INJURIES TO THE HEAD AND SPINE

OBJECTIVES

4-3.1 Identify basic facts and general principles about safety and why and when procedures regarding injuries to the head and spine must be done with at least 80% accuracy.

OBJECTIVES

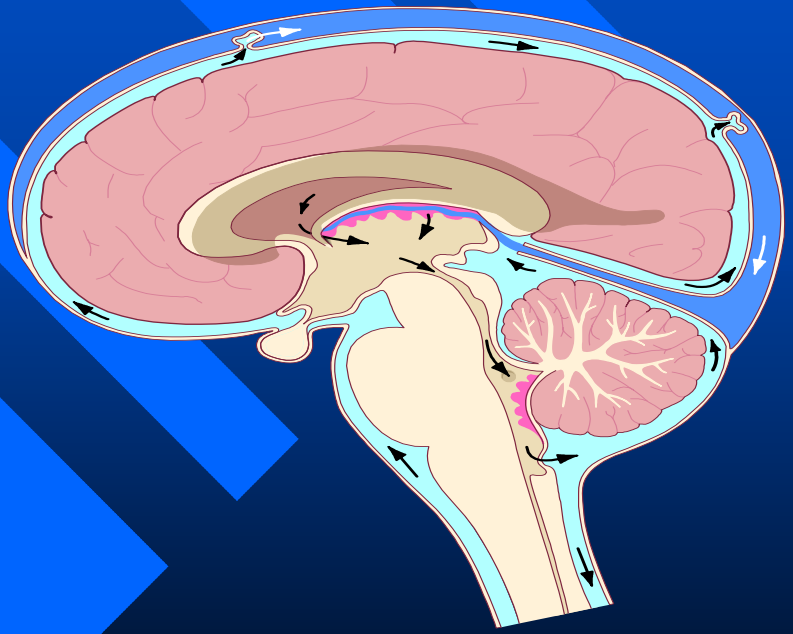
- Nervous System Review
- Skeletal System Review
- Injuries to the Spine
- Injuries to Brain and Skull
- Immobilization
- Special Considerations

