

Revised curriculum Post Doctoral Certificate Course (PDCC) (adult) in Critical Care Medicine (2023)

Course duration: 12 months

Number of candidates: 04

Mode of Selection: The Post Doctoral Certificate Course in Critical Care Medicine (PDCC, CCM) is open to candidates holding postgraduate degree (MD) from an Indian University or a Diplomate of the National Board in either of the following specialties:

1. Anaesthesiology
2. Internal Medicine
3. Pulmonary Medicine
4. Emergency Medicine

The advertisement and selection process will be as per the Institute norms prevailing at the time.

Training schedule:

This is a full time, one-year period training programme in the department of critical care medicine.

Programme Outcome:

The candidate must gain experience in the diagnosis and treatment of patients with acute, serious, and life-threatening medical and surgical diseases. The present document defines the core curriculum of cognitive knowledge and procedural skills that an intensivist is expected to be equipped with to effectively approach the complex problems encountered in the critically ill patient.

Area of prime focus in the curriculum (Local, National, Regional, Global need)

Local need: The candidate must gain experience in the basics of critical care, resuscitation of sick including septic patients, and stabilization of single and multi-organ failure patients.

National need: Collaboration of intensivists across the nation to create critical care infrastructure to provide uniform tertiary-level care.

Regional need: To create manpower in terms of intensivists to generate employment.

Global need: To participate in research activities at the institutional level; this will contribute to the global solution of problems pertaining to critical care.

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The content of this one-year training in critical care medicine deals with the following aspects:

- (A) Theoretical knowledge about pathophysiology, diagnosis and treatment of a series of disease processes.
- (B) Specific procedures and interventions that the candidate must be able to perform.
- (C) Certain speciality specific procedures and intervention
- (D) Logbook

For details of (A), (B), and (C), see detailed syllabus in the next page

(D) Log book

The candidates would maintain logbooks of interesting cases, seminars, journal clubs, institutional academic activity, and procedures performed /assisted which would be countersigned by the departmental faculty members.

Final eligibility assessment for awarding the PDCC in CCM

Internal assessment:

Assessor: Faculty members of the department of CCM

Periodicity: 06 monthly

* Assessment: By grading system (A ++, A+, A, B, B-, B--)

Exit exam:

- As per the prevailing norms of the Institute at the time
- 2 theory papers [First: Basic science (100 marks), Second: Clinical sciences (100 marks)] and practical exam [Total 300 marks: Clinical competencies-150 marks, Practical skills: 100 marks, Viva voce: 50 marks]

Criteria for passing:

Theory – Students should get more than 40 % in each paper and aggregate more than 50%

Practical – Students should get more than 30 % in each section and aggregate more than 55%

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Lt Col Varun Bajpai VSM
Executive Registrar
SGPGIMS, Lucknow

Needs: Local : Pink, National : Orange, Regional: light blue, International : green

Detailed syllabus

Colour Coding

Global
Regional
National
Local (State)

GREEN
BLUE
ORANGE
PINK

A) Theoretical Curriculum during PDCC

The critical care specialist (Intensivist) must understand the pathophysiology, construct a differential diagnosis and apply the appropriate prophylactic and therapeutic interventions in the following disorders. The list is not comprehensive and can be modified from time to time.

1. Respiratory

Management of:

- airway (including respiratory arrest, upper airway obstruction, thermal airway injuries)
- pneumonia
- pulmonary oedema
- acute respiratory distress syndrome
- bronchial asthma/ COPD
- respiratory failure because of various reasons including respiratory and neuromuscular.

2. Cardiovascular

Management of:

- Fluid assessment indices in critically ill
- hemodynamic instability and shock
- cardiac arrest, acute myocardial infarction, and unstable angina
- heart failure, common cardiac arrhythmias and conduction disturbances
- complications of specific cardiac disorders (cardiomyopathies, valvular heart disease, atrial or ventricular septal defects, myocarditis)
- cardiac tamponade, pulmonary embolism, aortic dissection and hypertensive crisis
- peripheral vascular diseases, post-cardiovascular surgery.

Training in cardiopulmonary cerebral resuscitation, including Basic Life Support (BLS), Advanced Life Support (ALS) and Advanced trauma life support (ATLS).

3. Neurology

Management of:

Coma and head trauma, intracranial hypertension, cerebrovascular accidents, meningo-encephalitis, neuromuscular disease like myasthenia gravis and Guillain - Barre syndrome, post-anoxic brain damage, acute confusional states, spinal cord injuries, brain death and post-neurosurgery patients.

4. Renal

Management of Oliguria, Acute renal failure and renal replacement therapies.

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5. Gastro-intestinal

Management of Pancreatitis, acute and chronic liver failure, inflammatory bowel diseases.

Prevention and treatment of acute G.I. bleeding (including variceal bleeding), perforated viscus and bowel obstruction.

6. Metabolic and Nutritional

Management of Fluid, electrolytes and acid-base disorders, endocrine disorders including hypo and hyperglycemic coma, nutritional and caloric requirement in sick patients and enteral and parenteral nutrition.

