

Module 7:

Trauma

OBJECTIVES

At the completion of this lesson, the student will be able to:

COGNITIVE OBJECTIVES

- 7-1 State methods of emergency medical care of external bleeding.
- 7-2 Define hypoperfusion, its traumatic causes and the body's response.
- 7-3 List types of shock
- 7-4 List signs and symptoms of shock (hypoperfusion).
- 7-5 State the steps in the emergency medical care of the patient with signs and symptoms of shock (hypoperfusion).
- 7-6 Establish the relationship between mechanism of injury and internal bleeding
- 7-7 Describe causes, injuries and consequences of severe internal bleeding
- 7-8 List the signs of internal bleeding
- 7-9 List the steps in the emergency medical care of the patient with signs and symptoms of internal bleeding
- 7-10 Review A&P of the chest and abdomen
- 7-11 Describe the steps in the emergency medical care of a patient with an injury to the chest or abdomen, an amputation or burn
- 7-12 Establish the relationship between airway management and the patient with chest injury, burns, blunt and penetrating injuries.
- 7-13 Review A & P of the musculoskeletal system.
- 7-14 Describe the signs & symptoms of a bone and joint injury
- 7-15 List the emergency medical care of a patient with a painful, swollen deformed extremity
- 7-16 List the general rules of splinting
- 7-17 State the components and functions of the nervous system
- 7-18 Relate mechanism of injury to potential injuries of the head and spine
- 7-19 State the signs and symptoms of a potential spine injury.
- 7-20 Describe the method of determining if a patient may have a spine injury
- 7-21 Describe the airway management concerns in a suspected spinal injury.
- 7-22 Describe the basic principals of emergency care for a spine injured patient.
- 7-23 List the signs and symptoms of open and closed head/skull injuries
- 7-24 Describe the emergency care for injuries to the brain and skull
- 7-25 Describe the basic principals of emergency care for a spine injured patient
- 7-26 Describe how to stabilize the spine.
- 7-27 Relate mechanism of injury to potential injuries of the head and spine.
- 7-28 Describe the emergency medical care of the patient with a closed soft tissue injury.
- 7-29 Describe the emergency medical care of the patient with an open soft tissue injury.
- 7-30 Describe the indications for the use of rapid extrication.
- 7-31 List steps in performing rapid extrication.
- 7-32 Explain the preferred methods for stabilization of a helmet
- 7-33 Describe the special assessment needs of a patient wearing a helmet.
- 7-34 State the circumstances when a helmet should be left on the patient
- 7-35 Discuss the circumstances when a helmet should be removed.
- 7-36 Explain the preferred methods to remove a helmet

7-37 Identify special considerations when immobilizing infants and children

AFFECTIVE OBJECTIVES

7-38 Explain the sense of urgency to transport patients that are bleeding and show signs of hypoperfusion.

7-39 Explain the rationale for splinting at the scene versus load and go.

7-40 Explain the rationale for using rapid extrication approaches only when they will make the difference between life and death.

PSYCHOMOTOR OBJECTIVES

7-41 Demonstrate care of the patient experiencing external bleeding.

7-42 Demonstrate care of the patient exhibiting signs and symptoms of shock (hypoperfusion).

7-43 Demonstrate the steps in the care of open and closed soft tissue injuries. (chest injuries, abdominal injuries, burns and amputations).

7-44 Demonstrate the steps in the care of a patient with a head or spine injury.

7-45 Demonstrate the procedure for rapid extrication.

PREPARATION

Motivation: Trauma is the leading cause of death in the United States for persons between the ages of 1 and 44. Understanding the mechanism of injury, relevant signs and symptoms and appropriate intervention techniques is of paramount importance when dealing with the traumatized patient.

MATERIALS

AV Equipment: Utilize various audio-visual materials relating to bleeding and shock (hypoperfusion). The continuous design and development of new audio-visual materials relating to EMS requires careful review to determine which best meet the needs of the program. Materials should be edited to assure meeting the objectives of the curriculum.

EMS Equipment: Sterile dressings, bandages, splints, pneumatic anti-shock garment, triangular bandage, stick or rod, air splints, gloves, eye protection, blanket, universal dressing, occlusive dressing, roller bandages, 4 x 4 gauze pads, burn sheets, sterile water or saline.

PERSONNEL

Primary Instructor: One EMT-Basic instructor knowledgeable in assessment and management of the trauma patient.

