PRACTICE QUESTIONS
for the Certified Nurse in Critical Care – Canada examination

The following questions are intended for practice only and represent a random sampling (but not exhaustive list) of possible topics that could be tested as part of the critical care certification examination. Questions have been designed to test assorted competencies listed in the blueprint for the Canadian Nurses Association Certified Nurse in Critical Care Examination. The blueprint is available from the Canadian Nurses Association website at:


The degree of difficulty for these questions may be higher or lower than questions on the actual examination; questions have been developed to encourage a review of a variety of topic areas. Questions have been developed independent of the Canadian Nurses Association Critical Care Certification Examination Committee review.

These practice questions are for use by individual members of the Canadian Association of Critical Care Nurses (CACCN) only. Reproduction or electronic distribution without expressed written consent by CACCN is strictly prohibited.

Participant use of these questions does not guarantee success on the national examination. Accuracy of questions may change without notice based on new research evidence or national practice standards. CACCN is not responsible for any participant’s clinical decision-making.

CASE 1

Mr. Jackle, 68 yrs old, is admitted with hypotension and respiratory distress requiring intubation following a large ST elevation anterior-lateral wall myocardial infarction.

Case 1: Question 1

1. Shortly after insertion of a rights subclavian catheter, he develops worsening shortness of breath and bibasilar crackles. Blood is noted to be backing up from the central venous catheter and his oxygen saturation decreases with supine positioning. Which one of the following problems is consistent with these findings?
   a. Pulmonary embolus
   b. Right heart failure
   c. Cardiac pulmonary edema
   d. Hemopneumothorax

Case 1: Question 2

2. Mr. Jackle’s will be monitored for signs of reinfarction. Which one of the following lab tests would best indicate reinfarction?
   a. Creatinine kinase
   b. Cardiac troponin
   c. Lactate dehydrogenase
   d. Venous oxygen saturation
Case 1: Question 3

3. Mr. Jackle develops cardiogenic shock, respiratory failure and acute kidney injury. He is receiving epinephrine at 2 ug/min and is fully ventilated on an FiO2 .6 with PEEP 10. His SpO2 is 95%, HR 93 (sinus rhythm), BP 110/72 (MAP 66), CVP 14 mmHg, Hb 82 and central venous oxygen saturation (ScvO2) 42%. Which one of the following interventions is most appropriate?

   a. Metoprolol
   b. Captopril
   c. Increased FiO2
   d. Packed cells

Case 1: Question 4

4. Mr. Jackles develops the following rhythm. Interpret this rhythm strip.

   a. First degree block
   b. Junctional rhythm
   c. Second degree block
   d. Complete heart block
Case 1: Question 5

5. Mr. Jackle develops symptomatic bradycardia and requires a temporary pacemaker. The following rhythm strip displays his rhythm with a VVI pacemaker set at 75 beats/min. Identify the pacemaker problem.

![Rhythm Strip]

- a. Failure to capture
- b. Failure to fire
- c. Oversensing
- d. Undersensing

Case 1: Question 6

6. Mr. Jackle has a right chest tube inserted for a large pneumothorax. Immediately following insertion, the nurse notes that there is no fluctuation or bubbling in the underwater seal. Which one of the following interventions is the priority?

- a. Increase the level of suction
- b. Increase the volume in the water seal
- c. Strip the chest tube
- d. Obtain a STAT chest xray
Case 2

Mohammad is an 18 yr old man who was struck by a baseball bat in the L temple while playing baseball. He sustained a depressed skull fracture and is started on a dopamine infusion to support his BP.

Case 2: Question 1

7. On his way to the CT scanner, Mohammad’s L pupil suddenly becomes fixed and dilated. Which one of the following problems is consistent with these findings?
   a. Epidural hematoma with compression of CN V
   b. Pupillary dilation secondary to dopamine administration
   c. Left mass effect with tentorial herniation
   d. Bleeding from the ophthalmic artery

Case 2: Question 2

8. Mohammad’s pupil remains dilated and his blood pressure has increased to 180/70 with a HR of 45. Which one of the following interventions is the priority?
   a. Position head of bed flat
   b. Administer lasix
   c. Hyperventilation
   d. Administer labetolol

Case 2: Question 3

9. Which pharmacological agent would you anticipate to treat Mohammad’s raised intracranial pressure with a BP of 180/55 and HR 45?
   a. Dobutamine
   b. Nimodipine
   c. Hypertonic saline
   d. Atropine

Case 2: Question 4

10. Mohammad undergoes an emergency craniectomy, evacuation of epidural hematoma and insertion of external intraventricular drainage catheter. When zeroing the cerebral spinal fluid collecting system, what landmark will you use?
   a. Mid axillary line
   b. Base of occiput
   c. Foramen of Monro
   d. Cleft of chin
Case 2: Question 5

11. Mohammad aspirated at the time of intubation and develops ARDS with worsening hypoxemia, with \( \text{SpO}_2 \) of 85% on \( \text{FiO}_2 \) 0.8 and PEEP 5 cmH\(_2\)O. Which one of the following interventions is a priority.

   a. Increase his \( \text{FiO}_2 \) to 1.0 and accept \( \text{SpO}_2 \) of 90%
   b. Increase the level of PEEP as required and monitor ICP
   c. Initiate low tidal volume ventilation
   d. Prepare for urgent bronchoscopy

Case 2: Question 6

12. Mohammad’s condition deteriorates and he no longer responds to stimulation. Which one of the following lab tests is mandatory to confirm the diagnosis of neurological death (brain death)?

   a. \( \text{PaO}_2 \)
   b. Lactate
   c. \( \text{PaCO}_2 \)
   d. Ammonia

13. Mr. Sing has a massive GI bleed from a gastric ulcer. Following 12 units of packed cells and 4 units of fresh frozen plasma, he has the following labs: Hb 80 Platelets 82,000 INR 1.9 aPTT 58 and fibrinogen 0.4 g/L (normal 2-4 g/L). Which one of the following interventions is the priority?

