

# FCCCM - TWO-YEAR FELLOWSHIP CURRICULUM

Critical Care Education Foundation (CCEF)

College of Critical Care Medicine

[www.collegeofcriticalcare.com](http://www.collegeofcriticalcare.com)

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## EXECUTIVE SUMMARY

### Program Overview

- **Duration:** 24 months (2 years) post-MBBS/Diploma graduates with 1 year ICU experience post-qualification.
- **Duration:** 24 months (2 year) for MD/DNB graduates in relevant specialties. ICU experience NOT mandatory but 3-6 months of ICU experience post-qualification desirable.
- **Training Model:** Competency-based with progressive responsibility and milestone assessments.
- **Assessment Strategy:** Continuous centrally administered assessments with mentor feedback + quarterly evaluations + final fellowship exit examination.
- **Focus:** Foundation training in general critical care medicine with emphasis on Indian healthcare ecosystem.

### Program Objectives

FCCCM is designed to produce **competent general intensivists** who can:

1. **Practice Independently** in general ICUs across all tiers of the Indian healthcare system
2. **Manage Common Critical Illnesses** across all organ systems
3. **Function as Team Leaders** in ICU settings
4. **Provide Care in Resource-Limited Settings** with clinical acumen and improvisation skills
5. **Apply Evidence-Based Medicine** while adapting to local contexts
6. **Recognize Limitations** and know when to refer for subspecialty care (AFIC level)
7. **Communicate Effectively** with patients, families, and multidisciplinary teams
8. **Practice Ethically** with patient safety and quality improvement as priorities
9. **Teach and Mentor** junior doctors and medical students
10. **Demonstrate Cultural Competence** in the Indian healthcare ecosystem

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## PART 1: PHILOSOPHICAL FOUNDATION

### Core Principles for Indian Context

#### 1. Resource-Appropriate Training

The FCCCM curriculum recognizes the reality of Indian healthcare delivery across multiple tiers. Fellows must be trained to ***provide excellent foundational critical care in both resource-rich and resource-constrained settings.***

#### Key Elements:

- **Clinical acumen over technology dependence:** Emphasis on bedside diagnosis and pattern recognition.

- **"Sherlock Holmes Approach"**: Deductive reasoning from limited data, systematic clinical thinking.
- **Cost-conscious decision-making**: Judicious use of investigations.
- **Improvisation skills**: Adapting protocols to available resources without compromising safety.

## 2. Multi-tier Healthcare Reality

Fellows must be prepared to work across:

- Tertiary hospitals with advanced technology
- Corporate hospitals with private practice models
- District and secondary hospitals with limited resources
- Rural and semi-urban settings with basic ICU facilities

## 3. Family-Centred Communication

- Understanding joint family decision-making processes
- Cultural sensitivity in end-of-life discussions
- Communication across language and literacy barriers
- Navigation of socioeconomic barriers to care

## PART 2: PROGRAM STRUCTURE OVERVIEW

### Training Duration and Distribution

**Total Duration: 24 months**

Year	Duration	Focus
Year 1 (Foundation)	12 months	Building Core Competencies
Year 2 (Final)	12 months	Achieving Independent Practice & Advanced Foundation Topics

### Entry Requirements

#### For MD/DNB candidates:

- MD/DNB in Anaesthesiology, Internal Medicine, Emergency Medicine, or Pulmonary Medicine
- 3-6 months of ICU experience post-qualification desirable but not mandatory.
- Must work in ICU for the 24 months duration of the course.

#### For MBBS/Diploma candidates:

- Minimum 1 year ICU work experience post-qualification (at least 6 months continuous in a single ICU) mandatory.
- Must work in ICU for the 24 months duration of the course.

**All candidates:**

- Valid medical registration with National Medical Commission/State Medical Council
- Life Membership of the College of Critical Care Medicine.