Assistant Instructor: The instructor to student of 6:1 ratio should be used for psychomotor skill practice. Individuals used as assistant instructors should be knowledgeable in assessment and management of the trauma patient.

PRESENTATION

Declarative (What)

1. Shock (hypoperfusion syndrome)
 1. Severity
 1. Shock (hypoperfusion) results in inadequate perfusion of cells with oxygen and nutrients and inadequate removal of metabolic waste products.
 2. Cell and organ malfunction and death can result from shock (hypoperfusion); therefore, prompt recognition and treatment is vital to patient survival.
 3. Peripheral perfusion is drastically reduced due to the reduction in circulating blood volume.
 4. Trauma patients develop shock (hypoperfusion) from the loss of blood from both internal and external sites. This type of shock (hypoperfusion) is referred to as hypovolemic or hemorrhagic shock.
 2. General Signs and symptoms of shock (hypoperfusion)
 1. Mental states
 1. Restlessness
 2. Anxiety
 3. Altered mental status
 2. Peripheral perfusion
 1. Delayed capillary refill greater than 2 seconds in normal ambient air temperature - infant and child patients only
 2. Weak, thready or absent peripheral pulses
 3. Pale, cool, clammy skin
 3. Vital signs
 1. Decreased blood pressure (late sign)
 2. Increased pulse rate (early sign) - weak and thready
 3. Increased breathing rate
 - (1) Shallow
 - (2) Labored
 - (3) Irregular
 4. Other signs and symptoms
 - (1) Dilated pupils
 - (2) Thirst
 - (3) Nausea and vomiting
 - (4) Pallor with cyanosis to the lips
 4. Infant and child patients can maintain their blood pressure until their blood volume is more than half gone, so by the time their blood pressure drops they are close to death. The infant or child in shock has less reserve.

3. Types of Shock

1. Hypovolemic Shock - A type of shock that is the result of a low blood volume.
 1. Hemorrhagic Shock - The form of shock that is the result of blood loss either from trauma or a disease process. The natural response to bleeding is blood vessel constriction and clotting. Uncontrolled bleeding or significant bleeding can lead to shock and possibly death. Blood loss may be internal or external.
 2. Metabolic Shock
 - (1) Metabolic Shock - Another form of Hypovolemic shock that is the result of electrolyte or plasma loss and does not involve the loss of whole blood. It can occur due to dehydration or from burns.
 - (2) Signs and symptoms - general signs & symptoms but without blood loss. May also include:
 - (1) Furrowed tongue
 - (2) Sunken eyes
 - (3) Poor skin turgor or tenting of the skin
 - (4) Sunken fontanelles in the infant patient
 - (5) Recent episodes of vomiting and diarrhea
 - (6) Presence of burns
2. Cardiogenic Shock
 1. a type of shock that is the result of a massive myocardial infarction. The heart becomes so badly damaged that it is unable to pump effectively. As a result, blood begins to back up in the system.
3. Distributive Shock -
 1. Defined as a type of shock with several different forms. In distributive shock, the blood vessels suddenly dilate causing the blood pressure to fall. This can occur for several reasons.
 - (1) Anaphylactic shock - a form of shock caused by a violent systemic reaction to an allergen / toxin. The substance may be ingested, injected, inhaled or absorbed. The patient may know what substance caused the reaction.
 - (2) Neurogenic Shock (Spinal) Shock - a form of shock that is a result of the severing of the spinal cord. This results in wide spread vasodilation and drop in blood pressure. The compensatory mechanisms are not activated because nerve impulses cannot be conducted through the spinal cord.
 - (3) Septic shock - a form of distributive shock that is the result of a systemic bacterial infection. This results in wide spread vasodilation and drop in blood pressure. There is also an increase of fluid seeping into the tissues from the capillaries. Urinary tract infection are

a common cause.

- (1) Signs and symptoms may include:
 - 1) restlessness, confusion
 - 2) Tachycardia
 - 3) warm, flushed, moist skin
 - 4) High fever
 - 5) Bruising
 - 6) Edema
 - 7) Chills
 - 8) Hypotension

NOTE: See appendix for chart of the comparison of the signs and symptoms of the different types of shock.

