Seattle/King County EMT-B Class

Topics

1. Acute Abdomen: Chapter 14
2. Abdomen & Genitalia Injuries: Chapter 28
3. Musculoskeletal Care: Chapter 29
4. Head and Spine Injuries: Chapter 30

The Acute Abdomen
Abdominal Pain

- Common complaint
- Cause is often difficult to identify; not necessary to determine cause
- Need to recognize life-threatening problems and act swiftly

Physiology of the Abdomen

Peritonitis:
- Irritation of the peritoneum

Peritoneum
- Thin membrane lining the entire abdomen

Acute abdomen
- Sudden onset of abdominal pain
- Can be fatal

Physiology of the Abdomen

- Pain usually interpreted as colic; a severe, intermittent cramping pain.
- Referred pain
  - Perceived pain at a distant point of the body caused by irritation of the visceral peritoneum
Causes of Acute Abdomen

- Nearly every kind of abdominal problem can cause an acute abdomen.
- Substances lying in or adjacent to the abdominal cavity

Causes of Acute Abdomen

- Perforation of an ulcer
- Gallstones that lead to inflammation (cholecystitis)
- Inflammation of the pancreas (pancreatitis)
- Inflammation or infection of appendix
- Inflammation of pouches in large intestine (diverticulitis)

Urinary System

- Kidneys can be affected by stones that form from materials normally passed in the urine.
- Kidney infections can cause severe pain.
- Patients are often quite ill, with a high fever.
- Bladder infection (cystitis) more common, especially in women.
- Patients usually have lower abdominal pain.
Uterus and Ovaries

Causes of pain
- Menstrual cycle
- Pelvic inflammatory disease
- Ectopic pregnancy

Always consider a gynecologic problem with women having abdominal pain.

Other Organ Systems

Aneurysm
- Weakness in aorta

Pneumonia
- May cause ileus and abdominal pain

Hernia
- Protrusion through a hole in the body wall

Signs and Symptoms

- Ileus
  - Paralysis of muscular contractions in the intestine
  - Causes abdominal distention
- Nothing can pass normally out of stomach or bowel.
- Stomach can only empty through vomiting.
- Almost always associated with nausea and vomiting.
Signs and Symptoms, continued
- Distention
- Anorexia
- Loss of body fluid into peritoneal cavity
- Fever may or may not be present.
- Tenseness of abdominal muscles over irritated area

Scene Size-up
1. Scene Size-up
   - Ensure that the scene is safe.
   - Acute abdomen can be result of violence.
   - Consider ALS back-up.
   - Observe the scene closely for clues.

Initial Assessment
1. Scene Size-up
2. Initial Assessment
   - Decide SICK/NOT SICK.
   - Ascertain chief complaint.
   - Note patient’s LOC using AVPU scale.
   - Check for adequate airway and treat appropriately.
   - Administer oxygen.
Initial Assessment, continued

1. Scene Size-up
2. Initial Assessment
   • Assess for major bleeding.
   • Pulse and skin condition may indicate shock.
   • If evidence of shock exists, elevate patient’s legs 6” to 12”.

Focused History/Physical Exam

1. Scene Size-up
2. Initial Assessment
3. Focused History/Physical Exam
   • Local or diffuse abdominal pain/tenderness
   • Patient position
   • Rapid and shallow breathing
   • Referred (distant) pain
   • Anorexia, nausea, vomiting

Detailed Physical Exam

1. Scene Size-up
2. Initial Assessment
3. Focused History/Physical Exam
4. Detailed Physical Exam
   • You will not be able to make a diagnosis.
   • This exam may help provide more information.
   • Do not delay transport to perform this.
Patient’s condition may rapidly change.
Reassess ABCs.
Anticipate development of shock; treat even if there are no obvious signs.
Relay information as soon as possible.
Include pertinent physical findings.

1. Scene Size-up
2. Initial Assessment
3. Focused History/Physical Exam
4. Detailed Physical Exam
5. Ongoing Assessment

Transport gently.
Do not delay transport if patient has:
- Life threat
- Suspected internal bleeding
- Poor general impression
Do not delay transport of pediatric or geriatric patients.

SAMPLE History
Use OPQRST to ask the patient what makes the pain better or worse.
Do not give the patient anything by mouth.
Focused Physical Exam

- Explain what you are about to do.
- If no trauma, place patient supine with legs drawn up and flexed at knees.
- Determine if motion causes pain and if distention is present.
- Palpate the four quadrants of the patient's abdomen gently.

