

**Post Doctoral Certificate Course (PDCC) in Medical  
Intensive Care,  
Department of Medicine,  
AIIMS, Nagpur**

Sr.No.	Parts	Page no
1.	Goal	1
2.	Objectives of programme	1
3.	Course structure	1
	a) Duration	1
	b) Eligibility	1
	c) Selection process	1
	d) Number of seats	1
	e) Degree to be awarded	2
	f) Fees	2
	g) Stipend	2
	h) Syllabus and Competencies	2
4.	Teaching Learning Methods	5
	a) Broad Teaching Plan	
	b) Rotation	
5.	Assessments	6
	a) Formative assessment	
	b) Periodic evaluation	
	c) Summative Assessment	
6.	Recommended reading	7
7.	Logbook	8

## 1. GOAL

AllIMS, Nagpur, as a premier tertiary care institute, is committed to advancing patient care, research, and education in Intensive care medicine. Establishing a Post-Doctoral Certificate Course (PDCC) in Medical Intensive Care will strengthen the institute's capacity to deliver state-of-the-art care for critically ill patients while fostering an environment of academic excellence. For students, this program will provide structured, hands-on training in managing complex medical emergencies, advanced organ support, and evidence-based practices. The course aims to train highly skilled intensivists and serve as leaders, educators, and researchers within the broader healthcare system.

## 2. OBJECTIVES

- To provide advanced training in the management of critically ill patients.
- To develop expertise in using advanced life-support technologies and invasive monitoring.
- To enhance skills in decision-making and multidisciplinary collaboration.
- To foster research in Intensive care medicine, leading to evidence-based practice improvements.

## 3. COURSE STRUCTURE

### a) Duration:

- One-year full-time program

### b) Eligibility:

- MD/DNB in General Medicine/ Internal Medicine, Anesthesiology, Pulmonary Medicine, or Emergency Medicine from a recognised institution.
- Candidates must have completed a recognised residency program and hold valid registration with the Medical Council.

### c) Selection procedure:

- The selection process will start with an entrance test conducted by the institute. The examination will have a written test and a viva voce. Candidates securing more than 50% marks in the written test will be required to appear for the departmental viva voce examination, which will assess their clinical aptitude, decision-making ability, and problem-solving potential. This will follow the Institute's rules applicable to other PDCC courses.

### d) Number of seats:

- The number of seats will be decided according to the rules and norms of the Institute.

### e) Degree to be awarded: PDCC in Medical Intensive Care

- f) **Tuition Fees**: As applicable
- g) **Emolument**: as applicable to senior resident.

**h) Syllabus and competencies**

The candidate must understand the pathophysiology, construct a differential diagnosis and apply the appropriate prophylactic and therapeutic interventions in the following disorders. This list is not comprehensive.

**1. Respiratory**

- Management of airways (including respiratory arrest, upper airway obstruction, smoke or burns airways damage), pulmonary oedema, adult respiratory distress syndrome, hypercapnic respiratory failure, severe asthma, chest trauma, respiratory muscle disorders.

**2. Cardiovascular**

- Hemodynamic instability and shock, cardiac arrest, acute myocardial infarction and unstable angina. Severe heart failure, common arrhythmias and conduction disturbances. Specific cardiac disorders (cardiomyopathies, valvular heart disease, atrial or ventricular septal defects, myocarditis), cardiac tamponade, pulmonary embolism, aortic dissection, hypertensive crisis, peripheral vascular disease.

**3. Neurology**

- Coma, head trauma, intracranial hypertension, cerebrovascular accidents, cerebral vasospasm, meningoencephalitis, acute neuromuscular disease (including myasthenia & Guillain Barre syndrome), post-anoxic brain damage, acute confusional states, spinal cord injury, neurosurgery, brain death.

**4. Renal**

- Oliguria, acute kidney injury, renal replacement therapy

**5. Metabolic & Nutritional**

- Fluid electrolyte and acid-base disorders, endocrine disorders (Diabetic ketoacidosis, hyperosmolar hyperglycemic state, adrenal crisis, pheochromocytoma crisis, thyroid storm, myxedema coma, severe hypercalcemia, severe hypocalcemia, pituitary apoplexy, SIADH, acute diabetes insipidus, parathyroid crisis), nutritional requirements, and nutrition monitoring.

