



**ANSWER SHEET**

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|-------|-------|
| 1. B  | 26. B |
| 2. D  | 27. A |
| 3. B  | 28. C |
| 4. C  | 29. B |
| 5. B  | 30. B |
| 6. D  | 31. A |
| 7. B  | 32. B |
| 8. B  | 33. C |
| 9. D  | 34. B |
| 10. A | 35. A |
| 11. A | 36. A |
| 12. D | 37. B |
| 13. C | 38. A |
| 14. C | 39. B |
| 15. B | 40. B |
| 16. C | 41. B |
| 17. B | 42. C |
| 18. A | 43. B |
| 19. C | 44. D |
| 20. A | 45. A |
| 21. A | 46. C |
| 22. C | 47. B |
| 23. C | 48. B |
| 24. A | 49. C |
| 25. B | 50. C |



## ANSWER KEYS AND RATIONALE

### 1. Answer B

**Rationale:** The ITLS Reassessment Exam should be conducted after any intervention, movement of the patient, or if the patient's condition changes, to ensure the patient's status is properly monitored and any further interventions are performed as needed. It must be performed every 5 minutes in critical patients, and 15 minutes if not critical.

### 2. Answer D

**Rationale:** The "Cardiac Box" includes the area of the anterior chest bounded superiorly by the clavicles, laterally by the midclavicular lines, and inferiorly by a line drawn between the points where the midclavicular lines intersect the costal margins.

### 3. Answer B

**Rationale:** HEMS transport should be considered when it provides a significant advantage over ground transport in terms of timely delivery of the patient from the scene to definitive care.

### 4. Answer C

**Rationale:** REF. CARDIAC TAMPONADE SECTION. The principal differential diagnosis of tension pneumothorax is cardiac tamponade, and both injuries should be identified in the Primary Evaluation. In lower rib fractures, the presence of abdominal injuries should be ruled out.

### 5. Answer B

**Rationale:** Initial Assessment. This is particularly true in the geriatric population, who may have osteoarthritic and kyphotic changes and a neck that may not maintain a neutral alignment normally. It is important not to forcibly place the occiput on the backboard or ground in these patients. Padding may be used to help a kyphotic patient maintain a natural alignment during transport, especially if a supine position is required.



#### 6. Answer D

**Rationale:** ITLS Assessment of the Geriatric Patient. The assessment of an elderly trauma patient follows the algorithm as described in Chapter 2, bearing in mind the special considerations for an elderly trauma patient. They are as follows: There is a tendency to under triage an elderly trauma patient. The patient may not report symptoms accurately and comprehensively as they generally complain less. There may be difficulty in communication with an elderly patient due to sight and hearing impairment or an altered mental status. Be patient; allow the patient to report what happened before seeking a history from others. An elderly patient may underreport symptoms due to fear of losing independence. Be polite and courteous to develop a rapport, explore other underlying chronic illnesses, and clearly explain actions. In the assessment, be mindful that the elderly may not have the same response to pain, hypovolemia, and hypoxia as a younger person. Be observant of the environment, looking for clues to the injury and to possible abuse.

#### 7. Answer B

**Rationale:** “An ECP can reduce the rate of bleeding from a pelvic fracture by placing a pelvic binder. Pelvic binders function by bringing broken pieces of the posterior pelvis closer to normal position. The goal is to bring broken blood vessels into a more normal position and thus reduce the rate of blood loss in the pelvis”

#### 8. Answer B

**Rationale:** Use of Emergency Medical Dispatch and Prearrival Instructions. Emergency medical dispatch (EMD) is a system in which dispatchers can provide specific instructions to callers to help them deal with the emergency at hand until help arrives. Specific training is provided to dispatchers, who read a script to relay prearrival instructions to callers. For example, if a caller reports uncontrollable bleeding from a traumatic injury, a dispatcher provides instructions on how to control the bleeding. In addition, the system provides a dispatcher with the information necessary to send the appropriate response unit in a timely manner. For example, a dispatcher may determine that advanced life support is necessary opposed to basic life support. An ECP must remember that the dispatcher is relying on the information given, not seen. Therefore, the situation may be very different from what was reported. ECPs should always perform an ITLS assessment and maintain a high index of suspicion for occult injury.

