



## 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

21 February 2019

(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 68-year-old male patient weighing 70kg was admitted to your intensive care unit 24 hours ago with a diagnosis of necrotising acute severe pancreatitis. The patient has had an alcohol binge 2 days previously. There was no organ dysfunction on initial admission to hospital. He is now in respiratory failure that has required intubation and ventilation and has also developed a stage 1 acute kidney injury. The patient is currently oliguric.

On examination you note the following

Heart rate 140 beats per minute in normal sinus rhythm.

Blood pressure 105/45mmHg (on both invasive and non-invasive measurement).

Temperature 39°Celsius.

There has been deterioration in oxygenation and lung compliance in the last 6 hours.

- What is your differential diagnosis for the worsening organ function and how would you attempt to make a definitive diagnosis? (10)
  - With reasons, discuss your approach to the administration of prophylactic antibiotics at this stage. (5)
  - A CT scan reveals gas in the retroperitoneum and surrounding the tail of the pancreas. Discuss evidence-based treatment options you would advise at this point in time. (10)
  - What risk factors does this patient have for the development of intra-abdominal hypertension? (6)
  - How would you prevent the development of intra-abdominal hypertension and its complications in this patient? (19)
- [50]
- 2 Critically appraise current red blood cell transfusion recommendations in different clinical scenarios, in critically ill patients. Your appraisal should include current evidence and controversies. [50]
- 3 You are the director of an intensive care unit and have been approached by hospital management to draw up standard operating procedures (SOPs) to reduce hospital-acquired infections in your unit. Outline your proposed SOPs, providing evidence from the literature (where appropriate), to address the following
- Hand hygiene. (15)
  - Strategies to reduce central line associated blood stream infections (CLABSI). (30)
  - Cleaning of laryngoscope blades. (5)
- [50]

- 4 a) Outline the medical management of acute severe asthma. Give the level of evidence available for each intervention. (20)
- b) i) Describe the principles of mechanical ventilation for acute asthma.  
ii) List the specific settings you would generally use as a starting point for a 30-year-old patient weighing 65kg. (15)
- c) i) Which is the best inhaled drug delivery system to use during mechanical ventilation?  
ii) What other options are available? Describe what you would do to optimise drug delivery during nebulisation. (10)
- a) A patient with an exacerbation of chronic obstructive pulmonary disease is given supplemental oxygen via a 60% entrainment mask. The arterial carbon dioxide tension is noted to rise. What are the potential causes of this? (5)
- [50]