   a. Potassium bolus
   b. Octoplex
   c. Cryoprecipitate
   d. Protamine sulphate

14. Ms. Tirani is on \( \text{FiO}_2 \) 0.5 PEEP 5 and PS 15. She has a total minute volume of 12 L and her RR has increased to 36 from 22. She is restless and agitated. Blood gases are:

   \[
   \begin{align*}
   \text{PaO}_2 & = 69 \\
   \text{PCO}_2 & = 49 \\
   \text{pH} & = 7.36 \\
   \text{HCO}_3 & = 30
   \end{align*}
   \]

   Which one of the following interventions is most appropriate?

   a. Increase her \( \text{FiO}_2 \)
   b. Convert to AC
   c. Increase her Pressure Support
   d. Increase her sedation
15. Mrs. Butovsky develops sepsis due to an infected prosthetic hip joint. She is started on antibiotic therapy. Which lab test can be used to evaluate her response to antibiotic therapy?
   a. Eosinophil Sedemenation Rate (ESR)
   b. Protein C levels
   c. C-Reactive Protein
   d. Ionized calcium levels

16. When administering mannitol for raised ICP, which one of the following lab tests is the priority?
   a. Serum arginine vasopressin (AVP)
   b. Urine specific gravity
   c. Serum creatinine
   d. Serum osmolality

17. Following cardiac surgery, Mr. Cassanza is noted to have new 2-3 mm ST segment elevation in Leads I, II, III, aVF, aVL and V5-V6. Which one of the following problems is most likely associated with these findings.
   a. Left ventricular hypertrophy
   b. ST segment myocardial infarction
   c. Pericarditis
   d. Pulmonary embolus

18. Mr. Topias was admitted two days ago following emergency surgery for an ischemic bowel. He is hemodynamically stable, but has failed a spontaneous breathing trial. On chest xray, his lungs are hyperinflated with interstitial disease and his chest appears barrel shaped. Which of the following data would be most helpful?
   a. Total lung capacity
   b. Minute volume
   c. Preadmission FEV1/FVC
   d. Peak Negative Inspiratory Pressures

19. Mrs. Zena was admitted with 30% full thickness burns to the back and side of her head following a house fire. Her carboxyhemoglobin level is 0.35, SpO2 100% and PaO2 85 mmHg on 50% oxygen. Which one of the following is the priority?
   a. BiPAP
   b. Intubation with PEEP
   c. 100% oxygen
   d. Diuretics

20. Immediately following intubation, Mrs. Livert has an end tidal CO₂ reading of 1 mmHg. Which one of the following explanations is consistent with these findings?
   a. Mrs. Livert has a pulmonary embolus
   b. The endotracheal tube is in the right mainstem bronchus
   c. The endotracheal tube is well positioned
   d. The endotracheal tube is in the esophagus
21. Which one of the following options identifies the components of oxygen content.
   a. Cardiac output, $\text{SaO}_2$, Hb
   b. Hb, $\text{PaO}_2$, $\text{SaO}_2$, cardiac output
   c. Hb, $\text{PaO}_2$, $\text{SaO}_2$
   d. Hb, $\text{SaO}_2$, $\text{SvO}_2$

22. Calculate Cerebral Perfusion Pressure (CPP) based on the following data:

   HR 75  
   BP 120/80 (MAP 65)  
   CVP 12  
   ICP 15  
   RR 25  
   Minute Volume 10.5 L/min

   a. 60  
   b. 50  
   c. 105  
   d. 52

23. Mr. Alberta is declared neurologically dead and his family consents to organ donation. Which one of the following interventions is the priority?
   a. Antibiotics, vasopressin and intensive insulin  
   b. Vasopressin, methylprednisolone (Solumedrol) and levothyroxine  
   c. Desmopressin (DDAVP), Epinephrine and dexamethasone (Decadron)  
   d. Antibiotics, Immunoglobulin and Vasopressin

24. Mr. Smith is admitted with pulmonary edema requiring intubation. His cardiac troponin and CK increase 5 fold, 2 hours after admission and he develops ST segment depression in his lateral leads. He has a history of diabetes, COPD and renal insufficiency. Which one of the following interventions is the priority?
   a. Tenectaplace  
   b. IV Heparin  
   c. Drotrecogin alfa activated  
   d. Digitalis

25. Mr. Viato had an open repair of an abdominal aneurysm involving his renal arteries. His fluid balance from the operating room is 3 litres positive and he is on FiO2 .5 PEEP 10 and AC 14. Three hours following admission, his urine output is 25 ml/hr, CVP 12, HR 110 and BP 110/60. Which one of the following interventions is the priority?
   a. Lasix  
   b. Fluid  
   c. Beta blockers  
   d. Dobutamine
26. Mrs. Evans becomes more difficult to ventilate and her chest x-ray reveals worsening bilateral infiltrates. Her oxygen saturation falls to 80% despite an FiO2 1.0 and PEEP 18. Which one of the following interventions may help to improve her hypoxemia?

   a. High Frequency Oscillatory Ventilation
   b. Low tidal volume ventilation
   c. Bronchoscopy
   d. Manual bagging and suctioning

27. Identify a complication of Intra-aortic Balloon Pumping.

   a. Impaired R arm circulation
   b. Thrombocythemia
   c. Deep Vein Thrombosis
   d. Prerenal failure

28. Which one of the following agents is an inotrope?

   a. Epinephrine
   b. Metoprolol
   c. Diltiazem
   d. Ramipril

29. Mrs. Haberdeeen is admitted with exacerbation of COPD following an influenza like illness (ILI). She has increased sputum production and cough, with loud expiratory wheezes. Her blood gases are:

   \[
   \begin{align*}
   \text{PaO}_2 & = 48 \\
   \text{PaCO}_2 & = 58 \\
   \text{pH} & = 7.39 \\
   \text{HCO}_3 & = 40 \\
   \text{BE} & = +10
   \end{align*}
   \]