**Exit Competency**

FCCCM graduates are competent to:

- Practice independently as general intensivists.
  - Manage common critical illnesses across all organ systems.
  - Work in general ICU teams in district, secondary, and tertiary hospitals.
  - Provide critical care in resource-limited settings.
  - Progress to advanced subspecialty training (AFIC) for further specialization.
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**PART 3: YEAR 1 (FOUNDATION YEAR) CURRICULUM****Year 1 Clinical Rotations****Total Duration: 12 months**

- Medical ICU: 4 months
- Surgical/Trauma ICU: 3 months
- Cardiac/Coronary Care Unit: 2 months
- Neurological/Neurosurgical ICU: 2 months
- Emergency Department: 1 month

*Note: In general ICUs where all case types are managed together, specific rotations may not apply. Training will be adapted to the local ICU structure. Candidates are required to acquire adequate exposure to these case mix.*

**Year 1 Module Breakdown****Quarter 1 (Months 1-3): Fundamentals & Resuscitation***Module 1: Airway & Breathing (Foundation)*

- Applied respiratory physiology
- Basic Airway management
- Oxygen therapy systems and high-flow nasal cannula
- Common respiratory emergencies
- Non-invasive ventilation
- Basic mechanical ventilation (AC, SIMV, PSV modes only)
- Basic troubleshooting of ventilators
- Nebulization

*Module 2: Circulation & Shock (Foundation)*

- Hemodynamic assessment: clinical examination and basic monitoring
- Invasive monitoring: arterial lines and CVP interpretation
- Acute MI and Acute Heart Failure

- Shock recognition and classification
- Fluid therapy: crystalloids vs colloids (practical selection)
- Basic vasopressors and inotropes
- ECG interpretation

#### *Module 3: Resuscitation*

- ACLS protocols and algorithms
- CPR in challenging scenarios (pregnancy, trauma, special situations)
- Post-cardiac arrest care (basic stabilization)
- Team leadership during resuscitation

### **Quarter 2 (Months 4-6): Organ Systems & Monitoring**

#### *Module 4: Neurological Critical Care (Foundation)*

- Altered sensorium (including coma): systematic approach & differential diagnosis
- Stroke management (basic): haemorrhagic and ischemic
- Status epilepticus: recognition and initial management
- Guillain-Barré syndrome and neuromuscular disorders
- Delirium assessment and management
- Interpretation of CSF reports
- CNS Infections

#### *Module 5: Renal & Electrolyte Disorders*

- Acute kidney injury: classification, prevention, management
- Dialysis basics: indications, modalities selection (HD vs CRRT)
- Understanding of dialysis access and basic troubleshooting
- Electrolyte emergencies: hyper/hyponatremia, hyper/hypokalaemia
- Acid-base interpretation: systematic approach

#### *Module 6: Gastrointestinal & Hepatic*

- Upper and lower GI bleed management
- Acute liver failure (especially viral hepatitis)
- Acute pancreatitis: severity assessment and management
- Nutrition in critically ill: enteral vs parenteral
- Abdominal compartment syndrome: recognition
- Acute abdomen in ICU
- Mesenteric ischemia, C. difficile infection & toxic megacolon

### **Quarter 3 (Months 7-9): Infection & Inflammation**

#### *Module 7: Infectious Diseases in ICU*

- Sepsis and septic shock: recognition and bundle implementation
- Tropical infections: malaria, dengue, scrub typhus, leptospirosis
- Tuberculosis in critical care
- Nosocomial infections: VAP, CLABSI, CAUTI prevention
- Antimicrobial stewardship: practical implementation
- Fungal infections and MDR organisms (basic management)

- Skin infections and toxin-mediated syndromes

#### *Module 8: Haematological Disorders*

- Bleeding disorders and coagulopathy management
- Anaemia and thrombocytopenia in ICU
- Transfusion practices and massive transfusion protocols
- DIC, TTP, HUS: recognition and basic management

