

# ATLS Practice Test 2

## Questions

1. A 22-year-old man sustains a gunshot wound to the left chest and is transported to a small community hospital at which surgical capabilities are not available. In the emergency department, a chest tube is inserted and 700 mL of blood is evacuated. The trauma center accepts the patient in transfer. Just before the patient is placed in the ambulance for transfer, his blood pressure decreases to 80/68 mm Hg and his heart rate increases to 136 beats per minute. The next step should be to
  - a. clamp the chest tube.
  - b. cancel the patient's transfer.
  - c. perform an emergency department thoracotomy.
  - d. repeat the primary survey and proceed with transfer.
  - e. delay the transfer until the referring doctor can contact a thoracic surgeon.
2. A young woman sustains a severe head injury as the result of a motor vehicle crash. In the emergency department, her GCS is 6. Her blood pressure is 140/90 mm Hg and her heart rate is 80 beats per minute. She is intubated and mechanically ventilated. Her pupils are 3 mm in size and equally reactive to light. There is no other apparent injury. The most important principle to follow in the early management of her head injury is to
  - a. avoid hypotension.
  - b. administer an osmotic diuretic.
  - c. aggressively treat systemic hypertension.
  - d. reduce metabolic requirements of the brain.
  - e. distinguish between intracranial hematoma and cerebral edema.
3. A 6-year-old boy walking across the street is struck by the front bumper of a sports utility vehicle traveling at 32 kph (20 mph). Which one of the following statements is **TRUE**?
  - a. A flail chest is probable.
  - b. A symptomatic cardiac contusion is expected.
  - c. A pulmonary contusion may be present in the absence of rib fractures.
  - d. Transection of the thoracic aorta is more likely than in an adult patient.
  - e. Rib fractures are commonly found in children with this mechanism of injury.
4. A 39-year-old man is admitted to the emergency department after an automobile collision. He is cyanotic, has insufficient respiratory effort, and has a GCS Score of 6. His full beard makes it difficult to fit the oxygen facemask to his face. The most appropriate next step is to

- a. perform a surgical cricothyroidotomy.
  - b. attempt nasotracheal intubation.
  - c. ventilate him with a bag-mask device until c-spine injury can be excluded.
  - d. attempt orotracheal intubation using two people and inline stabilization of the cervical spine.
  - e. ventilate the patient with a bag-mask device until his beard can be shaved for better mask fit.
5. A 42-year-old man is struck on the left temple during an assault. He has immediate blurring of vision in the left eye and progressive worsening over the next several hours. On examination 6 hours after injury his left visual acuity is counting fingers at 1 meter; right visual acuity is 20/20. The left pupil is sluggish with an afferent pupillary defect. The anterior segment appears normal and there is no evidence of globe rupture. Computed tomography of the head and orbit reveals a linear fracture of the left optic canal with a small bony fragment abutting the optic nerve within the optic canal but without hematoma elsewhere. There are no other life-threatening injuries. Which management strategy is most appropriate?
- a. Immediate surgical optic canal decompression to remove the bony fragment and decompress the optic nerve.
  - b. High-dose intravenous corticosteroid pulse therapy alone and observation for neurologic recovery.
  - c. Emergent lateral canthotomy and cantholysis to reduce orbital pressure before definitive treatment.
  - d. Conservative management with close observation and outpatient low-dose oral corticosteroids.
  - e. Urgent transfer for hyperbaric oxygen therapy as the primary intervention.
6. The following are contraindications for tetanus toxoid administration
- a. History of neurological reaction or severe hypersensitivity to the product.
  - b. Local side effects.
  - c. Muscular spasms.
  - d. Pregnancy.
  - e. All of the above.
7. After being involved in a motor vehicle crash, a 25-year-old man is brought to a hospital with a general surgeon on duty. He has a GCS of 13 and complains of abdominal pain. His blood pressure was 80 mm Hg systolic by palpation on arrival at the hospital, but increases to 110/70 mm Hg with the administration of 2 liters of balanced blood products. His heart rate remains 120 beats per minute. Computed tomography shows a splenic laceration with free abdominal fluid. His blood pressure falls to 70 mm Hg after CT. The next step is
- a. contrast angiography.
  - b. transfer to a higher level trauma center.
  - c. exploratory laparotomy.
  - d. transfuse packed red blood cells.
  - e. transesophageal echocardiography.

