



King George's Medical University, UP, Lucknow

POST DOCTORAL CERTIFICATE COURSE (PDCC) IN PULMONARY & CRITICAL CARE MEDICINE



Department of Pulmonary & Critical Care Medicine

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1. GOALS & OBJECTIVES

Goals:- The goals of the program would be to prepare candidates so as he/she.

1. Recognizes the health needs of patients having pulmonary complaints and carries out professional obligations in keeping with principles of National Health Policy and professional ethics.
2. Has acquired the competencies pertaining to Pulmonary and Critical Care Medicine that are required to be practiced in the community and at all levels of health care system. Has acquired skills in effectively communicating with the patient, family and the community.
3. Is aware of the contemporary advances and developments in medical sciences as related to Pulmonary and Critical Care Medicine.
4. Is oriented to principles of research methodology and epidemiology and should be able to analysis published research literature properly.
5. Has acquired skills in educating medical and paramedical professionals.

2. REQUIREMENTS/TRAINING PLAN FOR PDCC COURSE.

1. **Eligibility:-** Candidates for admission shall be required to have any one of the following qualifications.
 - a) MD/DNB in Respiratory Medicine/ Pulmonary Medicine/TB & Chest diseases/TB & Respiratory diseases/ General Medicine/ Internal Medicine/ Medicine/ Pediatrics degree recognized by the NMC/MCI.
 - b) He/she having qualified for the postgraduate degree of any university recognized by the Medical Council of India or any other University recognized as equivalent there to by the Medical Council of India and obtained permanent registration from any of the state Medical Council NMC/MCI.

2. **Duration of the course:** One Year


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3. ORGANIZATION OF TEACHING AND TRAINING

Learning in postgraduate degree course shall essentially be autonomous and self-directed. However, to stimulate the learning process and guiding the student, various academic activities shall be periodically conducted in the department.

A. Methods for the transfer of knowledge:

- a. Clinical Case Presentation: One per week.
- b. Seminar: One per week.
- c. Journal Club: One per week.
- d. Teaching Rounds- Two per week.
- e. Institutional level CME As per institute's schedule.
- f. Inter departmental clinical meets One per Quarter.
- g. An effort shall be made to develop integrated teaching with other department as decided by the Head of the Department.
- h. Faculty Lecture- Intra/Inter departmental-one per month.
- i. Any other academic activities as decided by the Head of the Department.
- j. Activities outside institute: PDCC candidates are encouraged to attend conferences and workshops outside institute.
- k. Webinars/ Virtual knowledge network/ Podcasts/ Telemedicine broadcasted from and to other institutes of importance.
- l. Candidate has to work as Senior Resident in the department and will participate in In patient/out patient/emergency duties and other responsibilities as assigned by the department.


B. Methods of imparting clinical skills, conversion of theory in practice and documentation:

Skills related to use of various diagnostic and therapeutic procedures will be imparted by:

OPD Teaching: PDCC candidates are posted in the OPD and they are expected to work up and present the case to the consultant to develop competencies.

IPD teaching: PDCC candidates are posted in the indoor ward on rotation basis. They work up the admitted cases in detail under the supervision.

Demonstration / Hands on Training: PDCC candidates will be given hands on training in various procedures related to a *specific area* of practice, as applicable.


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4. SYLLABUS / COMPETENCIES:

➤ Respiratory

1. Clinical Sciences:-

i. Evaluation and interpretation of following signs and symptoms:-

- a. Dyspnea
- b. Wheeze
- c. Chest pain
- d. Cough
- e. Sputum production
- f. Stridor
- g. Hoarseness of voice
- h. Haemoptysis
- i. Snoring
- j. Daytime somnolence
- k. General symptoms of diseases including fever, weight loss, edema, nocturia
- l. General examination findings:- anemia, cyanosis, clubbing, lymphadenopathy

2. Pathophysiology, clinical manifestations, diagnosis, management & prognosis of the following diseases:-

i. Airway disease:

- a. Sinusitis & Epiglottitis
- b. Laryngotracheobronchitis
- c. Tracheitis
- d. Foreign bodies
- e. Asthma
- f. Chronic obstructive pulmonary disease (chronic bronchitis, emphysema)
- g. Bullous Lung diseases
- h. Bronchiectasis
- i. Cystic fibrosis
- j. Bronchiolitis
- k. Dysmotility Syndromes


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ii. Pleural disorders:

- a. Pleural effusions
- b. Empyema
- c. Pneumothorax
- d. Pleural plaques and thickening
- e. Mesothelioma and other Pleural malignancies

iii. Mediastinum:

- a. Mediastinitis
- b. Pneumomediastinum
- c. Mediastinal Masses
- d. Vascular Abnormalities

iv. Neoplastic disorders:

- a. Pathogenesis
- b. Approach to the patient with Pulmonary nodules
- c. Pathology of Bronchogenic Carcinoma
- d. Clinical evaluation and diagnosis
- e. Natural history
- f. Genetic and Molecular changes
- g. Prospects for a Personalized Pharmacological Approach to treatment
- h. Epidemiology of the lung cancer
- i. Clinical evaluation, diagnosis & staging of lung cancer
- j. Treatment of non-small cell lung cancer: Surgery
- k. Treatment of Non-Small cell lung cancer: Chemotherapy
- l. Small Cell Lung Cancer: Diagnosis, Treatment, and natural history.
- m. Primary lung tumors other than Bronchogenic Carcinoma: Benign and Malignant.
- n. Extrapulmonary Syndromes associated with Lung Tumors
- o. Metastatic Pulmonary tumours: The role of Surgical Resection
- p. Mesothelioma
- q. Metastatic & Other pleural tumours
- r. Benign intrathoracic tumours
- s. Mediastinal tumours
- t. Chest wall tumours
- u. Sarcoma

A. Infectious diseases:

Non Tubercular Infectious Diseases of the Lungs

- a. Pulmonary clearance of Infectious agents
- b. Approach to the patient with Pulmonary Infection
- c. Pulmonary Infection in Immunocompromised hosts
- d. Microbial Virulence factors in Pulmonary Infections
- e. Principles of Antibiotic Use and the Selection of Empiric therapy for Pneumonia
- f. HIV, AIDS and pulmonary disorders
- g. Upper Respiratory Infections
- h. Lower respiratory infections
- i. Community acquired pneumonia
- j. Nosocomial pneumonia
- k. Pneumonia in the immunocompromised host
- l. Other pneumonias
- m. Parapneumonic effusion & Empyema
- n. Lung abscess
- o. Fungal infections
- p. Parasitic infections
- q. Epidemic Viral infections
- r. Others infections

Tuberculosis

- a. Pulmonary TB
- b. Extrapulmonary TB
- c. TB in the immunocompromised host
- d. Latent TB infections
- e. Non tuberculous mycobacterial diseases
- f. Drug resistant Tuberculosis
- g. Tuberculosis control programme, including Programmatic management of drug resistant Tuberculosis (PMDT).

B. Industrial and environmental disease:

- a. Inorganic and organic pneumoconiosis
- b. Air pollution, sick building syndrome, and smoking
- c. Occupational asthma, reactive airways dysfunction syndrome
- d. Occupational lung diseases.
- e. High altitude physiology and clinical disorder, Diving injuries and air embolism, thermal lung injury and acute smoke inhalation
- f. Lung mechanics and disorder related to special circumstances such as aviation and sports.
- g. Disability evaluation and compensation

C. Complications of aspiration:-

- a. Gastric Contents
- b. Foreign bodies
- c. Lipoid material
- d. Water, including immersion injuries

D. Immunologic Diseases:

- a. Rhinitis
- b. Asthma, Allergic bronchopulmonary aspergillosis
- c. Extrinsic allergic alveolitis
- d. Eosinophilic lung disease
- e. Respiratory manifestations of collagen vascular disease
- f. Pulmonary vasculitis
- g. Bronchiolitis obliterans organizing pneumonia

E. Lung injury:

- a. Trauma
- b. Drugs (including recreational and illicit drugs)
- c. Oxygen
- d. Thermal
- e. Barotrauma

