BCEN TCRN - Quiz Questions with Answers

Clinical Practice: Extremity and Wound

1.

What type of burn will commonly cause injuries that will not be appreciable during the initial physical assessment of the patient?

Electrical

Thermal

Chemical

Radiation

Correct answer: Electrical

Electrical energy often transverses the body between the point of contact with the area of high voltage and the grounding point nearest to the point of contact. Because electrical energy travels through the body, much of the burn will not be appreciable during initial physical assessment of the patient.

Thermal burns and chemical burns typically affect the external surfaces and will be appreciable during a physical assessment. Some types of radiation burns, such as radiation burns sustained during cancer treatments, may be both internal and external, although these will often be more visible than electrical burns. The most common form of radiation burn, sunburns, are very noticeable during physical assessments.

2.

The trauma nurse is calculating the amount of fluid needed for a patient who has been severely burned. When calculating the percentage of the body area burned, what should the nurse consider to be a burn?

Only partial-thickness burns and full-thickness burns

Any reddened area

Superficial burns, partial-thickness burns, and full-thickness burns

Only full-thickness burns

Correct answer: Only partial-thickness burns and full-thickness burns

When calculating the total surface area burned, only areas with partial-thickness burns and full-thickness burns should be counted.

Superficial burns and any other areas that are considered burns or irritation should not be counted.

3.

The trauma nurse is treating a patient who was saved from a house fire and brought to the emergency room with carbon monoxide poisoning. Which of the following considerations for this patient is correct?

The patient should be provided with high concentration oxygen

Carbon monoxide and oxygen have close to an equal affinity for hemoglobin

The patient needs continuous oximetry to monitor their progression

Carbon monoxide poisoning affects the lining of the lungs

Correct answer: The patient should be provided with high concentration oxygen

Carbon monoxide's half life is about four hours on room air and about one hour with 100% oxygen. Administering high concentration oxygen decreases carbon monoxide more quickly, improving the patient's oxygenation.

Carbon monoxide has an affinity for hemoglobin that is about 200 times that of oxygen. Carbon monoxide that is bound to hemoglobin may be detected as oxygenated blood by pulse oximetry, making this method of monitoring less clinically useful. Carbon monoxide poisoning does not affect the lining of the lungs.

4.

Which of the following will increase a patient's risk of developing compartment syndrome?

Venomous spider bite

Broken fifth digit of the foot

Kerlix dressing applied correctly to the left lower leg

Dehydration

Correct answer: Venomous spider bite

A venomous bite can lead to shifts in intracompartmental fluids that can cause compartment syndrome.

A broken bone next to a compartment may increase the risk of compartment syndrome; however, the fifth digit of the foot is not within a compartment, making the risk of compartment syndrome with this type of injury low.

A pressure dressing or a Kerlix dressing that is applied too tightly can cause external pressure that increases the risk of compartment syndrome; however, a correctly applied Kerlix dressing will not increase this risk.

Dehydration does not significantly increase the risk of compartment syndrome.

5.

Which of the following best describes the zone of stasis in a burn injury?

This zone has impaired blood flow

This zone contains necrotic tissue

This zone is likely to heal rapidly

This zone will develop eschar

Correct answer: This zone has impaired blood flow

The zone of stasis in a burn is characterized by impaired blood flow, but can be recovered if adequate blood flow is restored.

The zone of coagulation describes the zone that contains necrotic tissues and that develops eschar. The zone of hyperemia is damaged, but is likely to recover quickly.

6.

The trauma nurse provides care to a patient who was rescued from a house fire and who smokes two packs of cigarettes a day.

How will the patient's smoking history impact their carboxyhemoglobin levels?

The baseline carboxyhemoglobin may be higher, but will elevate at about the same rate as someone who doesn't smoke

A smoking history will not impact their carboxyhemoglobin level

The baseline carboxyhemoglobin will be the same as a non-smoker, but will elevate significantly faster than someone who doesn't smoke

The baseline carboxyhemoglobin may be higher and will elevate significantly faster than someone who doesn't smoke

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Correct answer: The baseline carboxyhemoglobin may be higher, but will elevate at about the same rate as someone who doesn't smoke

A non-smoker's baseline carboxyhemoglobin level will be 0-3%, while a smoker's baseline carboxyhemoglobin level will be 0-15%. While the baseline carboxyhemoglobin may be different, smoking will not play a role in elevating someone's carboxyhemoglobin level more quickly. A smoker, however, may have a higher carboxyhemoglobin level than a non-smoker with a similar level of exposure due to starting with a higher baseline.

7.

Which of the four conditions, if called into the trauma center by EMS prior to their arrival, is associated with the highest risk of exsanguination?

Partial amputation

Complete amputation

Open fracture

Degloving injury

Correct answer: Partial amputation

Partial amputation carries the highest risk of bleeding of the four conditions given. In a complete amputation, the transected vasculature retracts and spasms. In a partial amputation, the vasculature continues to attempt to perfuse the organ without having the same degree of vasospasm, making a partial amputation a higher risk of bleeding than a complete amputation.

An open fracture may or may not involve the vasculature, while amputations almost always do. A degloving injury, while serious, does not typically involve veins and arteries, reducing the risk of bleeding compared to the other conditions.

8.

Which of the following statements is correct regarding gunshot wound victims?

Denser organs absorb more kinetic energy from gunshot wounds, accumulating more damage

Less dense organs absorb more kinetic energy from gunshot wounds, accumulating more damage

Denser organs absorb more static energy from gunshot wounds, accumulating more damage

Less dense organs absorb more static energy from gunshot wounds, accumulating more damage

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Correct answer: Denser organs absorb more kinetic energy from gunshot wounds, accumulating more damage

Bullets cause damage by transferring kinetic energy, not static energy, to organs and tissues. Denser organs will absorb more energy as the bullet passes through them, accumulating more damage than less dense organs.

9.

Which of the following is not considered one of the 6 Ps of compartment syndrome?

Potassium elevation

Poikilothermia

Paralysis

Pallor

Correct answer: Potassium elevation

Potassium elevation may occur as cells become ischemic and release their contents, however, this is not considered one of the clinical hallmarks of compartment syndrome.

Poikilothermia is a late sign as distal regulation of the limb's temperature is affected. Paralysis is also a late sign once there is significant nerve involvement. Pallor is also one of the 6 Ps, along with pain, pulses, and parasthesia.

10.

A patient with multiple fractures to the bilateral legs and pelvis will need stabilization of these fractures. Which of the following is a consideration when planning fracture stabilization?

The method of fracture stabilization will vary

Intramedullary devices will be used

External fixation will be needed

Most of these fractures will not need stabilization

Correct answer: The method of fracture stabilization will vary

There are many different ways to stabilize fractures, and the method of stabilization will vary based on the fracture's location and type.

Without knowing more about the specific locations and type of fractures sustained by this patient, it will not be possible to determine if intramedullary devices or external fixation will be necessary, or if some fractures do not require stabilization.

11.

When a trauma nurse is taking a burn patient's history, which of the following is not a factor directly affecting burn depth?

The area over which the offending agent was spread

The duration of contact with the offending agent

The thickness of the epidermis and dermis

The blood supply to the area

Correct answer: The area over which the offending agent was spread

The area over which the offending agent was spread will affect the surface area burned but does not directly impact the depth of the burn.

The duration of contact with the offending agent, the thickness of the epidermis and dermis, the blood supply to the area, and the temperature of the offending agent are the four factors that affect the depth of a burn.

12.

Which of the following is not a cause of hypothermia in burn patients?

Decreased core temperature due to blood loss

Rapid fluid resuscitation

Evaporation from fluids on the skin

Loss of the normal skin barrier

Correct answer: Decreased core temperature due to blood loss

Hypothermia may be caused during hemorrhage due to the extensive loss of blood volume; however, this is not normally a significant factor in burn patients. While fluid loss from burns may lead to dehydration, it is unlikely that blood volume loss will occur fast enough to affect the body's ability to regulate its core temperature.

Rapid fluid resuscitation can lead to hypothermia if the fluids are not warmed. Evaporation from fluids seeping from the burn can cause hypothermia in the same way that sweat evaporation promotes cooling. Loss of the normal skin barrier does affect the body's ability to regulate its normal temperature.

13.

Which of the following is not a benefit of restoring normal alignment to a fractured bone?