8. A 28-year-old woman presents after a stab wound to the neck with a 2-centimeter laceration just lateral to the midline at the level of the cricothyroid membrane. She is talking and swallowing, and there is no active external hemorrhage. She has a hoarse voice and minimal subcutaneous emphysema. Vital signs are within normal limits. What is the optimal next step in management?
- Immediate endotracheal intubation in the emergency department.
  - Proceed to computed tomography angiography of the neck with contrast and flexible fiberoptic laryngoscopy as indicated.
  - Apply local wound care and discharge with outpatient follow-up.
  - Perform emergent tracheostomy in the operating room.
  - Observe in the emergency department for six hours with serial examinations only.
9. All of the following are indications of inhalation injury, **EXCEPT**
- singeing of the eyebrows and nasal vibrissae.
  - carboxyhemoglobin level >4%.
  - carbon deposits in the mouth or nose, and carbonaceous sputum.
  - hoarseness.
  - face or neck burns.
10. A 28-year-old deployed service member has been recovered from a buried improvised explosive device explosion. He is unconscious, breathing at 6 breaths per minute, pulse 130 beats per minute, blood pressure 80/40 mm Hg. There is soot around the mouth and nose and facial singeing. The left hemithorax is silent to auscultation with reduced chest rise on the left. The trachea is deviated slightly to the right. The team has a laryngoscope, basic airway kit, a needle chest decompression kit, and there is a sterile scalpel. Chest tube instruments are not available. Evacuation will take at least two hours. What is the single best immediate intervention to maximize his chance of survival?
- Attempt oral endotracheal intubation now and then reassess the chest.
  - Perform needle chest decompression of the left hemithorax and then proceed to endotracheal intubation.
  - Perform a left-sided finger thoracostomy (open chest entry through the chest wall) immediately and then secure the airway.
  - Establish a surgical cricothyroidotomy because facial burns make oral intubation likely to fail.
  - Begin controlled positive pressure ventilation with a bag and mask only and defer invasive airway or thoracic interventions until arrival at a surgical facility.
11. A patient arrives in the emergency department after being beaten about the head and face with a wooden club. He is comatose and has a palpable depressed skull fracture. His face is swollen and ecchymotic. He has gurgling respirations and vomitus on his face and clothing. The most appropriate step after providing supplemental oxygen and elevating his jaw is to

- a. request a CT scan.
  - b. insert a gastric tube.
  - c. suction the oropharynx.
  - d. obtain a lateral cervical spine x-ray.
  - e. ventilate the patient with a bag-mask.
12. A 64-year-old man, involved in a high-speed car crash, is resuscitated initially in a small hospital with limited resources. He has a closed head injury with a GCS Score of 13. He has a widened mediastinum on chest X-ray with fractures of left ribs 2 through 4, but no pneumothorax. After infusing 2 liters of balanced blood products, his blood pressure is 100/74 mm Hg, heart rate is 110 beats per minute, and respiratory rate is 18 breaths per minute. He has gross hematuria and a pelvic fracture. You decide to transfer this patient to a facility capable of providing a higher level of care. The facility is 128 km (80 miles) away. Before transfer, you should first
- a. intubate the patient.
  - b. perform diagnostic peritoneal lavage.
  - c. apply the pneumatic antishock garment.
  - d. call the receiving hospital and speak to the surgeon on call.
  - e. discuss the advisability of transfer with the patient's family.
13. During the third trimester of pregnancy, all of the following changes occur normally, **EXCEPT**
- a. decrease in PaCO<sub>2</sub>.
  - b. decrease in leukocyte count.
  - c. reduced gastric emptying rate.
  - d. diminished residual lung volume.
  - e. diminished pelvic ligament tension.
14. A 28-year-old pedestrian is brought to the trauma resuscitation area after being struck by a vehicle. He is conscious but drowsy, responds to painful stimuli, and opens his eyes only to pain. He has massive midface fractures with severe oronasal bleeding and anticipated difficult mask ventilation. His breathing is shallow and oxygen saturation is 78% on high-flow supplemental oxygen by face mask. His systolic blood pressure is 110 mm Hg and his heart rate is 120 beats per minute. A computed tomography scan would be desirable to assess the brain for hemorrhage, but the patient is deteriorating. Which airway strategy is most appropriate now?
- a. Awake oral fiberoptic intubation performed in the trauma bay with topical anesthesia and sedation.
  - b. Rapid sequence induction followed by orotracheal intubation using direct laryngoscopy.
  - c. Surgical cricothyroidotomy at the bedside with subsequent ventilation.
  - d. Nasotracheal intubation using blind technique in the trauma bay.
  - e. Immediate transfer to the operating room for tracheostomy under controlled conditions before airway instrumentation.

