COLLEGE OF INTENSIVE CARE MEDICINE
OF AUSTRALIA AND NEW ZEALAND

SECOND PART EXAMINATION

EXAM REPORT

AUGUST / OCTOBER 2023

This report is prepared to provide candidates, tutors, and Supervisors of Training (SOTs) with information regarding the assessment of candidates' performance in the CICM Second Part General Examination. This report is for use as an educational resource and includes a guide as to expected content of the answers for the written section. Trainees/SIMGs should discuss the report with their supervisors and educators so that they may prepare appropriately for future examinations. Trainees/SIMGs should not rely solely on writing practice answers to previous exam questions for exam preparation and should first establish a strong knowledge base from clinical learning and studying relevant texts, journals, and on-line resources.

The exam comprises a written section and an oral section. The written section consists of two papers, comprised of 15 short answer questions each. The pass mark for the written section is derived by the Angoff method and for this sitting was set at **52.62%.** The oral section consists of eight interactive vivas and two separate clinical hot cases. The vivas were completed in Melbourne over two consecutive days (Thursday 26 and Friday 27 October) and the hot cases were completed in Melbourne and Adelaide over two non-consecutive days (Wednesday 25 and Tuesday 31 October).

The tables below provide an overall statistical analysis as well as information regarding performance in the individual sections. A comparison with data from the five previous exams is provided.

In all sections of the exam the candidate must demonstrate performance consistent with that of a trainee who is ready to enter the transition year of the CICM training program, by demonstrating they have the ability for safe, effective, independent practice as an Intensivist. Candidates who are not at this level are encouraged to defer their attempt at the exam.

Overall Performance	2023.2	2023.1	2022.2	2022.1	2021.2	2021.1
Presenting for written (Including SIMG)	81	66	52	38	64	54
Carrying a written pass or exempted from a previous attempt	11	8	29	24	26	25
SIMG written exempt	2	2	3	4	4	0
Total number presenting (written + carry + SIMG)	92	74	81	62	90	79
Invited to orals (passed written section)	47	24	23	21	46	40
Total number invited to the oral section	58	32	52	45	70	66

Analysis of Performance in Individual Sections	2023.2	2023.1	2022.2	2022.1	2021.2
Successful in the written section	47/81	24/66	23/52	21/38	46/64
	58%	**36%**	**44%**	**55%**	**72%**
Successful in the Hot case section	45/58	18/32	27/51	21/45	37/70
	78%	**56%**	**53%**	**47%**	**53%**
Successful in both Hot cases	17/58	13/32	16/51	14/45	25/70
	29%	**41%**	**31%**	**31%**	**36%**
Successful in the Viva section	48/58	27/32	44/51	40/45	56/70
	83%	**84%**	**86%**	**88%**	**80%**

Sectional Pass Rates	**2023.2**		**2023.1**		**2022.2**		**2022.1**		**2021.2**		
Hot cases	**Pass rate**	**Highest individual mark**	**Pass rate**	**Highest individual mark**	**Pass rate**	**Highest individual mark**	**Pass rate**	**Highest individual mark**	**Pass rate**		**Highest individual mark**
Hot case 1	53%	83%	56%	85%	49%	85%	51%	82%	67%		80%
Hot case 2	53%	85%	56%	90%	59%	90%	47%	85%	49%		90%
VIVAs*			**Day 1**	**Day 2**	**Week 1**		**Week 1**	**Week 2**	**Day 1**	**Day 2**	**Day 3**
Viva 1	76%	85%	56% / 65%	63% / 80%	84% / 80%		100% / 82%	74% / 78%	79% / 90%	100% / 86%	74% / 80%
Viva 2	67%	79%	94% / 80%	88% / 86%	65% / 83%		59% / 70%	78% / 84%	58% / 66%	83% / 76%	65% / 73%
Radiology Viva 3	48%	76%	75% / 83%	63% / 62%	69% / 74%		55% / 66%	74% / 70%	46% / 72%	65% / 71%	57% / 75%
Procedure Viva 4	74%	88%	81% / 78%	56% / 74%	59% / 75%		45% / 72%	26% / 57%	71% / 77%	100% / 79%	74% / 79%
Viva 5	76%	90%	44% / 74%	81% / 70%	84% / 81%		68% / 78%	87% / 90%	54% / 66%	43% / 78%	22% / 70%
Viva 6	79%	91%	63% / 64%	63% / 64%	76% / 82%		95% / 95%	87% / 94%	67% / 83%	96% / 96%	61% / 94%
Viva 7	83%	79%	75% / 80%	88% / 75%	92% / 90%		55% / 55%	61% / 71%	42% / 60%	17% / 60%	57% / 69%
Communication Viva 8	53%	85%	44% / 88%	75% / 75%	63% / 90%		59% / 92%	65% / 90%	58% / 90%	48% / 90%	48% / 85%

**For the 2023.2 (October) oral section, Vivas 1, 2, 3 and 4 were examined on Thursday and Vivas 5, 6, 7 and 8 were examined on Friday.*

Oral Section Pass Rates	2023.2	2023.1	2022.2	2022.1	2021.2	2021.1
Candidates who passed the written section and passed the overall exam	34/47	17/24	20/52	12/38	27/46	24/40
	72%	**71%**	**38%**	**32%**	**59%**	**60%**
All candidates invited to oral section and passed the overall exam (written + carry + SIMG)	40/58	23/32	36/51	29/45	41/70	32/66
	69%	**72%**	**71%**	**64%**	**59%**	**48%**
Overall Pass Rate	40/92	23/74	36/79	29/62	41/90	32/79
	43%	**31%**	**46%**	**47%**	**45%**	**40%**

EXAMINERS' COMMENTS

Written Paper

58% of the Second Part examination candidates who sat the August 2023 written section were invited to the oral section. Candidates who did not qualify for an invitation did so for one or more of the following reasons:

- Insufficient knowledge of the topic in question.
- Insufficient detail and/or depth of the answer.
- Poorly structured answer.
- Inadequate reference to supportive evidence where relevant.
- Failure to answer the question asked.
- Omission of all or part of the question.

Candidates that failed questions most often gave insufficiently detailed answers that were not at the level expected of a transitional fellow. Candidates often gave generic "proforma" answers that did not deal with the specific issues or scenario outlined in the question.

Candidates are advised to read the questions carefully and thoroughly and ensure they answer the specific question asked and address all parts of each question. Examiners commented that candidates had not appeared to consider the mark distribution in some multi-part questions, spending too little time on the more important sections. Candidates are reminded to make sure their writing is legible and to avoid using non-standard abbreviations. Candidates are also reminded that professional conduct is assessed throughout the exam process and that inappropriate comments written on the answer paper are not acceptable.

The examination report is now referenced to the syllabus to aid the candidate in directing their study more effectively. A selection of marking rubrics to complement the SAQ discussion have been published to guide trainees, SOTs, and educational advisors in the requirements of the assessment process and the standard of written content expected of the transitional fellow.

Candidates are strongly encouraged to consider feedback and advice from SOTs and educational advisors when considering the appropriate time for them to attempt the Second Part Examination.

SECOND PART WRITTEN EXAMINATION

(A) Write your answers in the blue books provided. Questions should be answered in groups of **TWO per book only**, except for QUESTIONS 15 & 16 which must be answered in separate booklets:

(B) Start each answer on a **new page** and indicate the **question number**. It is not necessary to rewrite the question in your answer book.

(C) You should aim to answer each question in **ten** minutes.

(D) The questions are worth **equal** marks.

(E) Record your **candidate number** and each **question number** on the cover of each book and hand in all books.

GLOSSARY OF TERMS

Critically evaluate: Explain and provide the evidence available relating to a topic.

Outline: Provide a summary of the important points.

List: Provide a list.

Compare and contrast: Provide a description of similarities and differences. You may tabulate your answer.

Assessment: Generic term that implies determining an underlying diagnosis, encompassing; history, clinical examination, and relevant investigations.

Management: Generic term that implies determining an overall management plan, encompassing; resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment.

Discuss: Explain the underlying key principles. Where appropriate, this may include controversies and/or advantages and disadvantages.

Explain: Make plain or known in detail.

NOTE

Where laboratory values are provided, abnormal values are marked with an asterisk (*).

Please note that in this report all images from the SAQs have been removed.

Question 1

a) Discuss the assessment and challenges of diagnosing ventriculitis in a febrile patient with a subarachnoid haemorrhage (SAH) and an external ventricular drain (EVD) in situ.

(6 marks)

b) Outline the principles of management if a diagnosis of EVD-related ventriculitis is strongly suspected or confirmed.

(4 marks)

Syllabus topic/section:

2.1.3 Sepsis and Infections – L1.
2.1.8 Neurological Intensive Care – L1.

Aim:

1. To ask the candidate to demonstrate knowledge of assessment of the diagnosis of EVD related ventriculitis.
2. To test application of this knowledge to the clinical context and discuss the challenges of using the diagnostic criteria in a critically unwell patient.
3. To test knowledge of broad principles of management of EVD related ventriculitis.

Discussion:

To demonstrate competency of the subject, the answer needed to address every element requested in the stem. For part A candidate answers that addressed the assessment AND challenges as requested gained higher marks.

Examples of challenges include the difficulty of an accepted definition of ventriculitis, inflammatory changes due to brain injury with the presence of the EVD and features associated with SAH which will mask the features of infection amongst others. Candidates using the glossary of terms who structed their answer in terms of history (including risk factors for ventriculitis, e.g. patient related, and catheter related factors) examination findings and targeted investigations *with rationale* gained higher marks.

In Part B the expected transitional fellow level standard contained details of antibiotic choice and rationale, as well as a discussion on the management of the EVD and patient related factors. Ventriculitis is a pathology that has a specific therapy of antimicrobials and little requirement for ongoing source control, unlike, for example, pancreatitis. It is therefore necessary to go into detail about choice, rationale, timing, duration, and route in the explanation of antibiotics in this setting This is particularly important in severe ventriculitis where the intraventricular route is required for treatment resistant cases.

Marking Rubric:

Part A **Assessment and challenges** **6 marks**	Inadequate detail Doesn't appreciate the challenges of diagnosis. 0-2 marks	Has knowledge of how to diagnose ventriculitis but has not demonstrated the challenges in the critically unwell patient. 2-3 marks	Good detail present. Able to appreciate some of the challenges of making diagnosis of ventriculitis in poor detail. 3-4 marks	Contained applied clinical perspective. Detailed and nuanced answer, Able to appreciate the challenges of making the diagnosis of ventriculitis. 5-6 marks
Part B **Principles of management** **4 marks**	Superficial answer, minimal details about antibiotic choice. Minimal or no discussion about EVD. <2 marks	Addresses antibiotics, EVD in limited detail. 1-2 marks	Improved structured answer with more detail. Some organisation attempt of details. 2-3 marks	Detailed and nuanced answer Included antibiotic choice, dose and rationale, management of EVD and considerations relating to change. 4 marks

Angoff score for this SAQ	4.86
Highest candidate score achieved (average)	7

Question 2

Outline the approach to neurological prognostication of a patient post out-of-hospital cardiac arrest (OOHCA). Your answer should include the following headings:

a) General principles. (2 marks)

b) Clinical factors. (2.5 marks)

c) Imaging. (2.5 marks)

d) Neurophysiological studies. (2 marks)

e) Biomarkers. (1 mark)

Syllabus topic/section:

2.1.4 Cardiovascular Intensive Care – L1.

Aim:

To demonstrate knowledge of neuro-prognostication post OOHCA.

