Curriculum

DNB Broad Specialty

Respiratory Medicine

- Objectives of the Programme
- Teaching and Training Activities
- Syllabus
- Competencies
- Log Book
- Recommended Text Books and Journals

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I. PROGRAMME GOALS AND OBJECTIVES

1. PROGRAMME GOALS

The goal of Post graduation (DNB) course in Pulmonary Medicine and Chest is to produce a competent chest physician who:

a. Recognizes the health needs of patients having chest complaints and carries out professional obligations in keeping with principles of National Health Policy and professional ethics.
b. Has acquired the competencies pertaining to chest medicine that are required to be practiced in the community and at all levels of health care system.
c. Has acquired skills in effectively communicating with the patient, family and the community.
d. Is aware of the contemporary advances and developments in medical sciences as related to pulmonary medicine.
e. Is oriented to principles of research methodology.
f. Has acquired skills in educating medical and paramedical professionals.

2. PROGRAMME OBJECTIVES

At the end of the DNB course in Pulmonary Medicine and Chest, the student should be able to:

a. Recognize the key importance of pulmonary medicine in the context of the health priority of the country.
b. Practice the specialty of Pulmonary Medicine in keeping with the principles of professional ethics.
c. Identify social, economic, environmental, biological and emotional determinants of patient and institute diagnostic, therapeutic, rehabilitative, preventive and promotive measures to provide holistic care to him.
d. Take detailed history, perform full physical examination and make clinical diagnosis.
e. Perform relevant investigative and therapeutic procedures for the patient.

f. Interpret important imaging and laboratory results.

g. Diagnose illness based on the analysis of history, physical examination and investigative work up.

h. Plan and deliver comprehensive treatment for illness using principles of rational drug therapy.

i. Plan rehabilitation of patients suffering from chronic illness.

j. Manage respiratory emergencies efficiently.

k. Demonstrate skills in documentation of case details, and of morbidity and mortality data relevant to the assigned situation.

l. Demonstrate empathy and humane approach towards patients and their families and respect their sensibilities.

m. Demonstrate communication skills of a high order in explaining management and prognosis, providing counseling and giving health education messages to patients, families and communities.

n. Develop skills as a self-directed learner, recognize continuing educational needs; use appropriate learning resources, and critically analyze relevant published literature in order to practice evidence-based medicine.

o. Demonstrate competence in basic concepts of research methodology and epidemiology, and be able to critically analyze relevant published research literature.

p. Develop skills in using educational methods and techniques as applicable to the teaching of medical/ nursing students, general physicians and paramedical health workers.

q. Function as an effective leader of a health team engaged in health care research or training.

II. TEACHING AND TRAINING ACTIVITIES

The fundamental components of the teaching programme should include:

1. Case presentations & discussion- once a week

2. Seminar – Once a week
3. Journal club- Once a week
4. Grand round presentation (by rotation departments and subspecialties)- once a week
5. Faculty lecture teaching- once a month
6. Clinical Audit-Once a Month
7. A poster and have one oral presentation at least once during their training period in a recognized conference.

The rounds should include bedside sessions, file rounds & documentation of case history and examination, progress notes, round discussions, investigations and management plan) interesting and difficult case unit discussions.

The training program would focus on knowledge, skills and attitudes (behavior), all essential components of education. It is being divided into theoretical, clinical and practical in all aspects of the delivery of the rehabilitative care, including methodology of research and teaching.

a. **Theoretical:** The theoretical knowledge would be imparted to the candidates through discussions, journal clubs, symposia and seminars. The students are exposed to recent advances through discussions in journal clubs. These are considered necessary in view of an inadequate exposure to the subject in the undergraduate curriculum.
b. **Symposia:** Trainees would be required to present a minimum of 20 topics based on the curriculum in a period of three years to the combined class of teachers and students. A free discussion would be encouraged in these symposia. The topics of the symposia would be given to the trainees with the dates for presentation.
c. **Clinical:** The trainee would be attached to a faculty member to be able to pick up methods of history taking, examination, prescription writing and management in rehabilitation practice.
d. **Bedside:** The trainee would work up cases, learn management of cases by discussion with faculty of the department.

e. **Journal Clubs**: This would be a weekly academic exercise. A list of suggested Journals is given towards the end of this document. The candidate would summarize and discuss the scientific article critically. A faculty member will suggest the article and moderate the discussion, with participation by other faculty members and resident doctors. The contributions made by the article in furtherance of the scientific knowledge and limitations, if any, will be highlighted.

f. **Research:** The student would carry out the research project and write a thesis/ dissertation in accordance with NBEMS guidelines. He/ she would also be given exposure to partake in the research projects going on in the departments to learn their planning, methodology and execution so as to learn various aspects of research.

