

COMPREHENSIVE MOCK EXAM 3

Supplemental to: Surgical Critical Care Board Review 2026-2027

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*American Board of Surgery Surgical Critical Care Certifying Examination — 200 questions,
computer-based single-best-answer format, domain-weighted per the official SCC CE blueprint;
A-E option format follows the parent book specification*

Board-Review Questions

1. A patient with blunt abdominal trauma is hypotensive with a positive FAST examination and peritonitis. What is the next step?
 - A. Repeat FAST after additional blood-product resuscitation
 - B. Obtain contrast-enhanced abdominal CT before intervention
 - C. Proceed immediately to exploratory laparotomy for hemorrhage control
 - D. Perform diagnostic peritoneal aspiration before operative management
 - E. Proceed first to pelvic angiography for presumed retroperitoneal bleeding

2. An 80-kg adult has 30% TBSA partial- and full-thickness burns. Using a contemporary 2 mL/kg/%TBSA starting estimate, what is the estimated crystalloid volume for the first 24 hours before titration?
 - A. 7.2 L
 - B. 9.6 L
 - C. 2.4 L
 - D. 12.0 L
 - E. 4.8 L

3. A patient with severe airflow obstruction becomes pulseless shortly after intubation. The ventilator shows marked auto-PEEP. What bedside maneuver may rapidly improve venous return while the cause is addressed?
 - A. Apply an inspiratory hold to measure plateau pressure before changing ventilation
 - B. Increase external PEEP to match the measured intrinsic PEEP during the arrest
 - C. Briefly disconnect the ventilator to allow complete exhalation
 - D. Increase respiratory rate to improve carbon dioxide clearance during resuscitation
 - E. Increase tidal volume to improve minute ventilation despite dynamic hyperinflation

4. A patient with aneurysmal subarachnoid hemorrhage has undergone aneurysm treatment. Which medication should generally be started early and continued to improve neurologic outcomes by reducing delayed ischemic complications?

- A.** Early enteral nimodipine, continued unless a clinical contraindication develops
- B.** Routine levetiracetam continued for the hospitalization to prevent delayed cerebral ischemia
- C.** Prophylactic induced hypertension before any neurologic change develops
- D.** Scheduled mannitol administration despite normal intracranial pressure and volume status
- E.** Therapeutic anticoagulation to prevent cerebral arterial vasospasm

5. A hemodynamically unstable patient with pelvic-ring disruption has no intraperitoneal blood on FAST and ongoing transfusion requirement. What is the most appropriate hemorrhage-control strategy?

- A.** Maintain the pelvic binder and continue transfusion without adding a hemorrhage-control procedure
- B.** Obtain CT angiography before any intervention despite persistent hemodynamic instability
- C.** Pelvic stabilization followed promptly by packing and/or angioembolization as resources permit
- D.** Remove the pelvic binder and place the patient in traction before further resuscitation
- E.** Proceed to exploratory laparotomy solely because pelvic bleeding is suspected despite a negative FAST

6. A patient with severe acute pancreatitis has persistent organ failure but no proven infected necrosis. Which statement about prophylactic antibiotics is most accurate?

- A.** Routine antibiotics are not indicated solely to prevent infection of sterile pancreatic necrosis
- B.** Begin a carbapenem in all patients with radiographic pancreatic necrosis regardless of infection evidence
- C.** Use prophylactic fluconazole whenever pancreatic necrosis involves more than one anatomic region
- D.** Continue broad-spectrum antibiotics until the necrotic collection has fully resolved on imaging
- E.** Delay enteral feeding until inflammatory markers normalize because feeding increases necrosis infection

7. A patient with septic shock has persistent fever and organ dysfunction 48 hours after apparently appropriate antibiotics. Which next step is most important?
- A. Broaden antimicrobial coverage immediately without reassessing the anatomy or diagnosis
 - B. Continue the current regimen unchanged because fever at 48 hours is expected in septic shock
 - C. Reevaluate for inadequate source control, resistant organisms, or an alternative diagnosis
 - D. Add empiric antifungal therapy solely because bacterial antibiotics have not normalized the temperature
 - E. Treat the fever with antipyretics and defer further investigation while cultures are pending
8. A ventilated patient has both peak and plateau pressures markedly elevated compared with earlier values. Which explanation is most likely?
- A. Reduced respiratory-system compliance from processes such as ARDS or pneumothorax
 - B. Increased endotracheal-tube resistance from thick secretions with unchanged alveolar compliance
 - C. Acute bronchospasm causing a large resistive pressure gradient across the airways
 - D. Kinking of the endotracheal tube producing an isolated increase in airway resistance
 - E. Patient biting of the endotracheal tube with preserved respiratory-system compliance
9. A patient with low cardiac output after cardiac surgery has a pulmonary artery catheter. Mixed venous oxygen saturation is 48% with normal arterial oxygen saturation and hemoglobin. What does this most strongly indicate?
- A. Systemic oxygen extraction has fallen because tissue oxygen demand is unusually low
 - B. Cardiac output is more than adequate and tissue extraction is appropriately minimal
 - C. Arterial oxygen content is necessarily low despite the stated normal saturation and hemoglobin
 - D. Systemic oxygen delivery is inadequate relative to tissue oxygen consumption
 - E. The low value proves a left-to-right intracardiac shunt is the cause of shock

10. A patient has potassium 6.9 mEq/L with peaked T waves and widening of the QRS complex. What should be given first to reduce the immediate risk of malignant arrhythmia?

- A.** Give intravenous insulin with dextrose before any membrane-stabilizing treatment
- B.** Give nebulized beta-agonist therapy as the sole immediate intervention
- C.** Administer sodium bicarbonate first regardless of the patient's acid-base status
- D.** Begin a loop diuretic and wait for urinary potassium excretion before other therapy
- E.** Intravenous calcium given immediately to stabilize the cardiac membrane

11. A patient with oliguria and generalized edema has received substantial fluid but shows no stroke-volume increase during passive leg raise. What is the best implication for further resuscitation?

- A.** Give another crystalloid bolus because oliguria alone establishes persistent preload dependence
- B.** Switch to albumin because lack of response to crystalloid predicts response to colloid
- C.** Additional fluid is unlikely to improve cardiac output and may worsen fluid overload
- D.** Use central venous pressure alone to decide whether repeated fluid boluses are indicated
- E.** Continue fluid until urine output normalizes even if dynamic indices remain negative

12. A toddler with blunt abdominal trauma is initially normotensive but tachycardic, pale, and poorly perfused. Which statement is most accurate?

- A.** Hypotension is usually the earliest reliable sign of clinically important pediatric hemorrhage
- B.** A normal systolic pressure makes major blood loss unlikely when tachycardia is present
- C.** Tachycardia is less useful than hypotension for recognizing early shock in young children
- D.** Peripheral perfusion findings are unreliable until systolic pressure begins to fall
- E.** Children may maintain blood pressure until late in shock, so normal pressure does not exclude major blood loss

13. A mechanically ventilated patient becomes hypotensive shortly after central-line placement. Breath sounds are absent on the right, airway pressure rises, and the trachea shifts left. What should be done first?

- A.** Increase PEEP to recruit the right lung
- B.** Obtain a chest CT before intervention
- C.** Immediate right-sided chest decompression
- D.** Give intravenous furosemide for pulmonary edema
- E.** Perform synchronized cardioversion

14. A study reports an odds ratio of 1.0 for the association between an exposure and an outcome. What does this indicate?

- A.** No observed association between exposure and outcome
- B.** The exposure doubles the odds of the outcome in the studied population
- C.** The exposure reduces the odds of the outcome by approximately one half
- D.** The study demonstrates a statistically significant protective association
- E.** The absolute risk difference between groups must equal zero regardless of baseline risk

15. A patient with cirrhosis and variceal hemorrhage develops worsening confusion and asterixis after bleeding is controlled. Which complication is most likely?

- A.** Hepatic encephalopathy precipitated by gastrointestinal bleeding
- B.** Alcohol-withdrawal delirium precipitated by the blood transfusion
- C.** Acute ischemic stroke as the typical explanation for symmetric asterixis
- D.** Uremic encephalopathy despite preserved renal function and no azotemia
- E.** Hypercapnic encephalopathy despite normal ventilation and arterial carbon dioxide

16. A critically ill patient has refractory ventricular ectopy and potassium of 3.0 mEq/L despite repeated potassium replacement. Magnesium is 1.1 mg/dL. What is the best next step?

- A.** Continue potassium replacement without correcting the magnesium deficit
- B.** Give intravenous calcium as definitive treatment for both abnormalities
- C.** Administer sodium bicarbonate despite no acid-base indication

- D.** Pause potassium therapy until magnesium normalizes without replacement
- E.** Replace magnesium together with continued potassium repletion

17. A patient with severe TBI has escalating intracranial pressure and an intact blood pressure. Which osmotic therapy is appropriate as part of acute ICP management?

- A.** Prophylactic profound hyperventilation as continuous long-term osmotic therapy
- B.** High-dose corticosteroids to reduce traumatic cerebral edema and intracranial pressure
- C.** Hypertonic saline or mannitol selected according to hemodynamics and clinical context
- D.** Hypotonic free-water administration to lower serum osmolality during the ICP crisis
- E.** Routine albumin loading as the preferred hyperosmolar strategy after severe TBI

18. A patient develops monomorphic wide-complex tachycardia at 190/min but remains awake with a blood pressure of 118/70 mm Hg and no ischemic chest pain. Which approach is most appropriate?

- A.** Perform unsynchronized defibrillation immediately despite the presence of an organized pulse
- B.** Treat as stable ventricular tachycardia with an appropriate intravenous antiarrhythmic
- C.** Give intravenous diltiazem for presumed supraventricular tachycardia with aberrancy without further assessment
- D.** Observe without treatment because hemodynamic stability excludes clinically important ventricular tachycardia
- E.** Administer repeated adenosine doses for an irregular polymorphic wide-complex rhythm

19. A patient with severe symptomatic hypercalcemia is dehydrated and confused. What is the most appropriate initial treatment?

- A.** Isotonic crystalloid rehydration followed by cause-directed calcium-lowering therapy
- B.** Give intravenous bisphosphonate before correcting the substantial intravascular volume deficit
- C.** Use loop diuretics as the first intervention before restoring intravascular volume
- D.** Restrict fluids to prevent urinary calcium losses and worsening dehydration

E. Begin phosphate infusion as routine first-line therapy for severe hypercalcemia

20. A patient with ARDS has tidal volume 420 mL, plateau pressure 28 cm H₂O, and total PEEP 12 cm H₂O. What is the driving pressure?

A. 40 cm H₂O

B. 12 cm H₂O

C. 4 cm H₂O

D. 16 cm H₂O

E. 28 cm H₂O

21. An elderly postoperative patient is hypothermic, bradycardic, hypoventilating, hyponatremic, and obtunded with a history of severe hypothyroidism. Which diagnosis is most likely?

A. Serotonin syndrome

B. Thyroid storm

C. Pheochromocytoma crisis

D. Acute alcohol withdrawal

E. Myxedema coma

22. A screening test is used in a population where disease prevalence rises substantially. If sensitivity and specificity remain unchanged, what generally happens to the positive predictive value?

A. It decreases because a larger fraction of positive results become false positives

B. It increases as a larger share of positive results are true positives

C. It remains unchanged because predictive values depend only on sensitivity and specificity

D. It becomes equal to sensitivity once prevalence rises above 50 percent

E. It becomes equal to specificity once prevalence rises above 50 percent

23. A bleeding patient taking warfarin has an INR of 5.8 and an intracranial hemorrhage. Which reversal strategy is most appropriate?

- A.** Give intravenous vitamin K alone and rely on delayed hepatic synthesis of clotting factors
- B.** Give fresh frozen plasma without vitamin K despite the need for sustained reversal
- C.** Give protamine sulfate because it neutralizes vitamin K antagonists directly
- D.** Give four-factor prothrombin complex concentrate plus intravenous vitamin K
- E.** Give platelet transfusion as the primary strategy for reversing warfarin anticoagulation

24. A patient with acute kidney injury has potassium 6.7 mEq/L despite medical therapy, severe metabolic acidosis, and progressive pulmonary edema. What is the most appropriate next treatment?

- A.** Urgent renal replacement therapy for refractory electrolyte, acid-base, and volume problems
- B.** Continue repeated insulin-dextrose treatments alone despite recurrent severe hyperkalemia
- C.** Give additional crystalloid boluses despite progressive pulmonary edema and oliguria
- D.** Use loop diuretics as definitive therapy despite refractory acidosis and hyperkalemia
- E.** Delay renal replacement therapy until the serum creatinine reaches a prespecified threshold

25. A patient passes a spontaneous breathing trial but has weak cough, copious secretions, and fluctuating mental status. What is the best interpretation?

- A.** Passing the trial does not guarantee successful extubation because airway protection must also be adequate
- B.** Extubate immediately because passing the spontaneous breathing trial establishes airway safety
- C.** Repeat the spontaneous breathing trial until cough strength and secretion burden improve
- D.** Use a cuff-leak test as the main determinant of whether the patient can protect the airway
- E.** Proceed directly to tracheostomy because copious secretions preclude any future extubation attempt

26. A patient with known small-bowel obstruction develops continuous severe pain, tachycardia, fever, leukocytosis, and metabolic acidosis. What complication should be suspected?

- A.** Uncomplicated adhesive small-bowel obstruction without ischemia
- B.** Postoperative ileus with preserved bowel perfusion
- C.** Acute colonic pseudo-obstruction without ischemia
- D.** Partial small-bowel obstruction without vascular compromise
- E.** Strangulated small-bowel obstruction with ischemia

27. A transplant patient taking tacrolimus develops tremor, hypertension, hyperkalemia, and rising creatinine. Which drug effect is most likely?

- A.** Calcineurin-inhibitor toxicity with renal and neurologic effects
- B.** Acute cellular allograft rejection causing isolated graft dysfunction
- C.** Mycophenolate toxicity causing diarrhea and marrow suppression
- D.** Transplant renal-artery stenosis causing renovascular hypertension
- E.** Adrenal insufficiency after rapid corticosteroid withdrawal

28. A passive leg raise increases measured stroke volume by 15% in a patient with shock. What does this finding suggest?

- A.** The patient is likely preload responsive and may increase output with fluid
- B.** The patient is unlikely to be fluid responsive because a 15 percent rise is below a useful threshold
- C.** The maneuver proves that vasopressor therapy should be stopped before any fluid is given
- D.** The finding diagnoses cardiogenic shock rather than providing information about preload responsiveness
- E.** The result is uninterpretable because passive leg raising cannot act as a reversible preload challenge

29. A patient on pressure-control ventilation has a sudden fall in delivered tidal volume without a change in set inspiratory pressure. Which change would best explain this?

- A.** An increase in set inspiratory pressure

- B.** A large improvement in lung compliance
- C.** A longer inspiratory time producing more volume
- D.** A new reduction in respiratory-system compliance
- E.** A spontaneous decrease in airway resistance with no other change

30. A patient with atrial fibrillation develops sudden severe abdominal pain out of proportion to examination and rising lactate. What diagnosis should be considered first?

- A.** Nonocclusive mesenteric ischemia caused by prolonged low-flow shock
- B.** Mesenteric venous thrombosis as the most likely embolic complication of atrial fibrillation
- C.** Ischemic colitis confined to a watershed region after transient hypotension
- D.** Acute mesenteric ischemia from arterial embolism
- E.** Perforated peptic ulcer as the classic cause of pain out of proportion to examination

31. A patient with acute decompensated left-ventricular failure has severe hypertension, pulmonary edema, and preserved mental status. Which hemodynamic intervention can rapidly improve forward flow while reducing pulmonary congestion?

- A.** Give a large crystalloid bolus to raise left-ventricular filling pressure further
- B.** Use phenylephrine to increase systemic vascular resistance and left-ventricular afterload
- C.** Use isolated loop diuresis while leaving the severe hypertension untreated initially
- D.** Start an inotrope despite preserved perfusion pressure and no evidence of low contractility
- E.** Careful intravenous afterload reduction with a titratable vasodilator

32. A patient with an infected central venous catheter has persistent *Staphylococcus aureus* bacteremia. Which management step is most appropriate?

- A.** Attempt catheter salvage with antibiotic-lock therapy despite persistent *S. aureus* bacteremia
- B.** Remove the infected catheter and evaluate for metastatic infection while giving targeted antibiotics

- C. Exchange the catheter over a guidewire through the same infected tract
- D. Keep the catheter in place if fever resolves before blood cultures become negative
- E. Remove systemic antibiotics after line removal without evaluating for metastatic infection

33. A mechanically ventilated patient has increasing abdominal distention, oliguria, high airway pressures, and shock. Bladder pressure is 26 mm Hg with new organ dysfunction. What is the diagnosis?

- A. Intra-abdominal hypertension without pressure-related organ dysfunction
- B. Postoperative ileus with secondary abdominal distention
- C. Tension pneumothorax causing obstructive shock and high airway pressure
- D. Prerenal acute kidney injury causing oliguria during shock
- E. Abdominal compartment syndrome with new organ dysfunction

34. A patient with chronic hyponatremia has a serum sodium of 112 mEq/L and a generalized seizure. What is the most appropriate immediate therapy?

- A. Restrict fluid and wait for spontaneous correction despite the active seizure
- B. Normalize the sodium rapidly to 140 mEq/L during the first several hours
- C. Give controlled hypertonic saline to raise sodium promptly by a small initial amount
- D. Use isotonic saline alone despite severe neurologic symptoms from hyponatremia
- E. Give a vasopressin-receptor antagonist before controlling the acute neurologic symptoms

35. A patient from a house fire is confused with headache and a normal pulse-oximetry reading. What treatment should be given for suspected carbon monoxide poisoning?

- A. Wait for carboxyhemoglobin confirmation before starting oxygen therapy
- B. Administer high-concentration oxygen immediately for suspected poisoning
- C. Use normal pulse oximetry to exclude clinically important exposure
- D. Give methylene blue as first-line antidotal therapy
- E. Use low-flow oxygen because high FiO₂ slows carbon monoxide elimination

36. A septic patient develops atrial fibrillation with a ventricular rate of 170/min and a blood pressure of 70/40 mm Hg with altered mentation. What is the most appropriate immediate management?

- A.** Give intravenous diltiazem for rate control before treating the shock
- B.** Load digoxin and reassess after pharmacologic rate control
- C.** Perform immediate synchronized electrical cardioversion for instability
- D.** Give adenosine as definitive therapy for the irregular tachyarrhythmia
- E.** Treat sepsis alone and defer rhythm intervention despite hypotension

37. A patient with massive upper gastrointestinal bleeding is hypotensive and has ongoing hematemesis. After airway assessment and resuscitation, what is the next definitive diagnostic and therapeutic step in most cases?

- A.** Perform urgent upper endoscopy after initial airway and circulatory stabilization
- B.** Obtain CT angiography before any endoscopic hemostatic attempt
- C.** Proceed directly to operative gastrectomy without localization
- D.** Perform colonoscopy as the initial diagnostic procedure
- E.** Obtain a barium contrast study before endoscopy

38. An arterial line tracing in a patient with severe aortic regurgitation shows a very wide pulse pressure. Which physiologic change best explains this finding?

- A.** Right-to-left shunting across the atrial septum
- B.** Rapid diastolic runoff from the aorta back into the left ventricle
- C.** Complete loss of arterial compliance from acute hypovolemia
- D.** Marked reduction in stroke volume with prolonged diastolic filling
- E.** Fixed obstruction to left-ventricular ejection during systole

39. A postoperative patient suddenly develops hypotension, jugular venous distention, and tachycardia. Bedside echocardiography shows a large pericardial effusion with right-ventricular diastolic collapse. What is the most appropriate immediate treatment?

- A.** Begin nitroprusside to reduce afterload before treating impaired filling
- B.** Observe with serial echocardiography despite ongoing tamponade physiology
- C.** Give aggressive diuresis to lower central venous pressure
- D.** Use beta blockade to slow the heart before relieving pericardial pressure
- E.** Perform urgent pericardial decompression to restore cardiac filling

40. A stable patient has a grade IV blunt splenic injury with contrast extravasation on CT. Which management is most appropriate at a capable trauma center?