Discussion:

A detailed understanding of neuro prognostication is a core competency for Intensivists. Given its frequency in the examination process a high standard of detail was required. Good candidates outlined appropriate timing of multimodal assessment with reference to common confounding factors and clinical evaluation (specifically motor score, pupillary light and corneal reflexes, other brainstem reflexes and myoclonus), specifying utility in neuro prognostication.

Discussion of imaging (CT and MRI), Neurophysiological studies (EEG, SSEPs) and biomarkers (NSE) with exploration of expected findings and utility was expected. Reference to evidence and existing guidelines was limited in many answers. Several publications provide guidance to this complex area (e.g. ERC/ESICM). Application of neurophysiological testing and biomarkers was generally explored only superficially by many candidates who would benefit from clinical exposure or further reading in this area.

Candidates did less well if they:

1. Misunderstood the question and focused on brain death testing.
2. Provided generic answers.

For example, a motor score of < 3 is a marker of severity, however context is crucial to accurately assess the utility of the motor score. Outlining the time frame, the setting of clinical findings and the potential confounders would give more depth of knowledge to the answer, provide necessary context and allow the candidate to demonstrate competency.

Angoff score for this SAQ	5.36
Highest candidate score achieved (average)	8.75

Question 3

3.1 A 45-year-old patient was admitted to the ICU with refractory hypoxic respiratory failure requiring veno-venous extra corporeal membrane oxygenation (VV-ECMO).

The day 8 coagulation profile is below:

Parameter	**Patient Value**	**Adult Normal Range**
Prothrombin time	16 sec	12.0-16.5
INR (International Normalized Ratio)	1.1	0.9-1.3
APTT (activated partial thromboplastin time)	76 sec*	27.0-38.5
Platelet count	69 x 10^9/L*	150-350
Fibrinogen	2.0 g/L	2.0-4.0
D-Dimer	18 mg/L*	< 0.5

3.1.1 List **four** potential causes of the thrombocytopenia. (2 marks)

3.1.2 List **four** investigations that would help differentiate between causes. (2 marks)

3.2

A 66-year-old patient was admitted to ICU post-emergency coronary artery bypass grafts (CABGs). The early post-operative course is complicated by ongoing oozing from lines and surgical sites.

The coagulation profile post-ICU arrival is below:

Parameter	Patient Value	Adult Normal Range
Prothrombin time	12 sec	12.0-16.5
INR international normalized ratio	0.9	0.9-1.3
APTT activated partial thromboplastin time	119 sec*	27.0-38.5
Fibrinogen	1.6 g/L*	2.0-4.0
Platelets	137 x10^9/L*	150-350
Thrombin Time	>100 sec*	11-17

3.2.1 List four potential causes for the prolongation of the APTT. (2 marks)

3.2.2 Explain the significance of the prolongation of the thrombin time. (1 mark)

3.2.3 List two tests that would help to confirm the differential diagnosis and explain your answer.

(1 mark)

3.3

A 75-year-old patient weighing 78kg was admitted with an acute pulmonary embolism. A heparin infusion was commenced with a dose of 1550 U/hr. Forty-eight hours later the following results were obtained:

Parameter	Patient Value	Adult Normal Range
Prothrombin time	16 sec	12.0-16.5
INR (International Normalized Ratio)	1.1	0.9-1.3
APTT (activated partial thromboplastin time)	40 sec*	27.0-38.5
Platelet count	339 x 10^9/L	150-350
Fibrinogen	4.0 g/L	2.0-4.0

3.3.1 Explain the above results and list the most likely cause. (1 mark)

3.3.2 List two potential treatment strategies. (1 mark)

Syllabus topic/section:

2.1.21 Applied Pharmacology in Intensive Care.

Aim:

To identify, assess and manage common coagulation abnormalities of critically ill patients.

Discussion:

Candidates should be commended for the depth of knowledge displayed here. Causes of thrombocytopenia were correctly noted and prioritised, Investigations including BMAT, SRA, PF4 ELISA test and were correctly identified.

Coagulation tests, Heparin resistance and the corresponding treatment strategies were explained well.

Angoff score for this SAQ	6
Highest candidate score achieved (average)	9.25

Question 4

A 30-year-old patient with life-threatening asthma is intubated and mechanically ventilated in your ICU. Bronchospasm persists despite treatment with inhaled salbutamol and ipratropium bromide, intravenous hydrocortisone, antibiotics, and magnesium.

a) List four additional pharmacological therapies that could potentially acutely improve this patient's bronchospasm.

(2 marks)

b) List the advantages and disadvantages of their use. (8 marks)

Syllabus topic/section:

2.1.5 Respiratory Intensive Care – L1.
2.1.21 Applied Pharmacology in Intensive Care.

Aim:

To explore adjuvant strategies for bronchospasm control for the severely critically ill asthmatic patient.

Discussion:

Candidates received higher marks if they were able to list pharmacological agents which would improve bronchospasm. Some candidates mentioned therapies which do not improve bronchospasm and were focused on other aspects of asthma care.

Adjuncts to the treatment of asthma such as muscle relaxants are not bronchodilators and hence did not gain marks. Inhalational Anaesthetics agents, intravenous ketamine, parenteral beta agonists (including adrenaline), or theophylline/aminophylline were acceptable therapies.

Majority of the candidates lost marks when they could not correctly list disadvantages of many of these agents, provided insufficient detail or had incorrect answers. This indicates a knowledge gap for a condition which is commonly seen in ICU.

Angoff score for this SAQ	5.5
Highest candidate score achieved (average)	8.5

Question 5

Compare and contrast the use of computed tomography (CT) with magnetic resonance imaging (MRI) in the assessment of suspected cervical spine injury, in ventilated patients following blunt trauma.

Please tabulate your answer under the following headings:

a) Indications. (5 marks)

b) Advantages and disadvantages. (5 marks)

Syllabus topic/section:

2.1.20 Radiology in Intensive Care.
2.1.13 Trauma Intensive Care – L1.

Aim:

To explore the clinical issues of ventilated trauma management.

Discussion:

This question is a repeat from the 2023.1 March paper and the candidate answers have improved in the quality, attention to detail and depth of knowledge of this core topic from the previous sitting.

The marking examiner noted that some candidates achieved a high score with only 1 page of writing *if it was well structured and concise.* This is a useful fact when considering time management strategies in the examination. This answer benefits from a tabulated structure and most candidates were able to take advantage of this.

Marks could have been gained by considering that 50% of the marks were allocated to the discussion of indications for both modalities, marks were missed because they prioritised the advantages and disadvantages to the exclusion of a section that had equal mark allocation. Candidates are advised to use the marks allocated to manage time effectively during the written examination.

The disadvantage of having to remain in a collar while waiting for an MRI under GA was omitted by many of the candidates. Most had also failed to mention the prognostic advantages of being able to image the internal structure of the spinal cord. Some candidates referred to MRI as the "gold standard", without specifying which structures it is the gold standard for. Many candidates referred to contrast as being a disadvantage of either modality, but neither modality requires contrast for the evaluation of C-spine injury.

Many candidates wrote about the rationale for CT or MRI (e.g., good at picking up ligamentous injuries) rather than the indications as the question asked (e.g., a patient with abnormal neurological examination needs an MRI even if CT doesn't detect an injury etc).

Angoff score for this SAQ	5.68
Highest candidate score achieved (average)	9.5

Question 6

A 21-year-old 50kg patient with insulin-dependent diabetes presents to the emergency department with a 3-day history of vomiting. The diagnosis of diabetic ketoacidosis is confirmed. This is the arterial blood gas on air at presentation:

Parameter	Patient value	Adult normal range
pH	6.93*	7.35-7.45
Bicarbonate	2 mmol/L*	22-26
Base excess	-28 mmol/L*	-2-+2
Lactate	2.8 mmol/L*	0.5-1.6
Sodium	127 mmol/L*	135-145
Potassium	5.5 mmol/L*	3.5-5
Chloride	98 mmol/L	95-105
Glucose	22 mmol/L*	3.5-6

Urine analysis: Ketones 4+
Blood ketones: 2 mmol/l

a) Outline your management of fluid replacement, electrolyte replacement and insulin therapy in the next 24-hours.

(8 marks)

b) Briefly outline the pathophysiology of euglycaemic ketoacidosis in a patient taking dapagliflozin (a sodium-glucose co-transporter 2 inhibitor).

(2 marks)

Syllabus topic/section:

2.1.9 Endocrine Intensive Care – L1.
2.1.21 Applied Pharmacology in Intensive Care.

Aim:

To demonstrate a detailed understanding of the practical management of diabetic ketoacidosis and to demonstrate knowledge of the pathogenesis of the most important complications of these drugs.

Discussion:

Part (A) – This question tests recall of how to manage DKA and explores the application of these management principles to the clinical scenario given. Candidates scored well if: They detailed a standard approach to DKA specifically addressing 24hrs management of fluids, electrolytes, and insulin for the patient scenario provided with clearly mentioned endpoints. Candidates scored poorly if they did not mention management of these domains and failed to write clear endpoints or inaccurate doses of insulin and inadequate fluids were administered.
Strategies to improve: Address the question asked by reading and understanding the question, do not waste time in writing things not asked e.g. resuscitation issues other than those of volume status. Mentioning management plan/goals with reference to standard guidelines are rewarded.

Part (B) – Candidates scored if well if they mentioned: as the SGLT2 inhibitors block the sodium-glucose co-transporter 2, the resulting glucosuria leads to decreased plasma glucose levels and decreased insulin release. Carbohydrate deficit, insulinopenia, and increased glucagon release lead to upregulation of lipolysis and ketogenesis resulting in ketoacidosis. Candidates scored poorly if they were unable to demonstrate the pathophysiology of euglycaemic ketogenesis.

Angoff score for this SAQ	5.77
Highest candidate score achieved (average)	8.5

Question 7

Regarding pressure support ventilation in the invasively ventilated patient:

a) Outline the possible methods which could be used to initiate ventilator cycling from inspiration to expiration.

(4 marks)

b) List three circumstances under which ventilator default settings for inspiratory to expiratory cycling may contribute to patient-ventilator dyssynchrony. For each circumstance explain the modifications needed to improve patient-ventilator interaction, and briefly explain the rationale for each modification.

(6 marks)

Syllabus topic/section:

2.1.5 Respiratory Intensive Care – L1.

Aim:

To evaluate candidate knowledge of fundamental principles of ventilator operation.
To allow the candidate to display knowledge of advanced ventilation strategies to improve patient ventilator interaction.

Discussion:

Part (A) – The objective of the question was to assess knowledge regarding cycling in both conventional and newer pressure support modes (PAV and NAVA). Candidates scored well if they mentioned conventional PSV- Flow cycling – the expiration begins when the flow reaches a percentage of peak flow range from 1-70% and traditional set at 25%. IN NAVA what is set by the clinician is the pressure support applied for each millivolt of EMG activity. Inspiration ends at a specific percentage of the peak EMG activity. Candidates performed poorly if they did not mention the above.

Part (B) – Objective of this question was to assess understanding of how to set cycling in spontaneous mode to avoid asynchrony. Candidates did well if they could write about causes of premature and delayed cycling. Candidates did poorly:

- If they failed to demonstrate an understanding of asynchrony related to cycling.
- Candidates were not specific in their answer to pressure support ventilation.