15. A 29-year-old man is brought to the emergency department after a workplace explosion involving compressed air. He was not wearing hearing protection. He reports acute left ear pain, immediate hearing loss, vertigo, and nausea. He denies loss of consciousness. Vital signs are stable. Primary survey is unremarkable. During secondary survey, otoscopic examination reveals a large central perforation of the left tympanic membrane with surrounding hemorrhage. Clear fluid is intermittently noted in the external auditory canal. Facial movement is symmetric, but tuning fork testing demonstrates lateralization to the right ear. There is no visible hemotympanum. Computed tomographic imaging of the head performed for associated trauma shows no skull fracture. Which of the following is the **most appropriate next step in management**?
- Administer topical aminoglycoside ear drops and perform gentle irrigation to prevent infectious complications.
  - Pack the external auditory canal with gauze to control otorrhea and allow spontaneous membrane healing.
  - Maintain the ear dry, avoid instrumentation, and obtain urgent otolaryngology consultation for evaluation of possible inner ear injury.
  - Begin prophylactic systemic antibiotics due to the high risk of ascending meningitis.
  - Perform bedside tympanic membrane repair using tissue adhesive to restore the conductive hearing pathway.
16. A 6-year-old boy is brought to the emergency department after being involved in a high-speed motor vehicle collision. He was restrained in a forward-facing car seat. On arrival, he is alert and crying. Initial vital signs are stable. Primary survey reveals no airway compromise or external hemorrhage. During secondary survey, he reports tingling in both hands and difficulty moving his legs. Physical examination demonstrates bilateral upper extremity weakness graded 4 out of 5, bilateral lower extremity weakness graded 2 out of 5, and decreased pinprick sensation below the level of the nipples. Rectal tone is reduced. Plain radiographs of the cervical, thoracic, and lumbar spine show normal alignment with no fractures or dislocations. Computed tomographic imaging of the entire spine is also interpreted as normal. After spinal immobilization and hemodynamic stabilization, which of the following statements most accurately reflects the current evidence-based understanding of diagnosis, mechanism, and early management of this patient's condition?
- The absence of bony or ligamentous injury on computed tomographic imaging effectively excludes clinically significant spinal cord injury, making functional neurologic symptoms the most likely explanation.
  - The injury is most consistent with transient spinal cord concussion, and early mobilization without further imaging is recommended once symptoms begin to improve.
  - This condition is primarily caused by longitudinal distraction forces leading to complete spinal cord transection, which explains the delayed neurologic deterioration.
  - Early magnetic resonance imaging is essential to identify intramedullary pathology, guide prognosis, and determine the duration of spinal immobilization.
  - High-dose corticosteroid therapy initiated within 8 hours is the cornerstone of treatment and has been shown to improve long-term neurologic outcomes in pediatric patients.

17. A 45-year-old woman presents after a single stab wound to the left lower quadrant of the abdomen from an assault. On arrival she is hemodynamically stable: heart rate 92 beats per minute, blood pressure 128/78 mm Hg. She has localized tenderness at the wound site and a small penetrating tract. Her focused abdominal sonography for trauma examination shows a small amount of free fluid isolated to the pelvis. Laboratory values show a hemoglobin level within institutional normal limits and a normal white blood cell count. Computed tomography of the abdomen and pelvis with intravenous contrast demonstrates a puncture tract through the anterior abdominal wall into the peritoneal cavity with a small volume of pelvic fluid but no clear organ laceration or active intraperitoneal contrast extravasation. What is the most appropriate next management?
- Admit for nonoperative observation with serial physical examinations and repeat imaging as needed.
  - Perform immediate exploratory laparotomy in the operating room.
  - Proceed to diagnostic laparoscopy in the operating room to directly inspect the bowel and peritoneal cavity.
  - Perform local wound exploration at bedside and, if positive for peritoneal violation, continue nonoperative management.
  - Arrange for interventional radiology consultation for diagnostic and possible therapeutic angiography.
18. A 56-year-old man was found unresponsive after a fall from an unknown height. Emergency medical services arrive and note a Glasgow Coma Scale score of 7 with spontaneous respirations at 10 breaths per minute. He is intubated in the field. Initial blood pressure on arrival to the trauma center is 102/64 mm Hg and heart rate 112 beats per minute. Noncontrast head computed tomography demonstrates a 6-millimeter acute subdural hematoma with 8 millimeters midline shift and signs of uncal herniation on the left. Laboratory tests return with platelet count 48,000 per microliter, international normalized ratio 2.2, and hemoglobin 112 grams per liter. The nearest neurosurgical operating room is five minutes away within the same hospital. Massive transfusion protocol is available. Which of the following is the single most appropriate immediate action?
- Administer intravenous hypertonic saline bolus and prepare for immediate neurosurgical decompression while concurrently reversing coagulopathy with platelets and prothrombin complex concentrate.
  - Transfer the patient emergently to the nearest higher-level trauma center with neurosurgical capability.
  - Give two units of uncrossmatched packed red blood cells first, then proceed to platelet transfusion and prothrombin complex concentrate.
  - Defer urgent neurosurgical intervention until the international normalized ratio is below 1.5 and platelet count is above 100,000 per microliter.
  - Administer fresh frozen plasma and wait 30 minutes to reassess international normalized ratio before commencing neurosurgery.