III. SYLLABUS

Milestones in the history of Pulmonary Medicine:

Structure & Functions of Respiratory System and mediastinum.

1. Anatomy
2. Development & aging of respiratory system
3. Physiology
    - Respiratory Mechanics
    - Physiology of Respiration & Ventilation
    - Molecular Regulation of Lung development
    - Pulmonary Surfactant and disorders of Surfactant Homeostasis
    - Mucociliary clearance
    - Physiological basis of pulmonary function testing & arterial blood gases.
    - Acid base disturbances
    - Physiology aspects related to mechanical ventilation
    - Physiology related to endocrine aspects of lung
    - Sleep physiology

4. Patho-Physiology of all disorders pertaining to pulmonary medicine.
5. Microbiology
6. Genetics
7. Pharmacology
8. Pathology
9. Immunology & defense mechanisms
10. Molecular biology
11. Biochemistry

Symptoms and Signs

1. Dyspnoea
2. Wheeze
3. Stridor
4. Hoarseness
5. Cough
6. Sputum production
7. Chest Pain
8. Haemptysis
9. Snoring
10. General symptoms of disease including fever, weight loss, oedema, Nocturia and
11. Day time somnolence
12. Abnormal findings on general examination including cyanosis, clubbing, superior vena cava syndrome and Horners syndrome.
13. Abnormal findings on inspection should include abnormal breathing patterns, chest wall deformities.
14. Abnormal findings on palpation and percussion
15. Abnormal findings on auscultation

Diseases of Airways

1. Asthma
2. Acute Bronchitis
3. Chronic bronchitis/ COPD
4. Bronchiolitis
5. Bronchiectasis
6. Airway Stenosis, megaly & malacia
7. Tracheooesophageal Fistula
8. Upper airway disease
9. Vocal cord Dysfunction
10. Foreign body aspiration
11. GERD

Neoplasms of the Lung and Thorax

1. Pathogenesis
2. Approach to the patient with Pulmonary nodules
3. Pathology of Bronchogenic Carcinoma
4. Clinical evaluation and diagnosis
5. Natural history
6. Genetic and Molecular changes
7. Prospects for a Personalized Pharmacological Approach to treatment
8. Epidemiology of the lung cancer
9. Clinical evaluation, diagnosis & staging of lung cancer
10. Treatment of non-small cell lung cancer: Surgery
11. Treatment of Non-Small cell lung cancer: Chemotherapy
12. Small Cell Lung Cancer: Diagnosis, Treatment, and natural history.
13. Primary lung tumors other than Bronchogenic Carcinoma: Benign and Malignant.
14. Extra pulmonary Syndromes associated with Lung Tumors

15. Metastatic Pulmonary tumours: The role of Surgical Resection
16. Mesothelioma
17. Metastatic & Other pleural tumours
18. Benign intrathoracic tumours
19. Mediastinal tumours
20. Chest wall tumours
21. Sarcoma

Lymphoproliferative and Hematologic Diseases Involving the lung and Pleura

Lung Immunology

1. Innate and Adaptive Immunity in the lung
2. Lymphocyte- and Macrophage-Mediated Inflammation in the lung
3. Mast cells and Eosinophils
4. Leukocyte Accumulation in Pulmonary Disease
5. Antibody- Mediated Lung Defenses and Humoral Immunodeficiency

Lung Injury and Repair

1. T Lymphocytes in the lung
2. Chemokines, Adipokines, and growth factors in the lung
3. Redox Signaling and Oxidative Stress in Lung Diseases
4. Fibroblasts in Lung Homeostasis and Diseases