**6. Haematological**

- Disseminated intravascular coagulation and other coagulation disorders, haemolytic syndromes, acute blood loss and anaemia, blood component therapy, and immune disorders.

**7. Infections**

- Severe infection due to aerobic and anaerobic bacteria, viruses, fungal and parasites, nosocomial infection, infection in the immunocompromised, tropical disease, antimicrobial therapy, immunotherapy and infection control in ICU.

#### **8. Gastro-intestinal**

- Inflammatory bowel diseases, pancreatitis, acute and chronic liver failure, prevention and treatment of acute G.I. Bleeding (including variceal bleeding), peritonitis, mesenteric infarction, perforated viscus, bowel obstruction, abdominal trauma, abdominal surgery.

#### **9. Obstetric**

- Toxemia (including HELLP syndrome), amniotic fluid embolism, eclampsia, and haemorrhage, peripartum cardiomyopathy, and valvular heart disease

#### **10. Environmental Hazards**

- Burns, hypo-and hyperthermia, near-drowning electrocution, radiations, chemical injuries, animal bites.

#### **11. Toxicology, poisoning**

- Acute intoxications, drug overdose, serious adverse reactions, anaphylaxis.

#### **12. General**

- Pharmacology, pharmacokinetics, and drug interactions. Analgesia, sedation, and muscle relaxants. Inflammation and anti-inflammatory agents. Multiple trauma. Transport of the critically ill. Multisystem disorders (including Multi-Organ Dysfunction Syndrome MODS and Systemic Inflammatory Response Syndrome SIRS). Management of the organ donor.

### **Interventions and procedures**

#### **1. Respiratory**

- Maintenance of open airway
- Endotracheal intubation (oral and nasal)
- Emergency cricothyrotomy
- Insertion of supraglottic airway devices
- Percutaneous tracheostomy
- Suctioning of the airway
- Calibration and Setting of ventilator with different modes of ventilation
- Titration of oxygen therapy
- Use of manual resuscitator bag
- Techniques of weaning from mechanical ventilation
- Placement of an intercostal tube
- Implementation of respiratory pharmacological support

- Fiberoptic bronchoscopy
- Interpretation of arterial and mixed venous blood gases, assessment of gas exchange and respiratory mechanics.

## **2. Cardiovascular**

- Placement of a central venous catheter (by different routes)
- Cardiac output monitoring
- Arterial catheter (by different routes) measurement and interpretation of the hemodynamic variables (including the derived variables)
- Implementation of cardiovascular support
- Antiarrhythmic therapy and thrombolysis.

## **3. Neurologic**

- Basic interpretation of brain CT/MRI scan
- Intracranial pressure monitoring.

## **4. Nutrition**

- Metabolic and Nutritional Implementation of intravenous fluid therapy
- Enteral and parental nutrition.

## **5. Haematologic**

- Correction of haemostatic and coagulation disorders
- Interpretation of a coagulation profile
- Implementation of thrombolysis.

## **6. Renal**

- Bladder catheterisation
- Renal replacement techniques.

## **7. Gastrointestinal**

- Placement of gastric tube
- Esophageal and gastric tamponade balloon

## **8. Communication Skills**

- Tackling an angry/agitated relative
- Counselling of relatives of a critically ill patient
- Breaking Bad news
- Counselling for organ donation

## **9. Radiology**

- Interpretation of Chest X-ray
- Interpretation of CT scan and MRI
- Interpretation of point-of-care ultrasonography

## 10. Extracorporeal Therapy

- ECMO
- ECCO 2 R
- RRT

## 11. Sample collection

- Arterial blood sample for blood gas analysis, central and peripheral venous blood sampling for various biochemical and special (lactate, ammonia, coagulation parameters) investigations (with preanalytic considerations), blood culture collection technique, urinary sample collection (Midstream clean catch and catheterised sample collection), bronchoalveolar lavage sample collection, mini-BAL, paracentesis, thoracocentesis and lumbar puncture

## 4. TEACHING AND LEARNING METHODS

The teaching and learning methodology below includes but is not limited to, Lecture, discussion, student-directed learning, and Case-Based Learning.

