**DEPARTMENT OF SURGERY**

**SURGICAL FOUNDATIONS EXAM**

February 18, 2014

7:30 a.m. to 9:30 a.m.

***EXAMINATION INSTRUCTIONS***

1. Please write and code your name on the Computer Answer Sheet – left side.

2. This examination is multiple-choice. Choose the single best answer.

3. This examination is two hours in length.

4. Examination results will be sent from the Department of Surgery

1. In regard to cancer epidemiology research, the estimate of survival times using proactive disease screening is confounded by concerns that?

 a) length time biases suggests that fast growing cancers will be more easily detected

 b) lead time bias suggests that active screening artificially improves survival times

 c) screening doesn’t usually detect slow-growing tumors

 d) cancer-specific death rates do not correct adequately for length and lead time

1. A 21 year old woman is recovering from a severe MVC. The stress from her injuries and surgical treatment causes a hypermetabolic state. Which of the following is NOT seen during stress hypermetabolism?

 a) increased need for linoleic and anachadonic acids

 b) elevated resting energy expenditure

 c) increased hepatic gluconeogenesis

 d) positive nitrogen balance

1. Oncogenes, proto-oncogenes, and tumor suppresser genes pay a major role in carcinogenesis. Which of the following statements is TRUE?

 a) proto-oncogenes are proteins capable of inhibiting oncogenes

 b) exposure to carcinogens causes insertion of oncogenes into the human genome

 c) proto-oncogenes may be activated by mutation, amplification, or translocation

 d) tumour suppressor genes may be activated by certain chemotherapy drugs

1. Massive blood losses are replaced with packed RBC, fresh frozen plasma and pooled platelets. Cryoprecipitate is sometimes needed to replace losses of?

 a) factor VIII

 b) Von Willibrands factor

 c) thrombin

 d) fibrinogen

1. A 60 year old man is admitted to the ICU for treatment of septic shock following removal of an obstructing right ureteral calculus at cystoscopy. Which of the following treatments is most likely to increase his survival probability?

 a) solucortef 100 mgs IV tid x72 hr

 b) administration of IL-1 receptor antagonist

 c) administration of broad-spectrum antibiotics for 5-10 days

 d) administration of activated protein C

1. Five days after an esophogectomy for cancer, a 65 year old man develops fever as well as edema, erythema, and tenderness over the right cheek. Which of the following is TRUE?

 a) it is usually due to streptococcal infection

 b) massage of the area is beneficial

 c) it can be prevented with antibiotics

 d) it is associated with decreased saliva formation

1. A 50 year old man has been in the ICU for three weeks following repair of a ruptured AAA. He develops fever, hypotension, and a new heart murmur. Blood cultures grow vancomycin-resistant enterococcus. The best antibiotic treatment for this condition is?

 a) azithromycin

 b) linezolid

c) levofloxacin

 d) ciprofloxacin

1. Death occurring many weeks after severe injury may be the result of any of the following, EXCEPT?

 a) adrenal failure

 b) neurologic injury

 c) sepsis-induced multi-organ system failure

 d) suicide

1. A 25 year old man is admitted to the ICU because of a severe closed head injury from a skiing accident. He has no other significant injuries. The most appropriate approach to feeding this patient is?

 a) nasogastric feeds

 b) nasojejunal feeds

 c) start TPN on day 3

 d) peripheral caloric support until a feeding gastrostomy can be inserted endoscopically

1. A 55 year old man comes to the ER with a 24 hour history of a painful, erythematous right leg. His vitals are:

 HR 150

 BP 95/60

 RR 22

 O2 SAT 93% on N/P 02 4L/min

 Regarding resuscitation of this patient in the ER before transfer to the Operating Room, which of the following statements is TRUE?

1. intravenous administration of antibiotics is the first priority
2. a central line should be inserted to measure CVP
3. 2-4 litres of crystalloid should be administered intravenously
4. endotrachial intubation should be established promptly

11. A 28 year old woman is an unrestrained driver in a MVC. She has stable vital signs and left upper quadrant abdominal tenderness, but no peritoneal signs. What is the next step in her management?

 a) admission for observation

 b) abdominal ultrasound

 c) diagnostic peritoneal lavage

 d) CT scan abdomen/pelvis

 12. A 66 year old woman undergoes total gastrectomy for carcinoma of the stomach. Because of the resection of the gastro-esophageal junction, the surgeon is worried the patient may suffer from aspiration pneumonitis. All the following are helpful in preventing this complication, EXCEPT:

 a) head of bed at 30 degrees at all times

 b) Ancet 1 gram IV q8hx72 hrs post-operatively

 c) vigorous chest physio tid

 d) post-operative epidural analgesia

13. A 48 year old man sustains bilateral closed femur fracture in a motor vehicle crash. He has no other injuries. He undergoes bilateral ORIF of his fractures. The most appropriate prophylaxis for DVT in this patient would be?