Decreases bleeding

Improves venous return

Improves lymphatic return

Reduces the release of marrow components into circulation

Correct answer: Decreases bleeding

Restoring normal alignment to a fractured bone does not significantly reduce bleeding at the fracture site.

Restoring bone alignment will, however, improve both venous and lymphatic return and will reduce the release of marrow components into circulation.

14.

A trauma nurse is caring for a patient with a gunshot wound in the left lower leg with injury to the fibula, the left lower abdomen with injury to the rectum and sigmoid colon, and the right cheek without any other facial or head involvement. The patient begins having pain in the left leg, muscle spasms in the left leg, fever, and full-body chills.

Which of the following conditions should be suspected?

Osteomyelitis

Peritonitis

Deep vein thrombosis

Damage to the posterior tibial artery

Correct answer: Osteomyelitis

Localized pain and spasms with signs of infection are indicative of osteomyelitis, especially with foreign body damage to a bone.

Peritonitis would not be likely to cause localized pain and spasms in the left leg. Deep vein thrombosis would not cause chills. Damage to the posterior tibial artery would cause symptoms of bleeding.

15.

Which of the following injuries is least likely to require transfer to a burn center?

Burns to part of the abdomen

Partial thickness burns covering 15% of the body

Burns to the soles of the feet

Inhalation injury

Correct answer: Burns to part of the abdomen

Burns to the abdomen by themselves do not require transfer to a burn center unless they cover a large area, are deep, or are circumferential.

Partial thickness burns covering more than 10% of the body, burns to the feet, and inhalation injuries will all require treatment at a burn center.

16.

A patient presents to the ER with a spiral facture of the left humerus. What type of force is most likely to cause this type of fracture?

Torsion

Tension

Combined loading

Bending

Correct answer: Torsion

Torsion forces are forces that are applied in a twisting motion of two ends around the longitude axis of the ends. This twisting force is the cause of a spiral fracture when the force is applied to a bone.

Tension forces are the stretching of two ends away from each other and can lead to multiple types of fractures when the force is applied to bone. Combined loading refers to the application of multiple different forces simultaneously. Bending forces refers to the application of a force on an object that causes compression of one side and stretching of the other.

17.

The trauma nurse is caring for a 220-pound adult with burns covering both legs. How much fluid should this patient be given over the first 24 hours after his injury?

7,200 mL

14,400 mL

9,200 mL

Not enough data given to determine

Correct answer: 7,200 mL

The calculation to determine the amount of fluid that should be provided in the 24 hours after a burn is calculated by multiplying the patient's weight in kilograms by the percent of their total body surface area that has been burned. For this patient, 220 lb is equal to 100 kg and, using the rule of nines, burns covering both legs is 36% of his total body surface area. The equation for this would be:

100 kg x 2 x 36 = 7,200 mL

18.

Which of the following is the correct way for the trauma nurse to provide care to an amputated body part?

Wrap the part in gauze and place it in a dry bag, which is then placed on ice

Wrap the part in gauze and place it directly on ice

Immerse the part in milk

Always keep the part with the patient

Correct answer: Wrap the part in gauze and place it in a dry bag, which is then placed on ice

The part should never be immersed in fluid. While a tooth may be immersed in milk to maintain its viability, an amputated body part should never be. An amputated part should never be placed directly on ice.

An amputated body part may need to be imaged or separated from the patient for other purposes. While the part may leave the patient, it should be clearly labeled with two patient identifiers.

19.

A patient involved in a motorcycle accident is brought to the emergency room with a dislocated elbow. Which of the following neurovascular structures is at risk for involvement with this injury?

The ulnar nerve

The radial nerve

The ulnar artery

The radial artery

Correct answer: The ulnar nerve

The ulnar nerve (also known as the "funny bone") is at a high risk for damage due to dislocation of the elbow or while attempting to reduce it. The brachial artery is another structure associated with risk during elbow dislocation.

There may be some small risk considerations with the other choices, but the ulnar nerve and the brachial arteries are the two primary concerns.

20.

You are treating a 19-year-old female who was assaulted, being struck in the center of the top of the head with a downward blow using a blunt object. Which of the following questions will help you to determine the intensity of the force that was applied during the assault?

"What object did he use?"

"How would you rate the pain this caused on a scale of one to ten?"

"Do you have a history of previous head injuries?"

"Were you struck from behind or in front?"

Correct answer: "What object did he use?"

The intensity of a force is the product of its mass and acceleration. Asking what type of object was used will help you to determine its mass and will also help you to understand the area over which the force was applied.

Asking the patient to rate their pain or about previous head injuries is important but will not provide information about the force used. Asking the patient if they were struck from behind or in front will not provide information about the force used, but may provide information about how the patient was able to defend themselves. Asking information about the trajectory of the blow will provide information about the intensity of the force, but the trajectory for this injury will not be different based on where the attacker was standing.

21.

A trauma nurse is assessing a patient who has been electrocuted. She notes a burn injury on the sole of a patient's foot where she assumes the current exited.

How should this wound be documented?

Contact point

Burn site

Exit wound

Grounding site wound

Correct answer: Contact point

The direction of movement of electricity through the body does not significantly affect how the wound is formed, and it can be difficult to tell in which direction the current traveled. An electrocution contact point should be documented as a contact point, not as an exit wound or a grounding site.

A burn site may be incorrect since the burn extends internally between contact points. A contact point is the correct way to document this injury.

22.

A trauma nurse enters the room of an unconscious burn patient who has burns to 32% of their total body surface area after a house fire. A student nurse has given the patients three blankets to stay warm.

Which response by the trauma nurse to the nursing student is best?

"Thank you for keeping this patient warm."

"We should remove these blankets to allow the burn to cool down as much as possible."

"These blankets may disrupt healing in the burn wound bed and should be removed."

"While one blanket would be okay, three blankets may overheat the patient."

Correct answer: "Thank you for keeping this patient warm."

Burn patients are at a higher risk of developing hypothermia and should be kept warm.

While removal of the initial agent that caused the burn and cooling the burn are priorities immediately after the injury, a patient who has come the ER after a house fire will be well past this being a potential factor to consider. Providing blankets to the patient is unlikely to disrupt healing of the burn. Overheating the patient is less of a concern than underheating them would be.

23.

A patient is brought to the emergency room after surviving a helicopter accidence. The only injuries noted during the initial assessment are a skull deformity, clear drainage from the left ear, an unstable pelvis, an amputation of the left hand with bleeding that is fully controlled with a tourniquet, and a step-off deformity at T6.

Which of the following should the trauma nurse be most concerned for when initially caring for this patient?

Exsanguination

Increased intracranial pressure

Airway obstruction

Pain

Correct answer: Exsanguination

An unstable pelvis is associated with a high risk of exsanguination. While there are several neurological complications that this patient may suffer, including increased intracranial pressure, the risk of exsanguination is more pressing and more likely to lead to death if untreated.

There is nothing in the patient's initial assessment to indicate that airway obstruction is a potential concern. While pain management is certainly needed for this patient, providing life sustaining care is more important than managing the patient's pain.

24.

Which of the following is least likely to be a complication of an infected open fracture?

Osteoporosis

Nonunion

Osteomyelitis

Delayed union

Correct answer: Osteoporosis

Osteoporosis is a disease process that occurs due to inappropriate bone remodeling. The development of osteoporosis is not thought to be related to infections that may occur with an open fracture.

Infected open fractures may result in complications that include nonunion, osteomyelitis, and delayed union.

25.

Which of the following is not a type of hip dislocation that may occur during a trauma?

Medial dislocation

Anterior dislocation

Posterior dislocation

Central fracture dislocation

Correct answer: Medial dislocation

There are three types of hip fractures that may occur during a trauma. These include central fracture dislocation, where a fracture of the pelvis results in free movement of the femoral head; anterior dislocation, where the femoral head dislocates by moving forward; and posterior dislocation, where the femoral head dislocates by moving backward.

There is no such thing as a medial hip dislocation.

26.

Which of the following statements made by a student nurse indicates that they understand the concepts of compartment syndrome?

"Compartment syndrome can affect any body compartment."

"Compartment syndrome only affects the extremities."

"Compartment syndrome most commonly affects the upper legs or the upper arms."

"Open fractures will not cause compartment syndrome."

Correct answer: "Compartment syndrome can affect any body compartment."

There are 46 compartments in the body, 36 of which are found in the extremities. Compartment syndrome can occur in any compartment in the body and does not only affect the extremities.