Angoff score for this SAQ	3.68
Highest candidate score achieved (average)	6.25

Question 8

A 59-year-old patient with a known history of ischaemic dilated cardiomyopathy (ejection fraction (EF) 25%), with an automatic implantable cardioverter defibrillator (AICD) in situ, has presented to the Emergency Department as the AICD has appropriately delivered 15 shocks in the past 4 hrs. ECG shows sinus rhythm with pre-existing left bundle branch block (LBBB).

The patient is cooperative with a GCS of 15 but distressed by the repetitive shocks.

The airway is maintained. Blood pressure is 90/65 mmHg, heart rate is 105/minute, sinus rhythm. Peripheral oxygen saturations are 96% on room air.

Outline your management of this patient.

Syllabus topic/section:

2.1.4 Cardiovascular Intensive Care – L1.

Aim:

Assess a candidate's knowledge of AICD and management of VT storm.

Discussion:

Candidates scored marks if they mentioned accurate patient risk stratification and appropriate management according to hemodynamic tolerability e.g. Patient is GCS 15 - organ perfusion maintained- categorized as stable VT.
Higher marks were achieved if the answer Included – ruling out all potentially reversible causes, administering anti-arrhythmic drugs in staged sequence and then considered general anesthesia (to reduce the sympathetic surge) and mechanical hemodynamic support (as EF 25%- Poor LVEF) as a rescue therapy prior to proceeding to Radiofrequency ablation (definitive therapy).

Candidates scored poorly if focus concentrated on a malfunctioning AICD as the stem specified that the shocks delivered were appropriate. Candidates did not score marks for elaborating on assessment when management (resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment) had been specifically asked.

Suggested strategies for improvement:

- Read the SAQ carefully (e.g. the AICD was functioning).
- Provide a tiered strategy for Mx of refractory VT.
- Use the glossary of terms to understand the direction of the question.
- Have practiced an approach of thinking both long term as well as short term.

Angoff score for this SAQ	4.5
Highest candidate score achieved (average)	8.25

Question 9

You are reading a published report of a systematic review into an intervention intended to improve outcomes in a critically ill population.

Outline what you would expect to be included in the report.

Syllabus topic/section:

2.5.1 Research and Evidence Based practice in Intensive Care.

Aim:

To assess the candidate familiarity with research publications.

Discussion:

Candidates scored well if they gave a structured, detailed answer touching upon:

- Methods section including research protocol, criteria for including and excluding studies in the systematic review, analytic framework and key questions, databases and other information sources used to identify relevant studies, search strategy, study selection process, data extraction process, methods for handling missing information, information to be extracted from included studies, methods to appraise the quality of individual studies, summary measures of effect size (e.g., risk ratio, difference in means), rationale for pooling (or not pooling) results of included studies, methods of synthesizing the evidence (qualitative and meta-analysis).
- Result section including Study selection process, list of excluded studies and reasons for their exclusion, appraisal of individual studies' quality, qualitative synthesis, meta-analysis of results. Defined Meta-analysis and differentiated it from SR.
- Discussion section with summary of evidence, strengths, and weaknesses of the conclusion for each key question, gaps in evidence, future research.

Candidates scored poorly due to limited answers lacking detail and demonstrated confusion by describing an RCT rather than a MA/SR. Lack of knowledge was the main reason for scoring poor marks.

Strategies to improve:

- Structure the answer.
- Must gain knowledge of how a systematic review is conducted – in a structured, reproducible, and unbiased way.

Angoff score for this SAQ	4.59
Highest candidate score achieved (average)	9

Question 10

A 78-year-old patient has been admitted to your ICU with septic shock of unknown cause. Background medical history includes type 2 diabetes and a prior stroke.

Laboratory tests show the following change in renal indices:

	Baseline	**On admission**	**Adult Normal Range**
Urea	15 mmol/L*	32 mmol/L*	3.0-8.0
Creatinine	150 μmol/L*	380 μmol/L*	45-90

12.1.1 Outline your approach to the **assessment** of the acute kidney injury in this patient. (4 marks)

12.1.2 Outline your approach to the **management** of the acute kidney injury in this patient. (6 marks)

Syllabus topic/section:

2.1.7 Renal Intensive Care – L1.

Aim:

To examine the understanding of renal failure secondary to sepsis and allow demonstration of strategies to avoid this complication.

Discussion:

Candidates who performed well divided their time and answer depth appropriate to the marks allocated. Candidates who referred to the scenario outlined, and then organised their answer accordingly, with specific rationale for assessment and management scored well. The topic is core to daily intensive care practice, and thus some detail (outlining rather than generic listing) of the important assessment and management facets for the patient was expected.

For example, the stem outlined a patient with acute AND chronic renal impairment and this aspect will guide the assessment and management. A prioritised approach to investigations, (instead of a catch all generic list) coupled with detailed goals of therapy, gained more marks.
Writing "Give fluids" or "aim euvolaemia" without mentioning how the clinical goal would be achieved gained less marks.

Consideration of poor cardiac output is an important contributor to AKI in ICU. Acknowledgement of this and addressing this in the management would have improved many candidates' answers. Many candidates spent far longer on assessment (4 marks) than the management section (6 marks) . Details on when and where dialysis was appropriate would have gained more marks than a generic list of indications.

Despite the stem mentioning septic shock of unknown cause many did not address assessment of source, source control issues and antibiotic choice with renal considerations in drug dosage.

Marking Rubric:

12.1.1 - Assessment (4 marks)			
History	Little to no specific history relevant to renal failure 0 marks	Covers basics but without perspective or detail. E.g. fails to consider aetiology of underlying renal impairment. 0.5 marks	Aetiology of chronic and acute renal impairment. ID reversible causes. Obstructive or infective symptoms, nephrotoxins esop medications. Seek info from nephrologists if possible likely to be seeing one with baseline CR). 0.5-1 marks
Examination	Generic with little to no renal focus. 0 marks	Covers basics but without perspective and detail. E.g. fails to consider aetiology of underlying renal impairment. 0.5 marks	In depth with masses renal tenderness, prostate. CVS signs detailed re shock, BP perfusion, details of volume status. 1 mark
Investigation	Generic answer with little or no renal specific investigation. <0.5 marks	Basics of urinalysis, renal and CVS interrogation but lacking in full diagnostic detail or clinical perspective. 0.5- 1.5 marks	Urinalysis (inc sediment and micro). Imaging and contrast guide. (e.g. if infarction) Prioritised list of investigations with rationale. 1.5-2 marks
12.1.2			
Management **(6 marks)**	Generic answer major errors. <2 marks	Safe approach with any systemic organisation of facts. g, pre-renal, e.g. fluid discussion with Hb targets. Renal. E.g. pharmacology Postrenal. Details of procedures. 2-3 marks	All the previous and - r/o and mx reversible causes. - ABs and drugs (evidence summary) with renal adjustments specified. - understands nuances of volume status. - Tx Sepsis. Consideration of CVS targets and why. 4-6 marks
Overall organisation to be considered in the marking	Poor structure and /or failure to address the specifics relevant to the renal impairment.	A safe and structured approach but missing some detail or clinical perspective.	Clear systematic and detailed approach to diagnosis and management with a focus on renal failure. Additional clinical perspective indicating an understanding of balancing the clinically common whilst considering less common but important issues.

Angoff score for this SAQ	5.64
Highest candidate score achieved (average)	6.75

Question 11

Outline how you would distinguish between post-operative myocardial ischaemia and pericarditis on assessment of an ICU patient with ST segment elevation on a 12 lead ECG within the first 48 hours of coronary artery bypass surgery.

Your answer should consider factors that might make this distinction difficult.

Syllabus topic/section:

2.1.18 Peri-operative Issues in Intensive Care – L1.

Aim:

To examine the candidate's knowledge regarding the assessment and management of a common complication of cardiac surgery.

Discussion:

The question was generally well answered. Candidates who specifically addressed the clinical scenario (post CABG surgery, not general pericarditis presentations) and addressed each aspect of assessment (history, examination, and investigation) performed well. A reminder for candidates to be specific, if possible, with detail (such as specific ECG changes expected). Also, a reminder for candidates to refer to the glossary of terms – outline indicates some detail and explanation required, rather than a simple list.

Angoff score for this SAQ	4.95
Highest candidate score achieved (average)	7.75

Question 12

12.1

A 75-year-old patient presented with bone pain. Their biochemical profile is shown below:

Parameter	Patient Value	Adult Normal Range
Sodium	140 mmol/L	135-145
Potassium	5.1 mmol/L*	3.5-5.0
Chloride	108 mmol/L*	95-105
Bicarbonate	21.0 mmol/L*	22.0-26.0
Glucose	6.0 mmol/L	3.5-6.0
Urea	25.0 mmol/L*	3.0-8.0
Creatinine	250 µmol/L*	45-90
Magnesium	1.10 mmol/L*	0.75-0.95
Albumin	25 g/L*	35-50
Protein	95 g/L*	60-80
Total bilirubin	26 µmol/L*	< 26
Aspartate transferase	60 U/L*	< 35
Alanine transferase	60 U/L*	< 35
Alkaline phosphatase	250 U/L*	30-110
g-Glutamyl transferase	40 U/L*	< 40
Ionised calcium	1.50 mmol/L*	1.10-1.35
Calcium corrected	2.90 mmol/L*	2.12-2.62
Phosphate	1.8 mmol/L*	0.8-1.5
Lactate Dehydrogenase	350 U/L*	50-150
Beta-2 microglobulin	6 mg/L*	< 1

12.1.1 List the most likely diagnosis. (1 mark)

12.1.2 List **two** factors that may predispose to infection in this patient. (2 marks)

Question 12 continued next page.

Question 12 continued

12.2

A 62-year-old patient has been admitted to your ICU for routine post-operative monitoring after a vascular surgical procedure.

The pre-operative full blood count (FBC) is displayed below:

Parameter	Patient Value	Adult Normal Range
Haemoglobin	125 g/L*	130-180
White Cell Count	7.4 x 10^9/L	4.5-11
Platelets	255 x 10^9/L	150-400
Mean Cell Volume	110 fL*	80-98
Mean Cell Haemoglobin	30 pg/cell	27-33
Mean Cell Haemoglobin Concentration	320 p/L	310-360

12.2.1 List **six** possible causes for the findings on the FBC. (3 marks)

12.3

A 52-year-old patient presents with bruising and a retroperitoneal haematoma five weeks after starting warfarin for a proximal deep vein thrombosis (DVT) with a target international normalised ratio (INR) of 2.5.

The following investigations were obtained:

Parameter	Patient Value	Adult Normal Range
Haemoglobin	122 g/L*	135-180
White Cell Count	10.1 x 10^9/L	4.0-11.0
Platelets	298 x 10^9/L	150-400
Prothrombin time	29.3 sec*	12.0-16.5
International normalised ratio (INR)	2.3*	0.9-1.3
Activated partial thromboplastin time (APTT)	117.0 sec*	27.0-38.5
Fibrinogen	3.9 g/L	2.0-4.0

12.3.1 List the likely underlying cause for this coagulation profile. (2 marks)

12.3.2 List **two** confirmatory tests. (2 marks)

Syllabus topic/section:

2.1.21 Applied Pharmacology in Intensive Care.

Aim:

To allow the candidate to demonstrate competency in data interpretation.

