Answers with explanations at **mcatest.wixsite.com/atls**

# ATLS Practice Test 4

## Questions

1. A 5-year-old boy falls 3 meters from a tree and strikes his abdomen on a branch. He is alert and crying. Vital signs: heart rate 132 beats per minute, respiratory rate 30 per minute, blood pressure 86/48 mm Hg, capillary refill is 3 seconds. Focused sonography shows free fluid in Morrison's pouch. What is the next best step?
   A. Computed tomography of the abdomen and pelvis with intravenous contrast
   B. Immediate exploratory laparotomy
   C. Diagnostic peritoneal lavage
   D. Serial abdominal examinations with observation
   E. Intravenous fluid bolus and repeat sonography in 1 hour

2. A 28-year-old woman, 26 weeks pregnant, is struck in the abdomen. Vital signs: HR 100, BP 105/70 mm Hg, pallor noted. Why might her blood pressure remain near normal despite significant hemorrhage?
   A. Estrogen-mediated vasodilation
   B. Increased plasma volume and delayed hypotension
   C. Measurement error due to cuff size
   D. Maternal catecholamine surge
   E. Compression of aorta by uterus

3. A stable trauma patient has isolated hip pain after a fall. No leg shortening or external rotation, but cannot bear weight. Pelvic X-ray normal. What is the best next step?
   A. MRI of hip
   B. CT of pelvis
   C. Observation and repeat X-ray in 24 hours
   D. Apply traction
   E. Discharge with analgesia

4. An 82-year-old woman on warfarin and aspirin sustains a minor fall. She is alert, BP 110/70 mm Hg. One hour later, she becomes confused. Which agent should be administered immediately after confirming INR 6.2?
   A. Fresh frozen plasma
   B. Desmopressin
   C. Platelet transfusion
   D. Recombinant factor VIIa
   E. Prothrombin complex concentrate (PCC) plus vitamin K

5. A 9-year-old boy is struck in the anterior neck by bicycle handlebars. He is alert but has hoarse voice, mild stridor, and subcutaneous crepitus over the neck. Oxygen saturation is 94%. What is the most appropriate next step?
   A. Immediate orotracheal intubation with rapid sequence induction
   B. Needle cricothyrotomy
   C. Awake fiber-optic intubation with surgical backup
   D. Observation with humidified oxygen and serial exams
   E. Surgical tracheostomy under general anesthesia

6. During the secondary survey of a stable patient, you note periorbital ecchymosis with blood-tinged clear fluid dripping from the nose. What should you do next?
   A. Insert a nasogastric tube to decompress stomach
   B. Suspect basilar skull fracture and avoid nasal instrumentation
   C. Ignore the finding since nasal bleeding is common after trauma
   D. Pack the nose tightly to stop the fluid leak
   E. Discharge the patient with sinus precautions

7. A 26-year-old pregnant trauma patient at 36 weeks gestation is in cardiac arrest. CPR is ongoing. When should resuscitative hysterotomy (perimortem cesarean section) be performed?
   A. Immediately, as soon as arrest is identified
   B. After 4 minutes of unsuccessful resuscitation
   C. Only if fetal heart tones are detected
   D. Only if the mother is stable enough for surgery
   E. Never in the emergency department

8. A 21-year-old male has a stab wound to the anterior neck at the level of the cricoid cartilage. He is breathing spontaneously, speaking in short sentences, and has a small expanding neck hematoma with mild stridor. Laryngoscopy reveals partial airway obstruction from anterior swelling. What is the recommended immediate airway management?
   A. Perform awake orotracheal intubation using rapid sequence technique.
   B. Attempt blind nasotracheal intubation.
   C. Perform awake fiberoptic nasotracheal intubation with surgical backup.
   D. Immediate cricothyroidotomy in the emergency department.
   E. Observe and prepare for possible intubation if obstruction progresses.