Nervous System

- Function
  - Controls the voluntary and involuntary activity of the body

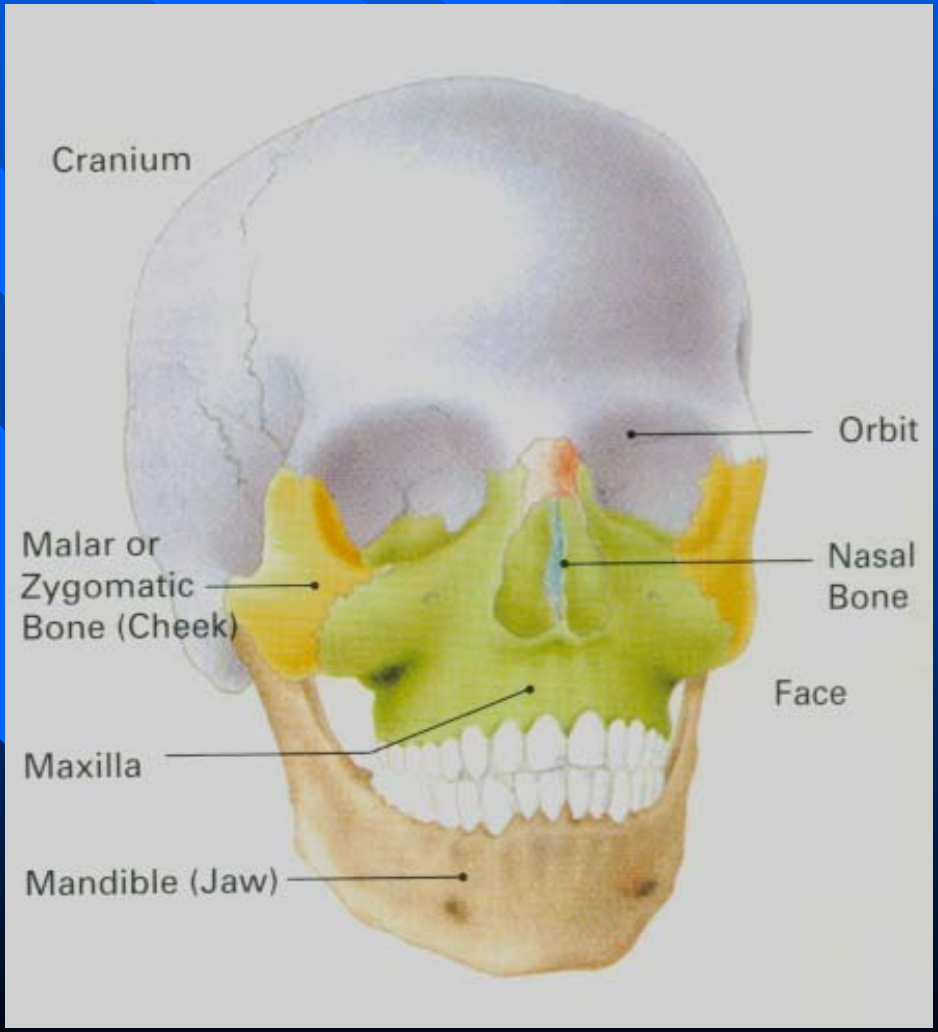
Nervous System

- Components
  - –Central
  - –Peripheral
    - »Sensory
    - »Motor



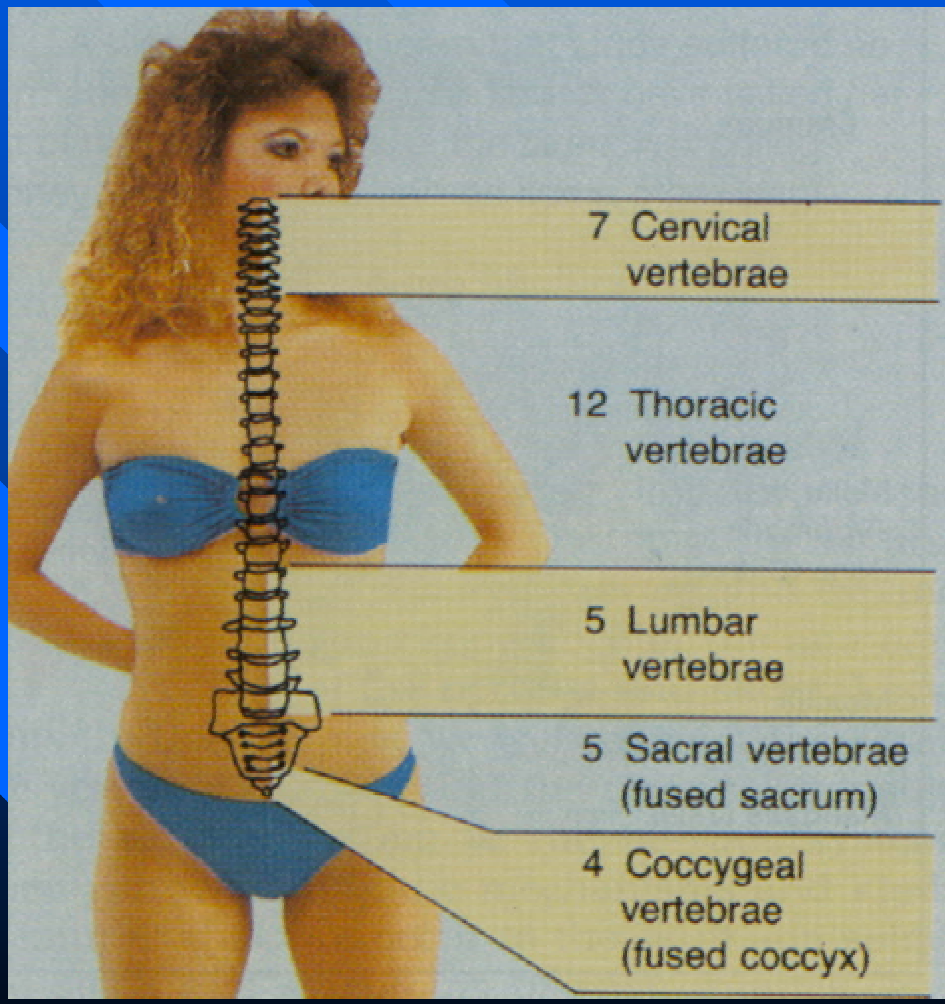
Skeletal System

- Functions
- Components
  - Skull



Skeletal System

- Components
  - –Spinal column
  - –Surrounds and protects the spinal cord



Injuries to the Spine

- Mechanisms of injury
  - Compression
    - »Falls
    - »Diving
    - »Motor vehicle accidents

Mechanisms of Injury

- Excessive flexion, extension rotation
- Lateral bending
- Distraction
  - » Pulling apart of the spine
  - » Hangings

Injuries to the Spine

- Maintain a high index of suspicion
  - –Motor vehicle accidents
  - –Pedestrians – vehicle collisions
  - –Falls

Injuries to the Spine

- Maintain a high index of suspicion
  - Blunt trauma
  - Penetrating trauma to head, neck or torso
  - Motorcycle crashes

High Index of Suspicion

- Hangings
- Diving accidents
- Unconscious trauma victims

Injuries to the Spine

- Signs and symptoms
  - Ability to walk, move extremities, feel sensation or lack of pain to spinal column does not rule out the possibility of spinal column or spinal cord damage

Signs and Symptoms

- Tenderness
- Pain with moving
- Pain independent of movement
- Obvious deformity
- Soft tissue injuries