19. A 20-year-old woman, at 32 weeks gestation, is stabbed in the upper right chest. In the emergency department, her blood pressure is 80/60 mm Hg. She is gasping for breath, extremely anxious, and yelling for help. Breath sounds are diminished in the right chest. The most appropriate first step is to
- perform tracheal intubation.
  - insert an oropharyngeal airway.
  - perform needle decompression of the right chest.
  - manually displace the gravid uterus to the left side of the abdomen.
  - initiate 2 large-caliber peripheral IV lines and crystalloid infusion.
20. A 34-year-old woman is brought to the emergency department after a motorcycle collision with a truck. On arrival, she is pale and diaphoretic. She responds only to painful stimuli. Vital signs are as follows: heart rate 142 beats per minute, blood pressure 62/38 mm Hg, respiratory rate 30 breaths per minute, oxygen saturation 94% with high-flow oxygen. Focused assessment with sonography in trauma demonstrates free fluid in the pelvis but no pericardial effusion. Pelvic binder is applied. Two large-bore intravenous lines are established, and massive transfusion is initiated. Despite transfusion of uncrossmatched blood, her systolic blood pressure remains below 70 mm Hg. The trauma team considers resuscitative endovascular balloon occlusion of the aorta (REBOA) as a bridge to definitive surgical hemorrhage control. Which of the following statements **best reflects current evidence-based practice** and **physiologic principles** guiding its use in this patient?
- Zone 3 (between the lowest renal artery and the aortic bifurcation) balloon occlusion is preferred because it augments coronary perfusion while minimizing ischemia to abdominal organs.
  - Resuscitative endovascular balloon occlusion of the aorta should be avoided because focused assessment with sonography in trauma cannot localize the bleeding source precisely.
  - Zone 1 (between the left subclavian artery and the celiac artery) balloon occlusion is appropriate, but complete occlusion should be limited in duration to reduce the risk of ischemia-reperfusion injury.
  - Partial balloon occlusion offers no physiologic advantage over complete occlusion in patients with profound hemorrhagic shock.
  - Resuscitative endovascular balloon occlusion of the aorta definitively controls pelvic hemorrhage and eliminates the need for operative or interventional radiology management.
21. A trauma patient presents to your emergency department with inspiratory stridor and a suspected c-spine injury. Oxygen saturation is 88% on high-flow oxygen via a nonrebreathing mask. The most appropriate next step is to
- apply cervical traction.
  - perform immediate tracheostomy.
  - insert bilateral thoracostomy tubes.
  - maintain 100% oxygen and obtain immediate c-spine x-rays.
  - maintain inline immobilization and establish a definitive airway.