F. Restrictive lung diseases:

- a. Chest wall deformities
- b. Neuromuscular diseases

G. Diffuse Parenchymal (interstitial) Lung Diseases:

- a. Sarcoidosis.
- b. Hypersensitivity pneumonitis.
- c. Eosinophilic lung diseases.
- d. Drug induced pulmonary diseases.
- e. Idiopathic Interstitial pneumonias including Idiopathic Pulmonary Fibrosis (IPF)
- f. NSIP, COP, AIP, RB-ILD, DIP, LIP.
- g. ILD associated with CTDs.
- h. Interstitial lung diseases specific to Infancy
- i. Pulmonary haemorrhage syndromes


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- H. Disorders of the pulmonary circulation:**
- Pulmonary embolism (thrombo-embolism, fat, air, tumor, amniotic fluid)
 - Pulmonary hypertension
 - Pulmonary edema
 - Cor pulmonale
 - Pulmonary arteriovenous malformations, fistulas and other vascular abnormalities.
 - Hepato-pulmonary and hepato-renal syndrome
 - Vasculitis
- I. Sleep disorders:**
- Sleep disordered breathing
 - Hypoventilation syndromes
 - Non-respiratory sleep disorders (restless legs syndrome, periodic limb movement disorder, narcolepsy, parasomnias insomnia)
- J. Respiratory manifestations of extra pulmonary disorders.**
- K. Respiratory complications of pregnancy.**
- L. Oxygen therapy and various inhalational devices.**
- M. Newer Emerging Pulmonary Diseases.**
- 3. Demonstrate an understanding of indications, benefit, contraindications, complications and general techniques of the following therapeutic/ diagnostic interventions:**
- Pulmonary rehabilitation.
 - Radiation therapy.
 - Chemotherapy.
 - Respiratory therapy.
 - Physical therapy.
 - Interventional bronchoscopy including endobronchial ultrasound (EBUS), foreign body removal, tumor debulking and airway stenting.
- i. Common surgical intervention:-**
- Mediastinoscopy.
 - Thoracotomy and lung resection.
 - Thoracoscopy.
 - Surgical management of empyema.
 - Lung Reduction surgery.
 - Lung transplantation.
- ii. Palliative care.**
- iii. End of life decision making.**

5. CRITICAL CARE MEDICINE

- i. Hemodynamic and respiratory monitoring.
- ii. Respiratory failure : pathogenesis, causes, diagnosis and management.
- iii. Sepsis.
- iv. Resuscitation of the critically ill including multiple organ failure.
- v. Principles of mechanical ventilation:-
 - a. Non-invasive ventilation
 - b. Invasive ventilation
 - c. Newer modes of ventilation
 - d. Weaning
 - e. Weaning failure
 - f. Home based NIV and long term oxygen therapy.
- vi. Infection control in intensive care unit.
- vii. VAP Prevention bundle.
- viii. Comprehensive care of the comatose.
- ix. Nutrition in critically ill patients.
- x. Management of pain and sedation in intensive care unit.
- xi. Management of emergencies pertaining to cardiology, neurology, nephrology, gastroenterology and other medical emergencies encountered in the intensive care unit.
- xii. Ethics and palliative care in ICU settings.
- xiii. Organization of intensive care setting.
- xiv. Procedural skills:
 - a. Maintenance of an open airway
 - b. Tracheal intubation (oral, nasal)
 - c. Cricothyrotomy, tracheostomy, transtracheal catheters
 - d. Noninvasive ventilations
 - e. Invasive mechanical Ventilatory support; Respiratory graphics
 - f. Prone ventilation
 - g. Topical use of respiratory medication (inhalers & nebulizer)
 - h. Suctioning, chest physiotherapy and incentive spirometry.
 - i. weaning techniques
 - j. Flexible bronchoscopy (Diagnostic and therapeutic)
 - k. Chest tube insertion, chest drainage systems
 - l. USG and CT guided procedures
 - m. Bedside pulmonary function tests.
 - n. Thoracic Ultrasonography


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➤ **Cardiovascular**

Haemodynamic instability and shock, cardiac arrest acute myocardial infarction and unstable angina severe heart failure, common arrhythmias and conduction disturbance, specific cardiac disorders (cardiomyopathies, valvular heart disease, atrial or ventricular septal defects, myocarditis), cardiac tamponade, pulmonary embolism, aortic dissection, hypertensive crisis, peripheral vascular diseases, cardiovascular surgery, current Knowledge and skills to perform Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS).