9. An 83-year-old man presents after a low-speed motor vehicle crash. He has mild abdominal pain but normal FAST. Two hours later, his blood pressure drops and hemoglobin decreases. What is the most likely cause?
   A. Solid organ laceration missed on FAST
   B. Delayed hollow viscus perforation
   C. Retroperitoneal bleed from pelvic vessel injury
   D. Intrathoracic bleeding
   E. Acute myocardial infarction

10. A pregnant woman at 24 weeks gestation sustains penetrating thoracoabdominal trauma and arrives hypotensive. Which of the following statements is most accurate regarding resuscitation priorities?
    A. Maternal resuscitation should be secondary to efforts focused on the fetus.
    B. Displace the uterus to the left only if the patient becomes hypotensive.
    C. Fetal heart rate monitoring should replace maternal vital sign monitoring.
    D. The pregnant patient should be resuscitated primarily for maternal survival; operations and interventions should not be delayed because of pregnancy.
    E. Delay blood transfusion until obstetricians have decided whether to proceed to cesarean delivery.

11. During the secondary survey of a patient with multiple penetrating injuries, you note an expanding soft tissue hematoma in the anterior neck associated with hoarseness and drooling. The patient is talking but becoming increasingly anxious. What is the best immediate action?
    A. Secure the airway proactively with definitive airway control in the operating room or controlled environment.
    B. Observe in the trauma bay with supplemental oxygen because the patient is talking.
    C. Give oral analgesics to calm the patient and reassess in 10 minutes.
    D. Obtain contrast computed tomography of the neck to locate the bleeding source prior to airway intervention.
    E. Apply a local pressure dressing and arrange for surgical exploration.

12. An 8-year-old falls from a bicycle and presents with chest pain and difficulty breathing. On exam, there is subcutaneous emphysema and decreased breath sounds on the right. He remains stable. Chest x-ray shows pneumothorax and pneumomediastinum. What is the next best diagnostic or management step?
    A. Insert chest tube immediately
    B. Perform rigid bronchoscopy to evaluate for tracheobronchial injury
    C. Observe with oxygen and repeat imaging in 6 hours
    D. Obtain CT angiography of the chest
    E. Place bilateral chest tubes

13. A 72-year-old man sustains multiple rib fractures from a motor vehicle crash. He is alert but develops progressive hypoventilation over several hours despite adequate analgesia. What is the most important contributing factor?
    A. Decreased chest wall compliance and baseline poor reserve
    B. Unrecognized pneumothorax
    C. Pulmonary embolism
    D. Pleural effusion
    E. Diaphragmatic rupture

14. A 30-year-old woman at 30 weeks gestation is struck by a car. She is stable with mild abdominal tenderness. Fetal monitoring shows frequent uterine contractions but normal fetal heart rate. What is the most appropriate next step?
    A. Immediate cesarean delivery
    B. Administer tocolytics to stop contractions
    C. Observe with continuous fetal monitoring for at least 4 hours
    D. Perform MRI to assess the placenta
    E. Discharge with instructions for follow up

15. A 60-year-old man falls from a ladder and is brought to the emergency department. On primary survey his airway is patent and he is talking in full sentences. Blood pressure is 90/60 mm Hg, heart rate is 110 beats per minute, and respiratory rate is 22 breaths per minute. He has obvious abdominal distention and diffuse abdominal tenderness. You perform the primary survey interventions and identify ongoing hemorrhagic shock. Which of the following is the single best next step in management in the emergency department?
    A. Perform immediate diagnostic peritoneal lavage
    B. Place a pelvic binder and obtain pelvic radiographs
    C. Contrast-enhanced computed tomography
    D. Obtain a FAST examination and, if positive, proceed to the operating room for urgent laparotomy
    E. Give two liters of crystalloid and reassess for response

16. A 50-year-old man arrives after a high-speed motorcycle collision. He is intubated with a cuffed endotracheal tube placed in the field and arrives on manual ventilation. His oxygen saturation is 95%, chest auscultation reveals absent breath sounds on the right, and the trachea is midline. Breath sounds are present on the left. Jugular veins are flat. Blood pressure is 110/70 mm Hg and heart rate is 100 beats per minute. What is the most likely diagnosis causing the absent right-sided breath sounds?
    A. Right mainstem bronchus intubation by the endotracheal tube.
    B. Massive right hemothorax.
    C. Right-sided pneumothorax causing collapse of the right lung.
    D. Bronchospasm localized to the right lung.
    E. Right lower lobe atelectasis from mucus plugging.

