COLLEGE OF INTENSIVE CARE MEDICINE
OF AUSTRALIA AND NEW ZEALAND

Syllabus for the Second Part Examination in General Intensive Care Medicine

Second Edition

Foreword

This is the second edition of the Syllabus for the Second Part examination in general intensive care medicine. It has evolved from the College training document T-30 (Competencies, Learning Opportunities, Teaching and Assessments for Training in General Intensive Care Medicine), and incorporates the experience and knowledge gained since the publication of the current version. The structure has changed to a more systems-based approach, with greater detail provided on which conditions and topics are examinable. Domains of practice are categorised into "Levels of Understanding" to further guide candidates as to the amount of detail expected. Crucially, the syllabus has also been more closely aligned with the College graduate outcomes and the overall training program. When read in conjunction with the examination reports and past papers, it is hoped that it will provide trainees, tutors, and examiners with an improved guide as to the desired breadth and depth of knowledge required for success in the Second Part examination.

Intensive care medicine is a rapidly changing speciality, and this document can never be complete. The intent is to review it regularly and it will continue to evolve. The College of Intensive Care Medicine encourages trainees to update and maintain the currency of their clinical knowledge.

Finally, the strengths and value of this document could not have been achieved without the contribution of those involved; Candidates who have sat the CICM Second Part examination, past and current CICM Second Part Examiners, and all those listed within this document.

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CICM acknowledges the valued contributions made in the development of the Syllabus for the Second Part examination in general intensive care medicine (first edition).

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1 Introduction

1.1 The Second Part examination in general intensive care medicine

The Second Part examination is a summative assessment of knowledge, skills, behaviours, and capabilities in intensive care medicine. The examination is completed in Phase 2 of training, and trainees are eligible to sit the exam following the completion of 12 months of core training in intensive care. It comprises three components: short answer questions (SAQ's), oral vivas and clinical cases.

Successful completion of the Second Part examination is required to progress to Phase 3 (the transition year) of training. This provides evidence that trainees entering Phase 3 have the knowledge, skills, and capabilities to practice safely and effectively as a Phase 3 (transition year) trainee, who is progressing towards practice as an intensive care medicine specialist.

Specialist international medical graduates may be required to undertake the Second Part examination as part of the pathway to specialist recognition in Australia or Aotearoa New Zealand.

1.2 Connection with the CICM training program curriculum

Preparation for the Second Part examination drives achievement of the CICM graduate outcomes in intensive care medicine. Successful completion of the Second Part examination provides evidence of progress towards achievement of these outcomes in theses domains; medical expert, communicator and collaborator, health advocate, leader and manager, scholar and professional. These domains may be assessed in all three components of the examination.

1.3 Syllabus purpose

The purpose of the syllabus for the Second Part examination in general intensive care medicine is:

1. To provide transparency for examiners, candidates, supervisors of training and other CICM Fellows regarding assessable knowledge, skills, and capabilities.
2. To provide the basis for blueprinting the examination, which supports a comprehensive and consistent approach to assessment.
3. To enable comprehensive and effective feedback for candidates on performance in the examination.

1.4 Syllabus structure

The syllabus is divided into Domains of Practice, reflecting the CICM graduate outcomes. Each Domain is further divided into subjects. Subjects comprise both "conditions" – specific pathophysiological processes – and "topics" – concepts relevant to the subject.

1.5 Levels of Understanding

Expectations of candidates understanding of conditions and topics in the Medical Expert domain will differ based on relevance and importance in intensive care practice.

L1
These conditions and topics are core areas of clinical practice relevant to intensive care medicine and are considered essential knowledge. Detailed knowledge and comprehension of the principles and facts that relate to these areas will be expected, as well as the ability to apply and relate facts, principles, and concepts, analyse and appraise information provided, and create and justify rationale for approaches to clinical and non-clinical cases.