* 1. low molecular weight heparin subcutaneously
	2. unfractionated heparin subcutaneously
	3. leg pneumatic compression devices
	4. IVC filter

14. A 64 year old man is scheduled undergo femoral-popliteal bypass grafting for peripheral vascular disease. He had one episode of congestive heart failure two years previously and is now well controlled with an angiotension-converting enzyme (ACE) inhibitor and a diuretic. He gardens and is able to carry on normal activities without restrictions. His resting ECG is normal. Additional pre-operative cardiac testing should be include:

* 1. nuclear medicine cardiac study
	2. exercise stress testing
	3. coronary angiography
	4. no further testing

15. Anemia (hgb < 9 gm/dl) in a patient with a traumatic brain injury should be treated with red blood cell transfusion:

* 1. without exception
	2. in patients manifesting physiologic indications for transfusion
	3. in patients aged 55 or older
	4. in patients with sepsis

16. After intubation, the MOST accurate and expeditious way to determine whether the endotrachial tube is in the trachea is?

* 1. lung auscultation
	2. tube misting
	3. end-tidal CO2
	4. chest wall rise

17. A 60 year old man undergoes bowel resection because of infarction caused by thrombosis of his superior mesenteric artery. Post-operatively he does well but requires long term home TPN. Which type of central intravenous line is least likely to cause sepsis in this patient?

* 1. polyvinylchloride triple lumen catheter in the subclavian vein
	2. single-lumen Hickman catheter in the subclavian vein
	3. double-lumen PICC line in the right cephalic vein
	4. single-lumen polyvinylchloride line in the right internal jugular vein

18. Intra-operative hypothermia (patient core temperature <34° C) is associated with all of the following, EXCEPT?

* 1. decreased levels of fibrinogen
	2. decreased platelet activity
	3. increased incidence of surgical site infection
	4. increased blood loss during abdominal surgery

19. All the following are known complications of heparin administration, EXCEPT?

* 1. skin necrosis
	2. cholestatic hepatic injury
	3. arterial thrombosis
	4. osteoporosis

20. In the management of hemorrhagic shock, the best clinical sign of successful fluid resuscitation is?

* 1. a increase in blood pressure
	2. an increase in urine output
	3. an increase in arterial oxygenation
	4. a decrease in tachycardia

21. A 46 year old woman is about to undergo hepatic resection for metastatic carcinoid tumor. During anaesthesia induction, her blood pressure decreases to 80 mmHg systolic and her heart rate increases to 110. Her entire body appears flushed. Her temperature is normal as is end-tidal CO2. Management consists of?

* 1. corticosteroids
	2. octreotide
	3. abort operation
	4. dantrolene

22. Which of the following statements concerning tetanus infection is correct?

1. Active immunization with tetanus toxoid is the mainstay of therapy.
2. Generalized toxic convulsions are produced by an exotoxin.
3. Mental confusion is a common finding.
4. Severe local infection is present at the site of injury.

23. 12 hours after undergoing percent percutaneous drainage of a large subphrenic abscess, the patient is found to be confused, agitated, and tachypneic. BP 80/40, HR 140, RR 24, T 39.5. The patient is transferred to the ICU and a Swan-Ganz catheter inserted after fluid resuscitation. Which of the following findings would be unlikely in this patient?

1. Increased cardiac output.
2. Decreased peripheral vascular resistance.
3. Increased arteriovenous oxygen difference.
4. Increased serum lactate.

24. Which of the following antibiotics may be efficacious in the treatment of clostridium difficile-induced pseudomembranous colitis?

1. Clindamycin.
2. Penicillin – G.
3. Chloramphenicol
4. Vancomycin.

25. Bacterial factors may aid the development of surgical site infections. Which of the following statements is NOT correct?

1. A thick polysaccride capsule around certain bacteria inhibits phagocytosis.
2. Surface components on gram-negative bacteria (endotoxin) can have a toxic effect on Neutrophils.
3. The ability of a microbe to secrete exotoxins may greatly facilitate infection.
4. Staphylococcus epidermidis contaminating a clean surgical incision will usually result in infection.