Compartment syndrome occurs most commonly in the lower legs and forearms, not in the upper legs and the upper arms. Open fracture may cause compartment syndrome in other intact compartments that surround the compartment affected by the open fracture.

27.

Which of the following is a common chronic issue that can potentially be a serious complication of musculoskeletal trauma?

Pain

Infection

Fat embolism syndrome

Bleeding

Correct answer: Pain

Chronic pain is a potentially serious complication of musculoskeletal trauma that can inhibit full recovery and lead to a decreased quality of life.

Chronic infection in the form of chronic osteomyelitis can occur, but is not a common chronic issue associated with musculoskeletal trauma. Fat embolism syndrome and bleeding are not chronic issues and are not likely to occur in the post-acute stage of musculoskeletal trauma.

28.

The trauma nurse understands that which of the following is not true when placing tourniquets?

If the tourniquet doesn't work it should be taken off and applied higher

They should be placed as close to the amputation site as possible

They should be placed over clothes

The time applied should be clearly marked on the tourniquet

Correct answer: If the tourniquet doesn't work, it should be taken off and applied higher

When a tourniquet fails to control bleeding, another tourniquet should be applied proximal to the first tourniquet. The first tourniquet should not be removed, as this can cause bleeding to restart.

Tourniquets should be placed over clothes and should be placed as close to the amputation site as possible. The time applied should be clearly marked on the tourniquet to avoid leaving the tourniquet on for too long, causing ischemia to the limb.

29.

Which of the following is least likely to be caused by crush syndrome?

Hypertension

Rhabdomyolysis

Increased compartment pressures

Third spacing of fluid

Correct answer: Hypertension

Crush syndrome occurs due to prolonged entrapment in a crush injury, such as a cave-in or a motor vehicle accident with severe encroachment into the passenger compartment. Crush syndrome is the result of a predictable series of sequela and results in third spacing of fluid, leading to increased compartment pressures and relative hypotension. The crush injury also leads to rhabdomyolysis, which is complicated by the other effects of crush syndrome.

30.

A patient who is developing compartment syndrome will begin to experience pain and parasthesia with what compartment pressure?

20 mm Hg

5 mm Hg

15 mm Hg

35 mm Hg

Correct answer: 20 mm Hg

Normal intracompartmental pressures are 10-12 mm Hg, and pain and parasthesia typically are experienced with intracompartmental pressures of 20-30 mm Hg. Compartment syndrome is an emergent condition and early recognition of this condition is needed to spare the affected limb.

31.

Which of the following pelvic injuries is most likely to occur when a passenger exiting a vehicle has their leg struck by a passing vehicle?

Vertical sheer

Anteroposterior compression

Lateral compression

Complex

Correct answer: Vertical sheer

Vertical sheer pelvic injuries are injuries to the pelvis that typically occur by application of a large amount of vertical force, especially when applied to one side of the pelvis.

Anteroposterior compression occurs with forces that are directed from the anterior to the posterior of the pelvis. This injury pattern would be more likely if the patient was struck directly in the pelvis instead of the leg. Lateral compression occurs due to rotation of one side of the pelvis, and is less likely to occur with the mechanism of injury described. Complex pelvic injuries are not easily classified and tend to result from obliquely applied forces.

32.

A trauma nurse is evaluating a patient who was stabbed just below the diaphragm during an assault. The knife was removed from the wound during the stabbing. Which of the following factors can best help the trauma nurse to determine the knife's angle of entry?

The gender of the assailant

The height of the assailant

The height of the patient

The number of knife wounds

Correct answer: The gender of the assailant

The gender of the assailant is a helpful factor in determining the angle of entry of the knife. Males tend to stab with upward force, while females tend to stab downward. While this is not a rule, it is statistically significant and can help determine a knife's trajectory during a stabbing.

The height of the patient and their assailant will impact where the entry wound is, but not the angle of entry. The number of knife wounds does not predictably affect the angle of entry during a stabbing.

33.

While assessing a trauma patient, the nurse notes that the patient is able to extend and flex their legs. At what level of innervation is this movement controlled?

L2-L4

L4-L5

C5-C7

S3-S4

Correct answer: L2-L4

L2-L4 is the area of the spine innervating muscle movements of the legs.

L4-L5 is associated with innervation that allows the foot to be flexed and the toes to be extended. C5-C7 is associated with innervation that allows flexion and extension of the arms. S3-S4 is associated with innervation of the anal sphincter.

34.

Which of the following factors has the greatest influence on how destructive a bullet wound will be to internal tissues?

Muzzle distance from the entry point

Velocity of the bullet

Yaw

Tumble

Correct answer: Muzzle distance from the entry point

Muzzle distance from the entry point affects muzzle blast injury but does not affect how destructive the bullet is.

The velocity of the bullet affects how much kinetic energy the bullet transfers. The yaw of the bullet describes how much the nose of the bullet deviates from a straight line and affects kinetic energy transfer on impact. Tumbling refers to the forward rotation of the bullet along its center of mass, which can cause extensive damage.

35.

The trauma nurse is teaching a new nurse about extremity injuries. Which of the following descriptions by the new nurse correctly describes a strain?

A stretch or tear in a muscle or tendon

A stretch or tear in a ligament

An area of broken capillaries or venules beneath the skin

An injury in which tissue is torn away or separated

Correct answer: A stretch or tear in a muscle or tendon

A strain is a stretch or tear in a muscle or tendon that occurs due to traumatic injury.

A sprain, not a strain, is a stretch or tear in a ligament. An area of broken capillaries or venules beneath the skin describes a contusion, while an injury in which tissue is torn away or separated describes an avulsion.

36.

A 43-year-old female presents to the ER via EMS after a motor vehicle accident. Her radiograph shows a left femoral head fracture, and she has an area of open skin over her left thigh that appears to be a shallow abrasion. The femur is in two pieces and both pieces seem to be aligned.

What type of fracture would this be?

- **Open fracture**
- Comminuted fracture
- Incomplete fracture
- Displaced fracture

Correct answer: Open fracture

A fracture that has non-intact skin above it is always considered an open fracture, even if the bone is still aligned, and it does not appear that the bone caused the opening in the skin.

The bones are aligned, so this would not be considered a displaced fracture. A comminuted fracture is fragmented at the fracture site. In an incomplete fracture, the bone would still be in one piece.

37.

A 44-year-old male who was partially trapped in a car that was on fire is brought to the trauma center with fourth-degree burns to his bilateral lower legs. Which of the following treatments will likely be necessary?

Amputation of the extremities

Only skin grafts on the burned areas

Both muscle and skin grafts over the burned areas

This injury is fatal; only comfort care measures are needed

Correct answer: Amputation of the extremities

Limbs that have a fourth-degree burn, which involves the muscle, bones, vasculature, and/or the nerves, will almost always require amputation due to the extent of the injury.

Skin and/or muscle grafts will not be effective except in rare situations. While amputation may be necessary, it is not likely to be fatal if treated with amputation.

38.

Which of the following is least likely to be a cause of compartment syndrome?

Administration of mannitol

Bleeding disorders

Venomous bites

Eschar from burns

Correct answer: Administration of mannitol

Administration of mannitol may decrease, not increase, intracompartmental pressures.

Bleeding disorders and venomous bites are potential internal causes of compartment syndrome. Eschar from burns can cause external compression that increases the pressure on the compartments, increasing the risk of compartment syndrome.

39.

A 22-year-old male has a tibia fracture at the proximal epiphyseal plate after a skateboarding accident. Which of the following is a consideration for this type of fracture?

The risk of bone length alterations due to the healing pattern of this fracture is only a concern for prepubescent or adolescent patients.

There is a risk of bone length alterations due to the healing pattern of this fracture for this patient.

There is a significant risk of non-union due to the healing pattern of this fracture for this patient.

The risk of non-union due to the healing pattern of this fracture is only a concern for prepubescent or adolescent patients.

Correct answer: The risk of bone length alterations due to the healing pattern of this fracture is only a concern for prepubescent or adolescent patients.

The epiphyseal plate is also called the growth plate and is the site of growth in the bone. A fracture at this site while the bone is growing can lead the bone to stop lengthening prematurely or to continue to lengthen beyond its ideal length. Once growth has stopped, however, this risk is no longer a consideration.

There is not a significantly increased risk of non-union with this type of fracture, regardless of age.

40.