L2
These conditions and topics are significant and relevant to intensive care medicine and are considered important knowledge. An understanding of the key concepts and facts that relate to these areas is expected, although with less detail than required for L1 conditions and topics.

The distinction between L1 and L2 conditions and topics is reflected both in the level of expected knowledge, and the frequency with which the condition or topic will be examined.

Expected Knowledge for each domain of practice is given below the conditions and topics lists. This may be divided into sections for the L1 and L2 lists.

Frequency of Examination Questions on L2 conditions and topics will comprise no more than 30% of the written paper in total, and L2 conditions and topics will not form the primary focus of individual Vivas.

1.6 Recommended resources

Candidates are encouraged to draw on a variety of resources to support preparation for the Second Part examination in general intensive care medicine, including reviewing the CICM guidelines and statements relating to clinical care, as the content of these are assessable in the Second Part examination. The recommendations outlined below are not an exhaustive list and should be taken as an indication of the type of resources candidates should draw on. For conditions and topics in the Syllabus where expected knowledge includes supporting evidence, candidates will be expected to have a summary understanding of the relevant literature but will not be required to answer questions on specific clinical trials.

Textbooks:

- Oh's Intensive Care Manual
- Venkatesh. Data Interpretation in Critical Care Medicine
- Talley and O'Connor's Clinical Examination
- Talley and O'Connor's Examination Medicine
- Paul Myles, Statistical methods in Anaesthesia and Intensive Care
- Major Critical Care Journals subscribed by CICM (refer to the CICM Library)

CICM Resources:

- Examination Reports and Past Papers
- Professional Documents

- Trainee Education Resources
- Indigenous Health Resources

Other Professional Organisational Resources:

- ANZICS statement on Death and Organ Donation
- ATLS/ACLS Guidelines
- Brain Trauma Foundation Guidelines

Many candidates also find educational websites and podcasts to be useful supplements for exam preparation.

1.7 Glossary

For each of the conditions, topics, procedures, and therapies described within the syllabus, candidates may be asked to:

Assessment	Generic term that implies determining an underlying diagnosis, encompassing; history, clinical examination, and relevant investigations.
Compare and contrast	Provide a description of similarities and differences. You may tabulate your answer.
Critically evaluate	Provide and explain the evidence available relating to a topic.
Define	Provide the meaning of a requested topic.
Discuss	Explain the underlying key principles. Where appropriate, this may include controversies and/or advantages and disadvantages.
Explain	Make plain or known in detail.
Illustrate	Make clear by using specific example(s) or a diagram to demonstrate.
Interpret	Provide the meaning of the given data/information.
Justify	Provide a rationale to support your stated position. Where relevant give evidence.
List	Provide a series of items or points, in bullet or numbered format.
Management	Generic term that implies determining an overall management plan, encompassing; resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment.
Outline	Provide an organised overview of the important points.
Summarise	Condense relevant information into systematic arrangement or classification.

2 Domains of Practice

2.1 Medical Expert

2.1.1 Structure and Process

L1 **Topics** • Transport of the critically ill patient • Rapid Response Systems / Critical Care Outreach • Principles of infection control including SDD	**L2** **Topics** • ICU design and organisation • Role of clinical information systems, other expert systems. • Workplace culture e.g., burnout, fatigue (management and prevention) • Role of team-based health care in ICU • Pandemic and major incident Planning and response
For each of the above topics expected knowledge will include: • Principles and practice / implementation • Relevant guidelines and evidence • Controversies and risks	

2.1.2 Decision Making

L1 **Topics** • Clinical assessment of the critically ill patient • Severity scoring and outcome prediction • Treatment limitation / end of life care • Principles of medical ethics and application of ethical principles to clinical practice	**L2** **Topics** • Principals of critical thinking/clinical reasoning
For each of the above topics expected knowledge will include: • Principles and practice • Relevant guidelines and evidence • Controversies and risks	