17. A 37-year-old man arrives after a rollover motor vehicle collision. He is agitated, pale, and repeatedly attempting to remove his cervical collar. His respiratory rate is 34 breaths per minute and shallow. Breath sounds are markedly diminished on the left. His trachea appears central but is difficult to assess. His oxygen saturation is 81% despite a non-rebreather mask. Blood pressure is 108 mm Hg systolic with a heart rate of 133 beats per minute. Jugular veins are flat. No external bleeding is noted. What is the most appropriate next step?
    A. Perform immediate endotracheal intubation with rapid-sequence induction.
    B. Perform immediate tube thoracostomy on the left.
    C. Obtain a portable chest radiograph.
    D. Administer ketamine and attempt noninvasive ventilation.
    E. Begin crystalloid resuscitation.

18. A 57-year-old woman presents after being struck by a falling tree limb. She is alert but anxious. Her respiratory rate is 36 breaths per minute with marked use of accessory muscles. Breath sounds on the left are diminished with hyperresonance to percussion. Her trachea is midline, and jugular veins are flat. A bedside ultrasound examination reveals absent pleural sliding on the left without lung point identification. You prepare for a chest tube. Suddenly, she becomes somnolent with a systolic blood pressure of 72 mm Hg and severe respiratory distress. What should be performed immediately?
    A. Orotracheal intubation followed by controlled mechanical ventilation
    B. Bilateral finger thoracostomy
    C. Needle decompression of the left chest at the second intercostal space in the midclavicular line
    D. Immediate tube thoracostomy of the left chest
    E. Needle decompression of the left chest at the fifth intercostal space in the anterior axillary line

19. A 43-year-old male is involved in a MVC and ejected from the vehicle. He is conscious and complaining of severe chest pain and shortness of breath. Vital signs show tachycardia and borderline low blood pressure. On inspection, there are multiple anterior chest wall bruises and a visible seat belt imprint. A focused sonographic assessment in trauma reveals a small pericardial effusion without signs of right ventricular diastolic collapse, and no free intraperitoneal fluid. A chest radiograph demonstrates multiple bilateral anterior rib fractures with elevation of the left hemidiaphragm. The patient's blood pressure then falls and jugular venous distention develops. Which of the following is the most likely diagnosis and best immediate management?
    A. Blunt cardiac contusion causing arrhythmia; start antiarrhythmic therapy and continuous cardiac monitoring.
    B. Massive pulmonary embolism from fat emboli; initiate systemic thrombolytic therapy.
    C. Tension pneumothorax; perform emergent needle decompression and chest tube insertion.
    D. Cardiac tamponade from slow bleeding into the pericardium; prepare for immediate pericardiocentesis at the bedside.
    E. Traumatic aortic injury with mediastinal hemorrhage; rapidly transfer to interventional radiology for endovascular stent graft placement.

20. A 54-year-old woman is rescued from a house fire and arrives at the emergency department 45 minutes after exposure. She is alert but has a hoarse voice, soot around the nares and oropharynx, singed nasal hair, and a persistent cough with carbonaceous sputum. Her respiratory rate is 24 breaths per minute and oxygen saturation is 96% on room air. She has superficial facial burns but no other injuries. Which action is most appropriate?
    A. Immediate orotracheal intubation using rapid sequence induction because progressive upper airway edema is likely.
    B. Trial of humidified oxygen and frequent clinical observation; proceed to intubation only if oxygen saturation falls or airway obstruction occurs.
    C. Perform awake fiberoptic nasotracheal intubation to preserve spontaneous ventilation and assess the airway.
    D. Computed tomography of the head and neck.

E. Place a supraglottic airway device as a temporizing measure and defer definitive airway until edema develops.

21. A 47-year-old construction worker is intubated after a fall of 6 meters. He has asymmetric pupils: right pupil dilated and poorly reactive, left pupil reactive. His systolic blood pressure is 160 mm Hg and oxygen saturation is 98% on controlled ventilation. Intracranial computed tomography shows a large temporal intracerebral hematoma with mass effect and midline shift. While the neurosurgical team prepares for urgent operative decompression, which single immediate intervention is most appropriate to lower intracranial pressure and temporize herniation physiology?
    A. Administer a bolus of mannitol 1 gram per kilogram and then place the patient in a head-down Trendelenburg position to improve cerebral perfusion.
    B. Start a continuous infusion of hypertonic saline 3%.
    C. Initiate therapeutic hypothermia to 32 degrees Celsius.
    D. Maintain normoventilation with arterial carbon dioxide tension of 38 to 42 mm Hg and observe while maintaining adequate mean arterial pressure.
    E. Begin controlled hyperventilation to target arterial carbon dioxide tension of approximately 30 mm Hg while preparing for hyperosmolar therapy.

