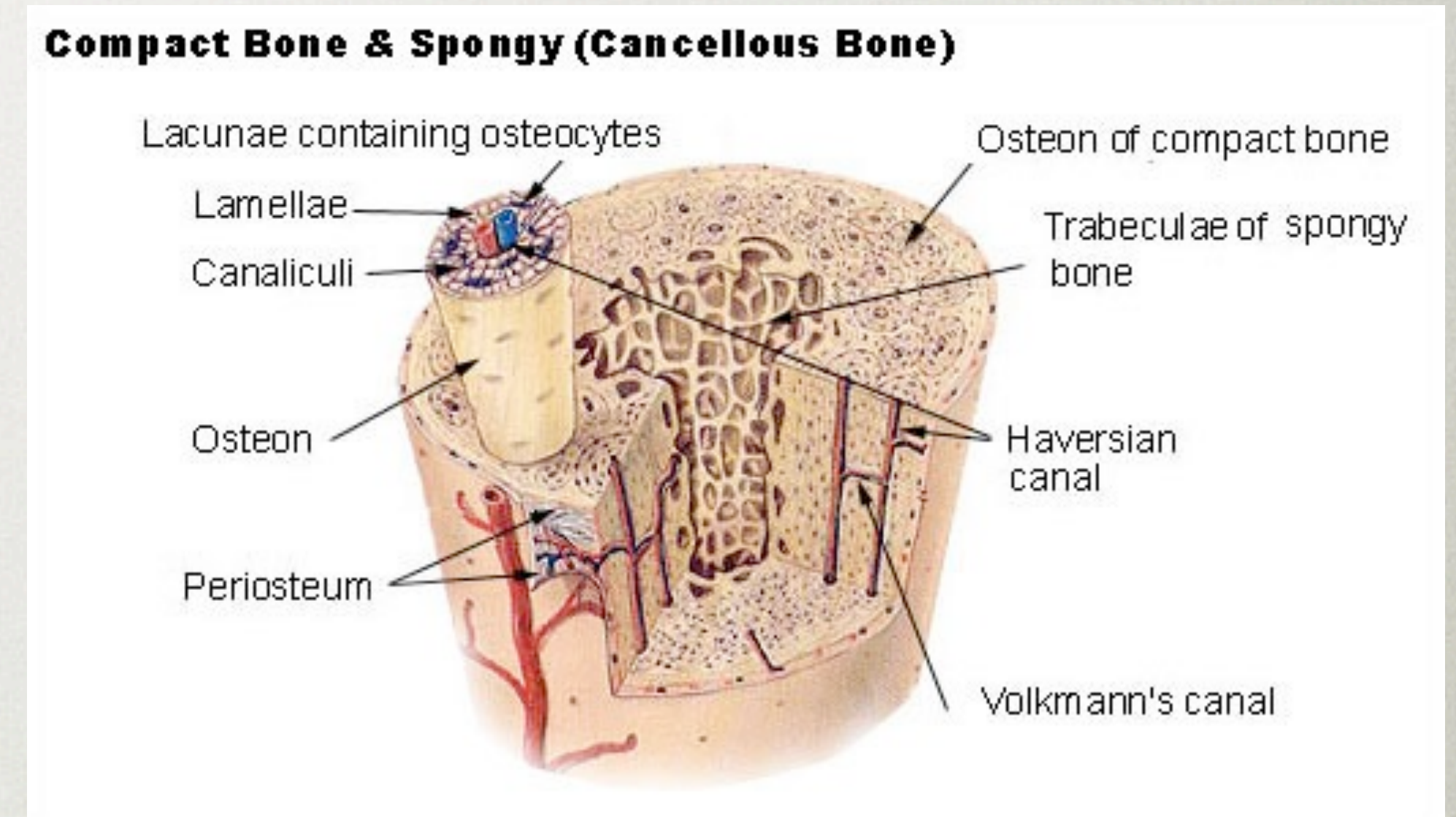


- General types: Fractures, dislocations, lacerations

# KEY POINTS WITH FRACTURES/DISLOCATIONS

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- Bones are VERY vascular
- A structural problem can very quickly lead to a fluid loss problem
- Fractures / Dislocations often damage nearby blood vessels and / or nerves



# ASSESSMENT OF EXTREMITIES

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- First priority with any suspected extremity injury:
  - Assess circulation, motor function, and sensation (CMS) beyond the point of injury
    - Pulse / capillary refill, equality of strength, equality of sensation / abnormal sensation
- Assess the good side and compare
  - That's why you have two!



# TREATMENT OF FRACTURES/DISLOCATIONS

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- Splint (and sling if upper extremity)
- General splinting principles:
  - Immobilize joints immediately above and below injury
  - Assess CMS before and after applying splint

If CMS is compromised:  
CALL 911!