- A.** Observe without angiography because hemodynamic stability makes contrast extravasation low risk
- B.** Nonoperative management with consideration of splenic angioembolization
- C.** Perform immediate splenectomy solely because the injury is classified as grade IV
- D.** Discharge after a single stable hemoglobin measurement because delayed bleeding is unlikely
- E.** Perform exploratory laparotomy before attempting splenic preservation despite stable physiology

41. A patient with severe liver failure develops recurrent hypoglycemia despite no insulin administration. Which mechanism is most relevant?

- A.** Impaired hepatic glycogenolysis and gluconeogenesis
- B.** Increased renal gluconeogenesis with excessive release of glucose into the circulation
- C.** Accelerated intestinal glucose absorption caused directly by hepatic synthetic failure
- D.** Increased skeletal-muscle glycogenolysis with transfer of free glucose into plasma
- E.** Excess glucagon secretion producing persistent fasting hyperglycemia

42. A patient with acute inferior myocardial infarction is hypotensive with clear lungs, elevated jugular venous pressure, and ST elevation in right-sided precordial leads. Which initial hemodynamic strategy is most appropriate?

- A.** Give aggressive nitrates to reduce right-ventricular filling pressure
- B.** Start high-dose diuresis despite the absence of pulmonary congestion
- C.** Restrict all intravenous fluid because myocardial infarction is present
- D.** Use isolated afterload reduction with nitroprusside
- E.** Support right-ventricular preload while arranging reperfusion

43. A diagnostic test has 95% sensitivity. What does this mean?

- A.** The disease prevalence in the tested population is 95%
- B.** Among patients who truly have the disease, about 95% will test positive
- C.** The test reduces mortality by 95%
- D.** Among patients without disease, 95% will test negative
- E.** Among patients who test positive, 95% definitely have the disease

44. An asthmatic patient on mechanical ventilation develops hypotension, very high peak airway pressure, and expiratory flow that does not return to baseline before the next breath. What is the most appropriate immediate ventilator strategy?

- A.** Increase respiratory rate to eliminate hypercapnia rapidly
- B.** Add external PEEP until peak pressure exceeds 50 cm H₂O
- C.** Shorten expiratory time to prevent respiratory alkalosis
- D.** Increase expiratory time by reducing respiratory rate and minute ventilation
- E.** Increase tidal volume to overcome airway resistance

45. A patient with severe TBI develops a generalized tonic-clonic seizure on hospital day 2. Which statement regarding post-traumatic seizures is most accurate?

- A.** Antiseizure prophylaxis is contraindicated when traumatic intracranial hemorrhage is present
- B.** Early prophylaxis reliably prevents post-traumatic epilepsy months or years after injury
- C.** Early antiseizure prophylaxis can reduce seizures occurring in the first week after severe TBI
- D.** A seizure during the first week does not contribute to secondary cerebral metabolic stress
- E.** Magnesium sulfate is the standard prophylactic agent for early post-traumatic seizures

46. A patient with severe traumatic brain injury has an intracranial pressure persistently measuring 25 mm Hg despite sedation and head elevation. Which statement is most accurate?

- A.** No treatment is indicated until ICP exceeds 40 mm Hg for several hours
- B.** Cerebral perfusion pressure should intentionally be lowered below 40 mm Hg
- C.** ICP should be ignored if the systolic blood pressure is normal
- D.** This level warrants treatment because sustained ICP above about 22 mm Hg is associated with worse outcome
- E.** Routine profound hyperventilation is the preferred long-term first-line therapy

47. A stable ICU patient without active bleeding has hemoglobin 6.8 g/dL. Which transfusion strategy is generally appropriate?

- A.** Transfuse red cells to maintain hemoglobin above 12 g/dL in otherwise stable ICU patients
- B.** Transfuse red cells using a restrictive threshold near 7 g/dL unless clinical factors justify a higher threshold
- C.** Use platelet transfusion instead of red cells because thrombocytopenia often accompanies critical illness
- D.** Withhold red-cell transfusion until hemoglobin falls below 5 g/dL regardless of clinical context
- E.** Use plasma transfusion as the preferred method for increasing oxygen-carrying capacity

48. A patient with diabetic ketoacidosis has a measured serum potassium of 5.2 mEq/L before insulin therapy. Which statement is most accurate?

- A.** The measured hyperkalemia indicates that total-body potassium stores are increased

- B.** Insulin therapy will raise serum potassium further by shifting potassium out of cells
- C.** Potassium replacement is generally unnecessary once the initial serum level exceeds 5 mEq/L
- D.** Total-body potassium is usually depleted despite the initially normal or high serum value
- E.** Acidosis prevents urinary potassium losses, so clinically important potassium depletion does not occur

49. A patient with aneurysmal subarachnoid hemorrhage develops new focal weakness on day 7, and imaging excludes rebleeding. Which complication is most concerning?

- A.** Acute hydrocephalus as the most likely isolated cause of a new focal deficit on day 7
- B.** Recurrent aneurysmal bleeding despite imaging that excludes new hemorrhage
- C.** Osmotic demyelination syndrome caused by the subarachnoid hemorrhage itself
- D.** Postictal paresis despite no witnessed or electrographic seizure activity
- E.** Delayed cerebral ischemia, often associated with cerebral vasospasm

50. A mechanically ventilated patient has a new infiltrate and purulent secretions after 8 days in the ICU. The unit has substantial multidrug-resistant gram-negative prevalence, and the patient received IV antibiotics last week. What should empiric therapy account for?

- A.** Use the usual community-acquired pneumonia regimen without considering prior antibiotic exposure
- B.** Delay empiric treatment until final quantitative culture results are available
- C.** Use routine antifungal therapy because prolonged ventilation predicts invasive fungal pneumonia
- D.** Use a single narrow gram-positive agent regardless of the unit antibiogram
- E.** Local resistance patterns and the patient's individual MDR risk factors

51. A massively bleeding patient has a fibrinogen concentration of 85 mg/dL with diffuse microvascular bleeding. Which blood component most directly replaces fibrinogen?

- A.** Packed red blood cells to replace fibrinogen while increasing oxygen-carrying capacity
- B.** Platelets as the most concentrated source of fibrinogen during massive bleeding

- C. Four-factor prothrombin complex concentrate as the principal fibrinogen replacement product
- D. Cryoprecipitate or fibrinogen concentrate to restore fibrinogen directly
- E. Albumin solution to restore fibrinogen without adding coagulation factors

52. An arterial-line tracing shows exaggerated systolic peaks and unusually low diastolic pressure with prominent oscillation after the fast-flush test. What is the likely problem?

- A. Correct damping with no waveform distortion
- B. Loss of all arterial pulsatility from cardiac arrest
- C. Underdamping with excessive resonance
- D. Overdamping from clot in the catheter
- E. A venous catheter accidentally transduced as an artery

53. An intubated ARDS patient has a plateau pressure of 34 cm H₂O while receiving 6 mL/kg predicted body weight. What is the best next ventilator adjustment?

- A. Increase tidal volume to reduce respiratory rate despite the elevated plateau pressure
- B. Remove PEEP entirely despite persistent alveolar instability and oxygenation needs
- C. Calculate tidal volume from actual body weight rather than predicted body weight
- D. Reduce tidal volume further while maintaining acceptable oxygenation and ventilation
- E. Increase inspiratory pressure until arterial carbon dioxide reaches the normal range

54. A patient has shock with warm extremities, wide pulse pressure, high cardiac output, and low systemic vascular resistance. Which hemodynamic pattern is most consistent with these findings?

- A. Cardiogenic shock
- B. Isolated right-ventricular infarction
- C. Obstructive shock from tamponade
- D. Hypovolemic shock
- E. Distributive shock

55. A diagnostic test has 95% specificity. What does this mean?
- A. Among patients with disease, 95% will test positive
 - B. The test sensitivity must also be 95%
 - C. Among patients who do not have the disease, about 95% will test negative
 - D. Among patients with a positive result, 95% have disease despite prevalence
 - E. The false-negative rate is necessarily 95%
56. A patient with profound neutropenia develops fever and shock. Which antimicrobial principle is most appropriate?
- A. Begin vancomycin monotherapy because gram-positive organisms predominate in neutropenic fever
 - B. Begin prompt broad-spectrum antibacterial therapy with antipseudomonal activity while cultures are obtained
 - C. Use an oral fluoroquinolone regimen despite shock and profound neutropenia
 - D. Delay antibacterial therapy until blood-culture identification is available
 - E. Begin empiric mold-active antifungal therapy as the sole initial treatment for the first febrile episode
57. A patient with postoperative intra-abdominal sepsis has yeast reported from a properly obtained peritoneal specimen after a recurrent anastomotic leak and prolonged broad-spectrum antibiotic exposure. Which interpretation is most appropriate?
- A. Treat the yeast as colonization because *Candida* does not cause secondary intra-abdominal infection
 - B. Continue antibacterial therapy alone because a recurrent anastomotic leak does not increase fungal risk
 - C. Begin lifelong suppressive antifungal therapy after any postoperative *Candida* isolation
 - D. Repeat cultures without antifungal therapy because a properly obtained peritoneal specimen is nonsterile by definition

E. Consider invasive intra-abdominal Candida infection and treat in this high-risk context

58. A patient with a crush injury to the leg is extricated after several hours and develops peaked T waves before arrival at the operating room. Which metabolic complication is most urgent?

- A. Severe hypocalcemia causing the peaked T waves
- B. Acute hyperkalemia from release of intracellular muscle potassium
- C. Hypophosphatemia from intracellular phosphate trapping
- D. Metabolic alkalosis from release of intracellular bicarbonate
- E. Hypernatremia from release of intracellular sodium

59. A burn wound that was initially viable becomes painful, discolored, and associated with systemic deterioration and rapidly spreading invasive infection. What is the most important management principle?

- A. Escalate topical antimicrobial therapy and defer excision while systemic antibiotics take effect
- B. Close the wound primarily after bedside cleansing without removing invasive necrotic tissue
- C. Delay excision until serial surface cultures become negative
- D. Urgently excise infected necrotic tissue and give appropriate systemic antimicrobials
- E. Use systemic corticosteroids to reduce the inflammatory response before operative treatment

60. A patient with septic shock improves after antibiotics and source control. Cultures remain negative, and a noninfectious diagnosis becomes much more likely. What is the best antimicrobial approach?

- A. Broaden to additional antibacterial classes despite improving physiology and a likely noninfectious diagnosis
- B. Continue the original broad regimen for a fixed 14-day course regardless of the revised diagnosis
- C. Add empiric antifungal therapy solely because bacterial cultures remain negative
- D. Reassess daily and discontinue empiric antibiotics when infection is no longer supported
- E. Continue broad therapy until inflammatory biomarkers completely normalize

61. A patient with a preexisting do-not-resuscitate order is scheduled for urgent surgery. Which approach is ethically appropriate?

- A.** Automatically suspend the DNR for the entire perioperative period without discussion
- B.** Automatically cancel the operation because any preexisting DNR prohibits anesthesia
- C.** Reconsider the DNR with the patient or surrogate and define acceptable perioperative interventions
- D.** Require temporary acceptance of all resuscitative interventions as a condition of surgery
- E.** Ask the surgical team to ignore the directive because advance directives do not apply in the operating room

62. A kidney-transplant recipient develops rising creatinine, graft tenderness, and reduced urine output several weeks after transplantation. Which diagnosis should be considered prominently?

- A.** Acute allograft rejection causing clinically important graft dysfunction
- B.** Calcineurin-inhibitor nephrotoxicity as the only diagnosis that can occur several weeks after transplantation
- C.** Ureteral obstruction causing postrenal graft dysfunction without considering rejection
- D.** Renal-artery thrombosis presenting several weeks later with a tender perfused graft as the typical pattern
- E.** Expected postoperative variation that does not require urgent assessment of the transplanted kidney

63. A 2-year-old child with respiratory failure develops bradycardia and poor perfusion. Which cause should be corrected immediately because it commonly precipitates pediatric bradycardic arrest?

- A.** Medication-induced bradycardia from an inadvertent beta-blocker exposure
- B.** Hypoxemia from worsening respiratory failure causing secondary bradycardia
- C.** Vagal stimulation from airway suctioning causing transient sinus bradycardia
- D.** Hypothermia causing progressive sinus bradycardia and impaired perfusion
- E.** Congenital atrioventricular block presenting with a primary bradyarrhythmia

64. A patient with severe TBI has mean arterial pressure 85 mm Hg and intracranial pressure 20 mm Hg. What is the cerebral perfusion pressure?

- A.** 85 mm Hg
- B.** 105 mm Hg
- C.** 45 mm Hg
- D.** 20 mm Hg
- E.** 65 mm Hg

65. During resuscitation, a patient develops pulseless electrical activity. Bedside ultrasound shows a massively dilated right ventricle without pericardial effusion. Which reversible cause should be considered urgently?

- A.** Stable chronic aortic regurgitation
- B.** Isolated essential hypertension
- C.** Massive pulmonary embolism
- D.** Primary hypoglycemia
- E.** Uncomplicated atrial fibrillation

66. A patient with ARDS has a PaO₂ of 60 mm Hg on FiO₂ 0.80. Which calculation best quantifies the severity of oxygenation impairment?

- A.** Mean arterial pressure divided by PEEP
- B.** PaO₂ divided by FiO₂, yielding a P/F ratio of 75
- C.** FiO₂ divided by PaO₂, yielding a ratio of 0.013
- D.** PaCO₂ multiplied by tidal volume
- E.** Plateau pressure divided by respiratory rate

67. A patient has pH 7.25, PaCO₂ 25 mm Hg, and serum bicarbonate 11 mEq/L. Which primary acid-base disorder is present?

- A. Primary respiratory acidosis with renal compensation
- B. Primary metabolic alkalosis with respiratory compensation
- C. A normal acid-base state because PaCO₂ is low
- D. Primary metabolic acidosis with respiratory compensation
- E. Primary respiratory alkalosis with renal bicarbonate retention

68. A mechanically ventilated patient requires ongoing analgesia and light sedation. Which general medication strategy best supports liberation from ventilation?

- A. Use continuous neuromuscular blockade as the primary long-term strategy for comfort and sedation
- B. Treat pain first and use the lowest effective sedative exposure with regular reassessment
- C. Withhold analgesia so pain does not interfere with serial neurologic examinations
- D. Target deep unarousable sedation until mechanical ventilation is discontinued
- E. Prefer continuous benzodiazepine infusions at deep sedation targets for most ventilated patients

69. A patient with chronic hypernatremia from water loss has a serum sodium of 166 mEq/L but is hemodynamically stable. What is the key principle of correction?

- A. Use hypertonic saline to lower the serum sodium through osmotic redistribution
- B. Replace free-water deficit gradually while monitoring sodium frequently
- C. Normalize the sodium within several hours to shorten the duration of hyperosmolar exposure
- D. Use loop diuretics alone without replacing the calculated free-water deficit
- E. Avoid enteral free water because only intravenous dextrose solutions can correct hypernatremia

70. A patient with blunt chest trauma is hypotensive and has muffled heart sounds and jugular venous distention. FAST shows pericardial fluid. What is the most appropriate next step?

- A. Large-dose diuresis to reduce central venous pressure
- B. Increase PEEP to improve right-ventricular filling

- C. Immediate operative or procedural relief of traumatic tamponade
- D. CT angiography before any intervention
- E. Observation because pericardial fluid is expected after trauma

71. A patient from an enclosed-space fire has profound lactic acidosis, hypotension, and altered mental status out of proportion to the measured carboxyhemoglobin level despite high-flow oxygen. Which additional toxin should be considered?

- A. Carbon monoxide alone as the complete explanation for the disproportionate cellular lactic acidosis
- B. Cyanide toxicity from combustion products causing cellular hypoxia
- C. Methemoglobinemia from smoke exposure as the characteristic cause of profound lactate elevation
- D. Methanol exposure from combustion products as the typical cause of immediate cardiovascular collapse
- E. Organophosphate poisoning without cholinergic findings as the expected enclosed-fire toxic syndrome

72. A patient with severe oliguria after pelvic trauma has a distended bladder and bilateral hydronephrosis on ultrasound. Which category of acute kidney injury is most likely?

- A. Immune-complex glomerulonephritis producing an intrinsic renal lesion
- B. Hepatorenal syndrome causing functional renal failure after pelvic trauma
- C. Intrinsic acute tubular injury occurring without urinary tract obstruction
- D. Postrenal urinary obstruction producing acute kidney injury and hydronephrosis
- E. Prerenal azotemia from isolated dehydration despite a distended obstructed bladder

73. An alert adult patient with decision-making capacity refuses a recommended operation after demonstrating understanding of the risks, benefits, and alternatives. What is the appropriate response?

- A. Ask a family member to override the refusal because the operation is recommended by the surgeon

- B.** Treat the refusal as evidence of incapacity because the patient's choice carries substantial risk
- C.** Respect the informed refusal and continue to offer appropriate supportive care
- D.** Proceed under implied consent because urgent operations are exempt from informed-refusal standards
- E.** Sedate the patient first and obtain consent after the sedative impairs decision-making capacity

74. A 42-year-old man with severe traumatic brain injury and ongoing pelvic hemorrhage has a systolic pressure of 82 mm Hg. Which principle should guide his resuscitation?

- A.** Withhold blood products until intracranial pressure monitoring is established
- B.** Use isolated vasoconstriction without volume or blood-product resuscitation
- C.** Prioritize profound hyperventilation over correction of systemic hypotension
- D.** Avoid permissive hypotension and support adequate cerebral perfusion while controlling bleeding
- E.** Accept a systolic pressure near 80 mm Hg until pelvic fixation is complete

75. A patient on chronic glucocorticoids undergoes emergency surgery and develops refractory hypotension, abdominal pain, hyponatremia, and hyperkalemia. What treatment should be given promptly?

- A.** Fluid restriction because hyponatremia implies water excess
- B.** High-dose insulin to correct the hyperkalemia without steroids
- C.** Immediate thyroid hormone as the primary therapy
- D.** Stop all glucocorticoids to allow endogenous adrenal recovery
- E.** Stress-dose intravenous hydrocortisone with appropriate volume resuscitation

76. A patient with severe ARDS remains profoundly hypoxemic despite lung-protective ventilation and appropriate PEEP. Which intervention has a demonstrated role in severe disease?

- A.** Prone positioning for prolonged daily sessions
- B.** Large tidal volumes to recruit dependent lung regions

- C. Prolonged high-pressure recruitment maneuvers as routine therapy
- D. Immediate reduction of PEEP to zero
- E. Routine high-frequency oscillatory ventilation

77. A 34-week pregnant patient has severe hypertension, headache, right upper quadrant pain, elevated liver enzymes, low platelets, and hemolysis. Which diagnosis is most likely?

- A. Hyperemesis gravidarum with dehydration but no hypertensive-organ syndrome
- B. Uncomplicated chronic hypertension without hemolysis or hepatic involvement
- C. Isolated gestational thrombocytopenia without hemolysis or liver injury
- D. Acute appendicitis causing right-sided abdominal pain without the laboratory triad
- E. HELLP syndrome with hemolysis, elevated liver enzymes, and thrombocytopenia

78. A trauma patient with multiple rib fractures has severe pain, shallow breathing, and declining inspiratory volumes but no immediate indication for intubation. Which intervention is most likely to reduce pulmonary complications?

- A. Use systemic sedation without targeted analgesia so chest-wall motion is minimized
- B. Restrict coughing and mobilization to reduce pain from the rib fractures
- C. Intubate prophylactically based on the number of fractured ribs despite adequate gas exchange
- D. Use opioid analgesia alone at doses that suppress respiratory drive and spontaneous cough
- E. Aggressive multimodal analgesia with pulmonary hygiene and early mobilization

79. A near-miss medication error is caught before reaching the patient. What is the best system response?

- A. Document the event without review because no injury actually reached the patient
- B. Focus on individual punishment rather than examining medication-system contributors
- C. Report and analyze the near miss to identify latent system hazards before harm occurs
- D. Wait for a similar error to reach a patient before changing the process

E. Remove the medication from the formulary without investigating how the near miss occurred

80. A patient with a tibial fracture has escalating pain despite analgesia, pain with passive stretch, tense compartments, and new paresthesias. What is the definitive treatment?