   What is the priority?

   a. BiPAP
   b. Prednisone
   c. Mechanical ventilation
   d. Acetylcysteine (Mucomyst)

30. Mr. Vera suffered a right hemispheric stroke. He does not open his eyes, extends his left arm, makes grunting sounds to central pain, and picks at the bed linen with his right hand. What is his score on the Glasgow Coma Scale.

   a. 5
   b. 7
   c. 8
   d. 9
31. Mrs. Ploutette is admitted with a hypertensive crisis. Her BP is 240/190. Which one of the following interventions would you anticipate?
   a. Labetolol (Tandate)
   b. Nitroglycerine
   c. Phenytoin (Neosynephrine)
   d. Isoproterenol (Isuprel)

32. Interpret the following blood gas.

   \[
   \begin{array}{c|c}
   \text{PaO}_2 & 78 \\
   \text{PaCO}_2 & 29 \\
   \text{pH} & 7.29 \\
   \text{HCO}_3 & 14 \\
   \text{BE} & -10 \\
   \end{array}
   \]

   a. Respiratory alkalosis
   b. Respiratory acidosis
   c. Metabolic acidosis
   d. Metabolic alkalosis

33. Mr. Yablonski is awaiting a bed on the ward and is no longer on the bedside monitor. The nurse enters his room to assess him, and finds him cyanotic, apneic and pulseless. ECG leads are connected and reveal ventricular fibrillation. Which one of the following is the priority?
   a. Intubation and ventilation
   b. Compressions X 2 minutes at 100/minute
   c. Epinephrine 1 mg IV
   d. Defibrillation with 3 quick shocks

34. Mrs. Habernathy becomes agitated and is at risk for self-exubation. Which one of the following interventions is the priority?
   a. Apply restraints
   b. Assess cause of agitation
   c. Increase dose of sedatives
   d. Have family sit with Mrs. Habernathy

35. Mrs. Fortein is admitted with urosepsis. Her blood pressure increases to 110/70 following 4 L of normal saline, however, she remains oliguric with a urine output of < 10 ml/hr. Her oxygenation deteriorates despite BiPAP, and she requires intubation. Labs reveal: Hb 101 Platelets 62,000 INR 1.9 aPTT 57. Her lactate has increased to 6 from 4. Which one of the following interventions is indicated?
   a. Steroids
   b. Vasopressin
   c. Drotrecogin Alfa Activated (Xigris)
   d. Dobutamine
36. Mrs. Green is on Coumadin for atrial fibrillation. She is admitted with ischemic bowel and requires urgent surgery. Her INR is 10.4 and aPTT 52. Which one of the following interventions is the priority?
   a. Protamine sulphate
   b. Octaplex
   c. Cryoprecipitate
   d. Vitamin K infusion

37. Ms. Tabuski is admitted with septic shock. She presents following a 12 hour history of sore throat, decreasing level of consciousness and purpura. Which one of the following interventions should be instituted?
   a. Airborn precautions
   b. Contact precautions
   c. Droplet precautions
   d. No precautions while on closed circuit ventilation

38. Six hours following a motor vehicle collision, Mr. Kibble has a 10 fold increase in his CK and myoglobin. Which one of the following interventions is the priority?
   a. Fluid
   b. Lasix
   c. Tissue plasminogen activator (tPA)
   d. Insulin and glucose

39. Following open repair of a ruptured aneurysm, Mr. Gregson’s bladder pressure is 45 mmHg. Which one of the following interventions is the priority?
   a. Continuous bladder irrigation
   b. Fluid administration
   c. Decrease the amount of PEEP
   d. Continuous renal replacement therapy

40. Mr. Chen experiences full thickness circumferential burns to his chest, abdomen and back. Which one of the following interventions is the priority?
   a. Silver sulfadiazine
   b. Wound debridement
   c. Escarotomies
   d. Topical analgesia

41. Six hours following a traumatic brain injury due to a fall from a ladder, Mr. Plueth develops hypotension and a 4 gram drop in hemoglobin. Which one of the following problems would be consistent with these findings?
   a. Diabetes insipidus
   b. Intracranial hemorrhage
   c. Intra-abdominal bleeding
   d. Fat embolism
42. During surgery, Mrs. Zibert develops malignant hyperthermia. Which one of the following is the priority?
   a. Aggressive cooling
   b. Potassium boluses
   c. Sodium citrate
   d. Dantrolene

43. Which one of the goals for wound care should be included for a Stage II pressure ulcer?
   a. Wet to dry dressings
   b. Hydrocolloid dressings
   c. Cleansing with chlorhexidine
   d. Tight packing of wound cavity

44. Simone is a 22 year old woman admitted with ARDS following H1N1. Her blood gases on .8 PEEP 10 PC 34 (tidal volumes ~500 cc) and AC 28 are as follows:
   PaO2 52 PaCO2 46 pH 7.32 HCO3 17
   Which one of the following interventions is the priority?
   a. increase PEEP
   b. increase FiO2
   c. decrease PC
   d. increase AC

45. Which pair of cranial nerves is being evaluated when a corneal reflex test is performed on the L eye.
   a. L CN V and VII
   b. R CN V and VII
   c. L CN III and VII
   d. R CN III and VII

46. Ms. Frederick sustained a complete spinal cord injury at the level of C3 and underwent anterior fixation 3 days ago. Which one of the following interventions should be included in her care plan?
   a. Assisted cough during suctioning
   b. Atropine pre suctioning
   c. Mannitol x 24 hours post operatively
   d. Early extubation