#### 9. Answer D

**Rationale:** The approach to a trauma victim should always follow the ITLS assessment system, C-ABC, even if we suspect that we are dealing with a patient in cardiac arrest. In this case, it is essential not to lose more blood. Remember that if a tourniquet cannot be applied due to the location of the wound, it would be appropriate to apply a hemostatic agent.

**10. Answer A**

**Rationale:** Without devices that measure volume, the adult BVM should only be squeezed on one side using two or three fingers and a thumb, using only about one-third of the BVM. Unless indicated by the patient's condition (e.g., hypercapnia), normal volume (500 mL) and rate (10/min) should be used.

**11. Answer A**

**Rationale:** If the patient has an altered mental status, do a brief neurologic exam to identify possible increased intracranial pressure (ICP). This exam should include the pupils and Glasgow Coma Scale (GCS) score. All patients with altered mental status should have a finger-stick glucose test performed.

**12. Answer D**

**Rationale:** Blast injuries fit into one or more of five categories: Primary blast injury is the result of blast wave. Secondary blast injuries are when objects being propelled by the initial blast strike a patient. Tertiary blast injuries result from a patient being thrown from the initial blast. Quaternary blast injuries are caused by the heated gases and fire traveling through the air as the blast releases its energy. Quinary injuries result from hazards that the initial blast releases (Figure 1-5 and Table 1 -1.)

**13. Answer C**

**Rationale:** Medicine in the high-threat environment fundamentally differs from conventional prehospital care, both in the nature and timing of care provided. Medical decisions are modified based on the immediacy of threat and emphasize decreasing preventable deaths and avoiding death or injuries to the responders. Military data suggest that universal adoption of high-threat care guidelines can significantly reduce mortality and improve patient outcomes.

**14. Answer C**

**Rationale:** A shock index (HR/SBP) above 1.0 suggests significant hypoperfusion and the need for early intervention. Option B. Citation: "An elevated shock index (SI > 1), has been demonstrated to be an accurate predictor of resuscitative needs in a variety of patient populations."

**15. Answer B**

**Rationale:** In the event of traumatic cardiac arrest, our efforts must be focused on identifying the situation of cardiorespiratory arrest, the immediate initiation of resuscitation measures, and the search for possible reversible causes (looking for airway, respiratory, and cardiocirculatory causes - the Hs and Ts). In the clinical case described, with wounds in the chest and abdomen, the most frequent causes will be hypovolemia, acidosis (due to hemorrhage and hypoxia), and a wound that could cause cardiac tamponade. The presence of hyperkalemia would be more related to crush syndromes, which is not our case.

**16. Answer C**

**Rationale:** Amputations. Complete or partial amputations are conditions that often occur from severe traumatic insults, including combat or significant industrial accidents. They are associated with substantial morbidity and mortality and can limit activities of daily living. 3,4 The prehospital management of the injuries primarily includes hemorrhage control with direct pressure and tourniquet or junctional tourniquet placement.

**17. Answer B**

**Rationale:** In a low perfusion state, the ETCO<sub>2</sub> reading is expected to be low, typically below 20 mmHg, due to reduced blood flow to the lungs. Quote: "In low perfusion states you may have to adjust the scaling on your capnograph."

**18. Answer A**

**Rationale:** See the figure where the START Method appears in the chapter. The START method of triage was developed by Newport Beach Fire and Marine Department (NBFD) and Hoag Hospital in Newport Beach, California, in 1983. They designed the system to be taught to emergency responders "in ten seconds." The NBFD sought to increase effectiveness on the scene of MCIs by using "just in time" training techniques. The system was adequate, but often resulted in under triage by failing to recognize the severity of some injuries.