2.1.3 Sepsis and Infections

L1
Conditions

- Sepsis and Septic shock
- Multiple organ dysfunction syndrome
- Rarer Infections with specific ICU considerations: necrotising soft tissue infections, streptococcal toxic shock, bacterial and virial meningitis and encephalitis, endocarditis, cerebral malaria, tetanus, melioidosis, dengue shock syndrome, toxoplasmosis, cryptococcus, botulism

Topics

- Antimicrobial use in the ICU

For each of the above conditions expected knowledge will include:

- Epidemiology
- Aetiology
- Pathophysiology and clinical course
- Assessment encompassing history, clinical examination, and relevant investigations
- Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment
- Complications and known sequelae
- Relevant guidelines and evidence

Candidates should be able to:

- Apply knowledge to intensive care clinical scenarios
- Perform an appropriate clinical assessment
- Analyse and synthesise information from a clinical assessment and investigations
- Develop an evidence-based management plan tailored to patient needs

For each of the above **topics,** expected knowledge will include:

- Principles and practice
- Relevant guidelines and evidence
- Controversies and risks

2.1.4 Cardiovascular Intensive Care

L1	L2
Conditions • Shock • Cardiac arrest • Ischaemic heart disease • Acute coronary syndromes • Heart failure • Pulmonary hypertension • Hypertensive Crisis • Valvular heart disease • Aortic aneurysm and dissection • Cardiac arrythmias • Thrombotic disease **Topics** • Haemodynamic monitoring • Interpretation of the electrocardiogram • Mechanical supports: ECMO / IABP • Cardiopulmonary resuscitation	**Conditions** • Congenital heart disease • Myocarditis • Pericarditis • Vena cava obstruction syndromes **Topics** • Echocardiography in intensive care • Mechanical supports: VAD/Impella • Cardiac Transplantation
For each of the above **L1 conditions** expected knowledge will include: • Epidemiology • Aetiology • Pathophysiology and clinical course • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae • Relevant guidelines and evidence Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop an evidence-based management plan tailored to patient needs	For each of the above **L2 conditions** expected knowledge will include: • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop a management plan tailored to patient needs For each of the above **L2 topics,** expected knowledge will include: • Principles and practice • Controversies and risks

For each of the above **L1 topics,** expected knowledge will include: • Relevant anatomy • Principles and practice • Interpretation • Relevant guidelines and evidence • Controversies and risks	

2.1.5 Respiratory Intensive Care

L1	L2
Conditions • Respiratory failure • Acute respiratory distress syndrome • Acute lung injury • Pulmonary embolism (clot, fat and other) • Acute severe asthma • Chronic obstructive airways disease • Interstitial lung disease • Pneumonia • Airway obstruction • Obstructive sleep apnoea • Pulmonary haemorrhage • Pleural disease including broncho-pleural fistula **Topics** • Airway management • Respiratory monitoring • Interpretation of arterial blood gases • Oxygen delivery systems • Mechanical ventilatory support • Prone positioning • Chest imaging • Pleural drain management • Respiratory physiotherapy • V-V ECMO	**Conditions** • Common paediatric presentations: croup and bronchiolitis • Pneumonitis e.g., aspiration, radiation, drug-induced • Diseases of the diaphragm • Tracheomalacia and stenosis • Respiratory malignancy and associated paraneoplastic syndromes • Lung transplantation **Topics** • Respiratory function tests • Chest ultrasound

For each of the above **L1 conditions** expected knowledge will include: • Epidemiology • Aetiology • Pathophysiology and clinical course • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae • Relevant guidelines and evidence Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop an evidence-based management plan tailored to patient needs For each of the above **L1 topics,** expected knowledge will include: • Relevant anatomy • Principles and practice • Interpretation • Relevant guidelines and evidence • Controversies and risks	For each of the above **L2 conditions** expected knowledge will include: • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop a management plan tailored to patient needs For each of the above **L2 topics,** expected knowledge will include: • Principles and practice • Interpretation • Controversies and risks