22. A 29-year-old man is brought to the trauma bay after a single stab wound to the left anterior chest at the level of the fourth intercostal space. He is conscious but anxious. Vital signs: heart rate 132 beats per minute, blood pressure 82/48 mm Hg, respiratory rate 28 breaths per minute, and oxygen saturation 92% on supplemental oxygen by mask. On inspection there is a 2-centimeter penetrating wound to the left anterior chest. Physical examination reveals diminished breath sounds on the left, jugular venous distension, and muffled heart sounds. A portable upright chest radiograph shows a small left apical pneumothorax and no obvious rib fractures. Focused bedside ultrasound shows a small left pleural fluid collection and a pericardial effusion. Which of the following is the single best immediate management step?
    A. Tube thoracostomy of the left pleural space followed by urgent operative exploration.
    B. Emergent left anterolateral thoracotomy with pericardiotomy in the trauma bay.
    C. Immediate pericardiocentesis via subxiphoid approach guided by ultrasound, then reassess hemodynamics.
    D. Endotracheal intubation, positive pressure ventilation, and emergent needle decompression of the left chest.
    E. Rapid computed tomography angiography of the chest to define cardiac and great vessel injuries.

23. A 29-year-old woman at an estimated 22 weeks of gestation arrives after a fall from standing height with abdominal pain but stable vital signs: blood pressure 122/78 mm Hg and heart rate 96 beats per minute. She has uterine tenderness and small vaginal bleeding. Fetal heart tones are present on initial hand-held Doppler. Which of the following management decisions is most consistent with current best practice for monitoring and disposition?

A. Discharge home with return precautions since vital signs are normal and fetal heart tones are present.
B. Admit for a minimum of 24 hours of continuous fetal monitoring and observation for evolving abruption, with obstetric consultation and serial maternal laboratory tests.
C. Place the patient in the left lateral decubitus position, perform immediate computed tomography of the abdomen and pelvis to evaluate maternal solid organ injury prior to initiating fetal monitoring, and then discharge if imaging is normal.
D. Give tocolytic medication immediately to prevent preterm labor and begin maternal intravenous fluids; start fetal monitoring only if contractions develop.
E. Immediate operative exploration in the operating room because any vaginal bleeding at 22 weeks after blunt trauma mandates laparotomy.

24. A 67-year-old woman is struck by a motor vehicle and arrives hypotensive with a systolic blood pressure of 62 mm Hg and heart rate of 140 beats per minute. She has multiple abrasions and obvious pelvic instability on log roll. Focused assessment with sonography for trauma examination is equivocal for free intraperitoneal fluid. A pelvic binder has been applied and there is no major external hemorrhage. Laboratory testing shows hemoglobin 98 grams per liter and lactate 8 millimoles per liter. The trauma surgeon asks whether angiographic embolization or immediate preperitoneal pelvic packing is the more appropriate next step. Which choice best guides initial management in this hemodynamically unstable patient?
A. Immediate computed tomography with contrast to localize bleeding prior to definitive intervention because the patient is stable enough given binder application.
B. Proceed directly to angioembolization because pelvic arterial bleeding is the most common cause of persistent hemorrhage in elderly patients.
C. Perform emergent preperitoneal pelvic packing combined with external stabilization and resuscitation because packing is faster and more effective for combined venous and osseous bleeding in unstable patients.
D. Transfer the patient to the operating room for exploratory laparotomy first because intra-abdominal bleeding is more likely than pelvic bleeding, even in the absence of free fluid on sonography.
E. Initiate massive transfusion protocol and observe for response for at least 30 minutes before invasive procedures because elderly patients may have an occult response to blood products.