A victim of a mass shooting is brought to the emergency room with multiple injuries. Which of the following interventions should the nurse perform first?

Apply a tourniquet to the left leg to treat severe bleeding

Suction blood in the patient's airway

Begin providing bag-mask breaths for the patient's apnea

Obtain a set of vital signs

Correct answer: Apply a tourniquet to the left leg to treat severe bleeding

During the primary survey, assessments and interventions are typically prioritized based on an ABC (airway, breathing, circulation) approach. When severe bleeding is present, however, circulation is addressed first until the hemorrhage is addressed.

41.

A patient is brought to the ER with burns to the lower extremities after being in a house fire. Which of the following is true about this patient's risk of compartment syndrome?

Burns alone increase the risk of compartment syndrome

The risk of compartment syndrome is greater only if crush injuries were sustained during the structural fire

The risk of compartment syndrome is elevated due to the high volume of fluids this patient will receive

These burns do not increase the risk of compartment syndrome

Correct answer: These burns alone increase the risk of compartment syndrome

Burns to the lower extremities can cause eschar that leads to external compression of compartments, leading to compartment syndrome.

Crush injuries suffered during a structure fire may increase the risk of compartment syndrome, but this is not the only reason that the risk of compartment syndrome would be increased. High volume fluid resuscitation does not typically increase the risk of compartment syndrome.

42.

Which of the following is correct when examining a patient who may have a vertical shear injury to the pelvis?

This injury type is often associated with other visceral injuries

The injury will have caused an amputation of the leg on the affected side

This injury type is less complex to treat and associated with better outcomes when compared to other pelvic injuries

The mechanism of injury does not require much force to cause this type of injury

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Correct answer: This injury type is often associated with other visceral injuries

Vertical shear injuries are injuries to the pelvis that are caused by a great amount of force, causing shearing of half of the pelvis from the pubic symphysis and sacroiliac joint. Patients with these injuries may have suffered an amputation of the leg; however, this type of injury is not always connected to a vertical sheer injury and would normally result in rapid exsanguination and death.

Vertical sheer injures are complicated to treat and affect soft tissues and viscera near the affected area more than other types of pelvic fractures, making them associated with worse outcomes when compared to most other pelvic injuries.

43.

A 21-year-old male comes into the ER after a gun accident in which he was shot in the left leg. There is an entry wound and no exit wound, the bullet did not hit bone, and the bullet was a frangible bullet.

In what state should the nurse anticipate the bullet is likely in?

Shattered

Crumpled

Expanded

Non-deformed

Correct answer: Shattered

Frangible bullets are scored so that they will fragment upon impacting tissues, meaning that this bullet has likely shattered or fragmented upon entering the patient.

Full metal jacket bullets should be non-deformed if they have not contacted bone. Soft nose bullets are designed to crumple, while hollow point are designed to expand.

44.

A trauma patient comes into the emergency room with a dislocation. Which of the following statements made by the patient indicates that they understand teaching about dislocations?

"A dislocation can require emergency treatment."

"While dislocations are uncomfortable, they are not medical emergencies."

"It is safe to try to pop the bone back in place at home myself."

"If I have a dislocation, I am more likely to fracture that bone in the future."

Correct answer: "A dislocation can require emergency treatment."

A dislocation can be an orthopedic emergency when it is associated with compromise of nearby vessels or nerves. Dislocations are not always medical emergencies, but they can be.

A patient should not be advised to attempt to reduce a dislocation by themselves, as there is a risk of causing vessel, nerve, or even organ damage if the reduction is not performed correctly. A dislocation may increase the risk of future dislocations, but does not significantly increase the risk of fracture of the affected bone.

45.

A wound is allowed to heal by remaining open and forming granulation tissue until it is healed. Which of the following best describes this approach?

Healing by secondary intention

Healing by primary intention

Healing by tertiary intention

Healing by quaternary intention

Correct answer: Healing by secondary intention

Healing by secondary intention describes wound healing where the wound remains open and forms granulation tissue until it is healed.

Healing by primary intention describes wound healing where the wound is surgically closed. Healing by tertiary intention describes wound healing where the wound initially remains open and forms granulation tissue, then is surgically closed.

There is no wound healing approach called healing by quaternary intention.

46.

The trauma nurse advocates for a burn patient who is unable to eat themselves to begin enteral tube feedings. Which of the following is not a rationale for beginning enteral tube feedings for this patient?

Makes ventilatory weaning possible

Decreases production of catabolic hormones

Improves nitrogen balance

Maintains gut mucosal integrity

Correct answer: Makes ventilatory weaning possible

Weaning from a mechanical ventilator is possible in a patient who is not receiving adequate nutrition, but may be more difficult in malnourished patients. Ultimately, nutritional status plays a small role in the ability to wean a ventilated patient.

Enteral feedings will decrease the production of catabolic hormones, improve nitrogen balance, and maintain gut mucosal integrity.

47.

A patient who has second and third degree burns to 18% of her body is brought to the emergency room. Which of the following pain treatment methods should the nurse anticipate will be used to manage this patient's pain?

Small and frequent doses of opioid medications

Nonpharmacologic methods followed by NSAIDs, with opioid medications for breakthrough pain

Topical lidocaine

Opioid medications administered PRN

Correct answer: Small and frequent doses of opioid medications

Pain management for burn patients is typically dependent upon narcotic-based medications. Often, small and frequent doses or a drip of these medications will be administered.

Topical lidocaine is not a normal pain treatment strategy for burn patients. The "low and slow" approach to pain medications is not typically followed for burn patients due to the high degree of pain these injuries create. The need for opioid medications can be anticipated, and a PRN approach is not normally used for severe burns.

48.

A patient has pain from compartment syndrome that is developing due to a pressure dressing that was placed on his left lower leg. The trauma nurse removes the pressure dressing, elevates the extremity, and provides cool packs to the patient.

Which of the following results should the trauma nurse expect from these interventions?

There may be some initial improvement, however, a fasciotomy will still probably be necessary

These interventions will not have any effect on the patient's discomfort

These interventions will likely be sufficient to eliminate developing compartment syndrome

If these interventions improve the patient's comfort, it indicates that the discomfort is not actually caused by compartment syndrome

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Correct answer: There may be some initial improvement, however, a fasciotomy will still probably be necessary

Certain interventions, such as removing restrictive bandages, elevating the extremity, and providing cooling packs may help to provide some temporary level of reduction in discomfort, however, they will not typically eliminate developing compartment syndrome, and surgical intervention will still be necessary in most situations.

Temporary improvement of the patient's discomfort does not indicate that the cause of the discomfort was not compartment syndrome.

49.

Which of the following is the least invasive way of effectively treating compartment syndrome?

Fasciotomy

Negative pressure applied to the compartment through a catheter

Cooling and elevating the extremity

Anti-inflammatory medications

Correct answer: Fasciotomy

A fasciotomy is the only way of effectively treating compartment syndrome. Fasciotomy involves surgically opening the compartment and leaving it open, typically covered with wet saline gauze.

Other less invasive treatments should not be used to treat compartment syndrome, as they will not be effective.

50.

The trauma nurse has calculated that a patient with severe burns will need 10,000mL of fluid over the first 24 hours. At what rate should this fluid be administered?

625 mL/hr for the first 8 hours, then 313 mL/hr for the next 16 hours

313 mL/hr for the first 16 hours, then 625 mL/hr for the next 8 hours

500 mL/hr for the first 8 hours, then 375 mL/hr for the next 16 hours

417 mL/hr

Correct answer: 625 mL/hr for the first 8 hours, then 313 mL/hr for the next 16 hours

The total amount of fluid to be given should be divided in half, then one half should be given over the first 8 hours and the second half should be given over the next 16 hours.

This 10,000 mL volume should be divided into two, 5,000 mL halves. Over 8 hours, this will equal a rate of 625 mL/h, and over the remaining 16 hours, this will equal 312.5mL/hr.

51.

The trauma nurse is providing teaching to a patient about different types of bone injuries. Which of the following statements by the patient indicates that they correctly understand the nurse's teaching?

"Subluxation is like an incomplete dislocation."

"Subluxation is a dislocation that affects a nerve or blood vessel."

"Subluxation is a combination of dislocation and fracture."

"Subluxation describes a fracture affecting a joint."

Correct answer: "Subluxation is like an incomplete dislocation."