➤ **Neurology**

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

➤ **Renal**

Oliguria. Acute renal failure, renal replacement therapy.

➤ **Metabolic & Nutritional**

Fluid electrolyte and acid-base disorders, endocrine disorders (including diabetes), nutritional requirements, monitoring of nutrition.

➤ **Rheumatological**

Disseminated intravascular coagulation and other coagulation disorders, haemolytic syndromes anaemia, leukemias, thrombocytopenias, blood component therapy, and immune disorders.

➤ **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 practices.

➤ **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.

➤ **Obstetric**

Toxemia (including HELLP syndrome), amniotic fluid embolism, eclampsia, and haemorrhage.


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➤ **Environmental Hazards**

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

➤ **Toxicology, poisoning**

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

➤ **General**

Pharmacology, pharmacokinetics and drug interactions. Analgesia, sedation and muscle relaxants, inflammation and anti-inflammatory agents, multiple trauma, transport of the critically ill, management of the organ donor.

➤ **Cardiovascular**

Placement of a central venous catheter (by different routes). pulmonary artery (w catheter, arterial catheter (by different routes) measurement and interpretation of the hemodynamic variables (including the derived variables), use of ultrasound implementation of cardiovascular support, antiarrhythmic therapy and thrombolysis.

➤ **Neurologic**

Basic interpretation of brain CT/MRI scan, lumbar puncture, and, intracranial pressure monitoring.

➤ **Nutrition**

Implementation of intravenous fluid therapy, enteral and parental nutrition.

➤ **Haematologic**

Correction of haemostatic and coagulation disorders, interpretation of a coagulation profile, correct administration of blood component therapy.

➤ **Renal**

Bladder catheterization, placement of dialysis catheters and institution of renal replacement therapy.

➤ **Gastro-intestinal**

Placement of gastric tube, an esophageal and gastric tamponade balloon catheter, ascitic tapping. Intraabdominal pressure monitoring and interpretation.


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➤ **General Aspects**

- Measurement of severity of illness and outcome assessment. Exposure to clinical research, ethical and legal aspects of critical care.
- Participation in regional and national CME's, seminars, conferences and workshops in critical care

5. LOG BOOK

- a. PDCC candidate shall maintain a record log book of the work carried out by them during the period of training.
- b. The log book has to be maintained as recommended by the department, checked, and assessed periodically and signed by the senior resident weekly and consultant fortnightly and, checked and signed by the HOD at the end of every month.
- c. Scanned copy of the log book will be kept in the departmental record for future purposes.

6. POSTER/RESEARCH PRESENTATION AND PUBLICATION:

During the training period PDCC candidate has:

1. To present at least one poster presentation in a National conference.
2. To read at least one paper in a National conference.
3. To submit at least one research paper, which should be published/accepted for publication/sent for publication during the period of his postgraduate studies in National/ international indexed journal.
4. Data should have been collected during the training period

7. SCHEME OF ASSESSMENT:

Examination:

Formative Assessment:

Formative assessment includes various formal and informal assessment procedure by which evaluation of student's learning, comprehension, and academic progress is done by the teachers/faculty to improve student attainment. Formative assessment test (FAT) is called as "Formative" as it informs the in process teaching and learning modifications. FAT is an integral part of the effective teaching. The goal of the FAT is to collect information which can be used to improve the student learning process. Formative assessment is essentially positive in intent, directed towards promoting learning; it is therefore part of teaching. Validity and usefulness are paramount informative assessment and should take precedence over concerns for reliability. The assessment scheme consists of three parts which has to be essentially completed by the candidates.