25. A 29-year-old woman falls from the second story and lands face first. On arrival she is awake but agitated. She has distortion of facial structures with bleeding from the nose and mouth, massive facial swelling, and a displaced mandibular fracture with obstructed oral cavity. Her oxygen saturation on high-flow oxygen by face mask is 88% and is slowly falling. Neck exam reveals obvious blunt soft tissue injury but she can phonate. There are no penetrating neck wounds. Which airway strategy gives the highest chance of safe definitive airway control while minimizing the risk of catastrophic hypoxia or loss of airway control?
A. Awake tracheal intubation using topical anesthesia and flexible fiberoptic bronchoscopy through the nasal route.
B. Rapid sequence tracheal intubation via oral direct laryngoscopy with cricoid pressure applied.

C. Emergency surgical cricothyrotomy at the bedside under local anesthesia.
D. Nasotracheal intubation blindly without neuromuscular blockade because of potential cervical spine injury.
E. Awake tracheostomy performed in the emergency department with surgical team and otolaryngology assistance.

26. A 32-year-old man is brought to the emergency department after a high-speed motorcycle collision. He is awake but tachycardic at 128 beats per minute and hypotensive with a blood pressure of 78/42 mm Hg. He complains of severe pelvic pain. Primary survey reveals a distended pelvis that is unstable to compression. There is no obvious major external bleeding. A pelvic binder has been applied in the prehospital setting. Focused assessment with sonography for trauma reveals minimal free fluid in the abdomen. After initial airway control and bilateral tube thoracostomies that are negative for tension physiology, the patient remains hypotensive despite two liters of warmed crystalloid and one unit of group O packed red blood cells. Which of the following is the most appropriate next step in management?
A. Immediate external fixation of the pelvis in the emergency department under procedural sedation and then transfer to the computed tomography scanner.
B. Activation of the interventional radiology team for emergent pelvic arterial embolization while the patient remains in the emergency department.
C. Rapid transfer to the operating room for exploratory laparotomy and pelvic packing.
D. Administer tranexamic acid and observe for response for 15 minutes before additional interventions.
E. Remove the pelvic binder and apply a sheet wrap at the level of the greater trochanters to improve pelvic stability.

27. A 72-year-old female pedestrian struck by an automobile presents awake but in respiratory distress. She has severe chest wall pain and paradoxical movement of a 4-rib segment along the right lateral chest. She is tachypneic at 34 breaths per minute and has oxygen saturation of 88% on supplemental oxygen by reservoir mask. Computed tomography of the chest demonstrates multiple displaced fractures of ribs 3 through 7 on the right, an ipsilateral pulmonary contusion involving the right middle and lower lobes with greater than 20% lung volume opacification, and no major vascular injury. She has a history of chronic obstructive pulmonary disease and uses home inhalers. After multimodal analgesia and regional anesthesia are initiated, she continues to deteriorate with rising carbon dioxide levels on arterial blood gas and worsening mental status. Which of the following is the most appropriate next definitive management?
A. Continue noninvasive positive pressure ventilation with careful monitoring and repeat arterial blood gas in 30 minutes.
B. Proceed to endotracheal intubation with early ventilatory strategies using low tidal volume and adequate positive end-expiratory pressure, and consider early surgical fixation of the rib fractures when stabilized.
C. Urgent operative thoracotomy for pulmonary contusion debridement and repair of fractured ribs.
D. Immediate placement of an epidural catheter for continuous thoracic epidural analgesia and avoid mechanical ventilation.

E. Perform urgent rib plating fixation at the bedside under sedation to stabilize the chest wall and avoid the need for mechanical ventilation.

28. A 46-year-old construction worker falls from a height of 20 feet and is found to be conscious but anxious. On arrival, his breathing is rapid and shallow, oxygen saturation is 86% on nonrebreather oxygen, and he complains of severe right-sided chest pain. Physical examination shows diminished breath sounds on the right, subcutaneous emphysema over the right hemithorax, and jugular venous pressure that is not elevated. His pulse is 135 beats per minute and his systolic blood pressure is 95 mm Hg. A portable chest radiograph shows multiple right-sided rib fractures and a moderate right-sided pleural air collection with associated hemothorax. Which action is the highest priority in his immediate management?
    A. Immediate needle decompression of the right hemithorax in the second intercostal space at the midclavicular line.
    B. Placement of a large-bore chest tube in the right fifth intercostal space at the midaxillary line.
    C. Emergent right-sided thoracotomy in the trauma bay.
    D. Urgent computed tomography scan of the chest with intravenous contrast to define pulmonary contusion and vascular injury.
    E. Analgesia with intravenous opioid and admission for observation with serial examinations.

