COLLEGE OF INTENSIVE CARE MEDICINE
OF AUSTRALIA AND NEW ZEALAND

REPORT OF THE
INTENSIVE CARE PRIMARY EXAMINATION

MARCH / MAY 2011

This report is prepared to provide candidates, tutors and their supervisors of training with information about the way in which the Examiners assessed the performance of candidates in the Examination. Answers provided are not model answers but guides to what was expected. Candidates should discuss the report with their tutors so that they may prepare appropriately for the future examinations.

The exam included two 2.5 hour written papers, each comprising of twelve short answer questions and twenty short fact questions. Candidates were required to perform at a satisfactory level in the written before being eligible to sit the oral part of the exam. The oral was comprised of eight, ten-minute Viva stations.

OVERALL STATISTICS

Total number of candidates presenting for the written examination:	12
Number of candidates scoring >50% in the written:	4
Number of candidates scoring 45-50% in the written:	3
Number of candidates carrying a written score:	1
Total number invited to the Oral section based on written marks:	8
Total number of candidates successful at the CICM Primary:	6

Successful candidates:

Ebid	Ebrahim
Abhijit	Laha
Anni	Paasilahti
Bradley	Treloar
Chong	Goh
Gavin	Salt

WRITTEN SECTION

SAQ PAPER 1

1. Describe the physiological consequences of breathing 100% oxygen at sea level.

The question related to physiological changes occurring when FiO_2=1 Many candidates focused on the toxic effects of oxygen, which were often incorrect (CNS symptoms will not occur at one atmosphere). Candidates simply lacked knowledge, those that did have some understanding failed to provide adequate detail (ie. it was occasionally mentioned oxygen stores are increased but not the mechanism by which or extent to which stores are increased).
In addition it was expected that candidates would outline and describe the mechanism behind the changes in PaO_2 in arterial and mixed venous blood, shift in CO2 ventilation, hypoxic pulmonary vasoconstriction as well as pulmonary toxic effects

Syllabus: B2a, c
Recommended sources: Applied Respiratory Physiology, Nunn, Pages 265 to 268, 288 and 491 to 508

0 (0%) of candidates passed this question.

2. Outline the principal anatomical features of the diaphragm that are important to its function.

Most candidates had a basic knowledge of diaphragmatic function however were uncertain of anatomy and rarely related the two. Candidates were expected to describe the attachments of the diaphragm, openings, nerve supply, actions, including it's role upon the oesophageal sphincter

Syllabus: B1b 2c
Recommended sources: Anatomy for Anaesthetists, Ellis and Feldman, pages 317 - 323

3 (25%) of candidates passed this question.

3. Compare and contrast the pharmacology of intravenously administered atropine and glycopyrrolate

Most candidates exhibited a structural approach with reasonable understanding of the pharmacology of atropine although there was a lack of precision (anticholinergic is correct, competitive muscarinic antagonist is more precise). Some answers did not contrast glycopyrrolate adequately. The phrase 'hepatic metabolism, renal excretion' needed to be accompanied with detail if marks were to be awarded.

Syllabus: G3b
Recommended sources: Goodman and Gillman, The Pharmacological Basis of Therapeutics, Chp 7

6 (50%) of candidates passed this question.

4. Outline the role of calcium in the body (70% of marks). Outline the differences between calcium chloride and calcium gluconate solutions (30%of marks).

The question sought an understanding of the diverse roles of calcium. Some candidates spent considerable time in details of one or two roles. Limited marks were awarded for demonstrating knowledge of calcium distribution & homeostasis. Few candidates had a good understanding of the differences between calcium chloride and gluconate.

Syllabus: J1 and J2a
Recommended sources: Textbook of Medical Physiology, Guyton & Hall, Page 462. Pharmacology and Physiology in Anaesthetic Practice, Stoelting, Page 612

4 (33%) of candidates passed this question.