Baseline Vital Signs

- Monitor for adequate ventilation.
- Beware that changes in vital signs may be as a result of septic or hypovolemic shock.
Interventions

- Based on assessment findings.
- Anticipate vomiting.
- Nausea is frequently lessened by low-flow oxygen.
- If the patient exhibits signs of shock, place in Trendelenburg position.

Emergency Medical Care

- Take steps to provide comfort and lessen effects of shock; reassure patient.
- Position patients who are vomiting to maintain airway.
- Be sure to use BSI.
- Clean ambulance and equipment once patient is delivered.

Questions

- What questions do you have?

To review this presentation, go to: http://www.emsonline.net/emtb
Abdomen & Genitalia Injuries

Hollow Organs in the Abdomen

Signs of Peritonitis
- Abdominal pain
- Tenderness
- Muscle spasm
- Diminished bowel sounds
- Nausea/vomiting
- Distention
Solid Organs in the Abdomen

Abdominal Quadrants
- The abdominal cavity is divided into four quadrants.

Injuries of the Abdomen
- Closed injury:
  - Severe blows that damage abdomen without breaking skin
- Open injury:
  - Foreign body enters abdomen and opens peritoneal cavity to outside
Abdominal Injury
Signs and symptoms may include:
- Pain
- Tachycardia
- Decreased blood pressure
- Pale, cool, moist skin
- Firm abdomen on palpation
- Bruising

Blunt Abdominal Wounds
- Severe bruises of the abdominal wall
- Laceration of the liver and spleen
- Rupture of the intestine
- Tears in the mesentery
- Rupture or tearing of the kidneys
- Rupture of the bladder
- Severe intra-abdominal hemorrhage
- Peritoneal irritation and inflammation

Care of Blunt Abdominal Wounds
- Decide SICK/NOT SICK.
- Place patient on backboard.
- Protect airway.
- Monitor vital signs.
- Administer oxygen.
- Treat for shock.
- Provide prompt transport.
Seat Belts and Airbags

- If used inappropriately, seat belts may cause injuries.
- Frontal airbags provide protection only during head-on collisions.

Seat Belt Positions

Care for Penetrating Injuries

- Inspect for exit wounds.
- Apply a dry, sterile dressing to all open wounds.
- If the penetrating object is still in place, apply a stabilizing bandage around it to control bleeding and minimize movement.
Abdominal Evisceration

- Internal organs or fat protrude through the open wound.
- Never try to replace organs.
- Cover the organs with a moist gauze, then secure with a dressing.
- Organs must be kept warm and moist.

Treatment for Evisceration

Emergency Medical Care

- Decide SICK/NOT SICK.
- Consider spinal immobilization.
- Ensure patent airway; keep airway clear of vomitus.
- Consider use of a BVM device.
- Trauma to the kidneys, liver, and spleen can cause significant internal bleeding.
- Evaluate and treat for shock.
- Cover wounds and control bleeding.
- Transport promptly.
Injuries of the Kidney

Suspect kidney damage if patient has a history or physical evidence of:

- Abrasion, laceration, hematoma, or contusion in the flank
- A penetrating wound in the region of the lower rib cage or upper abdomen
- Fractures on either side of the lower rib cage or of the lower thoracic or lumbar vertebrae

Injuries of the Kidney, cont’d

- Kidney injuries may result from a direct blow, such as in a tackle in football.
Injury of the Urinary Bladder

• Either a blunt or penetrating injury can rupture the bladder.
• Urine will spill into the surrounding tissues.
• Suspect if you see blood at the urethral opening or physical signs of trauma on the lower abdomen, pelvis, or perineum.
• Monitor vitals signs.
• The presence of associated injuries or shock will dictate the urgency of transport.

Injury of the Urinary Bladder, cont’d

• Fracture of the pelvis can result in a laceration of the bladder.

Male Reproductive System
Injury to the External Male Genitalia

- These injuries are painful. Make the patient comfortable.
- Use sterile, moist compresses to cover areas stripped of skin.
- Apply direct pressure to control bleeding.
- Never manipulate any impaled objects.
- Identify and bring avulsed parts to the hospital.