1. Clinical Case Discussion
2. Morbidity-Mortality Discussion
3. Audit presentation
4. Lectures, Seminars and Journal Clubs
5. Presentation of progress report on the research projects
6. Simulation Laboratory
7. Joint inter-departmental academic meets with radiology, microbiology etc.
8. Departmental Clinical Meetings, Grand Rounds and Clinico-Pathological Meetings
9. Multi-departmental Combined Grand Rounds / Joint Academic Activities of the Institution

The candidate has to attend conference/workshops/CME on topics related to Intensive Care Medicine. The candidate is expected to do a short-term research project related to Medical Intensive Care at AIIMS, Nagpur. The recognised teacher in Medical Intensive care will be a guide for a short-term research project. The topic of the project, research cell, and IEC permission should be obtained during the first two months.

### Formal Teaching:

- a) **Journal Club:** Paper presentation/discussion once every month
- b) **Seminar:** One seminar every month
- c) **Lecture/discussion:** Lectures on newer topics by faculty, in place of a seminar as per need.
- d) **Case presentation** in the ward. Postgraduate students will present a clinical case for discussion before a faculty, and discussion made about its management.
- e) **Combined Round/Grand Round:** These exercises will be done for the hospital once a

month, involving presenting unusual or difficult cases. Presentation of cases in clinical combined/grand rounds and clinical series/research data for the benefit of all clinicians and other related disciplines.

- f) **Emergency situation:** Casualty duty will be arranged by rotation among the students, with a faculty member from Emergency Medicine covering daily by rotation.
- g) **Bedside clinical training** for patient care management. Bedside patient care discussions are to be conducted daily for half to one hour during ward rounds with faculty and 1-2 hours in the evening by postgraduate students and faculty on emergency duty.
- h) Should attend one conference/CMEs/Workshop during tenure.
- i) **LOG BOOK** Postgraduate students shall maintain a log book of the work they carry out and the training programme they undergo during the training. The logbook shall be periodically checked and assessed by the faculty members providing the training.
- j) The Department should encourage e-learning activities.
- k) Clinical and Practical posting:

Sr No	Posting	Duration
1.	MICU (Department of Medicine)	9 months
2.	SICU (Department of Anaesthesiology) and Super-speciality ICU	2 month
3.	Trauma and Emergency department	1 month

A minimum of **75% Attendance** is compulsory for appearing in the professional exam.

## 5. ASSESSMENT

### Formative Assessment

Formative assessment will be continual and assess medical knowledge, patient care, procedural and academic skills, interpersonal skills, professionalism, self-directed learning, and ability to practice in the system.

### Periodic Evaluation:

Trainees will be evaluated continuously for their performance in all areas, including clinical and investigative work, case presentations, seminars, journal clubs, and procedures. The pre-professional and professional examinations will be conducted for students.

### Summative assessment

The summative assessment examination shall include two heads:

- A. **Theory exam:** A 100-mark question paper(10 LAQs of 10 marks each).
- B. **Practical exam:** 100 marks. It will consist of two cases and three table viva:

- Cases: Each case is worth 35 marks and involves history taking, examination, and documentation
- Tables: Each table is worth 10 marks and covers topics such as ABG, ECG, drugs, radiology, ACLS, and airway, ventilation basics and hemodynamic monitoring

**Examiners:** Institute rules will be followed

Candidates will be declared successful in the course only after securing a **minimum of 50% marks**. Theory and practicals must be passed separately.

## 6. RECOMMENDED READING

### Books

1. Textbook of Critical Care (Elsevier)
2. Oxford Textbook of Critical Care (Oxford University Press)
3. Critical Care Medicine: Principles of Diagnosis and Management in the Adult (Mosby)
4. Irwin and Rippe's Intensive Care Medicine (LWW)
5. Oh's Intensive Care Manual (Butterworth-Heinemann)
6. Textbook of Critical Care: Common Problems in the ICU Access Code (Saunders)
7. Evidence-Based Practice of Critical Care (Elsevier)
8. Principles and Practice of Mechanical Ventilation (Tobin, Principles and Practice of Mechanical Ventilation) (McGraw-Hill Education / Medical)
9. West's Respiratory Physiology: The Essentials (LWW)
10. Manual of ICU Procedures (Jaypee Hights Medical Pub Inc)
11. Harrison's Principles of Internal Medicine (McGraw-Hill Education/Medical)

### Journals

- Critical Care Medicine
- Intensive Care Medicine (ESICM)
- American journal of Respiratory and Critical Care Medicine
- Critical Care
- Indian Journal of Critical Care Medicine
- New England Journal of Medicine
- Journal of American Medical Association
- The Lancet
- British Medical Journal

