examination
INTENSIVE CARE MEDICINE

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Examination
Intensive Care
Medicine

2nd edition
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To
  Tom Czarniecki [CF]
  Daniel, Katie and Rocky Steel [LS]
  Leo and family; Tania, Pat and family [KV]
  Tui Phantomlobo [BL]
  La, Fiona, Ciara, Kevin and Nora Mac Partlin [MMacP]
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In memory of Lynne Dowd (1959–2011), wife, mother, doctor.
Her warmth and ability to listen, combined with enthusiasm for a challenge and life in general, will be missed by her family, friends and patients.
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About the DVD

This edition of *Examination Intensive Care Medicine* is accompanied by a complementary DVD. It contains a wide range of extra information, and reflects the growth of intensive care as a specialty area since the publication of *Examination Intensive Care and Anaesthesia* in 2006. By presenting this information on DVD we have avoided creating a large, unwieldy book or multiple volumes. Also, the format allows us to present the information in a more interactive, portable and user-friendly manner.

The content of the DVD is easily navigable by clicking on the section or topic of interest.
Medical specialist examinations, in the milieu of a busy clinical workload and a young family, can be all-consuming and soul destroying. With motivation, careful planning and regular revision, climbing this Everest can become more manageable, exacting a lesser cost in relationships and physical and mental health. How best to do this?

Educators have devised techniques in ‘active learning’ such as SQ3R (Survey, Question, Read, Recite, Review), PQRST (Preview, Question, Read, Summary, Test) and the KWL Table (what we know, want to know, learned), with tips on passing examinations. While these have undoubtedly helped high school and university students, the more mature medical specialists-to-be require approaches more substantive than sublime, basic ‘how to’ methods to pass a more demanding clinical examination. While textbooks on the specialty of intensive care are plentiful, those that address preparing and ‘fronting’ intensive care examinations are as rare as the proverbial hen’s teeth. Examination Intensive Care Medicine fills this gap.

The book first addresses training programs and their examination formats in Australia and New Zealand (College of Intensive Care Medicine), the United Kingdom (Intercollegiate Board for Training in Intensive Care Medicine), and Europe (European Society of Intensive Care Medicine). The other chapters (ten in all) discuss strategies and tips on studying (e.g. health, study notes, study groups), presentation (e.g. travel, dress), and performance at vivas and clinical cases. The pragmatic pearls are not limited to the above examinations, but are universally useful for other intensive care examinations, or indeed (in many parts), for other specialty examinations.

Apart from strategies and tips on studying for, and presenting at, intensive care examinations, this book also provides a mountain of relevant factual information to help pass these examinations (i.e. SQ3R and PQRST material), including basic sciences, equipment, procedures, clinical cases and investigations. Chapter 3, ‘Basic Sciences for Intensive Care Medicine’, offers a superbly comprehensive and useful revision for candidates of all acute medical specialty examinations. The icing on the cake is an accompanying interactive DVD, replete with a wealth of material, including ECGs, images, laboratory profiles, monitoring data and supplementary facts.

Any resource that can guide a candidate to pass an intensive care examination is good, but it must be good to succeed. Examination Intensive Care Medicine is impressively good. The first tip in this journey to be a specialist intensivist should be: Read this book before paying your examination fee.

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Preface

In the last two decades intensive care medicine (ICM) has rapidly evolved into a medical specialty in its own right. The Australian and New Zealand College of Anaesthetists and Royal Australasian College of Physicians Joint Faculty of Intensive Care Medicine (ANZCA/RACP JFICM) developed a Fellowship training and examination process that is widely recognised as a premier training program for intensivists worldwide. In 2008 they moved to establish the first independent training college for ICM in the world and on 1 January 2010 the College of Intensive Care Medicine of Australia and New Zealand (CICM) became formally operational.

In 2006 Elsevier published *Examination Intensive Care and Anaesthesia* (Nikki Blackwell, Carole Foot and Christopher Thomas) for both Australasian ICM and anaesthesia trainees, reflecting a historic close relationship between the two specialties. This highly successful book was the first examination guide to help meet the needs of these two groups of clinicians.