A subluxation is movement of a joint out of its natural position, but not completely outside this natural positioning. A dislocation is a 100% subluxation and, while describing a subluxation as an incomplete dislocation may not be technically correct, as there is not such a thing as an incomplete dislocation, it does indicate understanding of the essence of the concept.

Subluxation does not describe a dislocation affecting a nerve or blood vessel and does not describe any form of fracture, although subluxations may accompany fractures.

52.

A patient has a traumatic injury that affects innervation at the level of C5-C7. Which of the following will this affect?

Flexion and extension of the arms

Flexion and extension of the legs

Flexion of the foot and extension of the toes

Tightening of the anus

Correct answer: Flexion and extension of the arms

Flexion and extension of the arms is affected by disruption of innervation at the level of C5-C7.

Flexion and extension of the legs is affected by disruption of innervation at the level of L2-L4. Flexion of the foot and extension of the toes is affected by disruption of innervation at the level of L4-L5. Tightening of the anus is affected by disruption of innervation at the level of S3-S4.

53.

A patient with a recent crush injury of the left lower leg is complaining of pain. If the patient is developing compartment syndrome, which of the following methods of pain management will be most effective?

Surgical intervention

NSAID pain medications

Narcotic pain medications

Elevation of the extremity

Correct answer: Surgical intervention

Patients with compartment syndrome often have pain that is unresponsive to pharmacological interventions.

While elevation of the extremity may help reduce edema by promoting the return of fluids to circulation via the lymphatic system, it will not help reduce intracompartmental swelling, as the edema within the compartment cannot easily move outside the compartment.

A fasciotomy (relieving pressure within the compartment) will be the only intervention that reduces intracompartmental pressure and the pain that it causes.

54.

Which of the following is not a factor that directly increases the risk of infection due to a fracture?

The presence of multiple fractures

A compound fracture

Poor nutritional status of the patient

Hyperglycemia

Correct answer: The presence of multiple fractures

Multiple fractures by themselves do not increase the risk of infection. They may increase the probability of other complications that could increase the risk of developing infection but, by themselves, are not a risk factor.

The presence of a compound fracture can allow bacterial access to the fracture site. Poor nutritional status of the patient or hyperglycemia also increases the risk of infection.

55.

Which of the following patients is at the lowest risk for infectious complications after a penetrating trauma?

Patients with a history of autoimmune disease

Patients who smoke

Patients with a history of renal failure

Patients who are older adults

Correct answer: Patients with a history of autoimmune disease

There are several factors that increase a patient's risk of developing an infection or a complication from an infection: advanced age, a history of renal failure, and a history of smoking or impaired oxygenation.

Patients who have a history of autoimmune disease are at the lowest risk of the different conditions described.

56.

A patient presents to the trauma center with burns covering his left arm. Which of the following creates the greatest risk to the limb?

Eschar formation

Fluid loss

Infection

Hypothermia

Correct answer: Eschar formation

Because the burn covers the entire arm, eschar formation is the greatest threat to the limb, as eschar can constrict the limb, decreasing circulation to the limb and causing the limb to suffer irreversible ischemic damage.

Fluid loss, infection, and hypothermia are all important considerations for the overall health of the patient but are not likely to cause a threat to the limb specifically.

57.

Which of the following descriptions of pain creates the highest suspicion for compartment syndrome?

Burning

Stabbing

Cramping

Stinging

Correct answer: Burning

The pain caused by compartment syndrome is most often described as burning or searing.

Compartment syndrome pain is not normally described as stabbing, cramping, or stinging and is often unresponsive to medication.

58.

A patient has splatter burns scattered on the front of their torso, front of each arm, and the front of their left leg. How can the trauma nurse best estimate the percentage of the patient's total body surface area (TBSA) that is burned?

By using the rule of palms

By using the rule of nines

By using the modified Lund and Browder Chart

By measuring each splatter burn

Correct answer: By using the rule of palms

The rule of palms is ideal for estimating the area burned for scattered burns. The rule of palms uses the palm and fingers of the patient's hand as being equivalent to 1% of their TBSA.

The rule of nines and the modified Lund and Browder Chart work better for estimating the surface area of a single large area. Measuring each splatter burn is not an estimation of the area, but a measurement.

59.

A trauma nurse is caring for a 78-year-old female who had a femur fracture after a ground-level fall. How long after the injury should the nurse continue to be alert for the possibility of fat embolism syndrome?

4 days

24 hours

48 hours

1 week

Correct answer: 4 days

The potential for severe respiratory compromise resulting from fat embolism syndrome exists for about 96 hours after the initial injury. After that time, the risk of fat embolism syndrome decreases significantly, and it is unlikely that fat embolism syndrome will cause complications after that point.

60.

The trauma nurse is caring for a patient whose clothing ignited due to a static discharge while he was pumping gas. The patient has burns covering the anterior upper torso, extending around both axial and covering the posterior upper torso.

Which of the following considerations by the trauma nurse is correct?

Be prepared to perform a surgical procedure at the bedside

Understand that infection is this patient's greatest risk

Be prepared to administer several liters of normal saline over the next 24 hours

Recognize that pain management is the highest priority for this patient

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Correct answer: Be prepared to perform a surgical procedure at the bedside

A patient who has circumferential burns around the upper torso may experience respiratory distress due to decreased chest wall compliance as eschar begins to form. The treatment for this will be to perform an escharotomy, which is a surgical procedure that can be done at the bedside.

Infection is not the greatest risk for this patient, as eschar formation can threaten his breathing, making this a more important risk. Lactated Ringers, not normal saline, should be given over the first 24 hours. Pain management is a priority; however, other life-sustaining measures are a greater priority for this patient.

61.

Which of the following is not a factor that increases the risk of nonunion of a fracture?

Use of citalopram

Loss of periosteum

Excessive motion at the fracture site

Smoking

Correct answer: Use of citalopram

There are several factors that can increase the risk of nonunion during fracture healing. These include loss of periosteum, excessive motion at the fracture site, smoking, and use of certain medications. Medications that increase the risk of nonunion, however, will tend to be medications that affect blood flow, such as NSAIDs.

Citalopram is not likely to increase the risk of nonunion.

62.

A patient is rescued from a structure fire and is brought to the ER. The patient has second degree burns to the anterior torso and forearms, shortness of breath, anxiety, severe pain over the burned area, a hoarse voice, and tachycardia.

Which of the following interventions is most important for this patient?

Intubate the patient

Begin administering fluids

Ensure the patient does not develop hypothermia

Treat the patient's pain

Correct answer: Intubate the patient

Shortness of breath, anxiety, and a hoarse voice are all indicators of inhalation injury. A patient with inhalation injury should be intubated early, before airway edema and injury inhibit breathing while simultaneously complicating intubation efforts.

Administering fluids, preventing hypothermia, and treating the patient's pain are all priorities, but are all less important than protecting the patient's airway.

63.

Which of the following is correct when considering inhalation injuries?

Inhalation injuries can occur with just the inhalation of heated air

Inhalation injuries only occur when the airway is directly exposed to a heat source

Inhalation injuries only occur with thermal burns

Inhalation injuries always involve heat damage to the lining of the lungs

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Correct answer: Inhalation injuries can occur with just the inhalation of heated air

Inhalation of heated air alone is sufficient to cause an inhalation injury.

Inhalation injuries do not require exposure of the airway directly to a heat source and can occur from chemical burns and, in rare cases, radiation burns. Inhalation injuries can involve inhalation of chemicals such as carbon monoxide, and do not always involve heat damage to the lining of the lungs.

64.

A patient presents to the emergency room with an open fracture of the tiba. The patient initially has intact pulses and neurological function distal to the joint, but six hours after, the area distal to injury begins to develop pallor, paresthesia, and poikilothermia.

Which of the following interventions should the trauma nurse recommend?

Measure intracompartmental pressures in the lower leg

X-ray of the affected extremity

CT of the affected extremity

Assess for hemorrhage at the injury site

Correct answer: Measure intracompartmental pressures in the lower leg

Compartment syndrome can develop after a facture, even if the fracture is open. This is caused by increased pressure inside intact compartments or inadequate opening of the compartment containing the open fracture that allows pressure to build up in the compartment, even after the compartment has been penetrated by a broken bone. Measuring intracompartmental pressures in the lower leg will indicate the presence of compartment syndrome.

X-ray or CT of the affected extremity may reveal neurovascular damage caused by the fracture, but it is unlikely that this would be a delayed finding after an open fracture. Hemorrhage at the injury site would have systemic effects, not only effects distal to the injury.