47. Mrs. Pitre is recovering from septic shock. After failing several spontaneous breathing trials, she received a percutaneous tracheostomy tube. Two days later, within 10 minutes of starting a tracheostomy mask trial, she complains of shortness of breath and demands to return to the ventilator. Her SpO2 remains > 95% during the trial. Which one of the following interventions pre tracheostomy mask trial is most likely to reduce her dyspnea and facilitate spontaneous breathing?
   a. N-acetylcysteine (Mucomyst)
   b. Lorazepam (Ativan)
   c. Morphine
   d. Aminophylline
48. Mrs. Vidaliea is one day postoperative repair fractured hip. She develops a sudden onset of hypoxemic respiratory failure and is diagnosed with an acute pulmonary embolus. Which one of the following interventions is the priority?
   a. Dalteparin (Fragmin) 5,000 units subcutaneous OD
   b. Drotrecogin alfa activated (Xigris)
   c. Coumadin (Warfarin) 10 mg loading dose
   d. Heparin IV 80 units/kg bolus

49. Mark is an 18 year old man admitted with pneumonia and exacerbation of his asthma. He complains of chest tightness and develops increased wheezes. Which one of the following interventions is the priority?
   a. Ipratropium bromide (Atrovent)
   b. Bethamethasone (QVAR)
   c. Salmeterol/fluticasone (Advair)
   d. Salbutamol (Ventolin)

50. Mrs. Greir develops hypercarbia and hypoxemia following extubation. She is started on BiPAP in an effort to avoid reintubation. Which one of the following interventions should be included in her plan of care.
   a. Integumentary inspection of nose and face
   b. Nasal-tracheal suctioning to facilitate secretion clearance
   c. Oral intake of high calorie milk shakes.
   d. Administer regular dose benzodiazepines

51. Three days after insertion of a chest tube for pleural effusion/empyema, Mr. Butler’s ventilator begins to alarm for low exhaled tidal volume. Upon examination, increased bubbling is noted in the underwater seal chamber of the chest drainage unit, and the set tidal volume is 200 cc > exhaled tidal volume. Which one of the following problems do these findings suggest?
   a. Chest tube obstruction
   b. Bronchopleural fistula
   c. Asynchrony with ventilator
   d. Air trapping

52. Mrs. Karver develops a sudden facial droop with dysphagia. Which diagnostic test is best for identification of an acute cerebral infarction?
   a. MRI
   b. EEG
   c. CT scan
   d. Cerebral angiogram
53. Mr. Fever had an ischemic bowel requiring urgent total colectomy and ileostomy and TPN. One week following admission to ICU, his Alanine Aminotransferase (ALT) and his Aspartate Aminotransferase (AST) double, and his alkaline phosphatase and direct bilirubin increase 4 fold. His lipase and pancreatic amylase are mildly elevated and his ammonia is normal. These findings are most consistent with which complication?

a. Hepatic ischemia  
b. Biliary tract disease  
c. Pancreatitis  
d. Hemolysis

54. Mrs. Volaro is admitted with a diagnosis of septic shock NYD. She received aggressive fluid resuscitation, is started on broad spectrum antibiotics and steroids, and is now on levophed at 15 mcg/min and vasopressin at 2.4 units/hr. Despite maintaining a MAP of 65 mmHg, her lactate rises from 4.5 to 8.8 and she develops new onset diarrhea. Which one of the following interventions would you anticipate?

a. Repeat blood cultures  
b. Hepatic ultrasound  
c. CT abdomen  
d. Insertion of rectal tube

55. Mrs. Farmer is started on neuromuscular blocking agents. Which one of the following interventions is a priority?

a. Titrate sedation using a sedation scoring tool  
b. Maintain eyes in a closed position  
c. Use of oral hydration solutions  
d. Administration of prn analgesia

56. Mr. Aikin is admitted with acute gallstone pancreatitis following ERCP. He develops ARDS and requires intubation and mechanical ventilation, with fluid resuscitation for systemic inflammation. He is experiencing nausea and vomiting. Which one of the following interventions would you anticipate?

a. Early initiation of TPN  
b. NPO with gastric drainage  
c. Nasal-jejunal enteral feeding  
d. Avoidance of narcotics

57. Mr. Singh is a 68 year old man who had an intraventricular hemorrhage. He has an external ventricular drain (EVD) that is open to drainage at 5 cmH₂O above the reference level. It has been draining ~20 ml per hour for the past 24 hours. The waveform suddenly becomes dampened with a pressure reading of 8 mmHg, and there has been no CSF drainage during the past hour. How should these findings be interpreted?

a. Lack of drainage is an expected finding  
b. Clotting of the catheter should be suspected  
c. The hydrocephalus has resolved  
d. The drainage chamber should be raised
58. Christine is a 19 year old who suffers from anorexia and bulimia. She is admitted with failure to thrive, weighing 40 kg. Which one of the following interventions is a priority?

   a. Initiate central TPN while encouraging oral intake
   b. Initiate tube feeding at a rate that matches daily energy requirements
   c. Monitor and replace phosphate, magnesium and potassium
   d. Administer loperamide prn if diarrhea develops

59. Mr. Kieffer is admitted following an overdose of beta blockers. Which one of the following antidotes would you anticipate?

   a. Levothyroxine
   b. Glucagon
   c. Levophed
   d. N-acetylcysteine Mucomyst

60. Following insertion of a nasogastric feeding tube, Mrs. Pinkerton is started on continuous enteral feeding infusion at 30 ml/hr. Three hours later, she has a residual volume of 100 ml. Which one of the following interventions would be the priority?

   a. Remove the feeding tube and replace with a nasal-jejunal tube
   b. Position Mrs. Pinkerton on her left side
   c. Initiate metoclopramide (Maxeran)
   d. Administer a dose of pantoprazole (Pantoloc)

61. Which one of the following interventions should be included in the care of a patient receiving Central TPN?

   a. Change lipid tubing every 72 hours
   b. Change central line every 7 days
   c. Weekly blood cultures
   d. Routine liver function tests

62. Mrs. Clan develops a leak of gastric contents around her new gastrostomy tube site. She is placed NPO and started on a medication to decrease gastroenteropancreatic secretions. Which medication has been ordered to produce this effect?

