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2  **National EMS Education Standard Competencies (1 of 5)**

Medicine

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely ill patient.

3  **National EMS Education Standard Competencies (2 of 5)**

- Diseases of the Eyes, Ears, Nose, and Throat
  - Recognition and management of
    - Nosebleed

4  **National EMS Education Standard Competencies (3 of 5)**

Trauma

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely injured patient.

5  **National EMS Education Standard Competencies (4 of 5)**

- Head, Facial, Neck, and Spine Trauma
  - Recognition and management of
    - Life threats
  - Pathophysiology, assessment, and management of
    - Penetrating neck trauma
    - Laryngotracheal injuries

6  **National EMS Education Standard Competencies (5 of 5)**

- Head, Facial, Neck, and Spine Trauma (cont'd)
  - Pathophysiology, assessment, and management of (cont'd)
    - Facial fractures
    - Foreign bodies in the eyes
    - Dental trauma

7  **Introduction (1 of 2)**

- Face and neck are vulnerable to injury.
  - Relatively unprotected positions on body
  - Soft-tissue injuries and fractures are common and vary in severity.
- Some injuries are life-threatening.
  - Penetrating trauma to the neck may cause severe bleeding.
  - Open injury may result in an air embolism.

8  **Introduction (2 of 2)**

- With appropriate prehospital and hospital care, a patient with a seemingly devastating injury can have a surprisingly good outcome.

9  **The Head**

- Cranium
  - Contains the brain
  - Most posterior portion is called the occiput.
  - Lateral portions on each side are called temples or temporal regions.
  - Forehead is called the frontal region.
  - Anterior to the ear, in the temporal region, you can feel the pulse of the superficial temporal artery.

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10  **The Face (1 of 6)**

- Composed of:
  - Eyes
  - Ears
  - Nose
  - Mouth
  - Cheeks

11  **The Face (2 of 6)**

- Six major bones include:
  - Nasal bone
  - Two zygomas
  - Two maxillae
  - Mandible

12  **The Face (3 of 6)**

- The orbit of the eye is composed of:
  - Lower edge of the frontal bone of the skull
  - Zygoma
  - Maxilla
  - Nasal bone
- Protects the eye from injury
- 

13  **The Face (4 of 6)**

- Only the proximal third of the nose is formed by bone.
  - The remaining two thirds are composed of cartilage.

14  **The Face (5 of 6)**

- The exposed portion of the ear is composed entirely of cartilage covered by skin.
  - Pinna
  - Tragus
  - Superficial temporal artery

15  **The Face (6 of 6)**

- About 1 inch posterior to the external opening of the ear is the mastoid process.
- The mandible forms the jaw and chin.
  - Motion of the mandible occurs at the temporomandibular joint.

16  **The Neck (1 of 4)**

- Contains many important structures
- Supported by the cervical spine
- The upper part of the esophagus and the trachea lie in the midline of the neck.
  - The carotid arteries are found on either side of the trachea.

17  **The Neck (2 of 4)**

- The larynx
  - Adam's apple is located in the center of the neck.
  - Other portion of the larynx is the cricoid cartilage.

18  **The Neck (3 of 4)**

- The larynx (cont'd)
  - The cricothyroid membrane lies between the thyroid cartilage and the cricoid cartilage.
  - Soft depression in the midline of the neck

19  **The Neck (4 of 4)**

- The trachea
  - Below the larynx
  - Connects the oropharynx and larynx with the main passages of the lungs
- Sternocleidomastoid muscles
  - Originate from the mastoid process
  - Allow movement of the head

20  **The Eye (1 of 7)**

- Globe-shaped, approximately 1 inch in diameter
- Located within a bony socket in the skull called the orbit
  - The orbit protects over 80% of the eyeball.

21  **The Eye (2 of 7)**

22  **The Eye (3 of 7)**

- Clear, jellylike fluid near the back of the eye is called vitreous humor.
  - In front of the lens is a fluid called the aqueous humor, which can leak out in penetrating injuries.
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23  **The Eye (4 of 7)**

- The conjunctiva is the membrane that covers the eye.
- The lacrimal glands produce fluid to keep the eye moist.

24  **The Eye (5 of 7)**

- The sclera is the white, fibrous tissue that helps maintain the globular shape.
- On the front of the eye, the sclera is replaced by a clear, transparent membrane called the cornea.
  - Allows light to enter the eye
  - The iris is a circular muscle behind the cornea.