2.1.6 Gastrointestinal Intensive Care

L1 **Conditions** • Acute gastrointestinal bleeding • Cholecystitis and cholangitis • Acute hepatic failure • Chronic hepatic failure • Pancreatitis • Intra-abdominal catastrophes	**L2** **Conditions** • Oesophageal pathologies • Infections commonly requiring ICU support e.g., pseudo-membranous colitis • Gastro-intestinal motility syndromes • Gastro-intestinal perforation syndromes • Liver transplantation

Topics • Gastro-intestinal ischaemia or infarction • Enteral and parenteral nutrition • Malnutrition • Abdominal compartment syndrome • Abdominal imaging techniques	• Gastro-intestinal malignancies and associated paraneoplastic syndromes
For each of the above **L1 conditions** expected knowledge will include: • Epidemiology • Aetiology and prevention • Pathophysiology and clinical course • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae • Relevant guidelines and evidence Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop an evidence-based management plan tailored to patient needs For each of the above **L1 topics,** expected knowledge will include: • Relevant anatomy • Principles and practice • Interpretation • Relevant guidelines and evidence • Controversies and risks	For each of the above **L2 conditions** expected knowledge will include: • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop a management plan tailored to patient needs

2.1.7 Renal Intensive Care

L1	L2
Condition • Renal failure • Hypertensive crisis • Urosepsis **Topics** • Renal replacement therapy • Acid-base and electrolyte disorders • Blood gas analysis	**Conditions** • Nephrotic and nephritic syndromes • Interstitial nephritis • Renal malignancy • Renal transplantation **Topics** • Renal imaging
For each of the above **L1 conditions** expected knowledge will include: • Epidemiology • Aetiology • Pathophysiology and clinical course • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae • Relevant guidelines and evidence Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop an evidence-based management plan tailored to patient needs For each of the above **L1 topics,** expected knowledge will include: • Relevant anatomy • Principles and practice • Interpretation • Relevant guidelines and evidence • Controversies and risks	For each of the above **L2 conditions** expected knowledge will include: • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop a management plan tailored to patient needs For each of the above **L2 topics,** expected knowledge will include: • Relevant anatomy • Principles and practice • Interpretation • Controversies and risks

2.1.8 Neurological Intensive Care

L1	L2
Conditions • Seizure disorders including status epilepticus • Acute cerebrovascular injury • Subarachnoid, subdural and intracranial haemorrhage • Delirium • Acute behavioural disturbances • Meningitis and encephalomyelitis • Hypoxic ischaemic encephalopathy • Intracranial hypertension • Brain death • ICU acquired weakness • Guillain Barre syndrome • Spinal cord disorders **Topics** • Disorders of consciousness • Neuromonitoring • Intracranial pressure monitoring • Cerebral protection • Interpretation of cerebrospinal fluid • Brain CT and CT angiography	**Conditions** • Neurological malignancy • Space occupying lesions • Venous sinus thrombosis • Posterior reversible encephalopathy syndrome • Neuromuscular disorders including myasthenia gravis, motor neurone disease **Topics** • MRI
For each of the above **L1 conditions** expected knowledge will include: • Epidemiology • Aetiology • Pathophysiology and clinical course • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae • Relevant guidelines and evidence Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment	For each of the above **L2 conditions** expected knowledge will include: • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop a management plan tailored to patient needs

• Analyse and synthesise information from a clinical assessment and investigations • Develop an evidence-based management plan tailored to patient needs For each of the above **L1 topics,** expected knowledge will include: • Relevant anatomy • Principles and practice • Interpretation • Relevant guidelines and evidence • Controversies and risks	For each of the above **L2 topics,** expected knowledge will include: • Indications and relevant guidelines • Controversies and risks