Female Reproductive System

Injuries of the Female Genitalia

- Female internal genitalia is well protected and usually not injured.
- The exception is the pregnant uterus which is vulnerable to both blunt and penetrating injuries.
  - Keep in mind that the unborn child is also at risk.
  - Expect to see signs and symptoms of shock.
  - Provide all necessary support.
  - Transport promptly.
Injuries of the Female Genitalia

- Injuries to the external genitalia are very painful but not life threatening.
- Treat lacerations, abrasions, and avulsions with moist, sterile compresses.
- Use local pressure and a diaper-type bandage to hold the dressing in place.
- The urgency of transport will be determined by the associated injuries, amount of hemorrhage, and the presence of shock.

Rectal Bleeding

- Common complaint
- Blood may appear in undergarments or may be passed during a bowel movement.
- Can be caused by sexual assault, hemorrhoids, colitis, or ulcers of the digestive tract
- Pack the crease between the buttocks with compresses and consult with medical control.
- Acute bleeding should never be passed off as something minor.

Sexual Assault

- Do not examine genitalia unless there is obvious bleeding.
- The patient should not wash the area, defecate, eat, or drink until examined.
- Offer to call the local rape crisis center.
- Document carefully and preserve evidence.
Musculoskeletal Care

Mechanism of Injury
Force may be applied in several ways:
- Direct blow
- Indirect force
- Twisting force
- High-energy injury

Types of Musculoskeletal Injuries
- Fracture: Broken bone
- Dislocation: Disruption of a joint
- Sprain: Joint injury with tearing of ligaments
- Strain: Stretching or tearing of a muscle
Fractures

- **Closed fracture**: A fracture that does not break the skin.
- **Open fracture**: External wound associated with fracture.
- **Non-displaced fracture**: Simple crack of the bone.
- **Displaced fracture**: Fracture in which there is actual deformity.

Greenstick Fracture

Signs and Symptoms of a Fracture

- Deformity
- Tenderness
- Guarding
- Swelling
- Bruising
Signs and Symptoms of a Fracture
- Crepitus
- False motion
- Exposed fragments
- Pain
- Locked joint

Signs and Symptoms of a Dislocation
- Marked deformity
- Swelling
- Pain
- Tenderness on palpation
- Virtually complete loss of joint function
- Numbness or impaired circulation to the limb and digit

Signs and Symptoms of a Sprain
- Point tenderness can be elicited over injured ligaments.
- Swelling and ecchymosis appear at the point of injury to the ligaments.
- Pain
- Instability of the joint is indicated by increased motion.
**Compartment Syndrome**

What you'll find:
- Occurs in a fractured tibia or forearm of children
- Elevated pressure within a fascial compartment
- Develops within 6 to 12 hours after injury or after being discharged from the Emergency Department
- Pain out of proportion with injury

**Compartment Syndrome, cont'd**

What you do:
- Splint affected limb, keeping it at the level of the heart.
- Provide immediate transport.

**Severity of Injury**

<table>
<thead>
<tr>
<th>Minor</th>
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<tbody>
<tr>
<td>- Minor sprains</td>
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<tr>
<td>- Fractures or dislocations of digits.</td>
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</table>
### Severity of Injury

- **Minor**
  - Open fractures of the digits
  - Non-displaced long bone fractures
  - Non-displaced pelvic fractures
  - Major sprains of a major joint

- **Moderate**
  - Displaced long bone fractures
  - Multiple hand and foot fractures
  - Open long bone fractures
  - Displaced pelvic fractures
  - Dislocations of major joints
  - Multiple digit amputations
  - Laceration of major nerves or blood vessels

- **Serious**
  - Life-threatening (survival is probable)
  - Multiple closed fractures
  - Limb amputations
  - Fractures of both long bones on the leg (bilateral femur fractures)

- **Severe**
  - Life-threatening (survival is improbable)
Severity of Injury

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
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<tbody>
<tr>
<td>Minor</td>
<td>Life-threatening (survival is uncertain)</td>
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<tr>
<td>Moderate</td>
<td>Multiple open fracture of the limbs</td>
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<tr>
<td>Serious</td>
<td>Suspected pelvic fractures with hemodynamic instability</td>
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<tr>
<td>Severe</td>
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<td>Critical</td>
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 Splinting

- Flexible or rigid device used to protect extremity
- Injuries should be splinted prior to moving patient, unless the patient is critical.
- Splinting helps prevent further injury.
- Improvise splinting materials when needed.