**19. Answer C**

**Rationale:** ITLS Assessment of the Pediatric Patient. (...) In the aftermath of a traumatic incident, a diminished level of consciousness in a child may hint at various medical issues, including hypoxia, shock, head injury, and seizure activity. In general, pain is a stimulus that makes the patient "alert" and is not directly related to a decrease in the level of consciousness, unless there are other accompanying injuries.

**20. Answer A**

**Rationale:** When the ICP increases, the systemic blood pressure increases to try to preserve blood flow to the brain. The body senses the rise in systemic blood pressure, and this triggers a drop in the pulse rate as the body tries to lower the systemic blood pressure.

**21. Answer A**

**Rationale:** There are factors associated with a better prognosis: the presence of vital signs on the arrival of the rescue team, cardiac motion on ultrasound examination, and a shockable rhythm. Other factors associated with a poor prognosis include distance to the hospital, dilated pupils, or no response to capnography after a period of resuscitation.



**22. Answer C**

**Rationale:** Direct pressure is the first-line treatment, followed by a tourniquet for uncontrolled bleeding, and wound packing for deep, junctional wounds. Citation: "The first step in addressing external, non-truncal hemorrhage is to apply direct pressure over the perceived source of bleeding."

**23. Answer: C**

**Rationale:** Closed fractures with deformity can be at risk of conversion to open fractures.

Quote: "Closed fractures with significant deformities and skin tenting are at high risk for conversion to open." (Chapter 11 - Extremity ...)

**24. Answer A**

**Rationale:** Special Considerations in Spinal Motion Restriction. Emergency rescue and rapid extrication. At times, patients must be removed from dangerous or life-threatening situations as quickly and safely as possible, or a patient is in extremis and requires immediate life-saving interventions. Unsafe scene situations that may necessitate emergency rescue and/or rapid extrication. Emergency Rescue is reserved for those situations in which there is immediate (within seconds) environmental threat to the life of the victim and/or emergency care responder. Patients should be moved to a safe area in a manner that places the emergency care responder at the least risk. Rapid extrication should be considered for patients whose medical conditions or situations require fast intervention (1 or 2 minutes— but not seconds) to prevent death. A fully alert patient with suspected spinal injury can be allowed to self-extricate if there are no distracting injuries or apparent signs of spinal cord injury.

**25. Answer B**

**Rationale:** Mechanism of Injury:

In a motor vehicle crash, multiple types of collisions can occur. The first collision happens when the vehicle strikes an object. The second collision occurs when the occupant impacts the interior of the vehicle (e.g., seatbelt, airbag, windshield). The third collision involves internal organs moving within the body. A fourth collision may occur in the brain as it rebounds within the skull, resulting in coup and contrecoup injuries. Additionally, secondary collisions occur when unsecured objects within the vehicle strike occupants, resulting in further injury.

**26. Answer B**

**Rationale:** The Aging Body. Respiratory System. Pulmonary function deteriorates in older adults. Pulmonary circulation decreases 30%, reducing the amount of carbon dioxide and oxygen exchanged at the alveoli. There is less functional residual capacity and vital capacity.

**27. Answer: A**

**Rationale:** The most critical non-pharmacological skills are: Repositioning misaligned fractures, Immobilizing fractures and/or the patient, Positioning on a scoop stretcher or vacuum mattress, and restoring comfort for the patient, Cooling, Warming the patient to restore comfort and avoid coagulopathy, and providing psychosocial support and empathic interaction with the patient.

And the benefits of these non-pharmacological skills are various: There is no need for additional resources in personnel or time for preparation. In most cases, the effect occurs immediately, Side effects and adverse events are more unlikely and usually directly reversible, Most of these measures are well evaluated and have proven benefit, Using non-pharmacological skills helps to reduce the amount of medication needed to reduce the pain level in an adequate way and cause less adverse effects (e.g., nausea, decreased RR, hypotension).