29. A 62-year-old woman is involved in a high-speed motor vehicle collision. She is hypotensive with a systolic blood pressure of 70 mm Hg, heart rate 140 beats per minute, and pale with a decreased level of consciousness. Pelvic radiograph demonstrates an open-book pelvic ring disruption with widening of the symphysis pubis and a vertical shear component. Focused assessment with sonography for trauma shows free fluid in the pelvis and no pericardial fluid. External pelvic compression has been applied. Which of the following interventions offers the most rapid and effective control of life-threatening hemorrhage from pelvic sources in this patient?
    A. Application of a pelvic external binder tightened to maximum tension and continued resuscitation with balanced transfusions.
    B. Emergent pelvic external fixation with anterior external fixator in the operating room under general anesthesia.
    C. Angiographic pelvic arterial embolization.
    D. Resuscitative endovascular balloon occlusion of the aorta at the zone proximal to the pelvis in the trauma bay or hybrid suite.
    E. Ligation of the internal iliac arteries bilaterally via laparotomy in the operating room.

30. A metropolitan hospital receives 40 patients from a high-rise building fire. The emergency department can realistically provide invasive mechanical ventilation to only 2 additional patients beyond current census. You are the senior clinician performing triage using the Simple Triage and Rapid Treatment method adapted for resource scarcity. Four incoming patients of similar arrival priority present simultaneously:
    Patient A: 68-year-old with second- and third-degree burns to 40% total body surface area, airway intact, respiratory rate 28 breaths per minute, weak radial pulse, responds to voice.

Patient B: 34-year-old with smoke inhalation, soot around the oropharynx, stridor at rest, oxygen saturation 88% on high-flow oxygen by mask, anxious but follows commands.
Patient C: 12-year-old with partial-thickness burns to 20% total body surface area, no respiratory distress, but altered mental status with a Glasgow Coma Scale equivalent of 8 after suspected carbon monoxide exposure.
Patient D: 50-year-old with blast-related chest injury, hypotensive with systolic blood pressure 70 mm Hg, absent breath sounds on the left, tracheal deviation to the right, agonal respirations.
According to resource-scarce triage principles and maximizing lives saved, which patient should receive one of the two available invasive ventilators first?

A. Patient A
B. Patient B
C. Patient C
D. Patient D
E. Any of the above; defer ventilator allocation until definitive imaging and arterial blood gas confirmation

31. A 58-year-old man is struck while crossing a busy urban arterial at an unsignalized crosswalk at midblock at night. He sustains multiple injuries and dies despite optimal in-hospital care. A city task force is convened to reduce pedestrian mortality on this arterial. Considering primary prevention strategies that act before a crash occurs, which single intervention is most likely to produce the greatest reduction in pedestrian mortality on this arterial?

A. Widen the sidewalks and add aesthetic landscaping.
B. Install four midblock raised pedestrian refuge islands.
C. Implement permanent reduction of the posted speed limit from 50 kilometers per hour to 30 kilometers per hour and redesign the crosswalk with traffic calming features.
D. Add an advanced automated external defibrillator program and station responders along the arterial.
E. Require vehicles to be equipped with pedestrian-detecting automatic emergency braking through local fleet procurement incentives.

32. A 45-year-old man involved in an industrial accident is unresponsive on arrival. There is no response to voice or pain; he withdraws to painful stimuli in the lower extremities but flexes abnormally to pain in the upper extremities. He opens his eyes to pain. Spontaneous breathing is present and regular. Pupillary examination reveals reactive midsize pupils bilaterally. He is intubated for airway protection. Which of the following best interprets his neurologic status using the components of the Glasgow Coma Scale and describes the correct implication for level of neurologic monitoring?

A. Eye opening to pain (score 2), best verbal response not testable because of intubation, best motor response of flexion withdrawal to pain in the upper extremities (score 4); this corresponds to a Glasgow Coma Scale estimated total of 6 and indicates the need for intracranial pressure monitoring and neuroradiologic imaging given severe traumatic brain injury.