There are increasing numbers of individuals training in ICM in Europe and Australasia. They now come from a diversity of backgrounds, including anaesthesia, emergency medicine, medicine and surgery. Recently, a pathway has evolved in Australasia for training in ICM alone and the first primary examination was held in 2007. There are strong relationships between the intensivists working in these regions, many of whom have trained and/or worked in several countries. To standardise training in ICM the CICM in Australasia, the European Society of Intensive Care Medicine (ESICM) and the Intercollegiate Board for Training in Intensive Care Medicine (IBTICM) in the United Kingdom have all introduced competency-based training programs and formative assessment. The first EDIC exam was held in 1989, the first UK diploma in 1998, and the modern, revised JFICM in 2002. Not unexpectedly, there are many similarities in the topics covered and methods of assessment prescribed in the training and examination syllabuses for the three training programs.

There is a need for high-quality, exam-focused resources to facilitate the passage of candidates through these various ICU Fellowship examinations, which are universally demanding and stressful career progression requirements. This book covers the key components of the syllabuses of EDIC, UK ICM diploma and the CICM Primary and Fellowship exams. It also provides material to assist trainees approaching the CICM Paediatric ICM Fellowship exam. Comprehensive strategies for dealing with each of the specific components of the exams are covered in detail using a structured approach that is evident from the table of contents. The purpose of this book is not to replace didactic intensive care textbooks but to provide exam candidates with all the necessary tailored information they require to successfully and more easily pass their examinations. This book will also be extremely useful as an update and/or reference guide for supervisors of training, established intensivists and all non-training doctors practising critical care medicine.

The first two chapters deal with training requirements in intensive care medicine as well as providing some hints for surviving the pre-exam period. These are followed by a summary of the essential basic sciences facts underpinning ICM practice, which is relevant to a greater or lesser degree to all of the examinations. Chapters 4 to 6 cover equipment, practical and procedural skills, and data interpretation, addressing the breadth of material related to the practical side of practice. This area is fundamental for intensivists and is frequently examined.

The vivas and clinical cases are then addressed in Chapter 7 and 8, with an emphasis on preparing candidates for interactive sessions with examiners and patients. The aim
of these sections is not to produce ‘intensivist clones’; instead we hope that readers will be able to use these suggestions as a framework to develop their own individual clinical/exam style.

Familiarity with key journal articles is essential for the practising intensivist. Understanding the state of the literature surrounding ICM not only facilitates exam performance, but also enables candidates to move beyond the process with a foundation on which to contextualise new developments during their future career as a specialist. Chapter 9 summarises the important tools needed to evaluate such material.

Finally, Chapter 10 addresses the needs of CICM Paediatric Fellowship exam candidates. This material is also relevant for candidates approaching the CICM Adult and European examinations as adult intensivists may be called upon to resuscitate and manage young patients until transfer can be made to paediatric centres. Key paediatric knowledge is therefore expected. This is a common source of stress for candidates with limited paediatric critical care experience.

The accompanying DVD complements the book by providing a wealth of additional resources and material. In particular, there is an extensive equipment and procedure library, a summary of important papers intensivists need to be aware of, a range of recall cases and a pharmacology quiz to facilitate self-assessment and guide further study.

We are all practising intensivists with a passion for education and training. We have written the book for our future colleagues. We sincerely hope that this book makes the reader’s journey to a long and rewarding career in ICM somewhat less daunting and helps them present their hard-won knowledge and clinical competence to the best possible advantage.

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Disclaimer

The authors have taken considerable care in ensuring the accuracy of the information contained in this book and DVD. However, the reader is advised to check all information carefully before using it in clinical practice. The authors take no responsibility for any errors which may be contained herein, nor for any misfortune befalling any individual as the result of action taken using information in this book.
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Dr Stephen Huang, Intensive Care Research Scientist, Nepean Hospital, New South Wales

Mr Richard Huang, Cardiovascular Ultrasound Technician, Nepean Hospital, New South Wales
Chapter 1

Training in intensive care medicine in Europe and Australasia

You are rewarding a teacher poorly if you remain always a pupil.
FRIEDRICH NIETZSCHE

European Diploma of Intensive Care Medicine (EDIC)

The European Diploma of Intensive Care Medicine (EDIC) is a two-part exam organised and conducted by the European Society of Intensive Care Medicine (ESICM). The EDIC is awarded to candidates who have successfully passed both parts of the exam and completed training in their primary specialty. The EDIC exam is intended to complement specialist postgraduate intensive care medicine training.