A. Continue serial examinations until distal pulses disappear before surgical decompression

B. Urgent decompressive fasciotomy of the threatened muscular compartments

C. Use systemic anticoagulation to improve microvascular flow within the affected compartments

D. Apply a tighter circumferential splint to limit further soft-tissue swelling

E. Elevate the leg well above heart level and observe despite progressive neurologic symptoms

81. A liver-transplant recipient becomes hypotensive and has rapidly rising aminotransferases immediately after transplantation. Doppler ultrasound shows absent hepatic arterial flow. What is the most urgent concern?

A. Hepatic artery thrombosis causing acute ischemia of the transplanted graft

B. Acute cellular rejection as the typical cause of absent hepatic arterial Doppler flow immediately after transplant

C. Primary graft dysfunction with preserved hepatic arterial flow as the best explanation for the Doppler finding

D. Biliary anastomotic obstruction causing abrupt loss of hepatic arterial perfusion

E. Portal-vein stenosis as the expected cause of complete absence of hepatic arterial flow

82. A patient receiving enteral nutrition has repeated gastric residual concerns but no abdominal distention, vomiting, or other signs of intolerance. Which principle is most appropriate?

A. Stop enteral feeding whenever any gastric residual is aspirated, regardless of symptoms

B. Convert to parenteral nutrition immediately because gastric residuals prove enteral feeding failure

C. Assess overall feeding tolerance rather than stopping enteral nutrition for an isolated residual value

D. Use a single gastric residual measurement as the primary diagnostic test for bowel ischemia

E. Hold nutrition until the stomach is completely empty on repeated bedside aspiration

83. A patient with severe septic shock is receiving norepinephrine and remains hypotensive. Which agent is commonly added to reduce escalating catecholamine requirements by providing nonadrenergic vasoconstriction?

- A. Vasopressin
- B. Nitroglycerin
- C. Milrinone
- D. Dobutamine
- E. Esmolol

84. An ICU identifies frequent delays in administering antibiotics for septic shock. Which quality-improvement approach is most appropriate?

- A. Issue a policy memo without measuring whether antibiotic-delivery times change
- B. Change several unrelated ICU processes simultaneously without specifying a measurable aim
- C. Focus on individual discipline before mapping where delays arise in the care process
- D. Map the process, test a targeted change with iterative PDSA cycles, and track meaningful outcomes
- E. Track compliance only after the intervention is complete, without iterative testing or feedback

85. A patient with COPD is ready for a spontaneous breathing trial. Which finding most strongly supports proceeding with the trial?

- A. Hemodynamic stability with adequate oxygenation on modest support and spontaneous breathing effort
- B. Deep neuromuscular blockade with complete absence of spontaneous respiratory effort
- C. Uncontrolled myocardial ischemia with recurrent episodes of ventricular tachycardia
- D. Escalating vasopressor requirement accompanied by severe metabolic acidosis
- E. Persistent requirement for FiO₂ 1.0 and PEEP 16 cm H₂O despite treatment

86. A vasopressor-dependent patient develops abdominal distention, bloody diarrhea, and rising lactate after prolonged shock. Which mechanism is most likely?

- A.** Embolic superior mesenteric arterial occlusion from an unrecognized atrial thrombus
- B.** Acute C. difficile colitis as the most direct consequence of prolonged vasopressor exposure
- C.** Nonocclusive mesenteric ischemia from low flow and intense splanchnic vasoconstriction
- D.** Acute pancreatitis causing bowel-wall hypoperfusion and bloody diarrhea
- E.** Mechanical small-bowel obstruction causing the typical diffuse ischemia of prolonged shock

87. During a mass-casualty event, ICU resources are insufficient for all patients who might benefit. Which triage principle is most appropriate?

- A.** Use categorical exclusions based on disability rather than individualized clinical assessment
- B.** Use a transparent, consistently applied process focused on maximizing benefit while avoiding irrelevant discrimination
- C.** Allow each treating clinician to apply an undisclosed personal allocation standard
- D.** Prioritize social status and perceived societal worth when assigning scarce ICU resources
- E.** Use first-come, first-served as the sole rule even when it predictably reduces overall benefit

88. A burn patient has facial burns, soot in the oropharynx, progressive hoarseness, and increasing work of breathing after an enclosed-space fire. What is the best airway strategy?

- A.** Continue noninvasive ventilation while progressive supraglottic edema is observed
- B.** Perform early endotracheal intubation before edema makes airway control difficult
- C.** Delay airway control until bronchoscopy has graded the inhalation injury
- D.** Use diuretics to reduce airway edema before deciding whether intubation is necessary
- E.** Wait for stridor at rest or complete obstruction before securing the airway

89. A patient with rhabdomyolysis after a crush injury has creatine kinase 18,000 U/L, dark urine, and rising creatinine. Which initial therapy is most important if there is no contraindication?

- A.** Begin routine sodium bicarbonate infusion before assessing acid-base status or urine output
- B.** Start prophylactic dialysis solely because the creatine kinase exceeds 10,000 U/L
- C.** Use high-dose loop diuretics instead of restoring intravascular volume and renal perfusion
- D.** Early isotonic crystalloid resuscitation to maintain renal perfusion and urine flow
- E.** Restrict intravenous fluid to reduce the concentration of pigment in the renal tubules

90. A patient with moderate-to-severe ARDS has persistent oxygenation failure. Which PEEP strategy is supported by contemporary guideline-based care?

- A.** Use prolonged high-pressure recruitment maneuvers routinely as the first response to hypoxemia
- B.** Reduce PEEP to zero whenever vasopressors are required for circulatory support
- C.** Choose PEEP mainly to normalize arterial carbon dioxide rather than maintain recruitment
- D.** Consider higher PEEP without routine prolonged recruitment maneuvers
- E.** Avoid higher PEEP even in moderate-to-severe ARDS because it consistently worsens outcomes

91. A patient with a high-voltage electrical injury has dark urine and elevated creatine kinase. Which complication requires especially close monitoring?

- A.** Isolated superficial skin injury as the best marker of the depth of electrical tissue damage
- B.** Delayed isolated hypokalemia from ongoing skeletal-muscle potassium uptake
- C.** Rhabdomyolysis with hyperkalemia and acute kidney injury
- D.** Uncomplicated respiratory alkalosis as the major systemic consequence of electrical injury
- E.** Acute appendicitis triggered by high-voltage current passage through the abdomen

92. A patient with septic shock has no clear source after initial evaluation. Which statement about blood cultures is most appropriate?

- A.** Withhold antimicrobial therapy until final blood-culture identification is available
- B.** Obtain blood cultures promptly, ideally before antibiotics, without creating a dangerous treatment delay

- C.** Skip blood cultures because a clinical diagnosis of septic shock makes microbiologic data unnecessary
- D.** Obtain only one culture bottle because additional sets do not improve interpretation of bacteremia
- E.** Delay cultures until after several antibiotic doses so transient contaminants are suppressed

93. A comatose patient after cardiac arrest is receiving temperature control and sedation. When should definitive neurologic prognostication generally be performed?

- A.** Use the admission motor examination alone before sedatives and temperature-control drugs are cleared
- B.** At least 72 hours after ROSC or rewarming, after confounders resolve, using multimodal assessment
- C.** Base prognosis on a single absent pupillary response during active neuromuscular blockade
- D.** Make a definitive prognosis during hypothermia because delayed assessment adds little information
- E.** Use serum lactate alone as a substitute for multimodal neurologic prognostication

94. A bleeding trauma patient reaches the emergency department 90 minutes after injury and is expected to require major transfusion. There is no contraindication to antifibrinolytic therapy. Which timing is most appropriate for tranexamic acid when it is used?

- A.** Delay tranexamic acid until operative hemostasis is complete and bleeding has substantially slowed
- B.** Administer it after 6 hours because later antifibrinolysis is more effective than early treatment
- C.** Reserve it for laboratory-confirmed hypofibrinogenemia rather than suspected major traumatic bleeding
- D.** Administer it as early as possible within 3 hours of injury
- E.** Wait until 24 hours after injury so patients with spontaneous hemostasis can be excluded

95. A cirrhotic patient presents with massive hematemesis and suspected esophageal variceal bleeding. Which early medication combination is appropriate while urgent endoscopy is arranged?

- A.** Use nonselective oral beta blockade as the primary emergency therapy during active exsanguinating hemorrhage
- B.** A vasoactive portal-pressure agent plus prophylactic antibiotics
- C.** Give therapeutic anticoagulation plus aspirin to reduce portal-vein thrombosis during the bleed
- D.** Use high-dose loop diuretics before restoring perfusion because portal hypertension reflects volume overload
- E.** Give a proton-pump inhibitor alone and omit infection prophylaxis despite suspected variceal bleeding

96. A hypotensive patient develops acute kidney injury after prolonged shock. Urinalysis shows muddy brown granular casts. Which renal lesion is most likely?

- A.** Minimal change nephrotic syndrome
- B.** Chronic diabetic nephropathy alone
- C.** Postrenal obstruction without tubular injury
- D.** Isolated renal artery aneurysm
- E.** Acute tubular injury from ischemia

97. A critically ill patient has right upper quadrant pain, fever, leukocytosis, and gallbladder wall thickening without gallstones after prolonged fasting and ventilation. Which diagnosis is most likely?

- A.** Simple postoperative ileus
- B.** Acute hepatitis without gallbladder disease
- C.** Acute acalculous cholecystitis
- D.** Chronic pancreatitis
- E.** Uncomplicated biliary colic from gallstones

98. An injured patient has a lactate of 7 mmol/L on arrival. After hemorrhage control and resuscitation, lactate falls to 3 mmol/L over several hours and urine output improves. What does this trend most strongly suggest?

- A. Definite occult mesenteric ischemia requiring laparotomy
- B. Improving global perfusion and repayment of oxygen debt
- C. An isolated laboratory artifact without resuscitation significance
- D. Worsening tissue hypoxia despite better hemodynamics
- E. A need to continue fluids until lactate reaches exactly zero

99. A mechanically ventilated patient with suspected ventilator-associated pneumonia has fever, purulent secretions, and a new infiltrate. Which diagnostic approach is most appropriate?

- A. Treat empirically without obtaining a respiratory specimen because airway cultures do not affect de-escalation
- B. Continue broad-spectrum therapy for a fixed prolonged course regardless of culture and clinical response
- C. Delay respiratory sampling until several days of antibiotics have reduced airway bacterial burden
- D. Use procalcitonin alone to establish or exclude ventilator-associated pneumonia
- E. Obtain respiratory cultures promptly and use clinical data to guide empiric therapy and subsequent de-escalation

100. A patient with probable septic shock has not yet received antibiotics. What is the appropriate timing?

- A. Delay antibacterial therapy until blood cultures have identified the organism and susceptibilities
- B. Wait for procalcitonin to exceed a prespecified threshold before treating probable septic shock
- C. Give empiric antifungal therapy alone while bacterial infection is being excluded
- D. Administer empiric antimicrobial therapy immediately, ideally within about 1 hour of recognition
- E. Observe for several hours to confirm persistent hypotension before beginning antimicrobial therapy

101. A patient with suspected urethral injury after pelvic fracture has blood at the urethral meatus and cannot void. What should be done before blind urethral catheterization?

- A.** Attempt gentle urethral catheterization to define whether obstruction is present
- B.** Perform retrograde urethrography before urethral instrumentation
- C.** Place a suprapubic catheter before evaluating the suspected urethral lesion
- D.** Perform delayed cystoscopy after several days of observation
- E.** Give a diuretic to distinguish obstruction from urethral disruption

102. A patient with hemorrhagic shock is cold, acidemic, and diffusely oozing from venipuncture sites during laparotomy. Which combination best describes the self-reinforcing physiologic problem that should be corrected?

- A.** Hyperthermia, alkalosis, and thrombocytosis
- B.** Bradycardia, hypermagnesemia, and polycythemia
- C.** Hypothermia, acidosis, and coagulopathy
- D.** Hypertension, hypoglycemia, and leukopenia
- E.** Hypocalcemia, hypernatremia, and respiratory alkalosis

103. A ventilated patient has central venous oxygen saturation that falls from 72% to 52% while arterial saturation and hemoglobin are unchanged. Which change is most likely?

- A.** Systemic oxygen delivery has increased because venous desaturation indicates better extraction reserve
- B.** Oxygen delivery has fallen relative to tissue demand, often because cardiac output decreased
- C.** Tissue oxygen extraction has fallen while oxygen consumption remains unchanged
- D.** The trend is uninterpretable because central venous oxygen saturation does not respond to cardiac output
- E.** Arterial oxygen content has increased despite unchanged saturation and hemoglobin

104. A patient with blunt trauma has left shoulder pain, hypotension, and a positive FAST in the left upper quadrant. Which organ is most likely injured?

- A.** Splenic injury producing left upper-quadrant intraperitoneal bleeding

- B.** Left renal injury with predominantly retroperitoneal bleeding around the kidney
- C.** Gastric injury causing contained intraluminal hemorrhage without peritoneal contamination
- D.** Left diaphragmatic rupture with herniation but no solid-organ hemorrhage
- E.** Descending-colon injury producing localized retroperitoneal contamination

105. A postoperative patient develops sudden hypoxemia and hypotension. Ultrasound shows right-ventricular dilation, and CT confirms a large pulmonary embolism. The patient remains in shock despite supportive therapy. Which treatment category should be considered urgently if no absolute contraindication exists?

- A.** Escalate urgently to reperfusion therapy for high-risk pulmonary embolism
- B.** Continue supportive care with prophylactic-dose anticoagulation alone
- C.** Place an inferior vena cava filter as definitive treatment of the embolus
- D.** Use loop diuresis as the principal treatment of acute right-heart failure
- E.** Wait for interval clot enlargement before considering reperfusion

106. A trauma patient has persistent shock despite blood products. Bedside ultrasound shows a small hyperdynamic left ventricle, no pericardial effusion, and no right-ventricular dilation. Which interpretation is most likely?

- A.** Primary left-ventricular systolic failure causing cardiogenic shock and elevated left-sided filling pressure
- B.** Preload remains inadequate from ongoing or incompletely replaced volume loss
- C.** Pericardial tamponade despite the absence of a pericardial effusion on bedside ultrasound
- D.** Massive pulmonary embolism despite the absence of right-ventricular dilation
- E.** Tension pneumothorax as the most likely cause despite no supporting thoracic ultrasound findings

107. A patient with acute liver failure develops worsening encephalopathy and rising intracranial pressure. Which management principle is most important?

- A.** Use sedatives to obscure neurologic decline without directed intracranial monitoring

- B.** Give large volumes of hypotonic fluid to intentionally reduce the serum sodium
- C.** Manage urgently at a liver-transplant-capable center while controlling cerebral edema and organ failure
- D.** Avoid glucose surveillance because clinically important hypoglycemia is uncommon
- E.** Delay transplant-center referral until spontaneous bilirubin normalization occurs

108. A 6-year-old child has a severe head injury. Which secondary insult is particularly important to avoid during early resuscitation?

- A.** Adequate analgesia
- B.** Mild normocapnia
- C.** Head elevation when hemodynamically tolerated
- D.** Hypotension and hypoxemia
- E.** Maintenance of normal body temperature

109. A patient with severe acute pancreatitis is hemodynamically stable after initial resuscitation. Which nutrition strategy is preferred?

- A.** Keep the patient NPO until pancreatic enzymes and inflammatory markers have normalized
- B.** Begin total parenteral nutrition routinely because enteral feeding worsens pancreatic necrosis
- C.** Initiate enteral feeding rather than prolonged bowel rest with routine parenteral nutrition
- D.** Delay nutrition for at least one week to provide complete pancreatic rest
- E.** Provide intravenous lipid calories alone rather than a complete enteral macronutrient regimen

110. A solid-organ transplant recipient develops fever and pulmonary infiltrates while receiving substantial immunosuppression. Which diagnostic principle is most appropriate?

- A.** Maintain a broad differential that includes opportunistic infection and obtain targeted microbiologic evaluation early
- B.** Assume the infiltrates represent routine community-acquired bacterial pneumonia regardless of transplant timing

- C.** Avoid invasive respiratory sampling even if noninvasive studies remain nondiagnostic and the patient worsens
- D.** Stop all immunosuppression immediately before discussing the case with the transplant team
- E.** Narrow the differential to a single pathogen before considering degree and timing of immunosuppression

111. A patient with severe metabolic acidosis has bicarbonate 12 mEq/L. Using Winter's formula, what PaCO₂ would represent appropriate respiratory compensation?

- A.** Approximately 12 mm Hg
- B.** Approximately 55 mm Hg
- C.** Approximately 70 mm Hg
- D.** Approximately 26 mm Hg
- E.** Approximately 40 mm Hg

112. A pregnant patient with severe preeclampsia develops a generalized seizure. Which medication is preferred for seizure treatment and prevention of recurrence?

- A.** Use phenytoin as the preferred first-line agent for eclampsia because it prevents recurrent hypertension
- B.** Magnesium sulfate used for acute seizure control and prevention of recurrence
- C.** Use mannitol as the primary anticonvulsant because cerebral edema is the usual cause of eclamptic seizures
- D.** Use a benzodiazepine infusion as routine definitive prophylaxis after the initial eclamptic seizure
- E.** Use warfarin to prevent recurrent seizures presumed to result from cerebral thrombosis

113. An ICU wants to reduce central-line-associated bloodstream infections. Which intervention is most likely to be effective at the unit level?

- A.** Implement a standardized insertion and maintenance bundle with compliance monitoring and feedback
- B.** Use prophylactic systemic antibiotics for each central line throughout the catheter dwell time

- C.** Replace central venous catheters on a fixed daily schedule to prevent colonization
- D.** Retain lines that are no longer necessary because repeated insertion increases infection risk
- E.** Focus on a single insertion maneuver without auditing maintenance practices or bundle adherence

114. A 63-year-old patient with septic shock has adequate mean arterial pressure on norepinephrine but persistent cool extremities, oliguria, and low cardiac output with depressed left-ventricular function. Which addition is most appropriate?

- A.** Give repeated crystalloid boluses despite adequate pressure and evidence of depressed myocardial function
- B.** Add phenylephrine to raise systemic vascular resistance further despite persistent low cardiac output
- C.** Add dobutamine for persistent hypoperfusion from cardiac dysfunction
- D.** Start a beta blocker during active hypoperfusion to reduce myocardial oxygen consumption
- E.** Reduce norepinephrine until mean arterial pressure falls so ventricular afterload is minimized

115. A patient with septic shock has already received initial fluid resuscitation. Which bedside finding is most useful to determine whether an additional fluid bolus is likely to increase stroke volume?

- A.** A reproducible rise in stroke volume during passive leg raising
- B.** A chest radiograph showing mild bilateral opacities
- C.** Peripheral edema on physical examination
- D.** A central venous pressure of 10 mm Hg
- E.** A single serum lactate value of 4 mmol/L

116. A 4-year-old child with hemorrhagic shock after trauma remains tachycardic with poor perfusion after initial resuscitation. Which principle is most important when giving fluids and blood products?

- A.** Use fixed adult-volume boluses because weight-based dosing underestimates pediatric blood loss
- B.** Use weight-based resuscitation with frequent reassessment for response and overload

- C. Use urine output as the only endpoint and disregard mental status and peripheral perfusion
- D. Delay blood products until several liters of crystalloid have been administered
- E. Accept persistent hypotension because young children tolerate low perfusion without secondary injury

117. A patient with severe ARDS remains hypoxemic despite optimized lung-protective ventilation, proning, and appropriate PEEP. Which rescue option may be appropriate at an experienced center in a carefully selected patient?