5. Outline the process of digestion and absorption of dietary carbohydrate.

A number of candidates had absolutely no understanding of this subject. Some candidates had a basic understanding of either digestion or absorption but few demonstrated knowledge of both processes. Inaccuracies were common with many discussing the role of the gastric acid & enzymes in carbohydrate digestion. Most forgot to mention simple dietary carbohydrates. For a good answer candidates were expected to outline the forms of dietary carbohydrates, gastro-intestinal enzyme action and mechanism of absorption

Syllabus: Q1, 2c
Recommended sources: Review of Medical Physiology, Ganong, Chp 27

2 (17%) of candidates passed this question.

6. Describe the pharmacology of suxamethonium

Most candidates presented a structured answer and demonstrated reasonable understanding of the pharmacology of suxamethonium. This is however a core subject and candidates should be able to answer this question in depth.

Syllabus: H2a, 2c
Recommended sources: Basic and Clinical Pharmacology, Katzung, Chp 27

7 (58%) of candidates passed this question.

7. Briefly describe the factors that affect the partial pressure of carbon dioxide in mixed venous blood.

Candidates were expected to provide a definition of important terms such as mixed venous. Many candidates provided much information about the partial pressure of carbon dioxide in arterial blood without discussing the factors which alter the mixed venous pressure.

Partial pressure of CO2 in mixed venous blood depends on the CO2 content of the mixed venous blood, which in turn represents a balance between CO2 production in the tissues and the CO2 content in arterial blood. Good answers demonstrated an understanding of this and provided relevant details about these aspects. The partial pressure of CO2 is related to the CO2 content by the CO2 dissociation curve, the position of which is determined by the state of oxygenation of haemoglobin, the Haldane effect. CO2 production is related to aerobic metabolism in cells and total production is defined by the metabolic rate. Examples of increased and decreased CO2 production gained additional marks. The partial pressure of CO2 in mixed venous blood is related to the partial pressure or content of CO2 in arterial blood. This is determined mainly by alveolar ventilation under the control of chemoreceptors and the brainstem respiratory centre.

Syllabus: B1h, 2c
Recommended sources: Applied Respiratory Physiology, Nunn 5th edition, Chp 10 pages 222 to 239

1 (8%) of candidates passed this question.

8. Describe the factors that affect the output of the right ventricle

An approach that covered the main determinants of right ventricular cardiac output including heart rate, right ventricular preload, contractility, afterload and the relationship with left ventricular output, ventricular interdependence, and the respiratory system would have provided the framework for a good answer. Some candidates used this approach but described more features of left ventricular than right ventricular output. The observation that the right ventricle is relatively thin walled and its output is very sensitive to changes in right ventricular preload and afterload particularly was central to this question. The unique shape of the right ventricle and its contraction characteristics involving ventricular interdependence were rarely mentioned. Also details on right ventricular afterload and the importance of factors affecting pulmonary vascular resistance were lacking in most answers.

Syllabus: C1c
Recommended sources: Review of Medical Physiology, Ganong, Chps 31 and 33, Textbook of Medical Physiology, Guyton & Hall Chp 9 and 20

6 (50%) of candidates passed this question.

9. Describe how the kidney maintains the medullary concentration gradient.

A useful introduction could include a definition of medullary concentration gradient and its function. The answer was expected to describe the roles of sodium, chloride and urea in the countercurrent multiplier and the features of the vasa recta countercurrent exchange system.

The 3 main areas that needed to be addressed to pass this question included:
[1] The loops of Henle with their water permeable descending limbs and water impermeable ascending limbs, which actively remove solutes from the tubular lumen. The counter current multiplier system.
[2] The vasa recta which run parallel to the loops of Henle and are permeable to water and solute and have low flow. This allows the medullary concentration gradient to be maintained. The counter current exchange mechanism.
[3] The role of urea which is concentrated in the medulla by mechanisms which involve changes in permeability to urea in different regions of the tubules partly influenced by the effects of antidiuretic hormone. `
Some candidates elected to draw the loop of Henle and vasa recta together with the movement of various solutes and water and answer the question from it. Unfortunately mistakes in these diagrams only confused their answers further.

Syllabus: Section D1, 2c
Recommended sources: Principles of Physiology for the Anaesthetist, Power and Kam, page 234

4 (33%) of candidates passed this question.