Part 1 of the EDIC exam is a multiple choice question (MCQ) paper in English. The objective of the MCQ paper is to test candidates’ knowledge across a broad range of topics in intensive care medicine (ICM). Candidates who have successfully passed the Part 1 exam may then choose to sit Part 2 of the exam after 24 months of intensive care medicine training (including complementary specialty training). Part 2 of the EDIC is a clinical and oral exam. The standard expected for Part 2 is of a senior intensive care medicine trainee nearing the completion of their training. The syllabus for the EDIC exam is drawn from the international Competency-Based Training in Intensive Care Medicine in Europe (CoBaTrICE), which covers a broad spectrum of intensive care medicine, including resuscitation, diagnosis, disease management, perioperative care, transport, paediatrics, professionalism and end-of-life care. The CoBaTrICE website (www.cobatrice.org) offers useful links to educational resources.

The website of ESICM has information on registering for the EDIC and the EDIC exam guidelines (www.esicm.org). The ESICM website also offers the Patient-centered Acute Care Training (PACT), which is a modular-based long-distance learning program. The PACT contains 44 modules covering the intensive care curriculum, which is divided into four categories: clinical problems, skills and techniques, organ-specific problems and professionalism. Each module consists of scientific content, patient challenges or task-based learning, where users are given a clinical scenario and asked to interpret the nature of the problems and make management decisions, followed by MCQs for self-assessment. Access to PACT is available to all ESICM members free of charge; for non-ESICM members access is also permitted for a fee.
The ESICM also offers candidates access to sample MCQs used in previous EDIC exams and run a number of educational courses throughout the year that are useful for candidates preparing for the exam.

**EDIC Part 1: Multiple choice question (MCQ) paper**

The EDIC Part 1 exam is a 100-question MCQ paper over 3 hours. To achieve minimum entry criteria to the Part 1 exam, applicants must have evidence that they are:

- a fully registered Medical Doctor
- participating in a national training program in a primary specialty (anaesthesia, general medicine, emergency medicine, general surgery, paediatrics or intensive care medicine)
- participating in a national training program in intensive care medicine or completion of at least 12 months intensive care medicine training, of which a maximum of 6 months may be in a complementary specialty (acute or emergency medicine other than the candidate’s primary specialty).

The MCQs are equally divided into two types: type A and type K questions. Type A questions consist of a stem with five possible answers, from which the candidate may only select one correct answer. A correct answer in a type A question scores one point; a wrong or blank answer scores no points. An example of a type A question is shown in Table 1.1.

**TABLE 1.1 Type A question**

<table>
<thead>
<tr>
<th>Which ONE of the following statements about dopamine is FALSE?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: The cardiovascular effects of dopamine are dependent on its rate of infusion</td>
</tr>
<tr>
<td>B: Dopamine attenuates the response of the carotid body to hypoxia</td>
</tr>
<tr>
<td>C: Dopamine can be used to prevent nausea and vomiting X</td>
</tr>
<tr>
<td>D: Dopamine has been shown to vasodilate mesenteric vessels</td>
</tr>
<tr>
<td>E: Dopamine is a precursor to noradrenaline and adrenaline</td>
</tr>
</tbody>
</table>

Type K questions require candidates to choose either a T (true) or F (false) response to four statements labelled A to D. For type K questions all four responses must be correct to score a full mark, with a half mark scored if three out of four responses are correct. An example of a type K question is shown in Table 1.2.

**TABLE 1.2 Type K question**

<table>
<thead>
<tr>
<th>In tumour lysis syndrome the following biochemical abnormalities can be found:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Hyperkalaemia T</td>
</tr>
<tr>
<td>B: Hyperphosphataemia T</td>
</tr>
<tr>
<td>C: Hypercalcaemia F</td>
</tr>
<tr>
<td>D: Hyperuricaemia T</td>
</tr>
</tbody>
</table>

The MCQs cover a broad range of topics in intensive care medicine. The exam questions broadly follow the EDIC ‘content blueprint’ as shown in Table 1.3, although the content blueprint may be changed annually.
Candidates may also choose to sit the ‘dummy exam’, which replicates the real exam conditions without it counting. Candidates sitting the ‘dummy exam’ are not eligible to sit the real exam for at least 1 year.

The pass mark is variable each year and based on a calculation using the mean value and standard deviation for each group of candidates. The pass mark is approximately 56%, with about 70% of candidates passing the exam in any one sitting. Results take 1–2 months, to arrive by post. Candidates who fail Part 1 of the EDIC exam are not allowed to re-sit it for 12 months. A total of three attempts is allowed.

