

(Under Critical Care Education Foundation-India)
Unit-F, Gemini Park, V.N. Purav Marg, Mankhurd, Mumbai-400088
Email: chairman@ccef.in

<u>Curriculum for Fellowship Examination in Critical Care Medicine</u> (2010-2020)

College of Critical Care Medicine (under Critical Care Education Foundation-India)

The FCCCM examination structure is designed to evaluate the candidates' performance in 2 aspects:

- 1) Assessment of performance throughout the year consists of
 - a) Performance in the ICU
 - b) Attendance/ participation at various teaching programs
 - c) Logbook submission
 - d) The evaluation of candidate by the teacher/ HOD in ICU.
- 2) Assessment of performance at a pre-decided point in time (the Exit Examination): consisting of
 - a) Theory /written component
 - b) Vivas
 - c) Objective Structured Clinical Examinations (OSCEs) and
 - d) Bedside clinical examination

Assessment of Performance Throughout the Year

Logbook Submission of well worked out [original data] <u>in specified format</u> using given templates in download section of ICUeducation.com. Logbook will consist of:

- 1) Set of 10 ABG,
- 2) Set of 5 ECG,
- 3) Set of 5 X-rays,
- 4) Set of 5 Biochemistry data,
- 5) Set of 5 haematology/Coagulation data,
- 6) Set of 5 CT scans/MRI
- 7) Set of 5 Clinical Cases.

Assessment of performance at a pre-decided point in time (the Exit Examination):

The Exit Examination will be separate for Primary examination candidates and Fellowship examination Candidates. The Exit examination will consist of:

- a) Theory component: There will be 2 written papers covering all aspects of Critical Care except neonatal and paediatric critical care.
- b) Vivas (4)
- c) Objective Structured Clinical Examinations (OSCEs)
 - 1. Arterial blood gas Interpretation Station
 - 2. Biochemistry report Interpretation Station
 - 3. Xray Station
 - 4. CT scan/ MRI station
 - 5. Haematology & Coagulation report Interpretation Station
 - 6. ECG/ EKG Station
 - 7. Drugs/ Graphs in ICU station
 - 8. Hemodynamic data interpretation Station.
 - 9. Microbiological data interpretation station.
 - 10. Communication station (with Actor)
- d) Hot-Cases in ICU: 2 ICU cases and 2 Medical Cases.

Candidate must secure 50% marks overall to pass the exit examination.



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Details of Syllabus

There are 12 Categories, and the topics are divided into knowledge and skills that the candidate must acquire proficiency in.

- 1. General Management
- 2. Respiratory Critical Care
- 3. Cardiac Critical Care
- 4. Critical Care Gastroenterology
- 5. Critical Care Neurology
- 6. Critical Care Nephrology
- 7. Critical Care Endocrinology
- 8. Critical Care Haematology and Oncology
- 9. Infectious Diseases in Critical Care
- 10. Surgical and Trauma Critical Care
- 11. Obstetric Critical Care
- 12. Pharmacology and Toxicology in Critical Care

	1. General Management
	KNOWLEDGE
1.01	Resource allocation in the ICU
1.02	Interpreting and applying evidence-based medicine in Critical Care
1.03	Policies, Bundles, and protocols in ICU
1.04	ICU-designing, staffing
1.05	Criteria for admission to, and discharge/ transfer from ICU
1.06	Rapid response teams
1.07	Transport of the critically ill patient
1.08	Quality assurance and safety in ICU
1.09	Medico-legal issue in ICU
1.10	Principles of physiotherapy in the ICU
1.11	End of Life issues and Goals of care
1.12	Palliative care
1.13	Post-ICU syndrome
1.14	Physician burn-out
	SKILL
	A. Ethical issues in ICU:
1.15	Basic ethical principles: autonomy, beneficence, non-maleficence, justice
1.16	Respect for patient privacy, dignity, and confidentiality
1.17	Ethical relationships with industry
	B. Basics principles of communication in ICU:
	Compassionate care, active listening, interprofessional collaboration (Team player) and
1.18	communication.
1.19	Respects the cultural and religious beliefs of the patient
1.20	Patient and family centred care
	C. Team player:
1.21	Contribute to ICU activities
1.22	Approachable and accessible
1.23	Recognizes personal strengths and limitations
1.24	Active participation in continuing education
1.25	Fosters effective communication with inter-professional teams
1.26	Demonstrate initiative in problem solving