**LOGBOOK**



**DEPARTMENT OF GENERAL MEDICINE  
ALL INDIA INSTITUTE OF MEDICAL SCIENCES NAGPUR**

**Personal details:**

**Name of the student:**

**Date of admission to PDCC :**

**Date of beginning of the PDCC :**

**Reg: No. (College ID)**

**Reg. No. (University ID)**

**Permanent Address:**

**E mail ID:**

**Mobile Number:**

## CERTIFICATE

This is to certify that the candidate Mr/ Ms ....., Reg No. ...., admitted in the year 2025-2026 in the PDCC course -----  
-----at General Medicine department, All India Institute of Medical Sciences, Nagpur has satisfactorily completed / has not completed all assignments /requirements mentioned in this logbook during the period from ..... to..... He / she is / is not eligible to appear for the summative assessment.

Signature of Faculty

Name and Designation

Countersigned by Head of the Department

Dean of the College

Place: Nagpur

Date:...../.../2026

## 14. LOGBOOK

Lectures			
Sr No	Date	Topic	Faculty

Journal club					
Sr No	Date	Journal club topic	Journal/ Issue	Presenter	Signature of supervisor

Seminar					
Sr No	Date	Seminar topic	Presenter	Moderator	Signature of supervisor

Case presentation					
Sr No	Date	Case	Presenter	Moderator	Signature of supervisor

Topic presentation by faculty					
Sr No	Date	Topic	Presenter		Signature of supervisor

### Conferences and CME attended

Sr No	Date	Name of conference/ CME	Place
		Mechanical ventilation	
		Hemodynamic monitoring	
		ACLS	
		Difficult airway	



## **Judgement of Performance**

### **Domain 1. Resuscitation and Initial management of the acutely ill patient**

		Yes/No
1.1	Adopts a structured and timely approach to the recognition, assessment and stabilization of the acutely ill patient with disordered physiology	
1.2	Manages cardiopulmonary resuscitation	
1.3	Manages the patient post-resuscitation	

### **Domain 2. Diagnosis: Assessment, Investigation, Monitoring and Data Interpretation**

		Yes/No
2.1	Obtains a history and performs an accurate clinical examination	
2.2	Undertakes timely and appropriate investigations	
2.3	Describes indications for echocardiography	
2.4	Performs electrocardiography (ECG / EKG) and interprets the results	
2.5	Obtains appropriate microbiological samples and interprets results	
2.6	Obtains and interprets the results from blood gas samples	
2.7	Interprets chest x-rays	
2.8	Liaises with radiologists to organize and interpret clinical imaging	
2.9	Monitors and responds to trends in physiological variables	
2.10	Integrates clinical findings with laboratory investigations to form a DD	

### **Domain 3: Disease management**

		Yes/No
Acute Disease:		
3.1	Manages the care of the critically ill patient with specific acute medical conditions	
Chronic Disease:		
3.2	Identifies the implications of chronic and co-morbid disease in the acutely ill patient	
Organ System Failure:		
3.3	Recognizes and manages the patient with circulatory failure	
3.4	Recognizes and manages the patient with, or at risk of, acute renal failure	
3.5	Recognizes and manages the patient with, or at risk of, acute liver failure	
3.6	Recognizes and manages the patient with neurological impairment	
3.7	Recognizes and manages the patient with acute gastrointestinal failure	
3.8	Recognizes and manages the patient with acute lung injury syndromes (ARDS)	
3.9	Recognizes and manages the septic patient	
3.10	Recognizes and manages the patient following intoxication with drugs or environmental toxins	
3.11	Recognizes life-threatening maternal peripartum complications and manages care under supervision	

#### Domain 4: Therapeutic intervention and organ support

		Yes/No
4.1	Prescribes drugs and therapies safely	
4.2	Manages antimicrobial drug therapy	
4.3	Administers blood and blood products safely	
4.4	Uses fluids and vasoactive/inotropic drugs to support the circulation	
4.5	Describes the use of mechanical assist devices to support the circulation	
4.6	Initiates, manages, and weans patients from invasive and non-invasive ventilation	
4.7	Initiates, manages and weans patients from renal replacement therapy	
4.8	Recognizes and manages electrolyte, glucose and acid-base disturbances	
4.9	Co-ordinates and provides nutritional assessment and support	