4. Emergency medical care --
 1. Body substance isolation.
 2. Maintain airway/artificial ventilation. Administer oxygen.
 3. Control any external bleeding.
 4. Elevate the lower extremities approximately 8 to 12 inches. If the patient has serious injuries to the pelvis, lower extremities, head, chest, abdomen, neck, or spine, keep the patient supine.
 5. Transport without delay. Request ALS if available.
 6. Prevent loss of body heat.
 7. Splint any suspected bone or joint injuries en route if possible.

2. Internal Bleeding -

1. Severity
 1. Internal bleeding can result in severe blood loss with resultant shock (hypoperfusion) and subsequent death.
 2. Injured, damaged or diseased internal organs commonly lead to extensive bleeding that is concealed.
 3. Painful, swollen, deformed extremities may also lead to serious internal blood loss.
 4. Suspicion and severity of internal bleeding should be based on the mechanism of injury and clinical signs and symptoms.

2. Relationship to mechanism of injury

1. Blunt trauma
 1. Falls
 2. Motorcycle crashes
 3. Pedestrian impacts
 4. Automobile collisions
 5. Blast injuries
 6. Look for evidence of contusions, abrasions, deformity, impact marks, and swelling.
2. Penetrating trauma

NOTE: there are non traumatic causes to internal bleeding.

3. Signs and symptoms of internal bleeding
 1. Pain, tenderness, swelling or discoloration of suspected site of injury.
 2. Bleeding from the mouth, rectum, or vagina, or other orifice.
 3. Vomiting bright red blood or dark coffee ground colored blood. Coughing up blood.
 4. Dark, tarry stools or stools with bright red blood
 5. Tender, rigid, and/or distended abdomen
 6. Signs and symptoms of hypovolemic shock (hypoperfusion)
 1. Anxiety, restlessness, combativeness or altered mental status.
 2. Weakness, faintness or dizziness
 3. Thirst
 4. Shallow rapid breathing
 5. Rapid weak pulse
 6. Pale, cool, clammy skin
 7. Capillary refill greater than 2 seconds - infant and child patients only
 8. Dropping blood pressure (late sign)
 9. Dilated pupils that are sluggish to respond
 10. Nausea and vomiting

3. Review of the Skin

1. Function
 1. Protection of the body. Skin is watertight and not penetrable by bacteria.
 2. Regulation of body temperature. Water evaporates from the skin surface in hot weather and surface blood vessels constrict in cold weather.
2. Layers
 1. Epidermis
 1. Outermost layer consists of dead cells constantly being rubbed off and replaced.
 2. Deeper part of the epidermis contains cells which some pigment granules.
 2. Dermis - contains many special structures of the skin:
 1. Sweat glands
 2. Sebaceous glands
 3. Hair follicles
 4. Blood vessels
 5. Specialized nerve endings.
 3. Subcutaneous Tissue - Beneath the skin is a layer composed largely of fat that serves as a body insulator.
3. Emergency medical care for soft tissue injuries
 1. Relationship to body substance isolation
 1. Gloves

2. Gown
3. Eye protection
4. Hand washing
2. Maintain proper airway/artificial ventilation/oxygenation.
3. Management of open soft tissue injuries.
 1. Expose the wound.
 2. Control the bleeding.
 3. Prevent further contamination.
 4. Apply dry sterile dressing to the wound and bandage securely in place.
 5. Keep the patient calm and quiet.
 6. Treat for shock (hypoperfusion) if signs and symptoms are present.

4. The Chest and Abdomen

1. The Chest

1. The rib cage includes the ribs, the thoracic vertebrae, and the sternum.
2. The ribs are connected to the vertebrae in back and all but two are connected to the sternum in front by cartilage.
3. There is some movement of the rib cage associated with breathing
4. The rib cage encloses the lungs and heart, and damage to the ribs can result in damage to these organs.

2. The Abdomen

1. Contents - major organs of digestion, excretion, female reproduction
 1. Boundaries
 2. Peritoneum and mesentery
2. Digestive system
 1. Function
 2. Location - transcends boundaries of thorax and abdomen
 3. Contents

(1) Mouth	(7) Liver
(2) Salivary glands	(8) Gallbladder and bile ducts
(3) Pharynx	(9) Small intestine
(4) Esophagus	(10) Large intestine
(5) Stomach	(11) Appendix
(6) Pancreas	(12) Rectum and anus
3. Urinary System
 1. Functions
 2. Contents
 - (1) Kidneys
 - (2) Ureter
 - (3) Urinary bladder and urethra
4. Reproductive System
 1. Male
 - (1) Testicles

- (2) Vasa deferentia
 - (3) Seminal vesicles
 - (4) Prostrate gland
 - (5) Urethra
 - (6) Penis
 - 2. Female
 - (1) Ovaries
 - (2) Fallopian tubes
 - (3) Uterus
 - (4) Vagina
- 5. Airway Management

Patients with a chest injury, burns, blunt and penetrating injuries may be unable to maintain their own airway. Airway management is essential with every patient. Such patients may require cervical spine precaution.