2.1.9 Endocrine Intensive Care

L1 **Conditions**	**L2** **Conditions**
• Diabetes mellitus • Diabetes insipidus • Acute thyroid crises • Phaeochromocytoma • Adrenocortical insufficiency	• Cushing's disease • Conn's syndrome • Other thyroid disorders • SIADH • Pituitary crises
For each of the above **L1 conditions** expected knowledge will include: • Epidemiology • Aetiology • Pathophysiology and clinical course • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae • Relevant guidelines and evidence Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations	For each of the above **L2 conditions** expected knowledge will include: • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop a management plan tailored to patient needs

• Develop an evidence-based management plan tailored to patient needs	

2.1.10 Immunological and Rheumatological Intensive Care

L1	L2
Conditions • Anaphylaxis • Severe drug reactions, toxic epidermal necrolysis and Stevens-Johnson syndrome.	**Conditions** • Autoimmune and connective tissue diseases e.g., SLE, RA, scleroderma. • Vasculitides • Immunodeficiency syndromes **Topics** • Plasma exchange modalities • Relevant adverse effects of chemotherapeutic and immunomodulator therapies
For each of the above **L1 conditions** expected knowledge will include: • Epidemiology • Aetiology • Pathophysiology and clinical course • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae • Relevant guidelines and evidence Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop an evidence-based management plan tailored to patient needs	For each of the above **L2 conditions** expected knowledge will include: • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop a management plan tailored to patient needs For each of the above **L2 topics,** expected knowledge will include: • Principles and practice • Clinical sequelae • Controversies and risks

2.1.11 Haematological and Oncological Intensive Care

L1	L2
Conditions • Anaemia • Neutropenia • Thrombocytopenia • Arterio-venous thrombotic disease e.g., DVT, thrombophilic disorders, HITTS, TTP-HUS • Tumour lysis syndrome **Topics** • Bone marrow failure • Stem cell and bone marrow transplantation • Haemostatic failure • Massive transfusion	**Conditions** • Haematological malignancy and paraneoplastic syndromes • Haemophagocytic syndrome • Haemolytic Syndromes • Hyperviscosity syndromes • Anti-phospholipid syndrome, including Catastrophic antiphospholipid syndrome (CAPS) **Topics** • Relevant adverse effects of chemotherapeutic and immunomodulator therapies • Thromboelastography • Blood films relevant to ICU practice

For each of the above **L1 conditions** expected knowledge will include: • Epidemiology • Aetiology • Pathophysiology and clinical course • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae • Relevant guidelines and evidence Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop an evidence-based management plan tailored to patient needs For each of the above **L1 topics,** expected knowledge will include: • Principles and practice • Interpretation • Relevant guidelines and evidence • Controversies and risks	For each of the above **L2 conditions** expected knowledge will include: • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop a management plan tailored to patient needs For each of the above **L2 topics,** expected knowledge will include: • Clinical sequelae • Interpretation

2.1.12 Obstetric Intensive Care

L1 **Conditions** • Pre-eclampsia and eclampsia including HELLP • Post partum haemorrhage • Amniotic fluid embolism **Topics** • Physiological change related to pregnancy • Special considerations when managing the obstetric patient	**L2** • Ovarian hyperstimulation syndrome • Pregnancy related infections • Ectopic pregnancy

For each of the above **L1 conditions** expected knowledge will include: • Epidemiology • Aetiology • Pathophysiology and clinical course • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae • Relevant guidelines and evidence Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop an evidence-based management plan tailored to patient needs For each of the above **L1 topics,** expected knowledge will include: • Anatomical, physiological and pathophysiological alterations impacting on ICU care • Logistic considerations to provision of ICU care • Assessment encompassing history, clinical examination, and relevant investigations • Relevant guidelines and evidence	For each of the above **L2 conditions** expected knowledge will include: • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop a management plan tailored to patient needs