25  **The Eye (6 of 7)**

- The pupil is the opening in the center of the iris.
  - Allows light to move to the back of the eye
  - Anisocoria is a condition in which a person is born with different-sized pupils.
- The lens lies behind the iris.
  - Focuses images on the retina at the back of the globe

26  **The Eye (7 of 7)**

- The retina contains nerve endings.
  - Respond to light by transmitting nerve impulses through the optic nerve to the brain
  - The retina is nourished by a layer of blood vessels called the choroid.
  - Retinal detachment causes blindness.

27  **Injuries of the Face and Neck (1 of 2)**

- Can often lead to partial or complete obstruction of the upper airway
  - Several factors may contribute.
    - Blood clots from heavy facial bleeding
    - Direct injuries to the nose and mouth, larynx, and trachea
    - Dislodgment of teeth or dentures into the throat
- 28  **Injuries of the Face and Neck (2 of 2)**
- Several factors (cont'd)
    - Swelling that accompanies direct and indirect injury
    - Airway may be affected when the patient's head is turned to the side
    - Possible injuries to the brain and/or cervical spine
- 29  **Soft-Tissue Injuries**
- Very common
  - Face and neck are extremely vascular
    - Swelling may be more severe.
    - Skin and tissues in these areas have a rich blood supply.
    - A blunt injury can cause a hematoma.
- 30  **Dental Injuries (1 of 2)**
- Mandible injuries are common.
  - Most of these injuries are the result of vehicle collisions and assaults.
  - Signs of mandible fractures include:
    - Misalignment of the teeth
    - Numbness of the chin
    - An inability to open the mouth
- 31  **Dental Injuries (2 of 2)**
- Maxillary fractures are usually found after blunt-force, high-energy impacts.
    - Signs of maxillary fractures include:
      - Massive facial swelling
      - Instability of the facial bones
      - Misalignment of teeth
  - Fractured and avulsed teeth are common following facial trauma.
- 32  **Scene Size-up (1 of 2)**
- Scene safety
    - Observe for hazards and threats.
    - Assess for potential violence and environmental hazards.
    - Eye protection and face mask are standard.
    - Carry several pairs of gloves.
    - Determine the number of patients.
- 33  **Scene Size-up (2 of 2)**
- Mechanism of injury/nature of illness
    - Assess the scene.
    - Common MOI for face and neck injuries:
      - Motor vehicle collisions
      - Sports
      - Falls

- Penetrating trauma
- Blunt trauma

34  **Primary Assessment (1 of 7)**

- Focuses on identifying and managing life-threatening concerns
- Threats to ABCs must be treated immediately.
  - When there is life-threatening external hemorrhage, it should be addressed before airway and breathing.

35  **Primary Assessment (2 of 7)**

- Form a general impression.
  - Look for important indicators about the seriousness of the patient's condition.
  - Injuries may be very obvious, or hidden.
  - Control blood loss with direct pressure.
  - Consider the need for manual spinal stabilization.
  - Check for responsiveness using the AVPU scale.

36  **Primary Assessment (3 of 7)**

- Airway and breathing
  - Ensure a clear and patent airway.
  - If the patient is unresponsive or has significantly altered LOC, consider a properly sized oropharyngeal airway.
  - Quickly assess for adequacy of breathing.
  - Palpate the chest wall for DCAP-BTLS.
  - Splinting or otherwise restricting chest wall motion is contraindicated.

37  **Primary Assessment (4 of 7)**

- Circulation
  - Quickly assess pulse rate and quality.
  - Determine skin condition, color, and temperature.
  - Check capillary refill time.
  - Significant bleeding is an immediate life threat.

38  **Primary Assessment (5 of 7)**

- Transport decision
  - Consider quickly transporting patients with airway or breathing problems or with significant bleeding.
  - Consider ALS backup.
  - A patient with internal bleeding must be transported quickly for treatment by a physician.

39  **Primary Assessment (6 of 7)**

- Transport decision (cont'd)
  - Signs of hypoperfusion include:
    - Tachycardia
    - Tachypnea
    - Low blood pressure
    - Weak pulse
    - Cool, moist, pale skin

40  **Primary Assessment (7 of 7)**

- Transport decision (cont'd)

- Even if the patient has no signs of hypoperfusion or other life-threatening injuries, there is the possibility of eye injuries.
  - The patient should be transported as quickly and safely as possible.
  - Surgery will need to be accomplished within 30 minutes or permanent blindness may result.