22. When applying the Rule of Nines to infants,
- it is not reliable.
  - the body is proportionally larger in infants than in adults.
  - the head is proportionally larger in infants than in adults.
  - the legs are proportionally larger in infants than in adults.
  - the arms are proportionally larger in infants than in adults.
23. A 60-year-old man sustains a stab wound to the right posterior flank. Witnesses state the weapon was a small knife. His heart rate is 90 beats per minute, blood pressure is 128/72 mm Hg, and respiratory rate is 24 breaths per minute. The most appropriate action to take at this time is to
- perform a colonoscopy.
  - perform a barium enema.
  - perform an intravenous pyelogram.
  - perform serial physical examinations.
  - suture repair the wound and outpatient follow up.
24. The following are criteria for transfer to a burn center, **EXCEPT** for
- Partial-thickness and full-thickness burns on greater than 10% of the BSA
  - Any full-thickness burn
  - Partial-thickness and full-thickness burns involving the face, hands, feet, genitalia, perineum, and skin overlying major joints
  - Elevated central venous pressure
  - Inhalation injury
25. A 46-year-old man is brought to the emergency department after a high-speed motor vehicle collision. He is sitting upright, anxious, and repeatedly spitting blood-tinged saliva. He answers questions appropriately in short sentences. Vital signs are heart rate 118 beats per minute, blood pressure 148/92 mm Hg, respiratory rate 26 breaths per minute, oxygen saturation 96% on room air. Physical examination reveals extensive mandibular instability, avulsed teeth, progressive sublingual swelling, and a hoarse voice. There is no stridor. Cervical spine motion is restricted manually. The trauma team plans an awake intubation due to anticipated difficulty with mask ventilation and loss of airway tone if sedated. Which of the following strategies is **most appropriate** to maximize success while minimizing catastrophic airway loss in this patient?
- Proceed with awake oral intubation using a flexible fiberoptic bronchoscope after generous topical anesthesia and antisialagogue administration, maintaining spontaneous ventilation throughout.
  - Administer ketamine for dissociative sedation, followed by video laryngoscopy with inline cervical stabilization.
  - Perform awake nasotracheal intubation using a flexible fiberoptic bronchoscope because nasal access improves glottic visualization in mandibular trauma.
  - Apply topical anesthesia only to the oropharynx and perform direct laryngoscopy once the patient tolerates a laryngoscope blade.
  - Prepare for immediate surgical airway.



26. A 9-month-old girl is brought to the emergency department by her father for decreased feeding and irritability over two days. He reports that she rolled off a low mattress onto a carpeted floor. There was no reported loss of consciousness. Vital signs are normal. Physical examination reveals mild fussiness, no scalp swelling, and a faint bruise over the left cheek that the father attributes to teething toys. Neurologic examination is otherwise nonfocal. Computed tomography of the head without contrast demonstrates a small right-sided subdural hematoma without midline shift. Skeletal survey reveals a healing fracture of the right clavicle. Coagulation studies are normal. Which of the following features most strongly supports **non-accidental trauma** rather than an accidental fall?
- Absence of loss of consciousness after the reported fall
  - Small size of the subdural hematoma
  - Presence of a healing clavicle fracture
  - Normal vital signs on presentation
  - History of a fall from a low height
27. For the patient with severe traumatic brain injury, profound hypocarbia should be avoided to prevent
- respiratory alkalosis.
  - metabolic acidosis.
  - cerebral vasoconstriction with diminished perfusion.
  - neurogenic pulmonary edema.
  - shift of the oxyhemoglobin dissociation curve.
28. A 33-year-old woman is involved in a head-on motor vehicle crash. It took 30 minutes to extricate her from the car. Upon arrival in the emergency department, her heart rate is 120 beats per minute, BP is 90/70 mm Hg, respiratory rate is 16 breaths per minute, and her GCS Score is 15. Examination reveals bilaterally equal breath sounds, anterior chest wall ecchymosis, and distended neck veins. Her abdomen is flat, soft, and not tender. Her pelvis is stable. Palpable distal pulses are found in all 4 extremities. Of the following, the most likely diagnosis is
- hemorrhagic shock
  - cardiac tamponade
  - massive hemothorax
  - tension pneumothorax
  - diaphragmatic rupture
29. A hemodynamically normal 10-year-old girl is admitted to the Pediatric Intensive Care Unit (PICU) for observation after a Grade III (moderately severe) splenic injury has been confirmed by computed tomography (CT). Which of the following mandates prompt laparotomy?
- A serum amylase of 200.
  - A leukocyte count of 14,000.
  - Extraperitoneal bladder rupture.
  - Free intraperitoneal air demonstrated on follow-up CT.
  - A fall in the hemoglobin level from 12 g/dL to 8 g/dL over 24 hours.