 - 1. Loss of consciousness
 - 2. Foreign materials
 - 3. Swelling
 - 4. Unstable facial structures.
- 6. Emergency medical care of an open chest wound
 - 1. Occlusive dressing to open wound
 - 2. Administer oxygen if not already done
 - 3. Position of comfort if no spinal injury suspected
- 7. Emergency medical care for an open abdominal injury
 - 1. Do not touch or try to replace the exposed organ.
 - 2. Cover exposed organs and wound with a sterile dressing, moistened with sterile water or saline, and secure in place.
 - 3. Flex the patient's hips and knees, if uninjured.
- 8. Emergency medical care of amputations
 - 1. Wrap the amputated part in a sterile dressing.
 - 2. Wrap or bag the amputated part in plastic and keep cool.
 - 3. Transport the amputated part with the patient.
 - 4. Do not complete partial amputations
 - 5. Immobilize to prevent further injury.

9. Large open neck injury
 1. May cause air embolism.
 2. Cover with an occlusive dressing.
 3. Compress carotid artery only if necessary to control bleeding.
10. Emergency medical care of burns
 1. Consider the cause of the burn
IE: chemical, thermal, and electrical
 2. General procedures for treating burns
 3. Stop the burning process by appropriate means.
 1. Determine severity of the burn.
 1. Consider rule of nines
 2. Location, age and preexisting conditions
 2. Remove smoldering clothing and jewelry.
 3. Body substance isolation
 4. Continually monitor the airway for evidence of closure.
 5. Prevent further contamination.
 6. Cover the burned area with a dry sterile dressing.
 7. Do not use any type of ointment, lotion or antiseptic.
 4. Do not break blisters.
 5. Transport.
 6. Know local protocols for transport to appropriate local facility.
11. External Genitalia -Injuries to the male and female external genitalia are treated as soft tissue injuries with consideration for potential criminal assault situations to maintain evidence.
12. Musculoskeletal Review
 1. Anatomy review
 2. Function of the Muscular system
 1. Muscle is a special form of tissue that contracts or shortens when stimulated.
 2. Muscles enable the body to move.
 3. Functions of the skeletal system which normally has 206 bones.
 1. It gives form to the body.
 2. It supports the body and permits standing erect.
 3. Muscles attached to the skeleton by Tendons permit motion at most places (joints) where bones join together. There is no motion at a fused joint.

4. It protects body organs, that is:
 1. The brain is in the skull.
 2. The heart and lungs are protected by the rib cage.
 3. Much of the liver and spleen are protected by the lower ribs.
 4. The spinal cord lies within the spinal canal. There is limited space between the walls of the canal and the cord.
 5. Production of red blood cells
4. The major bone groups and bones are:
1. Skull. The skull has two main divisions:
 1. Cranium
 2. Face (facial bones and mandible)
 2. Spinal column. It has 33 bones, called vertebrae, and 5 sections
 1. Cervical spine
 2. Thoracic (Dorsal) spine
 3. Lumber spine
 4. Sacral spine
 5. Coccygeal spine
 3. Thorax. The thorax is made up of:
 1. Twelve pairs of ribs.
 2. Twelve thoracic vertebrae
 3. Sternum
 4. The Upper Extremity. The upper extremities are designed as follows
 1. Shoulder Girdle. The upper extremities are attached to the shoulder girdle which is formed largely by the shoulder blade (scapula) and the collarbone (clavicle).
 2. Arm. The arm (shoulder to elbow) has one bone known as the humerus.
 3. Forearm. The forearm (elbow to wrist) has two bones: the radius on the thumb side and the ulna on the little finger side.
 4. Hand. The hand has many bones including those of the wrist and fingers.
 5. Pelvis and the Lower Extremities. The pelvis and lower extremities are designed as follows:
 1. Pelvis. The pelvis is a bony ring formed by the sacrum and two pelvic bones.
 2. Hip Joint. The lower extremity is attached to the pelvis at the hip joint.
 3. Upper Leg (Thigh). The upper leg contains one bone known as the femur. It is the longest, heaviest and strongest bone of the body. Fractures of the femur are serious.
 4. Lower Leg. The lower leg has two bones, the tibia in front and the fibula in back.
 5. Foot. As with the hand, the foot has many bones.
 6. Kneecap. The leg also has a bone at the kneecap known as the patella.