1.27	Lead, delegate & supervise others appropriately according to their experience/ role
	D. Professionalism:
1.28	Take decisions to admit, discharge or transfer patients
1.29	Maximize safety in everyday practice
1.30	Obtain consent/assent for treatment, research, autopsy, or organ donation
1.31	Considers patient comfort during procedures / investigations
1.32	Avoids unnecessary tests and procedures
1.33	Point-of-Care testing
1.34	Handover to ICU
1.35	Documentation
1.36	Understand basic medical statistics
1.37	How to read a medical journal
1.38	Teaching skills and training in ICU
1.39	Lead, delegate & supervise others appropriately according to experience/role
1.40	Fast-HUGS
1.41	Management of Pain and sedation in ICU
1.42	Principles, indications, and limitations of pulse oximetry
1.43	Prevention of bedsores and management
1.44	Examine patients, elicit, and interpret clinical signs in the ICU
1.45	Develop a working, & limited differential diagnosis based on presenting features
1.46	Integrate clinical findings with results of investigations
1.47	Document investigations undertaken, results and action taken
1.48	Clinical research in ICU
	2. Respiratory Critical Care
	KNOWLEDGE:
	Pathophysiology, clinical presentation, differential diagnosis, complications, and
	management of commonly encountered acute medical conditions.
2.01	Physiology: Principles of gas exchange, Pathophysiology and differential diagnosis of acute
	respiratory failure, heart-lung interaction, Lung mechanics, lung volumes
2.02	Pulmonary oedema
2.03	Lung Collapse/ Atelectasis
2.04	Pneumonia- community and hospital acquired, aspiration pneumonia
2.05	Pulmonary haemorrhage
2.06	Acute lung injury (ALI) and acute respiratory distress syndrome (ARDS)
2.07	Acute Severe Asthma
2.08	Chronic obstructive airways disease (COPD)
2.09	The unprotected airway in a comatose patient
2.10	Pleural Pathologies: Massive pleural effusions, Pneumothorax (simple, Tension), Empyema
2.11	Respiratory muscle disorders
2.12	Pulmonary thrombo-embolic disease- including air, fat, amniotic fluid embolism
2.13	Pulmonary Hypertension
2.14	Pulmonary complications in immunocompromised patients
2.15	Respiratory inhalational injuries
2.16	Drowning
2.17	Sleep Apnoea Syndromes
2.18	Thoracic trauma
	SKILL
	Oxygen therapy: Indications, contraindications, Safe prescribing of oxygen; calculation of
2.19	approx. FiO2, manifestations of oxygen toxicity. High-Flow Nasal oxygenation therapy.
2.20	Nebulization: Principles, drugs nebulized, indications, contraindications, side effects



