

1-1. 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 initial fluid resuscitation, 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. A tube thoracostomy is performed for decreased left chest 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. re-examine the chest.
- b. perform an aortogram.
- c. obtain a computed tomography (CT) scan of the chest.
- d. obtain arterial blood gas analyses.
- e. perform transesophageal echocardiography.

1-2. A construction worker falls two stories from a building and sustains bilateral calcaneal fractures. In the emergency department (ED), he is alert, his 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.

1-3. Which of the following is true regarding the initial resuscitation of a trauma patient?

a. A patient with a torso gunshot wound and hypotension should receive crystalloid fluid resuscitation until the blood pressure is normal. **X. The aim is to correct perfusion**

☒ b. Evidence of improved perfusion after fluid resuscitation could include improvement in Glasgow Coma Scale (GCS) score on reevaluation.

c. **Massive transfusion** is defined as transfusion of more than 10 units of packed red blood cells and **plasma** within 24 hours. **X. 10 units of pRBCs within the first 24 hours of admission or more than 4 units in 1 hour.**

Balanced / Damage control / Hemostatic = pRBCs, plasma, and platelets

d. When tranexamic acid is administered by prehospital providers, a second dose is required within 24 hours.

X. Both doses must be given with 3 hours from time of injury

e. Fluid resuscitation is far more important than bleeding control in trauma patients.

X. Persistent infusion of large volumes of fluid and blood in an attempt to achieve a normal blood pressure is not a substitute for definitive control of bleeding.

1-4. In managing a patient with a severe traumatic brain injury, the most important initial step is to:

- ☒ a. secure the airway. **ABCDE Approach still applies.**
- b. obtain a c-spine film.
- c. support the circulation.
- d. control scalp hemorrhage.
- e. determine the GCS score.

1-5. A previously healthy, 70-kg man suffers an estimated acute blood loss of 2 liters. Which statement applies to this patient?(Blood volume is 7% of body weight = 4.9L; more than 40% blood loss, Class 3)

a. His pulse pressure will be widened. **X. Narrow PP in Class 3 and 4**

b. His urinary output will be at the lower limits of normal. **X. He will be oliguric**

c. He will have tachycardia but no change in his systolic blood pressure. **X. he will Hypotensive**

(d) An arterial blood gas would demonstrate a base deficit between -6 and -10 mEq/L. **Class 3**

e. His systolic blood pressure will be maintained with an elevated diastolic pressure. **X. he will Hypotensive**

1-6. The physiological hypervolemia of pregnancy has clinical significance in the management of the severely injured, gravid woman by:

a. reducing the need for blood transfusion. **X. he will Hypotensive**

b. resulting in an elevated hematocrit. **X. Haematocrit decreases**

c. complicating the management of closed head injury.

d. reducing the volume of crystalloid required for resuscitation.

(e) increasing the volume of blood loss to produce maternal hypotension. **Healthy pregnant patients can lose 1,2l to 1,5L of blood before exhibiting signs and symptoms of hypovolemia.**

1-7. The best assessment of fluid resuscitation of the adult burn patient is:

(a) urinary output of 0.5 mL/kg/hr. **1 ml /kg/hr in paediatrics**

b. normalization of blood pressure. **X. Haematocrit decreases**

c. normalization of the heart rate. **X. Haematocrit decreases**

d. measuring a normal central venous pressure. **X. Haematocrit decreases**

e. providing 4 mL/kg/percent body burned/24 hours of crystalloid fluid.

1-8. The diagnosis of shock must include:

a. hypoxemia.

b. acidosis.

c. hypotension.

d. increased vascular resistance.

(e) evidence of inadequate organ perfusion.

1-9. A 7-year-old boy is brought to the ED by his parents several minutes after he fell through a window. He is bleeding profusely from a 6-cm wound in his medial right thigh. Immediate management of the wound should consist of:

a. applying a tourniquet.

b. applying direct pressure on the wound.

c. packing the wound with gauze. **X. Gauzes conceal ongoing blood loss**

(d) applying direct pressure on the femoral artery at the groin.

e. debriding devitalized tissue.