41  **History Taking**

- Investigate the chief complaint.
  - Obtain a medical history.
  - Be alert for injury-specific signs and symptoms.
  - Be aware of pertinent negatives.
  - Gather a SAMPLE history from the patient, or from friends and family.

42  **Secondary Assessment (1 of 4)**

- Physical examinations
  - If multiple systems have been affected, start with an assessment of the entire body, looking for DCAP-BTLS.
  - Do not delay transport to complete a thorough physical examination.
  - In a responsive patient with an isolated injury with limited MOI, consider focusing on the isolated injury, the patient's chief complaint, and the body region affected.

43  **Secondary Assessment (2 of 4)**

- Physical examinations (cont'd)
  - Ensure that control of bleeding is maintained and note injury location.
  - Inspect the open wound for any foreign matter and stabilize impaled objects.
  - Use both your eyes and your hands.
  - Assess all underlying systems.

44  **Secondary Assessment (3 of 4)**

- Physical examinations (cont'd)
  - When evaluating the eyes, start with the outer aspect and work toward the pupils.
  - Examine the eye for any obvious foreign matter.
  - Visual acuity is a vital sign of the eye.
  - Look for discoloration, bleeding, redness, eye symmetry, and pupil size and reaction to light.
  - Brain injury, nerve disease, glaucoma, and meningitis are causes of unequal pupils.

45  **Secondary Assessment (4 of 4)**

- Vital signs
  - Assess vital signs to obtain a baseline.
  - You must be concerned with visible bleeding and unseen bleeding inside a body cavity.
  - With facial and throat injuries, baseline information is very important.
  - Use appropriate monitoring devices.

46  **Reassessment (1 of 4)**

- Repeat the primary assessment.
- Reassess vital signs and the chief complaint.
  - Reassess the patient's condition at least every 5 minutes.
- Interventions

- Provide complete spinal immobilization if necessary.

47  **Reassessment (2 of 4)**

- Interventions (cont'd)
  - Maintain an open airway, be prepared to suction, and consider an oropharyngeal airway.
  - Whenever you suspect significant bleeding, provide high-flow oxygen.
  - Control significant visible bleeding.
- 

48  **Reassessment (3 of 4)**

- Interventions (cont'd)
  - If the patient has signs of hypoperfusion, treat aggressively for shock and provide rapid transport.
- Communication and documentation
  - Include a description of the MOI and the position in which you found the patient.
  - In cases of vehicle collisions, document the method used to remove the patient from the vehicle.

49  **Reassessment (4 of 4)**

- Communication and documentation (cont'd)
  - Recognize, estimate, and report the amount of blood loss.
  - Inform the hospital about all injuries involving the head and neck.

50  **Emergency Medical Care (1 of 5)**

- Treat soft-tissue injuries to the face and neck the same as soft-tissue injuries elsewhere on the body.
  - Assess ABCs and life threats first.
  - Follow standard precautions.
  - In the absence of life-threatening bleeding, first open and clear the airway.
  - Avoid moving the neck in patients with suspected cervical spine injuries.

51  **Emergency Medical Care (2 of 5)**

- Control bleeding by applying direct manual pressure with a dry, sterile dressing.
  - Use roller gauze, wrapped around the head, to hold a pressure dressing in place.
  - Do not apply excessive pressure if an underlying skull fracture is suspected.

52  **Emergency Medical Care (3 of 5)**

- Cover exposed brain, eye, or other structures with a moist, sterile dressing
- Apply ice locally to injuries that do not break the skin.
- For soft-tissue injuries around the mouth, check for bleeding inside the mouth.
  - Broken teeth and tongue lacerations may cause extensive bleeding and obstruction of the upper airway.

53  **Emergency Medical Care (4 of 5)**

- Physicians can sometimes graft a piece of avulsed skin back into position.
  - If you find portions of avulsed skin:
    - Wrap in a sterile dressing.
    - Place in a plastic bag.
    - Keep cool, but do not place directly on ice.
    - Label and deliver to the emergency department.

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54  **Emergency Medical Care (5 of 5)**

- If the avulsed skin is still attached in a loose flap:
  - Place the flap in position as close to normal as possible.
  - Hold in place with a dry, sterile dressing.