Non Tubercular Infectious Diseases of the Lungs

1. Pulmonary clearance of Infectious agents
2. Approach to the patient with Pulmonary Infection
3. Pulmonary Infection in Immunocompromised hosts
4. Microbial Virulence factors in Pulmonary Infections
5. Principles of Antibiotic Use and the Selection of Empiric therapy for Pneumonia
6. HIV, AIDS and pulmonary disorders

7. Upper Respiratory Infections
8. Lower respiratory infections
9. Community acquired pneumonia
10. Nosocomial pneumonia
11. Pneumonia in the immunocompromised host
12. Other pneumonias
13. Parapneumonic effusion & Empyema
14. Lung abscess
15. Fungal infections
16. Parasitic infections
17. Epidemic Viral infections
18. Others infections

Tuberculosis

1. Pulmonary TB
2. Extrapulmonary TB
3. TB in the immunocompromised host
4. Latent TB infections
5. Non tuberculous mycobacterial diseases
6. Drug resistant Tuberculosis
7. Tuberculosis control programme, including Programmatic management of drug resistant Tuberculosis (PMDT).

Pulmonary Vascular diseases

1. Pulmonary Embolism
2. Pulmonary edema
3. Primary Pulmonary Hypertension
4. Secondary Pulmonary Hypertension, Cor Pulmonale
5. Vasculitis and Diffuse pulmonary hemorrhage

6. Abnormal A-V communication
7. Hepatopulmonary Syndrome

Community and Social Pulmonary Medicine

1. Prevention and cure of tuberculosis under RNTCP including Programmatic management of drug resistant Tuberculosis (PMDT).
2. Implementation of DOTS
3. Prevention of HIV (VCTC) as it increases prevalence of tuberculosis.
4. Investigation of adverse events following anti tubercular therapy
5. General principles of prevention and control of tuberculosis and nosocominal infection (pneumonia).
6. Prevention of drop let infection.

Occupational and Environmental Diseases

1. Occupational Asthma
2. Reactive airway dysfunction syndrome
3. Pneumoconiosis and Asbestos related Disease
4. Hypersensitivity pneumonitis
5. Dust and Toxic gas inhalation disease
6. Air pollution (indoor and outdoor) and it's impact on health
7. Smoking related diseases
8. Health effects of Climate change, including those due to Heat Waves
9. High altitude Disease
10. Diving related disease, Aviation and sports related pulmonary disorders.
11. Disability evaluation and compensation.

Diffuse Parenchymal (interstitial) Lung Diseases

1. Sarcoidosis
2. Idiopathic Interstitial pneumonias including Idiopathic Pulmonary Fibrosis (IPF)

3. NSIP, COP, AIP, RB-ILD, DIP, LIP
4. Interstitial lung diseases specific to Infancy

Iatrogenic diseases

1. Drug induced lung diseases
2. Complications of invasive procedures
3. Radiation induced Disease

Acute Injury

1. Inhalation Lung Injury
2. Traumatic thoracic injury

Respiratory Failure

3. Acute Lung Injury and Acute Respiratory Distress Syndrome
4. Obstructive Lung disease
5. Neuromuscular Disease
6. Chest Wall Diseases
7. Other restrictive lung Disease

Pleural Diseases

1. Pleurisy
2. Pleural Effusion
3. Chylothorax
4. Haemothorax
5. Fibrothorax
6. Pneumothorax/Hydropneumothorax/Pyopneumothorax
7. Empyema

Diseases of the chest wall and respiratory muscles including the diaphragm

1. Chest wall deformities
2. Neuromuscular disorders
3. Phrenic Nerve Palsy
4. Diaphragmatic hernia
5. Chest wall and diaphragmatic tumours

Mediastinal Diseases excluding tumours

1. Mediastinitis
2. Medistinal Fibrosis
3. Pneumomedistinum

Pleuropulmonary manifestations of systemic/ Extrapulmonary disorders

1. Collagen vascular disease
2. Cardiac disease
3. Abdominal disease
4. Haematological disease
5. Obesity
6. Hyperventilation syndrome

Genetic and Developmental Disorders

1. Cystic Fibrosis
2. Primary Ciliary Dyskinesia
3. Alpha-1 antitrypsin deficiency
4. Agenesis, Aplasia and Hypoplasia
5. Sequestration
6. Anomalies of Tracheo-bronchial tree and Fissures
7. Others

