# THE COLLEGES OF MEDICINE OF SOUTH AFRICA

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## Examination for the Subspecialty Certificate in Critical Care of the College of Emergency Medicine of South Africa

Paper 1 27 February 2020 (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)*

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1 With reference to sepsis and septic shock

a) How is sepsis currently defined? (2)
b) What is the mortality associated with sepsis and with septic shock respectively? (2)
c) Explain why the mortality for sepsis and septic shock have changed over time. (6)
d) During the immediate resuscitative period, how has the management of septic shock changed over the last few years? Why is this so? (10)
e) What are the current recommendations for bundle care in sepsis and which interventions have the greatest impact on mortality? (10)
f) What are the challenges facing Lower- and Middle-Income Countries (LMICs) in the management of sepsis? (10)
g) Should the most recent Surviving Sepsis Campaign Guidelines be abolished in 2020? Motivate your answer. (10)

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2 A 53-year-old male patient (height 1.65m; mass 70kg) presents to the emergency department with headache and vomiting. He has a left hemiparesis and a Glasgow Coma Scale score of 5/15. Soon after presentation he has a generalised tonic- clonic seizure.

a) Outline your priorities for the management of this seizure. Include approximate doses for any drugs you might use. (10)

After 30 minutes, the seizure is terminated and the patient is intubated and paralysed and referred for a CT brain that confirms a high-grade sub-arachnoid haemorrhage and is subsequently transferred to the Intensive Care Unit. The neurosurgeon asks you to “lighten” the patient for a clinical assessment. On reducing sedation, further seizure activity is noticed. This happens on 3 occasions

b) Describe when and how you would cease sedation in this patient. (5)
c) Using the information given above, provide an assessment of this patient’s prognosis. (5)

With respect to the Guillain Barre Syndrome (GBS)

d) Outline how you would distinguish between GBS and Critical Illness Polymyoneuropathy (CIP). (20)
e) List the current treatment options for GBS. Briefly outline the supporting evidence. (5)
f) What is the prognosis of GBS and what factors are associated with a worse outcome? (5)

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3 A 30-year-old, previously healthy male patient is admitted to the intensive care unit after a laparotomy for stab injury resulting in secondary peritonitis and a vascular injury. Within 24-hours he is in septic shock on noradrenaline at 1ug/kg/min to maintain mean arterial pressure (MAP) >65mmHg. His creatinine is now 464 umol/L. His urine output has been 0.5ml/kg/hour for the past 24-hours. The patient does not have any emergent indications for dialysis at this stage.

a) What evidence-based factors would you consider when deciding whether to initiate renal replacement therapy (RRT) and the timing thereof in this patient? (15)

b) A decision to initiate RRT is eventually made. What factors will influence your selection of modality of RRT in this patient? (10)

c) After the initiation of RRT, the patient's MAP decreases to 50mmHg.

i) What patient related factors lead to haemodynamic instability related to renal replacement therapy (HIRRT)? (5)

ii) How would you manage HIRRT? (10)

d) How would you ensure patency of the circuit in this patient? (10)

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4 You have been tasked with implementing quality improvement processes within your critical care environment.

a) Why is assessment of quality of care important? (5)

b) Briefly explain the methodology of an improvement system method that may be used. (5)

c) Describe the factors involved in the selection and development of quality indicators. (10)

d) Describe the key steps in initiating and evaluating quality improvement programmes. (10)

e) Construct a quality improvement plan to reduce the unplanned extubation rate in your critical care unit. (20)

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