- A. Consider venovenous extracorporeal membrane oxygenation at an experienced center
- B. Use repeated prolonged high-pressure recruitment maneuvers
- C. Eliminate PEEP despite severe refractory hypoxemia
- D. Increase tidal volume well above lung-protective levels
- E. Reduce inspired oxygen toward room air despite profound hypoxemia

118. A patient with blunt chest trauma has a widened mediastinum on radiograph but is hemodynamically stable. What is the preferred diagnostic study for suspected blunt thoracic aortic injury?

- A. Use transesophageal echocardiography as the routine initial study
- B. Proceed directly to thoracotomy based on the chest radiograph alone
- C. Obtain contrast-enhanced CT angiography of the thoracic aorta
- D. Obtain noncontrast chest CT to avoid masking the aortic lesion
- E. Use diagnostic peritoneal lavage to assess mediastinal widening

119. A patient with suspected sepsis has a procalcitonin level that is low, but the clinical picture strongly supports perforated appendicitis with shock. What is the best interpretation?

- A. A single biomarker should not override a convincing clinical diagnosis requiring treatment and source control
- B. The low procalcitonin excludes bacterial sepsis with certainty

- C. Surgery should be canceled because biomarkers are more specific than imaging
- D. Antibiotics are contraindicated whenever procalcitonin is low
- E. The patient should be observed without resuscitation until the value rises

120. A patient with septic shock has a mean arterial pressure of 66 mm Hg on norepinephrine, but urine output and mentation are improving. Which blood-pressure target is generally appropriate for most adults?

- A. Increase the mean arterial pressure to at least 95 mm Hg in all adults despite improving perfusion at 66 mm Hg
- B. Use systolic pressure alone and disregard mean arterial pressure when titrating septic-shock vasopressors
- C. Reduce the mean arterial pressure below 50 mm Hg to minimize catecholamine exposure
- D. Target a diastolic pressure of 90 mm Hg in every patient regardless of age or chronic hypertension
- E. Maintain an initial mean arterial pressure near 65 mm Hg and individualize as needed

121. A severely malnourished patient is about to begin nutrition support. Which preventive measure is particularly important because of the risk of refeeding syndrome?

- A. Begin full caloric replacement immediately because prolonged malnutrition lowers intracellular electrolyte demand
- B. Avoid phosphate supplementation during the first days of feeding to prevent metastatic calcification
- C. Use dextrose-containing nutrition without vitamin supplementation until electrolytes stabilize
- D. Give thiamine and monitor phosphate, potassium, and magnesium closely
- E. Restrict protein as the main preventive intervention while leaving phosphate and magnesium unchecked

122. A critically ill patient is transferred from the ICU to the ward after a prolonged septic course. Which systems intervention best supports continuity and safety?

- A.** Transfer using the problem list alone without reconciling medications or pending studies
- B.** Omit new functional and cognitive deficits because they can be reassessed after discharge
- C.** Provide a structured transition plan with medication reconciliation, unresolved problems, and follow-up needs
- D.** Leave follow-up of unresolved ICU problems to the ward team without explicit handoff
- E.** Stop chronic medications at transfer and restart them only if symptoms recur

123. A patient with a drained empyema improves clinically and cultures identify a susceptible organism. Which principle should guide antimicrobial therapy?

- A.** Narrow therapy to the identified pathogen and ensure pleural source control remains adequate
- B.** Continue the original broad empiric regimen despite susceptibility results and clinical improvement
- C.** Remove pleural drainage immediately because antibiotic susceptibility has been established
- D.** Add routine antifungal therapy even though cultures show only a susceptible bacterial pathogen
- E.** Stop antimicrobial therapy as soon as the chest tube is placed regardless of residual infection

124. A patient on continuous renal replacement therapy requires an antibiotic that is small, water soluble, and minimally protein bound. Which pharmacokinetic effect is most likely?

- A.** CRRT eliminates the need to adjust antimicrobial dosing because extracorporeal clearance is negligible
- B.** Drug clearance becomes independent of effluent rate, membrane properties, and residual renal function
- C.** Highly protein-bound large molecules are generally removed more efficiently than small unbound molecules
- D.** CRRT prevents antimicrobial accumulation but cannot produce clinically important drug clearance
- E.** The drug may be substantially cleared by the extracorporeal circuit and require CRRT-adjusted dosing

125. A patient with a 35% TBSA burn is several days into the ICU course and is markedly hypermetabolic. Which nutrition principle is most appropriate?

- A.** Use prolonged caloric restriction to blunt the postburn hypermetabolic response
- B.** Delay nutrition until definitive wound closure because early feeding increases infectious complications
- C.** Provide early high-protein enteral nutrition when feasible
- D.** Provide low-protein nutrition to reduce nitrogen generation during burn catabolism
- E.** Use intravenous dextrose alone as complete nutrition during the hypermetabolic phase

126. A patient in early septic shock has marked capillary leak and generalized edema. How can this affect hydrophilic antibiotic pharmacokinetics?

- A.** Decrease the apparent volume of distribution so standard loading doses produce higher early concentrations
- B.** Make hydrophilic drug distribution independent of extracellular fluid expansion
- C.** Eliminate renal and extracorporeal clearance of hydrophilic antibiotics during early septic shock
- D.** Guarantee toxic peak concentrations after standard beta-lactam loading doses despite capillary leak
- E.** Increase apparent volume of distribution and reduce early plasma concentration after standard dosing

127. A trauma patient has gross hematuria and pelvic fracture. CT cystography shows intraperitoneal bladder rupture. Which treatment is indicated?

- A.** Use urethral catheter drainage as for an uncomplicated extraperitoneal rupture
- B.** Perform operative repair of the intraperitoneal bladder rupture
- C.** Observe without drainage because intraperitoneal urine is reabsorbed
- D.** Place a nephrostomy tube as definitive treatment of the bladder defect
- E.** Use continuous bladder irrigation until spontaneous closure

128. A severely injured patient receives large volumes of crystalloid before transfer and now has worsening pulmonary edema, bowel edema, and rising intra-abdominal pressure. Which resuscitation concept was most likely violated?

- A.** Limiting unnecessary crystalloid as part of damage-control resuscitation
- B.** Prioritizing early balanced blood-component resuscitation during major traumatic hemorrhage
- C.** Using permissive hypotension in a bleeding patient without traumatic brain injury before hemorrhage control
- D.** Correcting ionized hypocalcemia during massive transfusion when citrate toxicity develops
- E.** Using rapid definitive hemorrhage control rather than delaying for normalization of laboratory values

129. An 8-year-old child with severe asthma is intubated and develops rising airway pressures, hypotension, and incomplete exhalation. Which ventilator adjustment is most appropriate?

- A.** Increase respiratory rate to normalize arterial carbon dioxide despite incomplete exhalation
- B.** Reduce respiratory rate and allow a longer expiratory time
- C.** Increase inspiratory time so less of each respiratory cycle is available for exhalation
- D.** Increase tidal volume to overcome airflow obstruction despite worsening dynamic hyperinflation
- E.** Increase external PEEP above intrinsic PEEP without first reducing dynamic hyperinflation

130. Blood cultures in a patient with septic shock grow methicillin-susceptible *Staphylococcus aureus*, and susceptibilities are known. The patient is receiving vancomycin plus broad gram-negative coverage. What is the best antimicrobial principle?

- A.** De-escalate to targeted therapy appropriate for MSSA once the source is addressed
- B.** Continue vancomycin because a broader agent is preferred even after MSSA susceptibility is known
- C.** Continue broad gram-negative coverage for the entire hospitalization despite a defined susceptible pathogen
- D.** Add empiric antifungal therapy because persistent bacteremia implies occult *Candida* coinfection
- E.** Stop all antimicrobial therapy once the organism is identified because source control is sufficient

131. A patient with an acute myocardial infarction develops a new harsh systolic murmur, pulmonary edema, and shock several days later. Which mechanical complication is most likely?

- A.** Ventricular septal rupture causing an acute left-to-right shunt and a new systolic murmur
- B.** Left-ventricular free-wall rupture causing hemopericardium and tamponade rather than mitral regurgitation
- C.** Papillary muscle rupture causing acute severe mitral regurgitation
- D.** Postinfarction pericarditis causing pleuritic pain without acute valvular failure
- E.** Chronic ventricular aneurysm causing persistent ST elevation without an abrupt new murmur

132. A vasopressor-dependent patient with improving septic shock has stable doses and no signs of bowel ischemia. What is the most appropriate nutrition approach?

- A.** Consider cautious early enteral nutrition with close monitoring for intolerance
- B.** Withhold enteral nutrition until all vasopressors have been discontinued for several days
- C.** Begin full-goal bolus enteral feeding immediately despite ongoing vasopressor dependence
- D.** Use parenteral nutrition exclusively because any vasopressor exposure contraindicates enteral feeding
- E.** Provide only intravenous dextrose until the patient is transferred out of the ICU

133. A family requests continued invasive treatment that the ICU team believes cannot achieve the patient's stated goals. What is the best next step?

- A.** Stop the disputed treatment immediately without further communication, documentation, or review
- B.** Continue every requested intervention indefinitely because the family alone determines medical appropriateness
- C.** Use structured shared decision making, clarify goals and prognosis, and seek ethics review if conflict persists
- D.** Ask security to remove the family so prognostic disagreements no longer affect care planning

E. Avoid documenting the conflict because written records make later ethics consultation more difficult

134. A patient receiving unfractionated heparin has a platelet fall of more than 50% beginning on day 6 and develops a new deep venous thrombosis. What is the best immediate management?

A. Change unfractionated heparin to low-molecular-weight heparin while confirmatory HIT testing is pending

B. Continue heparin because thrombosis makes an immune-mediated heparin reaction less likely

C. Wait for a confirmatory laboratory result before stopping heparin or initiating alternative anticoagulation

D. Stop all heparin and begin a non-heparin anticoagulant while evaluating for HIT

E. Give prophylactic platelet transfusions and withhold anticoagulation despite new thrombosis

135. A treatment reduces mortality from 20% to 15%. What is the absolute risk reduction?

A. 25 percentage points

B. 5 percentage points

C. 1 percentage point

D. 75 percentage points

E. 3 percentage points

136. A ventilator pressure-volume loop shows a prominent upper inflection or 'beaking' pattern at end inspiration. What does this most likely suggest?

A. A lower inflection point indicating recruitable collapsed alveoli at low lung volume

B. An isolated increase in airway resistance without excessive end-inspiratory lung volume

C. A major circuit leak preventing the set tidal volume from reaching the patient

D. Alveolar overdistention from excessive end-inspiratory volume or pressure

E. Normal pressure-volume mechanics demonstrating that tidal volume should be increased

137. A patient with status epilepticus continues convulsing after an adequate benzodiazepine dose. What is the next general treatment step?

- A.** Observe after the benzodiazepine because continued convulsions commonly terminate without additional therapy
- B.** Administer an appropriate second-line antiseizure medication promptly
- C.** Use neuromuscular blockade alone and interpret cessation of motor activity as seizure control
- D.** Delay further antiseizure therapy until 24 hours of continuous EEG data are available
- E.** Induce therapeutic hypoglycemia to lower cerebral metabolic demand during the seizure

138. A critically ill obese patient requires nutritional assessment. Which body-weight concept is generally most useful for setting ventilator tidal volume but not necessarily caloric dosing?

- A.** Actual body weight including acute fluid accumulation and generalized edema
- B.** Admission body weight regardless of height, sex, or major preexisting obesity
- C.** A weight calculated from serum albumin and measured nitrogen balance
- D.** Current scale weight after resuscitation because lung volume increases with adipose mass
- E.** Predicted body weight based primarily on height and sex

139. A patient after blunt trauma has severe epigastric pain, elevated lipase, and CT evidence of pancreatic transection with main duct disruption. Which factor most strongly drives operative or interventional management?

- A.** Age younger than 50 years
- B.** A normal white blood cell count
- C.** Serum lipase level alone
- D.** Integrity of the main pancreatic duct
- E.** Presence of any abdominal-wall bruise

140. During a handoff of a critically ill patient, which communication practice best reduces loss of essential information?

- A.** Use a structured handoff covering illness severity, active problems, contingency plans, and pending tasks
- B.** Focus on the admitting diagnosis while omitting contingency plans and anticipated deterioration
- C.** Rely on memory alone and avoid written or electronic support for pending tasks
- D.** Delay handoff until the receiving clinician independently discovers active problems
- E.** Exclude medication changes and code status because those data are available elsewhere in the chart

141. A patient develops profuse diarrhea and leukocytosis after broad-spectrum antibiotics. Stool testing confirms toxigenic *Clostridioides difficile*. The abdomen is distended, lactate is rising, and hypotension develops. Which complication must be considered?

- A.** Nonsevere antibiotic-associated *C. difficile* diarrhea suitable for routine ward management
- B.** Mechanical small-bowel obstruction causing the positive stool toxin and leukocytosis
- C.** Fulminant *C. difficile* colitis with toxic megacolon requiring urgent surgical evaluation
- D.** Acute pancreatitis causing toxic colonic dilation after antibiotic exposure
- E.** Viral gastroenteritis with incidental toxigenic *C. difficile* testing despite shock and ileus

142. During a massive transfusion, a trauma patient becomes hypotensive with a prolonged QT interval despite ongoing blood-product administration. Which abnormality should be suspected and treated promptly?

- A.** Treat citrate-associated ionized hypocalcemia during massive transfusion
- B.** Treat transfusion-related hyperkalemia as the usual cause of QT prolongation
- C.** Treat acute hypermagnesemia from stored red-cell administration
- D.** Treat severe hyponatremia caused by transfused plasma sodium
- E.** Treat hypophosphatemia as the typical transfusion-related conduction problem

143. An incapacitated patient has no written directive. A legally appropriate surrogate is available and knows the patient's long-standing values. How should decisions be made?

- A.** Use substituted judgment based on the patient's known values and preferences
- B.** Apply a best-interest standard based mainly on the clinician's personal values despite known patient preferences
- C.** Default to maximal life-prolonging treatment without considering the patient's previously expressed values
- D.** Exclude the surrogate because only a written advance directive can guide decisions for an incapacitated patient
- E.** Use the surrogate's own preferences even when they conflict with the patient's known values

144. A patient receives several liters of 0.9% saline and develops a non-anion-gap metabolic acidosis with rising serum chloride. What is the most likely mechanism?

- A.** Lactic acidosis from conversion of infused chloride to lactate
- B.** Ketoacidosis produced directly by sodium chloride administration
- C.** Respiratory acidosis caused by chloride-induced hypoventilation
- D.** Anion-gap acidosis from citrate accumulation in saline
- E.** Hyperchloremic non-anion-gap metabolic acidosis from the chloride load

145. A postoperative patient has fever, hypotension, severe pain out of proportion to examination, rapidly progressive swelling, and crepitus near an incision. What is the best next step?

- A.** Obtain MRI before surgical consultation because imaging confirmation should precede debridement
- B.** Immediate surgical exploration and debridement with broad-spectrum antibiotics
- C.** Treat with broad-spectrum antibiotics alone and reassess after the swelling demarcates
- D.** Perform bedside incision and drainage without wide exploration of deep fascia and muscle
- E.** Give corticosteroids to reduce inflammation before determining whether operative debridement is needed

146. A patient with a circumferential full-thickness chest burn develops progressively elevated airway pressures and impaired ventilation despite a patent endotracheal tube. What intervention is indicated?

- A.** Increase PEEP and tidal volume to overcome the external restriction before altering the burn eschar
- B.** Perform tube thoracostomy because rising airway pressure after chest burn usually reflects pneumothorax
- C.** Delay intervention until Doppler signals or systemic blood pressure begin to fall
- D.** Perform chest escharotomy to release restrictive full-thickness burn eschar
- E.** Apply a compressive chest dressing to reduce edema and improve chest-wall mechanics

147. A 27-year-old man arrives after a high-speed collision with a heart rate of 138/min, blood pressure 78/46 mm Hg, cool extremities, and a positive FAST examination. He is confused and has no external hemorrhage. Which intervention should be prioritized while definitive hemorrhage control is being arranged?

- A.** Give repeated large crystalloid boluses until the blood pressure normalizes before starting blood products
- B.** Activate balanced massive transfusion with rapid operative hemorrhage control
- C.** Use norepinephrine as the main initial therapy for hemorrhagic shock before replacing circulating blood volume
- D.** Delay transfusion until the admission hemoglobin confirms the magnitude of acute blood loss
- E.** Obtain CT angiography before operative hemorrhage control despite shock and a positive FAST

148. A patient with suspected blunt thoracic aortic injury has severe hypertension and tachycardia while definitive repair is being planned. What medical strategy is generally appropriate if no contraindication exists?

- A.** Allow severe hypertension until definitive repair because antihypertensive therapy risks extending the injury
- B.** Impulse control with beta blockade and blood-pressure reduction
- C.** Use a pure vasodilator before heart-rate control despite marked tachycardia and shear stress

- D.** Increase heart rate with a beta-agonist to maintain cardiac output during the pre-repair period
- E.** Give thrombolytic therapy to prevent propagation of the aortic wall injury

149. A patient has blunt abdominal trauma with a seat-belt sign, increasing abdominal tenderness, leukocytosis, and free fluid on CT without solid-organ injury. What injury should be suspected?

- A.** Occult solid-organ contusion with otherwise unexplained free fluid
- B.** Isolated abdominal-wall injury causing the progressive tenderness
- C.** Uncomplicated renal injury causing intraperitoneal free fluid
- D.** Traumatic pancreatitis without mesenteric or bowel injury
- E.** Hollow-viscus or mesenteric injury associated with the seat-belt mechanism

150. A malnourished patient is started on nutrition and develops weakness, respiratory failure, and a serum phosphate of 0.8 mg/dL. What is the most likely diagnosis?

- A.** Tumor lysis syndrome with acute phosphate depletion
- B.** Primary hyperparathyroidism with acute phosphate loss
- C.** Diabetes insipidus causing selective phosphate depletion
- D.** Refeeding syndrome with severe intracellular phosphate shift and hypophosphatemia
- E.** Respiratory acidosis causing acute extracellular phosphate loss

151. A patient with necrotizing pancreatitis clinically deteriorates 3 weeks after onset. CT shows gas within a necrotic collection. Which diagnosis is most likely?

- A.** Sterile acute peripancreatic fluid collection
- B.** Uninfected pancreatic pseudocyst after acute pancreatitis
- C.** Sterile walled-off pancreatic necrosis
- D.** Infected pancreatic necrosis with gas-forming organisms
- E.** Hemorrhagic pancreatic necrosis without infection

152. A patient with septic shock from a perforated colon is receiving broad-spectrum antibiotics but remains unstable. Which intervention is most important in addition to antimicrobial therapy?

- A.** Escalate antimicrobial spectrum while deferring treatment of the perforation
- B.** Use corticosteroids as a substitute for anatomic source control
- C.** Delay intervention until procalcitonin and vasopressor needs normalize
- D.** Wait for blood cultures to clear before repairing or draining the source
- E.** Obtain urgent definitive source control of the perforated colon

153. A patient with an open abdomen develops a high-output enteroatmospheric fistula. Which initial management priority is most appropriate?

- A.** Stop all nutrition until fistula output ceases because nutritional support perpetuates intestinal secretion
- B.** Apply high negative-pressure suction directly to exposed bowel mucosa to collapse the fistula opening
- C.** Replace only water because electrolyte losses from high-output intestinal fistulas are clinically negligible
- D.** Control effluent, protect skin and wound, replace losses, and provide nutritional support
- E.** Attempt blind bedside suture closure before defining fistula anatomy or controlling contamination

154. A patient with secondary peritonitis undergoes successful operative source control and improves rapidly. Which antibiotic-duration principle is most appropriate?

- A.** Continue broad-spectrum therapy for several weeks despite adequate source control and rapid clinical improvement
- B.** Continue antibiotics until leukocyte count and temperature remain normal for seven consecutive days
- C.** Stop antimicrobial therapy immediately after incision closure regardless of severity or postoperative course
- D.** Add routine antifungal therapy despite no Candida risk factors, culture evidence, or ongoing sepsis

E. Use a shorter course when adequate source control has been achieved and the clinical response is favorable

155. A neurosurgical patient develops abrupt polyuria, serum sodium 158 mEq/L, high serum osmolality, and very dilute urine. Which diagnosis is most likely?