Discussion:

Candidates generally did extremely well in this repeat data question. Candidates are reminded that if the question asks you to list 6 causes there are only marks for 6 answers. If 8 are written the top 6 will be assessed and the bottom 2 causes will not be marked.

Angoff score for this SAQ	6.36
Highest candidate score achieved (average)	9.5

Question 13

With regards to infection with *Legionella pneumophila* and *Legionella longbeachae:*

a) Outline the mode of transmission of each species. (3 marks)

b) List **four** methods for diagnosis. (2 marks)

c) Outline the antimicrobial therapy. (2 marks)

d) Outline strategies for the prevention of infection. (3 marks)

Syllabus topic/section:

2.1.3 Sepsis and Infections – L1.

Aim:

To allow candidate to demonstrate familiarity with an atypical infection.

Discussion:

Candidates performed well if they were able to distinguish between the species of Legionella and were precise with modes of transmission and transmission sources for patients including water and soil. Combination therapy was rarely mentioned in discussion of antimicrobial therapy.

Contact precautions were incorrectly mentioned by many candidates, and candidates who performed best in outlining infection prevention strategies included broad/public health strategies as well as strategies for individuals. Candidates are again reminded that the term "outline" indicates the requirement for brief details in the answer, rather than a simple list (e.g. how (dose and duration) and why for antimicrobials (clinical considerations and side effects) rather than simply listing the antimicrobial).

Angoff score for this SAQ	4.36
Highest candidate score achieved (average)	5.75

Question 14

The latest hand hygiene compliance for your ICU is 69% with compliance for Moment 5 (World Health Organization classification) being the lowest.

a) Define Moment 5 and explain why it is necessary. (2 marks)

b) Outline strategies to improve hand hygiene compliance of ICU staff. (8 marks)

Syllabus topic/section:

2.3.1 Intensive Care Administration.

Aim:

Hand hygiene is internationally standardized, and part of routine standard of care.

Discussion:

A question on a core topic of daily relevance to intensive care practice. Generally, well answered. Many candidates answered by reproducing a generic "audit cycle" template, with limited marks able to be awarded. Answers containing information on specific strategies to improve hand hygiene compliance attracted higher marks. Candidates are reminded to read the question carefully, and answer the specific question being asked – a generic listing of the 5 moments of hand hygiene was not adequate to pass the first part of the question, rather an understanding of the rationale for moment 5 was expected.

Angoff score for this SAQ	5.05
Highest candidate score achieved (average)	7.9

Question 15

With reference to the performance of percutaneous tracheostomy in the ICU:

a) List the common complications encountered during the procedure. (2 marks)

b) Outline the steps that can be taken both prior and during the procedure to prevent or minimize the risk of these complications.

(8 marks)

Syllabus topic/section:

2.1.19 Intensive Care Procedures.

Aim:

To allow demonstration of knowledge of safety regarding a commonly performed ICU procedure.

Discussion:

A core topic in intensive care practice. Candidates scored high marks for the first part of the question when a comprehensive list was provided. The second part of the question (8/10 marks allocated) asked for steps to prevent or minimise the risk of the identified complications. Some candidates answered with a generic account of how to perform a tracheostomy, rather than referring to the complications previously outlined and addressing each complication in turn (a table format may have been useful to help with this).

Specific oversights: bleeding was usually mentioned as a potential complication however the use of lignocaine with adrenaline to reduce this risk was uncommonly mentioned. Hypoxia was commonly mentioned however performing the procedure on an FiO2 of 100% was uncommonly outlined as a prevention strategy. Use of bronchoscopy and ultrasound were usually outlined, however many candidates did not outline a coagulation status check or withholding of anticoagulants. Fasting or aspiration of gastric content prior to the procedure was uncommonly mentioned, as was aspiration of free air into the syringe when confirming needle placement in the trachea.

Additionally, the most complete answers demonstrated a broad view of strategies (e.g. the requirement for haemodynamic and respiratory optimisation and monitoring during the procedure). Candidates who mentioned team factors, such as role allocation, supervision, checklists gained further marks.

Many candidates addressed their response from the narrow lens of the proceduralist. The second part examination is assessing the ability of the trainee to attain the level of an independent practitioner at the level of a transitional fellow. Broadening your perspective to that of a clinician responsible for the overall conduct and safety of the procedure will both achieve this standard and gain superior marks.

Angoff score for this SAQ	5.55
Highest candidate score achieved (average)	7.5

Question 16

Discuss the options for the definitive management of acute severe lower gastrointestinal bleeding, including the potential advantages and disadvantages of each option.

Syllabus topic/section:

2.1.6 Gastrointestinal Intensive Care – L1.

Aim:

To allow the candidate to demonstrate knowledge of management of a common life-threatening condition to the standard of a transitional fellow.

Discussion:

Generally, candidates performed well in this question. Candidates who performed less well did so because they did not do what the question specified and therefore did not gain the marks available.

For example, many candidates wrote detailed notes about aetiology and general supportive care when the question specifically asked for "options for definitive management" only. Several candidates might have gained a few extra marks with the additional time this could have created had they focused on the question.

It is frustrating for candidates (and SOTs) to reflect on why candidates did less well than they imagined as they "wrote a lot". If, however, the information they have provided is not what was requested, it will therefore attract no marks. The way to improve is to practice answering SAQs and show them to as many colleagues as possible so that this skill is reproducible under examination conditions.

Candidates are encouraged to reflect on ALL the key parts of the knowledge that might be required to answer a question. One minute spent entitling a section and adding a few simple points is much better than spending all 10-minutes demonstrating only some of the required knowledge areas.

On the next page is the marking rubric. Please note the rubric is in tabulated form, however this was not required in the candidate answer, simple headings and bullet point structure was sufficient. Consider how the marking grid prioritises higher level facts, understanding of the subject and short- and long-range insight in the ramifications of the therapeutic options available. Ability to demonstrate this will achieve the written standard required of a transition level fellow that is ready for independent practice.

Marking Rubric:

Angio	Minimal detail, mostly missing/blank or only simple points, e.g. mentions radiation exposure only. 0-1.5 marks	Some detail, e.g. recognizes the safety aspect of transport to/from angio as a disadvantage. 1.5-2 marks	Good amount of information and insight, e.g. recognizes the short timeframe between CTA and DSA, need to quickly organise an IR suite or hybrid theatre, anaesthetist, IR radiologist, 2-3 marks	Shows a thorough understanding of the advantages and disadvantages including staffing, Safety profile and limitations of intervention. Knows rate of blood loss (<0.5ml/min) as a detailed and important limitation of the procedure 3-4 marks	/4
Scope	Minimal detail, i.e. only mentions the obvious (direct visualization of bleeding structures, as an advantage, etc.) <1.5 marks	Some details, essential points, e.g. recognizes the loss of value from unprepped colon as a major disadvantage. notes the anatomical extent limitations of endoscopy, mentions the risk of perforation. 1.5 marks-2 marks	All the important disadvantages; brings up good advantages, e.g. ability to get biopsy samples or multiple options for hemostasis. 2-2.5 marks	Complete or near complete list of advantages and disadvantages, including higher level thinking facts such as no outcome difference with early (<24) endoscopy, or that UGI bleeding can be identified as the cause of apparent PR frank blood loss. 2.5-3 marks	/3
Surgery	Minimal detail: need to mention that Sx is the last option to score any marks. <1.5 marks	Recognise significant morbidity and mortality, understand that the site of bleeding should be known for surgery to be effective/safe. 1.5 –2 marks	All the important disadvantages; also recognise the value of getting larger anatomical samples (e.g. for staging of malignancy). 2.0-2.5 marks	All the important points, plus longer-range insight, e.g. longer-term risks from surgery. 2.5-3.0 marks	/3

Angoff score for this SAQ	5.36
Highest candidate score achieved (average)	7.75

Question 17

With respect to *Pneumocystis jirovecii* pneumonia (PJP):

a) List **two** microbiological features of the causative organism. (1 mark)

b) List **four** risk factors for the development of PJP. (2 marks)

c) List **four** drugs with activity against the organism. (2 marks)

d) List the investigations used in making the diagnosis of PJP. (5 marks)

Syllabus topic/section:

2.1.3 Sepsis and Infections – L1.

Aim:

To allow the candidate to demonstrate knowledge of a common infection in the immunosuppressed.

Discussion:

Certain sections of the question have been answered well (risk factors & investigations). This made the question easy to gain marks >5/10. However, the microbiological features & treatment drugs answers were poorly answered. In particular there were emphasis on microbiological tests that were generic. "M/C/S" for example, is not a specific method used to identify/diagnose PJ pneumonia. Candidates who are more specific about methods used will gain higher marks as they had demonstrated a knowledge of appropriate depth. For example, Tinctorial (dye based) staining e.g. Wright –Giemsa, gram-Weigert), fluorescent antibody staining, or mentioning PCR based assays.

Overall, most of the candidates have reasonable answers to succeed at the question. We suggest two 2 things for individual improvement - making note of key words & structuring the answer under headings/categories. During preparation for this examination consider these two strategies: using palm cards on topics & choosing the key words while preparing the topics + understanding their significance.

Angoff score for this SAQ	5.05
Highest candidate score achieved (average)	8

Question 18

Critically evaluate the role of corticosteroids in patients with severe community-acquired pneumonia **NOT** caused by SARS-CoV-2 infection under the following headings:

a) Rationale. (2 marks)

b) Potential risks. (3 marks)

c) Evidence supporting or refuting corticosteroid use in community-acquired pneumonia. (5 marks)

Syllabus topic/section:

2.1.5 Respiratory Intensive Care – L1.

Aim:

To explore the evidence and use of corticosteroids in respiratory infections.

Discussion:

Community Acquired Pneumonia (CAP) is one of the leading causes of death in Australia and most developed countries.

Candidates who scored well answered **specifically** about the rationale and evidence for steroids **in non-COVID CAP**. Depth into the effects of steroid anti-inflammatory, immune modulating properties or link to how this could improve outcomes in respiratory function or other outcomes were rewarded.

Candidates who explained their understanding of results of trials or meta-analysis (Blum et al, Torres et al, Meduri et al, CAPE-COD, Cochrane review) and explained reason for use in severe CAP vs non-severe CAP scored more marks. Candidates are advised to take a moment to read the question carefully and respond accurately (e.g. the question was very specific, but answers mostly related to the general use of steroids in critical illness). Specific mention of trial names or mentioning *all* the trials is **not required to pass,** however the candidate *was* rewarded if this information was given. Candidates about to sit their fellowship exam should have a fair understanding of the literature to justify their clinical practice.

Marking Rubric:

Rationale **2 marks**	Does not iterate rationale. OR Very limited detail, key elements missing. <1 mark	Limited detail. Main elements present but unstructured. 1 mark	Broad detail for rationale included. May still have some unstructured elements. 1.5 marks	Detailed and complete explanation of rationale. Structured. 1.5 -2 marks
Potential risks **3 marks**	Nil or fewer than 2 potential risks. <1 mark	Reasonable list outlines major risks e.g. hyperglycaemia, GIT bleeding 1 mark	Comprehensive list. 1-1.5 marks	Complete list. Ranging across all systems 1.5-3 marks
Evidence **5 marks**	Poor details mentioned, with some interpretation and major positive and negative findings. May comment on limitations. OR trials mentioned but very limited or inaccurate interpretation and detail. <1.5 marks	Accurate interpretation and accurate major positive and negative findings. Some findings or details missing, or minor inaccuracies. Does not have to mention trials explicitly to pass. May comment on limitations. 1.5-2.5 marks	Accurate interpretation and major positive and negative findings accurately described. Includes some comment on limitations. 2.5-3.5 marks	Trials mentioned explicitly. E.g. Cape COD, Meduri Accurate interpretation and significant positive and negative findings. Limitations clearly and accurately described. Indications clearly and accurately described with clinical application. 3.5-5 marks

Angoff score for this SAQ	4.91
Highest candidate score achieved (average)	6.75

Question 19

19.1

A 44-year-old patient was found collapsed. The following results were obtained from arterial blood gas analysis and venous biochemistry.