65.

A patient with an unstable pelvis is brought to the emergency room after being rescued from a small plane that crashed during landing. Which of the following interventions is most important for this patient?

Insert two large bore IVs

Assess for other fractures

Intubate the patient

Assess the patient's neurological status

Correct answer: Insert two large bore IVs

Pelvic fractures are associated with the highest amount of blood loss of any fracture type, with blood loss of up to 6 liters being a possibility. Ensuring that IV access is present will help to ensure that hypovolemia can be treated quickly.

Assessing for other fractures and assessing neurological status are important, but not as important as ensuring that the patient's circulation is maintained. Protecting the patient's airway is more important than circulation; however, there are no indications that intubation is a correct intervention for this patient.

66.

Which of the following would be considered a tertiary blast injury?

A broken femur caused by being thrown against a wall

Pulmonary barotrauma caused by the pressure wave

Third degree burns to the chest caused by thermal energy

Penetrating trauma to the skull caused by shrapnel

Correct answer: A broken femur caused by being thrown against a wall

There are five different types of blast injuries. Primary injuries are caused by the pressure wave the blast causes. Secondary injuries are caused by shrapnel from the explosive device or shrapnel created by the blast wave. Tertiary injuries are caused by the individuals involved being thrown by the blast wind or by structural collapses. Quaternary injuries are caused by other explosion-related injuries, such as thermal injuries, exposure to fumes, and other factors that occur during or immediately after the explosion. Quinary injuries are more long-term injuries associated with hazardous materials from the explosive, such as radioactive materials or infectious agents.

An injury caused by being thrown against a wall would be considered a tertiary injury.

67.

The trauma nurse is treating a patient with a crush injury of the left lower leg. What is the best method to monitor for potential compartment syndrome?

Monitor for any pain in the affected limb

Check the patient's pulses frequently

Monitor for loss of sensation in the affected limb

Monitor for the loss of motor function in the affected limb

Correct answer: Monitor for any pain in the affected limb

Pain is one of the earliest signs of compartment syndrome, and the pain and response to pain medication should both be continually assessed in a patient who may develop compartment syndrome.

Any sensory and motor function changes should also be monitored for, not just the complete loss of these neurological functions. A patient's pulses can still be present in a patient with compartment syndrome. The systolic blood pressure needed to create a pulse is much greater than the 30 mm Hg that starts to cause intracompartmental compression of the capillaries and muscle ischemia.

68.

A patient presents to the ER after his leg was crushed between a car and a wall. The patient has increasing pain that is not responding to opioid treatments, but there is no edema or swelling noted.

Which of the following interventions by the nurse is most important?

Notify the physician

Obtain an order for an X-ray of the leg

Check the pulses distal to the injury

Continue to monitor the patient

Correct answer: Notify the physician

Crushing injuries carry a high risk of developing compartment syndrome. An early sign of compartment syndrome is pain that is unresponsive to narcotics. Compartment syndrome can result in intracompartmental swelling that is not appreciated externally, and the lack of edema or swelling is not an indicator that compartment syndrome is not developing.

Intracompartmental pressures of 20-30 mm Hg begin to cause damage to the structures in the compartment; an intracompartmental pressure that is equal to diastolic blood pressure is needed to begin to affect the pulses. This makes changes to the pulse a late sign when compartment syndrome is already having irreversible effects. Checking the pulses is not as important as checking the intracompartmental pressures, which requires a physician.

Obtaining an order for an X-ray or continuing to monitor the patient is not indicated.

69.

Which of the following nutritional interventions is not recommended for a burn patient?

A diet very high in calories

A diet very high in protein

Zinc supplementation

Amino acid supplementation

Correct answer: A diet very high in calories

Overfeeding burn patients is associated with increased fat mass, increased need for ventilatory support, and lengthened intensive care stays. Excessive caloric intake should be avoided.

A high-protein diet will facilitate wound healing and should be encouraged. Zinc supplementation and amino acid supplementation, especially with glutamine, have both been shown to increase healing in burn patients.

70.

A trauma nurse uses the rule of palms to estimate the surface area of a burn. Which of the following correctly describes the rule of palms?

The area of the palm of the patient's hand and their fingers is equal to 1% of their total body surface area

The area of the palm of the nurse's hand is only equal to 1% of the patient's total body surface area

The area of the palm of the nurse's hand and their fingers is equal to 1% of the patient's total body surface area

The area of the palm of the patient's hand is only equal to 1% of their total body surface area

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Correct answer: The area of the palm of the patient's hand and their fingers is equal to 1% of their total body surface area

The rule of palms uses both the palm of the patient's hand and their fingers to measure their total body surface area (TBSA). This area is about 1% of the patient's TBSA, and this can be used to estimate the area of a burn.

71.

Upon initial assessment of a trauma patient, the trauma nurse only notes a scapula fracture. What other condition should trauma nurse consider as potentially likely?

Pulmonary contusion

Brachial artery injury

Spine injury

Popliteal artery injury

Correct answer: Pulmonary contusion

Scapula fractures are the result of a high amount of energy transferred, and major thoracic injuries often occur due to the energy transferred during the trauma. A pulmonary contusion should be considered among the thoracic injuries that may occur.

While spine injuries and brachial artery injury may occur concurrently with a scapula fracture, pulmonary contusion is more likely. Popliteal artery injury is unlikely to be associated with a scapula fracture.

72.

The nurse is assuming the care of a patient who has a fracture that is documented as open, comminuted, and displaced. Which of the following is not true about this fracture?

The bone is in two pieces

A piece of the fracture is out of alignment

Skin integrity over the fracture area is compromised

Bone may be visible

Correct answer: The bone is in two pieces

A comminuted fracture is a shattered area where the bone is fragmented into more than two pieces.

The fracture is displaced, meaning that at least one piece of the fracture is out of alignment. An open fracture means that skin integrity over the fracture area is compromised. While bone is not always visible with an open fracture, unlike a closed fracture, this is possible.

73.

A patient presents with a fracture in which the bone is bent. What type of fracture best describes this injury type?

Greenstick fracture

Comminuted fracture

Incomplete fracture

Open fracture

Correct answer: Greenstick fracture

A greenstick fracture describes a fracture in which the bone is bent and is typically experienced in patients whose bones are still growing.

A comminuted fracture is a fracture in which the fracture is fragmented into several pieces. An incomplete fracture is a fracture that does not completely transect the bone. While a greenstick fracture may be considered a type of incomplete fracture, a greenstick fracture better describes a fracture in which the bone is bent. An open fracture is one in which the skin is open above the area of the fracture.

74.

A student nurse asks the trauma nurse what crepitus is. Which of the following answers is best?

It is a crackling or popping sound that occurs when two tissues rub together abnormally.

It is when air gets trapped in subcutaneous tissues.

It is creaking of the bones.

It is a way of describing the spread of bacteria through a tissue.

Correct answer: It is a crackling or popping sound that occurs when two tissues rub together abnormally.

The term crepitus describes a crackling or popping sound or feeling that occurs when two tissues rub together abnormally and is primarily used in two situations. One is the grating of bones together, whether because of a fracture, in a patient with osteoarthritis, or due to another cause. The second is the sensation and sound caused by subcutaneous emphysema that occurs when air leaks into the subcutaneous tissues.

Air trapped in subcutaneous tissues describes subcutaneous emphysema, not crepitus. Crepitus is the sensation and sound caused by subcutaneous emphysema. Creaking of the bones may describe crepitus, but another answer is better, as it includes the consideration related to subcutaneous emphysema. The term crepitus is not way of describing the spread of bacteria through a tissue.

75.

The trauma nurse is being shadowed by a student nurse who asks what the difference is between a segmented fracture and a comminuted fracture. Which of the following responses is correct?

A segmented fracture involves multiple distinct fractures in the same bone while a comminuted fracture is a single fracture site with multiple fragments

A comminuted fracture involves multiple distinct fractures in the same bone while a segmented fracture is a single fracture site with multiple fragments

A segmented fracture involves multiple bones while a comminuted fracture only involves one

A comminuted fracture involves multiple bones while a segmented fracture only involves one

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Correct answer: A segmented fracture involves multiple distinct fractures in the same bone while a comminuted fracture is a single fracture site with multiple fragments

A segmented fracture occurs when there are multiple distinct fractures in the same bone, dividing it into segments. A comminuted fracture involves a single fracture site that creates multiple fragments.