- A.** Cerebral salt wasting causing hyponatremia with inappropriately dilute urine
- B.** Syndrome of inappropriate antidiuretic hormone secretion causing polyuria and hyponatremia
- C.** Central diabetes insipidus causing hyponatremia with inappropriately dilute urine
- D.** Primary adrenal insufficiency causing abrupt free-water loss with dilute urine and high serum osmolality
- E.** Acute oliguric renal failure causing the marked polyuria and hyponatremia

156. Which technique is the standard bedside method for estimating intra-abdominal pressure in a critically ill patient?

- A.** Estimate intra-abdominal pressure from serial abdominal-girth measurements alone
- B.** Use central venous pressure as a direct surrogate for peritoneal pressure
- C.** Measure nasogastric pressure and use that value as the standard abdominal pressure
- D.** Measure pressure through the urinary bladder with the patient appropriately positioned
- E.** Use the peripheral arterial waveform because systolic pressure varies directly with abdominal pressure

157. A postoperative patient has persistent sinus tachycardia, hypotension, elevated jugular venous pressure, and new right-ventricular dilation with septal flattening on echocardiography. Which diagnosis is most concerning?

- A.** Acute pulmonary embolism producing right-ventricular pressure overload and strain
- B.** Simple hypovolemia despite elevated jugular venous pressure and RV dilation
- C.** Postoperative pain producing septal flattening and acute RV dilation
- D.** Isolated left-ventricular failure without pulmonary hypertension

E. Uncomplicated sinus tachycardia causing a new right-heart strain pattern

158. A patient with septic shock has a suspected urinary source, but an obstructed infected collecting system is found on imaging. What is the crucial additional treatment?

- A. Increase diuretic dosing to force infected urine through the obstructed collecting system
- B. Urgent decompression of the infected obstructed urinary tract
- C. Continue antibiotics alone because decompression increases bacteremia risk during septic shock
- D. Delay drainage until the patient is afebrile and off vasopressors for at least 48 hours
- E. Restrict intravenous fluids to lower collecting-system pressure while waiting for spontaneous passage

159. A pulmonary artery catheter shows cardiac output 4 L/min and body surface area 2 m². What is the cardiac index?

- A. 0.5 L/min/m²
- B. 4 L/min/m²
- C. 2 L/min/m²
- D. 6 L/min/m²
- E. 8 L/min/m²

160. A 60-year-old patient with pneumonia meets criteria for ARDS and is intubated. Which tidal-volume strategy is most appropriate?

- A. Use approximately 6 mL/kg of predicted body weight with limitation of plateau pressure
- B. Use 10 to 12 mL/kg of actual body weight to prevent atelectasis in edematous lungs
- C. Increase tidal volume until arterial carbon dioxide is normal even if plateau pressure rises markedly
- D. Set tidal volume from current scale weight because acute edema increases functional lung size
- E. Avoid plateau-pressure measurement because tidal volume alone determines ventilator-induced lung injury

161. A head-injured patient acutely develops a unilateral fixed dilated pupil, extensor posturing, and bradycardia with hypertension. What should be assumed until proven otherwise?

- A.** An isolated third-nerve palsy without mass effect or secondary intracranial hypertension
- B.** A postictal state after an unwitnessed seizure without an acute structural brain complication
- C.** Medication-related pupillary asymmetry that can be observed before reassessing intracranial pathology
- D.** Impending transtentorial herniation requiring immediate temporizing therapy and definitive evaluation
- E.** Acute hydrocephalus without herniation physiology as the best explanation for the Cushing response

162. A patient with a circumferential full-thickness forearm burn develops increasing pain, paresthesias, delayed capillary refill, and diminished Doppler signals as edema progresses. What is the best next step?

- A.** Observe with serial Doppler examinations until arterial flow is absent
- B.** Perform urgent escharotomy to release the constricting circumferential eschar
- C.** Perform fasciotomy first for an external eschar-related perfusion problem
- D.** Begin therapeutic anticoagulation to restore distal arterial flow
- E.** Apply a compressive wrap to limit edema and improve perfusion

163. A patient with heart failure develops dyspnea, hypertension, elevated jugular venous pressure, and bilateral infiltrates during a rapid transfusion. Which complication is most likely?

- A.** Transfusion-related acute lung injury with noncardiogenic pulmonary edema
- B.** Acute hemolytic transfusion reaction causing pulmonary edema and hypertension
- C.** Transfusion-associated circulatory overload from rapid intravascular volume expansion
- D.** Anaphylactic transfusion reaction with isolated hydrostatic edema
- E.** Febrile nonhemolytic transfusion reaction causing volume-mediated pulmonary edema

164. A mechanically ventilated patient with severe TBI develops worsening intracranial pressure while PaCO₂ rises from 38 to 62 mm Hg. Which mechanism is most likely?

- A.** Hypercapnia causes cerebral vasodilation and increases cerebral blood volume
- B.** Hypercapnia causes cerebral vasoconstriction and decreases intracranial blood volume
- C.** Arterial carbon dioxide has little effect on cerebral blood flow across this clinical range
- D.** Hypercapnia lowers intracranial pressure by increasing renal sodium and water excretion
- E.** Hypercapnia directly increases cerebral venous drainage and therefore lowers intracranial pressure

165. A patient with blunt trauma has left diaphragmatic rupture with herniation of abdominal viscera into the thorax. What is the definitive treatment?

- A.** Observe because traumatic diaphragmatic ruptures usually heal after pleural decompression
- B.** Use long-term positive-pressure ventilation to keep the abdominal viscera below the diaphragm
- C.** Place a chest tube as definitive treatment after reducing the herniated viscera
- D.** Use percutaneous drainage of the thorax rather than repairing the diaphragmatic defect
- E.** Surgical repair of the diaphragm after appropriate resuscitation

166. A patient with a gunshot wound to the thigh has an expanding pulsatile hematoma and absent distal pulses. What is the appropriate management?

- A.** Proceed to urgent operative vascular exploration and repair for hard signs of injury
- B.** Obtain CT angiography before vascular intervention despite the hard signs
- C.** Measure ankle-brachial index and observe if the value is technically obtainable
- D.** Begin anticoagulation before controlling hemorrhage from the suspected artery
- E.** Use external compression and reassess the extremity the following day

167. A child with suspected nonaccidental trauma has bruising in different stages of healing and injuries inconsistent with the caregiver's history. What is the appropriate clinical response?

- A.** Stabilize the child, document objectively, and activate mandatory reporting and multidisciplinary protection pathways
- B.** Delay objective documentation until child-protection investigators have interviewed the caregivers
- C.** Treat the injuries but defer mandatory reporting until abuse is proven beyond reasonable doubt
- D.** Discharge after stabilization if the caregiver provides a revised history that could explain the injuries
- E.** Confront the suspected perpetrator before completing medical stabilization or a coordinated safety plan

168. A patient has fever, severe tachycardia, agitation, heart failure, and a known history of untreated Graves disease after emergency surgery. Which diagnosis is most likely?

- A.** Pheochromocytoma crisis precipitated by surgery and causing catecholamine-mediated hyperthermia and tachycardia
- B.** Septic shock with hyperactive delirium and high-output cardiovascular stress
- C.** Malignant hyperthermia related to anesthetic exposure with hypermetabolism and cardiovascular instability
- D.** Thyroid storm causing severe hypermetabolic cardiovascular and neurologic decompensation
- E.** Serotonin syndrome causing hyperthermia, agitation, and autonomic instability after medication exposure

169. A patient with refractory ventricular fibrillation has received high-quality CPR and defibrillation. Which medication is appropriate during the ACLS algorithm?

- A.** Atropine as the preferred antiarrhythmic for shock-refractory ventricular fibrillation
- B.** Epinephrine with an antiarrhythmic such as amiodarone for refractory VF
- C.** A continuous nitroprusside infusion to raise coronary perfusion during chest compressions
- D.** Phenylephrine in place of additional defibrillation for persistent ventricular fibrillation
- E.** Digoxin loading before antiarrhythmic therapy for recurrent shockable rhythms

170. A 35-year-old patient with penetrating torso trauma is hypotensive but awake and has no evidence of traumatic brain injury. Before surgical control of bleeding, which blood-pressure strategy is most appropriate?

- A.** Use permissive hypotension while maintaining signs of vital-organ perfusion
- B.** Restore systolic pressure above 140 mm Hg with crystalloid before operative hemorrhage control
- C.** Target a mean arterial pressure above 90 mm Hg with vasopressors despite uncontrolled bleeding
- D.** Withhold resuscitation entirely until the surgical team has obtained definitive vascular control
- E.** Normalize pulse pressure with large-volume crystalloid before transport to the operating room

171. A patient receiving prolonged high-dose propofol develops metabolic acidosis, rhabdomyolysis, hyperkalemia, and cardiovascular collapse. Which complication should be suspected?

- A.** Neuroleptic malignant syndrome caused by dopamine-receptor blockade during the propofol infusion
- B.** Propofol infusion syndrome causing metabolic, muscular, and cardiovascular toxicity
- C.** Serotonin syndrome from serotonergic excess as the characteristic complication of high-dose propofol
- D.** Thyroid storm produced directly by prolonged intravenous propofol metabolism
- E.** Refeeding syndrome caused by caloric delivery rather than the high-dose sedative exposure

172. A critically ill patient has severe hypoalbuminemia and receives a highly protein-bound medication. Which effect may occur?

- A.** The unbound fraction decreases because fewer albumin binding sites are available
- B.** The unbound active drug fraction can increase even when the measured total concentration is low
- C.** The measured total concentration reliably equals the pharmacologically active free concentration
- D.** Protein binding increases as albumin falls, reducing the risk of drug toxicity
- E.** Renal and hepatic clearance become clinically irrelevant once hypoalbuminemia is severe

173. A patient with blunt thoracic trauma has a clinically evident flail segment but is maintaining adequate gas exchange. Which initial management is most appropriate while the chest-wall injury is evaluated for possible surgical stabilization?

- A.** Provide multimodal analgesia and aggressive pulmonary care while assessing candidacy for early rib fixation
- B.** Intubate solely because paradoxical chest-wall motion is present despite adequate ventilation and oxygenation
- C.** Bind the chest tightly with circumferential tape to eliminate paradoxical movement
- D.** Place bilateral chest tubes despite no pneumothorax or hemothorax on imaging
- E.** Withhold analgesia so spontaneous respiratory drive is not reduced

174. A patient develops acute hypoxemia and bilateral pulmonary infiltrates within 4 hours of plasma transfusion. There is no clear evidence of circulatory overload, and hypotension is present. Which transfusion complication is most likely?

- A.** Transfusion-related acute lung injury
- B.** Iron overload from chronic transfusion
- C.** Delayed hemolytic transfusion reaction
- D.** Post-transfusion purpura
- E.** Transfusion-associated circulatory overload

175. A patient in cardiogenic shock after a large anterior myocardial infarction has pulmonary edema, cool extremities, low cardiac output, and a mean arterial pressure of 58 mm Hg. Which vasoactive approach is most appropriate initially?

- A.** Start nitroprusside despite the severe hypotension
- B.** Withhold vasoactive therapy because reperfusion alone is usually sufficient
- C.** Use phenylephrine alone because pure vasoconstriction improves stroke volume
- D.** Use norepinephrine to restore perfusion pressure and add inotropy if output remains inadequate
- E.** Give repeated large crystalloid boluses until the lungs clear

176. A critically ill patient becomes inattentive, disorganized, and intermittently agitated at night without a focal neurologic deficit. Which management is most appropriate for likely ICU delirium?

- A.** Use antipsychotic medication to produce deep sedation as the routine primary treatment for delirium
- B.** Apply continuous physical restraints and stop daytime mobility to reduce nighttime agitation
- C.** Begin continuous benzodiazepine sedation despite the absence of an alcohol-withdrawal indication
- D.** Treat the behavior as benign ICU variation without investigating medications, infection, sleep, or metabolic causes
- E.** Identify reversible causes and use a multicomponent nonpharmacologic delirium-prevention strategy

177. A patient with acute cervical spinal cord injury has persistent hypotension and bradycardia after hemorrhage has been excluded. Which vasopressor is generally preferred to support spinal-cord and systemic perfusion?

- A.** Nitroprusside because lowering systemic vascular resistance improves spinal-cord perfusion
- B.** Norepinephrine because it provides vasoconstriction with useful beta-adrenergic support
- C.** Esmolol because reducing heart rate is the main hemodynamic goal in neurogenic shock
- D.** Dobutamine alone because vasoconstriction should be avoided after acute spinal cord injury
- E.** Nitroglycerin because venodilation increases venous return and corrects neurogenic shock

178. A patient has difficult oxygenation after massive aspiration during emergency intubation. Which initial management is most appropriate?

- A.** Use large tidal volumes to recruit dependent lung regions and clear aspirated material
- B.** Avoid PEEP because aspiration pneumonitis is predominantly an obstructive airway process
- C.** Perform bronchoscopy routinely even when there is no particulate obstruction requiring removal
- D.** Provide supportive lung-protective ventilation and suction visible particulate material as needed

E. Give prophylactic broad-spectrum antibiotics immediately for any witnessed aspiration without evidence of infection

179. A trauma patient has a severe liver injury but is hemodynamically stable after resuscitation. Which management strategy is generally preferred at a capable center?

A. Perform laparotomy solely because the injury is high grade despite sustained hemodynamic stability

B. Use nonoperative management with close monitoring and angioembolization when indicated

C. Observe without serial examinations, laboratory follow-up, or access to urgent intervention

D. Perform total hepatectomy as standard definitive treatment for severe blunt hepatic injury

E. Discharge after the first normal postresuscitation blood pressure without monitored observation

180. A postoperative patient with suspected septic shock has received an initial crystalloid bolus but remains hypotensive with a mean arterial pressure of 54 mm Hg. Which vasopressor is the preferred first-line agent?

A. Norepinephrine

B. Milrinone

C. Phenylephrine

D. Dobutamine

E. Dopamine

181. A patient with septic shock remains profoundly hypotensive after initial crystalloid. A reliable peripheral IV is present, but central venous access is not yet available. What is the best immediate action?

A. Use intramuscular epinephrine until central access is obtained

B. Start norepinephrine through the peripheral IV while arranging appropriate monitoring and access

C. Delay all vasopressors until a central venous catheter is inserted

D. Begin dopamine because it is safer through a peripheral IV

E. Give repeated crystalloid boluses despite signs of pulmonary edema

182. A patient with an acute cervical spinal cord injury has hypotension, warm skin, and bradycardia without evidence of ongoing hemorrhage. Which diagnosis best explains the hemodynamics?

- A. Neurogenic shock from loss of sympathetic tone
- B. Anaphylactic shock from spinal edema
- C. Cardiogenic shock from acute left-ventricular infarction
- D. Hemorrhagic shock from occult blood loss
- E. Obstructive shock from tension pneumothorax

183. A critically ill postoperative patient has persistent blood glucose values of 240 to 280 mg/dL. Which general glycemic strategy is most appropriate?

- A. Use intermittent high-dose insulin without scheduled bedside glucose monitoring
- B. Avoid insulin because stress hyperglycemia between 240 and 280 mg/dL does not require treatment in ICU patients
- C. Target 80–110 mg/dL routinely because near-normal glucose improves outcomes in most critically ill patients
- D. Target glucose below 70 mg/dL to suppress the endocrine stress response after surgery
- E. Initiate insulin for persistent glucose at this level and generally target about 140–180 mg/dL while avoiding hypoglycemia

184. A trauma patient has an open tibial fracture contaminated with soil. Which early management is most appropriate?

- A. Delay antimicrobial therapy until deep operative cultures identify the responsible organism
- B. Perform immediate tight primary skin closure before irrigation and debridement
- C. Prompt IV antibiotics, tetanus assessment, sterile coverage, and operative irrigation/debridement
- D. Use oral antibiotics alone because systemic IV therapy offers little benefit for contaminated open fractures

E. Defer tetanus assessment because broad-spectrum antibacterial therapy provides equivalent prophylaxis

185. Immediately after intubation, a patient has absent end-tidal CO₂ waveform despite several ventilations and no cardiac arrest. What is the most likely explanation?

- A. Very low carbon dioxide production despite correct tracheal placement and perfusion
- B. Pulmonary edema eliminating exhaled carbon dioxide despite correct tube position
- C. A normal transient finding during the first several minutes after intubation
- D. Esophageal intubation or another failure of a patent tracheal airway
- E. Correct tracheal placement with normal perfusion despite absent capnography

186. A treatment reduces an outcome from 20% to 15%. What is the number needed to treat?

- A. 5
- B. 20
- C. 100
- D. 10
- E. 15

187. A patient with acute right-ventricular failure becomes hypotensive after a large increase in PEEP. Which mechanism best explains the blood-pressure drop?

- A. Improved right-ventricular preload from increased systemic venous return during high PEEP
- B. Reduced pulmonary vascular resistance caused by alveolar overdistention
- C. Reduced venous return with increased right-ventricular afterload
- D. Increased left-ventricular preload because positive intrathoracic pressure draws venous blood into the chest
- E. Primary systemic arterial vasodilation from PEEP as the dominant hemodynamic effect

188. A 70-kg adult with septic shock has just received the initial recommended crystalloid resuscitation and remains mottled and hypotensive. Which approach is most appropriate now?

- A.** Continue fixed crystalloid boluses until serum lactate is normal regardless of dynamic fluid responsiveness
- B.** Reassess perfusion dynamically and individualize further fluid and vasopressor therapy
- C.** Use albumin as the exclusive fluid for all subsequent resuscitation because crystalloids are contraindicated after the initial bolus
- D.** Switch to hydroxyethyl starch because persistent shock indicates crystalloid failure
- E.** Delay vasopressor therapy until a central venous catheter has been placed

189. A patient with severe pulmonary hypertension develops acute right-ventricular failure after surgery. Which ventilator-related change is most likely to worsen right-ventricular afterload?

- A.** Reduction of unnecessary dynamic hyperinflation
- B.** Correction of severe acidemia
- C.** Avoidance of hypoxemia and hypercapnia
- D.** Excessive mean airway pressure and overdistention
- E.** Use of the lowest effective airway pressures

190. A patient with candidemia has a central venous catheter and is critically ill. Which initial treatment principle is appropriate?

- A.** Treat Candida recovered from blood as colonization unless several consecutive cultures remain positive
- B.** Begin systemic antifungal therapy and pursue source control including catheter management when feasible
- C.** Delay systemic therapy for one week to determine whether candidemia clears after catheter care alone
- D.** Use antibacterial therapy as definitive treatment because candidemia is usually secondary to bacterial sepsis
- E.** Use topical nystatin as adequate therapy for bloodstream Candida infection

191. A patient with a bronchopleural fistula has a persistent large air leak on positive-pressure ventilation. Which ventilator principle is most appropriate?

- A.** Increase PEEP and inspiratory pressure to force ventilation across the bronchopleural fistula
- B.** Increase tidal volume substantially to compensate for the portion of each breath lost through the fistula
- C.** Accept progressively higher airway pressures as long as oxygen saturation remains above 90 percent
- D.** Use the lowest airway pressures and tidal volumes that provide acceptable gas exchange
- E.** Prolong inspiratory time because a longer pressure gradient promotes fistula closure

192. An arterial catheter tracing is blunted with a slow upstroke and absent dicrotic notch, while cuff pressure is substantially higher than the displayed arterial systolic pressure. Which technical problem is most likely?

- A.** An overdamped arterial-line system
- B.** An underdamped system with excessive resonance
- C.** A pulse oximeter artifact affecting invasive pressure
- D.** An intra-aortic balloon pump operating normally
- E.** A perfectly calibrated line requiring no troubleshooting

193. A septic patient has thrombocytopenia, prolonged PT and aPTT, low fibrinogen, elevated D-dimer, and diffuse oozing. Which diagnosis best fits the pattern?

- A.** Thrombotic thrombocytopenic purpura with normal coagulation tests
- B.** Isolated vitamin B12 deficiency
- C.** Disseminated intravascular coagulation
- D.** Uncomplicated heparin prophylaxis effect alone
- E.** Immune thrombocytopenia without coagulation-factor consumption

194. A heart-transplant recipient has unexplained graft dysfunction without chest pain. Why can myocardial ischemia or rejection present atypically?