Parameter	Patient value	Adult normal range
FiO_2	0.28	
pH	7.05 *	7.35-7.45
PCO_2	15 mmHg (1.99 kPa)*	35.0-40.0 (4.6-6.0)
SaO_2	100%	
Bicarbonate	5 mmol/L*	22.0-26.0
Base excess	-24 mmol/L*	-2.0-+2.0
Lactate	3.0 mmol/L*	0.5-1.6

Parameter	Patient value	Adult normal range
Sodium	135 mmol/L	135-145
Potassium	5 mmol/L	3.5-5.0
Chloride	100 mmol/L	95-105
Ionised Calcium	0.9 mmol/L*	1.10-1.35
Calcium corrected	2.1 mmol/L*	2.12-2.62
Glucose	18 mmol/L*	3.5-6.0
Ketones	4.0 mmol/L*	< 1
Urea	7.8 mmol/L	3.0-8.0
Creatinine	118 µmol/L*	45-90
Measured osmolality	330 mosmol/Kg*	285-295
Albumin	35 g/L	35-50
Bilirubin	18 µmol/L	< 26
Aspartate transaminase (AST)	230 U/L*	<35
Alanine transaminase (ALT)	139 U/L*	<35
Alkaline phosphatase (ALP)	53 U/L	30-110

19.1.1 Explain the laboratory results. Show your calculations where appropriate and list **two** differential diagnoses consistent with these abnormalities.

(3 marks)

19.1.2 List **two** effective therapies. (2 marks)

Question 19 continued next page.

Question 19 continued

19.2

A previously fit and well 41-year-old patient underwent an anterior resection under general anesthesia with regional blockade. In recovery additional analgesia was required for escalating pain and treatment for nausea, following which the patient had an apparent seizure.

The following arterial blood gas sample was taken during resuscitation:

Parameter	Patient Value	Normal Adult Range
FiO_2	0.6	
pH	6.91*	7.35-7.45
PCO_2	64 mmHg (8.5 kPa)*	35-45 (4.6-6.0)
SaO_2	96%	
Bicarbonate	12 mmol/L*	22-26
Base Excess	-18 mmol/L*	-2-+2
Sodium	145 mmol/L	135-145
Potassium	4.1 mmol/L	3.5-5.2
Chloride	110 mmol/L	95-110
Lactate	16 mmol/L*	< 2
Haemoglobin	166 g/L*	115-160
Glucose	9.0 mmol/L*	3.6-7.7

19.2.1 Explain the acid-base abnormality. (2 marks)

19.2.2 List **six** possible causes for this clinical and biochemical scenario. (3 marks)

Syllabus topic/section:

2.1.14 Environmental Injuries and Toxicology in ICU – L1.
2.1.18 Peri-operative Issues in Intensive Care – L1.

Aim:

To explore the level of knowledge of common investigations and synthesis of information.

Discussion:

Some candidates lost time by adding in detail not asked for e.g. A-a gradient. The albumin correction in 2.1 was not done by any candidate. Some candidates missed part of the question which was essentially the only way a candidate achieved less than 5. Overall, it is commendable that the standard of ABG interpretation is high.

Angoff score for this SAQ	6.32
Highest candidate score achieved (average)	9.25

Question 20

A 37-year-old diabetic female presents with shock and multiorgan failure 7 days after a normal spontaneous vaginal delivery of a healthy baby. She reports a history of worsening abdominal pain, fevers, and a purulent vaginal discharge.

a) List **four** differential diagnoses for her presentation. (2 marks)

b) List the most likely causative organisms and justify your initial empiric antibiotic regime. (4 marks)

c) Assuming resuscitation measures are covered, outline other sepsis-specific management considerations. (4 marks)

Syllabus topic/section:

2.1.12 Obstetric Intensive care – L2.

Aim:

To allow the candidate to demonstrate assessment and management of obstetric complications to the level of a transitional fellow.

Discussion:

High scoring candidates had a clear structure, listed appropriate bacteria, considered appropriate antibiotics for the scenario including rationale whilst providing specific sepsis management. These candidates also demonstrated familiarity with important terminology which gives clarity to the answer, examiner and allows candidates to display higher level thinking and structure e.g., terminology such as Broad-spectrum antibiotics, Source control.

Many candidates did not provide good rationale for antibiotic choice when the question asked for a justification of antibiotic regime. Despite asking for specific management considerations related to sepsis - many candidates still answered resuscitation details. As the SAQ stated that resuscitation measures were covered no marks were given for this information. This is where efficient time management in one question may aid in other SAQs downstream. Some candidates wrote more for section c (4 marks) than for section A and B combined (6 marks. Practicing time management strategies would help in the overall success of the candidates' final marks (i.e. please see comments in SAQ 28).

Below is a breakdown of marks for part C (4 marks):

- Sepsis specific management (**1 mark)**

Allow up to one mark for a well-constructed answer encompassing appropriate disease specific sepsis management not included in answers below.

- Source control: (**2 marks**)

Including surgical management (if warranted) including the following: *(NB not all options required for full marks)*

- o Removal of vaginal foreign body, D+C, laparotomy, and washout,
- o EUA re D&C
- o Removal of retained products.
- o Hysterectomy.

- Other considerations: (**1 mark**)

- o prophylaxis for close contacts including neonate, reportable disease.
- o IVIG in this patient.

- Evidence – In Streptococcal TSS meta-analysis, IVIG is associated with 30-day reduction in mortality.
- Proposed mechanism – boost antibody levels via passive immunity, opsonization of GAS, neutralization of toxins, inhibition of T-cell proliferation and inflammatory cytokines.

Angoff score for this SAQ	5.27
Highest candidate score achieved (average)	8.5

Question 21

A 30-year-old patient was admitted to the ICU with a traumatic brain injury and cervical spine injury. The patient is intubated, ventilated, has an intracranial pressure (ICP) monitor in situ and remains on spinal precautions. The ICP is rising despite medical management and in response to this, a CT brain is considered.

a) Outline the preparation for the transfer to and from the CT scanner for this patient.

(7 marks)

b) Outline the challenges in transferring this patient and indicate how you will manage them.

(3 marks)

Syllabus topic/section:

2.1. Medical Expert.
2.1.1 Structure and process – L1.

Aim:

The candidate is expected to have a good understanding of intrahospital transfer of patients.

The candidate is expected to be able to anticipate and manage issues regarding the transfer of patient with traumatic brain injury and cervical spine injuries.

Discussion:

Candidates generally performed well in this question and good answers were characterised by clear headings with subsequent relevant clinical detail and prioritisation. Candidates who performed below the standard expected, excluded key safety aspects as outlined in the College guideline document "IC-10 Guidelines for Transport of Critically Ill Patients", provided largely unstructured responses, or neglected to identify the specific challenges and priorities posed by transporting a patient with a raised ICP and C-spine injury.

As the question required candidates to outline, they were required to include what they would do and why, rather than just a transport checklist. Candidates should be encouraged to think about the major points, use sub-heading for these and then list or describe relevant detail under each heading.

Several candidates did not address the second part of the question or only put 1 or 2 examples of challenges with little or no detail regarding management. Many easy marks were forfeited in this section. Candidates should look at the allocated marks (in this case 3 marks) and consider that it is likely that a minimum of three or more significant challenges (and their management) would be required for full marks. Examples of challenges would include emergency management for ICP control during transport with limited resources (e.g. in the lift) , the difficult in maintaining C-spine protection, dislodgement of various life sustaining equipment, logistical, staffing, and ventilation issues among others.

Angoff score for this SAQ	5.95
Highest candidate score achieved (average)	8.65

Question 22

With regards to meningococcal sepsis:

a) List **four** risk factors for meningococcal sepsis. (2 marks)

b) Outline the clinical features that increase the suspicion of meningococcal sepsis as the diagnosis. (3 marks)

c) Outline the specific management of meningococcal sepsis. (3 marks)

d) List **four** complications of this disease. (2 marks)

Syllabus topic/section:

2.1.3 Sepsis and infections – L1.
2.1.8 Neurological Intensive Care – L1.

Aim:

To allow the candidate to demonstrate competency in a life-threatening infective disease.

Discussion:

Many candidates performed below the standard required for this core level of clinical practice. Risk factors were not well known. Examples would have included contact with incident case, immunodeficiency, and age-related factors.

There was a lack of detail in part b, candidate's answers were not specific to meningococcal sepsis and lacked a structured and organised description of the clinical features. Most candidates did not mention or mentioned an incorrect dose of antibiotics and included investigations as well as management which gained no marks and investigations is part of assessment These candidates would have benefited from using the glossary of terms as a guide to what is required.

The complications mentioned were non-specific and marks were awarded for complications "specific to this disease" (meningococcal sepsis) rather than generic complications of sepsis. E.g. sensory neural hearing loss, cognitive disabilities.

Angoff score for this SAQ	5.32
Highest candidate score achieved (average)	6.25

Question 23

23.1

A 26-year-old patient was found collapsed in the street. On arrival in the Emergency Department, they were unresponsive and hypotensive with a temperature of 42ºC. The following is the arterial blood gas result following intubation:

Parameter	**Patient Value**	**Normal Adult Range**
FiO_2	1.0	
pH	7.21*	7.35-7.45
PCO_2	54 mmHg (7.1 kPa)*	35-45 (4.6-6.0)
Bicarbonate	21 mmol/L	21-28 (10-13)
Base Excess	-6 mmol/L*	-2-+2
Sodium	143 mmol/L	135-145
Potassium	4.9 mmol/L*	3.5-4.5
Chloride	112 mmol/L*	95-110
Calcium ionised	1.09 mmol/L*	1.12-1.32
Glucose	9.6 mmol/L*	3.0-5.4
Lactate	2.3 mmol/L*	< 1.3
Creatinine	219 μmol/L*	60-110
Haemoglobin	139 g/L	135-180

23.1.1 Explain the acid-base abnormality. (2 marks)

23.1.2 List the likely underlying cause for this clinical picture. (1.5 marks)

Question 23 continued next page.