1-10. For the patient with severe traumatic brain injury, profound hypocarbia should be avoided to prevent:

a. respiratory acidosis.

b. metabolic acidosis.

- ☒ c. cerebral vasoconstriction with diminished perfusion.
- d. neurogenic pulmonary edema.
- e. shift of the oxyhemoglobin dissociation curve.

1-11. After being involved in a motor vehicle crash, a 25-year-old man is brought to a hospital that has surgery capabilities available. CT of the chest and abdomen shows an aortic injury and splenic laceration with free abdominal fluid. His blood pressure falls to 70 mm Hg after CT. The next step is to:

- a. obtain contrast angiography.
- b. transfer him to a higher-level trauma center.
- ☒ c. perform an exploratory laparotomy.
- d. infuse additional crystalloid fluids.
- e. obtain transesophageal echocardiography.

1-12. Which statement regarding abdominal trauma in the pregnant patient is TRUE?

- a. The fetus is in jeopardy only with major abdominal trauma.
- b. Leakage of amniotic fluid is an indication for hospital admission.
- c. Indications for peritoneal lavage are different from those in the nonpregnant patient.
- ☒ d. With penetrating trauma, injury to the mother's abdominal hollow viscus is more common in late than in early pregnancy.
- e. The secondary survey follows a different pattern from that of the nonpregnant patient.

1-13. The first maneuver to improve oxygenation after chest injury is:

- a. intubate the patient.
- b. assess arterial blood gases.
- ☒ c. administer supplemental oxygen.
- d. ascertain the need for a chest tube.
- e. obtain a chest x-ray.

1-14. A 25-year-old man, injured in a motor vehicle crash, is admitted to the ED. His pupils react sluggishly and his eyes open to pressure. He does not follow commands, but he does moan periodically. His right arm is deformed and does not respond to pressure; however, his left hand reaches purposefully toward the stimulus. Both legs are stiffly extended. His GCS score is:

- a. 2.
- b. 4.
- c. 6.
- ☒ d. 9. **E2, V2, M5**
- e. 12.

1-15. A 20-year-old female who is at 32 weeks gestation is stabbed in the upper right chest. In the ED, 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:

- a. perform tracheal intubation.
- b. insert an oropharyngeal airway.

☒ c. perform needle or finger decompression of the right chest.

Chest decompression

d. manually displace the gravid uterus to the left side of the abdomen.

e. initiate two large-caliber peripheral IV lines and crystalloid infusion.

1-16. Which finding in an adult is most likely to require immediate management during the primary survey?

a. Distended abdomen

b. Glasgow Coma Scale score of 11

c. Temperature of 36.5°C (97.8°F)

d. Deformity of the right thigh

☒ e. Respiratory rate of 40 breaths per minute

1-17. The most important, immediate step in the management of an open pneumothorax is:

a. endotracheal intubation.

b. operation to close the wound.

c. placing a chest tube through the chest wound.

☒ d. placement of an occlusive dressing over the wound.

e. initiation of two large-caliber IVs with crystalloid solution.

1-18. Which of the following is a contraindication 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

1-19. A 56-year-old man is thrown violently against the steering wheel of his truck during a motor vehicle crash. On arrival in the ED, he is diaphoretic and complaining of chest pain. His blood pressure is 60/40 mm Hg and his respiratory rate is 40 breaths per minute. Which of the following best differentiates cardiac tamponade from tension pneumothorax as the cause of his hypotension?

a. Tachycardia

b. Pulse volume

☒ c. Breath sounds

d. Pulse pressure

e. Jugular venous pressure

1-20. Bronchial intubation of the right or left mainstem bronchus can easily occur during infant endotracheal intubation because:

☒ a. the trachea is relatively short.

b. the distance from the lips to the larynx is relatively short.

c. the use of cuffed endotracheal tubes eliminates this issue.

d. the mainstem bronchi are less angulated in their relation to the trachea.

e. so little friction exists between the endotracheal tube and the wall of the trachea.