26. With regard to anaerobic bacterial infections, which of the following statements is NOT true?

1. Anaerobic bacteria are common inhabitants of the skin and mucous membranes.
2. Bacteroides species are the most common isolates in anaerobic infections.
3. If appropriate cultures are obtained, anaerobes are found in about 25% of intra-abdominal abscesses.
4. Proper treatment of anaerobic infections consists of drainage, debridement of necrotic material and appropriate antibiotic therapy.

27. With regard to methicillin-resistant staphylococcus aureus (MRSA), which of the following statements is NOT true?

1. MRSA is a common nosocomial pathogen.
2. Treatment of choice is vancomycin.
3. MRSA is more virulent then methicillin-sensitive staph aureus
4. Hospitalized patients colonized with MRSA require appropriate isolation.

28. Which of the following characteristics of tetracycline is true?

1. Bacteriocidal
2. Active against mycobacterium.
3. Discoloration of teeth.
4. Narrow spectrum of activity.

29. Which of the following markers is the most clinically useful in following the course of a patient infected with the human immunodeficiency virus (HIV)?

1. Direct quantitation of viral load in plasma.

1. CD4 cell count.
2. Serum beta-two microglobulin.
3. P24 antigen level.

30. A 32 year old HIV-positive IV drug user is admitted to hospital following a seizure. A CT scan of the head with IV contrast shows two ring-enhancing lesions. Which of the following statements is correct?

1. Neurologic symptoms are extremely unusual as the first manifestation of AIDS.
2. Toxoplasmosis is the most common cause of focal-enhancing lesions on CT scan in HIV-infected patients.
3. Biopsy should be performed on all enhancing lesions in HIV patients.
4. Primary CNS lymphoma is less common in HIV patients than in immuno suppressed transplant patients.

31. When lactic acid is produced in response to injury, the body minimizes PH change by:

1. Decreasing production of sodium bicarbonate in tissues.
2. Excreting carbon dioxide through the lungs.
3. Excreting lactic acid through the kidneys.
4. Lowering renal output of chloride ions.

32. A 64 year old previously healthy man is admitted to hospital because of closed head injury and a ruptured spleen following an MVA. He is given 2/3 – 1/3 glucose/saline solution at 125 ml/hr. The patient is somnolent but easily aroused until the 5th day when he is noted to be in a deep coma. Shortly afterwards he has a grand mal seizure. The following lab data are obtained:

 Serum electrolytes Na+ 122, K+ 1.9, Cl- 96, HC03 19

 Serum osmolarity 260

 Urine electrolytes Na+ 61, K+ 18

What is the most likely cause of the patient’s seizure?

1. Hypokalemia.
2. Hyponatremia.
3. Intracranial bleeding.
4. Hypomagnesemia.

33. An elderly diabetic patient is found to have a serum sodium level of 122 and a blood glucose of 30.5. After correcting the glucose concentration with insulin, the serum sodium concentration should:

1. Decrease significantly unless the patient receives 3% saline.
2. Decrease transiently but return to 122 without specific treatment.
3. Remain essentially unchanged.
4. Increase to the normal range without specific therapy.

34. Initial administration of normal saline during the resuscitation of a patient with a gunshot wound of the abdomen results in a rise in blood pressure to 110/80. At this point, the patient’s blood gases are:

 pH 7.25

 p02 95

 pC02 25

 HC03 15

The patient’s metabolic acidosis would be best treated with?

1. Sodium bicarbonate IV.
2. Hyperventilation.
3. Administration of 500 cc Pentaspan.
4. Immediate laparotomy.

35. Characteristic findings in a malignant lesion include all of the following, EXCEPT:

1. Cellular polymorphism.
2. Loss of cell polarity.
3. Polyclonal origin.
4. Unresponsiveness to normal growth regulators.

36. In the prevention of graft rejection, cyclosporine:

1. Blocks transcription of IL-1 and TNF-alpha.
2. Inhibits RNA and DNA synthesis.
3. Inhibits lymphocyte nucleic acid metabolism.
4. Selectivity inhibits T-cell activation.

37. The single most important factor in determining whether to perform a transplant between a specific donor and recipient is?

1. Mixed lymphocyte culture assays of the donor and recipient.
2. HLA type of the donor and recipient.
3. Closeness of the relationship between the donor and recipient.
4. ABO blood types of the donor and recipient.

38. In the awake, non anesthetized patient suspected of having a hemolytic post-transfusion reaction, the most characteristic signs are:

1. Diffuse bleeding and hypotension.
2. Oliguria and hemoglobinuria.
3. Nausea and vomiting.
4. Fever and chills.

39. A 75 year-old woman is admitted to hospital because of acute cholecystitis and treated with broad-spectrum antibiotics. On the 3rd hospital day, her temperature rises to 40º and her blood pressure falls to 80/40. Laboratory studies reveal platelet count 49, INR 1.9, PTT 50.3. The most important step in the correction of this patient’s coagulopathy is:

1. Administration of fresh frozen plasma.
2. Administration of activated factor VII a.
3. Administration of epsilon-amino caproic acid.
4. Laparotomy.