 General Principles of Splinting

- Remove clothing from the area.
- Note and record the patient's neurovascular status.
- Cover all wounds with a dry, sterile dressing.
- Do not move the patient before splinting.
General Principles of Splinting

• Immobilize the joints above and below the injured joint.
• Pad all rigid splints.
• Maintain manual immobilization.
• Use constant, gentle, manual traction if needed.
• If you find resistance to limb alignment, splint the limb as is.

General Principles of Splinting

• Immobilize all suspected spinal injuries in a neutral in-line position.
• If the patient has signs of shock, align limb in normal anatomic position and transport.
• When in doubt, splint.

In-line Traction Splinting

• Act of exerting a pulling force on a bony structure in the direction of its normal alignment.
• Realigns fracture of the shaft of a long bone.
• Use the least amount of force necessary.
• If resistance is met or pain increases, splint in deformed position.
Applying a Rigid Splint

- Provide gentle support and in-traction of the limb.
- Another EMT-B places the rigid splint alongside or under the limb.
- Place padding between the limb and splint as needed.

Applying a Rigid Splint

- Secure the splint to the limb with bindings.
- Assess and record distal neurovascular function.

Applying a Vacuum Splint

- Stabilize and support the injury.
- Place the splint and wrap it around the limb.
- Draw the air out of the splint and seal the valve.
- Check and record distal neurovascular function.
Traction Splints

Do not use a traction splint under the following conditions:

- Upper extremity injuries
- Injuries close to or involving the knee
- Pelvis and hip injuries
- Partial amputation or avulsions with bone separation
- Lower leg, foot, or ankle injuries

Applying a Hare Traction Splint

- Expose the injured limb and check pulse, motor, and sensory function.
- Place splint beside the uninjured limb, adjust to proper length, and prepare straps.
- Support the injured limb as your partner fastens the ankle hitch.

- Continue to support the limb as your partner applies gentle in-line traction to the ankle hitch and foot.
- Slide the splint into position under the injured limb.
- Pad the groin and fasten the ischial strap.
Applying a Hare Traction Splint

- Connect loops of ankle hitch to end of splint as your partner continues traction.
- Carefully tighten ratchet to the point that splint holds adequate traction.
- Secure and check support straps.
- Assess distal neurovascular function.

Applying a Sager Traction Splint

- Expose the injured extremity and check pulse, motor, and sensory function.
- Adjust the thigh strap of the splint.
- Estimate the proper splint length.
- Fit the ankle pads to the patient’s ankle.
- Place the splint along the inner thigh.

Applying a Sager Traction Splint

- Secure the ankle harness.
- Snug the cable ring against the bottom of the foot.
- Pull out the inner shaft of the splint to apply traction.
Applying a Sager Traction Splint

- Secure the limb to the splint.
- Secure patient to a long backboard.
- Check pulse, motor, and sensory function.

Hazards of Improper Splinting

- Compression of nerves, tissues, and blood vessels
- Delay in transport of a patient with a life-threatening condition
- Reduction of distal circulation
- Aggravation of the injury
- Injury to tissue, nerves, blood vessels, or muscle

Clavicle and Scapula Injuries

- Clavicle is one of the most fractured bones in the body.
- Scapula is well protected
- Joint between clavicle and scapula is the acromioclavicular (A/C) joint
- Splint with a sling and swathe.
A/C Separation

With A/C separation, the distal end of the clavicle usually sticks out.

Dislocation of the Shoulder

- Most commonly dislocated large joint
- Usually dislocates anteriorly
- Is difficult to immobilize

A patient with a dislocated shoulder will guard the shoulder, trying to protect it by holding the arm in a fixed position away from the chest wall.
Dislocation of the Shoulder

- Splint the joint with a pillow or towel between the arm and the chest wall.
- Apply a sling and a swathe.

Fractures of the Humerus

- Occurs either proximally, in the midshaft, or distally at the elbow.
- Consider applying traction to realign a severely angulated humerus, according to local protocols.
- Splint with sling and swathe, supplemented with a padded board splint.

Elbow Injuries

- Fractures and dislocations often occur around the elbow.
- Injuries to nerves and blood vessels common.
- Assess neurovascular function carefully
  - Realignment may be needed to improve circulation.
Fractures of the Forearm

- Usually involves both radius and ulna
- Use a padded board, air, vacuum, or pillow splint.