- A.** Transplanted hearts cannot develop coronary disease
- B.** Cardiac denervation can blunt typical anginal symptoms and autonomic responses
- C.** The transplanted heart has no need for oxygen delivery
- D.** Rejection usually causes a loud murmur before ventricular dysfunction
- E.** Immunosuppression prevents all forms of myocardial inflammation

195. A hemodynamically stable ICU patient has a functioning gastrointestinal tract but is expected to be unable to eat for several days. What is the preferred route of nutrition?

- A.** Begin total parenteral nutrition routinely despite a functioning gastrointestinal tract
- B.** Use intravenous dextrose alone as complete nutritional support for the expected period without oral intake
- C.** Enteral nutrition delivered through the functioning gastrointestinal tract when feasible
- D.** Provide no nutrition until the patient can resume an independent oral diet
- E.** Use daily albumin infusions as a substitute for enteral protein and calorie delivery

196. A ventilated patient has a peak inspiratory pressure of 42 cm H₂O but a plateau pressure of 22 cm H₂O. Which problem is most likely?

- A.** Increased airway resistance such as bronchospasm or a partially obstructed tube
- B.** Marked chest-wall stiffness as the primary explanation
- C.** Severe loss of lung compliance from diffuse alveolar flooding
- D.** Excessive tidal volume causing elevated alveolar plateau pressure
- E.** A low-resistance circuit leak causing inadequate airway pressure

197. An adult with major burns is being resuscitated. Which bedside endpoint is commonly used to titrate fluid administration?

- A.** Normalize central venous pressure to a fixed value above 15 mm Hg before reducing fluid administration
- B.** Continue resuscitation until tachycardia is completely eliminated regardless of pain or temperature
- C.** Urine output around 0.5 mL/kg/hour together with global perfusion assessment
- D.** Target pulmonary artery occlusion pressure above 25 mm Hg as the primary endpoint of adequate burn resuscitation
- E.** Use serum sodium normalization as the main guide to minute-to-minute burn fluid titration

198. A patient with penetrating neck trauma has expanding hematoma, active bleeding, and airway compromise. What is the best next step?

- A.** Obtain CT angiography before intervening despite active bleeding and airway compromise
- B.** Perform contrast esophagography before securing the threatened airway
- C.** Observe the expanding hematoma while distal neurologic function remains intact
- D.** Secure the airway and proceed immediately to operative hemorrhage control
- E.** Begin systemic anticoagulation before defining the source of active bleeding

199. A postoperative patient has no active bleeding but is at high risk for venous thromboembolism and has no contraindication to anticoagulation. Which prevention strategy is most appropriate?

- A.** Withhold prophylaxis until venous thrombosis is documented because postoperative anticoagulation is preventive only after an event
- B.** Use aspirin alone as universal prophylaxis for all high-risk surgical ICU patients
- C.** Use pharmacologic VTE prophylaxis, supplemented by mechanical methods when appropriate
- D.** Use therapeutic-dose anticoagulation routinely despite the absence of diagnosed thrombosis
- E.** Rely on early mobilization alone despite ongoing high VTE risk and prolonged immobility

200. A postpartum patient has brisk uterine bleeding and a boggy enlarged uterus after delivery. What is the most likely cause?

- A.** Retained placental tissue causing continued bleeding despite otherwise adequate uterine contraction
- B.** Genital-tract laceration causing postpartum bleeding with a firm, well-contracted uterus
- C.** Uterine inversion causing hemorrhage with a mass protruding through the cervix or vagina
- D.** Consumptive coagulopathy causing diffuse bleeding despite a normally contracted uterus
- E.** Uterine atony causing heavy postpartum bleeding with a soft poorly contracted uterus

Answers

- 1. C.** Hemodynamic instability plus intraperitoneal fluid and peritonitis indicates a likely surgical source of bleeding or contamination. Operative exploration should not be delayed for CT in this scenario. The goal is rapid control of hemorrhage and contamination with damage-control principles when necessary.
- 2. E.** A 2 mL/kg/%TBSA starting estimate gives $2 \times 80 \times 30 = 4,800$ mL in the first 24 hours. This is only an initial estimate; actual fluid must be titrated to physiologic response, commonly including urine output and perfusion. Current burn guidance emphasizes avoiding excessive resuscitation and fluid creep.
- 3. C.** Severe dynamic hyperinflation can produce obstructive shock by elevating intrathoracic pressure and impeding venous return. Brief ventilator disconnection permits trapped gas to escape and can restore preload while ventilator settings and bronchospasm are corrected. Increasing minute ventilation would worsen the problem.
- 4. A.** Early enteral nimodipine after aneurysmal subarachnoid hemorrhage improves functional outcome and reduces delayed cerebral ischemic complications. Treatment should not be delayed solely until after aneurysm securing. Hypotension should be avoided, and seizure, intracranial-pressure, and thrombosis therapies are individualized.
- 5. C.** Unstable pelvic fractures can produce massive retroperitoneal hemorrhage. Immediate pelvic stabilization reduces pelvic volume, while definitive control may involve preperitoneal packing, angioembolization, or complementary techniques depending on physiology and institutional resources. Persistent shock requires action rather than prolonged diagnostic delay.
- 6. A.** Sterile pancreatic necrosis does not benefit from routine prophylactic antibiotics. Antimicrobials are used when infection is suspected or documented, and infected necrosis may require a step-up source-control strategy. Unnecessary antibiotics promote resistant organisms and fungal complications.
- 7. C.** Failure to improve should trigger a structured reassessment rather than reflexive antibiotic escalation. Undrained collections, ischemic or necrotic tissue, device infection, wrong antimicrobial

spectrum, and noninfectious mimics are common explanations. Source control is often the key determinant of recovery in surgical sepsis.

8. A. When both peak and plateau pressures rise, the pressure problem extends to the alveoli and reflects reduced respiratory-system compliance or excessive tidal volume. ARDS, pulmonary edema, abdominal distention, and pneumothorax are important possibilities. Isolated airway resistance raises peak pressure much more than plateau pressure.

9. D. A low mixed venous oxygen saturation reflects increased extraction because oxygen delivery is inadequate relative to consumption. With normal arterial saturation and hemoglobin, low cardiac output is a likely contributor. The value is not specific for a single cause but should prompt evaluation of the components of oxygen delivery.

10. E. ECG changes from severe hyperkalemia indicate immediate risk to cardiac conduction. Intravenous calcium stabilizes the myocardial membrane within minutes, buying time for therapies that shift potassium intracellularly and remove it from the body. Calcium does not lower serum potassium but should not be delayed when dangerous ECG changes are present.

11. C. Failure to augment stroke volume with a dynamic preload challenge suggests that the patient is not fluid responsive. Oliguria has many causes and should not trigger reflexive volume loading in an already edematous patient. Management should address perfusion, renal function, and fluid balance while avoiding further unnecessary overload.

12. E. Children compensate for blood loss with tachycardia and vasoconstriction and may preserve blood pressure until substantial volume has been lost. Early shock is therefore recognized by perfusion, mental status, pulse quality, capillary refill, and trajectory rather than hypotension alone. Waiting for low pressure can delay lifesaving resuscitation.

13. C. This is tension pneumothorax causing obstructive shock. Treatment is immediate decompression; imaging should not delay intervention in an unstable patient with classic findings. Increasing PEEP would worsen intrathoracic pressure and hemodynamic compromise.

14. A. An odds ratio of 1 indicates equal odds of the outcome in exposed and unexposed groups, meaning no observed association. Values above 1 suggest higher odds and values below 1 suggest lower odds, with interpretation depending on confidence intervals and study design. Odds ratios are not identical to risk ratios when outcomes are common.

15. A. GI bleeding increases intestinal nitrogen load and can precipitate hepatic encephalopathy in cirrhosis. Management includes treating the precipitant and reducing gut-derived ammonia, typically with lactulose and selected adjuncts. Alternative neurologic causes should still be considered when the examination is atypical or focal.

16. E. Hypomagnesemia promotes renal potassium wasting and makes hypokalemia difficult to correct. Both deficiencies also increase arrhythmia risk. Magnesium replacement should accompany ongoing

potassium repletion rather than escalating potassium alone without addressing the underlying magnesium deficit.

17. C. Hyperosmolar therapy with hypertonic saline or mannitol can reduce intracranial pressure by increasing serum tonicity and drawing water from brain tissue. Choice depends on volume status, renal function, sodium, and hemodynamics. Hypotonic fluids and free water can worsen cerebral edema, and albumin is not favored for TBI resuscitation.

18. B. A stable patient with monomorphic ventricular tachycardia and a pulse can be treated with an appropriate IV antiarrhythmic while preparing for escalation if instability develops. Immediate synchronized cardioversion is required if instability appears. Unsynchronized defibrillation is reserved for pulseless VT/VF or specific emergency circumstances.

19. A. Volume depletion commonly accompanies severe hypercalcemia and reduces renal calcium clearance. Initial isotonic rehydration restores perfusion and promotes calciuresis, after which therapies such as calcitonin or antiresorptive agents can be selected according to cause and urgency. Diuretics before adequate volume replacement can worsen dehydration.

20. D. Driving pressure is plateau pressure minus total PEEP. Here, 28 minus 12 equals 16 cm H₂O. It is a useful descriptor of the pressure required to deliver tidal volume across the respiratory system and should be interpreted alongside tidal volume, compliance, and overall lung-protective strategy.

21. E. Myxedema coma represents decompensated severe hypothyroidism and often presents with hypothermia, bradycardia, hypoventilation, hyponatremia, and altered mental status. It requires thyroid hormone replacement, supportive care, treatment of the precipitating illness, and empiric glucocorticoid until adrenal insufficiency is excluded.

22. B. Positive predictive value rises as disease prevalence increases because a greater proportion of positive results are true positives. Negative predictive value generally falls as prevalence rises. Sensitivity and specificity are more intrinsic test characteristics and do not change simply because prevalence changes.

23. D. Life-threatening warfarin-associated bleeding requires rapid replacement of vitamin K-dependent clotting factors with four-factor PCC plus IV vitamin K for sustained reversal. Vitamin K alone acts too slowly for intracranial hemorrhage. Protamine reverses heparin, not warfarin.

24. A. Refractory hyperkalemia, severe acidosis, and volume overload with pulmonary edema are classic urgent indications for renal replacement therapy. Dialysis decisions are based on complications and overall clinical status rather than a single creatinine threshold. Temporizing measures for hyperkalemia should continue while definitive therapy is arranged.

25. A. A spontaneous breathing trial evaluates the ability to sustain ventilation without substantial support, but extubation also requires airway protection and secretion management. Weak cough and

impaired mental status increase extubation-failure risk. Respiratory mechanics alone do not answer whether the airway can be safely maintained.

26. E. Systemic toxicity, continuous pain, and metabolic acidosis in bowel obstruction suggest compromised blood flow and strangulation. This requires urgent surgical evaluation rather than prolonged nonoperative management. Delay can allow transmural necrosis, perforation, and septic shock.

27. A. Tacrolimus and cyclosporine can cause nephrotoxicity, hypertension, hyperkalemia, and neurotoxicity, among other adverse effects. Drug levels, interacting medications, renal function, and the possibility of rejection must be considered together. Blind dose escalation can worsen kidney injury and neurologic toxicity.

28. A. Passive leg raise transiently transfers venous blood toward the central circulation and functions as a reversible preload challenge. A meaningful increase in stroke volume suggests fluid responsiveness, though the decision to give fluid also depends on overall risk and evidence of congestion. The test is more informative than static filling pressures alone.

29. D. In pressure-control ventilation, delivered tidal volume varies with compliance, resistance, inspiratory time, and patient effort. A sudden reduction in compliance from edema, atelectasis, abdominal distention, or pneumothorax can lower tidal volume at the same driving pressure. The change warrants prompt assessment of the patient and circuit.

30. D. Abrupt disproportionate abdominal pain in a patient with an embolic risk factor is classic for acute mesenteric ischemia. Early examination may be deceptively benign despite threatened bowel. Rapid vascular imaging and operative or endovascular evaluation are required because delay leads to transmural necrosis and sepsis.

31. E. In hypertensive acute heart failure, excessive afterload impairs stroke volume and promotes pulmonary congestion. A rapidly titratable vasodilator can reduce afterload and filling pressures when blood pressure is adequate. Additional volume or pure vasoconstriction would generally worsen the pathophysiology.

32. B. *S. aureus* catheter-related bloodstream infection has a high risk of persistent bacteremia and metastatic complications. Source control usually requires catheter removal, repeated blood cultures, and evaluation for endocarditis or other foci as appropriate. Retaining an infected intravascular device can allow continued seeding.

33. E. Sustained intra-abdominal hypertension above 20 mm Hg with new organ dysfunction defines abdominal compartment syndrome. Elevated pressure impairs venous return, renal perfusion, ventilation, and visceral blood flow. Immediate measures to reduce intra-abdominal pressure are required, with decompressive laparotomy for refractory or rapidly life-threatening cases.

- 34. C.** Severe symptomatic hyponatremia with seizure requires prompt hypertonic saline to achieve a modest early rise that relieves cerebral edema. Overcorrection must then be avoided because rapid correction of chronic hyponatremia risks osmotic demyelination. Diagnostic urine studies are useful but should not delay treatment of life-threatening symptoms.
- 35. B.** Standard pulse oximetry cannot reliably distinguish oxyhemoglobin from carboxyhemoglobin, so it may appear normal in carbon monoxide poisoning. High-concentration oxygen accelerates dissociation of carbon monoxide from hemoglobin and should be started immediately based on suspicion. Selected severe cases may warrant hyperbaric consultation.
- 36. C.** Hemodynamic instability attributable to a tachyarrhythmia is an indication for synchronized cardioversion. Rate-control drugs may be appropriate in stable patients, but they should not delay restoration of organized rhythm when shock and altered mental status are present. Adenosine does not terminate atrial fibrillation.
- 37. A.** Upper endoscopy is the principal diagnostic and therapeutic procedure for acute upper GI bleeding after initial stabilization. It can identify and treat many common sources while allowing surgery or angiographic therapy to be reserved for refractory or anatomically unsuitable bleeding. Resuscitation and correction of severe coagulopathy occur in parallel.
- 38. B.** Aortic regurgitation causes blood to leave the aorta during diastole, lowering diastolic pressure while systolic pressure may remain elevated because of increased stroke volume. This produces the classic wide pulse pressure. Aortic stenosis instead tends to create a narrowed pulse pressure with fixed outflow obstruction.
- 39. E.** Right-sided chamber collapse in the setting of shock and a large effusion indicates tamponade physiology. Definitive treatment is prompt drainage of the pericardial space while supportive measures are arranged. Diuresis and afterload reduction can worsen preload-dependent shock and should not delay decompression.
- 40. B.** Hemodynamically stable patients with high-grade splenic injury can often be managed nonoperatively in centers capable of close monitoring and urgent intervention. Contrast blush increases the role for angioembolization. Instability or peritonitis remains an indication for operative management.
- 41. A.** The liver is central to maintaining fasting glucose through glycogenolysis and gluconeogenesis. Severe hepatic failure can therefore cause hypoglycemia, especially with poor nutrition or sepsis. Recurrent low glucose in this setting is a marker of severe metabolic dysfunction and requires prompt treatment and monitoring.
- 42. E.** Right-ventricular infarction produces preload-sensitive shock with systemic venous congestion and relatively clear lungs. Judicious preload support may improve output while urgent reperfusion is pursued. Nitrates and excessive diuresis can sharply reduce venous return and worsen hypotension.

- 43. B.** Sensitivity is the probability of a positive test among people who truly have the disease. It is different from positive predictive value, which depends strongly on disease prevalence. High sensitivity makes a negative result useful for ruling out disease when the test and clinical setting are appropriate.
- 44. D.** The waveform indicates dynamic hyperinflation with auto-PEEP. Management requires allowing more time for exhalation, often by lowering respiratory rate, shortening inspiratory time, and accepting permissive hypercapnia. Increasing minute ventilation can worsen air trapping and obstructive shock physiology.
- 45. C.** Antiseizure prophylaxis is used in selected high-risk severe TBI to reduce early post-traumatic seizures, generally within the first 7 days. It has not been shown to prevent late epilepsy. Seizures can increase metabolic demand and intracranial pressure, so prevention of early events may be clinically important.
- 46. D.** Current severe TBI guidance uses sustained ICP above approximately 22 mm Hg as a treatment threshold because higher values are associated with increased mortality. Therapy is tiered and includes basic measures before escalation. Profound prophylactic hyperventilation can reduce cerebral blood flow and is generally reserved as a short-term rescue maneuver for impending herniation.
- 47. B.** For many hemodynamically stable critically ill adults, a restrictive red-cell transfusion threshold around 7 g/dL is appropriate, with individualization for active ischemia, ongoing bleeding, and other factors. Transfusion should treat inadequate oxygen-carrying capacity rather than pursue a universally normal hemoglobin.
- 48. D.** In DKA, osmotic diuresis and vomiting cause substantial total-body potassium loss even when extracellular shifts make the initial serum concentration normal or elevated. Insulin and correction of acidosis drive potassium back into cells, so serum potassium can fall rapidly. Frequent monitoring and replacement are essential.
- 49. E.** Delayed cerebral ischemia related to cerebral vasospasm typically occurs several days after aneurysmal subarachnoid hemorrhage and can present with new focal deficits or declining consciousness. Rebleeding, hydrocephalus, seizures, and metabolic causes remain in the differential, but the timing is classic. Prompt evaluation and targeted management are required.
- 50. E.** Empiric treatment of suspected hospital- or ventilator-associated pneumonia should incorporate severity, prior antimicrobial exposure, local antibiogram data, and risk for resistant organisms. Cultures should be obtained promptly to permit narrowing. Both undertreatment of high-risk infection and unnecessary indefinite broad therapy are harmful.
- 51. D.** Severe hypofibrinogenemia contributes to impaired clot firmness during major hemorrhage. Cryoprecipitate is rich in fibrinogen, and fibrinogen concentrate is an alternative in systems where it is available. Red cells restore oxygen-carrying capacity but do not directly correct fibrinogen deficiency.

52. C. Underdamping exaggerates systolic pressure and may underestimate diastolic pressure because the catheter-tubing system resonates. The fast-flush test shows excessive oscillations. Mean arterial pressure is often less affected, but the system should be corrected before interpreting systolic and diastolic values.

53. D. A plateau pressure above the lung-protective target suggests excessive end-inspiratory stress. Tidal volume can be reduced below 6 mL/kg predicted body weight when necessary, with respiratory rate and other settings adjusted to maintain acceptable ventilation. Normalization of PaCO₂ is less important than limiting injurious pressure.

54. E. Distributive shock is characterized by pathologic vasodilation and low systemic vascular resistance, often with preserved or elevated cardiac output early in the course. Hypovolemic, cardiogenic, and obstructive states usually produce compensatory vasoconstriction with higher systemic vascular resistance. The bedside pattern should still be integrated with the clinical cause.

55. C. Specificity is the probability of a negative result among people who truly do not have the disease. A highly specific test can help rule in disease when positive because false positives are uncommon, although predictive value still depends on prevalence. Sensitivity and specificity are separate characteristics.

56. B. Febrile neutropenia with shock is a high-risk emergency requiring immediate broad antibacterial coverage, including antipseudomonal activity, with additional agents tailored to likely source and resistance risk. The absence of neutrophils can blunt local signs, so infection must be treated aggressively while diagnostic data are gathered.

57. E. Candida can be clinically significant in complicated intra-abdominal infection, particularly with recurrent perforation or anastomotic leak, prolonged antibiotics, and severe illness. Treatment decisions depend on the quality of the specimen and clinical context. Routine antifungal therapy for every abdominal infection is not appropriate.

58. B. Crush injury and rhabdomyolysis release intracellular potassium, which can cause lethal arrhythmias early, including around extrication and reperfusion. ECG changes require immediate membrane stabilization and potassium-shifting therapy while definitive removal and renal management are arranged. Other electrolyte abnormalities can occur but hyperkalemia is the immediate threat.