*Just because you have two  
doesn't mean one is a back-up!*

# TYPES OF SPLINTS

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- No splint?
- Be creative
- A splint can be ANYTHING that will stabilize and provide structure
- Ex: stick, smashed water bottle, pt.'s own body



SAM splint



air splint



improvised splint



# BLEEDING CONTROL

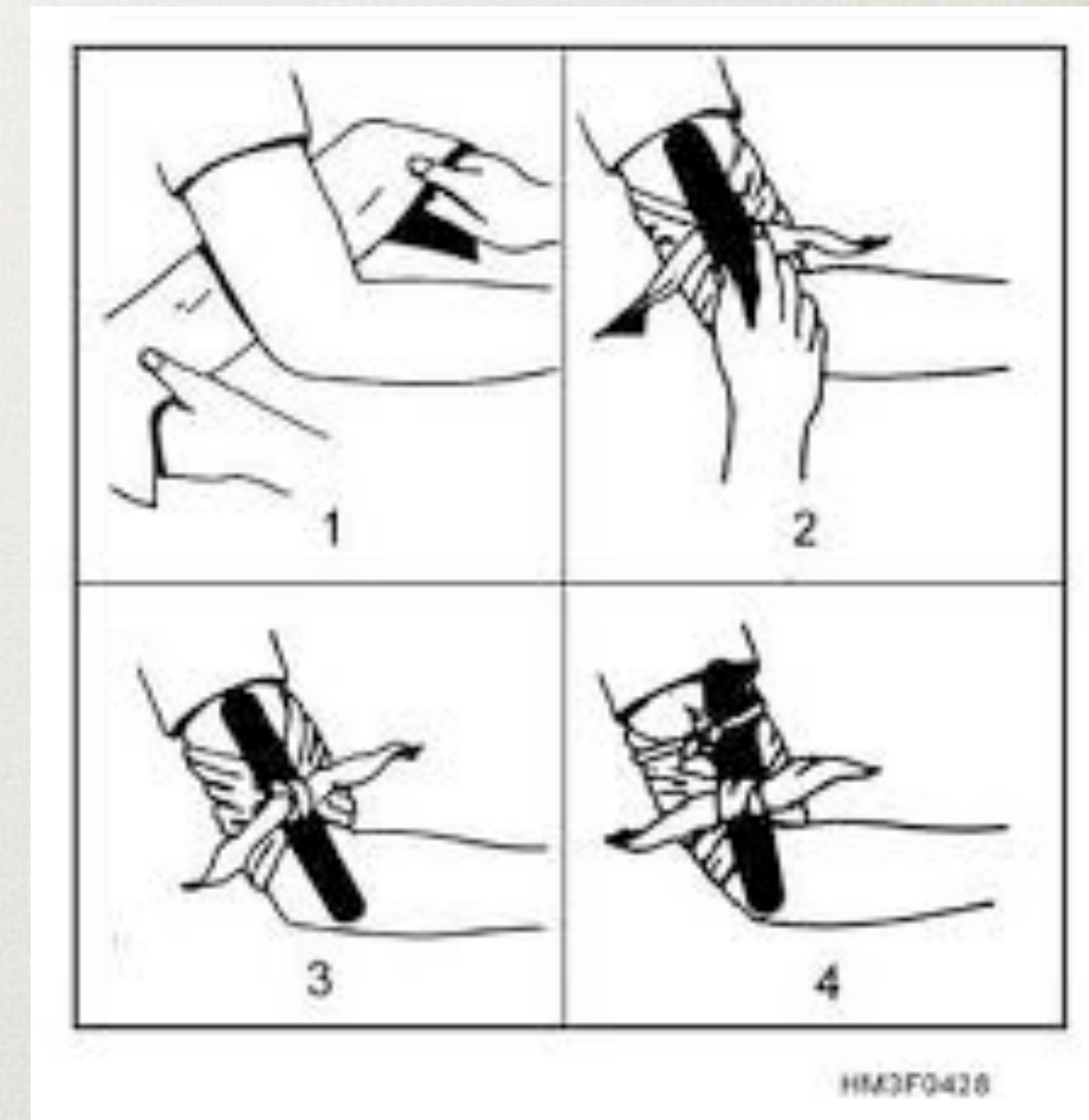
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1. Direct pressure

2. Pressure dressing

3. Tourniquet

- Tourniquets are OK to stop severe bleeding (the military told me so)
- Make sure you write down the time of application



# BLEEDING CONTROL KEY POINTS

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- Clean the site
  - Debris in the wound will make clot formation more difficult
- Once a dressing is in place do not remove it
  - You'll disrupt the forming clot and be starting from scratch

*Click me, I'm a link!*



# HORSE & HOUND HOW TO FALL

# BASELINE FIRST AID KIT SUGGESTIONS

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- **Wet-ones**
  - General cleaning
- **Gauze 4x4**
  - Good to have something sterile as the first thing next to a wound
- **Super glue**
  - Good for sealing minor cuts
  - Please don't use this to try to glue on an appendage
- **Triple anti-biotic**
  - Will help slow / stop minor bleeds as well as keep infection at bay
- **Athletic tape**
  - Tape on dressings, splints, and whatever else your heart desires
- **Triangle bandage**
  - Great sling / swathe that packs very small
- **Benadryl (pill and ointment)**
  - Allergic reactions
- **Advil/Aspirin**
  - Pain is a drag
  - Aspirin for potential heart problems
- **Sharpie**
  - Write down the time an injury happened
  - Write down details that you may need to convey to a 911 dispatcher
  - Write down the time of tourniquet application
  - Draw a mustache on your riding partner while they're unconscious

# SOURCES

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