Respiratory Diseases and Pregnancy

1. Asthma
2. Bronchiectasis/ Cystic fibrosis etc.
3. Tuberculosis
4. Sarcoidosis
5. Restrictive Lung diseases
6. Pregnancy induced respiratory diseases
7. Others

Pulmonary changes in autoimmune disorders

Allergic Diseases

1. Upper airway diseases
2. Asthma
3. Allergic Bronchopulmonary aspergillosis
4. Anaphylaxis
5. Others

Eosinophilic Diseases

1. Tropical pulmonary Eosinophilia
2. Non-asthmatic eosinophilic bronchitis
3. Acute and chronic eosinophilic pneumonia
4. Hypereosinophilic syndrome
5. Churg-strauss syndrome
6. Polyarteritis Nodosa
7. Others

Sleep related disorders

1. Obstructive sleep apnoea
2. Central sleep apnoea

3. Upper airway resistance syndrome
4. Obesity hypoventilation syndrome
5. Others

Immunodeficiency disorders

1. Congenital immunodeficiency syndrome
2. Acquired immunodeficiency syndrome
3. HIV related diseases
4. Graft versus host diseases
5. Post-transplantation immunodeficiency
6. Others

Pulmonary Rehabilitation

Lung Transplantation

Bioterrorism

Pediatric Pulmonology

Respiratory response to exercise in health

Aging of the respiratory system

Pulmonary diseases in Geriatrics population

Infection control practices in healthcare settings

Other Areas

1. Acute Responses to Toxic Exposures
2. Trauma and Blast Injuries
3. High Altitude
4. Diving Medicine
5. Pulmonary Complications of HIV Infection
6. Pulmonary Complications of stem cell and solid organ transplantation
7. Pulmonary Complications of primary Immunodeficiencies

8. Pulmonary Complications of Abdominal Diseases
9. Pulmonary Complications of Hematologic Diseases
10. Pulmonary Complications of Endocrine Diseases
11. The lungs in Obstetric and Gynecologic Diseases
12. The respiratory System and Neuromuscular Disease
13. Acute Ventilatory failure
14. Acute Hypoxemic Respiratory failure and ARDS
15. End-of-Life Care in Respiratory Failure

Biostatistics and Research methods

Public Health & Epidemiology

1. Epidemiological aspects of major respiratory and public health problems like Asthama, COPD, Interstitial lung disease
2. Occupational & Environmental disorders
3. Smoking related disorders
4. Infective diseases of lung
5. Tuberculosis and Pneumonias.

Surgical Aspects

Surgical interventions in various pulmonary disorders including trauma, tuberculosis and other infections & lung transplantation & minimally invasive interventions.

Medico-Legal Aspects

1. Compensation (occupational lung disorders) Fitness & disability evaluation.
2. Personal Protective measures for occupational health, biosafety guidelines for medical equipment & waste disposal.
3. Human Rights, ethical aspects, consent for procedures/newer drug development.

4. Aspects related to medical procedures & interventions performed in various pulmonary disorders.

Orphan Lung diseases

1. Langerhans cell histiocytosis
2. Lymphangioleiomyomatosis
3. Pulmonary alveolar proteinosis
4. Amyloidosis

Pulmonary Function Testing

1. Spirometry performance and interpretation
2. Static and Dynamic Lung Volumes- Interpretation and Performance
3. Body Plethysmography – Interpretation
4. Gas transfer- Interpretation
5. Blood gas assessment and Oximetry-Interpretation and Performance
6. Bronchial provocation testing- Interpretation and performance
7. Cardiopulmonary exercise testing- Interpretation and performance
8. Assessment of respiratory mechanics- Interpretation
9. Compliance measurements - Interpretation
10. Respiratory muscle assessment – Interpretation
11. Ventilation perfusion measurement – Interpretation
12. Shunt measurement – Interpretation
13. Sleep studies- Interpretation and performance
14. Measurement of regulation of ventilation- Interpretation