13. Injuries to bones and joints
 1. Signs and symptoms
 1. Deformity or angulated
 2. Pain and tenderness
 3. Grating
 4. Swelling
 5. Bruising (discoloration)
 6. Exposed bone ends
 7. Joint locked into position
 2. Emergency medical care of bone or joint injuries
 1. Body substance isolation
 2. Administer oxygen if indicated.
 3. After life threats have been controlled, splint injuries in preparation for transport.
 4. Application of cold pack to area of painful, swollen, deformed extremity to reduce swelling.
 5. Elevate the extremity.
 3. General rules of splinting
 1. Assess pulse, movement, and sensation distal to the injury prior to and following splint application and record.
 2. Immobilize the joint above and below the injury.
 3. Remove or cut away clothing.
 4. Cover open wounds with a sterile dressing.
 5. Align with gentle traction before splinting if there is a severe deformity or the distal extremity is cyanotic or lacks pulses.
 6. Do not intentionally replace the protruding bones.
 7. Pad each splint to prevent pressure and discomfort to the patient.
 8. Splint the patient before moving.
 9. When in doubt, splint the injury.
 10. If patient has signs of shock (hypoperfusion), align in normal anatomical position and transport.

14. The Nervous System Review
 1. Components
 1. Brain
 1. It is the controlling organ of the body and the center of consciousness.
 2. It occupies the entire space within the cranium.
 3. Each type of brain cell has a specific function and certain parts of the brain perform certain functions.
 2. Spinal Cord
 1. The spinal cord consists of long tracts of nerves that join the brain with all body organs and parts.
 2. It is protected by the spinal column.
 3. Nerves
 1. Sensory nerves send information to the brain on what the

different parts of the body are doing relative to their surroundings.

2. Motor nerves emanate from the brain and result in stimulation of a muscle or organ.

2. Actions

1. The functions of the central nervous system are:
 1. Automatic
 2. Reflex
 3. Conscious
 4. Voluntary control of muscles
 5. Involuntary control of muscles

15. Head and Spine Injuries

1. Mechanisms of injury with a high index of suspicion

NOTE: Refer to Module 5-4 of EMT-Basic Curriculum

2. Signs and symptoms

1. Ability to walk, move extremities or feel sensation; or lack of pain to spinal column does not rule out the possibility of spinal column or cord damage.
2. Tenderness in the area of injury
3. Pain associated with moving
4. Pain independent of movement or palpation
 1. Along spinal column
 2. Lower legs
 3. May be intermittent
5. Obvious deformity of the spine upon palpation
6. Soft tissue injuries associated with trauma
 1. Head, neck and cervical spine
 2. Shoulders, back or abdomen - thoracic, lumbar
 3. Lower extremities - lumbar, sacral
7. Numbness, weakness or tingling in the extremities
8. Loss of sensation or paralysis below the suspected level of injury
9. Loss of sensation or paralysis in the upper or lower extremities
10. Incontinence
11. Priapism
12. Posturing

Assessment Note: Do not allow the patient to move to try and elicit a patient response

3. Assessing the potential spine injured patient

1. Responsive patient
 1. Mechanism of injury
 2. Questions to ask (ensure patient does not move while answering the questions)
 - (1) Does your neck or back hurt?
 - (2) What happened?