10. Discuss the bacteriocidal activity, and toxicity, of gentamicin

The first part of the question on bactericidal activity of gentamicin was better answered than the second part on its toxicity. Details on the cellular mechanisms of bactericidal action and toxicity were lacking in most answers.
Most candidates did not appreciate that gentamicin is avidly accumulated and retained by proximal renal tubular cells in concentrations many times higher than the plasma concentration. Also these high tubular cell concentrations of gentamicin are maintained long after the plasma concentrations have fallen to very low levels, thus enhancing its toxic effects. Gentamicin has multiple toxic effects within the tubular cell including adverse effects on protein synthesis, translation and folding, impairment of mitochondrial function and production of reactive oxygen species and damage to the nucleus.

Syllabus: M2a, 2d
Recommended sources: Pharmacological Basis of Therapeutics, Goodman and Gillman, Chp 45 and page 1162

8 (75%) of candidates passed this question.

11. Outline the influence of pregnancy upon drug pharmacokinetics

Answers framed around the structure of absorption, distribution, metabolism and excretion performed better. An approach based on the physiologic changes of pregnancy performed less well because important areas of pharmacokinetics were omitted. The effects of pregnancy on oral absorption should have included a discussion of gastrointestinal motility, nausea and vomiting and gut blood flow. Absorption from sites other than the gastrointestinal tract, such as skin, lung and the epidural space and the effect of pregnancy on these should have been mentioned. Many answers were vague on the effects of increases in total body water and plasma volume and cardiac output and changes in plasma protein binding on the distribution of drugs. Most answers did not provide enough specific examples. The effect of pregnancy hormones on liver enzyme activity were mentioned by few.

Syllabus: Generic Pharmacology III 2d
Recommended sources: Foundations of Anaesthesia: Basic clinical Science. Hemmings and Hopkins, and Anaesthesia, Miller.

4 (33%) of candidates passed this question.

12. Describe the principles, and limitations, of the measurement of cardiac output using an indicator dilution technique

Most candidates chose to describe the thermodilution technique of cardiac output measurement. Descriptions of other techniques and indicators such as dye dilution using indocyanine green were acceptable alternatives.
Better answers included a description of the Fick Principle and the fact that it is based on the law of conservation of matter. For thermodilution, heat lost from the blood = heat gained from the injectate. Also required were an accurate description of the technique, a description of the indicator-time curve and errors encountered in the technique. For thermodilution these included the requirement for a Swan Ganz catheter, nature and temperature of the injectate, temperature measurement using a thermistor in the pulmonary artery and an appreciation that it is the curve of a decrease in temperature versus time that is being analysed.

Syllabus: S2c
Recommended sources: Anaesthesia, Miller, Chp 40

7 (58%) of candidates passed this question.

SAQ PAPER 2

13. Relate the surface electrocardiogram (ECG) to the events of the cardiac cycle (60% of marks). Briefly describe the mechanism of the effects of digoxin, and the mechanism of the effects of amiodarone, on the ECG (40% of marks)

Candidates were expected to provide sufficient detail in answers. Extra marks were awarded for diagrams relating the ECG accurately to pressure events during the cardiac cycle. Time intervals, units of measurement and clear labels were essential for diagrams.
Mechanisms pertaining to ion flux and ion channels needed to be specifically explained. Discussion of mechanisms needed to be accurate and relevant to the effect on the ECG. For example, better answers noted that AV conduction was depressed by Digoxin, predominantly due to an increase in Vagal tone

Syllabus: Cib2c C2c2b
Recommended sources: Principles of Physiology for the Anaesthetist, Power and Kam, pages 107-110, Pharmacology and Physiology in Anaesthetic Practice, Stoelting

8 (66%) of candidates passed this question.

14. Describe the mechanism of action, and adverse effects, of pulmonary vasodilators that are administered via the inhalational route.