Signs and Symptoms

- Numbness, weakness, tingling in the extremities
- Loss of sensation or paralysis below suspected level of injury

Signs and Symptoms

- Loss of sensation or paralysis in the upper or lower extremities
- Incontinence

Assessing the Spine Injured Patient

- Responsive
  - Mechanism of injury
  - Questions to ask
  - Inspect for

Assessing the Spine Injured Patient

- Responsive
  - Palpate for tenderness or deformity
  - Assess equality of strength in extremities

Assessing the Spine Injured Patient

- Unresponsive
  - Mechanism of injury
  - Initial assessment
  - Inspect for

Assessing the Spine Injured Patient

- Unresponsive
  - Palpate for tenderness or deformity
  - Obtain information from other people

Assessing the Spine Injured Patient

- Complications
  - Inadequate breathing effort
  - Paralysis

Emergency Medical Care

- BSI
- Establish/maintain in-line immobilization
- Perform initial assessment

Emergency Medical Care

- Assess CSM's
- Assess cervical region and neck
- Apply C-Collar

Emergency Medical Care

- If found
  - Lying position
  - Sitting position
  - Standing
  - Critically injured

Brain and Skull Injuries

- Head injuries
  - Injuries to the scalp
  - Injuries to brain
- Related non-traumatic conditions

Signs and Symptoms of Skull Injuries

- Mechanism of trauma
- Contusions, lacerations, hematomas to scalp
- Deformity to the skull

Signs and Symptoms of Skull Injuries

- Blood or CSF from ears or nose
- Black eyes or discoloration of soft tissue
  - Raccoon's eyes

Signs and Symptoms of Skull Injuries

- Bruising or swelling behind the ears
  - Battle signs

Head Injuries

- Traumatic
- Signs and symptoms
  - –Altered decreasing mental status
    - »Best indicator of a brain injury

Signs and Symptoms

- Irregular breathing pattern
- Consideration of MOI
- Contusions, lacerations, hematomas to the scalp
- Deformity of the skull

Signs and Symptoms

- Blood or CSF from ears or nose
- Black eyes or discoloration of soft tissue
  - »Raccoon's eyes

Signs and Symptoms

- –Bruising or swelling behind the ears
  - »Battle signs
- – Neurologic disability
- –Nausea and/or vomiting

Signs and Symptoms

- Unequal pupil size with altered mental status
- Seizure activity

Emergency Medical of Head Injuries

- BSI
- Airway
- Ventilation
- Initial assessment with spinal immobilization

Emergency Medical of Head Injuries

- Suspect spine injury
- Immobilize the spine
- Closely monitor ABC'S/LOC's
- Control bleeding

Emergency Medical of Head Injuries

- Positioning patient
  - Medical/non-traumatic injury

Emergency Medical of Head Injuries

- Be prepared for changes in patient
- Transport immediately

Immobilization

- C-spine immobilization device
  - Indications
  - Sizing
  - Precautions

Short Backboards

- Types
  - –Vest type
  - –Rigid short board

Short Backboards

- Provides stabilization and immobilization to the head, neck, and torso

Short Backboards

- Used to immobilize non-critical sitting patients with suspected spinal injuries

Long Backboards

- Several different types

Long Backboards

- Provides stabilization and immobilization to head,neck,torso, pelvis and extremities

Long Backboards

- Used to immobilize patient's found in a lying, standing or sitting position
- Can be used with short spine board

Special Considerations

Rapid Extrication

Rapid Extrication

- Indications
  - Unsafe scene
  - Unstable patient
  - Patient blocks access

Rapid Extrication

- Based on time and patient
  - Not EMT's preference

Helmet

- Special assessment needs
  - Airway and breathing
  - Fit of the helmet
  - Ability to gain access to airway and breathing

Helmet

- Indications to leave helmet on
  - Good fit
  - No impending airway and breathing problems
  - Removal would cause further problems

Helmet

- Indications to leave helmet on
  - Proper immobilization could be performed
  - No interference with the EMT-B's ability to assess and reassess airway and breathing

Helmet

- Indications for removing helmet
  - Inability to assess and/or reassess airway and breathing
  - Restriction of adequate management of the airway or breathing

Helmet

- Indications for removing helmet
  - Allows excessive movement of head inside helmet
  - Proper spinal immobilization can not be performed
  - Cardiac arrest

Helmet

- Types of helmet
  - Sports
  - Motorcycle

Special Considerations

- Infants and children
  - Immobilize on rigid board that fits the size
  - Special considerations

Infants and Children

- Special considerations
  - Pad from shoulders to heels if necessary to maintain neutral in-line immobilization
  - Properly size the c-collar

Review

4-3.1 Identify why and when procedures regarding injuries to the head and spine must be done with at least an 80% accuracy.

Review

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- Skeletal System Review
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- Injuries to Brain and Skull
- Immobilization
- Special Considerations