Artificial airway: Indications, selection, and insertion of oral (Consopharyngeal airways), and laryngeal mask airways (LMA) Tracheal intubation: selection of tube, indications, techniques placement, correct cuff inflation, maintenance, suctioning, ex Airway management in special circumstances: head injury, ful obstruction, suspected cervical spine injury 2.25 When to anticipate and Management of difficult intubation and Percutaneous and surgical tracheotomy: Indications, contrain management, complications Mechanical ventilation: Principles, indications, modes, initiation complications, readjusting ventilator based on blood gases, we troubleshooting, Disease specific considerations, Heart-Lung in ventilation, protective lung ventilation, ventilator graphs and techniques. Advanced/ novel modes of ventilation, approach patient. Non-invasive Ventilation: Principles, indications, initiation, modes complications 2.28 Bronchoscopy: Role in ICU Intercostal Chest Drain (ICD) insertion: Principal, indication, tecomplication, removal, Emergency relief of tension pneumoths. 2.30 Complication, removal, Emergency relief of tension pneumoths. 2.31 Rapid sequence intubation 2.32 End-tidal CO2 monitoring and capnography in ICU 2.33 Arterial Blood Gas interpretation 2.34 Imaging of the Chest: Xray and CT scan, USG of Chest. 3. Cardiac Critical Care KNOWLEDGE: Pathophysiology, clinical presentation, differential diagnosis, management of commonly encountered acute medical conditions of the complex of commonly encountered acute medical conditions of the complex of commonly encountered acute medical conditions of the complex of the patient with different types of shock and solution system and complex of the patient with different types of shock and language and complex of the patient with different types of shock and language and complex of the patient with different types of shock and language and complex of the patient with different types of shock and language and complex of the patient with different types of shoc	dications, techniques, confirming correct cubation stomach, upper airway and failed intubation dications, techniques, con, monitoring on a ventilator, ceaning, Common alarms and ceaning, Common alarms and conteraction during mechanical waveforms, Lung recruitment con a difficult to ventilate conitoring, management of chniques, management,
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3.05 ACS: unstable angina; acute myocardial infarction (STEMI &No.	lira
3.07 Acute pericardial disease and cardiac tamponade	d & monopes in leo
3.08 Cardiomyopathies (acute, chronic), peripartum, stress-induce	4
3.09 Myocarditis	4
3.10 Cardiac Arrhythmias: identification, mechanisms, managemer	<u></u>
3.11 Hypertensive emergencies	· ·
3.12 Acute aortic syndromes: aneurysms and dissections	
3.13 Infective endocarditis	
3.14 Peri-operative care of the cardiac surgical patient	
3.15 NOACS and antidotes	
SKILL	
3.16 Hemodynamic monitoring: Principles, methods, indications &	
interpretation, Integration of clinical examination data and he	limitations and waveform
characterize hemodynamic derangements	
3.17 Cardiac output studies: Indications, limitations and complications	
measurement of cardiac output (e.g. pulmonary artery cathet	modynamic monitoring to



	PiCCO, LiDCO) and minimizing complications, interpretation and calculation of derived
	variables.
3.18	Role of 2D echo in ICU
3.19	ECG/EKG: Interpretation
3.20	BCLS, ACLS and post cardiac arrest care
3.21	Fluid therapy in ICU
3.22	Temporary cardiac pacing: Principles and techniques, troubleshooting
3.23	Pericardiocentesis
	4. Critical Care Gastroenterology
	KNOWLEDGE:
	Pathophysiology, clinical presentation, differential diagnosis, complications, and
	management of commonly encountered acute medical conditions.
4.01	Acute abdomen
4.02	Diarrhoea and vomiting in ICU
4.03	Bowel obstruction & pseudo-obstruction
4.04	Intra-abdominal hypertension & compartment syndrome
4.05	Approach to jaundiced patient
4.06	Acute calculus and acalculous cholecystitis in ICU
4.07	Upper and lower GI haemorrhage
4.08	Acute and acute-on-chronic liver failure in ICU
4.09	Acute pancreatitis
4.10	Hepato-pulmonary syndrome, hepato-renal syndrome
4.11	Abdominal trauma
4.12	Mesenteric ischemia
4.13	Short-bowel syndrome
	SKILL
4.14	Interpretation of Liver function test
4.15	FAST scan in abdominal trauma
4.16	Insert a nasogastric tube / Naso-jejunal tube in intubated and non-intubated patient
4.17	Abdominal paracentesis: Indications, contraindications, complications, and technique
	Insertion of gastro-oesophageal balloon tamponade tube (e.g. Sengstaken-Blakemore,
4.18	Minnesota)
4.19	Nutrition in ICU: Enteral and Parenteral
	5. Critical Care Neurology
	KNOWLEDGE:
	Pathophysiology, clinical presentation, differential diagnosis, complications, and
	management of commonly encountered acute medical conditions.
5.01	Approach to altered consciousness-including coma
5.02	Acute confusional states
5.03	Post-anoxic brain damage
5.04	Cerebro-vascular diseases: Thrombo-embolic, intracranial haemorrhage, sub-arachnoid
	haemorrhage
5.05	Seizures in ICU and status epilepticus
5.06	CNS infections: meningitis and encephalitis
5.07	Raised intracranial pressure causes and management
5.08	Acute neuromuscular diseases (e.g., Guillain-Barre syndrome, myasthenia gravis)
5.09	ICU acquired critical illness polyneuropathy, motor neuropathy and myopathy
5.10	Malignant hyperpyrexia
5.11	Metabolic encephalopathy
5.12	Head injury