1-21. A 23-year-old man sustains four stab wounds to the upper right chest during an altercation and is brought by ambulance to a hospital that has full surgical capabilities. His wounds are all above the nipple. He is endotracheally intubated, closed tube thoracostomy is performed, and fluid resuscitation is initiated through two large-caliber IVs. Focused assessment with sonography for trauma (FAST) exam

does not reveal intra-abdominal injuries. His blood pressure now is 60/0 mm Hg, his heart rate is 160 beats per minute, his respiratory rate is 14 breaths per minute (ventilated with 100% O₂), and 1500 mL of blood have drained from the right chest. The most appropriate next step in managing this patient is to:

- a. perform diagnostic peritoneal lavage.
- b. obtain a CT of the chest.
- c. perform an angiography.
- ☒ d. urgently transfer the patient to the operating room. **Urgent thoracotomy**
- e. immediately transfer the patient to a trauma center.

1-22. A 39-year-old man is admitted to the ED 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 face mask 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. restrict cervical motion and attempt orotracheal intubation using 2 people.
- e. ventilate the patient with a bag-mask device until his beard can be shaved for better mask fit.

1-23. A patient is brought to the ED after a motor vehicle crash. He is conscious and there is no obvious external trauma. He arrives with a cervical collar in place and is secured to a long spine board. His blood pressure is 60/40 mm Hg and his heart rate is 70 beats per minute. His skin is warm. Which statement is TRUE?

- a. Vasoactive medications have no role in this patient's management.
 - b. The hypotension should be managed with volume resuscitation alone.
 - c. Flexion and extension views of the c-spine should be performed early.
 - ☒ d. Abdominal visceral injuries can be excluded as a cause of hypotension.
 - e. Flaccidity of the lower extremities and loss of deep tendon reflexes are expected.
- Vasopressor, Atropine and fluids for neurogenic shock. physiologic effects of neurogenic shock are not reversed with fluid resuscitation alone,

1-24. Which of the following is the most effective method for initially treating frostbite?

- ☒ a. Moist heat
- b. Early amputation
- c. Padding and elevation
- d. Vasodilators and heparin
- e. Topical application of silver sulfadiazine

1-25. A 32-year-old man's right leg is trapped beneath his overturned car for nearly 2 hours before he is extricated. On arrival in the ED, his right lower extremity is cool, mottled, insensate, and motionless. Despite normal vital signs, pulses cannot be palpated below the right femoral artery and the muscles of the lower extremity are firm and hard. During the management of this patient, which of the following is most likely to improve the chances for limb salvage?

- a. Applying skeletal traction
- b. Administering anticoagulant drugs
- c. Administering thrombolytic therapy
- ☒ d. Getting a surgical consultation for right lower extremity fasciotomy
- e. Transferring the patient to the trauma center 120 km away

1-26. A patient arrives in the ED 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.

1-27. A 22-year-old man sustains a gunshot wound to the left chest and is transported to a small community hospital; no surgical capabilities are available. In the ED, a chest tube is inserted and 700 mL of blood are 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 ED thoracotomy. *Do not perform thoracotomy unless a surgeon, qualified by training and experience, is present.*
- ☒ d. repeat the primary survey and proceed with transfer.
- e. delay the transfer until the referring doctor can contact a thoracic surgeon.

1-28. A 64-year-old man involved in a high-speed car crash is resuscitated initially in a small hospital without surgical capabilities. 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 initiating fluid resuscitation, his blood pressure is 110/74 mm Hg, heart rate is 100 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 away. Before transfer, you should first:

- ☒ a. intubate the patient.
- ☒ b. perform diagnostic peritoneal lavage or FAST.
- c. insert a left chest tube.
- d. call the receiving hospital and speak to the surgeon on call.
- e. discuss the advisability of transfer with the patient's family.

1-29. Hemorrhage of 20% of the patient's blood volume is usually associated with:

- a. oliguria.
- b. confusion.
- c. hypotension.
- ☒ d. tachycardia.
- e. blood transfusion requirement.