### **Quarter 4 (Months 10-12): Special Situations**

#### *Module 9: Toxicology - Indian Context (Foundation)*

- Organophosphate poisoning (basic resuscitation and antidote administration)
- Snake and scorpion envenomation (initial management and anti-venom)
- Common drug overdoses: paracetamol, benzodiazepines, opioids
- Corrosive ingestion: initial assessment
- Alcohol intoxication and methanol poisoning
- Aluminium phosphide (rice tablet) poisoning

#### *Module 10: Trauma & Environmental Emergencies*

- Polytrauma: ATLS principles and initial stabilization
- Burns: fluid resuscitation and wound care basics
- Near-drowning and electrocution
- Heat stroke and hypothermia

#### *Module 11: Obstetric Critical Care (Foundation)*

- Key aspects of physiology in pregnancy
- Eclampsia/pre-eclampsia: initial stabilization and magnesium therapy
- Post-partum haemorrhage: basic resuscitation protocols
- HELLP syndrome: recognition and supportive care
- Maternal sepsis
- Peripartum cardiomyopathy: recognition
- DVT, PE and amniotic fluid embolism

#### *Module 12: Ethics, Communication & Transitions of Care*

- Breaking bad news to families
- End-of-life discussions (observation and participation)
- Resource allocation ethics
- Medico-legal documentation
- Informed consent in critical care
- Discharge Planning from ICU

## Year 1 Assessment & Competency Requirements

### Assessment Structure (Month 12)

Component	Weightage	Pass Mark
Internal Assessment	40%	≥50%
Written Examination	30%	≥50%
Clinical/Practical (OSCE)	30%	≥50%
<b>Overall</b>	<b>100%</b>	<b>≥50%</b>

### Logbook Requirements (75 cases)

Category	Minimum Numbers	Focus
Clinical Cases	10	Detailed workups, clinical reasoning
ABGs	10	Systematic interpretation
Biochemistry	10	Electrolytes, renal, hepatic
ECG	10	Arrhythmias, ischemia
X-rays	10	Chest and abdominal
CT scans/MRIs	5	Brain, chest, abdomen
Drugs	5	ICU pharmacology
Equipment	5	Ventilators, monitors etc.
Haematology & Coagulation	5	Coagulopathy, transfusion
Graphs/Waveforms	5	Ventilator, hemodynamic

### Procedural Requirements (Year 1 minimum)

Procedure	Minimum	Competency Level
Endotracheal intubation	30	Supervised/Independent
Central venous cannulation	25	Supervised/Independent
Arterial line insertion	20	Supervised/Independent
Mechanical ventilation setup	40	Supervised/Independent
Non-invasive ventilation	20	Supervised/Independent
Lumbar puncture	3	Supervised
Thoracentesis	3	Supervised/Independent
Paracentesis	3	Supervised/Independent
Chest tube insertion	5	Supervised/Independent
CPR leadership	10	Supervised/Independent
Ultrasound-guided procedures	10	Supervised/Independent

## PART 4: YEAR 2 (FINAL YEAR) CURRICULUM

### Year 2 Objectives

By the end of Year 2, fellows must demonstrate:

1. Independent management of complex critical illnesses
2. Mastery of essential ICU procedures
3. Leadership in general ICU teams and crisis situations
4. Teaching ability for junior residents and medical students
5. Readiness for independent consultant practice in general ICUs
6. Advanced clinical reasoning with "Sherlock Holmes approach" mastery
7. Knowledge of when to refer for subspecialty care (covered in AFIC)
8. Understanding of telemedicine and remote ICU management
9. Understanding of rapid response team function and activation
10. Practical understanding of infection prevention in resource-limited settings

## Year 2 Core Modules

### *Module 13: ARDS Management*

- ARDS definition (Berlin criteria) and diagnosis
- Lung-protective ventilation strategies
- PEEP optimization (basic strategies only)
- Prone positioning (understanding principles, indications)
- Conservative fluid management

*Note: Advanced ventilation modes (HFOV, APRV, NAVA, ASV) and ECMO management covered in AFIC*