59. D. Invasive burn-wound infection can rapidly progress to sepsis and requires source control through excision of infected devitalized tissue plus systemic antimicrobial therapy. Topical agents alone do not treat invasive infection with systemic toxicity. Early recognition is critical because burn eschar can conceal deep progression.

60. D. Antimicrobial stewardship is part of sepsis care. Empiric therapy should be reassessed as new data emerge, and antibiotics should be narrowed or stopped when an alternative diagnosis is established

or infection becomes unlikely. Continuing unnecessary therapy increases toxicity, C. difficile infection, and resistance.

61. C. Perioperative DNR orders should undergo required reconsideration rather than automatic suspension or cancellation. Anesthesia and surgery routinely involve interventions that can resemble resuscitation, so the patient or surrogate should clarify goals and acceptable treatments. The resulting plan should be documented and communicated to the team.

62. A. Acute rejection can present with graft dysfunction and may include tenderness or systemic findings, although presentation can be subtle. Evaluation includes exclusion of mechanical and vascular causes, drug toxicity, infection, and often allograft biopsy. Treatment depends on the type and severity of rejection.

63. B. In children, severe bradycardia is often a terminal response to hypoxemia rather than a primary cardiac event. Immediate attention to oxygenation and ventilation is therefore crucial while chest compressions and medications are used according to the clinical state. Correcting the respiratory cause can be lifesaving.

64. E. Cerebral perfusion pressure is calculated as MAP minus ICP. Here, 85 minus 20 equals 65 mm Hg, which lies within the commonly targeted range for severe TBI. Both systemic hypotension and uncontrolled intracranial hypertension can therefore reduce cerebral perfusion.

65. C. PEA with acute RV dilation strongly suggests obstructive shock from pulmonary embolism, especially when tamponade is excluded. The reversible causes of arrest should be addressed rapidly, and ultrasound can narrow the differential. The other options do not explain abrupt RV pressure overload with PEA.

66. B. The P/F ratio is PaO₂ divided by FiO₂ expressed as a decimal, so 60/0.80 equals 75. This indicates severe oxygenation impairment in the appropriate clinical context. The ratio is used with other ARDS criteria rather than as an isolated diagnosis.

67. D. The low pH establishes acidemia, and the markedly reduced bicarbonate identifies a primary metabolic acidosis. The low PaCO₂ represents compensatory hyperventilation. Additional calculation can determine whether compensation is appropriate and whether a mixed disorder is also present.

68. B. Analgesia-first, goal-directed sedation reduces unnecessary sedative exposure and facilitates neurologic assessment, mobility, and ventilator liberation. Deep sedation is appropriate for selected indications but should not be routine. Neuromuscular blockers provide no analgesia or amnesia and cannot substitute for sedation.

69. B. Chronic hypernatremia causes cerebral adaptation, so overly rapid reduction can produce cerebral edema. Free water is replaced gradually with frequent reassessment of sodium and ongoing losses. If shock were present, intravascular volume would be restored first with isotonic fluid before definitive free-water correction.

70. C. Traumatic tamponade with shock is a time-critical obstructive process. Pericardial blood limits cardiac filling and requires immediate decompression, typically in an operative setting depending on the context. Imaging should not delay treatment in an unstable patient with convincing physiology.

71. B. Combustion of synthetic materials can release cyanide, which impairs cellular oxidative phosphorylation and can cause severe lactic acidosis and cardiovascular collapse. Hydroxocobalamin is a commonly used antidote when cyanide toxicity is strongly suspected. Treatment should not delay supportive resuscitation and management of concomitant carbon monoxide exposure.

72. D. Hydronephrosis and a distended bladder point to urinary outflow obstruction, a postrenal cause of AKI. Prompt decompression can be kidney saving and may produce a postobstructive diuresis that requires fluid and electrolyte monitoring. Treating only presumed hypovolemia would miss the mechanical cause.

73. C. A capacitated adult has the right to refuse even potentially lifesaving treatment after an informed discussion. Capacity is decision specific and depends on understanding, appreciation, reasoning, and ability to communicate a choice. Disagreement with the medical team does not by itself establish incapacity.

74. D. Permissive hypotension is not appropriate when severe TBI is present because systemic hypotension worsens secondary brain injury. Hemorrhage control remains urgent, but resuscitation must simultaneously preserve cerebral perfusion. Hyperventilation does not compensate for inadequate perfusion and can further reduce cerebral blood flow.

75. E. The presentation is consistent with adrenal crisis in a patient at risk for hypothalamic-pituitary-adrenal suppression. Treatment should not await confirmatory testing when shock is present; IV glucocorticoid and fluid resuscitation are required. Electrolyte abnormalities improve as cortisol and perfusion are restored.

76. A. Prone positioning for prolonged sessions improves outcomes in appropriately selected severe ARDS by improving ventilation-perfusion matching and reducing regional stress. High-frequency oscillation is not routinely recommended, and prolonged recruitment maneuvers can be harmful. Lung-protective ventilation remains the foundation.

77. E. HELLP denotes hemolysis, elevated liver enzymes, and low platelets and is a severe hypertensive disorder of pregnancy. Maternal stabilization, blood-pressure control, seizure prophylaxis when indicated, and obstetric delivery planning are critical. The right upper quadrant pain reflects hepatic involvement and signals potential for rapid deterioration.

78. E. Pain from rib fractures causes splinting, atelectasis, retained secretions, and pneumonia. Effective multimodal analgesia, respiratory therapy, coughing, and mobilization help preserve ventilation and secretion clearance. Intubation is reserved for respiratory failure or other specific indications, not fracture count alone.

79. C. Near misses are valuable patient-safety signals because they reveal hazards before injury occurs. A just-culture approach encourages reporting, examines system contributors, and distinguishes human error from reckless behavior. Learning from near misses can prevent future harm.

80. B. Acute compartment syndrome is a clinical emergency caused by rising tissue pressure that threatens muscle and nerve viability. Pain out of proportion and pain with passive stretch are early signs; pulses can remain present until late. Definitive treatment is urgent decompressive fasciotomy and removal of external constriction.

81. A. Loss of hepatic arterial flow after liver transplantation is a vascular emergency because arterial thrombosis can cause graft ischemia, biliary necrosis, and graft failure. Urgent confirmatory evaluation and surgical or endovascular management are required. The timing and Doppler finding make routine postoperative enzyme elevation inadequate as an explanation.

82. C. Feeding tolerance should be judged using the overall clinical picture, including vomiting, distention, pain, stool pattern, and perfusion. Isolated gastric residual volumes have limited value when used alone. Unnecessary interruptions worsen caloric delivery and should be balanced against true aspiration or intolerance risk.

83. A. Vasopressin is often added to norepinephrine in refractory vasodilatory septic shock to provide vasoconstriction through V1 receptors and reduce catecholamine dose. Dobutamine and milrinone primarily increase inotropy and may lower vascular resistance. Nitroglycerin is a vasodilator and esmolol is not a rescue vasopressor.

84. D. Quality improvement requires understanding the actual workflow, selecting a measurable intervention, testing it iteratively, and tracking process and outcome measures. PDSA cycles support rapid learning and adaptation. A purely punitive approach often misses system defects and may discourage transparent reporting.

85. A. Spontaneous breathing trials are appropriate once the cause of respiratory failure is improving and the patient can oxygenate on modest settings, initiate breaths, and maintain hemodynamic stability. Severe shock, high oxygen or PEEP requirements, paralysis, or unstable ischemia indicate that the patient is not ready for liberation.

86. C. Nonocclusive mesenteric ischemia occurs in critically ill low-flow states and can be worsened by profound vasoconstriction. The bowel is ischemic without a fixed large-vessel occlusion. Restoring perfusion, minimizing unnecessary vasoconstrictors, and urgent evaluation for necrotic bowel are central management priorities.

87. B. Crisis triage should use ethically defensible, transparent, and consistently applied criteria tied to the likelihood and magnitude of benefit, with procedural safeguards and reassessment. Irrelevant social worth and discriminatory exclusions are inappropriate. Clear institutional processes also reduce moral burden on individual clinicians.

88. B. Progressive hoarseness, soot, facial burns, and enclosed-space exposure raise concern for evolving inhalation injury and upper-airway edema. Early controlled intubation is safer than attempting rescue airway placement after edema progresses. Bronchoscopy can assess lower-airway injury after the airway is secured.

89. D. Myoglobin-mediated kidney injury is worsened by hypovolemia and low tubular flow, so early isotonic fluid resuscitation is central when the patient can tolerate it. Potassium and calcium abnormalities require close monitoring. Routine bicarbonate, mannitol, or preemptive dialysis has not replaced careful volume and complication management.

90. D. For moderate-to-severe ARDS, higher PEEP can be considered as part of a lung-protective strategy, while prolonged recruitment maneuvers are not routinely recommended. PEEP selection must still account for hemodynamics and overdistention. PaCO₂ normalization is not the primary purpose of PEEP.

91. C. Electrical injury can cause deep muscle necrosis out of proportion to skin findings. Rhabdomyolysis releases potassium and myoglobin, creating risk of arrhythmia and kidney injury. Resuscitation, ECG monitoring, electrolyte surveillance, and evaluation for compartment syndrome are therefore essential.

92. B. Blood cultures can identify the pathogen and support targeted therapy, so they should be collected promptly, ideally before antimicrobial administration. However, the pursuit of cultures should not substantially delay treatment in septic shock. Multiple appropriately obtained sets improve diagnostic yield and interpretation.

93. B. Neurologic prognostication after cardiac arrest should generally be deferred for at least 72 hours after return of spontaneous circulation, or after rewarming when hypothermia is used, with sedative and metabolic confounders minimized. Prognosis should integrate multiple modalities rather than rely on a single early examination finding.

94. D. The mortality benefit of tranexamic acid in bleeding trauma is time dependent, with use intended early after injury and not delayed beyond the effective early window. It is not a substitute for hemorrhage control or balanced transfusion. Waiting for severe laboratory coagulopathy or postoperative administration misses the intended mechanism and timing.

95. B. Suspected variceal hemorrhage is managed with resuscitation, early vasoactive therapy such as octreotide or a related agent, antibiotic prophylaxis, and urgent endoscopic control. Infection is common in cirrhotic GI bleeding and prophylactic antibiotics improve outcomes. Chronic nonselective beta blockade is not the sole therapy for active exsanguinating bleeding.

96. E. Muddy brown granular casts strongly support acute tubular injury, often ischemic in the setting of sustained shock. Management centers on restoring adequate perfusion, avoiding further nephrotoxins,

adjusting medication doses, and treating complications. The diagnosis is distinguished from purely prerenal physiology by structural tubular injury.

97. C. Acalculous cholecystitis occurs in critically ill, fasting, traumatized, or septic patients and can progress to gangrene or perforation. Ultrasound or other imaging may show gallbladder distention, wall thickening, or pericholecystic fluid without stones. Source control with cholecystectomy or percutaneous drainage depends on operative risk.

98. B. Serial lactate trends can provide useful information about changes in global perfusion after shock. A substantial decline accompanied by improved urine output supports improving resuscitation, although lactate is not perfectly specific and should not be used alone. Therapy should be individualized rather than continued mechanically until a specific laboratory value is reached.

99. E. VAP remains a clinical diagnosis supported by imaging and respiratory findings; microbiologic sampling helps target therapy and permits de-escalation. Cultures should ideally precede new antibiotics when this does not create unsafe delay. Biomarkers cannot replace clinical assessment, and indefinite broad-spectrum treatment promotes harm.

100. D. Septic shock is a medical emergency, and antimicrobial therapy should be initiated promptly after appropriate cultures are obtained when this does not create harmful delay. Waiting for final microbiology sacrifices time during a high-risk state. Empiric therapy should reflect the likely source, severity, and resistance risk.

101. B. Blood at the meatus after pelvic trauma raises concern for urethral disruption. Retrograde urethrography should generally precede blind catheter passage to avoid worsening the injury. Bladder drainage can then be established by an appropriate urethral or suprapubic route based on the findings.

102. C. The lethal triad of trauma is hypothermia, acidosis, and coagulopathy, each of which worsens the others and promotes ongoing bleeding. Damage-control resuscitation therefore includes active warming, restoration of perfusion, balanced hemostatic resuscitation, and rapid hemorrhage control. The other combinations do not describe the classic feedback loop driving traumatic exsanguination.

103. B. Venous oxygen saturation reflects the balance between oxygen delivery and consumption. With stable arterial saturation and hemoglobin, a fall suggests lower flow or increased metabolic demand. It should prompt assessment of cardiac output, perfusion, fever, shivering, and other factors rather than be interpreted in isolation.

104. A. Free fluid around the spleen after blunt trauma commonly indicates splenic injury, and diaphragmatic irritation can refer pain to the left shoulder. Hemodynamic status determines the next step: unstable patients require rapid hemorrhage control, whereas stable patients can undergo CT-based staging and potential nonoperative management.

105. A. Pulmonary embolism causing shock is high-risk disease and requires urgent consideration of reperfusion in addition to anticoagulation and supportive care. The exact modality depends on bleeding

risk and local expertise, but observation or prophylactic anticoagulation is inadequate. The key problem is obstructed pulmonary circulation and RV failure.

106. B. A small, vigorously contracting ventricle in a patient with shock is consistent with low preload, especially in hemorrhage. Tamponade would require a pericardial process and PE generally causes right-ventricular pressure overload. Ultrasound must be integrated with the clinical picture, but this pattern should prompt renewed search for ongoing bleeding and assessment of resuscitation adequacy.

107. C. Acute liver failure can progress rapidly to cerebral edema, multiorgan failure, and death; early transplant-center involvement is essential because candidacy and timing can change quickly. Management includes meticulous glucose, sodium, hemodynamic, and neurologic care. Hypotonic fluids can worsen cerebral edema.

108. D. Secondary brain injury is strongly worsened by systemic hypoxemia and hypotension. Pediatric TBI resuscitation therefore prioritizes airway oxygenation, ventilation, and age-appropriate blood-pressure support while intracranial injury is evaluated and treated. Avoiding preventable physiologic insults is as important as addressing the primary lesion.

109. C. Early enteral nutrition is preferred in severe acute pancreatitis when feasible and is associated with fewer infectious complications than routine parenteral nutrition. Prolonged bowel rest is unnecessary for most patients. Route and rate can be adjusted to tolerance and disease severity.

110. A. Immunosuppressed transplant recipients can develop bacterial, viral, fungal, and other opportunistic infections, with risks influenced by time from transplant and net immunosuppression. Early targeted sampling is often necessary because presentations are nonspecific. Immunosuppression adjustments should be coordinated with transplant specialists to balance infection control against rejection.

111. D. Winter's formula estimates expected PaCO_2 as 1.5 times bicarbonate plus 8, with a small range. For bicarbonate 12 mEq/L, the expected PaCO_2 is about 26 mm Hg. A substantially higher PaCO_2 would indicate superimposed respiratory acidosis, whereas a much lower value would suggest additional respiratory alkalosis.

112. B. A seizure in the setting of preeclampsia is eclampsia. Magnesium sulfate is the preferred medication for seizure control and prophylaxis, while maternal stabilization and delivery planning continue. Standard antiseizure drugs may be needed for refractory seizures or an alternative neurologic diagnosis, but magnesium is first line for eclampsia.

113. A. CLABSI prevention depends on a reliable bundle: hand hygiene, maximal sterile barriers during insertion, appropriate skin antisepsis, site selection, maintenance, and prompt removal of unnecessary catheters. Monitoring adherence and feeding results back to teams helps sustain performance. Routine prophylactic systemic antibiotics are not a substitute for process reliability.

114. C. When septic shock includes cardiac dysfunction with persistent hypoperfusion despite adequate volume status and blood pressure, an inotrope such as dobutamine can augment forward flow. Raising afterload further with pure vasoconstriction may worsen output. Additional fluid should depend on responsiveness rather than be automatic.

115. A. Dynamic tests that transiently alter preload, such as passive leg raising coupled to stroke-volume measurement, better predict fluid responsiveness than static filling pressures. Lactate and edema may indicate illness severity or fluid burden but do not directly determine whether another bolus will augment cardiac output. Static CVP is particularly unreliable for this purpose.

116. B. Pediatric resuscitation is weight based and requires frequent reassessment because children have smaller circulating volumes and can deteriorate rapidly. In hemorrhagic shock, early blood products should replace ongoing blood loss rather than relying on excessive crystalloid. Heart rate, mental status, pulses, capillary refill, blood pressure, and urine output all inform response.

117. A. Contemporary ARDS guidance supports consideration of VV-ECMO in selected patients with severe refractory hypoxemia after conventional evidence-based strategies are optimized. ECMO is resource intensive and requires appropriate selection and expertise. It does not replace lung-protective ventilation or justify injurious tidal volumes.

118. C. Modern multidetector CT angiography is the preferred initial diagnostic test for suspected blunt thoracic aortic injury in a stable patient. It defines the aorta and associated thoracic injuries rapidly. Unstable patients with an immediately treatable thoracic source may require a different pathway.

119. A. Sepsis is a clinical diagnosis, and no single biomarker reliably rules it in or out. A low procalcitonin cannot safely negate strong anatomic and physiologic evidence of infection with shock. Resuscitation, antimicrobials, and source control should proceed based on the whole clinical picture.

120. E. For most adults with septic shock, an initial MAP target around 65 mm Hg balances organ perfusion against vasopressor exposure. Some patients may need individualized targets based on chronic hypertension or perfusion markers, but routine pursuit of very high pressures has not shown a universal benefit. Clinical response remains important.

121. D. High-risk patients should receive thiamine and careful electrolyte monitoring before and during gradual advancement of calories. Refeeding causes insulin-mediated shifts of phosphate, potassium, and magnesium and can precipitate cardiovascular and respiratory failure. Prevention is safer than treating severe depletion after it occurs.

122. C. Transitions after critical illness are high-risk periods. Structured handoff, medication reconciliation, clear ownership of unresolved issues, and plans for physical, cognitive, and emotional sequelae improve continuity. The presence of an electronic record does not replace explicit transfer of clinically important information.

123. A. Empyema treatment depends on both drainage and appropriate antibiotics. Once reliable culture information is available, therapy should be narrowed when possible. Persistent loculation or inadequate drainage requires additional source-control assessment rather than simply broadening antibiotics.

124. E. Small, water-soluble, minimally protein-bound drugs can cross CRRT membranes and may undergo substantial extracorporeal clearance. Dosing depends on modality, effluent rate, residual renal function, and drug properties. Underdosing can occur if CRRT clearance is ignored, especially early in severe infection.

125. C. Major burns produce a prolonged hypermetabolic and catabolic state with high protein turnover. Early enteral nutrition and adequate protein help limit lean-body-mass loss and support wound healing. Caloric delivery should be monitored to avoid both underfeeding and overfeeding.

126. E. Capillary leak and aggressive fluid resuscitation expand extracellular water, increasing the volume of distribution for many hydrophilic antimicrobials. Standard initial doses may therefore produce lower-than-expected concentrations. Adequate loading doses are often important even when maintenance dosing later requires renal adjustment.

127. B. Intraperitoneal bladder rupture exposes the peritoneal cavity to urine and generally requires operative repair. Many uncomplicated extraperitoneal ruptures can be managed with catheter drainage, but intraperitoneal injuries are treated differently. Associated pelvic and intra-abdominal injuries must also be addressed.

128. A. Excess crystalloid contributes to tissue edema, abdominal compartment physiology, dilutional coagulopathy, and pulmonary dysfunction. Modern damage-control resuscitation prioritizes hemorrhage control and appropriately balanced blood products while minimizing unnecessary crystalloid. The complications described are classic consequences of fluid overload rather than insufficient crystalloid exposure.

129. B. As in adults, severe obstructive physiology can cause dynamic hyperinflation and auto-PEEP, leading to barotrauma and obstructive shock. Lowering respiratory rate and allowing full exhalation is central, with permissive hypercapnia accepted if pH remains tolerable. Aggressive minute ventilation can worsen air trapping.