30. A 40-year-old female restrained driver is transported to the emergency department in full spinal immobilization. She is hemodynamically normal and found to be paraplegic at the level of T10. Neurologic examination also determines that there is loss of pain and temperature sensation with preservation of proprioception and vibration. These findings are consistent with the diagnosis of
- central cord syndrome
  - spinal shock syndrome
  - anterior cord syndrome
  - complete cord syndrome
  - Brown-Séquard syndrome
31. Hemorrhage of 20% of the patient's blood volume is associated usually with
- oliguria
  - confusion
  - hypotension
  - tachycardia
  - blood transfusion requirement
32. A 35-year-old female presents to the emergency department after a low-speed motorcycle crash. She was wearing protective gear and did not lose consciousness. Vital signs are as follows: heart rate 94 beats per minute, blood pressure 128/78 mm Hg, respiratory rate 18 breaths per minute, oxygen saturation 99% on room air. Primary survey is unremarkable. Secondary survey reveals a deep-appearing abrasion over the right lateral thigh with embedded road debris and surrounding erythema. There is no active bleeding, no exposed fascia, and no evidence of fracture. Distal pulses are intact, and neurologic examination is normal. Plain radiographs of the femur show no fracture. The wound is copiously irrigated, mechanically debrided at the bedside, and dressed. The patient is otherwise healthy, with no history of diabetes mellitus, immunosuppression, or chronic kidney disease. Which of the following management decisions is most appropriate?
- Administer systemic broad-spectrum antibiotics for forty eight hours due to heavy contamination.
  - Initiate oral antibiotics for five days to prevent soft tissue infection
  - Withhold systemic antibiotics and manage with local wound care alone
  - Administer a single dose of intravenous antibiotics prior to discharge
  - Begin antibiotics only if erythema persists beyond twenty four hours
33. A 66-year-old man is admitted to the trauma intensive care unit after a high-speed motor vehicle collision. He sustained bilateral pulmonary contusions and multiple rib fractures. He is intubated for hypoxemic respiratory failure. Mechanical ventilation is initiated with volume-controlled ventilation using a tidal volume of 6 milliliters per kilogram of predicted body weight, respiratory rate 22 breaths per minute, fraction of inspired oxygen 0.6, and positive end-expiratory pressure of 5 centimeters of water. Two hours later, his arterial blood gas shows a partial pressure of oxygen of 58 millimeters of mercury. Plateau pressure is 26 centimeters of water. Blood pressure is 108/64 mm Hg with no vasopressor support. There is no pneumothorax on repeat chest radiograph. Which of the following ventilator adjustments is the most appropriate next step to improve oxygenation while minimizing secondary injury?

- a. Increase tidal volume to 8 milliliters per kilogram to improve alveolar ventilation.
  - b. Increase positive end expiratory pressure to 10 centimeters of water.
  - c. Increase fraction of inspired oxygen to 1.0 without changing other settings.
  - d. Decrease respiratory rate to reduce intrinsic positive end expiratory pressure.
  - e. Switch to pressure-controlled ventilation with higher inspiratory pressures.
34. Which one of the following situations requires Rh immunoglobulin administration to an injured woman?
- a. Negative pregnancy test, Rh negative, and torso trauma.
  - b. Positive pregnancy test, Rh positive, and has torso trauma.
  - c. Positive pregnancy test, Rh negative, and has torso trauma.
  - d. Positive pregnancy test, Rh positive, and has an isolated wrist fracture.
  - e. Positive pregnancy test, Rh negative, and has an isolated wrist fracture.
35. A 22-year-old man is hypotensive and tachycardic after a shotgun wound to the left shoulder. His blood pressure is initially 80/40 mm Hg. After 2 liters of balanced blood products his blood pressure increases to 122/84 mm Hg. His heart rate is now 100 beats per minute and his respiratory rate is 28 breaths per minute. His breath sounds are decreased in the left hemithorax, and after initial IV fluid resuscitation, a closed tube thoracostomy is performed for decreased left breath sounds with the return of a small amount of blood and no air leak. After chest tube insertion, the most appropriate next step is
- a. reexamine the chest.
  - b. perform an aortogram.
  - c. obtain a CT scan of the chest.
  - d. obtain arterial blood gas analyses.
  - e. perform transesophageal echocardiography.
36. A construction worker falls two stories from a building and sustains bilateral calcaneal fractures. In the emergency department, he is alert, vital signs are normal, and he is complaining of severe pain in both heels and his lower back. Lower extremity pulses are strong and there is no other deformity. The suspected diagnosis is most likely to be confirmed by
- a. angiography.
  - b. compartment pressures.
  - c. retrograde urethrogram.
  - d. doppler-ultrasound studies.
  - e. complete spine X-ray series.
37. A 22-year-old female athlete is stabbed in her left chest at the third interspace in the anterior axillary line. On admission to the emergency department and 15 minutes after the incident, she is awake and alert. Her heart rate is 100 beats per minute, blood pressure 80/60 mm Hg, and respiratory rate 20 breaths per minute. A chest x-ray reveals a large left hemothorax. A left chest tube is placed with an immediate return of 1600 mL of blood. The next management step for this patient is