Many candidates neglected to include oxygen which is also a drug with significant pulmonary vasodilating properties. Accurate detail concerning the receptor and second messenger effects of drugs was expected. The importance of V/Q matching and reduction in systemic effects via inhalational administration needed to be stated. Better answers included discussion of serious adverse effects such as met-haemoglobinaemia, acute lung injury, systemic hypotension, rebound phenomena and heart failure.

Syllabus: B2a, 2b,c,d,e
Recommended sources: Basic and Clinical Pharmacology, Katzung, Chp 18, 19

1 (8%) of candidates passed this question.

15. Define the concepts of:

Sensitivity	(20% of marks)
Specificity	(20% of marks)
Positive predictive value (PPV)	(20% of marks)
Negative predictive value (NPV)	(20% of marks)

Explain how the prevalence of a disease influences the PPV and the NPV of a diagnostic test (20% of marks).

The question required a precise definition of each term. Better answers included a 2 x 2 table denoting true and false positives and negatives. Discussion of sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) needed to be consistent with accurately quoted formulae. The directional influence of prevalence on PPV and NPV should have been stated clearly. Bayes' Theorem was noted in more comprehensive answers.

Syllabus: Evidence Based Medicine 2f
Recommended sources: Statistical methods for anaesthesia and intensive care, Myles and Ginn.

6 (50%) of candidates passed this question.

16. Compare and contrast the pharmacology of morphine, fentanyl and remifentanil.

The question asked for a comparison of the pharmacology (pharmacokinetics and pharmacodynamics) of three commonly used opiates. Better answers made use of a well constructed table with headings including chemistry, protein binding, lipid solubility, half-lives, context sensitive half-time, volume of distribution, metabolism, active metabolites, oral bioavailability, and clearance. A distinction should have been clearly drawn between onset, peak, and duration of effect. CNS stimulant effects as well as depressant effects, were expected to be listed.

Syllabus: G2d, 2d
Recommended sources: Anaesthesia, Miller Chp 11 and Pharmacological Basis of Therapeutics, Goodman and Gillman, Chp 21

2 (17%) of candidates passed this question.

17. Outline the physiological processes that occur in a blood vessel after venipuncture (80% of marks). How are these altered by the administration of aspirin (20% of marks)?

The question was answered well overall. Better answers included detail of the platelet receptor and mediator interactions. Discussion of the role of the platelet in providing a phospholipid surface to enable the formation of the activated Xa complex was expected. Modulation of the coagulation cascade and prevention of clot propagation via protein C, nitric oxide, thrombomodulin and fibrinolysis was important to note in a comprehensive answer. The pharmacodynamic action of aspirin was generally understood.

Syllabus: J1,2c and J2, 2d
Recommended sources: Basic and Clinical Pharmacology, Katzung, Chp 34, 36

8 (66%) of candidates passed this question.

18. Explain the physiological processes involved in the development of tissue interstitial oedema.

The question required an accurate statement of Starling's Equation, including the filtration and reflection co-efficients, and definitions of terms. Marks were awarded for numerical values pertaining to hydrostatic and oncotic pressure gradients and net filtration in a 24 hour period.

A satisfactory answer *explained* the factors which cause imbalance in Starling's relationship including; precapillary vasodilation, increased venous pressures, gravity / posture, fall in plasma protein concentration, changes to capillary permeability and lymphatic obstruction.

Syllabus: E1
Recommended sources: Review of Medical Physiology, Ganong, Chp 23 and other sections

2 (17%) of candidates passed this question.

19. Explain the role of haemoglobin as a buffer

To pass this question, the candidate only needed to define a buffer (weakly ionised acid or base in equilibrium with its full ionised salt), what it does, then discuss how Haemoglobin functions in this capacity. In that regard, brief review of how CO_2 is buffered, the role of haemoglobin histidine residues, buffering capacity of oxy haemoglobin and deoxy haemoglobin and how this contributes to the Haldane effect would have rounded out a very good answer.
Additional credit was given for an understanding that histidine contains an imidazole group and how these groups are effective as a buffer.
Few candidates mentioned that haemoglobin was quantitatively significant and no candidate mentioned that it is the primary buffer for CO_2. Many answers were quite brief and did not explore the subject matter asked.