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The scheme including:-

Part I:- Conduction of theory examination

Part II:- Feedback session on the theory performance

Part III:- Work place based clinical assessment

Scheme of Formative assessment

PART –I CONDUCT OF THEORY EXAMINATION

Candidate has to appear for

Theory Exam and it will be held for One day.

PART – II

FEEDBACK SESSION ON THE THEORY EXAMINATION

Candidate has to appear for his/her Theory Exam

Assessment workshop

PART – III WORK PLACE BASED

CLINICAL ASSESSMENT

After Theory Examination,

Candidate has to appear for Clinical Assessment.

The performance of the resident during the training period should be monitored throughout the course and duly recorded in the books as evidence of the ability and daily work of the student.

1. Personal Attributes:

Behavior and Emotional Stability: Dependable, disciplined, dedicated, stable in emergency situation, shows positive approach.

Motivation and Initiative: Takes responsibility, innovation, enterprising, dose not shirk duties or leave any work pending.

Honesty and Intergriety : Truthful, admits mistakes, does not cook up information, has ethical conduct, exhibits good moral values, loyal to the institution.

Interpersonal Skills and leadership Quality: has compassionate attitude towards patients and attendants, gets on well with colleagues and paramedical staff, is respectful to senior, has good communication skills.

2. Clinical Work :

Availability: Punctual, available continuously on duty, responds promptly on calls and takes proper permission for leave.

Diligence: Dedicated, hardworking, dos not shirk duties, leave no work pending, does not sit idle, competent in clinical case work up and management.

Academic ability: Intelligent, shows sound knowledge and skills, participates adequately in academic activities, and performs well in oral presentation and departmental tests.

Clinical Performance: Proficient in clinical presentations and case discussion during rounds and OPD work up. Preparing Documents of the case history/examination and


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progress notes in the file (daily notes, round discussion, investigations and management)
Skill of performing bed side procedures and handling emergencies.

Academic Activity: Performance during presentation at Journal club/Seminar/Case discussion /Stat meeting and other academic sessions. Proficiency in skills as mention job responsibilities.

FINAL EXAMINATION:

The summative assessment of competence will be done in the form of PDCC exit Examination leading to the awards of the degree of PDCC course in Pulmonary & Critical Care Medicine. The PDCC Exit Examination is a two-stage examination comprising the theory and practical part.

Theory examination:

1. The Theory Examination comprises of one paper with maximum marks of 100.
2. There are 10 short notes of 10 marks each in the theory paper.
3. Maximum time permitted is 3 hours.

Practical Examination:

1. Maximum marks : 300
2. Comprises of Clinical Examination and viva

The candidate has to score a minimum of 50% marks in aggregate i.e. 200 out of total 400 marks (Theory & Practical) with at least 50 % marks in theory examination to qualify in the PDCC Exit Exam.

The theory and Practical of PDCC Exit Examination shall be conducted at the same examination center of the concerned specialty.

Declaration of PDCC Exit Result:

1. PDCC Exit Examination is a qualifying examination.
2. Results of PDCC Exit Examination (theory & practical) are declared as PASS/FAIL.
3. PDCC degree is awarded to a trainee in the convocation of KGMU.

Eligibility Criteria to appear for the PDCC Examination:

i. Attendance :

The candidate must have attendance as per rules laid down by the academic council.

m. Poster, Paper, Research Presentation and Publication:

- i. To present one poster presentation National/International Conference.
- ii. To read one paper at a National/International conference.
- iii. To submit at least one research papers, which should be published/accepted for publication/sent for publication during the period of his postgraduate studies in National/ international indexed journal.
- iv. Data should have been collected during the training period.

n. Semester Examinations:

- i. The candidate must secure at least an average of 50% marks semester examination separately in theory as well as practical.
- ii. In the pre-professional examination, the candidate must secure at least 50% marks separately in theory as well as practical.

o. Formative assessment:

- i. The candidate must secure at least 50% marks in the formative assessment.

p. Recommendation from the Department

Department will provide in writing a certificate of good standing of the candidate for being eligible to appear in the professional examination.

**May be modified and finalized as per university rules.*


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