B. Eye opening to pain (score 3), best verbal response not testable because of intubation, best motor response of localizing to pain in the lower extremities (score 5); this corresponds to a Glasgow Coma Scale estimated total of 8 and indicates only routine ward observation is required.
C. Eye opening to pain (score 2), best verbal response not testable because of intubation, best motor response of abnormal flexion to pain in the upper extremities (score 3); this corresponds to a Glasgow Coma Scale estimated total of 5 and indicates severe brain injury warranting intensive care unit admission, neuroimaging, and consideration of intracranial pressure monitoring.
D. Eye opening to pain (score 3), best verbal response not testable because of intubation, best motor response of withdrawal to pain in the lower extremities (score 4); this corresponds to a Glasgow Coma Scale estimated total of 7 and indicates that only neuro-vital signs on the ward is necessary.
E. Eye opening to pain (score 1), best verbal response not testable because of intubation, best motor response of flexion withdrawal to pain in the upper extremities (score 4); this corresponds to a Glasgow Coma Scale estimated total of 5 but implies the patient is brain dead and no further intervention should be pursued.

33. A 16-year-old boy sustains devastating injuries after being struck by a truck while cycling. He arrives pulseless but with brief return of circulation during resuscitation before again losing pulses. Imaging reveals a non-survivable atlanto-occipital dissociation. His mother is brought to a consultation room while resuscitative attempts continue in the adjacent bay. During the initial conversation, the mother repeatedly asks whether "something more aggressive" can be attempted and tears become uncontrollable. You must communicate imminent death while supporting emotional processing. Which communication step is most appropriate at this moment?
A. Acknowledge the mother's emotions explicitly, allow space for silence, and then provide a clear, concise statement that her son's injuries are not survivable.
B. Redirect the conversation to procedural details of the resuscitation to avoid intensifying her grief.
C. Offer reassurance that additional interventions may still restore circulation and encourage hope until the team confirms otherwise.
D. Avoid stating that the injuries are non-survivable until the mother regains composure, so the information is less overwhelming.
E. Provide anticipatory guidance about organ donation possibilities before sharing the definitive prognosis.

34. A 38-year-old restrained driver presents after a high-speed motor vehicle collision. He is alert; heart rate 100 beats per minute; blood pressure 118/72 mm Hg; respiratory rate 20 breaths per minute; oxygen saturation 96% on room air. He complains of severe left-sided chest and upper back pain. Chest radiograph shows a widened mediastinum and a small left pleural effusion. There is no obvious pneumothorax. Focused assessment with sonography for trauma is negative for pericardial fluid. Which one of the following is the most appropriate next step?

A. Immediate transfer to the operating room for left thoracotomy and open repair of suspected aortic injury.
B. Urgent computed tomography angiography of the chest with intravenous contrast.
C. Transesophageal echocardiography in the emergency department to evaluate for traumatic aortic injury.
D. Observe in a monitored unit with serial chest radiographs and physical examinations.
E. Arrange urgent transfer to an endovascular team for stent graft placement without further imaging.

35. A 58-year-old man falls down stairs. On arrival, he has flaccid paralysis of all extremities and absent reflexes. His bulbocavernosus reflex is absent. Over the next two days, deep tendon reflexes return and he develops marked spasticity in the lower extremities, but strength remains severely impaired. Which physiologic change explains the transition observed?
A. Restoration of anterior horn cell function below the level of injury
B. Resolution of spinal shock with reappearance of segmental reflex arcs despite persistent supraspinal pathway disruption
C. Regeneration of corticospinal tracts resulting in voluntary motor recovery
D. Revascularization of anterior spinal artery leading to improved motor control
E. Recovery of lower motor neurons resulting in flaccid paralysis rather than spastic paralysis