1-30. Which statement concerning intraosseous infusion is TRUE?

- a. Only crystalloid solutions may be safely infused through the needle.
- ☒ b. Aspiration of bone marrow confirms appropriate positioning of the needle.
- c. Intraosseous infusion is the preferred route for volume resuscitation in small children.
- d. Intraosseous infusion may be utilized indefinitely.
- e. Swelling in the soft tissues around the intraosseous site is not a reason to discontinue infusion.

1-31. A young female sustains a severe head injury as the result of a motor vehicle crash. In the ED, 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.

1-32. A 33-year-old female is involved in a head-on motor vehicle crash. It took 30 minutes to extricate her from the car. Upon arrival in the ED, 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 four extremities. Of the following, the most likely diagnosis is:

- a. hemorrhagic shock.
- ☒ b. cardiac tamponade.
- c. massive hemothorax.
- d. tension pneumothorax.
- e. diaphragmatic rupture.

1-33. A hemodynamically normal 10-year-old girl is hospitalized for observation after a Grade III (moderately severe) splenic injury has been confirmed by CT. Which of the following mandates prompt celiotomy (laparotomy)?

- a. Serum amylase of 200
- b. Leukocyte count of 14,000
- c. Evidence of retroperitoneal hematoma on CT scan
- ☒ d. Development of peritonitis on physical exam
- e. Fall in the hemoglobin level from 12 g/dL to 8 g/dL over 24 hours

1-34. A 40-year-old female who was a restrained driver in a motor vehicle crash is evaluated in the ED. She is hemodynamically normal and found to be paraplegic at the level of T10. Which of the following are true regarding her evaluation and management?

- a. Neurogenic shock is likely to develop. X. Neurogenic shock develops at T6 upwards
- b. Imaging of her complete spine is required before transfer to a trauma center.
- c. Given the injury level, knee extension would be expected. X. Knee extension is L3
- d. Logrolling using four people is a safe approach to restrict spinal motion when moving her.
- e. Presence of bulbocavernosus reflex indicates a better prognosis.

1-35. A trauma patient presents to your ED with inspiratory stridor and a suspected c-spine injury. Oxygen saturation is 88% on high-flow oxygen via a non-rebreathing mask. The most appropriate next step is to:

- a. apply cervical traction.
- b. perform immediate tracheostomy. X. Time consuming
- c. insert bilateral thoracostomy tubes.
- d. maintain 100% oxygen and obtain immediate c-spine x-rays.
- ☒ e. restrict cervical motion and establish a definitive airway.

1-36. When applying the Rule of Nines to infants:

- a. it is not reliable.

- b. the body is proportionally larger in infants than in adults.
- ☒ c. the head is proportionally larger in infants than in adults.
- d. the legs are proportionally larger in infants than in adults.
- e. the arms are proportionally larger in infants than in adults.

1-37. A healthy young male is brought to the ED following a motor vehicle crash. His vital signs are blood pressure of 84/60 mm Hg, heart rate of 123 beats per minute, GCS 10. The patient moans when his pelvis is palpated. After initiating fluid resuscitation, the next step in management is:

- ☒ a. placement of a pelvic binder.
- b. transfer to a trauma center.
- c. a pelvic x-ray.
- d. to insert a urinary catheter.
- e. repeat the examination of the pelvis.

1-38. Which situation requires Rh immunoglobulin administration to an injured female?

- a. Negative pregnancy test, Rh negative, and has 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

1-39. A 22-year-old female athlete is stabbed in her left chest at the third interspace in the anteriormaxillary line. On admission to the ED and 15 minutes after the incident, she is awake and alert. Her heartrate is 100 beats per minute, blood pressure is 80/60 mm Hg, and respiratory rate is 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 to:

- 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.

1-40. A 6-year-old boy walking across the street is struck by the front bumper of a sports utility vehicle traveling at 32 kph. Which statement is TRUE about this patient?

- 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.