55  **Injuries of the Eyes (1 of 19)**

- Eye injuries are common, particularly in sports.
  - Can produce lifelong complications, including blindness
- In a normal, uninjured eye, the entire circle of the iris is visible.
  - The pupils are round, usually equal in size, and react equally to light.

56  **Injuries of the Eyes (2 of 19)**

- After an injury, pupil reaction or shape and eye movement are disturbed.
- Treatment starts with a thorough examination.
  - Always use standard precautions.
  - Take care not to aggravate any problems.
  - Look for abnormalities or conditions that may suggest the nature of the injury.

57  **Injuries of the Eyes (3 of 19)**

- Foreign objects
  - Even a small object may produce severe irritation.
  - Irrigation with a sterile saline solution will frequently flush away loose particles.
  - Use a bulb syringe or a nasal airway or cannula.

58  **Injuries of the Eyes (4 of 19)**

- Foreign objects (cont'd)
  - Always flush from the nose side of the eye toward the outside to avoid flushing material into the other eye.

59  **Injuries of the Eyes (5 of 19)**

- Foreign objects (cont'd)
  - A foreign body will leave a small abrasion on the conjunctiva.
  - Gentle irrigation may not wash out foreign bodies stuck to the cornea or lying under the upper eyelid.

60  **Injuries of the Eyes (6 of 19)**

- Foreign objects (cont'd)
  - Foreign bodies may be impaled in the eye.
  - Bandage the object in place to support it.
  - Cover the eye with a moist, sterile dressing.
  - Surround the object with a doughnut-shaped collar.
  - When you see or suspect an impaled object(s) in the eye, bandage both eyes with soft, bulky dressings to prevent further injury.

61  **Injuries of the Eyes (7 of 19)**

- Burns of the eye
  - Stop the burn and prevent further damage.
- Chemical burns
  - Usually caused by acid or alkaline solutions
  - Flush the eye with water or saline.
  - Direct the greatest amount of irrigating solution or water into the eye as gently as



possible.

62  **Injuries of the Eyes (8 of 19)**

63  **Injuries of the Eyes (9 of 19)**

- Chemical burns (cont'd)
  - You may have to force the lids open.
  - Flush from the inner to outside corner.
  - If the burn was caused by an alkali or a strong acid, irrigate continuously for at least 20 minutes.
  - After irrigation, apply a clean, dry dressing to cover the eye and transport.

64  **Injuries of the Eyes (10 of 19)**

- Thermal burns
  - During a fire, the eyes will close to protect from heat, and the eyelids will burn.
  - Transport promptly without further examination.
  - Cover both eyes with a sterile dressing moistened with sterile saline.
  - Apply eye shields over the dressing.

65  **Injuries of the Eyes (11 of 19)**

- Light burns
  - Infrared rays, eclipse light, and laser beams all can cause significant damage.
  - Retinal injuries caused by exposure to light are generally not painful but may result in permanent damage.
  - Severe conjunctivitis usually develops with redness, swelling, and excessive tears.

66  **Injuries of the Eyes (12 of 19)**

- Lacerations
  - Require very careful repair to restore appearance and function
  - Bleeding may be heavy, but it usually can be controlled with gentle, manual pressure.
  - If there is a laceration of the globe itself, apply no pressure to the eye.

67  **Injuries of the Eyes (13 of 19)**

- Lacerations (cont'd)
  - Never exert pressure on or manipulate the injured globe.
  - If part of the eyeball is exposed, gently apply a moist, sterile dressing to prevent drying.
  - Cover the injured eye with a protective metal eye shield cup or sterile dressing.
  - Apply soft dressings to both eyes and provide prompt transport.

68  **Injuries of the Eyes (14 of 19)**

- Lacerations (cont'd)
  - On rare occasions, the eyeball may be displaced from its socket.
  - Do not attempt to reposition it.
  - Cover the eye and stabilize it with a moist sterile dressing.
  - Cover both eyes to prevent further injury.
  - Have the patient lie supine.

69  **Injuries of the Eyes (15 of 19)**

- Blunt trauma
  - Injuries range from the ordinary black eye to a severely damaged globe.
  - Hyphema obscures all or part of the iris.
  - An orbit fracture is a fracture of the bones that form the eye floor and support the

globe.

– Retinal detachment is often seen in sports.