- a. perform a thoracoscopy.
  - b. perform an arch aortogram.
  - c. insert a second left chest tube.
  - d. prepare for an exploratory thoracotomy.
  - e. perform a chest CT.
38. A 67-year-old man is brought to the emergency department after falling down a flight of stairs. Prehospital personnel report a witnessed loss of consciousness lasting approximately two minutes. On arrival, his Glasgow Coma Scale score is 13. Vital signs are heart rate 88 beats per minute, blood pressure 178/92 mm Hg, respiratory rate 16 breaths per minute, oxygen saturation 98% on room air. Neurologic examination reveals confusion and a right-sided pronator drift. Pupils are equal and reactive. There are no signs of external head bleeding. Computed tomography of the head without contrast demonstrates a left-sided acute subdural hematoma measuring eight millimeters in thickness with four millimeters of midline shift. Basal cisterns are partially effaced. There is no intraparenchymal hemorrhage. During observation in the trauma bay, the patient becomes progressively somnolent, with a repeat Glasgow Coma Scale score of 10. Which of the following is the **most appropriate next step in management**?
- a. Administer hypertonic saline and continue close neurologic monitoring.
  - b. Intubate for airway protection and obtain repeat computed tomography in six hours.
  - c. Administer mannitol and delay intervention until neurosurgical consultation.
  - d. Emergent neurosurgical decompression.
  - e. Lower blood pressure aggressively to reduce intracranial bleeding.
39. A 41-year-old electrician is brought to the emergency department after accidental contact with a high-voltage power line at a construction site. Coworkers report a brief loss of consciousness followed by spontaneous awakening. On arrival, he is alert but complains of severe bilateral calf pain. Vital signs are heart rate 106 beats per minute, blood pressure 132/84 mm Hg, respiratory rate 18 breaths per minute, oxygen saturation 99% on room air. Physical examination reveals small charred wounds on the right palm and left heel. The lower extremities appear swollen and tense but are warm with palpable distal pulses. Sensation is intact. No fractures are identified on plain radiographs. Initial laboratory testing shows a creatine kinase level of 18,000 units per liter and a serum potassium level of 5.6 millimoles per liter. Urine is dark brown. Which of the following is the **most appropriate immediate management step**?
- a. Emergent bilateral lower extremity fasciotomies based on laboratory findings
  - b. Aggressive intravenous crystalloid resuscitation with urine alkalinization
  - c. Observation with serial laboratory testing and electrocardiographic monitoring
  - d. Administration of calcium gluconate for hyperkalemia
  - e. Computed tomography angiography of the lower extremities

40. A 26-year-old man sustains a close-range gunshot wound to the left lower chest during an assault. Prehospital personnel report one episode of transient hypotension that responded to crystalloid administration. On arrival, he is alert and speaking in full sentences. Vital signs are heart rate 112 beats per minute, blood pressure 104/68 mm Hg, respiratory rate 24 breaths per minute, oxygen saturation 96% on supplemental oxygen. Primary survey reveals equal bilateral breath sounds and no external hemorrhage. There is a single entry wound at the left eighth intercostal space along the posterior axillary line. No exit wound is identified. The abdomen is soft but mildly tender in the left upper quadrant without guarding. Focused assessment with sonography for trauma demonstrates a small amount of free fluid in the left upper quadrant only. A portable chest radiograph shows no pneumothorax and no retained projectile. Laboratory testing reveals a hemoglobin concentration of 12.6 grams per deciliter and a normal lactate level. Which of the following is the **most appropriate next management step**?
- a. Immediate exploratory laparotomy
  - b. Diagnostic peritoneal lavage
  - c. Computed tomography of the chest, abdomen, and pelvis with intravenous contrast
  - d. Left tube thoracostomy
  - e. Serial abdominal examinations with repeat focused assessment with sonography for trauma