Fractures of the Forearm

- A fracture of the distal radius produces a characteristic silver fork deformity.

Injuries to the Wrist and Hand

- Follow BSI precautions.
- Cover all wounds.
- Form hand into the position of function.
- Place a roller bandage in palm of hand.
- Apply padded board splint.
- Secure entire length of splint.
- Apply a sling and swathe.
Fractures of the Pelvis
- May involve life-threatening internal bleeding
- Assess pelvis for tenderness.
- Stable patients can be secured to a long backboard or scoop stretcher to immobilize isolated fractures of the pelvis.

Assessment of Pelvic Fractures
- If there is injury to the bladder or urethra, the patient may have lower abdominal tenderness.
- They may have blood in the urine (hematuria) or at the urethral opening.

Stabilizing Pelvic Fractures
- A stable patient with a pelvic fracture may be placed on a long board.
Dislocation of the Hip

- Hip dislocation requires significant mechanism of injury.
- Posterior dislocations lie with hip joint flexed and thigh rotated inward
- Anterior dislocations lie with leg extended straight out, and rotated, pointing away from midline.
- Splint in position of deformity and transport.

Fractures of the Proximal Femur

- Presents with very characteristic deformity
- Fractures from trauma injuries best managed with traction splint or PASG and a backboard.
- Isolated fracture in geriatric patients can be managed with long backboard or a scoop stretcher.

Fractures of the Proximal Femur

- A proximal femur fracture will be rotated.
- Splint the injured leg to the uninjured leg and secure the patient to a scoop stretcher or backboard.
Femoral Shaft Fractures

- Muscle spasms can cause deformity of the limb
- Significant amount of blood loss will occur.
- Stabilize with traction splint.

Injuries of Knee Ligaments

- Knee is very vulnerable to injury.
- Patient will complain of pain in the joint and be unable to use the extremity normally.
- Splint from hip joint to foot.
- Monitor distal neurovascular function.

Dislocation of the Knee

- Produces significant deformity
- More urgent injury is to the popliteal artery, which is often lacerated or compressed.
- Always check distal circulation.
Fractures About the Knee

- If there is adequate distal pulse and no significant deformity, splint limb with knee straight.
- If there is adequate distal pulse and significant deformity, splint joint in position of deformity.
- If pulse is absent below level of injury, contact medical control immediately.

Dislocation of the Patella

- Usually dislocates to lateral side.
- Produces significant deformity.
- Splint in position found.
- Support with pillows.

Injuries to the Tibia and Fibula

- Usually, both bones fracture at the same time.
- Open fracture of tibia common.
- Stabilize with a padded rigid long leg splint or an air splint that extends from the foot to upper thigh.
Injuries to the Tibia and Fibula

Because the tibia is so close to the skin, open fractures are quite common.

Ankle Injuries

• Most commonly injured joint
• Dress all open wounds.
• Assess distal neurovascular function.
• Correct any gross deformity by applying gentle longitudinal traction to the heel.
• Before releasing traction, apply a splint.

Foot Injuries

• Usually occur after a patient falls or jumps.
• Immobilize ankle joint and foot.
• Leave toes exposed to assess neurovascular function.
• Elevate foot 6”.
• Also consider possibility of spinal injury from a fall.
Foot Stabilization
A pillow splint can provide excellent stabilization of the foot.

Injuries from Falls
Frequently after a fall, the force of the injury is transmitted up the legs to the spine, sometimes resulting in a fracture of the lumbar spine.

Emergency Medical Care
- Decide SICK/NOT SICK.
- Completely cover open wounds.
- Apply the appropriate splint.
- If swelling is present, apply ice or cold packs.
- Prepare the patient for transport.
- Always inform hospital personnel about wounds that have been dressed and splinted.
Interventions

- Stabilize ABCs.
- Control serious bleeding.
- Secure patient to a backboard if critically injured.
- Provide prompt transport.
- If patient is not critically injured, splint on scene.
- Goal is to stabilize injury in most comfortable position that allows for maintenance of good circulation distal to site.

Baseline Vital Signs/SAMPLE History

- Obtain baseline vital signs as soon as possible
- Attempt to obtain SAMPLE history without delaying transport.
- Extent of history depends on how quickly you need to transport.