**28. Answer C**

**Rationale:** A complete spinal cord injury is defined as the total loss of all motor and sensory functions below the level of the injury, resulting in tetraplegia (quadriplegia) or paraplegia depending on the spinal level of the lesion. Neural pathways contained within the spinal cord cannot regenerate and in complete injuries the functional loss is permanent.

**29. Answer B**

**Rationale:** “While both hollow and solid organs are susceptible to serious injury by either penetrating or blunt trauma, the ECP should understand that solid organs are less compressible and thus more susceptible to injuries when subject to blunt force trauma”.

**30. Answer B**

**Rationale:** A key feature of heat stroke is that symptoms of neurologic dysfunction will be present. This may take the form of seizures, altered mental status, or unresponsiveness.

**31. Answer A**

**Rationale:** The SAMPLE history gathers vital information regarding the patient's current condition, medical history, and events leading up to the injury. (Signs and Symptoms, Allergies, Medications, Past Medical History, and Events leading to the present injury).

**32. Answer B**

**Rationale:** CHEST DECOMPRESSION. When a tension pneumothorax is decompressed with a needle, it releases the trapped air, alleviating the life-threatening pressure and converting the tension pneumothorax into a simple pneumothorax. This allows the lung to re-expand partially without the continued high pressure that compromises cardiovascular function. While it doesn't resolve the pneumothorax entirely, needle decompression effectively stabilizes the condition by converting it to a less severe form, a simple pneumothorax.

**33. Answer C**

**Rationale:** Vital Signs: During pregnancy, the heart must work harder to pump more blood to the uterus and placenta, leading to an increase in Heart Rate (HR). The average HR increases by approximately 10-15 beats per minute during pregnancy. During the first and second trimester, there may be a decrease in blood pressure (BP) of 5-10 mmHg due to decreased systemic vascular resistance caused by hormonal changes but may return to pre-pregnancy levels by the end of the second trimester.

**34. Answer B**

**Rationale:** Limit burn wound progression as much as possible. Rapid cooling early in the course of a surface burn injury can help limit this progression. Following removal from the source of the burn, the skin and clothing are still hot, and this heat continues to injure the tissues, causing an increase in burn depth and seriousness of the injury. Cooling halts this process and is beneficial if done appropriately. Cooling should be done with tap water or any source of clean room-temperature water, but it should be undertaken for no more than 5 to 10 minutes. Cooling for longer periods of time can induce hypothermia and subsequent shock. Do not use ice or ice water because this may induce hypothermia.

**35. Answer A**

**Rationale:** This is an example of internal, uncontrolled hemorrhage. Administer sufficient normal saline to maintain peripheral perfusion, following local or EMS agency medical direction policies. Maintaining peripheral perfusion is generally defined as giving enough fluid—usually in boluses—to return a peripheral pulse, such as a radial pulse.

**36. Answer A**

**Rationale:** Note whether the child is “working” to breathe, demonstrated by subcostal or suprasternal retractions, nasal flaring, or grunting. Look at the chest rise, listen for air going in and out, and feel the air coming out of the nose. If there is no movement, reposition the jaw to remove any anatomical obstruction. If you still do not sense any air exchange, you must breathe for the child. If you have any doubt that the child is breathing adequately on his or her own, immediately assist the child’s breathing.

**37. Answer B**

**Rationale:** “A positive FAST scan along with unstable vital signs will generally indicate an emergency/need for operative intervention to control hemorrhage. Likewise, a positive FAST with unstable vital signs may be an indication for emergent transfusion”. The injury mechanism does not suggest the indication of restriction of spinal movements, but since it is a penetrating trauma, it would also contraindicate it. Also, remember the concept of permissive hypotension (SBP above 90 mmHg) if there is no associated TBI (where the target SBP would be around 110 mmHg)

**38. Answer A**

**Rationale:** The Rapid Trauma Survey is used to identify life-threatening injuries in critical trauma patients and ensure they receive rapid transport to a trauma center for definitive care.