#### Domain 5: Practical Procedures

		Yes/No
<b>Respiratory system:</b>		
5.1	Administers oxygen using a variety of administration devices	
5.2	Performs fiberoptic laryngoscopy under supervision	
5.3	Performs emergency airway management	
5.4	Performs difficult and failed airway management according to local protocols	
5.5	Performs endotracheal suction	
5.6	Performs FOB and BAL in the intubated patient under supervision	
5.7	Performs percutaneous tracheostomy under supervision	
5.8	Performs thoracentesis via a chest drain	
<b>Cardiovascular system:</b>		
5.9	Performs peripheral venous catheterisation	
5.10	Performs arterial catheterization	
5.11	Describes a method for surgical isolation of vein / artery	
5.12	Describes ultrasound techniques for vascular localization	
5.13	Performs central venous catheterisation	
5.14	Performs defibrillation and cardioversion	
5.15	Performs cardiac pacing (transvenous or transthoracic)	
5.16	Describes how to perform pericardiocentesis	
5.17	Demonstrates a method for measuring cardiac output and derived haemodynamic variables	
<b>Central Nervous System:</b>		
5.18	Performs lumbar puncture under supervision	
5.19	Manages the administration of analgesia via an epidural catheter	
<b>Gastrointestinal System:</b>		
5.20	Performs nasogastric tube placement	
5.21	Performs abdominal paracentesis	
5.22	Describes Sengstaken tube (or equivalent) placement	
5.23	Describes indications for, and safe conduct of gastroscopy	
<b>Genitourinary system:</b>		
5.24	Performs urinary catheterization	

**Domain 6. Comfort and Recovery**

		Yes/No
7.1	Identifies and attempts to minimize the physical and psychosocial consequences of critical illness for patients and families	
7.2	Manages the assessment, prevention and treatment of pain and delirium	
7.3	Manages sedation and neuromuscular blockade	
7.4	Communicates the continuing care requirements of patients at ICU discharge to health care professionals, patients and relatives	
7.5	Manages the safe and timely discharge of patients from the ICU	

**Domain 7. End of life care**

		Yes/No
8.1	Manages the process of withholding or withdrawing treatment with the multidisciplinary team	
8.2	Discusses end of life care with patients and their families / surrogates	
8.3	Manages palliative care of the critically ill patient	
8.4	Performs brain-stem death testing	
8.5	Manages the physiological support of the organ donor	

**Domain 8: Transport**

		Yes/No
9.1	Undertakes transport of the mechanically ventilated critically ill patient outside the ICU	

**Domain 9: Patient safety and health systems management**

		Yes/No
10.1	Leads a daily multidisciplinary ward round	
10.2	Complies with local infection control measures	
10.3	Identifies environmental hazards and promotes safety for patients & staff	
10.4	Identifies and minimizes risk of critical incidents and adverse events	
10.5	Organizes a case conference	
10.6	Critically appraises and applies guidelines, protocols and care bundles	
10.7	Describes commonly used scoring systems for assessment of severity of illness	
10.8	Demonstrates an understanding of the managerial & administrative responsibilities of the ICM specialist	

**Domain 10: Professionalism**

		Yes/No
Communication Skills		
11.1	Communicates effectively with patients and relatives	
11.2	Communicates effectively with members of the health care team	
11.3	Maintains accurate and legible records / documentation	
Professional relationships with patients and relatives		
11.4	Involves patients (or their surrogates) in decisions about care and treatment	

11.5	Demonstrates respect of cultural and religious beliefs and an awareness of their impact on decision making	
11.6	Respects privacy, dignity, confidentiality and legal constraints on the use of patient data	

Professional relationships with members of the health care team		
11.7	Collaborates and consults; promotes team-working	
11.8	Ensures continuity of care through effective hand-over of clinical information	
11.9	Supports clinical staff outside the ICU to enable the delivery of effective care	
11.10	Appropriately supervises, and delegates to others, the delivery of patient care	
Self governance		
11.11	Takes responsibility for safe patient care	
11.12	Formulates clinical decisions with respect for ethical and legal principles	
11.13	Seeks learning opportunities and integrates knowledge into clinical practice	
11.14	Participates in multidisciplinary teaching	
11.15	Participates in research or audit under supervision	