Fractures are classified by individual bones, not multiple bones.

76.

The trauma nurse is assessing a patient who was the restrained front passenger in a motor vehicle accident (MVA). The MVA was high impact and there was passenger-compartment intrusion.

The trauma nurse recognizes that what type of fracture is most likely with this mechanism of injury?

Patella fracture

Wrist fracture

Scaphoid fracture

Vertebral compression fracture

Correct answer: Patella fracture

A high-impact MVA in which the passenger is unrestrained or in which passenger-compartment intrusion occurs, the knees and upper legs will be particularly affected. Patella, hip, and femur fractures are among the most common types of injuries that occur with this type of mechanism of injury.

Scaphoid and wrist fractures are more common with a falling onto outstretched hands (FOOSH) mechanism of injury. Vertebral compression fractures are more common where there is an axial loading mechanism of injury.

77.

A patient presents to the emergency room after heat exposure that has caused burns to the entire front of his torso, the front of his arms, the front of his legs, and to his genitals.

Using the rule of nines, what percentage of this patient's total body surface area is burned?

46%

45%

55%

54%

Correct answer: 46%

According to the rule of nines, each arm is 9%, each leg is 18%, the front upper torso is 9%, the front lower torso is 9%, and the genitals are 1%. As only the front half of his arms and legs are burned, the total surface are burned is: (4.5% x 2) + (9% x 2) + 9% + 9% + 1% = 46%.

78.

A patient weighing 165 pounds has burns covering both arms and the anterior and posterior thoracic area. What should be the starting rate of the IV fluids administered for this burn?

338 mL/hr

225 mL/hr

169 mL/hr

495 mL/hr

Correct answer: 338 mL/hr

The calculation to determine the amount of fluid that should be provided in the 24 hours after a burn is calculated by multiplying the patient's weight in kilograms by the percent of their total body surface area that has been burned. For this patient, 165 lb is equal to 75 kg (2.2 lb=1 kg). Using the rule of nines, the total body surface area burned is 36% The equation for this would be:

75 kg x 2 x 36 = 5,400 mL

Of this amount, half is given in the first eight hours, and half is given over the next sixteen hours. This means that 2,700 mL would be given in the first eight hours. To give 2,700 mL over eight hours, a rate of 337.5 mL/hr is required.

79.

Which of the following best describes an anteroposterior compression injury of the pelvis?

Injury to the pubis symphysis that causes the pelvis to spring open

Any injury to the pelvis that is caused by a force that is anterior- to posterior-directed

Direct pressure to an iliac wing causing internal rotation, which results in injury to the pubis symphysis and the sacroiliac joint of the affected side

A shearing force-related injury in which pelvic bones are likely to be markedly displaced

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Correct answer: Injury to the pubis symphysis that causes the pelvis to spring open

An anteroposterior compression injury of the pelvis results when an anterior force applied to the pelvis injures the pubis symphysis, causing the pelvis to spring open, which places strain on the bilateral sacroiliac joints and causes further pelvic instability.

While anteroposterior compression injury of the pelvis is caused by forces that are anterior- to posterior-directed, these forces will not always necessarily cause an anteroposterior compression injury. Direct pressure on an iliac wing causing internal rotation that causes injury at the pubis symphysis and the sacroiliac joint of the affected side describes a lateral compression injury, while a shearing force-related injury in which pelvic bones are likely to be markedly displaced describes a vertical shear injury.

80.

A patient presents to the emergency room with burns to 50% of her total body surface area (TBSA). She weighs 150 pounds.

How much fluid should she be given in the first eight hours?

3,400 mL

6,800 mL

15,000 mL

7,500 mL

Correct answer: 3,400 mL

The calculation to determine the amount of fluid that should be provided in the 24 hours after a burn is calculated by multiplying the patient's weight in kilograms by the percent of their total body surface area that has been burned. For this patient, 150 lb is equal to about 68 kg (2.2 lb=1 kg). The equation for this would be:

68 kg x 2 x 50 = 6,800 mL

Of this amount, half is given in the first eight hours, and half is given over the next sixteen hours. This means that 3,400 mL would be given in the first eight hours.

81.

Which of the following mechanisms or injuries is least likely to precipitate neurologic or vascular complications?

Torn ligament

Crushing mechanism

Dislocation

Closed fracture

Correct answer: Torn ligament

A torn ligament is called a sprain and is not likely to precipitate neurologic or vascular complications.

Dislocations, injuries caused by a crushing mechanism, and closed fractures can all have soft tissue effects that can lead to neurologic or vascular compromise.

82.

A 64-year-old male who was sunbathing on a beach fell asleep, wearing only shorts. The patient presents to the emergency room with extensive superficial burns over his entire anterior body, except for his genitals.

How would the trauma nurse document the percentage of total body surface area burned when using the fluid resuscitation formula?

0%

50%

49%

54%

Correct answer: 0%

When assessing the percentage of total body surface area burned to use the fluid resuscitation formula, the trauma nurse should only calculate partial-thickness or full-thickness burns. While the superficial burns may be extensive, fluid resuscitation is not necessary if there are no partial-thickness or full-thickness burns.

83.

A patient has an extensive crush injury and is developing compartment syndrome. What is the rationale for providing IV crystalloids to this patient?

To increase their renal blood flow production

To provide volume that assists with perfusion to the tissues

To draw accumulating fluid out of the compartments osmotically

In error, as IV fluids should not be administered to this patient

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Correct answer: To increase their renal blood flow production

Extensive crush injuries can cause rhabdomyolysis as muscle tissue breaks down, affecting renal function. Administering IV fluids will increase renal blood flow and urine production, protecting the kidneys from damage.

IV fluid can increase circulating volume, but this will not help provide additional perfusion of the affected areas in compartment syndrome. Compartment syndrome is typically caused by fluid or blood accumulating in the compartment due to damaged vascular structures, not an osmotic imbalance. Administering even a hypertonic IV fluid will not help treat compartment syndrome.

Clinical Practice: Head and Neck

84.

The nurse is assessing a patient's Glasgow Coma Score. Upon entering the patient's room, the patient spontaneously opens their eyes, but then closes them, only opening them again in response to verbal stimuli.

What score should the nurse assign for the patient's eye-opening response?

- **4**
- 5
- 3
- 2

Correct answer: 4

The patient's eye-opening response is scored on a scale of 4 to 1 and is scored based on the patient's best effort. Even though the patient may primarily only be opening their eyes to verbal stimuli, if they open their eyes spontaneously, they should be scored as a 4.

A score of 5 is not possible when evaluating a patient's eye-opening response using the GCS.

85.

A 42-year-old female presents after involvement in a motor vehicle accident with periorbital ecchymosis. Which of the following fractures is most likely to be present, given this finding?

Le Fort III

Le Fort I

Le Fort II

Mandibular fracture

Correct answer: Le Fort III

Le Fort fractures are facial fractures in which the midfacial skeletal structure partially or fully separates from the skull. A Le Fort III fracture is a transverse facial fracture that involves the orbits, causing periorbital ecchymosis, also called “raccoon eyes”.

A Le Fort I, Le Fort II, or a mandibular fracture is not likely to cause periorbital ecchymosis.

86.

The trauma nurse is assessing a patient with periorbital swelling who has recently received a paralytic agent. The nurse needs to assess the patient's Glasgow Coma Scale (GCS) score.

Which of the following approaches is correct?

Assess the GCS, but note the presence of periorbital swelling and recent use of a paralytic agent

Wait until the paralytic agent wears off to assess the GCS

Do not use the GCS to assess this patient

Use the GCS, but add 2 to the end score to compensate for interfering conditions

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Correct answer: Assess the GCS, but note the presence of periorbital swelling and recent use of a paralytic agent

The Glasgow Coma Scale (GCS) is a valuable and widely used clinical tool that can provide invaluable information. Using the GCS as an assessment tool should not be avoided just because there are interfering factors; however, these interfering factors should be noted.

The GCS should not be changed or adjusted because of the interfering conditions, and use of the GCS to assess a patient should not be delayed until medications wear off.

87.

Which of the following would electroencephalography not provide information about for the medical team?