5.13	Spinal cord injury and spinal syndromes
5.14	ICU care after neurosurgery
5.15	Brain death
5.16	Management of the potential organ donor
	SKILL
5.17	Examine and plan care for the confused patient: scoring systems and physical/ chemical
	restraints
5.18	Neuro-localization in the ICU: ventilated, non-ventilated patient
5.19	Neuro-localization in patients with spinal lesions
5.20	Cervical spine clearance in ICU
5.21	Assess and document Glasgow Coma Scale (GCS)
5.22	Take prompt action to reduce acutely elevated intracranial pressure
5.23	ICP monitoring: Indication, complication, care, and Interpretation of ICP waveforms
5.24	DVT prophylaxis in head-injury and intra-cerebral haemorrhage
5.25	Principles and application of therapeutic hypothermia
5.26	CSF analysis: Indications for lumbar puncture and interpretation of CSF report
5.27	Radiology in neuro-critical care
5.28	Sedation in ICU
	6. Critical Care Nephrology
	KNOWLEDGE:
	Pathophysiology, clinical presentation, differential diagnosis, complications, and
	management of commonly encountered acute medical conditions.
6.01	Renal physiology: Glomerular function, tubular function, electrolyte transport
6.02	Electrolyte disorders and their management: Hyponatremia, Hypernatremia, hypokalaemia,
	hyperkalaemia
6.03	Disorders of Mineral Metabolism: Calcium, Phosphorus, Magnesium
6.04	Acute Kidney Injury in ICU
6.05	Acute-on-chronic renal failure in ICU
6.06	nephrotoxic drugs and monitoring
6.07	Drug dosing in renal failure
6.08	Renal syndromes- hepato-renal, cardio-renal, pulmo-renal
6.09	Rhabdomyolysis
6.10	Contrast Induced Nephropathy
6.11	Severe Urosepsis in ICU: pyelonephritis
6.12	ICU management of a renal transplant patient
	SKILL
6.13	Interpretation of renal function test: serum electrolytes, Urine electrolytes, Urea: creatinine
	ratio, urine routine
6.14	Identify patients at risk of developing renal failure in ICU
6.15	Renal Replacement Therapy: Indications, complications, and selection (continuous and
	intermittent), Troubleshooting, Graphs
6.16	Temporary haemodialysis catheter: Placement, complications, management
	7. Critical Care Endocrinology
	KNOWLEDGE:
	Pathophysiology, clinical presentation, differential diagnosis, complications, and
7.61	management of commonly encountered acute medical conditions.
7.01	Guidelines and evidence for glycaemic control in ICU
7.02	Stress Hyperglycaemia
7.03	Diabetic emergencies: DKA, hypoglycaemia, hyperglycaemic hyperosmolar State (HHS)
7.04	Lactic acidosis