Question 23 continued

23.2

A 52-year-old patient with a history of chronic alcohol abuse was brought to the Emergency Department with a reported change in mental state for 3 – 4 days. They were drowsy and lethargic but communicated appropriately when roused. They did not appear dehydrated. The following are the blood results on presentation:

Parameter	Patient Value	Normal Adult Range
Sodium	116 mmol/L*	135-145
Potassium	2.9 mmol/L*	3.5-5.0
Chloride	67 mmol/L*	95-110
Bicarbonate	14 mmol/L*	22-32
Urea	2.9 mmol/L*	3.0-8.0
Creatinine	46 μmol/L	45-90
Glucose	6.8 mmol/L	3.5-6
Phosphate	0.60 mmol/L*	0.65-1.45
Magnesium	0.51 mmol/L*	0.70-1.05
Calcium adjusted	2.31 mmol/L	2.10-2.60
Albumin	34 g/L*	36-52
Bilirubin total	13 mmol/L	< 18
Alanine aminotransferase	67 U/L*	< 35
Aspartate transaminase	80 U/L*	< 40
Alkaline phosphatase	148 U/L*	30-110
g-Glutamyl transferase	480 U/L*	< 40
Lipase	492 U/L*	< 95
Amylase	189 U/L*	< 130
Free T4	14.2 pmol/L	12.0-31.0
Thyroid stimulating hormone	0.65 mU/L	0.50-5.00
Cortisol	1440 nmol/L*	150-700
b-Hydroxybutyrate	4.4 mmol/L*	< 0.4
Osmolality	254 mOsm/kg*	275-295
Urine Chemistry		
Sodium	< 20 mmol/L	
Potassium	37 mmol/L	
Osmolality	198 mOsm/kg	

23.2.1 List the likely diagnosis with the rationale for your decision. (2.5 marks)

23.2.2 Briefly outline your management of the hyponatraemia in this patient. (2 marks)

Question 23 continued next page.

Question 23 continued

23.3

The following blood tests are from an otherwise well 53-year-old patient, admitted to a general medical ward five days previously for intravenous antibiotic therapy for lower limb cellulitis. Admission blood tests were all normal. Over the last 24 hours the patient has become progressively oliguric but remains otherwise stable with normal vital signs.

The results of the full blood count and urea and electrolytes are as follows:

Parameter	Patient Value	Normal Adult Range
Haemoglobin	132 g/L	130-175
White Cell Count	9.8 x 10^9/L	4.0-11.0
Platelets	321 x 10^9/L	150-450
Neutrophils	10.4 x 10^9/L*	1.8-7.5
Lymphocytes	2.06 x 10^9/L	1.50-4.00
Monocytes	0.3 x 10^9/L	0.2-0.8
Eosinophils	4.3 x 10^9/L*	0.0-0.4
Haematocrit	0.35*	0.40-0.52
Mean Cell Volume	92 fL	82-98
Mean Cell Haemoglobin	29.9 pg/cell	27.0-34.0
Mean Cell Haemoglobin Concentration	326 g/L	310-360

Parameter	Patient Value	Normal Adult Range
Sodium	140 mmol/L	135-145
Potassium	3.8 mmol/L	3.2-4.5
Chloride	106 mmol/L	100-110
Bicarbonate	22 mmol/L	22-27
Urea	28.0 mmol/L*	3.0-8.0
Creatinine	310 µmol/L*	45-90
Total Calcium	2.17 mmol/L	2.15-2.60
Phosphate	1.6 mmol/L*	0.7-1.4
Albumin	31 g/L*	33-47
Total Bilirubin	20 mmol/L	4-20
Conjugated Bilirubin	4 mmol/L	1-4
g-Glutamyl transferase	22 U/L	0-50
Alkaline phosphatase	60 U/L	40-110
Lactate dehydrogenase	213 U/L	110-250
Aspartate transaminase	34 U/L	< 40
Alanine aminotransferase	25 U/L	< 40

23.3.1 List the most likely cause of the oliguria. (2 marks)

Syllabus topic/section:

2.1.14 Environmental Injuries and Toxicology in ICU – L1.
2.1.21 Applied Pharmacology in Intensive Care.

Aim:

To explore the understanding of data interpretation, toxidromes and management of dysnatraemias.

Discussion:

Overall, this question scored highly but the answers were not as well structured as the other data question 19. Some candidates missed parts of the question, which was really the only way to 'fail' this repeat data interpretation. The management of hyponatraemia was frequently muddled by candidates with many stressing that the correction must be slow but then giving both a fluid restriction and iv hypertonic saline or normal saline. These candidates appeared to have remembered parts of the management but not fully applied it correctly.

Angoff score for this SAQ	6.05
Highest candidate score achieved (average)	9

Question 24

A patient was admitted to ICU with multiple rib fractures due to chest trauma.

a) Outline your approach to analgesia for this patient. (6 marks)

b) Discuss the role of surgical rib fixation. Your headings should include:

i. The rationale for fixation. (1 mark)

ii. Indications for surgical referral. (2 marks)

iii. Potential disadvantages. (1 mark)

Syllabus topic/section:

2.1.13 Trauma Intensive Care – L1.

Aim:

To demonstrate a stepwise approach to multimodal analgesia, tailored to the individual patient and their pattern of injury.

To assess candidates' understanding of the controversies, indications and potential disadvantages of surgical rib fixation, an area of increasing interest and emerging evidence in treatment of chest trauma patients in ICU.

Discussion:

Very few candidates included a patient assessment as part of their answer to part a) "outline your approach" which made it difficult for them to pass this question as it was worth 6 of the marks. However nearly all who did attempt some assessment received 5 marks or greater. A section that is worth 6/10 marks requires a detailed response, and this would have aided more candidates to structure their answer for success. Analgesia in traumatic chest injuries is complex and individually tailored to both the pathology and the patient co-morbidities. This is a core facet of trauma ICU and given its importance a high level of competency is required.

Many candidates did not include non-pharmacological strategies as part of their approach to analgesia. Candidates need to approach the question as they would a real patient to make the answer more patient centred and less generic. More detail for all sections was required in answering this question.

Part (B) – Indications for surgical referral include but are not limited to respiratory failure, intractable pain, failure to wean 2' to chest wall instability and symptomatic non-union. A knowledge of surgical management indications and referral patterns to our surgical colleagues as we advocate for our patients is expected for this common problem post thoracic trauma in the ICU.

Angoff score for this SAQ	5.18
Highest candidate score achieved (average)	7.5

Question 25

Discuss Post Intensive Care Syndrome (PICS). Your answer should include the following headings:

a) Definition. (1 mark)

b) Clinical manifestations. (3 marks)

c) Risk factors. (3 marks)

d) Prevention. (3 marks)

Syllabus topic/section:

2.1.16 Populations requiring special considerations in Intensive Care.

Aim:

To explore the common sequalae of the long term critically ill patient.

Discussion:

The question was well answered, and most candidates had a good understanding of Post Intensive Care Syndrome. Some candidates could improve the structure of their answer. It's important to remember to be specific when describing risk factors. E.g. "length of ICU stay" does not describe the risk, it needs to be quantified for example "increased length of ICU stay".

Angoff score for this SAQ	5.14
Highest candidate score achieved (average)	9.25

Question 26

a) List **four** cardiorespiratory physiological effects post pneumonectomy. (2 marks)

b) List **six** potential early (<72hrs) post-operative complications specific to a pneumonectomy. (6 marks)

c) Outline your post-operative fluid management strategy after a pneumonectomy and give your rationale. (2 marks)

Syllabus topic/section:

2.1.18 Peri-operative Issues in Intensive Care – L1.

Aim:

To assess the candidate's understanding of the main issues that affect ICU care post pneumonectomy. In detail, an understanding of pathophysiological considerations affecting immediate post op ICU care, the potential early complications to look for and detailed understanding of intricacies of fluid therapy was tested.

Discussion:

Candidates are rewarded for following the glossary, being precise with listing the *specific* and *early* complications, correct handling of fluid therapy, and demonstrating an understanding of *specific* pathophysiological perturbations, as opposed to generic statements.

Candidates who received less marks demonstrated a poor understanding of the cardiovascular physiological changes following pneumonectomy. Those that understood the changes were able to score well for this question. Many simply stated the obvious respiratory changes of reduced FVC and tidal volume. This would be implied in the surgery itself and didn't demonstrate that candidates understand the changes that occur when a lung is removed. Examples of such changes include chylothorax, phrenic nerve/ recurrent laryngeal nerve damage, Atrial arrythmias (80% within 72 hours) and RV failure among others.

Many candidates listed general complications common to many different surgeries like infection or atelectasis (these did not score marks) rather than the specific complications of a pneumonectomy. Majority of candidates were able to provide and justify a sensible fluid management strategy.

Angoff score for this SAQ	5.05
Highest candidate score achieved (average)	7.88

Question 27

A 54-year-old patient has a diagnosis of Ludwig's angina confirmed on CT scan. They are admitted to your ICU for observation.

a) Outline your approach to clinical assessment in order to help you determine the need for intubation. (6 marks)

b) The patient deteriorates rapidly overnight and needs urgent intubation in ICU. Discuss the principles of managing the airway in this acute setting.

(4 marks)

Syllabus topic/section:

2.1.19 Intensive Care Procedures.

Aim:

To allow the candidate to demonstrate the standard required for the assessment and management of a life-threatening airway condition.

Discussion:

Anticipating the difficult airway with challenging and dynamic clinical status is a core skill of Intensive Care practice.

This was a new approach of a core procedural skill, and some candidates did very well. These candidates had structured, detailed and relevant responses outlining features of difficult airway and Ludwig's angina. Detailing clinical assessment AND outlining how these features influence the determination of the need to intubate were a hallmark of these responses.

Failure to assess globally meant several candidates failed to achieve high marks despite having good airway plans. Candidates are reminded to read the glossary of terms as OUTLINE the approach to assessment to determines the need for intubation is not the same as LIST the features of the difficult airway.

Use of the glossary of terms to guide the answer would aid the candidate to improve their performance.

Part (B) – required a discussion of the principles of urgently managing an airway that is anticipated to be difficult. Discussions that did not address a plan for oxygenation (and the challenges that this may present in this clinical setting) and plans for progression to FONA in the event of failure/CICO were considered dangerous.

Marking Rubric:

A) **Assessment of need for intubation** **6 marks**	Minimal history, little or no information regarding intubation Minimal clinical examination FONA not mentioned or in poor detail. No investigations or irrelevant ones Lack of structure to assessment <1.5 marks	Limited History. Some omissions Examination includes airway and assessment for FONA to a safe standard. Some attempt to determine intubation need and judgement rationale. Limited structure 2-4 marks	History covers most information with respect to intubation decision. Clinical examination covering most points and include assessment for FONA. Mentions some investigations with rationale. Some structure to assessment 4.5-5 marks	Comprehensive structured history of patient and surroundings Detailed clinical examination with rationale and justification for intubation timing etc, Mentions investigations with detailed rationale. 6 marks
B) **Principles of emergency intubation** **4 marks**	No plan, or unsafe emergency plan. No or minimal details around seniority of personnel or difficult intubation equipment. No mention of FONA technique if failed intubation. 0-1 marks	Limited details of an emergency plan. Minimal details around seniority of personnel or difficult intubation equipment Mentions FONA technique if failed intubation but without relevant details. 1.5- 2.5 marks	Comprehensive emergency plan. Includes majority of the details around seniority of personnel and difficult intubation equipment required. Appropriate FONA technique if failed intubation. 3-3.5 marks	Detailed and organised emergency plan with rationale +/- discussion. Comprehensive details around seniority of personnel and difficult intubation equipment required. Appropriate FONA technique if failed intubation. 4 marks

Angoff score for this SAQ	5.09
Highest candidate score achieved (average)	8.5

Question 28

You are called to the Emergency Department to assist with the management of an 8-year-old child (25kg) with severe burns.

Initial vital signs are: blood pressure 70/30 mm/Hg; respiratory rate 35 breaths per min; heart rate 136 beats per minute, sinus rhythm; peripheral oxygen saturations are 92% on 6 L/min oxygen via a Hudson mask.