130. A. Once a microbiologic diagnosis and susceptibility profile are available, narrowing therapy reduces toxicity and selection pressure without sacrificing efficacy. MSSA is generally better treated with an appropriate antistaphylococcal beta-lactam than continued vancomycin when there is no contraindication. Source control and evaluation for metastatic infection remain essential.

131. C. Papillary muscle rupture is a catastrophic post-infarction mechanical complication that produces abrupt severe mitral regurgitation, pulmonary edema, and shock. The new murmur and timing after infarction are key clues. Urgent echocardiographic diagnosis and surgical evaluation are required.

132. A. Enteral nutrition may be used cautiously in selected patients whose shock is controlled or improving, even if low or stable vasopressor support continues. Escalating shock or signs of gut hypoperfusion warrant withholding or reducing feeds. The decision is based on perfusion and trajectory rather than the mere presence of any vasopressor.

133. C. Persistent conflict about potentially nonbeneficial treatment should be addressed through careful communication, explicit goals-of-care discussion, and a fair institutional conflict-resolution process. Ethics consultation can help clarify values and procedural options. Neither unilateral abandonment of communication nor indefinite treatment by demand is an adequate ethical framework.

134. D. The timing, degree of platelet fall, and new thrombosis are classic for heparin-induced thrombocytopenia. Heparin should be stopped immediately, including hidden exposures, and therapeutic non-heparin anticoagulation started when the clinical probability is significant and bleeding risk allows. Waiting for confirmatory testing exposes the patient to ongoing thrombotic risk.

135. B. Absolute risk reduction is the control event rate minus the treatment event rate: 20% minus 15% equals 5 percentage points. Relative risk reduction would be 25%. Distinguishing absolute from relative effects is important because clinical impact depends on baseline risk.

136. D. Beaking of the pressure-volume loop at high lung volume suggests diminishing compliance from overdistention. The finding should prompt reassessment of tidal volume, inspiratory pressure, and PEEP in the context of oxygenation and mechanics. Lung-protective ventilation aims to avoid both collapse and overdistention.

137. B. Ongoing status epilepticus requires rapid escalation after benzodiazepines to a second-line antiseizure drug, followed by anesthetic therapy with EEG monitoring if seizures remain refractory. Paralysis can hide motor activity without treating cortical seizures. Treatment aims to stop electrical seizure activity and address the underlying cause.

138. E. Ventilator tidal volume is based on predicted body weight because lung size correlates more closely with height and sex than with adipose mass. Nutritional dosing may use different weight strategies in obesity. Conflating actual body weight with lung size can lead to excessive tidal volumes and ventilator-induced injury.

139. D. Pancreatic trauma management depends heavily on whether the main pancreatic duct is disrupted. Ductal injuries have a higher risk of fistula, abscess, and pancreatitis and often require operative or advanced endoscopic management. Enzyme levels can be misleading and do not define injury severity by themselves.

140. A. Structured handoffs reduce omission by consistently transmitting the patient's current state, active threats, action items, and what to do if the condition changes. The goal is shared situational awareness, not merely transfer of facts. Critical medications, code status, and pending studies should be included when relevant.

141. C. Shock, rising lactate, and colonic distention in *C. difficile* infection suggest fulminant colitis and possible toxic megacolon. Medical therapy must be intensified and surgical consultation should be early because deterioration can be rapid. Waiting for perforation before involving surgery can be dangerous.

142. A. Citrate in transfused blood products binds ionized calcium, and clinically important hypocalcemia can develop during rapid massive transfusion. Hypocalcemia impairs myocardial performance and coagulation and may prolong the QT interval. Ionized calcium should be monitored and replaced when low during ongoing high-volume transfusion.

143. A. When a patient lacks capacity, the preferred standard is substituted judgment: choose as the patient would have chosen based on known values and prior statements. If preferences are unknown, decisions move toward the patient's best interests. Surrogates represent the patient rather than themselves.

144. E. Large chloride loads reduce the strong-ion difference and can produce hyperchloremic non-anion-gap metabolic acidosis. Balanced crystalloids contain less chloride and may reduce this effect in many critically ill patients. The acidosis is not caused by lactate generation from normal saline.

145. B. Necrotizing soft-tissue infection is a surgical emergency. Disproportionate pain, systemic toxicity, rapid progression, and gas are major warning signs; operative exploration should not be delayed for advanced imaging when suspicion is high. Broad empiric antibiotics support but do not replace aggressive debridement.

146. D. Circumferential full-thickness chest burns can form a noncompliant eschar that restricts chest-wall excursion as edema develops. Escharotomy releases the constriction and can rapidly improve ventilation. Simply increasing ventilator pressure risks lung injury without solving the mechanical restriction.

147. B. This patient has classically decompensated hemorrhagic shock with an identified intra-abdominal source. Damage-control resuscitation emphasizes early blood products and rapid hemorrhage control rather than large-volume crystalloid, vasopressor-first therapy, or diagnostic delay. Initial hemoglobin may be misleading before equilibration and should not delay treatment of obvious shock.

148. B. Reducing heart rate and arterial pressure decreases aortic wall shear and may reduce risk of injury progression before definitive repair. Beta blockade is typically central to impulse control, with additional agents used as needed. The strategy must be individualized when concomitant injuries require higher perfusion pressures.

149. E. Free intraperitoneal fluid without solid-organ injury, a seat-belt sign, and evolving tenderness should raise concern for bowel or mesenteric injury. These injuries can be subtle on initial imaging and may declare themselves over time. Serial examinations and timely operative evaluation are essential when suspicion persists.

150. D. Refeeding stimulates insulin, driving phosphate, potassium, and magnesium into cells and increasing demand for phosphorylated intermediates. Severe hypophosphatemia can cause diaphragmatic weakness, cardiac dysfunction, and neurologic complications. Nutrition should be advanced carefully with electrolyte and thiamine management in high-risk patients.

151. D. Gas in a pancreatic or peripancreatic necrotic collection in a deteriorating patient strongly suggests infection, although prior instrumentation can confound interpretation. Management includes appropriate antibiotics and source control, often using a delayed, minimally invasive step-up approach when feasible. Immediate open necrosectomy is not automatically required in every stable patient.

152. E. Sepsis from a surgically correctable source requires prompt source control in addition to resuscitation and antimicrobials. Persistent contamination cannot be overcome reliably with antibiotic escalation alone. The timing of source control should be early once the diagnosis is recognized and the patient can undergo the necessary intervention.

153. D. Management of an enteroatmospheric fistula is initially supportive and technically demanding: control effluent, protect surrounding tissue, correct fluid and electrolyte losses, treat sepsis, and optimize nutrition. Early forced closure is often unsuccessful in a hostile open abdomen and can worsen injury. Definitive reconstruction is usually delayed until conditions are favorable.

154. E. After adequate source control, prolonged antibiotic courses are usually unnecessary for many complicated intra-abdominal infections. Duration should reflect source control, organism, host factors, and clinical response. Persistent fever or organ dysfunction should prompt reassessment for uncontrolled infection rather than automatic extension of broad therapy.

155. C. Hypernatremia with inappropriately dilute urine after neurologic injury is characteristic of deficient antidiuretic hormone effect, often central diabetes insipidus. Treatment includes careful free-water replacement and desmopressin when central DI is confirmed or strongly suspected. SIADH causes water retention and hyponatremia rather than hypernatremia.

156. D. Intravesical pressure measurement is the standard practical surrogate for intra-abdominal pressure because the bladder acts as a passive pressure transducer when measured correctly. Physical examination alone is insensitive, especially in obese or sedated patients. Serial bladder measurements help track intra-abdominal hypertension and response to treatment.

157. A. New RV dilation and septal flattening in shock indicate acute pressure overload of the right ventricle. In a postoperative patient, massive or high-risk pulmonary embolism is a key concern. Simple hypovolemia typically produces an underfilled rather than dilated RV.

158. B. An infected obstructed urinary system is a source-control emergency. Antibiotics penetrate poorly into an undrained, pressurized collecting system and septic deterioration can continue until decompression occurs. Percutaneous or endoscopic drainage is selected according to anatomy and expertise.

159. C. Cardiac index normalizes cardiac output to body surface area and equals cardiac output divided by BSA. Four liters per minute divided by 2 square meters equals 2 L/min/m². This provides a more size-adjusted measure of circulatory performance than raw cardiac output alone.

160. A. Lung-protective ventilation in ARDS uses low tidal volume based on predicted, not actual, body weight and limits inspiratory plateau pressure. The purpose is to reduce ventilator-induced lung injury even if mild permissive hypercapnia results. Large tidal volumes and pressure targets chosen only to normalize blood gases increase risk of overdistention.

161. D. The combination of deteriorating examination, pupillary asymmetry, and Cushing physiology is a neurologic emergency consistent with impending herniation. Immediate measures to lower ICP and preserve perfusion should occur while definitive imaging and surgical treatment are organized. Delaying intervention risks irreversible brainstem injury.

162. B. A rigid circumferential eschar can impair limb perfusion as edema increases. Progressive neurovascular compromise is an indication for escharotomy; waiting for absent pulses risks ischemic injury. If deeper compartment syndrome persists despite adequate eschar release, fasciotomy may also be required.

163. C. TACO is hydrostatic pulmonary edema caused by transfusion volume or rate exceeding cardiovascular reserve. Hypertension, venous congestion, and signs of fluid overload favor TACO over TRALI. Management includes stopping or slowing transfusion, oxygen support, and diuresis when appropriate.

164. A. Carbon dioxide is a potent regulator of cerebral vascular tone. Acute hypercapnia causes vasodilation, increasing cerebral blood flow and intracranial blood volume, which can raise ICP when intracranial compliance is limited. Ventilation should therefore avoid major hypercapnia in patients with uncontrolled intracranial hypertension.

165. E. Traumatic diaphragmatic rupture does not reliably heal spontaneously and can lead to respiratory compromise or delayed visceral strangulation. Definitive management is operative reduction and repair, with the surgical approach chosen according to associated injuries and timing. A chest tube does not close the defect and may injure herniated viscera if placed blindly.

166. A. Hard signs of extremity vascular injury include pulsatile bleeding, expanding hematoma, bruit or thrill, distal ischemia, and absent pulses. These findings warrant immediate operative exploration rather than additional diagnostic delay. Temporary shunting may be useful in complex limb-threatening injuries requiring staged repair.

167. A. When abuse is suspected, medical stabilization comes first, followed by careful objective documentation and activation of mandated reporting and child-protection pathways. The clinical team should avoid investigative confrontation that could compromise safety or evidence. Multidisciplinary assessment helps identify occult injury and protect the child.

168. D. Thyroid storm is a life-threatening decompensation of thyrotoxicosis precipitated by physiologic stress such as surgery or infection. Hyperthermia, marked tachycardia, CNS dysfunction, and cardiovascular failure are classic. Management requires rapid blockade of adrenergic effects and thyroid hormone synthesis/release plus treatment of the precipitant.

169. B. Defibrillation and high-quality CPR are central in VF. Epinephrine is used during resuscitation, and amiodarone or lidocaine can be used for shock-refractory VF/pulseless VT. Atropine, vasodilators, and digoxin do not replace the established cardiac-arrest algorithm.

170. A. Before hemorrhage control in selected bleeding trauma patients without TBI, permissive hypotension can limit disruption of early clot formation and reduce unnecessary crystalloid exposure. The goal is not no resuscitation; it is sufficient perfusion while avoiding aggressive normalization of pressure. TBI is an important exception because cerebral perfusion depends on avoiding hypotension.

171. B. Propofol infusion syndrome is a rare but life-threatening complication associated with high doses and prolonged exposure, particularly in critically ill patients. Metabolic acidosis, rhabdomyolysis, hyperkalemia, renal failure, and cardiovascular collapse are characteristic. Propofol should be stopped and supportive management initiated promptly.

172. B. For highly protein-bound drugs, hypoalbuminemia can increase the free fraction, so total serum concentration may underestimate pharmacologically active exposure. Critical illness also changes volume of distribution and clearance. Drug levels must therefore be interpreted in context rather than by total concentration alone.

173. A. Initial management of flail chest includes effective multimodal analgesia, pulmonary hygiene, mobilization, and treatment of associated lung injury. Current chest-wall guidance also supports consideration of surgical stabilization in patients with flail chest, particularly when the segment is displaced or respiratory mechanics are compromised. Intubation is based on respiratory failure or another airway indication rather than paradoxical motion alone.

174. A. TRALI presents with acute noncardiogenic pulmonary edema temporally related to transfusion and can include hypotension and fever. TACO more often features hydrostatic overload, hypertension, elevated filling pressures, and response to diuresis. Distinguishing the syndromes guides supportive management and blood-bank investigation.

175. D. In cardiogenic shock with marked hypotension, norepinephrine is commonly used to restore coronary and systemic perfusion pressure. If low output persists after pressure is supported, an inotrope can be added. Pure afterload elevation, indiscriminate fluid loading, and potent vasodilation can worsen the hemodynamic state.

176. E. Delirium is common and should trigger evaluation for infection, medications, hypoxemia, metabolic problems, withdrawal, pain, and sleep disruption. Prevention and treatment emphasize

orientation, sleep promotion, mobility, sensory aids, and minimization of deliriogenic medications. Routine deep sedation with benzodiazepines can worsen delirium.

177. B. Acute cervical spinal cord injury can produce neurogenic shock through loss of sympathetic tone, causing vasodilation and bradycardia. Current hemodynamic guidance emphasizes correcting hypotension and generally favors norepinephrine for vasopressor support because it raises vascular tone while providing some beta-adrenergic cardiac support. Hemorrhage and other shock states must be excluded before attributing hypotension to neurogenic shock.

178. D. Aspiration pneumonitis is initially managed with supportive care, including lung-protective ventilation when needed. Visible particulate matter or suspected airway obstruction may require directed suction or bronchoscopy, but routine antibiotics are not automatically required for sterile chemical pneumonitis. Infection should be treated when clinically supported.

179. B. Stable patients with blunt hepatic injury are frequently managed nonoperatively, even with high-grade injuries, provided the center can monitor closely and intervene rapidly. Angioembolization is useful for selected arterial bleeding. Hemodynamic instability or peritonitis remains a major reason for surgery.

180. A. Norepinephrine is the preferred first-line vasopressor for septic shock because it reliably raises vascular tone with less arrhythmogenicity than dopamine. Dobutamine and milrinone are inotropes used selectively when cardiac dysfunction and persistent hypoperfusion are present. Phenylephrine lacks the balanced evidence base for routine first-line use.

181. B. Current sepsis guidance supports starting vasopressors peripherally when needed rather than allowing dangerous hypotension to persist while awaiting central access. The infusion should use a suitable peripheral site with close monitoring and transition as appropriate. The urgency is restoration of perfusion, not adherence to a central-line prerequisite.

182. A. High spinal cord injury can interrupt sympathetic pathways, producing vasodilation and relative or absolute bradycardia: the classic pattern of neurogenic shock. Hemorrhagic shock usually causes tachycardia and cool vasoconstricted skin, though both processes can coexist in trauma. Bleeding must still be excluded before attributing hypotension solely to the cord injury.

183. E. Persistent hyperglycemia at 240–280 mg/dL exceeds the usual treatment threshold in critically ill adults. Current hospital standards recommend initiating or intensifying insulin for persistent glucose at or above 180 mg/dL and targeting approximately 140–180 mg/dL for most ICU patients. More aggressive normalization increases hypoglycemia risk and has not improved overall outcomes.

184. C. Open fractures require early systemic antibiotics, tetanus prophylaxis when indicated, careful wound coverage, fracture stabilization, and timely operative debridement. Delayed antibiotics increase infection risk. Definitive closure strategy depends on contamination, tissue viability, and reconstruction needs.

185. D. Persistent waveform capnography is the best routine confirmation of tracheal placement. In a perfusing patient, absent exhaled CO₂ after several breaths strongly suggests esophageal placement or another failure of the airway circuit. The tube should be reassessed immediately rather than accepted based on chest movement alone.

186. B. The absolute risk reduction is 0.05, so NNT is 1 divided by 0.05, which equals 20. This means 20 similar patients would need treatment to prevent one additional event over the study period, assuming the observed effect applies to the target population.

187. C. High PEEP raises intrathoracic pressure, reducing venous return, and can increase pulmonary vascular resistance when alveoli are overdistended. Both effects can worsen RV output and systemic pressure. The hemodynamic impact is especially important in patients already dependent on right-heart function.

188. B. After initial resuscitation, ongoing fluid should be individualized with repeated assessment rather than automatically continued to lactate normalization. Vasopressors need not be delayed solely for central access, and balanced crystalloids remain appropriate first-line fluid. Starches are harmful in sepsis, and albumin is not required as the exclusive resuscitation fluid.

189. D. Pulmonary vascular resistance rises with hypoxemia, hypercapnia, acidemia, and excessive lung volumes. High intrathoracic and alveolar pressures from overdistention can increase RV afterload and reduce venous return. Ventilation should therefore avoid both derecruitment and excessive distention while maintaining gas exchange.

190. B. Candida recovered from blood is clinically important and requires systemic therapy. In critically ill adults, an echinocandin is commonly used initially, with subsequent tailoring based on species, susceptibility, and stability. Removal of potentially infected intravascular devices and documentation of bloodstream clearance are important components of care.

191. D. Flow through a bronchopleural fistula increases with the pressure gradient across the defect. Ventilation should therefore minimize airway pressure and tidal volume while maintaining acceptable oxygenation and ventilation. Higher PEEP and larger breaths can enlarge the leak and delay healing.

192. A. An overdamped arterial system attenuates the waveform, often lowering displayed systolic pressure and narrowing pulse pressure while mean pressure may remain closer to accurate. Air bubbles, compliant tubing, clot, or kinks can cause damping. The system should be flushed and inspected before major treatment decisions are based on an unreliable tracing.

193. C. DIC causes systemic coagulation activation with consumption of platelets and clotting factors, producing thrombosis and bleeding. Typical laboratory findings include thrombocytopenia, prolonged clotting times, low fibrinogen in overt cases, and elevated fibrin degradation products. Treatment focuses on the underlying cause and supportive blood-component therapy when clinically indicated.

194. B. The transplanted heart is denervated, so classic ischemic pain and reflex autonomic responses may be absent. Transplant vasculopathy and rejection can therefore present with graft dysfunction, arrhythmia, or heart failure rather than typical angina. Surveillance and objective testing are important in this population.

195. C. When the gastrointestinal tract is functional, enteral nutrition is generally preferred because it is physiologic, supports gut integrity, and avoids many catheter-related and metabolic complications of parenteral nutrition. Parenteral nutrition is reserved for situations in which enteral feeding is contraindicated or inadequate.

196. A. A high peak pressure with a relatively normal plateau pressure points to increased resistive pressure rather than reduced compliance. Bronchospasm, secretions, biting, or endotracheal tube obstruction are common causes. Compliance problems generally elevate both peak and plateau pressures.

197. C. Urine output is a practical endpoint of burn resuscitation in adults, often targeted near 0.5 mL/kg/hour, but it must be integrated with perfusion, hemodynamics, and signs of over-resuscitation. Chasing static filling pressures can worsen fluid creep. Patients with electrical injury may require different urine-output goals because of myoglobinuria.

198. D. Hard signs of major neck vascular or aerodigestive injury, including active bleeding, expanding hematoma, and airway compromise, require immediate operative management after securing the airway. Stable patients without hard signs can undergo selective imaging. Instability overrides the routine diagnostic pathway.

199. C. Critically ill surgical patients often have substantial VTE risk, and pharmacologic prophylaxis is indicated when bleeding risk permits. Mechanical prophylaxis can supplement or temporarily substitute when anticoagulation is contraindicated. Therapeutic anticoagulation is not used merely for prophylaxis in all patients.

200. E. Uterine atony is the most common cause of postpartum hemorrhage and presents with heavy bleeding and a soft, poorly contracted uterus. Initial treatment includes uterine massage and uterotonic therapy while resuscitation and evaluation for retained tissue, trauma, and coagulopathy proceed. Persistent hemorrhage may require tamponade, embolization, or surgery.