7.05	Thyroid emergencies: Myxoedema, Thyroid storm
7.06	Sick euthyroid syndrome
7.07	Adrenal emergencies: Sepsis-induced relative adrenal insufficiency, adrenal crisis,
	pheochromocytoma in ICU
7.08	Polyurea syndromes in ICU: Diabetes insipidus, Osmotic diuresis, psychogenic polydipsia
7.09	Pituitary disorders: Sheehan's syndrome
	SKILL
7.10	Blood glucose control: indications, methods, monitoring of safety & efficacy
	8. Critical Care Haematology & Oncology
	KNOWLEDGE:
	Pathophysiology, clinical presentation, differential diagnosis, complications, and
	management of commonly encountered acute medical conditions.
8.01	Anaemia in critical Care patients
8.02	Disseminated intravascular coagulation (DIC)
8.03	Bleeding disorders in ICU
8.04	TTP/ HUS
8.05	Massive blood transfusion in ICU
8.06	Sickle cell syndromes
8.07	Vasculitis in ICU
8.08	Catastrophic APLA
8.09	Care of immunosuppressed patients Care of hematopoietic stem cell transplant and Graft-
	Versus-Host Disease in ICU
8.10	Toxicity of chemotherapy in ICU: cardiomyopathy from anthracyclines, pulmonary toxicity
	from bleomycin, 5-FU induced arrythmias, methotrexate toxicity, L-asparaginase
	induced pancreatitis etc
8.11	Critical care of patients with haematological malignancies
8.12	Oncological emergencies
8.13	Tumour lysis syndrome
8.14	Hypercoagulable states in ICU
8.15	Management of Neutropenic patients
0.16	SKILL
8.16	Approach to anaemia in ICU
8.17	Coagulation studies: Indications and interpretation
8.18	Blood and blood component therapy
8.19	Thrombolytic and antithrombotic therapy in ICU
8.20	Mismatched transfusion management Reversal of blood thinners
8.21	
8.22	Plasmapheresis 9. Infectious Diseases in Critical Care
	S. Infectious Diseases in Critical Care KNOWLEDGE:
	Pathophysiology, clinical presentation, differential diagnosis, complications, and
	management of commonly encountered acute medical conditions.
9.01	Approach to fever in ICU
9.02	Sepsis: Guidelines and evidence for management
9.03	Organisms causing specific infections: Gram positive and Gram-negative bacteria, fungi,
5.05	protozoa, viruses
9.04	Hospital acquired infections: CRBSI, VAP, CAUTI, GI infections, Endcarditis
9.05A	A. Malaria
9.05B	B. Dengue and other viral haemorrhagic fevers



9.05D	D. Strongyloidiasis hyperinfection
9.05E	
9.05F	F. Critically ill patients with Typhoid
9.05G	G. Tetanus
9.05H	H. Rickettsia infections
9.051	I. Bacterial meningitis
9.05J	J. Cholera
9.06	HIV and AIDS in the ICU
9.07	Serious infections in immunocompromised hosts
9.08	Severe fungal infections in ICU
9.09	Clostridium difficile
9.10	Surgical site infection in ICU
9.11	Skin and soft tissue infections emergencies: necrotising fasciitis, pyoderma gangrenosum, etc
9.12	Antibiotics in the management of serious hospital acquired infections
9.13	Mechanisms of Antimicrobial resistance
9.14	Botulism
9.15	Management of Pandemic critical illness
9.16	Emerging Pandemic infections: H1N1, Covid-19, SARS, MERS
	SKILL
9.17	Basic understanding of antibiotics: Classification, mechanism of action, activity.
9.18	Interpretation of an antibiogram
9.19	Infection control measures in the ICU
9.20	Empirical antibiotic selection in ICU based on infection syndrome
9.21	Universal precautions and preventative infection control techniques
9.22	Antifungals in ICU
9.23	Post-exposure prophylaxis
9.24	Managing bio-waste and biohazards in ICU
	10. Surgical and trauma Critical Care
	KNOWLEDGE:
	Pathophysiology, clinical presentation, differential diagnosis, complications, and management of commonly encountered acute medical conditions.
10.01	Management of burn patient in ICU
10.02	Priorities in multisystem trauma
10.03	Massive transfusion in polytrauma
10.04	Radio-imaging in a trauma patient - neuro, cardiorespiratory and abdominal
10.05A	A. Respiratory - thoracic trauma; lung contusion, flail chest, haemothorax; tension pneumothorax
10.05B	B. Cardiovascular - hypovolemic shock; cardiac contusion, cardiac tamponade, traumatic
400==	aortic dissection, penetrating injury
10.05C	C. Renal - myoglobinuria; rhabdomyolysis
10.05D	D. Neurological - traumatic brain injury; coup and contra-coup injuries; intracranial
10.055	haemorrhage; spinal cord injury
10.05E	E. Gastrointestinal - abdominal trauma; abdominal compartment syndrome; rupture of
10.055	liver or spleen,
10.05F	F. Musculoskeletal system - fat embolism; crush injury & compartment syndromes
10.05G	G. Unstable pelvis
10.06	Electrical trauma
10.07	Temperature related injuries
10.08	Intra-abdominal sepsis