**EDIC Part 2: Clinical and oral examination**

The Part 2 exam consists of a clinical and an oral component. Candidates who have successfully passed Part 1 may sit the Part 2 exam. It is anticipated that most candidates will take Part 2 within 24 months of passing Part 1, and no later than 4 years after passing Part 1. Candidates may choose the country/centre in which they wish to sit the exam and, depending on availability, the EDIC committee will allocate the candidate a centre and date 1 month prior to the exam.

The minimum entry criteria for the Part 2 examination are evidence of:
- successful completion of the Part 1 exam
- 24 months’ intensive care medicine training, of which a maximum of 6 months may be in complementary specialties.

The Part 2 exam takes approximately 2 hours and consists of clinical and oral components. The candidate may be assessed by a number of examiners, some of whom may be external and invited from another European country. The clinical examination

<table>
<thead>
<tr>
<th>Blueprint number</th>
<th>Blueprint topic</th>
<th>Number of type A and K questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cardiovascular</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>Respiratory</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>Neuro-critical care</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Gastrointestinal/nutritional</td>
<td>8</td>
</tr>
<tr>
<td>5.1</td>
<td>Renal</td>
<td>4</td>
</tr>
<tr>
<td>5.2</td>
<td>Urology, obstetrics and gynaecology</td>
<td>4</td>
</tr>
<tr>
<td>6.1</td>
<td>Endocrine and metabolic</td>
<td>4</td>
</tr>
<tr>
<td>6.2</td>
<td>Bleeding and coagulation disorders</td>
<td>4</td>
</tr>
<tr>
<td>6.3</td>
<td>Oncology</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>Environmental hazards, poisoning and acute pharmacology</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>Severe infection and sepsis</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>Surgery and trauma</td>
<td>6</td>
</tr>
<tr>
<td>10.1</td>
<td>Ethics, law and quality assurance</td>
<td>4</td>
</tr>
<tr>
<td>10.3</td>
<td>Intensive care management</td>
<td>4</td>
</tr>
<tr>
<td>10.4</td>
<td>Transplantation</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

Source: EDIC Guidelines 2008
takes place at the bedside, lasts 60–90 minutes and consists of one long case and two or three short cases. The oral component takes approximately 30–40 minutes.

Clinical component
During the long case the candidate has 30–40 minutes to familiarise themselves with the patient. Candidates have access to the patient’s notes, charts and bedside monitoring, blood results, radiology and other relevant investigations, and will also have the opportunity to examine the patient. The objective is to enable examiners to assess candidates in a real-life environment where candidates must assimilate information in the allocated time period and decide on the appropriate therapeutic options. Candidates will be expected to initially summarise the clinical course of the patient and will then be questioned on specific areas of management. For the clinical exam, candidates are assessed in each of the following areas: approach to the patient, eliciting clinical information, clinical capacity in the intensive care environment and presentation of clinical findings. The long case is preceded or followed by two or three bedside short cases. These commonly focus on clinical signs (e.g. bronchial breathing), equipment (e.g. pulmonary artery catheter) or clinical examination (e.g. neurological examination).

Oral component
This takes place away from the bedside and commonly includes data interpretation (arterial blood gases, haematology and biochemical results, ECGs, echocardiograms, radiographs, CT and MRI scans), abbreviated case histories, hot topics and ethical dilemmas. Certain themes are common and include ventilation strategies in ARDS, care bundles, the surviving sepsis campaign, therapeutic hypothermia, blood glucose control, steroids and sepsis, nutrition, trauma management, brain stem testing, renal replacement therapy, management of head injury, and issues around consent and ethics. A sound knowledge of the evidence base in these areas is expected in the discussion.

The candidate receives a mark for both the clinical and oral parts of the examination (severe failure, failure, bare fail, pass, good pass or excellent) by each pair of examiners. A fail in any component ensures failure overall and a bare fail in one component may be compensated for by a good pass or excellent grade in another component at the discretion of the examiners. Candidates are notified of their results by the ESICM administrative office by post. Two attempts are allowed initially and if a candidate has not succeeded after the second attempt, a further two attempts are allowed 12 months later.