7. Hematological

Management of disseminated intravascular coagulation and other coagulation disorders, complications of haematologic malignancies, hemolytic syndromes, acute and chronic anemia, blood component therapy, immune disorders and post bone marrow transplant.

8. Infections

Infection control, management of severe infections due to aerobic and anaerobic bacteria, viruses, fungi and parasites, nosocomial infections, infections in the immunocompromised, tropical diseases, antimicrobial stewardship.

9. Obstetric

Management of Toxaemia (including HELLP syndrome), amniotic fluid embolism, eclampsia and post-partum haemorrhage.

10. Toxicology and poisoning

Management of acute intoxications, envenomations, drug overdose, serious adverse reactions and anaphylaxis.

11. Trauma

Stabilization of polytrauma patients (Head, spine, chest, abdomen, limb); specifically resuscitation, imaging, preparation for surgery, and post operative care.

12. General

- Pharmacology, pharmacokinetics, drug interactions and therapeutic drug monitoring
- Analgesia, sedation and muscle relaxants.
- Inflammation and anti-inflammatory agents.
- Transport of the critically ill patients (Intra and inter hospital).
- Multi-system disorders (including multi-organ dysfunction syndrome [MODS])
- Management of the organ donor
- Crisis management
- Family counselling
- ICU scoring systems
- ICU quality indicators

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- Basics of research methodology

(B) General Interventions and Procedures:

The intensivist must be able to perform a number of specific procedures; for all candidates experience is mandatory in the following areas:

- Endotracheal intubation including advanced airway techniques.
- Setting a ventilator with various modes of ventilation including non-invasive ventilation
- Chest physiotherapy and suctioning of the airway
- Assessment and measurement of arterial blood gas analysis and co-oximetry.
- Placement of intercostal drainage tube
- Placement of central venous catheter through various approaches
- Arterial catheterization

Experience in these procedures is desirable in the following areas:

- Fiberoptic bronchoscopy and bronchoalveolar lavage
- Cricothyrotomy, mini tracheotomy, and percutaneous dilatational tracheostomy

(C) Speciality-specific Interventions and Procedures:

The intensivist must be able to perform a number of specific procedures; for all candidates experience is desirable in the following areas:

- **Neurological**
 - Basic interpretation of brain CT/MRI Scan
 - Noninvasive measurement of ICP
 - Lumbar puncture and sampling of CSF
 - Neuroprotective therapies
- **Cardiovascular**
 - Fluid assessment (static and dynamic)
 - Basic echocardiography view (eyeballing EF calculation/ identification of pericardial tamponade)
 - Invasive and non-invasive cardiac output monitoring
 - IABP/ECMO
- **Respiratory**
 - Oxygen therapy
 - Lung USG (Blue protocol)
 - Lung protective ventilation
 - Prone position ventilation
- **Renal**
 - Renal replacement therapy principles including peritoneal dialysis
 - Plasma exchange therapies

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(D) Recommended reading: Text Books (latest edition)

1. Vincent JL, Moore FA, Bellomo R, Marini JJ. Textbook of critical care. Amsterdam: Elsevier; 2024.
2. Webb AR. Oxford Textbook of Critical Care. Oxford: Oxford University Press; 2020.
3. Parrillo JE, Dellinger RP. Critical care medicine: Principles of diagnosis and management in the adult. Philadelphia: Elsevier; 2019.
4. Irwin RS, Rippe JM, Lilly CM. Irwin & Rippe's Manual of Intensive Care Medicine. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins; 2014.
5. Bersten AD, Handy JM. Oh's Intensive Care Manual. Oxford, U.K.: Elsevier; 2019.
6. Deutschman CS, Neligan PJ. Evidence-based practice of Critical Care. Philadelphia, PA: Elsevier; 2020.
7. Tobin MJ. Principles and practice of mechanical ventilation. New York: McGraw-Hill Medical; 2013.
8. West JB, Luks A. West's respiratory physiology: The essentials. Philadelphia i pozostale: Wolters Kluwer; 2021.
9. Gurjar M. Manual of ICU procedures. New Delhi: Jaypee The Health Sciences Publisher; 2016.
10. Loscalzo J, Fauci AS, Kasper DL, Hauser SL, Longo DL, Jameson JL. Harrison's principles of Internal Medicine. New York: McGraw-Hill; 2022.

(E) Journals: 3-5 international and two national journals (all indexed)

- 1) CCM Society of Critical Care Medicine | SCCM
- 2) ICM Intensive Care Medicine | Home (springer.com)
- 3) CC Critical Care | Home page (biomedcentral.com)
- 4) JAMA JAMA – The Latest Medical Research, Reviews, and Guidelines (jamanetwork.com)
- 5) IJCCM Indian Journal of Critical Care Medicine (ijccm.org)

(F) e-Learning resources

- 1) PUBMED PubMed (nih.gov)
- 2) Up to date Sign In - UpToDate
- 3) Clinical key ClinicalKey - Lead with Answers
- 4) European Society of Intensive Care Medicine https://academy.esicm.org/
- 5) Indian Society of Critical Care Medicine STEP program (ISCCM Academy) https://academy.isccm.org/

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