   a. Pantoprazole (Pantoloc)
   b. Octreotide (Sandostatin)
   c. Metoclopramide (Maxeran)
   d. Vasopressin

63. Mr. Butler is admitted with bleeding from esophageal varices. He is intubated and ventilated for airway protection and to maintain sedation, and has a Minnesota Tube inserted to tamponade his varices. Which of the following should be included in the care of a patient with a Minnesota tube?

   a. The esophageal balloon must be inflated if the gastric balloon is deflated
   b. The esophageal balloon should be inflated at all times
   c. Traction is maintained through the use of weights on an overbed pulley
   d. Airway obstruction can occur if the gastric balloon is inflated
64. Mr. Gordinski is admitted with a diagnosis of hepatic encephalopathy secondary to cirrhosis. His ammonia level dropped to normal in the first 24 hours and he has had 2 spontaneous bowel movements. He remains in coma. Which one of the following interventions is a priority?

   a. Lactulose  
   b. N-acetylcysteine (Mucomyst)  
   c. Sodium Polystyrene (Kayexalate)  
   d. Glutamine supplements

65. Ms. Sibley is in a positive fluid balance with urine output < 30 ml/hr and significant peripheral edema. Labs are as follows:
   Na 148 K 4.9 Cl 105 HCO3 23 Urea 16 mmol/L Creatinine 85 umol/L. Urine sodium is low, and serum and urine osmolality increased. Which one of the following interventions would you anticipate?

   a. Furosemide (Lasix)  
   b. 0.45% normal saline  
   c. 0.9 % normal saline  
   d. Fluid restriction

66. Mr. Bright, 75 yrs old, has a history of Type II diabetes and chronic renal insufficiency. He is scheduled for a CT abdomen with contrast. Which one of the following interventions should be anticipated?

   a. Furosemide (Lasix)  
   b. N-acetylcysteine (Mucomyst)  
   c. Mannitol  
   d. Low dose dopamine

67. Mr. Wilson undergoes an open repair of an abdominal aortic aneurysm. In the first 24 hours following surgery, his creatinine doubles and his urine output decreases to < 10 ml/hr. Which one of the following is the most likely cause of his acute kidney injury?

   a. Postrenal  
   b. Intrarenal  
   c. Prerenal  
   d. Aneurysmal

68. Ms. Lo is admitted with oliguric renal failure. She suddenly develops hypotension with the following rhythm:

   ![Heart rhythm image]

Which one of the following interventions should be anticipated?

   a. Potassium bolus  
   b. Magnesium Sulphate  
   c. Insulin  
   d. Amiodarone
69. Mr. Yokobi is admitted with cardiogenic shock and oliguric acute kidney injury. Hemodynamics reveal the following: BP 105/60 (~70) Sinus rhythm (108) CI 1.8 (CO 2.4) CVP 23 PWP 25 SVRI 2088 (SVR 1566). Which one of the following interventions would you anticipate?

a. Dopamine at 2 mcg/kg/min  
b. Captopril 6.5 mg q6h  
c. Metoprolol 25 mg BID  
d. Dobutamine at 5 mcg/kg/min

70. Mrs. Clementine is on Continuous Renal Replacement and is receiving hemodiafiltration. Which one of the following interventions would increase clearance?

a. Increased fluid removal  
b. Use of citrate anticoagulation  
c. Use of a larger filter  
d. Reduction in the blood flow rate

71. The following problems is suggested by these findings?

a. Hyperthyroidism  
b. Hypothyroidism  
c. Sick euthyroid of critical illness  
d. Pituitary dysfunction

72. Following a severe traumatic brain injury, Jamie's urine output increases to 300 ml/hr, BP decreases to 90/60 and HR increases to 144. His serum sodium is 155 mmol/L. Which one of the following interventions is the priority?

a. Obtain urine and serum osmolalities  
b. Change IV fluid to 0.45 % NaCl  
c. Administer desmopressin (DDAVP)  
d. Initiate levophed infusion

73. Mr. Veldman is admitted with decreased level of consciousness. His admission labs are: Blood glucose 56 mmol/L, Na 149 K 4.8 Cl 105 HCO3 22, ABGs PaO2 72 PCO2 45 pH 7.39 HCO3 23. Which one of the problems is indicated by these findings?

a. Diabetic ketoacidosis  
b. Glucagon overdose  
c. Non-ketotic hyperosmolar coma  
d. Adrenal crisis

74. Martha is admitted following a motor vehicle collision. Her past medical history includes daily prednisone for the treatment of systemic lupus. Despite fluid replacement therapy and initiation of levophed, her blood pressure remains low. Which one of the following interventions is the priority?

a. Cosyntropinin  
b. Epinephrine  
c. Hydrocortisone  
d. Vasopressin
75. Ms. Oliviera is admitted with coma. She has a BP of 158/75 HR 52 (sinus) and requires intubation for level of consciousness and pulmonary edema. Her temperature is 34 (oral). Which of the following lab tests is the priority?
   a. TSH, T3, T4
   b. Serum and urine osmolalities
   c. Cosyntropin stimulation test
   d. Serum renin and angiotensin levels

76. Which one of the following pharmacological agents should be administered with levothyroxine for the treatment of myxedema coma?
   a. Insulin
   b. Glucagon
   c. Epinephrine
   d. Steroids

77. Mrs. Kang has been on steroids for the past 6 years to treat severe rheumatoid arthritis. Which one of the following problems would you anticipate?
   a. Hypercalcemia
   b. Hyperkalemia
   c. Hyperlipidemia
   d. Hypoglycemia