Rapid Trauma Exam: Significant

- If you find no external signs of injury, ask patient to move each limb carefully, stopping immediately if this causes pain.
- Skip this step if the patient reports neck or back pain. Slight movement could cause permanent damage to spinal cord.
Focused Trauma Exam: Non-significant

- Evaluate circulation, motor function, sensation.
- If two or more extremities are injured, transport.
  - Severe injuries more likely if two or more bones have been broken
- Recheck neurovascular function before and after splinting.
- Impaired circulation can lead to death of the limb.

Assessing Neurovascular Status

Pulse
- Palpate the radial, posterior tibial, and dorsalis pedis pulses.

Capillary refill
- Note and record skin color.
- Press the tip of the fingernail to make the skin blanch.
- If normal color does not return within 2 seconds, you can assume that circulation is impaired.
Assessing Neurovascular Status

Sensation
- Check feeling on the flesh near the tip of the index finger.
- In the foot, check the feeling on the flesh of the big toe and on the lateral side of the foot.

Assessing Neurovascular Status

Motor function
- Evaluate muscular activity when the injury is near the patient’s hand or foot.
- Ask the patient to open and close his or her fist.
- Ask the patient to wiggle his or her toes.

Head and Spine Injuries
Sensory and Connecting Nerves

- Connecting nerves form a reflex arc.
- If a sensory nerve detects an irritating stimulus, it will bypass the brain and send a direct message to a motor nerve.
**Autonomic Nervous System**

Two components:
1. Sympathetic nervous system
   - Reacts to stress with a flight or fright response.
   - Some common responses are dilated pupils, increased pulse rate, or rising BP.
2. Parasympathetic nervous system
   - Causes the opposite effect of the sympathetic nervous system.

**Spinal Column**

**Head Injuries**

- Scalp lacerations
- Skull fractures
- Brain injuries
- Medical conditions
- Complications of head injuries
Scalp Lacerations
- Scalp has a rich blood supply.
- There may be more serious, deeper injuries.

Skull Fracture
- Indicates significant force
- Signs
  - Obvious deformity
  - Visible crack in the skull
  - Raccoon eyes
  - Battle’s sign

Concussion
- Brain injury
- Temporary loss or alteration in brain function
- May result in unconsciousness, confusion, or amnesia
Concussion, continued

- Brain can sustain bruise when skull is struck.
- There will be bleeding and swelling.
- Bleeding will increase the pressure within the skull.

Intracranial Bleeding

Types of Intracranial Hematomas

- Subdural
- Intracerebral
- Epidural

Other Brain Injuries

- Brain injuries are not always caused by trauma.
- Medical conditions may cause spontaneous bleeding in the brain.
- Signs and symptoms of non-traumatic injuries are the same as those of traumatic injuries.
Complications of Head Injury

- Cerebral edema
- Convulsions and seizures
- Vomiting
- Leakage of cerebrospinal fluid

Signs and Symptoms

- Lacerations, contusions, hematomas to scalp
- Soft areas or depression upon palpation
- Visible skull fractures or deformities
- Ecchymosis around eyes and behind the ear
- Clear or pink CSF leakage

Signs and Symptoms, cont'd

- Failure of pupils to respond to light
- Unequal pupils
- Loss of sensation and/or motor function
- Period of unconsciousness
- Amnesia
- Seizures
Signs and Symptoms, cont'd
- Numbness or tingling in the extremities
- Irregular respirations
- Dizziness
- Visual complaints
- Combative or abnormal behavior
- Nausea or vomiting

Spine Injuries
- Compression injuries occur from a fall.
- Motor vehicle crashes or other types of trauma can overextend, flex, or rotate the spine.
- Distraction: When spine is pulled along its length; causes injuries, e.g. hangings.

Significant Mechanisms of Injury
- Motor vehicle crashes
- Pedestrian-motor vehicle collisions
- Falls
- Blunt or penetrating trauma
- Motorcycle crashes
- Hangings
- Driving accidents
- Recreational accidents
Rapid Trauma Exam

- Quickly use DCAP-BTLS.
- Decreased level of consciousness is the most reliable sign of head injury.
- Expect irregular respirations.
- Look for blood or CSF leaking from ears, nose, or mouth.

Rapid Trauma Exam, cont'd

- Look for bruising around eyes, behind ears.
- Evaluate pupils.
- Do not probe scalp lacerations.
- Do not remove an impaled object.