Intracranial pressure

Seizure activity

Depth of sedation

Cerebral perfusion

Correct answer: Intracranial pressure

Electroencephalography (EEG) measures a patient's brainwaves and provides information about neurological activity. Seizure activity will create changes in electrical activity that can be detected on an EEG. The depth of sedation will also affect electrical activity in the brain, making EEG helpful in determining how deep sedation is.

Cerebral perfusion is not directly measured by EEG, but insufficiencies in cerebral perfusion do correlate with electrical activity in the brain.

Intracranial pressure (ICP) does not correlate with electrical activity in the brain, and while increased ICP will cause electrical changes, an EEG is not used to assess ICP levels.

88.

Which of the following fluids is best for a patient who has increased intracranial pressure (ICP)?

5% normal saline

0.9% normal saline

0.45% normal saline

5% dextrose

Correct answer: 5% normal saline

Hypertonic saline can draw fluid off of the brain and may avoid some of the negative effects of mannitol, such as hypotension. The brain, however, will adapt to permissive hypernatremia, and the efficacy of this treatment will be reduced after 48 hours.

0.9% normal saline and 5% dextrose are isotonic solutions and 0.45% normal saline is hypotonic. These solutions will not decrease ICP.

89.

When assessing a patient for cervical spine injury using the Canadian C-Spine Rule, which of the following is not considered a dangerous mechanism of injury?

Experiencing a motor vehicle accident with a 45 mph impact

Falling down a flight of stairs

Hitting one's head while diving

Riding a bicycle in a bicycle vs. car collision

Correct answer: Experiencing a motor vehicle accident with a 45 mph impact

According to the Canadian C-Spine Rule, a tool commonly used to clear the cervical spine, dangerous injuries include falling down five or more stairs, axial load to the head (including diving injuries), and riding a bicycle that is struck by a car.

A motor vehicle accident is considered a dangerous injury when there is a 100 kph (~60 mph) impact, rollover, or ejection.

90.

A patient presents after being struck in the head with a baseball bat. Which of the following describes the injury that occurs when the brain contacts the skull at the site of the impact?

Coup injury

Contrecoup injury

Rotation injury

Skull deformation

Correct answer: Coup injury

A coup injury occurs when the brain contacts the skull at the site of an impact due to the skull accelerating faster than the brain.

Contrecoup injuries occur when the brain contacts the skull on the site directly opposite of the impact as the brain accelerates away from the impact while the skull is decelerating. Rotation injury occurs when the brain twists along the axis of the spinal cord. Skull deformation may occur during blunt trauma to the head, but does not describe the injury in the question stem.

91.

A 34-year-old male is brought to the emergency room with subconjunctival hemorrhage after a motor vehicle accident. Which of the following is true about this injury?

It is likely to resolve without a lasting effect on vision

It is never associated with serious intraocular or orbital trauma

It is often associated with serious intraocular or orbital trauma

It is caused by eye disease, not by trauma

Correct answer: It is likely to resolve without a lasting effect on vision

Subconjunctival hemorrhage is bleeding within the conjunctiva. This may be caused by trauma, but the bleeding is normally reabsorbed within days to a few weeks and does not cause any lasting effects on vision.

Subconjunctival hemorrhage can be associated with serious intraocular or orbital trauma, but this is uncommon.

92.

A patient with blunt head trauma presents with rhinorrhea. Which of the following tests is the most reliable way to determine whether the drainage is cerebrospinal fluid (CSF)?

Test the drainage for beta-2 transferrin

Test the drainage for glucose

Test the drainage for a positive halo sign

Measure the patient's intracranial pressure (ICP)

Correct answer: Test the drainage for beta-2 transferrin

Beta-2 transferrin is specific to CSF and is considered the gold standard for determining whether drainage is CSF.

Testing for glucose is not the gold standard, but may be used as a quicker test. A halo sign is unreliable and not typically recommended. Measuring the ICP may be necessary but will not indicate whether the drainage is CSF.

93.

A student nurse asks the trauma nurse how cerebrospinal fluid (CSF) moves in the brain. Which of the following responses is best?

CSF flows in a single direction in the brain

CSF does not move in the brain

CSF circulates in the brain like blood does in the body

CSF moves back and forth between ventricles and other spaces randomly

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Correct answer: CSF flows in a single direction in the brain

CSF is produced in the choroid plexus and flows through the intracranial spaces unidirectionally until it is reabsorbed. It is not static, does not circulate in a circular fashion like blood, and does not move randomly.

94.

Anosmia after an injury indicates potential damage to which of the cranial nerves?

CN I

CN VII

CN XI

CN XII

Correct answer: CN I

Anosmia, or the loss of ability to smell, indicates damage to CN I, or the olfactory nerve.

CN VII, or the facial nerve, innervates the muscles controlling facial expression and the anterior two thirds of the tongue. CN XI, or the accessory nerve, innervates the sternocleidomastoid and trapezius muscles. CN XII, or the hypoglossal nerve, controls most motor functions of the tongue.

95.

Which of the following head injury complications is likely to lead to the most rapid deterioration?

Epidural hematoma

Acute subdural hematoma

Chronic subdural hematoma

Cerebral contusion

Correct answer: Epidural hematoma

An epidural hematoma is caused by arterial bleeding. Arterial bleeding has more force because of the pressure applied by systole. This leads to a more rapid accumulation of blood and more rapid deterioration than other injuries.

An acute subdural hematoma is a venous bleed. While an acute subdural hematoma can lead to a rapid deterioration in condition, this change will not typically be as rapid as an epidural hematoma. A chronic subdural hematoma will not tend to deteriorate rapidly. Cerebral contusion may cause hematomas, but will not by itself lead to rapid deterioration of a patient's condition.

96.

Which of the following intracranial pressure (ICP) situations creates the greatest likelihood of a poor outcome in a patient with head trauma?

An ICP that is sustained at 25 mmHg

An ICP that is 20 mm Hg and is not responsive to treatment

An ICP that spikes to 35 mmHg, but quickly resolves with treatment

An ICP that is sustained lower than 10 mm Hg

Correct answer: An ICP that is sustained at 25 mmHg

An ICP that is sustained above 22 mmHg and is not responsive to treatment is correlated with poor clinical outcomes in patients who have suffered head trauma. An ICP that is sustained above 22 mmHg will have a worse effect than a temporary spike in ICP that responds well to treatment.

A sustained low ICP is not a concern.

97.

A patient with a suspected spinal cord injury has a CT of the spine that finds no radiographic abnormalities. What type of spinal cord injury could this be?

A stretch-related injury

A cord contusion

An incomplete cord transection

No spinal cord injury

Correct answer: A stretch-related injury

Stretch-related spinal cord injuries occur when the spinal cord is stretched along its axis. Injuries caused by this mechanism of injury are often at the cellular level and may not appear on radiographic imaging.

A cord contusion and an incomplete cord transection will normally be visible on a CT scan. This finding does not mean that there is no spinal cord injury.

98.

Which of the following is not true when administering mannitol?

The mechanism of beneficial action for mannitol is well understood

Mannitol must be filtered prior to administration

Mannitol should be given through a central line whenever possible

Mannitol can be harmful if it leaks through the blood-brain barrier

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Correct answer: The mechanism of beneficial action for mannitol is well understood

Mannitol's mechanism of action is still not fully understood and is an area of medical debate. While the mechanism of action is still under research, it is known that mannitol has an osmotic effect that reduces intracranial pressure by pulling fluids from the brain into the bloodstream.

Mannitol can create solid condensate that must be filtered prior to administration, either by using a filtered needle or an inline filter. Mannitol should be given through a central line whenever possible because it can cause tissue damage due to its osmotic effect if it infiltrates. Injuries that cause permeability of the blood-brain barrier can allow mannitol to leak into the cerebrospinal fluid (CSF), causing osmotic effects that draw fluid into the CSF and having a harmful effect.

99.

Which of the following will decrease a patient's cerebral perfusion pressure?

Increased intracranial pressure

Increased mean arterial pressure

Increased systolic blood pressure

Increased atmospheric pressure

Correct answer: Increased intracranial pressure

Increased intracranial pressure (ICP) will cause a decrease in cerebral perfusion pressure (CPP) by countering mean arterial pressure (MAP).

CPP is calculated by subtracting ICP from MAP. An increase in MAP will increase CPP. An increase in systolic blood pressure will increase MAP, resulting in increased CPP.

Atmospheric pressure has no effect on ICP, as the cranial vault is a rigid container that is not affected by atmospheric pressure unless its integrity is disrupted.