**39. Answer: B**

**Rationale:** Trauma triage criteria are designed to ensure patients are taken to the facility best equipped to handle their specific injuries, which improves patient outcomes and resource utilization. Citation: "Trauma triage criteria ensure the patient is transported to the facility best suited for the care of their specific injuries."

**40. Answer B**

**Rationale:** The definition of a mass casualty incident (MCI) is: "an event that overwhelms the local healthcare system, where the number of casualties vastly exceeds the local resources and capabilities in a short period of time." While this definition is simple, operationalizing it can be very difficult. Mass casualty events can include planned events (e.g., large sporting events or concerts), common recurrent events (e.g., motor vehicle crashes with more patients than the responding service can readily treat and transport), and uncommon events (e.g., building collapses, mass shooting/stabbings, natural disasters, etc.)

**41. Answer B**

**Rationale:** STEPS OF RAPID TRAUMA SURVEY. Examination of the pelvis is next. Palpate the pelvis by gently applying pressure at the hip joint (greater trochanters) and over the anterior iliac crest, and gently pressing down over the pubic symphysis. If any of these actions elicit pain, assume the patient has sustained a pelvic fracture. Once a possible pelvic fracture is identified, there is no need to palpate the pelvis again, as this may increase bleeding. Assign team member(s) to apply a pelvic binder in preparation for transport. If it were possible, briefly examine the perineum for signs of bleeding from the rectum or urethral meatus (if there's no bleeding, it doesn't rule out pelvic fracture).

**42. Answer C**

**Rationale:** Capnography, showing a square waveform, is considered the gold standard for confirming correct placement of a supraglottic airway. Quote: "ETCO<sub>2</sub> is always the gold standard for confirming proper placement."

**43. Answer B**

**Rationale:** The initial assessment is where it is identified that a patient is in cardiac arrest; it is the assessment that identifies life-threatening injuries: C-ABC.

**44. Answer D**

**Rationale:** Blast Lung: This is one of the most common and life-threatening primary blast injuries. The high-pressure wave compresses the chest, leading to alveolar rupture, pulmonary hemorrhage, and air embolism. Blast lung can result in respiratory distress, hypoxia, and respiratory failure

**45. Answer A**

**Rationale:** Hyperventilation actually has only a slight effect on brain swelling, but causes a significant decrease in cerebral perfusion from that same vasoconstriction, resulting in cerebral hypoxia. Thus, both hyperventilation and hypoventilation can cause cerebral ischemia and increased mortality in the TBI patient.

**46. Answer C**

**Rationale:** Answers A, B, and D are interventions for this patient; however, the ITLS Trauma Assessment is the most critical next step in identifying or ruling out life-threatening injuries, so C is the correct answer.

**47. Answer B**

**Rationale:** Key points involving the use of spinal motion restriction: Hard surface stretcher devices, especially the long spine board, should be used for extrication or patient transfer and not for transport, particularly in situations involving long transport times; patients should be transferred to a soft surface stretcher whenever and as soon as possible. Victims of penetrating trauma with no neurological signs do not require SMR. "Pulling traction" is not a prehospital option, and the term traction is not an appropriate description for motion restriction of the spine. Traction usually results in further instability of any spinal column injury.

**48. Answer B**

**Rationale:** The most serious and immediate injury that results from electrical contact is cardiac arrhythmia.

**49. Answer C**

**Rationale:** Hypovolemic shock victims usually have tachycardia, are pale, and have flat neck veins. So, if you find a trauma victim with a fast heart rate, who is pale, with weak radial pulses and flat neck veins, this patient is probably bleeding from some injury, either internally or externally (or possibly both).

**50. Answer C**

**Rationale:** The provider must take great care to prevent inadvertent hyperventilation (excessive volume), overventilation (excessive pressure), or hypoventilation. To perform high-performance ventilation, one must have meticulous control of the volume delivered and returned as well as the pressure and the rate of ventilation while remaining cognizant of gas exchange.