2.1.13 Trauma Intensive Care

L1 **Conditions**	**L2** **Topic**
• Shock • Traumatic brain injury • Faciomaxillary and upper airway trauma • Chest trauma	• Haemostatic management

• Spinal trauma • Abdominal and pelvic trauma • Limb injuries including traumatic amputations, • Compartment syndrome • Rhabdomyolysis **Topic** • Severe and/or multiple trauma • Management of massive haemorrhage	
For each of the above **L1 conditions** expected knowledge will include: • Epidemiology • Aetiology • Pathophysiology and clinical course • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae • Relevant guidelines and evidence Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop an evidence-based management plan tailored to patient needs For each of the above **L1 topics,** expected knowledge will include: • Relevant anatomy • Principles and practice • Relevant guidelines and evidence • Controversies and risks	For each of the above **L2 topics,** expected knowledge will include: • Principles and practice • Controversies and risks

2.1.14 Environmental Injuries and Toxicology in ICU

L1 **Conditions** • Burns • Electrocution • Blast injuries • Envenomation • Poisoning and drug intoxication • Submersion/Immersion • Thermal injury	**L2** **Conditions** • Malignant hyperthermia • Neuroleptic malignant syndrome • Serotonin syndrome • Decompression sickness • Hypothermia
For each of the above **L1 conditions** expected knowledge will include: • Epidemiology • Aetiology • Pathophysiology and clinical course • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, (including specific antidotes) initial and ongoing monitoring with supportive treatment • Complications and known sequelae • Relevant guidelines and evidence Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop an evidence-based management plan tailored to patient needs	For each of the above **L2 conditions** expected knowledge will include: • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop a management plan tailored to patient needs

2.1.15 Organ and Tissue Donation in Intensive Care

L1 **Topics** • Neurological determination of death • Circulatory determination of death • Organ and tissue donation after death • Patient and family-centred care • Best practice in organ donation
For the expected knowledge of the above **L1 Topics** candidates are referred to the *ANZICS Statement on Death and Organ Donation*

2.1.16 Populations requiring special considerations in Intensive Care

During ICU admission • Obese • Frail and aged • Chronic health conditions with impairment in physical and/or mental capacity **After ICU admission** Sequelae of prolonged ICU admissions
For each of the above **populations** expected knowledge will include: • Anatomical, physiological and pathophysiological alterations impacting on ICU care • Logistic considerations to provision of ICU care • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment • Complications and known sequelae • Relevant guidelines and evidence • Ethical considerations Candidates should be able to: • Apply knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from a clinical assessment and investigations • Develop an evidence-based management plan tailored to patient needs

2.1.17 Paediatrics

L2

Conditions

- Bronchiolitis
- Croup
- Other conditions described elsewhere in the syllabus as they present in children, encompassing:
    - Sepsis and septic shock
    - Trauma
    - Environmental Injuries and toxicology
    - Cardiac arrest
    - Meningitis
    - DKA

Topics

- Anatomical, physiological and pathophysiological alterations impacting on ICU care
- Paediatric cardiopulmonary resuscitation
- Paediatric fluid and electrolyte therapy

For each of the above **L2 conditions** expected knowledge will include:

- Assessment encompassing history, clinical examination, and relevant investigations
- Management ***for the first 24 hours in ICU***, encompassing resuscitation, definitive treatment, initial and ongoing monitoring with supportive treatment

For each of the above **L2 topics,** expected knowledge will include:

- Implications for ICU Management
- Principles and practice
- Controversies and risks