70  **Injuries of the Eyes (16 of 19)**

- Eye injuries following head injury
  - The following findings should alert you to the possibility of a head injury:
    - One pupil larger than the other
    - Eyes not moving together
    - Failure of the eyes to follow your finger
    - Bleeding under the conjunctiva
    - Protrusion or bulging of one eye
    -

71  **Injuries of the Eyes (17 of 19)**

- Blast injuries
  - Signs and symptoms range from severe pain and loss of vision to foreign bodies within the globe.
  - If there is a foreign body within the globe, do not remove it.
  - If only one eye is injured, follow local protocol.
  - If the patient has severe swelling, do not force the eyelid open to examine it.

72  **Injuries of the Eyes (18 of 19)**

- Contact lenses and artificial eyes
  - Do not attempt to remove contact lenses unless there is a chemical burn.
  - To remove a hard contact lens, use a small suction cup.
  - To remove soft contact lenses, place one or two drops of saline in the eye, pinch the lens between your thumb and index finger, and lift.

73  **Injuries of the Eyes (19 of 19)**

74  **Injuries of the Nose (1 of 4)**

- Nosebleeds (epistaxis) are a common problem.
  - One of the most common causes is digital trauma.
  - Anterior nosebleeds usually originate from the area of the septum and bleed slowly.
  - Posterior nosebleeds are usually more severe and often cause blood to drain into the throat.

75  **Injuries of the Nose (2 of 4)**

- The nose often takes the brunt of physical assaults and car crashes.
  - Blunt injuries may be associated with fractures and soft-tissue injuries of the face, head injuries, and/or injuries to the cervical spine.

76  **Injuries of the Nose (3 of 4)**

- Assess the nose structures for injury.
  - It is helpful to picture the inside of the nose itself.

77  **Injuries of the Nose (4 of 4)**

- Cerebrospinal fluid (CSF) may escape down through the nose following a fracture at the base of the skull.
- Control bleeding by applying a sterile dressing.

78  **Injuries of the Ear (1 of 4)**

- The ear is complex and associated with hearing and balance.

- Divided into three parts:
  - External ear
  - Middle ear
  - Inner ear
  -

79  **Injuries of the Ear (2 of 4)**

80  **Injuries of the Ear (3 of 4)**

- Ears are often injured, but they do not usually bleed very much.
  - In case of an ear avulsion, wrap the avulsed part in a moist, sterile dressing and put it in a plastic bag.
- Tympanic membrane rupture
  - Sudden changes in pressure created by a blast wave may cause rupture.
  - Patients will report severe ear pain, difficulty hearing, or ringing in the affected ear.

81  **Injuries of the Ear (4 of 4)**

- Tympanic membrane rupture (cont'd)
  - May be caused by insertion of objects too far into the ear.
  - Transport to the hospital for evaluation.
- Children place foreign bodies in the external auditory canal.
- Clear fluid coming from the ear may indicate a skull fracture.

82  **Facial Fractures (1 of 2)**

- Typically result from blunt impact
- Assume a direct blow to the mouth or nose has caused a facial fracture.
- Other clues include:
  - Bleeding in the mouth
  - Inability to swallow or talk
  - Absent or loose teeth
  - Loose or movable bone fragments

83  **Facial Fractures (2 of 2)**

- Facial fractures alone are not acute emergencies unless there is serious bleeding.
- Plastic surgeons can repair the damage to the face and mouth if the injuries are treated within 7 to 10 days.
- Swelling can be extreme within the first 24 hours after injury.

84  **Dental Injuries (1 of 2)**

- Can be traumatic to the patient
- Bleeding will occur whenever a tooth is violently displaced from its socket.
  - Apply direct pressure to stop the bleeding.
  - Perform suctioning if needed.
  - Cracked or loose teeth are possible airway obstructions.

85  **Dental Injuries (2 of 2)**

- Save and transport an avulsed tooth.
  - Handle it by the crown rather than the root.
  - Place the tooth in tooth storage solution, cold milk, or sterile saline.

- Notify the hospital.
- Reimplantation is recommended within 20 minutes to 1 hour after the trauma.

86  **Injuries of the Cheek**

- You may encounter an object impaled in the patient's cheek.
  - If you are unable to control the bleeding, consider removing the object.
  - Then provide direct pressure on the inside and outside of the cheek.
  - The amount of bandaging should not occlude the mouth.

87  **Injuries of the Neck (1 of 4)**

- The neck contains many structures vulnerable to injury by blunt trauma.
  - Upper airway
  - Esophagus
  - Carotid arteries and jugular veins
  - Thyroid cartilage (Adam's apple)
  - Cricoid cartilage
  - Upper part of the trachea

88  **Injuries of the Neck (2 of 4)**

- Blunt injuries
  - Any crushing injury of the upper part of the neck is likely to involve the larynx or trachea.
  - Once the cartilages of the upper airway and larynx are fractured, they do not spring back to their normal position.