- (3) Where does it hurt?
 - (4) Can you move your hands and feet?
 - (5) Can you feel me touching your fingers?
 - (6) Can you feel me touching your toes?
 3. Inspect for contusions, deformities, lacerations, punctures, penetrations, swelling.
 4. Palpate for areas of tenderness or deformity.
 5. Assess equality of strength of extremities
 - (1) Hand grip
 - (2) Gently push feet against hands
2. Unresponsive patient
 1. Mechanism of injury
 2. Initial assessment
 3. Inspect for:
 - (1) Contusions
 - (2) Deformities
 - (3) Lacerations
 - (4) Punctures/penetrations
 - (5) Swelling
 4. Palpate for areas of tenderness or deformity.
 5. Obtain information from others at the scene to determine information relevant to mechanism of injury or patient mental status prior to the EMT-B's arrival.
3. Emergency Medical Care
 1. Immobilization
 2. Oxygenation
 3. Transportation
4. Skull injury - signs and symptoms
 1. Mechanism of trauma
 2. Contusions, lacerations, hematomas to the scalp
 3. Deformity to the skull
 4. Blood or fluid (cerebrospinal fluid) leakage from the ears or nose
 5. Bruising (discoloration) around the eyes
 6. Bruising (discoloration) behind the ears (mastoid process)
 7. Closed head injury
 1. Traumatic
 2. Signs and symptoms
 - (1) Altered or decreasing mental status is the best indicator of a brain injury.
 - (1) Confusion, disorientation, or repetitive questioning
 - (2) Conscious - deteriorating mental status
 - (3) Unresponsive
 - (2) Irregular breathing pattern
 - (3) Consideration of mechanism of injury
 - (1) Deformity of windshield
 - (2) Deformity of helmet

- (4) Contusions, lacerations, hematomas to the scalp
- (5) Deformity to the skull
- (6) Blood or fluid (cerebrospinal fluid) leakage from the ears and nose
- (7) Bruising (discoloration) around the eyes
- (8) Bruising (discoloration) behind the ears (mastoid process)
- (9) Neurologic disability
- (10) Nausea and/or vomiting
- (11) Unequal pupil size with altered mental status
- (12) Seizure activity may be seen.
- (13) Priapism
- (14) Posturing

8. Open head injury

1. Signs and symptoms

- (1) Consideration of mechanism of injury
 - (1) Deformity of windshield
 - (2) Deformity of helmet
- (2) Contusions, lacerations, hematomas to the scalp
- (3) Deformity to the skull
- (4) Penetrating injury - do not remove impaled objects in the skull
- (5) Soft area or depression upon palpation
- (6) Exposed brain tissue
- (7) Bleeding from the open bone injury
- (8) Blood or fluid (cerebrospinal fluid) leakage from the ears and nose
- (9) Bruising (discoloration) around the eyes
- (10) Bruising (discoloration) behind the ears (mastoid process)
- (11) Nausea and/or vomiting
- (12) Possible signs and symptoms of a closed head injury may exist if brain injury has occurred.

9. Emergency medical care

- 1. Body substance isolation
- 2. Maintain airway/artificial ventilation/oxygenation.
- 3. Initial assessment with spinal immobilization should be done on scene with a complete detailed physical exam en route.
- 4. With any head injury, the EMT-Basic must suspect spinal injury. Immobilize the spine.
- 5. Closely monitor the airway, breathing, pulse, and mental status for deterioration.
- 6. Control bleeding.
 - (1) Do not apply pressure to an open or depressed skull injury.
 - (2) Dress and bandage open wound as indicated in the treatment of soft tissue injuries.

7. If a medical injury or non-traumatic injury exist, place patient on the left side.
8. Be prepared for changes in patient condition.
9. Immediately transport the patient using appropriate spinal immobilization devices.

16. Principles of Moving Patients

1. General considerations

1. In general, a patient should be moved immediately (emergency move) only when:
 1. There is an immediate danger to the patient if not moved.
 - (1) Fire or danger of fire.
 - (2) Explosives or other hazardous materials.
 - (3) Inability to protect the patient from other hazards at the scene.
 - (4) Inability to gain access to other patients in a vehicle who need life-saving care.
 2. Life-saving care cannot be given because of the patient's location or position, e.g., a cardiac arrest patient sitting in a chair or lying on a bed.
2. A patient should be moved quickly (urgent move) when there is immediate threat to life.
 1. Altered mental status
 2. Inadequate breathing
 3. Shock (Hypoperfusion)
3. If there is no threat to life, the patient should be moved when ready for transportation (non-urgent move).

17. Rapid Extrication

1. Indications

1. Unsafe scene
2. Unstable patient condition warrants immediate movement and transport.
3. Patient blocks the EMT-B's access to another, more seriously injured, patient.
4. Rapid extrication is based on time and the patient, and not the EMT-B's preference.