40. Frequent findings in a patient with a traumatic basal skull fracture include all of the following, EXCEPT:

1. Bruising behind the ear.
2. Facial nerve palsy.
3. Otorrhea.
4. Severe epistaxis.

41. The oxyhemoglobin dissociation curve is shifted to the left by:

1. Decreased blood pH.
2. Increased erythrocyte 2, 3-diphospho – glycerate concentration.
3. Increased body temperature.
4. Methemoglobinemia.

42. Harmful effects of significant alkalosis following trauma resuscitation or major surgery include all of the following, EXCEPT:

1. Decreased cerebral blood flow.
2. Hypercalcemia.
3. Hypokalemia.
4. Tissue hypoxia.

43. A 37 year old man is involved in a high speed motor vehicle collision. He is hemodynamically stable. A supine chest x-rays shows a pulmonary contusion and possible widened mediastinum. The most appropriate study to diagnosis the presence of a traumatic injury to the aorta is?

1. transesophageal echocardiogram
2. helical thin-cut CT angiography
3. thoracic aortogram
4. MR scan of the thorax

44. Which of the following statements about the use of intravenous fat emulsions in the nutritionally depleted surgical patient is NOT true?

1. daily infusion is associated with a higher incidence of infection
2. critically ill patients achieve nitrogen balance more easily with a mixture of glucose and lipid compounds than with glucose alone
3. the requirements for essential fatty acids can be met with 1500 ml of 10% lipid per week
4. a 500 ml bottle of 20% lipid contains about 1000 kilocalories

45. In the acute-phase response to injury or infection, levels of which of the following serum proteins is decreased?

1. C-reactive protein
2. fibrinogen
3. ceruloplasmin
4. albumin

46. Which of the following statements regarding epithelialization is true?

1. it produces a watertight seal of surgical incisions within 48hr
2. a re-epithelialized wound develops hair follicles and sweat glands as does normal skin
3. the process is normally not inhibited by surface contact with other epithelial cells
4. disruption of normal healing, such as in a chronic wound, may produce malignancy

47. A 46 year old woman who has been on long-term prednisone therapy for rheumatoid arthritis needs an abdominal hysterectomy for fibroids. Which of the following complications may be expected to occur in this patient with greater than average frequency?

1. poor wound healing
2. pulmonary embolus
3. ileus
4. renal failure

48. The incidence of post-operative venous thromboembolism is increased in patients with genetically determined procoagulant states. The following are all procoagulant states, EXCEPT:

1. antithrombin-III deficiency
2. resistance to activated protein C (Factor V Leiden)
3. antiphospholipid antibodies (lupus anticoagulant)
4. hypohomocystinemia

49. A 30 year old woman is being evaluated for abdominal pain in the Emergency Room when she suddenly develops a grand mal seizure with tonic clonic movements. The initial pharmacologic management of her seizure should be?

1. phenytoin (dilantin) 1 gram IV (loading dose)
2. lorazepam 0.1 mg/kg IV
3. proprofol 40 mgs bolus IV
4. Phenobarbital 10 mgs/kg IV over 1 hour

50. A 65 year old woman presents to the Emergency Room with a right hip fracture. She is scheduled for open reduction and internal fixation the following day. The orthopedic resident notices that the patient is tachycardic and hyper-reflexic. Blood tests confirm that the patient has hyperthyroidism. The appropriate peri-operative management of this condition is?

1. close observation in the ICU post-operatively
2. begin propylthiouracil and proceed with surgery
3. begin beta blockage with propranolol and proceed with surgery
4. arrange urgent radio-iodine ablation and proceed with surgery

51. Resuscitation from hypovolemic shock requires large quantities of fluids. Which of the following parameters are NOT helpful in assessing the adequacy of fluid resuscitation?