UK Intercollegiate Diploma in Intensive Care Medicine (DICM)

The training program in ICM in the United Kingdom is supervised by the new Faculty of Intensive Care Medicine (FICM) and is currently undergoing a number of changes. Training in ICM in the UK has traditionally been undertaken within a main specialty training program (anaesthesia, medicine, surgery, emergency medicine). ICM training consists of Basic ICM training (3 months of ICM at senior house officer/core trainee 1–2 level), Complementary Specialty training (6 months of general medicine for anaesthetists or 6 months of anaesthesia for physicians, surgeons or emergency medicine physicians at senior house officer/core trainee 1–2 level), Intermediate ICM training (6 months of general adult ICM at registrar/specialty trainee 3+ level) and Advanced ICM training (12 months of general and/or specialised ICM undertaken during the final 2 years of specialty training). Candidates completing the program receive recognition for ICM and their primary specialty training (anaesthesia, medicine, surgery, emergency medicine). In the future there will be the option for
candidates to undergo training in ICM as a primary specialty. Up-to-date and detailed information can found on the FICM website (www.ficm.ac.uk). The exam structure is also changing. The current United Kingdom Intercollegiate Diploma in Intensive Care Medicine (DICM) will have its last sitting in June 2012 and will be replaced by a new high level final exam.

Currently the DICM is an optional exam, available to doctors who have completed Intermediate training in ICM. The DICM consists of two modules:

- **Module 1** is a 4000–6000 word dissertation relevant to the field of ICM and an oral exam of the dissertation. Candidates who have taken a relevant higher degree are allowed to submit their thesis and, with confirmation of award of the degree, may be excused from the dissertation viva.

- **Module 2** involves a series of oral exams based on case scenarios, structured questions and expanded case summaries. The 10 expanded case summaries are a required component of Intermediate training in ICM.

The diploma is awarded on successful completion of both modules. Currently there are no limitations on the number of attempts allowed to pass the exam, but candidates must be aware that they will be unable to re-sit any part of the exam after June 2012.

The entry criteria for the DICM are:

- possession of a postgraduate qualification in a primary specialty (i.e. MRCP, FRCA, FRCS, FCEM or equivalent)

- registration with the FICM (or previous Intercollegiate Board for Training in Intensive Care Medicine) for either Intermediate/Advanced ICM training or the ICM Certificate of Completion of Training (CCT) program

- satisfactory completion of the Intermediate ICM training or other training acceptable to the FICM (this usually equates to a minimum of 3 months ICM training at senior house officer/core trainee 1–2 level, 6 months at registrar/specialty trainee 3+ level and 6 months of a complementary specialty at senior house officer/core trainee 1–2 level)

Of note, the FICM does not accept applications from overseas trainees for the DICM. The exam is conducted twice a year (June/November) and dates of the exam are published on the FICM website. The FICM website also provides guidance on the exam regulations, dissertation, expanded case summaries and exam syllabus. The syllabus is extensive and has a heavy emphasis on basic sciences, which is arguably misleading and not representative of the exam.

**Dissertation**

Candidates are initially required to submit a summary of their planned dissertation to the FICM for approval (ficm@rcoa.ac.uk). The intention of the summary is to provide the examiners with an opportunity to ensure that the dissertation is in an appropriate subject area and of adequate depth and breath for the exam. Once approval has been granted the candidate is allowed to submit a formal 4000–6000 word dissertation. This is done electronically via the DICM Manuscript Central site. The dissertation may be a review, research paper, audit or based upon a higher degree in a subject relevant to ICM. The philosophy behind the dissertation is that candidates have the opportunity to become ‘an expert’ in an area of ICM that is of particular interest to them. The range of potential topics is wide and candidates should choose a topic of interest that is broad enough to justify exploration. The candidate should have discussed the topic with their regional advisor in ICM and nominate a dissertation supervisor.

The dissertation is marked against six domains: defining a question for a structured review, accessing relevant and up-to-date resources in the area of study, appraising the current status of the field of study, drawing pertinent conclusions from the results of
the review or study, appraising limitations and future directions in the field of study, and demonstrating effective written communication skills. If examiners find that the dissertation is of marginal standard it may be returned to the candidate for revision. If the candidate fails to reach an adequate standard their supervisor is notified of the areas that need revision.

**Expanded case summaries**

All candidates are required to complete 10 expanded case summaries as part of Intermediate ICM training. The expanded case summaries should be approximately 750–1500 words in length and examine one aspect of the patient's clinical problem in depth. Each case summary should address a different clinical problem. The subheadings for each case summary are standardised and are as follows: clinical problem, relevant management, further information, changes to future management and references. Examples of expanded case summaries can be found at the FICM website.