### *Module 14: Cardiac Critical Care*

- Acute coronary syndromes: STEMI and NSTEMI management
- Acute heart failure, pulmonary edema and Cardiogenic shock management
- Arrhythmia diagnosis & management (supraventricular and ventricular)
- Peri-arrest arrhythmias
- Basic interpretation of cardiac biomarkers
- Post-cardiac arrest syndrome
- Infective Endocarditis diagnosis and management
- ECG Interpretation
- Temporary pacemaker understanding

*Note: Mechanical circulatory support covered in AFIC*

### *Module 15: Renal Replacement Therapy*

- Indications for RRT in AKI
- HD vs CRRT: basic understanding of selection criteria
- Vascular access for dialysis (temporary catheters)
- Basic understanding of dialysis prescription
- Common complications and basic troubleshooting
- Anticoagulation during dialysis (basic principles)

*Note: CRRT prescription optimization and advanced dialysis techniques covered in AFIC*

### *Module 16: Transplant & Immunocompromised Patients (Basic Understanding)*

- Recognition of immunocompromised state
- Common opportunistic infections (basic awareness)
- Post-transplant complications (general awareness)
- When to seek subspecialty consultation
- Basic principles of immunosuppression in ICU

*Note: Detailed transplant critical care covered in AFIC*

### *Module 17: Oncological Emergencies*

- Tumour lysis syndrome: recognition and management
- Superior vena cava syndrome
- Hypercalcemia of malignancy
- Febrile neutropenia in ICU
- Massive haemoptysis in malignancy

### *Module 18: Telemedicine & Remote ICU Management*

- Introduction to telemedicine in critical care
- Tele-ICU models and effectiveness
- Practical applications in Indian healthcare
- Legal and regulatory framework for telemedicine in India
- Patient privacy and data security in remote monitoring
- Clinical decision-making using remote monitoring data

### *Module 19: Rapid Response Teams / Medical Emergency Teams*

- Concept and evolution of Rapid Response Teams (RRT)
- RRT composition and activation criteria
- Role of the Intensivist in RRT
- Prevention of cardiac arrests through early RRT activation
- RRT protocol development and implementation

### *Module 20: Endocrine Emergencies*

- Hypoglycaemia, DKA and HHS: diagnosis and management
- Thyroid storm: recognition and initial treatment
- Myxoedema coma
- Adrenal crisis: diagnosis and steroid replacement
- Glycaemic control strategies in ICU
- SIADH and cerebral salt wasting
- Diabetes Insipidus

### *Module 21: ICU Administration & Quality*

- ICU workflow and team dynamics
- Basic quality metrics (mortality, Length of stay, readmission rates)
- Infection control bundles (VAP, CLABSI, CAUTI)
- Medication safety and error prevention
- Handover protocols
- Family meetings and communication

### *Module 22: Palliative Care & End-of-Life*

- Symptom management in terminal illness
- End-of-life discussions with families
- Withdrawal and withholding of life support
- Spiritual and bereavement support
- Brain death certification
- Organ donation processes

### *Module 23: Disaster Preparedness (Basic)*

- Triage principles in mass casualty
- Surge capacity planning
- Pandemic response (lessons from COVID-19)
- Chemical and biological disasters (awareness)

### *Module 24: Comprehensive Review & Integration*

- Integration of all topics learned
- Complex case discussions
- Landmark trials in critical care
- Evidence-based practice
- Preparation for independent practice
- Transition to consultant role

## **Year 2 Clinical Rotations**

### **Core Rotations (10 months):**

- Medical ICU with teaching: 3 months
- Surgical/Polytrauma ICU: 3 months
- Cardiac ICU: 2 months
- Elective rotations: 2 months (subspecialty exposure) **Choose 2:**
  - Obstetric ICU
  - Cardiothoracic ICU
  - Neuro ICU
  - Trauma ICU
  - Pulmonology
  - Nephrology

## Year 2 Final Exit Examination (Month 24)

### Assessment Components:

Component	Weightage	Pass Mark
Internal Assessment	30%	≥50%
Written Examination	35%	≥50%
Clinical/Practical	35%	≥50%
<b>Overall</b>	<b>100%</b>	<b>≥50%</b>