Focused Physical for Non-significant Trauma

- Watch for change in level of consciousness.
- Use Glasgow Coma Scale.
- Pain, tenderness, weakness, numbness, and tingling are signs of spinal injury.
- May lose sensation or become paralyzed.
- May become incontinent.
Baseline Vital Signs/SAMPLE History

- Complete set of baseline vital signs is essential.
- Assess pupil size and reactivity to light; continue to monitor.
- Gather as much history as possible while preparing for transport.

Interventions

- Control bleeding.
- Fold torn skin flaps back down onto the skin bed.
- Do not apply excessive pressure.
- If dressing becomes soaked, place a second dressing over it.

Interventions, cont’d

- Once bleeding has been controlled, secure with a soft self-adhering roller bandage.
- Monitor and treat for shock.
- Protect airway from vomiting.
- Provide immediate transport.
Emergency Medical Care of Spinal Injuries

1. Follow BSI precautions.
2. Decide SICK/NOT SICK.
3. Manage the airway.
   • Perform the jaw-thrust maneuver to open the airway.
   • Consider inserting an oropharyngeal airway.
   • Administer oxygen.
4. Stabilize the cervical spine.

Stabilization of the Cervical Spine

• Hold head firmly with both hands.
• Support the lower jaw.
• Move to eyes-forward position.

Stabilization of the Cervical Spine

• Support head while partner places cervical collar.
• Maintain the position until patient is secured to a backboard.
Stabilization of the Cervical Spine

Do not force the head into a neutral, in-line position if:

• Muscles spasm
• Pain increases
• Numbness, tingling, or weakness develop
• There is a compromised airway or breathing problems.

Emergency Medical Care of Head Injuries

• Decide SICK/NOT SICK.
• Establish an adequate airway.
• Control bleeding and provide adequate circulation.
• Assess the patient’s baseline level of consciousness.

Managing the Airway

• Establish an adequate airway.
• Use the jaw-thrust maneuver.
• Maintain head in neutral, in-line position.
• Place cervical collar.
• Suction.
• Provide high-flow oxygen.
• Continue to assist ventilations and administer oxygen.
Circulation

- Begin CPR if patient is in cardiac arrest.
- Transport immediately to trauma center.
- If patient becomes nauseated or vomits, place on left side.

Preparing for Transport: Supine Patients

- Maintain in-line stabilization.
- Have the other team members position the immobilization device.
- Log roll patient.

- Secure patient to backboard.
- Reassess pulse, motor, and sensory function in each extremity and continue to do so periodically.
Preparation for Transport: Sitting Patients

- Maintain manual in-line stabilization.
- Apply a cervical collar.
- Place a short board behind patient.
- Position device around patient.

Preparation for Transport: Sitting Patients

- Turn patient and lower to long backboard.
- Secure short and long backboards together.
- Reassess the pulse, motor function, and sensation.

Preparation for Transport: Standing Patients

- Stabilize the head and neck and apply a cervical collar.
- Position board behind patient.
- Carefully lower the patient to the ground.
Applying a Cervical Collar

- One EMT-B provides continuous manual in-line support of the head.
- Measure the proper size collar.

Applying a Cervical Collar, cont'd

- Place the chin support snuggly under the chin.
- Wrap the collar around the neck.
- Ensure that the collar fits.

Backboards

Short backboards
- Used on patients found in a sitting position

Long backboards
- Provide full-body immobilization
Helmet Removal

• Is the airway clear and is the patient breathing adequately?
• Can airway be maintained and ventilations assisted with helmet in place?
• How well does the helmet fit?
• Can the patient move within the helmet?
• Can the spine be immobilized in a neutral, in-line position with the helmet on?

Helmet Removal, continued

A helmet that fits well prevents the head from moving and should be left on, as long as:

• There are no impending airway or breathing problems.
• It does not interfere with assessment and treatment of the airway.
• You can properly immobilize the spine.

Helmet Removal, continued

• Open the face shield.
• Prevent head movement.
• Partner places hands.
• Gently slip helmet off halfway.
Helmet Removal, continued

- Partner slides hands from occiput to back of head.
- Remove helmet.
- Stabilize spine.
- Apply cervical collar.
- Pad as needed.

Pediatric Needs

- Immobilize a child in the car seat, if possible.

Pediatric Needs, continued

- Children may need extra padding to maintain immobilization.
- Children may need extra padding under the shoulders.
Questions

• What questions do you have?

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