2.1.18 Peri-operative Issues in Intensive Care

L1	**L2**
Peri-operative **topics**: • Cardiac surgery: including sternotomy for bypass grafting, valve surgery and aortic surgery • Thoracic surgery: including lobectomy, pneumonectomy and rib fixation • Neurosurgery: including craniotomy and craniectomy for common indications and major spinal surgery • Abdominal surgery: including oesophagectomy, partial hepatectomy and pancreatectomy (e.g., Whipple's procedure) • High risk patients undergoing routine surgery	Peri-operative **topics**: • Transplantation • Vascular surgery • Major head and neck surgery • Reconstructive surgery
For each of the above **L1 topics** expected knowledge will include: • Risk assessment and pre-op scoring systems • Anatomy and surgical technique relevant to ICU post-operative care • Expected post-operative clinical course • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, initial and ongoing monitoring and supportive treatment • Complications and known sequelae • Relevant guidelines and evidence Candidates should be able to: • Apply this knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from clinical assessment and investigations • Develop an evidence-based management plan tailored to patient needs	For each of the above **L2 topics** expected knowledge will include: • Expected post-operative clinical course • Assessment encompassing history, clinical examination, and relevant investigations • Management encompassing resuscitation, initial and ongoing monitoring and supportive treatment • Complications and known sequelae Candidates should be able to: • Apply this knowledge to intensive care clinical scenarios • Perform an appropriate clinical assessment • Analyse and synthesise information from clinical assessment and investigations

2.1.19 Intensive Care Procedures

L1

Cardiac

- Arterial line
- Central venous catheter
- Pulmonary artery catheter
- Intra-aortic balloon pump
- Pacing
- Pericardiocentesis
- Defibrillation and cardioversion
- Cardiac advanced life support

Respiratory

- Intubation
- Prone positioning
- Bronchoscopy
- Front of neck airway access
- Pleural drainage

Gastrointestinal

- Nasogastric tubes (NG, NJ, PEG and PEJ)
- Ascitic drain
- Balloon tamponade tube (i.e., SB or Minnesota)

Renal

- Dialysis catheter insertion

Neuro

- Lumbar puncture
- Brain death testing

Other

- Spinal Immobilisation
- Intra-osseous access
- Pelvic binders
- Temperature management
- Decontamination for toxicology
- Personal protective equipment

For each of the above expected knowledge will include:

- Indications
- Relevant anatomy
- Procedural Details including insertion, removal, and management
- Interpretation
- Advantages and disadvantages
- Complications

2.1.20 Radiology in Intensive Care

Radiological Investigations • CXR, C-spine X-Ray, pelvic X-Ray • CT head/ neck/thorax/abdomen and pelvis • Contrast studies CT head/neck/abdomen/thorax/pelvis (arterial and venous phase) • MRI brain and spine • Cerebral angiography for the purposes of brain death determination • Nuclear medicine for the purposes of brain death determination.
For each of the above **investigations** expected knowledge will include: • Indications • Relevant anatomy • Procedural details relating to ICU management • Interpretation (not expected for MRI brain or spine) • Advantages and disadvantages • Complications and risks • Relevant guidelines and evidence

2.1.21 Applied Pharmacology in Intensive Care

Cardiac • Inotropes and vasopressors • Anti-arrhythmics • Anti-hypertensives **Respiratory** • Bronchodilators • Pulmonary vasodilators • Corticosteroids **Renal** • Diuretics • Renal replacement fluid • Intravenous Fluids • Electrolyte replacements **Neuro** • Sedatives • Analgesics • Antidepressants • Antipsychotics • Anticonvulsants • Local Anaesthetics • Neuromuscular Blockers **Gastrointestinal** • Prokinteics • Antiemetics • Aperients and laxatives • Nutrition • Other – octreotide

Haem

- Anti-platelet
- Anti-coagulants
- Fibrinolytics
- Anti-fibrinolytics
- Blood products and derivatives

Immunology

- Antimicrobials
- Immunomodulators

Endocrine

- Hypoglycaemics – oral, subcutaneous, and intravenous
- Steroids
- Vasopressin and its analogues

Antidotes and Reversal Agents

For commonly used drugs in each of the above classes expected knowledge will include:

- Indications and contraindications
- Safe clinical use in intensive care, including reversal of effect where appropriate.
- Common or severe adverse effects

Candidates should be able to discuss the use of these drugs in intensive care including the available evidence.