#### 1. Logbook (10%)

#### 2. Written Examination (20%):

- Two written exams (MCQs) will be held in the first two quarters.
- Exit written examination (covers all topics in 2-year training program)
  - 2 papers with 100 MCQs each
  - Case-based scenarios
  - 2 hours per paper

#### 3. OSCE Stations (30%): 8 stations × 12 minutes each

1. ABG interpretation
2. Biochemistry
3. ECG
4. X-ray
5. CT/MRI
6. Graphs/Waveforms
7. Haematology-Coagulation
8. Drugs & Equipment

#### 4. E-Cases (30%):

- 2 complex clinical cases
  - One long e-case: 25 minutes
  - One short e-cases: 15 minutes
- Assessment of differential diagnosis, investigations, management

#### 5. Communication Component (10%):

- 1 difficult communication scenario
- Breaking bad news, end-of-life discussion, or conflict resolution

## Pass Requirements

To pass FCCCM and receive certification, candidates must:

1. Overall weighted score  $\geq 50\%$
2. Pass in all 5 components OR fail in only one component (excluding logbook and communication).
3. Failure to secure a minimum of 35% in e-cases will result in failure in the whole exam irrespective of overall performance.
4. Complete logbook
5. Complete all required workshops
6. Attendance of  $\geq 80\%$  in all online classes

## Grading

- **Pass:**  $\geq 50\%$  overall
- **Pass with Distinction:**  $\geq 80\%$  overall

## Year 2 Logbook Requirements (75 complex cases)

Category	Minimum Numbers	Focus
Clinical Cases	10	Complex, multi-organ failure
ABGs	10	Complex acid-base disorders
Biochemistry	10	Complex metabolic derangements
ECG	10	Complex arrhythmias
X-rays	10	Subtle findings, complications
CT scans/MRIs	5	Advanced imaging interpretation
Drugs	5	Advanced pharmacology
Equipment	5	Advanced equipment troubleshooting
Haematology & Coagulation	5	Complex coagulopathy
Graphs/Waveforms	5	Advanced waveform interpretation

## Year 2 Procedural Requirements

Procedure	Year 2 Minimum	Total (2-year)	Final Competency
Endotracheal intubation	10	40	Independent
Central venous cannulation	10	35	Independent
Arterial line insertion	10	30	Independent
Mechanical ventilation setup	20	60	Independent
Non-invasive ventilation	10	30	Independent
Thoracentesis	2	5	Independent
Paracentesis	2	5	Independent
Chest tube insertion	2	7	Independent
CPR leadership	5	15	Independent
Ultrasound-guided procedures	10	20	Independent

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## PART 5: CERTIFICATION & CAREER PATHWAYS

### FCCCM Certification

Upon successful completion of FCCCM, fellows are certified as **competent general intensivists** capable of:

- Independent management of general ICUs
- Working across all tiers of Indian healthcare system
- Managing common critical illnesses competently
- Leading general ICU teams
- Teaching and mentoring junior doctors

## Career Options After FCCCM

### 1. Direct Practice:

- Consultant intensivist in district/secondary/tertiary hospitals
- Corporate hospital ICU positions
- Government hospital critical care positions
- Private practice with ICU admitting privileges

### 2. Academic Medicine:

- Teaching positions in medical colleges
- Clinical instructor roles
- Continuing medical education faculty
- Eligible as Teacher for FCCCM course

### 3. Advanced Subspecialty Training:

- AFIC (Advanced Fellowship in Intensive Care) - 1 year programme

### 4. Administrative Roles:

- ICU Medical Director positions
- Clinical quality improvement roles
- Healthcare administration

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## CONCLUSION

The revised FCCCM curriculum provides **comprehensive foundation training** in general critical care medicine, preparing fellows for independent practice across the Indian healthcare ecosystem.

### For more information:

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[office@ccef.in](mailto:office@ccef.in)

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