2. Rapid extrication should be limited to life and death situations.

1. Does not provide optimal spinal stabilization
2. Use with "C" and "U" patients, or
3. Use when the patient's safety is compromised.

18. Helmet Removal

1. Special assessment needs for patients wearing helmets

1. Airway and breathing
2. Fit of the helmet and patient's movement within the helmet
3. Ability to gain access to airway and breathing

2. Review current protocol on head removal protocol
19. Standing Take Down
1. There are several accepted methods of immobilizing a patient who is found standing and may have a spinal injury. This is one acceptable method. If the patient is found in the standing position, immobilize the patient to a long spine board using the “standing takedown” method.
 1. The first rescuer stands behind the patient and manually stabilizes the patient’s head and neck. The rescuer positions himself so that they do not interfere with the placement and movement of the board.
 2. A rigid collar should be applied to the patient if possible at this time.
 3. A second rescuer inserts the long spine board from the side between the patient and the first rescuer. The rescuer ensures the patient is centered on the board.
 4. Two rescuers stand facing the patient, one on each side. Each inserts one hand under the patient’s armpit and grasps the nearest handhold on the spine board above the armpit.
 5. The two rescuers grasp a handhold near the top of the board with their free hands.
 6. A fourth rescuer stabilizes the foot of the board.
 7. The board is lowered to the ground while manual stabilization of the head and neck is continually maintained.
 8. Apply a rigid collar, if it was not previously applied. The patient is strapped to the board using standard techniques.

SUGGESTED APPLICATION

Procedural (How)

1. Review methods to control external bleeding.
2. Review methods used to treat the patient in shock (hypoperfusion).
3. Demonstrate the steps in the care of open and closed soft tissue injuries. (chest injuries, abdominal injuries, burns and amputations).
4. Demonstrate the steps in the care of a patient with a head or spine injury.
5. Demonstrate the procedure for rapid extrication.

Contextual (When, Where, Why)

The EMT-Basics will respond to various traumatic emergencies during a career in EMS. Their ability to quickly control bleeding and recognize and treat shock are critical to the life of the patient. Failure to properly immobilize a bone or joint injury can result in damage to soft tissue, organs, nerves and blood vessels. Failure to recognize the possibility of a head or spine injury will lead to an increased patient morbidity and mortality.

STUDENT ACTIVITIES

Auditory (Hear)

1. Students should hear simulated situations to identify signs and symptoms of external bleeding, internal bleeding and shock (hypoperfusion).
2. Students should hear simulations of various situations involving musculoskeletal injuries and the proper assessment and intervention.

Visual (See)

1. Students should see audio-visual aids or materials of the proper methods to control external bleeding and treat for shock (hypoperfusion).
2. Students should see demonstrations for the proper method of managing an open chest wound.
3. Students should see demonstrations for the proper method of managing an open abdominal injury.
4. Students should see audio-visual aids or materials which illustrate superficial, partial thickness and full thickness burns.
5. Students should see demonstrations for the proper management of burns.
6. Students should see demonstrations for the proper immobilization of a painful, swollen, deformed extremity.
7. Students should see the demonstrations of proper assessment and management of patients who have experienced head and spine injuries.
8. Students should see audio-visual aids or materials illustrating situations that would require the use of rapid extrication.

Kinesthetic (Do)

Students should practice the management of patients with external bleeding, internal bleeding and shock.

Students should practice the care of patients with open and closed soft tissue injuries (chest injuries, abdominal injuries, burns and amputations).

Students should practice the management of an injured extremity.

Students should practice the assessment and management of a patient who has experienced a head or spine injury.

Students should practice performing a rapid extrication.

Instructor Activities

1. Supervise student practice.
2. Reinforce student progress in cognitive, affective, and psychomotor domains.
3. Redirect students having difficulty in content.

EVALUATION

Written: Develop evaluation instruments, e.g., quizzes, verbal reviews, handouts, to determine if the students have met the cognitive and affective objectives of this lesson.

Practical: Evaluate the actions of the EMT-Basic students during role play, practice or other skill stations to determine their compliance with the cognitive and affective objectives and their mastery of the psychomotor objectives of this lesson.

REMEDIATION

Identify students or groups of students who are having difficulty with this subject content.

SUGGESTED ENRICHMENT

What is unique in the local area concerning this topic?