1. serum lactate
2. base deficit calculated from arterial blood gases
3. near infrared spectroscopy
4. central venous pressure

52. A 27 year old man is brought to the Emergency Room after being thrown from a motorcycle at high speed. His systolic blood pressure is 60. A chest x-ray shows a widened mediastinum. In addition to appropriate resuscitation, the next step in his management should be:

1. immediate left thoracotomy
2. CT thorax
3. aortic ach angiogram and possible stenting
4. abdominal ultrasound (FAST)

53. Many drugs used in surgical practice are bound to plasma proteins. Which of the following statements is correct?

1. albumin is the plasma protein largely responsible for binding drugs
2. binding is usually irreversible
3. binding to plasma proteins is highly specific, that is, the binding locus is specific for a given drug
4. bound drug has enhanced glomerular filtration

54. Which of the following can cause spuriously elevated pulse oximeter readings?

1. methemoglobinemia
2. finger nail polish
3. hyperbilirubinemia
4. IV methylene blue

55. A 53 year old woman who underwent brain tumour resection four days ago develops left lower extremity pain and swelling. An ultrasound examination demonstrates clot in the femoral popliteal veins on the left. The most appropriate treatment for this is?

1. begin ambulation and discontinue bed rest
2. begin intravenous heparin administration
3. use intermittent leg compression and graduated-compression stockings.
4. place an IVC filter

56. A 19 year old man is shot in the abdomen. When EMS arrives his vitals are heart rate 130, blood pressure 90/60, respiratory rate 20. EMS calls you at the base hospital to ask for advice. You should ask the EMS team to?

1. bring the patient to the Emergency Room ASAP
2. administer 1,000 cc 10% dextran solution on route to the ER
3. intubate the patient in the field and administer fluid on route to the ER
4. administer fluid bolus in the field over 10 minutes and then transport patient to the ER

57. A 57 year old man requires mechanical ventilation because of respiratory failure secondary to a blood transfusion (TRALI). Despite an FI0 2 of 0.5, his PO2 is noted to be only 60. The cause of this man’s hypoxemia is?

1. right to left shunt
2. V/Q mismatch
3. increased diffusion barrier
4. decreased mixed venous O2 saturation

58. A 30 year old man is involved in a motor vehicle accident. He requires emergency splenectomy and open reduction and internal fixation of a left femur fracture. On post-operative day two in the Intensive Care Unit, he develops a decreasing level of consciousness (GCS 14) and severe hypoxemia, necessitating intubation and mechanical ventilation. He was noted to have petechiae on his chest. The cause of his respiratory failure is likely?:

1. aspiration
2. fat embolism syndrome
3. adult respiratory distress syndrome (ARDS)
4. nosocomial pneumonia

59. An 85 year old man develops septic shock following attempted removal of an obstructing right ureteric stone. He is transferred to the ICU and resuscitation is begun with fluids and pressors. Which of the following antibiotics would NOT be appropriate for use in this patient while awaiting blood and urine culture results?

1. ceftriaxone
2. ciprofloxacin
3. gentamycin
4. imipenem

60. A 31 year old man was a belted driver involved in a high-speed motor vehicle collision. His air bag deployed. He was found apparently uninjured at the scene. In the Emergency Room, he has right sided weakness despite a normal CT head. The next step in is management should be?

1. close observation with serial neurological examination
2. neck immobilization and C-spine x-ray
3. CT angiogram of neck
4. EEG

61. In a septic patient, cytokine-mediated effects on trace element metabolism include which of the following?

1. decreased serum iron level
2. increased serum zinc level
3. increased serum copper level
4. decreased serum manganese level

62. Pre-operative non-invasive testing for the presence of inducible myocardial ischemia would be most appropriate for which of the following patients?

1. a healthy 60 year old man without historical cardiac risk factors scheduled for a gastrectomy for gastric adenocarcinoma
2. a patient with a history of myocardial infarction one year ago and good exercise tolerance undergoing a laparoscopic cholecystectomy
3. a patient with diabetes and renal insufficiency undergoing an inquinal hernia repair
4. a patient with limited exercise tolerance and diabetes undergoing a right hemi colectomy

63. With regard to the spread of neoplasm, which of the following statements is FALSE?

1. metastatic cells enter the lymph node via the subcapsular space and later permeate the sinusoids of the node
2. carcinoma-in-situ is a lesion with histopathological characteristics of malignancy without detectable invasion beyond the basement membrane
3. lymphatic involvement is common with epithelial neoplasms, whereas most sarcomas metastasize hematogenously
4. the metastatic process is highly efficient, as evidenced by the fact that the number of circulating tumour cells correlates with the metastatic burden

64. Which of the following is NOT a major clinical predictor of post-operative cardiac morbidity and mortality?

1. unstable coronary syndrome
2. coronary artery bypass surgery in the last three months
3. significant arrhythmias
4. severe valvular heart disease

65. A 50 year old man suffers from acute respiratory distress syndrome following treatment for an obstructed left ureter. He is orally intubated with ventilator settings of AC 16, TV 800 cc’s, FIO2  0.7, PEEP of 15 cm H2O. The ventilator high pressure alert signals and the RT has great difficulty bagging the patient. The arterial blood pressure and 02 saturation drop precipitously. You should immediately?