On clinical examination the child is distressed, coughing and has obvious singeing to the eyebrows. Burn assessment reveals erythema and blistering across the anterior chest, abdomen and both upper limbs. The estimated burns surface area (BSA) is 40%.

Outline your approach to assessment and management of this child.

Syllabus topic/section:

2.1.17 Paediatrics – L2.
2.1.14 Environmental Injuries and Toxicology in ICU – L1.

Aim:

The allow the candidate to demonstrate management of a paediatric trauma and detail the alterations in practice required in the critically unwell child for the first 24 hours.

Discussion:

The question explores the topic of thermal injuries and shock in an 8-year-old. Most of the information required was centred around universal principles of assessment and management of thermal injuries and shock. Candidates who provided details on the management and assessment of these core conditions AND adapted them to the paediatric patient received high marks. Most candidates used an ABCDE approach for assessment and management which is perfectly acceptable.

This is a child with shock who has suffered burns, and the good candidates highlighted the potential life-threatening injuries and treated them. They also asked sensible questions about the MIST and used this to determine immediate intubation requirement versus be prepared to intubate early.

Candidates did less well if they did not recognise and manage shock as a priority. Some candidates appeared to have a superficially short answer suggesting that they might have had insufficient time allocation to the question. Please see the previous SAQs particularly SAQ 20 discussion for tips on time management strategies.

Angoff score for this SAQ	4.95
Highest candidate score achieved (average)	8.25

Question 29

With respect to propofol infusion syndrome in the ICU:

a) Outline the pathophysiology. (2 marks)

b) List **six** risk factors for this syndrome. (3 marks)

c) Outline the clinical features, including relevant investigations. (5 marks)

Syllabus topic/section:

2.1.21 Applied Pharmacology in Intensive Care.

Aim:

To explore the complications of a ubiquitous sedative agent in the ICU routine practice.

Discussion:

Despite some individual high marks achieved, many candidates demonstrated limited knowledge of this important drug and its potential adverse effects. A list of 6 risk factors would have included but not limited to, dosage, catecholamines, disease severity, and many others.

The syllabus has outlined that questions on the mechanism of action, pharmacokinetics, and pharmacodynamics will no longer be examined in the second part examination.

Pathophysiology **is** examinable in the second part examination. This knowledge is considered essential for the safe practice and management of common *or* severe adverse effects such as propofol infusion syndrome.

In part C, some candidates *listed* the investigations required but did not *outline* the investigations with the associated abnormalities. More time should be spent on acquiring in-depth, precise, and comprehensive knowledge about PRIS.

Angoff score for this SAQ	4.91
Highest candidate score achieved (average)	7.75

Question 30

You have been asked to review a 53-year-old patient with known alcoholic liver disease, who has had a progressive fall in conscious level over the last 24 hours. The medical team are concerned the patient is developing hepatic encephalopathy (HE).

a) List **four** alternative diagnoses to HE that you would consider in this circumstance. (1 marks)

b) List **six** clinical signs that would be suggestive of HE. (3 marks)

c) Outline the specific management of severe HE in this setting. (6 marks)

Syllabus topic/section:

2.1.6 Gastrointestinal Intensive Care – L1.

Aim:

To explore a common clinical diagnostic challenge in a common hepatology pathology.

Discussion:

This question was repeated from the 2017.2 paper and the percentage scoring >5/10 was 26.5 %. The current pass rate has remained similar to the last published appearance of this SAQ. The answer has not changed since SAQ answer publication in 2017.

Most of the candidates who were unsuccessful did not demonstrate the difference between fulminant acute hepatic failure and decompensated chronic liver disease. Mentioning that HE is a diagnosis of exclusion with a brief succinct summary outlining the specific management of this pathology were a feature of the better candidates answer.

Angoff score for this SAQ	5.45
Highest candidate score achieved (average)	7.75

The report continues on the next page.

SECOND PART ORAL EXAMINATION

CLINICAL "HOT CASES" SECTION

EXAMINERS' COMMENTS

The hot cases run for twenty minutes with an additional two minutes at the start of each case for the candidate to be given both a verbal and a written introduction to the case in question. This is to give candidates more opportunity to take in the relevant information and to plan a focussed approach to examination of the patient.

The following comments are a guide to the expected standard for performance in the hot cases:

- Candidates should demonstrate professional behaviour, treating the patient with consideration and respect.
- Candidates should address and answer the question asked of them in the introduction to the hot case.
- Candidates should interpret and synthesise information as opposed to just describing the clinical findings.
- Candidates need to seek information relevant to the clinical case in question.
- Candidates should be able to provide a sensible differential diagnosis and appropriate management plan. A definitive diagnosis is not always expected and, in some cases, may yet to be determined.
- Candidates should not rely on a template answer or key phrases but answer questions in the context of the clinical case in question.
- Candidates must be able to describe, with justification, their own practice for specific management issues.

Candidates who performed well in the hot cases, as in previous exams, were able to demonstrate the following:

- A professional approach showing respect and consideration for the patient.
- Competent, efficient, and structured examination technique and able to appropriately adapt the examination to suit the clinical case in question.
- Seeking of information relevant to the case.
- Appropriate interpretation and synthesis of their findings.
- Presentation of their conclusions in a concise and systematic fashion, addressing the issue in question.
- Listing of a differential diagnosis that is relevant to the clinical case in question.
- Appropriate interpretation of relevant investigations.
- Discussion of management issues in a mature fashion, displaying confident and competent decision-making.
- An appreciation of the complexities and key issues of the case.
- Overall performance at the expected level (transitional fellow).

Candidates who did not perform at the acceptable standard did so for reasons including the following:

- Missing or misinterpreting key clinical signs on examination.
- Failure to perform a focussed examination relevant to the case in question.
- Incomplete or poor technique for examination of a system.
- Poor synthesis of findings with limited differential diagnosis, sometimes compounded by missed key clinical signs on examination.
- Poor interpretation of imaging and data.
- Failure to demonstrate understanding of the key issues relevant to the case in question and a lack of insight into the problems.
- Inability to construct an appropriate management plan for the case in question.

- Hesitancy and/or uncertainty in stating a management plan.
- The need for significant prompting during the discussion with knowledge gaps.
- Limited time for discussion as a consequence of taking too long to present the clinical findings or to interpret basic data.
- Inability to convey the impression that they could safely take charge of the unit.

It is apparent that some candidates are very nervous, and this may adversely affect their exam performance. Candidates badly affected by nerves may benefit from sessions with a performance psychologist, drama coach, public speaking coach or similar.

Candidates are advised that they should not sit the Second Part Examination until they can confidently examine patients, present the relevant clinical findings, synthesise all the information and discuss management issues at the appropriate level**, which is a trainee who is ready to enter the transition year of the CICM training program, by demonstrating they have the ability for safe, effective, independent practice as an Intensivist.** Candidates who have not yet attained this level of experience are strongly encouraged to defer their attempt at the exam. Candidates should practise hot cases from the commencement of their exam preparation. To this end, candidates are encouraged to do the following in their daily clinical practice as preparation for the hot cases:

- Seek the opportunity to take charge of the unit and be responsible for management decisions.
- Practise examination of individual systems.
- Treat every case to be assessed at work as a hot case, i.e., pose a relevant question (*e.g., 'Why is this patient not progressing?' 'What is the cause of the new fever?' 'Is this patient ready for extubation?'*), perform a focussed exam and then present your findings to a colleague.

SUMMARY OF CLINICAL "HOT CASES"

The clinical 'hot cases' require candidates to assess patients currently in the ICU, regarding answering specific questions around clinical assessment, including diagnosis, relevant investigations, and aspects of management. Five examples of clinical 'hot case' questions from this examination sitting are given below.

- *A 41-year-old man is Day 6 in the ICU following haematemesis 6 days ago requiring urgent gastroscopy on presentation proceeding to TIPS 24 hours ago. He has a background history of alcohol use disorder, liver cirrhosis and previous upper gastrointestinal bleeding. He is currently intubated and ventilated. Please examine him and provide a management plan for the next 24 hours.*
- *A 51-year-old man is Day 11 following an OOHCA with a total of 25 minutes of downtime. He commenced on VA ECMO for shock and decannulated 7 days ago. He had no significant prior background medical history. He has been on high flow/T-piece with a tracheostomy for 48 hours. Please examine him with a view to providing barriers to ward discharge.*
- *A 78-year-old man is Day 2 ICU presenting with shock with profound hypotension. He has a background medical history of inflammatory arthritis on steroids and methotrexate, atrial fibrillation, transient ischaemic attacks, and prior abdominal surgery. He is currently intubated and ventilated on renal replacement therapy. What are the causes of shock in this patient in order of priority?*
- *A 66-year-old female is Day 14 ICU after being found collapsed secondary to a sub arachnoid haemorrhage. She has a background history of hypertension and schizophrenia. She is currently intubated and ventilated. Can you examine her to assess why she has a persistently reduced level of consciousness.*
- *A 54-year-old Female is day 9 in the ICU. She has a background history of HTN, SLE and osteoporosis. She presents post renal transplant requiring dialysis. She is currently awake, self-ventilating and on nasal prongs oxygen, intermittently requiring low dose noradrenaline. Please examine her to determine the causes of her ongoing renal failure.*

The clinical hot cases were examined across two non-consecutive days at CICM accredited Intensive Care Units in Melbourne, VIC on Wednesday 25 November 2023 and Adelaide, SA on Tuesday 31 November 2023.

VIVAS

The overall pass rate for the vivas was 83%, compared with 58% for the written paper and 78% for the hot cases. Failure to pass a viva was often due to knowledge gaps, poorly structured answers, and an inability to give the rationale for their responses. As in the discussion for the hot cases, candidates should not rely solely on generic statements, key-phrases, and template answers, and, instead, tailor their responses to the specifics of the question and be able to justify and expand their response. Candidates are encouraged to practise viva technique and to discuss patient management, including the rationale for their decisions, with senior colleagues. As with the hot cases, candidates who are very nervous or have a poor technique may benefit from training with a performance coach.

VIVA STEMS

DAY 1 – THURSDAY 26 OCTOBER 2023

Viva 1

A 59-year-old patient presents to the Emergency Department with sudden onset of headache.

CT brain shows a 2 x 2 x 2.5cm cerebellar haemorrhage, with no evidence of aneurysm or arteriovenous malformation on CT angiogram.

Past medical history: hypertension, atrial fibrillation, type 2 diabetes

Medications: amlodipine, metoprolol, apixaban, metformin

Physical examination findings:

- HR 105 beats/min (AF), BP 230/130 mmHg
- RR 18 breaths/min, SaO_2 98% on room air
- The GCS is 15.
- Nystagmus is present, but no other focal neurological signs.

Discuss your immediate priorities in management, including the rationale for your approach.

Syllabus topic/section:

2.1.8 Neurological Intensive Care – L1.
2.1.15 organ and Tissue Donation in Intensive Care.

VIVA summary:

This viva focused on the discussion and management of posterior fossa haemorrhage with subsequent deterioration and the challenges of organ donation.