78. Ms. Romansky suddenly develops a decrease in her level of consciousness, even though she has not received any additional sedatives or analgesics. She is on broad spectrum antibiotics, levophed, vasopressin, steroids and intensive insulin. She is being fed via a nasal gastric feeding tube. She develops gastric distention with residual volumes equal to 6 hours feeding volume. Which one of the following interventions is a priority?
   a. Change feeding tube to small bowel placement
   b. Obtain a blood glucose measurement
   c. Initiate a prokinetic agent
   d. Change feeds to elemental solution

79. Which one of the following factors increases the risk for central line infection?
   a. Subclavian venous access
   b. Chorhexidine skin prep
   c. Tunneled catheters
   d. TPN

80. Mr. Vanderveen is admitted with alcoholic pancreatitis. He has a T 38.2 WBC 14,000 (with left shift and increased neutrophils). Following 4 litres of normal saline, his BP increases to 117/80 from 70/50, HR decreases from 144 to 92 and urine output increases from 10 to 60 ml/hr. He requires intubation for worsening hypoxemia. Which one of the following best explains these findings?
   a. Sepsis
   b. Severe sepsis
   c. Septic shock
   d. Systemic Inflammatory Response Syndrome
81. Ms. Dorosz, 80 kg, drops her platelet count by >50% 10 days after starting subcutaneous heparin. She develops a swollen right calf and positive Homans’s sign. Which one of the following interventions would you anticipate?

   a. Change anticoagulant to dalteparin 15,000 units SC daily
   b. Administer protamine sulphate and discontinue heparin
   c. Initiate anticoagulation with fondaparinux
   d. Stop all anticoagulation and initiate pneumatic compression stockings

82. Mr. Blewett is admitted with hypoxemic and hypercarbic respiratory arrest requiring intubation and ventilation. He has a RLL consolidation on xray, with copious purulent secretions. WBC is 24,000 T 39.2. BP 88/55 HR 136 and CVP 18 after 6 L of 0.9% normal saline. Urine output is 10 ml/hr. Which one of the following interventions is a priority?

   a. Levophed
   b. Dopamine
   c. Dobutamine
   d. Labetolol

83. Ms. Tam is recovery from a prolonged critical illness. She is having tracheostomy-mask trials each day. She is withdrawn and sad, and tells the nurse she no longer has any control of her life. Which one of the following interventions would best meet her needs?

   a. Initiate antidepressant therapy
   b. Administer sedation at bedtime
   c. Develop a collaborative plan of care
   d. Refer Mrs. Tam to a psychiatrist

84. Mr. Ferriere has been on home ventilation for several years with severe COPD. He was admitted for exacerbation of COPD due to pneumonia. At home, he varies his support between Pressure Control ventilation and spontaneous breathing. His pneumonia has now resolved and the plan is to return him to his baseline ventilation. He calls you to his bedside and asks you what his ventilator is set to because he feels short of breath. You tell him he is on Pressure Support, and he becomes very angry. He tells you that he told the respiratory therapist that he has tried Pressure Support in the past and he does not like it. When you speak to the respiratory therapist, she had placed the patient on PS to see if he noticed the difference. Which one of the following is an appropriate response?

   a. Encourage Mr. Ferriere to stay on the Pressure Support and give it a chance to work
   b. Have the respiratory therapists speak to Mr. Ferriere to explain her interventions
   c. Facilitate a meeting between you, the respiratory therapist and Mr. Ferriere to develop a plan for weaning
   d. Tell Mr. Ferriere that his lungs have changed and the previous mode might not work the same way

85. When using a Passy-Muir Valve (PMV), which one of the following interventions is appropriate?

   a. Ensure the cuff is always inflated
   b. Monitor for adequacy of exhalation
   c. Introduce the PMV as soon as the tracheostomy is performed
   d. Suction prn by passing the catheter through the centre of the PMV
86. Following an inferior wall infarction, Mrs. Kempster develops a sinus rhythm with Wenkebach phenomena. She develops episodes of symptomatic bradycardia. Which one of the following interventions would be the priority?
   a. Epinephrine  
   b. Cardioversion  
   c. Atropine  
   d. Dopamine

87. Mrs. Singh has advanced cancer. She has been extubated for two days, with orders for no reintubation. She develops increasing dyspnea. Which one of the following agents would best manage these symptoms?
   a. Propofol (Diprovane)  
   b. Fentanyl  
   c. Midazolam (Versed)  
   d. Gabapentin

88. You attempt to perform a pulmonary wedge pressure measurement, however, the catheter will not wedge. You identify the following waveform. Which one of the following interventions is appropriate?

![Waveform Image]

   a. Withdraw catheter until a right atrial tracing appears  
   b. Notify physician to advance pulmonary artery catheter  
   c. Avoid further balloon inflation  
   d. Obtain a chest xray

89. What is the appropriate intervention for the following arterial waveform during Intra Aortic Balloon Pumping (IABP)?

![Arterial Waveform Image]

   a. Make the inflation begin earlier  
   b. Make the inflation begin later  
   c. Make the deflation begin earlier  
   d. Make the deflation begin later
90. Identify the ideal location for measuring right atrial pressure from the following right atrial waveform.

91. Mr. Sleaman is admitted with chest pain, hypotension and acute rise in CK and troponin. What does this ECG suggest?

- a. Inferior wall infarction
- b. Lateral wall infarction
- c. Anterior wall infarction
- d. Posterior wall infarction
92. Mrs. Arubesque is admitted with cardiogenic shock following a myocardial infarction. She has the following findings:

HR 68 BP 80/55 CVP 24 SpO2 88%

Which one of the following interventions is the priority?

a. Levophed  
b. Epinephrine  
c. Lasix  
d. Metoprolol

93. Mr. Fillips underwent coronary bypass surgery. Four hours following admission to the critical care unit, his BP begins to fall, his HR rises to 130 and his urine output decreases to 35 ml/hr. His CVP increases to 22 and his PWP 18. The critical care nurse notifies the cardiovascular surgeon. Pending the surgeons arrival, which intervention is the priority?