1. extubate and re-intubate the patient suspecting a mucous plug in the endotracheal tube
2. obtain a stat chest x-ray
3. paralyze the patient to achieve increased chest wall compliance
4. insert bilateral 14 gauge angiocaths in the anterior 2nd interspace to R/O tension pneumothorax

66. A 45 year old woman undergoes an abdominal hysterectomy because of uterine cancer. The following morning she is found obtunded with a temperature of 394, heart rate 130, blood pressure 100/70, respiratory rate 25. The skin around her incision is noted to be gray in colour. In addition to resuscitation, the next steps in her management include all of the following, EXCEPT?

1. broad spectrum antibiotics
2. high dose intravenous immunoglobulin infusion
3. exploration of the wound and peritoneal cavity in the operating room
4. administration of hyperbaric oxygen

67. A 29 year old unbelted male driver crashes head first into a bridge while driving under the influence of alcohol. He is hemodynamically stable and a complete body CT scan reveals the following injuries; a 2 cm thick subdural hematoma, an aortic aneurysm at the take off of the left subclavian artery, a ruptured spleen with active extravacation of blood, an open left fracture of the tibia and fibula. This patient should undergo immediate?

1. craniotomy
2. thoracotomy and repair aneurysm
3. laparotomy and splenectomy
4. open reduction and internal fixation of left open fracture of the tibia and fibula

68. Which of the following statements concerning the resuscitation of trauma patients is TRUE?

1. treatment should be terminated if the patient requires continuing resuscitation after receiving 50 units of packed RBCs
2. hypotensive patients with blunt abdominal trauma should not be resuscitated until they are able to receive definitive care
3. hypothermia affects platelet function
4. hypertonic saline improves survival

69. The most important prognostic factor in patients with advanced cancer is?

1. progression of disease during chemotherapy
2. metastatic spread
3. Karnofsky score
4. clinical judgement

70. Which of the following statements concerning heat-shock proteins is NOT true?

1. they are expressed under conditions of compromised oxygen delivery
2. they are both constituitively and inducibly expressed
3. they are both pro and anti inflammatory
4. they play no role in cellular apoptosis

71. A post-operative surgical patient is receiving NG tube feeds. Three days after feeding is initiated, he begins to have diarrhea. All the following steps are appropriate management of his diarrhea, EXCEPT?

1. stop the tube feeds immediately to ensure the patient does not become dehydrated
2. check the patient’s medications to determine if any are contributing to his diarrhea
3. slow the rate of feedings or consider antidiarrheal medication when clostridium difficile is ruled out as a cause of the diarrhea
4. follow the patient’s fluid and electrolyte status carefully until the diarrhea subsides

72. Hypovolemic shock secondary to blood loss occurs commonly in surgical patients. Which of the following statements accurately characterizes the fluid shifts that occur during hemorrhagic shock?

1. the loss of intravascular volume is usually fully compensated by movement of extra vascular interstitial fluid into the vascular space
2. intracellular fluid volume decreases as fluid shifts from the intracellular to the extra cellular fluid compartment to compensate for the intravascular loss
3. the extracelluar and intravascular fluid volume is best restored using packed red blood cell transfusion and fresh frozen plasma
4. there is a decrease in the transmembrane potential resulting in increased sodium permeability and an influx of sodium into the cell

73. A surgical resident sustains a needle-stick injury from a patient who is hepatitis B antigen positive. The resident completed a series of three hepatitis B vaccines one year ago but her antibody response has not been checked. How should this injury be monitored?

1. there is no need to do anything since the source does not have active hepatitis B infection
2. the resident should receive hepatitis B immunoglobulin immediately
3. the resident should receive hepatitis B immunoglobulin and a Hepatitis B vaccine booster immediately
4. the resident should be tested for anti-hepatitis B antibody immediately. If the test result is negative, she requires further therapy

74. A 65 year old man is brought to the Emergency Room with an open fracture of the left tibia and fibula. He is taking aspirin and plavix for known coronary artery disease. The orthopedic surgeon wants to do an open reduction and internal fixation operation in the next six hours, but is concerned about post-operative bleeding causing a compartment syndrome. The best way to reverse the action of aspirin and plavix for immediate surgery is?

1. administer von Willebrands factor
2. administer 5 units of platelets
3. administer activated factor 7A
4. dialyze the patient for four hours pre-operatively

75. A 37 year old man has a tracheostomy for two months following treatment for a severe closed head injury. He is on the Neurosurgery Ward receiving FI02 0.28 via trach mask. You are called to see him because of acute respiratory distress with central cyanosis. You should immediately?