Candidates did well if they:

Were able to recognise that a posterior fossa haemorrhage is an emergency that requires ICU level monitoring and neurosurgical input (e.g. to be transferred to a NSx-capable facility). Had a specific plan for anticoagulant reversal. Gave their initial structured management plan with specific details (e.g. BP targets, choice of antihypertensive agents) without prompting. Recognised the risk of having an EVD without decompressive craniectomy. Recognised posterior fossa bleeds are a time-critical neurosurgical emergency with potential for rapid deterioration due to oedema and subsequent herniation, 4th ventricle compression and consequent development of hydrocephalus. That this is an indication for urgent posterior fossa craniectomy. Understood the concept of concept of "upwards trans tentorial herniation and other aspects of posterior fossa haemorrhage complications. Understood that signs may mimic brain death as brainstem signs and coma might be present but were able to relate to ANZICS statement on testing and organ donation and discuss imaging preconditions and specify need for subsequent radiological tests.

Candidates achieved less marks if they:

Offered their management plan in an unstructured fashion, without clear priorities, OR used solely a generic 'ABC resuscitation' vs assessing needs of this particular clinical scenario. Were slow to escalate the level of care to ICU, or to involve neurosurgeons. Offered no specific endpoints to their therapeutic interventions. Were unable to list the potential causes of abrupt neurological deterioration in the patient with a posterior fossa ICH. If required prompting to manage severe hypertension, reverse anticoagulation, or state that they would refer to neurosurgery/transfer to a neurosurgical centre in a patient with an acute posterior fossa haemorrhage. Failed to recognise potential, or understand mechanism of, deterioration in posterior fossa syndromes. Poor understanding of complications and management of posterior fossa haemorrhage (confusion around EVD, posterior fossa decompression, or both and why).

Maximum Score	8.5
Percentage Passed	76%

Viva 2

A 45-year-old morbidly obese patient presents to the Emergency Department with abdominal pain, fever, and a previous history of gallstones.

Outline the features of the assessment that would support a diagnosis of acute cholangitis.

Syllabus topic/section:

2.1.3 Sepsis and Infections.

VIVA summary:

Cholangitis assessment and treatment, CLABSI definition and assessment of the source of an MRSA infection.

Candidates did well if they:

Used a structured approach to questions regarding assessment, i.e. used the glossary of terms. Listened carefully to the question being asked and responded to redirection.

Candidates achieved less marks if they:

Had poor knowledge particularly regarding Mx of MRSA and lacked structured approach to answering and gave random disconnected facts with poor detail.

Maximum Score	7.85
Percentage Passed	67%

Viva 3 - Radiology Station

Syllabus topic/section:

2.1.20 Radiology in Intensive Care.

VIVA summary:

The radiology station consisted of 3 CXR's, 1 CT brain and 1 CT chest/abdomen.

Candidates did well if they:

Had a clear and systematic structure to reporting the images. Most quickly identified lines and devices before moving on to pathology. Note that there are more marks allocated to significant pathological findings than there are for "hardware". Took their time. Used specific language to describe the location and nature of abnormalities (for example: "there are patchy infiltrates throughout the mid-zone of the right lung" rather than "there are opacities here (pointing to the screen)". Incorporated the clinical details of the case into the report.

Candidates achieved less marks if they:

Used a "scattergun" approach to reporting the images. If missed significant pathology was missed. Spent a long time looking through the CTs before saying anything and they ran out of time to give any relevant findings.

Tips:

It is advisable to scroll through quickly to see the whole scan but then scroll through providing abnormalities as they go rather than trying to come up with a complete radiology report at the end, especially for a CT with many findings.

Lack of structure to X-Ray interpretation was where most lost marks as this resulted in them missing obvious findings.

Many candidates started reporting the CT abdomen/chest and spent a lot of time describing the abdominal changes before moving to the chest, which was where most of the pathology was found.

Maximum Score	7.55
Percentage Passed	48%

Viva 4 – Procedure Station

A 32-year-old morbidly obese (BMI 45) patient has just been admitted to your Intensive Care Unit with progressively worsening hypoxia secondary to a severe community acquired pneumonia.

The patient becomes agitated and is now pulling off the non-rebreather mask (NBM).

Vital signs are:

- HR 105 bpm sinus rhythm
- NIBP 100/70
- RR 35
- Saturations 78% on NBM 15 lpm.

You are aware that the patient was a direct laryngoscopy Grade 3 airway on previous elective surgery anaesthetic records. The patient requires urgent intubation.

Outline your preparation and plan for intubation and justify your rationale.

Syllabus topic/section:

2.1.19 Intensive Care procedures.

Planning and management of a difficult intubation and front of neck access in a can't intubate can't oxygenate scenario.

Candidates did well if they:

Had a structured approach to preparation for anticipated difficult intubation which included patient positioning, team preparation with role allocation, drugs, and equipment preparation. Understood nuances involved in positioning bariatric patient for intubation, drug dosing and high scoring candidates included back up plans for unanticipated failures in their answers. Had an approach which was safe and measured for failed FONA situation. Where able to convey the critical nature of the scenario with anticipation and planning of difficulties. Sounded like they were competent i.e., had been in an ICU and experienced the critically unwell patient intubation.

Candidates achieved less marks if they:

Lacked structured approach to the answer. Chose FOB as primary method of intubation and persisted with it despite prompting that it wasn't working. Did not have an approach to deal with failed FONA situation. Did not appreciate the difficulty (physiological and anatomical) of the situation. Some candidates made serious errors of palliating the patient without considering alternatives mentioned in the vortex approach +/- extracorporeal support.

Maximum Score	8.75
Percentage Passed	74%

DAY 2 – FRIDAY 27 OCTOBER 2023

Viva 5

You are looking after a day 1 adult ICU patient with severe upper limb electrical burns.
The patient was intubated for agitation and pain management. The CT brain was normal.

Their vital signs are as follows:

- SaO_2 is 95% on FiO_2 0.4
- PEEP 8 cm H_2O, TV 450 ml, RR 18.
- HR 100/min, sinus rhythm
- BP 100/50 mmHg requiring low dose of noradrenaline.

Outline your assessment for this patient.

Syllabus topic/section:

2.1.14 Environmental Injuries and Toxicology in ICU – L1.

VIVA summary:

Electrical burn assessment in a patient who subsequently develops an acute kidney injury and compartment syndrome.

Candidates did well if they:

Described their assessment with a clear structure e.g., history, examination, biochemistry, imaging. Recognised and proactively addressed the risk for compartment syndrome. Had a logically structured list of investigations to exclude compartment syndrome. Recognised that fluid resuscitation for burns and rhabdomyolysis could increase the risk of compartment syndrome. Were decisive in their management, e.g. committed to the course of dialysis as a means of avoiding fluid overload.

Candidates achieved less marks if they:

Did not appreciate the risk of aggressive fluid resuscitation in compartment syndrome. Had a generic Parkland formula-based approach to fluid resuscitation. Had a generic approach to assessment and management which did not consider the specific problems encountered in electrical burns.

Maximum Score	9
Percentage Passed	76%

Viva 6

A 40-year-old healthy female on the combined oral contraceptive pill, presents with a three-day history of shortness of breath.

Her vital parameters on presentation:

- Temperature = 36.6C
- Heart Rate = 122 beats per minute (sinus rhythm)
- Non-Invasive Blood Pressure = 105 / 56 mmHg
- Respiratory Rate = 35 breaths per minute
- SpO2 = 95% (FiO2 0.5 on CPAP 10 cm H2O).

CT Pulmonary Angiogram:

- Visible thrombus obstructing the origin of left and right pulmonary arteries.

What additional specific investigations would you require to risk stratify her Pulmonary Embolism?

Syllabus topic/section:

2.1.5 Respiratory Intensive Care.

Viva summary:

Pulmonary embolism, stratification of severity, treatment options and management of complications from disease.

Candidates did well if they:

Were familiar with the severity scores and investigations required to diagnose and stage PE. Could discuss the evidence of for the treatment of PEs and give an opinion tailored to the patient discussed. Could discuss reperfusion therapies succinctly and confidently and discuss the rationales and preference. Provided a comprehensive description of CT and echo findings / good general understanding of evidence for lysis in sub-massive PE.

Candidates achieved less marks if they:

Were vague or inconsistent in their answers. Were unable to target clinical information to the potential therapies outlined. Had no structure for answers leading to disorganised and incomplete response. Required lots of prompting for baseline information. Didn't demonstrate competence of RV support therapies. Provided a non-specific approach to heparin and post-lysis coagulopathy in setting of intra-cranial haemorrhage.

Maximum Score	9.13
Percentage Passed	79%

Viva 7

This VIVA will examine your understanding of ethical principles and decision making in the ICU.

John is an 83-year-old man who has been in coronary care unit (CCU) for 3 days with severe heart failure following an acute myocardial infarction.
He has a history of multiple CVAs, AF and HTN and was living independently.

John has been on continuous BiPAP since midnight on the cardiology ward and his oxygen requirement has escalated over the previous 5 hours to FiO2 0.7.

Outline the factors you would consider in making a decision about admitting John to ICU.

Syllabus topic/section:

2.6.1 Ethical and legal considerations in Intensive Care.

VIVA Summary

Ethical principles and decision making in admission and treatment issues of a critically ill patient.

Candidates did well if they:

Considered the scenario in a holistic manner (to include patient specific and non-patient specific factors). Could describe the principles succinctly and confidently listed criteria for decision making capacity. Accurately defined the ethical principles and applied the correct principles to the relevant component of the scenario.

Candidates achieved less marks if they:

Beneficence and social justice were less well understood and frequently confused with non – maleficence. Could not communicate clinical factors that differentiate each principle. Lacked detail and understanding of how ethical principles fit into their clinical practice and decision making.

Maximum Score	7.9
Percentage Passed	83%

Viva 8 – Communication Station

Mark is a 64-year-old male admitted overnight to the ICU following an overdose of benzodiazepines (diazepam). He has been commenced on a flumazenil infusion and High Flow Nasal Oxygen in the Emergency Department. Mark has a history of end stage rapidly progressive motor neurone disease. Mark is presently GCS 12 (M5 E 4 V 3). He is stable from a cardiovascular and respiratory viewpoint. He still requires flumazenil.

You are the most Senior Doctor in the Intensive Care Unit.

Mark's child Sam has requested to speak with you.

Syllabus topic/section:

2.2.1 Communication and collaboration in Intensive Care.

VIVA Summary:

This viva focused on the shared decision-making aspect of care. Including clarity of communication and respectful collaboration.

Candidates did well if they:

Approached the scenario with a focus on active listening and communication. Demonstrated understanding of the needs of the family member and worked towards a shared understanding of the situation. They did not have to reach an end point in the viva and good marks were achieved by candidates who focus on exploration of the issue and family members concerns and hopes for their loved one's healthcare. Listened and heard the actor, demonstrating understanding and empathy. Enquired about their Dad and his wishes, listened to the back story of their patient. Spoke respectfully about the management of their patient and discussed the options going forward. Respected their patient's ACD and acted in the best interests of their patient. Didn't use medical jargon.

Candidates achieved less marks if they:

Failed to build rapport or focused on medical legal elements of the case without listening/understanding the viewpoint of the actor. We're not able to explore the viewpoints of the advocate/family member or dismissed them behind a medical legal defence. Failed to engage with the difficult conversations or a tendency to close off the conversation. Talked over the actor and failed to listen to the information about their patient. Ignored the patients right to make decisions about his health care and life. Became focused on legal aspects. Blamed other departments for initiating treatment. Said that the decisions were started now, and we can't change in light of new information. Conducted a one-way conversation (providing information without listening and exploring the family member's views & understanding).

Maximum Score	7.9
Percentage Passed	83%