89  **Injuries of the Neck (3 of 4)**

- Blunt injuries (cont'd)
  - Can lead to loss of voice, difficulty swallowing, severe and sometimes fatal airway obstruction, and leakage of air into soft tissues of the neck
  - Subcutaneous emphysema is a characteristic crackling sensation produced by the presence of air.
  - Complete airway obstruction can develop very rapidly.
  - ALS support either by air or intercept may be necessary.

90  **Injuries of the Neck (4 of 4)**

- Penetrating injuries
  - Can cause profuse bleeding from laceration of the great vessels in the neck
  - Injuries to the carotid and jugular veins can cause the body to bleed out (exsanguination).
  - Injuries to these large vessels may also allow air to enter the circulatory system, which can lead to air embolism and cardiac arrest.
  - Direct pressure will control most bleeding.

91  **Laryngeal Injuries (1 of 4)**

- Blunt force trauma to the larynx can occur when:
  - Unrestrained driver strikes steering wheel
  - Snowmobile rider strikes a clothesline
- The larynx becomes crushed against the cervical spine, resulting in soft-tissue injury, fractures, and/or separation of the fascia.

92  **Laryngeal Injuries (2 of 4)**

- Penetrating or impaled objects in the larynx should not be removed unless they interfere with CPR.
  - Stabilize all impaled objects if they are not obstructing the airway.
  -

93  **Laryngeal Injuries (3 of 4)**

- Signs and symptoms of larynx injuries:
  - Respiratory distress
  - Hoarseness
  - Pain
  - Difficulty swallowing (dysphagia)
  - Cyanosis
  - Pale skin
  - Sputum in the wound
  -

94  **Laryngeal Injuries (4 of 4)**

- Signs and symptoms (cont'd)
  - Subcutaneous emphysema
  - Bruising on the neck
  - Hematoma
  - Bleeding
- To manage a laryngeal injury:
  - Provide oxygen and ventilation.
  - Apply cervical immobilization, but avoid rigid collars.

95  **Review**

1. Which of the following statements regarding the “Adam’s apple” is FALSE?
  - A. It is inferior to the cricoid cartilage.
  - B. It is formed by the thyroid cartilage.
  - C. It is the uppermost part of the larynx.
  - D. It is more prominent in men than in women.
- 2.

96  **Review**

Answer: A

Rationale: The most obvious prominence in the center of the anterior neck is the Adam’s apple. This prominence is the upper part of the larynx, formed by the thyroid cartilage. It is more prominent in men than in women. The other portion of the larynx is the cricoid cartilage, a firm ridge that is inferior to the thyroid cartilage.

97  **Review**

1. Which of the following statements regarding the “Adam’s apple” is FALSE?
  - A. It is inferior to the cricoid cartilage.

Rationale: Correct answer.
  - B. It is formed by the thyroid cartilage.

Rationale: This is true.
  - C. It is the uppermost part of the larynx.

Rationale: This is true.
  - D. It is more prominent in men than in women.

Rationale: This is true.

98  **Review**

2. The globe of the eye is also called the:

- A. lens.
- B. orbit.
- C. retina.
- D. eyeball.

3.

99  **Review**

Answer: D

Rationale: The globe of the eye is also called the eyeball. The lens, which sits behind the iris, focuses images on the retina—the light-sensitive area at the back of the globe. The globe is located within a bony socket in the skull called the orbit.

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100  **Review (1 of 2)**

2. The globe of the eye is also called the:

A. lens.

Rationale: The lens sits behind the iris and focuses images on the light-sensitive area at the back of the globe.

B. orbit.

Rationale: The orbit forms the base of the floor of the cranial cavity and contains the eye.

101  **Review (2 of 2)**

2. The globe of the eye is also called the:

C. retina.

Rationale: The retina is the light-sensitive area at the back of the globe.

D. eyeball.

Rationale: Correct answer

102  **Review**

3. When a person is looking at an object up close, the pupils should:

- A. dilate.
- B. constrict.
- C. remain the same size.
- D. dilate, and then constrict.

4.