Syllabus: B1h, 2c, 2b and Section F
Recommended sources: Nunn's Applied Respiratory Physiology, Lumb, page 228 to 230

4 (33%) of candidates passed this question.

20. Describe how previous immunisation protects against subsequent infection.

Providing a statement about what vaccines do followed by some detail about the processes involved in triggering a response and the nature of that response in both Innate immunity and acquired immunity would have achieved a good pass.
Many candidates failed to adequately describe the nature of the primary and the secondary response to antigen exposure. The fact that previous immunisation enabled a brisk secondary response was recognised by most candidates but that this was largely due to the proliferation of IgG antibody producing B lymphocytes and effector T cells was not appreciated. Many answers simply did not include sufficient information to achieve a pass mark.

Syllabus: M2i
Recommended sources: Review of Medical Physiology, Ganong, Chp 3

1 (8%) of candidates passed this question.

21. Briefly describe the cardiovascular events that occur during ventricular diastole.

One possible way to answer this question is to offer a definition of the diastolic period then to split the events up for description into mechanical events, ECG events and electrical/ionic events.
Few candidates defined the diastolic period, and whilst many talked about opening and closing of valves, there was generally a poor understanding of the sequence of events whereby the left ventricle comes to be filled with blood. The better answers included a description of the ionic events that occurred at the various stages of diastole. Many answers lacked any reference to the ECG events in diastole.

The major weakness in answers was again the failure to include sufficient information to achieve a pass mark. This was probably as a result of the lack of a systematic approach when answering a question of this nature.

Syllabus: C1b, 2d,e and C1c, 2e,f
Recommended sources: Textbook of Medical Physiology, Guyton & Hall, Chp 9 – 11 and Review of Medical Physiology, Ganong, Chp 31

1 (8%) of candidates passed this question.

22. Compare and contrast the pharmacology of drugs that alter the pH of gastric fluid.

Moderately well answered overall, however many candidates lacked a systematic approach to their comparison of the pharmacology of drugs that alter the pH of gastric fluid. Few candidates discussed pharmacokinetics in sufficient detail, with only a very limited discussion comparing the absorption, metabolism and elimination of even common drugs. Relevant information such as bioavailability, duration of effect, and available formulations with dosing was often lacking. Similarly, little attention was given to important drug interactions. Many candidates included drugs which are used for gastric problems or mucosal protection, but do not specifically influence gastric pH e.g. sucrulfate. Some candidates gave unnecessarily detailed accounts of the physiology of gastric fluid production and the acid-base mechanisms involved. All candidates provided details of H2 blockers and PPIs, but often did not list representative examples or compare the effects on basal versus stimulated acid secretion. Many candidates also discussed antacids, but did not indicate their mechanisms of action properly and did not outline potential adverse effects. Some candidates included prostaglandin analogues and anticholinergic drugs for completeness and were able to indicate their roles in affecting gastric acid secretion.

Syllabus: Q2a 2b,c
Recommended sources: Basic and Clinical Pharmacology, Katzung, Chp 62
2 (17%) of candidates passed this question.

23. Compare and contrast the pharmacology of Noradrenaline and Vasopressin

A straightforward question that was reasonably answered, with most candidates using a methodical tabular approach to explaining the differences in pharmacology between noradrenaline and vasopressin. The benefits of adhering to a well-organised system of columns showing direct comparisons of the various relevant drug characteristics was clear, with candidates who chose this approach covering most of the necessary information in a clear and comprehensive manner. Some candidates managed to provide a great deal of relevant detail within the allocated time as would be expected in this relatively uncomplicated question. Simple definitions were often lacking and failing to provide this basic introductory information resulted in lower marks for this question. While most candidates were able to discuss the effects of each drug on the cardiovascular system, not as many were able to give outline other physiological effects in sufficient detail. For example, many candidates made little mention of important renal, metabolic and haematological effects. While some candidates discussed pharmacokinetics well, many provided only a very superficial outline of this aspect. The important area of adverse reactions could also have been covered in greater detail.

