



Cert Critical Care(SA) Anaes

THE COLLEGES OF MEDICINE OF SOUTH AFRICA

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Examination for the Subspecialty Certificate in Critical Care of the
College of Anaesthetists of South Africa



Paper 1

26 July 2018

(3 hours)

All questions to be answered. Each question to be answered in a separate book (or books if more than one is required for the one answer)

- 1 a) Myocardial Injury after Non-Cardiac Surgery (MINS) has been increasingly identified as a cause of critical illness and mortality in post-operative patients. Discuss MINS under the following headings
- i) Pathophysiology. (3)
 - ii) Clinical features and diagnosis. (3)
 - iii) Outline a typical ICU haemodynamic and cardiovascular management plan for a 65-year-old patient who develops cardiogenic shock, with profound hypotension (MAP 55 mmHg) and pulmonary oedema, from MINS 24 hours after an elective total abdominal hysterectomy. Focus on the first 6 hours of ICU admission. (14)
- b) A patient is admitted to the ICU after a pulmonary embolus. Outline the indications for systemic thrombolysis in this patient. (5)
- c) Heparins are commonly given to critically ill patients. Write short notes on Heparin-Induced Thrombocytopenia Type 2 under the following headings
- i) Patients at risk. (2)
 - ii) Pathophysiology. (3)
 - iii) Clinical manifestations. (5)
 - iv) Treatment and management in the South African context. (5)
- d) You are consulting in a regional hospital ICU where, because of resource constraints, peritoneal dialysis is the only mode of renal replacement therapy available. You see a 20-year-old male with acute renal failure from traumatic rhabdomyolysis after a community assault. The patient is haemodynamically stable, but is anuric, is developing pulmonary oedema, and has a serum potassium concentration of 7.5mmol/l with T-waves 90% of R wave height on ECG Lead II
- i) Outline any contra-indications to peritoneal dialysis that you would need to consider. (3)
 - ii) Assuming that a peritoneal dialysis catheter is successfully placed, outline and explain your acute peritoneal dialysis prescription for the first 12 hours of treatment. (7)
- [50]

- 2 As the director of your intensive care unit, you have been asked to review critical care transfers within your facility
- List the most important factors in ensuring a safe critical care transfer. (12)
 - List the factors identified in the causation of serious haemodynamic or respiratory alterations during intra-hospital critical care transfers. (6)
 - You have been asked to determine the specifications for the purchase of a transport ventilator for your intensive care unit. List the key functionalities the transport ventilator should have. (12)
 - Describe a Critical Care prognostic scoring system you are familiar with. Your answer should include its benefits and limitations. (20)
- [50]
- 3
- List the most important non-infectious complications of patients who are recipients of organ transplants and are on immunosuppressive therapy. (15)
 - List the causes, and features (clinical and laboratory) of rhabdomyolysis, and outline the principles of management. (15)
 - Discuss aetiology of coagulopathy of trauma and the role, as well as, the important parameters measured with ROTEM/TEG and the interpretation thereof - an appropriately labelled diagram of the different patterns with annotations may suffice. (20)
- [50]
- 4 A 37-year-old female with a history of polycystic ovarian syndrome, who recently started treatment for infertility, is admitted to the intensive care unit with features suggestive of a severe Ovarian Hyperstimulation syndrome
- Write short notes on the pathophysiology of Ovarian Hyperstimulation syndrome. (8)
 - How is Ovarian Hyperstimulation Syndrome classified? (5)
 - Discuss your management of this patient during her acute admission in the ICU. (12)
 - During her stay in ICU she develops a persistent acidaemia with the following arterial blood gas analysis on an F_{iO_2} of 0.5

pH 7.25

P_{aCO_2} 4.8kPa (36mmHg)

P_{aO_2} 12.2kPa (92mmHg)

Base excess -10,

Lactate 3.2mmol/L

Bicarbonate 12mmol/L

Further blood tests yield the following information:

Sodium 147mmol/L

Potassium 4.9mmol/L

Urea 8mmol/L

Creatinine 80 μ mol/L

Chloride 115mmol/L

Magnesium 0.9mmol/L

Inorganic Phosphate 0.8mmol/L

Glucose 26mmol/L

Her serum ketones are elevated.

Write short notes on the management of Diabetic Ketoacidosis. Address the following points and provide evidence where possible

- Your choice of resuscitation fluids. (2)
- Your choice and regimen of glucose management. (3)

- iii) The blood glucose levels that you would target. Provide your reasoning. (4)
- iv) Nutritional support for this patient. (4)
- v) Explain, in terms of Stewart's physico-chemical approach to acid-base why she manifests with an acidaemia. (5)
- vi) List 4 clinical concerns or problems that may be associated with hyperchloraemia. (4)
- vii) With reference to anion gap
- Indicate the equation used to calculate an anion gap. (1)
 - Calculate this patient's anion gap. (1)
 - How would you classify her metabolic status based on her anion gap? (1)
- [50]