36. A 28-year-old man is brought after a single stab wound to the left anterior chest at the fourth intercostal space, midclavicular line. On arrival he is alert but diaphoretic. Vital signs: heart rate 128 beats per minute, blood pressure 86/60 mm Hg, respiratory rate 28 breaths per minute, oxygen saturation 94% on supplemental oxygen by face mask. Physical examination shows a 2.5 centimeter chest wound with minimal external bleeding, distant heart sounds, clear lung fields on auscultation, and no obvious external neck or abdominal injury. A portable upright chest radiograph shows no large hemothorax or pneumothorax. DPL is negative. Which one of the following is the most appropriate next step?
A. Perform an emergent left anterolateral thoracotomy at the bedside for open cardiac massage and direct repair of presumed cardiac injury.
B. Proceed to the operating room for median sternotomy and definitive cardiac exploration and repair.
C. Create a subxiphoid pericardial window in the emergency department to confirm pericardial blood, then proceed to the operating room if positive.
D. Insert a left-sided chest tube and observe; if hemodynamics worsen, then proceed to operative thoracotomy.
E. Obtain immediate computed tomography angiography of the chest to localize cardiac or great vessel injury prior to surgical intervention.

37. A 45-year-old woman presents after a single stab wound to the left lower quadrant of the abdomen. 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. 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?

A. Admit for nonoperative observation with serial physical examinations and repeat imaging as needed.
B. Perform immediate exploratory laparotomy in the operating room.
C. Proceed to diagnostic laparoscopy in the operating room to directly inspect the bowel and peritoneal cavity.
D. Perform local wound exploration at bedside and, if positive for peritoneal violation, continue nonoperative management.
E. Arrange for interventional radiology consultation for diagnostic and possible therapeutic angiography.

38. A 46-year-old man with blunt chest trauma becomes progressively more hypoxic during transport. On arrival, he is combative, cyanotic, and poorly ventilated with bag-mask technique. The team elects to use a laryngeal mask airway as a rescue measure. After insertion, ventilation becomes easier, but there is a sudden drop in blood pressure and progressive abdominal distention. What is the most likely explanation?

A. Excessive depth of insertion causing obstruction at the level of the epiglottis.
B. Ventilation through a partially folded cuff redirecting gas toward the esophagus.
C. Development of a tension pneumothorax due to positive pressure ventilation.
D. High vagal tone induced by laryngeal stimulation from the supraglottic device.
E. Pulmonary hemorrhage induced by traumatic chest movement during ventilation.

39. A 34-year-old man is brought to the emergency department after an industrial accident in which a metal rod struck his right orbit. He is awake and oriented. Right periorbital swelling and ecchymosis are present. Visual acuity in the right eye is counting fingers at 2 feet; left eye is 20/20. The right pupil is dilated and responds poorly to direct light; there is an afferent pupillary defect on the right. Intraocular pressure measurement is 50 mm Hg in the right eye and 14 mm Hg in the left eye. The right globe appears tense and proptotic. Computed tomography of the orbits shows a large retrobulbar hematoma without obvious globe rupture. Which one of the following is the most appropriate immediate management step for the right eye?

A. Emergent lateral canthotomy with cantholysis of the lower and upper limbs of the lateral canthus.
B. Immediate intravenous high-dose corticosteroid therapy followed by observation.
C. Emergent open orbital exploration in the operating room under general anesthesia.
D. Urgent lateral tarsorrhaphy at the bedside to protect the cornea and reduce proptosis.
E. Local subtenons drainage of the retrobulbar hematoma at the slit lamp.

40. A 34-year-old soldier sustains a high-energy lower extremity blast injury. On scene he had a proximal thigh hemorrhage that was controlled with a single commercial tourniquet applied to the mid-thigh. He remains alert but pale and tachycardic; blood pressure is 85/50 mm Hg despite one liter of crystalloid given in the field. The tourniquet has been in place for 90 minutes. Evacuation to definitive surgical care is expected to take at least eight more hours because of environmental

and operational constraints. What is the most appropriate immediate management regarding the tourniquet and limb?

A. Remove the tourniquet now, attempt direct pressure and hemostatic dressing, and reassess the wound because prolonged tourniquet time causes irreversible limb ischemia.
B. Leave the tourniquet in place and prepare for expedited decontamination and transfer; reassess pulses only when the patient reaches the operating room.
C. Convert the tourniquet to a pressure dressing now (replace the tourniquet with a compressive dressing) because prolonged tourniquet use increases systemic toxicity and tissue loss.
D. Perform a field fasciotomy at the proximal thigh to relieve ischemia and reduce reperfusion injury risk before evacuation.
E. Release the tourniquet for five minutes to allow perfusion and then reapply it if bleeding recurs; administering an anticoagulant will reduce the risk of thrombosis on reperfusion.