Syllabus: C2d, 2a and N2, 2f
Recommended sources: Basic and Clinical Pharmacology, Katzung, Chp 9 and 37

6 (50%) of candidates passed this question.

24. Describe the PHYSICAL PRINCIPLES that are involved in the flow of blood through a dialysis circuit, and, in the movement of solutes across a dialysis membrane.

This question required candidates to describe the physical principles of blood flow through a dialysis circuit and the movement of solute across a dialysis membrane. While most candidates were able to allude to important factors contributing to the flow of a fluid through a hollow tube, few did so in a systematic way and only some provided relevant formulae showing the relationship between pressure, fluid viscosity and tube resistance. A short discussion proceeding to flesh out the factors that determine blood viscosity, circuit pressures and practical examples was expected. Some candidates discussed convective processes extensively, which was not required in this question focussed on dialysis. Most candidates were able to describe the physical chemistry involved in diffusion across a semipermeable membrane in basic terms, however few provided sufficient details of these important principles. Very few candidates went on to properly discuss electrochemical forces affecting solute and water movement across a membrane or the factors that influence the performance of dialytic therapies in practical application.

Syllabus: A2c, R2e, D1, 2b,c
Recommended sources: Basic Physics and Measurement in anaesthesia, Davis and Kenny, various sections. Also Review of Medical Physiology, Ganong, chp 2, 32

2 (17%) of candidates passed this question.

PAPER 1 and 2 CLOZE QUESTIONS

7 (58%) of candidates passed these questions

PAPER 1 and 2 RANK QUESTIONS

7 (58%) of candidates passed these questions

PAPER 1 and 2 MATCH QUESTIONS

9 (75%) of candidates passed these questions

ORAL SECTION

8 candidates were invited to attend the oral section based on their written marks.

Candidates were presented with the following information (shown in *Italics*) during the two-minute reading time.

VIVA 1

This Viva will examine your knowledge of the pharmacology of common resuscitation fluids.

Q 1. What is the composition of Hartmann's Solution?

As this viva developed it sought an understanding of "balanced solutions", difference, adverse effects of intravenous solutions and difference between crystalloids and colloids and distribution of common intravenous solutions within the body. Candidates mostly had difficulty defining and differentiating a colloid from a crystalloid. A colloid is defined as a substance dispersed evenly throughout another substance. The hydrocolloids consist of colloid particles dispersed in water and as such the solid particles may be unable to pass through a semi-permeable membrane, thus exerting a colloid osmotic force and preferentially expanding the intravascular volume.

6 (75%) of candidates passed this VIVA

VIVA 2

This Viva will examine your knowledge about temperature and drugs that may affect temperature

Q 1. Outline the mechanisms by which the body controls temperature

The majority of candidates did well on this viva. Candidates were expected to know physiological mechanisms associated with defending against temperature fluctuations, sites of measurement of temperature, differences between sites, how NSAIDs reduced a fever and mechanisms of adverse effects associated with NSAIDs. Areas of weakness were failure to mention diurnal variation, thermoneutral zone and differences associated with neonates, newborns and children.

7 (87%) of candidates passed this VIVA

VIVA 3

This Viva will explore your knowledge of basic pharmacology and poisoning.

Q 1. Describe the factors that affect ORAL drug absorption

This viva explored basic pharmacology, dose response curves and poisoning as it related to paracetamol, aspirin and organophosphates. Areas of weakness included the depth of knowledge regarding basic pharmacology as it related to concepts such as clearance and bioavailability and first pass metabolism.

8 (100%) of candidates passed this VIVA

VIVA 4

This Viva will test your knowledge about intracranial pressure and cerebral blood flow.

Q 1. What are the determinants of intracranial pressure?

This viva explored basic and highly relevant area of CNS physiology. Candidates are expected to draw, interpret and explain the relationship between intracranial pressure, cerebral blood flow and variety of chemical and physiologic control mechanisms as they may be illustrated within graphs. Basic pharmacologic pharmacologic principles of ICP control were also discussed. Lack of knowledge depth and conceptual understanding were areas that need further attention.