1. change the inspired oxygen to 100%
2. remove the inner tube of the tracheostomy
3. intubate the patient orally
4. obtain a STAT portable chest x-ray

76. An anesthetized patient is erroneously transfused with a unit of ABO incompatible blood. This may cause all of the following, EXCEPT?

1. unexplained hypotension
2. ventricular arrhythmias
3. diffuse bleeding
4. hemoglobinuria

77. The oxyhemoglobin dissociation curve relates the partial pressure of O2 in the blood (PO2) to the % saturation of hemoglobin with oxygen (SO2). For a given SO2, the PO2 depends on all of the following, EXCEPT?

1. temperature
2. serum potassium
3. pH
4. RBC content of 2,3-DPG

78. A 31 year old woman with poorly controlled hyperthyroidism has a prolonged and difficult delivery of her first child. Immediately following delivery, her heart rate is 148 per minute, temperature is 39.4° C and O2 SAT 94%. She is agitated and restless. Which of the following statements about the initial treatment of her condition is NOT true?

1. the patient should be hydrated with balanced salt solution containing glucose
2. intravenous propranolol should be given
3. salicylates should be used to cool the patient
4. intravenous hydrocortisone should be given

79. An 80 year old woman undergoes laparotomy because of bowel obstruction and is found to have untreatable peritoneal carcinomatosis. After the surgery, the patient and her family request palliative care only. Three weeks later the patient is near death and requests that the surgeon “make sure” that she dies in the next week so that her children can all participate fully in her eldest grandchild’s wedding. The surgeon should?

1. slowly increase the rate of morphine infusion over the next few days
2. order diazepam 20 mgs intravenously q4h prn so that the patient may have control over the time of her death
3. meet with the patient and her family to reassure the patient that her condition will not affect the granddaughters wedding
4. ask the chaplain to see the patient to reconsider the timing of her death

80. Most bacterial abscesses require treatment with drainage and antibiotics however, all of the following abscesses can be treated with antibiotics alone, EXCEPT?

1. lung abscess
2. amebic liver abscess
3. tubo ovarian abscess
4. empyema of the gallbladder

81. A 22 year old woman was shot in the chest and abdomen and underwent a right thoracotomy and laparotomy with bowel resection and abdominal packing. In the Intensive Care Unit, her first post operative blood work shows:

 pH 7.19 Na 140

 pCO2 25 K 7.3

 02 230 Cl 115 Bicarb 12

 Her electrocardiogram shows peaked T waves. The core temperature is 33.2°. The immediate treatment of her hyperkalemia should be?

1. rewarm patient with a warm air device (BAIR hugger)
2. administer 40 mgs of Lasix IV state
3. administer 2 amps sodium sodium bicarbonate IV
4. administer 1 amp calcium glucagon

82. A 70 year old man undergoes laparotomy for perforated sigmoid diverticulitis four days following elective right total hip replacement. He has known significant coronary artery disease. 12 hours post-operatively in the ICU his vitals are: Heart rate 100, blood pressure 140/80, respiratory rate 15 (ventilated), O2 saturation 96. Laboratory values are hemoglobin 72, albumin 19 g/L, creatinine 140. His urine output is 20 ml/hr. What would be the optimal fluid management at this time?

1. 1,000 ccs normal saline bolus
2. 100 ccs 25% albumin bolus
3. 2 units packed red blood cells over 2 hours each
4. Lasix 20 mgs IV x1 dose

83. In morbidly obese patients (BMI >40), obstructive sleep apnea often results in all but which of the following conditions?

1. hypoxemia
2. hypercapnia
3. right heart failure
4. left heart failure

84. Which of the following is least likely to occur in conjunction with a surgically induced stress response?

1. increased metabolic rate
2. hypercoagulability
3. immune response suppression
4. increased secretion of thyroid stimulating hormone (TSH)

85. With regard to the pathophysiology of multiple organ failure in ICU patients, which of the following statements is FALSE?

1. sepsis is a major risk factor
2. injury to the microvascular endothelium is uniformly present
3. neutrophil-mediated injuries depend on adherence to the microvascular endothelium
4. the high concentration of xanthene oxidize in ischemic endothelial cells prevents the generation of toxic oxygen radicals

86. A 45 year old man is brought to the emergency room following a motor vehicle crash. His GCS is 6. He is intubated. His blood pressure is 90/60 and an abdominal ultrasound shows free fluid in the abdomen. The ambulance attendant states that in the patient’s wallet there is an unsigned undated Jehovah Witness Card forbidding blood transfusion. You should?