a. Milrinone  
b. Dobutamine  
c. Lasix  
d. Fluid

94. Identify the formula for minute volume.

a. Tidal volume X respiratory rate  
b. Functional residual capacity – tidal volume  
c. Forced vital capacity X respiratory rate  
d. Cardiac Output X respiratory rate

95. After successful completion of a spontaneous breathing trial, extubation is considered. Which one of the following findings would be a contraindication to extubation?

a. FiO2 0.4  
b. PEEP 5  
c. GCS 4  
d. Minute volume 10 L/min

96. Mrs. Andios is a Type II diabetic with a history of TIA and congestive heart failure. She is admitted to the critical care unit for monitoring following a Hartmann’s procedure for colon cancer. Two hours post operatively, she develops new onset uncontrolled atrial fibrillation with hypotension. Which one of the following interventions is the priority?

a. Lidocaine  
b. Amiodarone  
c. Coumadin  
d. IV heparin
97. Mrs. Katanska had a thrombotic stroke 18 hours ago. She has the following findings:

HR 85  
BP 165/80 (MAP 80)  
CVP 13  
RR 25  
Temp 38.1

Which one of the following pharmacological agents is the priority?

a. Antipyretic  
b. Anticonvulsant  
c. Antihypertensive  
d. Beta-blocker

98. Mrs. Bennedict has a large anterior-lateral wall ST segment elevation myocardial infarction. She develops severe shortness of breath, orthopnea, pink frothy sputum and jugular venous distention. BP 160/95 HR 135 and RR 32. Which one of the following interventions is a priority?

a. Dobutamine  
b. Metoprolol  
c. Lasix  
d. Digoxin

99. Calculate the PaO₂:FiO₂ ratio based on the following data:

FiO₂ 1.0 PEEP 10 PaO₂ 65 pH 7.34 PaCO₂ 45 SpO₂ 90%

a. .90  
b. 20  
c. 65  
d. 35

100. Mr. Sinese is admitted with a Type B aortic dissection, distal to the left subclavian. Which one of the following interventions is the priority?

a. Labetolol  
b. Metoprolol  
c. Milrinone  
d. Norepinephrine

101. Mrs. Chen has a diagnosis of asthma and is admitted with loud expiratory wheezes that are audible without a stethoscope. Three hours after starting salbutamol (Ventolin) by inhalation q 1 h and after IV methylprednisolone is started (Solumedrol), her wheezes have disappeared and her chest wall movement has decreased. She has the following findings:

RR is 35  
SpO₂ 86%  
BP 160/95

Which one of the following interventions is the priority?

a. Reduce the frequency of the ventolin  
b. Initiate spiriva  
c. Administer apresoline  
d. Prepare for intubation
102. Darius is injured in a motor vehicle collision. He has a right cerebral contusion, small L subdural hematoma and decreased motor function in his left leg. His L great toe is downgoing, and his patellar and Achilles reflexes (knee and ankle jerk) are 0-1+. Which one of the following problems would explain his left leg weakness.

   a. Right cerebral injury  
   b. Left cerebral injury  
   c. Acute spinal cord injury  
   d. Peripheral nerve injury

103. Mr. Sing is admitted to the critical care unit with a closed head injury following a fall from a ladder. He develops respiratory distress and has HR 144, RR 38, BP 60/40 and SpO2 74%. His peak airway pressures increase and his trachea deviates to the right side. Which one of the following interventions is the priority?

   a. Mannitol  
   b. Norepinephrine (Levophed)  
   c. Right sided chest tube  
   d. Left sided chest tube

104. Mrs. Sisko is admitted with atrial fibrillation and is treated with diliazem, metoprolol and amiodarone. She is cardioverted to sinus rhythm 24 hours after admission, and develops R sided facial droop and right hand weakness 30 minutes later. Which one of the following explanations identifies the most likely cause of these findings.

   a. Right cerebral embolus  
   b. Right cerebral hemorrhage  
   c. Left cerebral hemorrhage  
   d. Left cerebral embolus

105. Mrs. Watson sustains a fractured sternum and multiple fractures of right ribs #3-#6. She is on .5 PEEP 10 and Pressure Support (PS) 15 cmH2O. She becomes restless with paradoxical chest wall movement and her tidal volumes decrease to 250-300 cc. Which one of the following interventions is the priority?

   a. Analgesic  
   b. Sedative  
   c. Increase the PS  
   d. Increase the PEEP

106. Which one of the following findings is most suggestive of pulmonary embolus?

   a. Hypercarbia, hypoxemia and respiratory distress  
   b. Clear chest, severe hypoxemia, and respiratory alkalosis  
   c. Orthopnea, hemoptysis and pulmonary artery dilation  
   d. Cardiac enlargement, hypercarbia and increased minute ventilation

107. Mr. Liposki was admitted this morning with an acute C5-6 spinal cord injury due to an all terrain vehicle roll-over. He is currently ventilated and receiving prn analgesia. When planning his care, which one of the following interventions should be included in the plan?

   a. Strict maintenance of cervical, thoracic and lumbar spine alignment  
   b. Neurological testing of spinal cord function q 12 h  
   c. Early mobilization to trauma chair with cervical collar  
   d. Head of bed elevation to 45 degrees with cervical collar
108. Mr. Bottwa sustained a C6 injury 14 years ago and has chronic narcotic use for neck pain. Two days ago, he was admitted with pneumonia. His blood pressure is 155/60 HR 55 and he has facial flushing and headache. Which one of the following interventions is the priority?

a. Perform assisted cough  
b. Administer antihypertensive agent  
c. Assess bladder catheter  
d. Administer analgesic

109. Mr. Dorias was admitted the previous evening following a hypertensive cerebral bleed. He is admitted in deep coma, with midline shift evident on CT. His best motor response is abnormal flexion and he frequently flexes his neck toward his shoulder during abnormal posturing episodes. During these episodes, his SBP increases to > 200 mmHg. Which one of the following interventions is a priority?