4 (50%) of candidates passed this VIVA

VIVA 5

This Viva will examine your knowledge of respiratory physiology

Q1: Draw the flow volume loop of the lung of a young adult male. Include tidal volume and submaximal efforts

Dynamic tests of forced vital capacity are one of the most common types of respiratory function test that trainees will be exposed to. Candidates were expected to accurately label and discuss features of the flow volume loop including accurate axes, peak flow and its determinants and the effort dependent and independent parts of the loop. Pressures and flow characteristics in the airway during quiet expiration and forced expiration were sought. An adequate description of dynamic airways compression resulting in forced expiratory gas flow limitation was also required. Also asked were expiratory gas flow characteristics and lung volumes in chronic obstructive and restrictive lung disease. Finally the viva briefly explored knowledge of equipment that measures gas flow. Most candidates performed poorly in this viva. The main area of weakness was a lack of understanding of how pressure and flow change in the lungs during quiet and forced expiration. Also most candidates did not appreciate the importance of alveolar (lung) elastic recoil pressure in determining the pressure gradient for gas flow during quiet and forced expiration and how this depends on lung volume.

3 (37%) of candidates passed this VIVA

VIVA 6

This Viva will examine your knowledge of the physiology of glucose regulation and hypoglycaemic drugs as well as the physiology of the Thyroid gland

Q 1. Describe the physiology of Insulin

This viva began with a discussion on the physiology of insulin, physiological consequences of insulin deficiency, oral hypoglycaemic drugs and the thyroid gland. Generally candidates performed well in this viva. The role of insulin beyond metabolism of glucose, fat and protein was not well understood. The differences in the pharmacology between T4 and T3 was another area of weakness.

6 (75%) of candidates passed this VIVA

VIVA 7

This Viva will test your knowledge of renal physiology and potassium regulation

Q 1. Briefly outline the functions of the kidney?

This viva tested, briefly, knowledge of renal function, as well as covering hyperkalaemia in some depth. Candidates had a general knowledge related to hyperkalaemia, but struggled to explain the cardiac consequences as they related to the cardiac action potential and as they reflected upon the ECG.

8 (100%) of candidates passed this VIVA

VIVA 8

This Viva will discuss the pharmacology and the physiology of the peripheral circulation

During the reading time, candidates were also shown a figure of SNP, and were asked if they recognised it. The viva then went on to discuss the pharmacology of SNP. This was generally well done. For the latter half of the viva, candidates were tested on their knowledge of the physiology of the peripheral circulation. Areas of weakness were, the understanding of the physiology of the endothelium, substances it secretes (eg prostacyclin, EDRF and endothelin), as well knowledge of the vasomotor centre.

7 (87%) of candidates passed this VIVA

Summary of the Examination

The CICM Primary Examination explores the knowledge of the basic sciences that forms the basis to Intensive Care practice. A detailed syllabus has been developed and forms the foundation for the knowledge required for this Examination. All questions are sourced directly from that syllabus.

The CICM Primary examination is an integrated examination of the basic sciences as they relate to intensive care practice. Thus candidates will encounter questions that would require them to think broadly and provide an answer that integrates various physiological and pharmacological mechanisms, at times in the context of commonly encountered clinical circumstances within the ICU. It is not uncommon for candidates to lack sufficient depth of core physiology, for example respiratory physiology. Knowledge is expected to be at a level which enables candidates to accurately discuss, explain, translate and illustrate essential physiology. To do so, candidates need to read widely, beyond any one textbook.

There are still candidates who are presenting for this examination, very unprepared. Such candidates will not, and have not, succeeded. Candidates are encouraged to discuss their level of preparedness, and to trial written and oral questions, with their Supervisor of Training and other CICM Fellows, prior to undertaking the CICM Primary Examination.

On behalf of the Examination Panel, I would like to congratulate the successful candidates at this CICM Primary Examination.

A/Prof Arthas Flabouris
Chair, Primary Examination Committee
May 2011

Circulation:	Board of College	Panel of Examiners
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