**Exam format**

- **Dissertation viva (45 minutes):** candidates should have in-depth knowledge of their topic and are required to discuss their dissertation with the examiners.
- **Clinical scenario and data interpretation viva (30 minutes):** this typically consists of one long case (15 minutes) and up to three short cases (5 minutes each). For the long case candidates are asked to review a written clinical case history and discuss various management options. The short cases comprise data interpretation involving biochemistry results, arterial blood gases, ECGs and radiology.
- **Case summaries viva (30 minutes):** candidates will be required to discuss their expanded case summaries. As candidates are able to select the cases they submit it is expected that they will have a reasonable depth of knowledge.
- **Structured oral vivas (2 × 30 minutes):** topics are diverse and can cover several aspects of ICM. The examiners use structured questions based on a predetermined list of domains to maximise consistency and objectivity. Previous topics have included: blood transfusion in the critically ill, management of ARDS, transfusion-related lung injury, scoring systems in intensive care, medical emergency teams, acute coronary syndromes, cardiac output monitoring, management of status epilepticus, diagnosis of community-acquired pneumonia, definitions of SIRS/sepsis/MOF, Stewart's hypothesis of acid base, renal replacement therapy, management of subarachnoid haemorrhage, antibiotic-associated diarrhoea, endocarditis, ethics and difficult management decisions. A good knowledge of the recent literature is essential.

Examiners assign an independent mark based on their assessment of the candidate's performance in each of the different vivas above. To pass the exam, candidates must submit a satisfactory dissertation, obtain a pass in the dissertation viva and obtain a pass in at least two of the three remaining vivas.

**Fellowship of the College of Intensive Care Medicine (FCICM) training requirements**

**Core knowledge and resources**

To be admitted to Fellowship of the College of Intensive Care Medicine of Australia and New Zealand it is necessary to have:

- completed advanced training with five out of six satisfactory training assessments, including the final one
- spent 12 months in approved posts in both medicine and anaesthesia
• submitted a formal project and had it accepted
• spent at least 6 months of advanced training working at senior registrar level
• completed an ADAPT course (for trainees who registered on or after 1 November 2004)
• been successful at the Fellowship examination.

Regulation 4 of the College of Intensive Care Medicine: Admission to Fellowship of the College of Intensive Care Medicine by Training and Examination (available on the college website: www.cicm.org.au) describes in detail the process necessary to be admitted to Fellowship.

All trainees registered after 1 January 2010, when the College of Intensive Care Medicine (CICM) of Australia and New Zealand was formally established, are governed by Regulation 5: Program for Training and Certification in Intensive Care Medicine. Those trainees who commenced their training before this date are governed by the Joint Faculty of Intensive Care Medicine (JFICM) regulations that applied at the time of their registration.

The Administrative Officer (Training and Examinations) at CICM can provide guidance through the various aspects of the paperwork and requirements needed during the different phases of training.

The CICM website contains a description of some of the desirable abilities required to practise as a competent, caring specialist in intensive care under Training/Training resources, in the document titled ‘Trainee selection policy’ (www.cicm.org.au). The abilities include excellent clinical skills, good management skills, an aptitude to cope with stress, a motivation to behave professionally in a manner that earns respect, an understanding of medical ethics and a commitment to undertake continuing education and quality assurance activities. Given that the FCICM Fellowship Examination is an exit exam for intensivists it is obvious that it will aim to give candidates the chance to demonstrate their possession of these desired qualities.

Successfully completing the CICM Primary examination is one way to advance towards becoming an intensive care specialist. The journal, Critical Care and Resuscitation (the college house journal), is available online, with editorials on key topics in intensive care. You will also find an education module on the website. It contains practical advice on how to approach studying, as well as tips on how to avoid common pitfalls.

**CICM Primary examination**

The requirements of basic training must be completed before progress to advanced training can occur. Basic training consists of 12 months of general hospital experience plus 36 months of approved basic training positions. This is explained in detail on the college website.

The rate-limiting step for most trainees to complete their basic training is the requirement to pass either the CICM Primary examination or an acceptable alternative primary examination.

The regulations currently state that success at the ANZCA, ACEM and RACS Primary examination or basic physician training and success at the RACP written and clinical (adult or paediatric) examinations are acceptable alternatives to the college’s Primary examination.

Applications for exemption from the Primary exam are individually assessed by the college censor. However, the process is time-consuming and should be started early to avoid the loss of training time.

Trainees must have completed 12 months’ general hospital experience and be registered as a trainee of the college in order to apply for the CICM Primary examination. They do not, however, have to have started approved training in order
to present for the exam. The Primary examination may be taken at any time during basic training.