103  **Review**

Answer: B

Rationale: The pupils, which allow light to move to the back of the eye, constrict in bright light and dilate in dim light. The pupils should also constrict when looking at an object up close and dilate when looking at an object farther away; this is called pupillary accommodation. These pupillary adjustments occur almost instantaneously.

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104  **Review (1 of 2)**

3. When a person is looking at an object up close, the pupils should:

A. dilate.

Rationale: The pupils will dilate when looking at objects far away.  
B. constrict.

Rationale: Correct answer

105  **Review (2 of 2)**

3. When a person is looking at an object up close, the pupils should:

C. remain the same size.

Rationale: The pupils will constrict when looking at objects that are close.

D. dilate, and then constrict.

Rationale: The pupils will constrict first when looking at close objects.

106  **Review**

4. When caring for a chemical burn to the eye, the EMT should:

A. prevent contamination of the opposite eye.

B. immediately cover the injured eye with a sterile dressing.

C. avoid irrigating the eye, as this may cause further injury.

D. irrigate both eyes simultaneously, even if only one eye is injured.

5.

107  **Review**

Answer: A

Rationale: When irrigating a chemical burn to the eye, it is important to *direct the stream away from the uninjured eye*. If you do not, you will likely flush the chemical into the unaffected eye. After irrigating the eye for the appropriate amount of time, cover *both* eyes with a sterile dressing.

108  **Review (1 of 2)**

4. When caring for a chemical burn to the eye, the EMT should:

A. prevent contamination of the opposite eye.

Rationale: Correct answer

B. immediately cover the injured eye with a sterile dressing.

Rationale: Irrigation of the eye must take place first.

109  **Review (2 of 2)**

4. When caring for a chemical burn to the eye, the EMT should:

C. avoid irrigating the eye, as this may cause further injury.

Rationale: Irrigation of the affected eye must take place. Direct the stream away from the uninjured eye.

D. irrigate both eyes simultaneously, even if only one eye is injured.

Rationale: Direct the stream of the contaminated eye away from the unaffected eye.

110  **Review**

5. Which of the following signs is LEAST indicative of a head injury?

A. Asymmetrical pupils

B. Pupillary constriction to bright light

C. Both eyes moving in opposite directions

D. Inability to look upward when instructed to

6.

111  **Review**

Answer: B

Rationale: The pupils normally constrict in bright light and dilate in dim light. Suspect a head

injury if the pupils do not react appropriately, are asymmetrical (unequal), do not move together, or if the patient is unable to look upward.

112  **Review (1 of 2)**

5. Which of the following signs is LEAST indicative of a head injury?

A. Asymmetrical pupils

Rationale: This may be an indication of a head injury.

B. Pupillary constriction to bright light

Rationale: Correct answer

113  **Review (2 of 2)**

5. Which of the following signs is LEAST indicative of a head injury?

C. Both eyes moving in opposite directions

Rationale: This may be an indication of a head injury.

D. Inability to look upward when instructed to

Rationale: This may be an indication of a head injury.

114  **Review**

6. The purpose of the eustachian tube is to:

A. move in response to sound waves.

B. transmit impulses from the brain to the ear.

C. equalize pressure in the middle ear when external pressure changes.

D. house fluid within the inner chamber of the ear and support balance.

7.

115  **Review**

Answer: C

Rationale: The middle ear is connected to the nasal cavity by the eustachian tube, which permits equalization of pressure in the middle ear when external atmospheric pressure changes.

116  **Review (1 of 2)**

6. The purpose of the eustachian tube is to:

A. move in response to sound waves.

Rationale: This occurs in the tympanic membrane or eardrum.

B. transmit impulses from the brain to the ear.

Rationale: Impulses are transmitted from the ear to the brain.

117  **Review (2 of 2)**

6. The purpose of the eustachian tube is to:

C. equalize pressure in the middle ear when external pressure changes.

Rationale: Correct answer

D. house fluid within the inner chamber of the ear and support balance.

Rationale: Bony chambers in the inner ear support balance.

118  **Review**

7. When caring for a patient with facial trauma, the EMT should be MOST concerned with:

A. spinal trauma.

B. airway compromise.

C. associated eye injuries.



D. severe external bleeding.

8.

119  **Review**

Answer: B

Rationale: No airway, no patient! Injuries to the face often cause obstruction of the upper airway, either by clotted blood or associated swelling. Additionally, large amounts of blood can be swallowed, which increases the risks of vomiting and aspiration. Bleeding control, spinal trauma, and associated injuries are important factors and should be treated accordingly; however, the airway comes first.