Detailed mechanism of action, pharmacokinetic and pharmacodynamic information is not required. This is covered in the Part I syllabus and examination.

2.2 Communicator and Collaborator

2.2.1 Communication and collaboration in Intensive Care

Topics • Communication with patients as part of care in the ICU • Informed consent • Handover and referrals • Family/Whānau meetings • Shared decision making • Open disclosure • Providing information for discharge • Intra and Inter-professional communication and collaboration in situations that include but are not limited to critical clinical events, resuscitation, retrievals and debriefing • Challenging conversations e.g., breaking bad news, end of life care, organ donation and conflict resolution
For the above topics candidates should be able to discuss and demonstrate effective, respectful and empathetic, professional, culturally safe and patient/family centred communication skills.

2.3 Leader and Manager

2.3.1 Intensive Care Administration

Topics Safety and Quality • Clinical audit • Occupational health and safety standards relevant to intensive care • Incident reporting and review • Key performance indicators in ICU Resource Allocation and Management • Equipment assessment and provision • Personnel management and staffing • Promoting and maintaining a safe workplace culture • Sustainable health care practice
For the above topics Candidates should be able to discuss the purpose and processes of these activities in relation to Intensive Care.

2.4 Health Advocate

2.4.1 Aboriginal, Torres Strait Islander, Māori and Pasifika Health and cultural safety

Topics • Aboriginal and Torres Strait Islander Health • Hauora Māori • Culturally safe healthcare for Aboriginal and Torres Strait Islander, Māori, and Pasifika populations
For the above topics candidates should be able to: • Demonstrate how they would model and promote culturally safe healthcare in the Intensive care environment

2.5 Scholar and Educator

2.5.1 Research and Evidence Based Practice in Intensive Care

Topics
Candidates should be able to discuss the following:

- The different levels of evidence
- Critical appraisal of study types; both observational and interventional studies.
- Research methods for each study type including study design, populations, methods, data collection, analysis and outcomes
- Aspects of statistics including: Data types, approaches to data analysis, (eg, normal and non-normal distribution of continuous data, risk ratio and diagnostic studies specificity and sensitivity, positive and negative predictive value and receiver operating curves)
- The ethical issues in performing research in the critically ill, including issues related to consent, emergency treatment, and assessment of risk.

2.6 Professional

2.6.1 Ethical and legal considerations in Intensive Care

Candidates should be able to discuss the following:

- Concepts of patient autonomy, beneficence, non-maleficence, and justice (as it applies to fair distribution of resources)
- Principles of informed consent
- Issues and principles involved in withholding and withdrawing treatment, and the care of the dying patient
- Ethics of resource allocation in the face of competing claims to care
- Legal issues and principles involved in the diagnosis of brain death and the process of organ donation

2.6.2 Professional behaviour

Candidates should be able to:

- Demonstrate an understanding of the responsibilities of belonging to a profession
- Behave with compassion, integrity and honesty towards colleagues, patients, and the public.
- Demonstrate professional behaviour during the conduct of the clinical examination.

APPENDIX

A note on calculations used in the Second Part examination:

Anion Gap & Delta Ratio
Normal anion gap is 12
Potassium is not used in the calculation
All anion gaps should be corrected for albumin if the stated albumin level is <40
The anion gap is not corrected for phosphate.

Delta Ratio = (change in anion gap) / (change in bicarbonate)
Assuming the normal AG =12 and the normal HCO_3 is 24

Delta ratio of < 0.4 = normal anion gap acidosis
Delta ratio of 0.4-0.8 = mixed high and normal anion gap acidosis
Delta ratio of 0.8- 1.0 = high anion gap
Delta ratio of 1-2.0 = high anion gap exists
Delta ratio over >2.0 = a high anion gap acidosis and a metabolic alkalosis is present

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