The syllabus for the CICM Primary is available on the college website. The subject areas are described in-depth but it should be noted that the content is examined in an integrated fashion. This is different from some of the other primary examinations, where different subjects can be sat at different sittings.

Format of the CICM Primary examination

The CICM Primary examination consists of two parts: a written section followed by an oral examination. The written section is held in the major cities of Australia and New Zealand or other countries at the discretion of the Board. The oral exam is usually held in Melbourne. The College must receive applications before the closing date, 2 months before the date of the exam. The exam is held twice a year. The written section usually occurs in March and September, with the orals held 2 months later.

In the written paper a score of at least 45% must be obtained in order to be invited to sit the oral section. Candidates who are subsequently unsuccessful in the overall exam can proceed directly to the oral examination at the next two sittings, provided they have achieved a score of 50% or over in the written section. If a fail is obtained at the third attempt, the written section will need to be taken again on the next attempt.

The written section

This consists of two 150-minute papers. Both papers consist of 12 short-answer questions (SAQs) and 20 short-fact questions (SFQs). The college advises that 120 minutes are allocated to the SAQs (10 minutes per question) and 30 minutes to the 20 SFQs. Eighty per cent of the overall marks for the written are allocated to the SAQs and 20% to the SFQs. The written section makes up 50% of the total marks for the entire exam (see Table 1.4 for a breakdown of the marks).

The usual advice about written exams applies for these papers. Marks are divided equally between the SAQs, so allocate the time accordingly. Answers should be planned, writing legible and diagrams, lists and notes utilised to save time. Pre-planned generic skeleton answers (e.g. for a ‘critically evaluate’ question, a ‘pharmacology question’, a ‘compare and contrast’ question) will help organisation of answers under pressure. A mock exam is available on the CICM website, which gives an indication of the format, level of difficulty and scope of the questions.

The oral section

This comprises eight stations, each of 10 minutes. There are also one or two rest stations. The stations are a mixture of cross-table vivas and objective structured clinical examinations (OSCEs). All of the stations carry equal marks. Normal laboratory values will be given with investigation results. The examiner(s) assess performance using a predetermined marking grid.

Thirty minutes before the start time of the exam the chairman gives an overview of the process and logistics of the oral stations. Two minutes are allowed for movement between stations and for reading the introductory scenario outside the station. Ten minutes are allocated for the actual station.

Each station is marked individually, and the examiners are different for each station with no knowledge of your previous performance. The questions are graded in terms of difficulty, to allow a good assessment of knowledge. It is therefore possible that a point will be reached when candidates are unable to answer all the questions posed. In reality this means that, although they may not have answered all the questions correctly, they may still have passed the station.
Marking components

<table>
<thead>
<tr>
<th>Topic</th>
<th>Maximum mark</th>
<th>Pass mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 × 150-minute papers</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>SAQs</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>SFQs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>Oral section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 × 10-minute stations</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>50</td>
</tr>
</tbody>
</table>

Results

After the examination has concluded, an examiners meeting takes place. Immediately after this, results are handed to each candidate in a sealed envelope at a designated time and place.

CICM Fellowship examination

The breadth and depth of knowledge, skills and attitudes required to pass the CICM Fellowship examination are well described in the college documents, ‘Objectives of Training in Intensive Care’, which can be downloaded from the college website (www.cicm.org.au).

A thorough knowledge of the basic sciences and a broad-based understanding of general medicine, surgery and other disciplines as they relate to ICM form part of the core knowledge required by the examination.

Many trainees in adult intensive care worry about paediatric questions in the Fellowship exam. The level of knowledge expected is well described in the document ‘Objectives of Training and Competencies for Advanced Training in Paediatric Intensive Care’ and further explored in Chapter 10 of this book. The CICM Paediatric Intensive Care Medicine Fellowship examination is also specifically addressed in Chapter 10.

The exam takes place twice a year, with the written section usually occurring in April and August, and the oral section 6 weeks later. Completed application forms for the exam should be received by the faculty office 56 days before the written section. Exam dates and closing dates are available on the college website. The written section takes place in the capital cities of each state, with the location of the oral section rotating between the major metropolitan centres.

Basic training and at least 12 months core intensive care training must be completed before presenting for the Fellowship examination.