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120  **Review (1 of 2)**

7. When caring for a patient with facial trauma, the EMT should be MOST concerned with:

A. spinal trauma.

Rationale: This is a concern to be treated, but treating the airway is first.

B. airway compromise.

Rationale: Correct answer

121  **Review (2 of 2)**

7. When caring for a patient with facial trauma, the EMT should be MOST concerned with:

C. associated eye injuries.

Rationale: This is a concern to be treated, but treating the airway is first.

D. severe external bleeding.

Rationale: This is a concern to be treated, but treating the airway is first.

122  **Review**

8. The presence of subcutaneous emphysema following trauma to the face and throat is MOST suggestive of:

A. esophageal injury.

B. cervical spine fracture.

C. crushing tracheal injury.

D. carotid artery laceration.

9.

123  **Review**

Answer: C

Rationale: Crushing injuries or fractures of the larynx or trachea can result in a leakage of air into the soft tissues of the neck. The presence of air in the soft tissues produces a characteristic crackling sensation called subcutaneous emphysema.

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124  **Review (1 of 2)**

8. The presence of subcutaneous emphysema following trauma to the face and throat is MOST suggestive of:

A. esophageal injury.

Rationale: This will produce bleeding, which may be observed in the patient's mouth or through difficulty swallowing.

B. cervical spine fracture.

Rationale: This may be indicated by pain and/or paralysis.

125  **Review (2 of 2)**

8. The presence of subcutaneous emphysema following trauma to the face and throat is

MOST suggestive of:

C. crushing tracheal injury.

Rationale: Correct answer

D. carotid artery laceration.

Rationale: This could be assessed by excessive swelling or the presence of a large hematoma in the neck area.

126  **Review**

9. A 21-year-old male has a large laceration to his neck. When you assess him, you note that bright red blood is spurting from the left side of his neck. You should immediately:

A. apply a pressure dressing to his neck.

B. sit the patient up to slow the bleeding.

C. place your gloved hand over the wound.

D. apply 100% oxygen via nonrebreathing mask.

10.

127  **Review**

Answer: C

Rationale: Laceration of the carotid artery—as evidenced by bright red blood spurting from the wound—can cause profuse bleeding, profound shock, and death very quickly. You must *immediately* control the bleeding with the use of direct pressure. Cover the wound with your gloved hand initially and then apply a bulky pressure dressing. After the bleeding has been controlled, apply high-flow oxygen and transport promptly.

128  **Review (1 of 2)**

9. A 21-year-old male has a large laceration to his neck. When you assess him, you note that bright red blood is spurting from the left side of his neck. You should immediately:

A. apply a pressure dressing to his neck.

Rationale: You should apply a bulky dressing to control bleeding.

B. sit the patient up to slow the bleeding.

Rationale: Bleeding must be controlled first with direct pressure.

129  **Review (2 of 2)**

9. A 21-year-old male has a large laceration to his neck. When you assess him, you note that bright red blood is spurting from the left side of his neck. You should immediately:

C. place your gloved hand over the wound.

Rationale: Correct answer

D. apply 100% oxygen via nonrebreathing mask.

Rationale: A nonrebreathing mask is applied after bleeding is controlled.

130  **Review**

10. Which of the following mechanisms of injury would MOST likely cause a crushing injury of the larynx and/or trachea?

A. Attempted suicide by hanging

B. Gunshot wound to the lateral neck

C. Car crash involving lateral impact

D. Patient whose head hits the windshield

11.

131  **Review**

Answer: A

Rationale: Any crushing injury of the upper part of the neck is likely to involve the larynx or

trachea. Examples include the anterior neck impacting a steering wheel, hanging (distraction) mechanisms, and clothesline injuries.

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132  **Review (1 of 2)**

10. Which of the following mechanisms of injury would MOST likely cause a crushing injury of the larynx and/or trachea?

A. Attempted suicide by hanging

Rationale: Correct answer

B. Gunshot wound to the lateral neck

Rationale: This would produce a penetrating injury.

133  **Review (2 of 2)**

10. Which of the following mechanisms of injury would MOST likely cause a crushing injury of the larynx and/or trachea?

C. Car crash involving lateral impact

Rationale: This would produce an injury to the spine and possibly the head.

D. Patient whose head hits the windshield

Rationale: This would produce an injury to the head or a compression injury to the spine.