1. continue treatment (immediate laparotomy) but not transfuse any blood products
2. ask the police to find any relatives and bring them to the emergency room to find out if the patient is really a Jehovah Witness believer
3. consult the hospital chaplain about further management
4. continue treatment (immediate laparotomy) and administer blood products as needed

87. A 58 year old single unemployed woman on social assistance, is admitted to hospital with an upper GI blood. She has a long history of alcohol abuse. Investigation reveals a malignant appearing gastric ulcer as the source of her ongoing bleeding. Her physician believes she would die in the next few days without surgery, but the patient refuses surgical intervention. You, the surgeon, should?

1. declare her incompetent, and then operate on her
2. ask the hospital chaplain to see her
3. consult psychiatry
4. transfer her to a palliative care unit

88. A 75 year old man is in the Intensive Care Unit on a ventilator seven days after undergoing a repair of a ruptured abdominal aortic aneurysm. For the last few days, his urine output has decreased to 10-20 cc’s per hour. Creatinine has increased from 100 two days ago to 150 at present. He has remained hypertensive (180/90) with a CVP >15 throughout. With regards to his renal function, the next step in his management should be?

1. examine the urine sediment and check urine sodium
2. obtain renal ultrasound
3. consult nephrology
4. change the foley catheter

89. Patients being treated for malignancy are frequently malnourished. Enteral or parental nutritional support in these patients’versus no supplementation has been shown in clinical trials to?:

1. increase length of survival by 15%
2. decrease tumour recurrence rate by 10% following surgical excision
3. allow significantly more successful completions of aggressive chemotherapy regimes in patients with GI malignancies
4. has not shown any convincing evidence of improvement in overall survival

90. Nonsteroidal anti-inflammatory drugs are commonly used for post-operative pain relief. All of the following are potentially complications of non-steroidal use, EXCEPT?

1. colonic ileus
2. gastric ulceration
3. platelet inhibition
4. renal damage

91. A 60 year old man was involved in a motor vehicle crash and ejected from the car. On arrival in the emergency room, his pulse is 120, blood pressure 80/60, respiratory rate 21, GCS 8. He is intubated and 2 liters of normal saline are infused rapidly. He remains tachycardiac and hypotensive. Primary survey reveals a non-bleeding scalp laceration and hematoma, a distended abdomen, and shortening with external rotation of the left leg. Chest x-ray was normal. Pelvic x-rays shows a left femoral neck fracture. The next step in his management should be?

1. switching to colloid resuscitation
2. CT scan head and abdomen
3. application of a traction splint
4. laparotomy

92. Furosemide (Lasix) is commonly used to treat fluid overload. All of the following are mechanisms of action of Furosemide, EXCEPT?

1. inhibition of active sodium absorption in the ascending loop of Henle
2. increased blood flow to the kidney
3. augmented catecholamaine susceptibility to alpha-adranergeric receptors
4. increased venous capacitance

93. A 25 year old asthmatic is scheduled for elective right inguinal hernia repair. In the holding area he has severe wheezing bilaterally. The optimal management for this patient is?

1. carry out the procedure under local anaesthesia with IV sedation to avoid airway manipulation
2. administer ventolin and atrovent nebulizer treatment in the holding area and proceed with surgery when the patient stops wheezing
3. administer corticosteroids and carry out the procedure under spinal anaesthesia
4. postpone surgery until the patient’s asthma is under control

94. Which of the following opiods, when given in high dosages, may cause hyperflexia, myocolonus, seizures and anticholinergic effects?

1. morphine
2. demerol
3. codeine
4. fentanyl

95. With regard to the use of vasopressors in the management of hemorrhage shock, which of the following statement is NOT correct?

1. vasopressors usually result in an elevation of the blood pressure
2. vasopressors achieve their goal of blood pressure support primarily through inotropic effects
3. dopamine given in low to moderate dosages may provide inotropic and chronotropic support to the heart as well as enhance renal blood flow
4. in general, the use of vasopressos in hemorrhagic shock is discouraged

96. The most common clinical symptom of a post-operative myocardial infarction is?

1. none
2. retrosternal chest pain
3. dyspnea
4. sudden post-operative death

97. A 40 year old woman spikes a fever to 40° following percutaneous drainage of a pelvic appendiceal abscess. She is noted to be tachypnic and an arterial blood gas is sent. The earliest change in arterial blood gasses associated with sepsis is?

1. increased PCO2
2. decreased PO2
3. respiratory alkalosis
4. metabolic acidosis