A new prerequisite to presenting for the Fellowship examination was introduced in August 2010 to assist candidates to prepare for the clinical examination. In the 6 months leading up to the date of the written examination every candidate must be formally assessed by their supervisor of training (or an appropriate delegate who is a Fellow of the CICM) as having achieved a satisfactory standard during an observed clinical assessment of a critically ill patient, on four separate occasions. This replaces the previous requirement for candidates to have performed four separate observed clinical assessments without a stipulation of the standard required. The cases should
be performed under the same conditions as the exam. Extra time should be used after the case to discuss the clinical problem(s) and for the candidate to receive feedback on their performance. In order to complete the four satisfactory assessments, generally more than four cases will need to be covered. This means the cases should be started 6 months prior to the written exam.

Satisfactory completion of these four assessments does not guarantee success in the clinical component of the examination. However, the college believes the process will ensure that candidates receive feedback during these assessments, allowing them to adequately prepare and present for the exam at the best time to ensure success.

Candidates who are unsuccessful in the clinical part of the Fellowship examination will need to repeat the four observed satisfactory clinical assessments prior to each subsequent attempt at the clinical component of the exam.

The management of a large number of intensive care patients is one of the best ways to prepare for the examination. This ensures the development of a considered approach to clinical and non-clinical issues that occur in the intensive care unit. Before attempting the examination, a frank assessment by the supervisor of training can be useful in determining the appropriate time to sit, not forgetting that this is an exit examination for consultant intensivists.

Format of the Fellowship examination
Candidates are required to pass the written section of the examination with a mark of 50% or more before being invited to the clinical section. A pass at the written exam with failure in the clinical allows direct entry to the oral section of the examination at the next two sittings. A breakdown of the marks for the different components of the Fellowship examination is shown in Table 1.5.

Written examination
The written exam consists of two 150-minute papers held on the same day. Each paper consists of 15 questions. The marks are allocated equally between the 30 questions. Consequently, time must be divided equally between each question, with 10 minutes to answer each question.

All the usual commonsense examination advice applies. Read the question carefully and only answer the question posed. Write legibly and be concise. Plan your answers and use lists, tables and diagrams to save time. One approach is to spend 2 minutes planning your answer, and 8 minutes writing it. Practising by completing past papers will help candidates develop useful strategies.

The content of the written papers has changed in recent years. Data interpretation, radiology and equipment questions are now all possible in the written papers, alongside questions on every aspect of intensive care practice, including the literature, management and basic sciences.

Clinical examination – Cross-table vivas
The viva section consists of eight cross-table vivas, each lasting 10 minutes. There are 2 minutes between each viva for candidates to move to the next station and read the introduction to the next viva, apart from the radiology station where candidates enter directly into the viva station and spend the 2 minutes looking at the radiology images before the questioning starts. Each viva is allocated equal marks. Do not despair if a viva does not seem to have gone well. The examiners at each station have no knowledge of your performance at other stations. Questions range in difficulty in order to test candidates’ depth of knowledge. When you are tested to the limits of your knowledge you will probably encounter questions that you cannot answer, nevertheless you may have already gained sufficient marks to pass the station.
Clinical examination – Clinical cases
The exam features two clinical cases. These are patients currently in the intensive care unit of the hospital(s) hosting the exam. Each case lasts 20 minutes and is examined by a different pair of examiners. The examiners direct candidates to assess a specific problem or system. The first 10 minutes of each case should be spent performing a purposeful examination to allow evaluation and assessment of clinical signs present and allow the development of a management strategy. The second 10 minutes is spent discussing an appropriate diagnosis and management plan, as well as interpreting relevant investigations.

Marking components

<table>
<thead>
<tr>
<th>Topic</th>
<th>Maximum mark</th>
<th>Pass mark</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Written section</strong></td>
<td></td>
<td></td>
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<tr>
<td>2 × 150-minute papers</td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td><strong>Clinical section</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical cases</td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td><strong>Cross-table vivas</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 × 10-minute vivas</td>
<td>40</td>
<td>20</td>
</tr>
</tbody>
</table>

To pass the examination a total score of at least 50% must be achieved. Only one section may be failed. Due to the importance placed on clinical examination and assessment a pass in the Fellowship examination cannot be achieved with a ‘poor fail’ (12/30) in the clinical cases section, however well an individual has scored overall.

Results
After the examination has concluded an examiners meeting takes place, which usually lasts at least 2 hours. Immediately after this, results are handed to each candidate in a sealed envelope at a designated time and place.