10.09	Asuta limb isabamia, patialagu diagnasis and treatment stratagies
	Acute limb ischemia - aetiology, diagnosis, and treatment strategies
10.10	Management of GI fistulas in ICU
10.11	Management of broncho-pleural fistulas on ventilator
10.12	Abdominal compartment syndrome
10.13	Principles of post-operative critical care
10.14	Surgical and post-surgical bleeding management in ICU
10.15	Non cardiac surgery in cardiac patient in ICU post-op
10.16	Care of thoracic surgery patients
10.17	Management of morbidly obese patient in ICU
10.10	SKILL
10.18	ATLS
10.19	Performance and interpretation of a primary and secondary survey
10.20	Cervical immobilization
10.21	Clearance of cervical spine
10.22	Intubation in a patient with suspected Cervical spine injury
10.23	Rapid sequence intubation
10.24	Resuscitation in a hemodynamically unstable acute trauma patient
10.25	Intubation in a patient with suspected raised ICP
10.26	FAST scan and extended FAST scan
10.27	Measurement of intra-abdominal pressure
10.28	Identification & peri-operative optimization of a high-risk surgical patient
	11. Obstetric Critical Care
	KNOWLEDGE:
	Pathophysiology, clinical presentation, differential diagnosis, complications, and
	management of commonly encountered acute medical conditions.
11.01	Cardio-respiratory changes in pregnancy
11.02	Hypertensive emergencies in pregnancy - pre-eclampsia & eclampsia
11.03	Management of pregnant patients with valvular heart disease in ICU
11.04	HELLP syndrome
11.05	Acute fatty liver of pregnancy
11.06	Amniotic fluid and pulmonary embolism in pregnancy
11.07	Ovarian hyperstimulation syndrome
11.08	Post-partum complications: post-partum haemorrhage and post-partum cardiomyopathy
11.09	Abdominal trauma in pregnant patient
1110	SKILL
11.10	CPR in pregnant patient
	12. Pharmacology and Toxicology in Critical Care
	KNOWLEDGE:
	Pathophysiology, clinical presentation, differential diagnosis, complications, and management of commonly encountered acute medical conditions.
12.01	Principles of Pharmacokinetics & pharmacodynamics
12.01	Adjustment of drug doses in renal impairment
12.02	Mechanisms of Antimicrobial resistance
12.03 12.04A	
	A. Anti-hypertensives
12.04B	B. Inotropes, vasodilators, vasoconstrictors
12.04C	C. Antiarrhythmics
12.04D	D. Diuretics
12.04E	E. Hypnotics, sedatives, and analgesics
12.04F	F. Neuromuscular blocking agents
12.04G	G. Anti-convulsant



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12.04H	H. Anti-diabetic agents
12.041	I. Respiratory stimulants and bronchodilators
12.04J	J. Anti-infectives (antibacterial, antifungal, antiviral, antiprotozoal, anthelminthics)
12.04K	K. Non-steroidal anti-inflammatory agents
12.04L	L. Corticosteroids and immunosuppressants
12.04M	M. Anticoagulants, thrombolytic and anti-thrombotic agents
12.04N	N. Pro-kinetic and antiemetic agents
12.040	O. Local anaesthetics
12.04P	P. Plasma volume expanders
12.04Q	Q. Antihistamines
12.04R	R. Antidepressants
12.04S	S. Antipsychotic
12.05	Toxicology: Presentation and management of following
12.06	Substance abuse and withdrawal: Alcohol, Cocaine, Opioids, Benzodiazepines
12.07A	A. Insecticides & Pesticides: Organophosphorus poisoning
12.07B	B. Insecticides & Pesticides: Yellow phosphorous poisoning
12.07C	C. Insecticides & Pesticides: Aluminium Phosphide poisoning
12.08	Mushroom poisoning
12.09A	A. Envenomation: snake bites
12.09B	B. Envenomation: scorpion strings
12.09C	C. Envenomation: bees' strings
12.10	Identification and management of carbon monoxide poisoning
12.11	Steven-Johnson Syndrome and Toxic Epidermal Necrolysis
	SKILL
12.12	Calculation of Creatinine clearance
12.13	Dialysable drugs: Principles and examples
12.14	Gastric lavage
12.15	Activated charcoal
12.16	Decontamination
12.17	Specific antidotes for various poisonings

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