a. Administer PRN hydralazine (Apresoline)  
b. Reduce the frequency of neurological testing  
c. Minimize the frequency of family visits  
d. Apply a cervical spine collar

110. Which one of the following findings is most suggestive of pulmonary embolus?

a. Hypercarbia, hypoxemia and respiratory distress  
b. Clear chest xray, severe hypoxemia, and respiratory alkalosis  
c. Orthopnea, hemoptysis and pulmonary artery dilation  
d. Cardiac enlargement, hypercarbia and increased minute ventilation

111. Mrs. Talovsky developed idiopathic pulmonary hypertension following the birth of her second child 5 years earlier. She was admitted with cyanosis. She is mechanically ventilated with the following findings: SpO2 75%, HR 144, BP 105/60 and PAP 82/45. Which one of the following interventions is the priority?

a. Prostacyclin (Flolan)  
b. Norepinephrine (Levophed)  
c. Increased PEEP  
d. Epinephrine (Adrenalin)

112. Ms. Kelver is admitted with status asthmaticus. Immediately following intubation, she is manually ventilated using a bag-mask. She becomes very difficult to ventilate, requiring increasing effort to inflate the lung with each manual breath. Which one of the following interventions is the priority?

a. Connect to mechanical ventilator with Pressure Control mode  
b. Initiate ventilation with High Frequency Oscillatory Ventilation (HFOV)  
c. Disconnect the bag-mask valve and assist exhalation with manual chest pressure  
d. Administer salbutamol (Ventolin) STAT via endotracheal tube
113. Mrs. Catalia, 45 years of age, had a clipping of a ruptured left middle cerebral artery aneurysm 5 days earlier. She had been obeying with her right side at previous assessments but is now only localizing. Her GCS has decreased from 12 (eye opening 3, verbal 3, motor 6) to 7 and a repeat CT is negative for new swelling or bleeding. Her BP is 145/84 (MAP 85), HR 80, CVP 13 and urine output 100 ml/hr. What intervention is the priority?

   a. Fluid bolus  
   b. Head of bed elevation  
   c. Mannitol bolus  
   d. Nifedipine q 4 h

114. Mr. Zelenick is on .5 PEEP 10 and Pressure Control Ventilation (AC 18). Which one of the following alarms could be produced by biting on the endotracheal tube.

   a. High pressure  
   b. Low tidal volume  
   c. High minute volume  
   d. Auto PEEP

115. Mrs. Sidiki experienced a cardiac arrest with a 15 minute downtime before return to spontaneous circulation. She has a GCS of 5 at admission, with a BP of 110/60, HR 118 on full ventilation. Which one of the following interventions is the priority?

   a. Phenytoin  
   b. Glucose  
   c. Hypothermia  
   d. Haldol

116. Mrs. Chin is in the critical care unit being treated for severe sepsis due to pneumonia. She is on FiO2 0.6 PC 32 AC 25 PEEP 18. She is on norepinephrine at 18 ug/min, vasopressin at 2 units per hour, hydrocortisone 100 mg q 8 h and insulin infusion at 8 units per hour. She suddenly has a tonic clonic generalized seizure. Which one of the following interventions is the priority?

   a. Phenytoin (Dilantin)  
   b. Magnesium Sulphate bolus  
   c. Hypertonic Saline administration  
   d. Blood sugar assessment

117. Mrs. Caplin is 18 hours post cardiac arrest and being treated with hypothermia. She remains non-responsive, with a BP of 100/55 (MAP 60), HR 85, CVP 12, T 33 urine output 35 ml/hr, SpO2 95% on FiO2 .4 PEEP 5 and AC 18. Which one of the following interventions is a priority?

   a. Nitroglycerine  
   b. Fluid bolus  
   c. Beta blocker  
   d. Increased PEEP
118. Mr. Evans has ARDS and is on the following ventilator settings:

FiO2 0.5 PEEP 12 AC 22 Volume Controlled ventilation with VT 450 cc.

Blood gases are: PaO2 64 PCO2 58 pH 7.22 HCO3 26.

Which one of the following interventions would be the priority?

a. Increase the PEEP
b. Increase the tidal volume
c. Change to Pressure Control Ventilation
d. Increase the AC rate

119. Mrs. Vanelli develops witnessed onset of aphasia. One hour later, an urgent CT rules out cerebral hemorrhage. Vital signs are:

BP 156/84 (MAP 90)
HR 105 (atrial fibrillation)
RR 26
Glucose 10.2
T 36.8

What is the priority?

a. TnK (Tenectaplase)
b. tPA (Aletiplase)
c. Heparin
d. Insulin

120. Two hours following open heart surgery for aortic valve replacement, Mr. Kiefer’s BP increases from 110/60 to 145/90 despite analgesia. HR 75 and urine output 150 ml/hr. Which one of the following interventions is the priority?

a. Antihypertensive
b. Monitoring only
c. Fluid bolus
d. Anticoagulation

121. Mrs. Brown requires full ventilation for 10 days. She is now hemodynamically stable with adequate blood gases on FiO2 0.4 and Pressure Support 16. Which one of the following interventions should be included in her plan of care?

a. Mobilization
b. Anxiolytics
c. Prophylactic antibiotics
d. Saline instillation with suctioning
122. Steve has raised intracranial pressure and is receiving mannitol q 6 h for ICP > 20 mmHg. Which one of the following lab tests is the priority?

   a. Serum arginine vasopressin (AVP)
   b. Urine specific gravity
   c. Serum creatinine
   d. Serum osmolality

123. Mr. Bottwa sustained a C6 injury 14 years ago and has chronic narcotic use for neck pain. Two days ago, he was admitted with pneumonia. His blood pressure is 155/60 HR 55 and he has facial flushing and headache. Which one of the following interventions is the priority?

   a. Perform assisted cough
   b. Administer antihypertensive agent
   c. Assess bladder catheter
   d. Administer analgesic