Imaging in Chest Medicine

1. Chest X-ray
2. Ultrasound
3. CT Scan

4. MRI
5. PET Scan
6. Others

Nutrition in Respiratory medicine

Medical Emergency Management

1. Management of acute asthma, Pneumothorax/Hydropneumothorax, hemothorax, acute exacerbation of COPD, hemoptysis
2. Cardiopulmonary resuscitation
3. Endotracheal intubation
4. Management of acute respiratory failure and ARDS
5. Pulmonary thromboembolism

Critical care in Pulmonary Medicine

1. Hemodynamic and respiratory monitoring
2. Principles of mechanical ventilation
3. Nutrition in critically ill patients
4. Management of pain and sedation in critical care medicine
5. Ethics and palliative care in ICU settings
6. Organization of intensive care setting

Recent Advances:

1. Recent diagnostic techniques for Tuberculosis
2. Drug development in respiratory medicine.
3. Sleep Medicine
4. Invasive diagnostic techniques
5. Lung in extreme conditions.
6. Role of mechanical Ventilator and setting up of I.R.C.U.

7. Major indications of Surgery in Lung Diseases.
8. Modern concepts of Heart Lung Transplantation.
9. Promotion of Lung functions through exercise and Oxygen supplementation.
10. Recent diagnostics and therapeutic interventions in Lung cancer.

Miscellaneous

1. Approach to Important Clinical Problems
2. Oncology. Lung cancer, benign and malignant with pleural metastasis with primary pleural malignancy
3. Connective tissue disorder, drug induced pulmonary diseases, HIV related pulmonary disease and tuberculosis.

Topics to be included in all subjects:

- Biostatistics, Research Methodology and Clinical Epidemiology
- Ethics
- Medico legal aspects relevant to the discipline
- Health Policy issues as may be applicable to the discipline

Training and Practicals

A. Training in Pulmonary Function Testing

Understanding of performing and interpretation of Spirometry, lung volume and diffusion test. A clear understanding of the indications and potential pitfalls in the performance and the limitations of interpretation of pulmonary function testing including reversibility test of airway obstruction and bronchial provocation test.

B. Training in Critical Care Medicine

Trainees will be expected to master the cognitive skills and develop knowledge and understanding of the following:

1. Pathophysiology of Respiratory Failure.
2. Indications and Interpretation of Arterial Blood gas and Electrolytes analysis.
3. Indications and management of invasive and non-invasive mechanical ventilation.
4. Thorough knowledge about Ventilator associated complications.
5. The pharmacology, adverse reactions, efficacy and appropriate use of drugs used in Pulmonology. These include Oxygen, Nebulisations, Bronchodilators, Antibiotics, anti-Tuberculosis drugs, antifungal agents and various cytotoxic drugs.
6. Bronchoscopic procedures in critically ill patients.

C. <u>Training in Asthma & COPD</u>

Clinical Training

1. To identify patients suffering from asthma & COPD.
2. Common diagnostic tests for diagnosis of asthma and COPD
3. To acquire clinical skills in managing exacerbations of asthma and COPD.
4. Training on primary and secondary prevention of asthma.
5. Training of patient education program.
6. Indication and delivery of long term oxygen therapy.

Training Procedure

Use and maintenance of nebulisers, spacers, peakflow meter, Meter Dose Inhalers, CPAP, BIPAP, Humidifier and other appliances.

D. <u>Training in Respiratory Infections</u>

Trainees must master in basic knowledge regarding respiratory infections, including:

1. The mechanisms of inflammation.
2. Elements of the Respiratory defense system (including the mucosal immuno

system and the components of mucosal barrier function).

3. The prevalence, clinical presentation of respiratory pathogens (viral, bacterial, fungal, and protozoal).
4. The Pathophysiology of pneumonia, Tuberculosis & other infectious diseases.
5. The indications and contraindications of antimicrobial therapy, mechanisms of microbial drug resistance, and risk of infections from enteric organism.
6. Clinical exposure of respiratory infections should include the diagnosis and management of patients with common infectious presentations such as Pneumonias (bacterial, viral, fungal); Tuberculosis & its various presentations (including appropriate antitubercular chemotherapies; in relation to emergence of drug Resistant cases); infections in immunocompromised hosts (e.g., transplantation patients, patients with AIDS).

E. <u>Training in Respiratory Malignancy</u>

Throughout the entire period of training, trainees should participate in the outpatient screening for and diagnosis of all types respiratory malignancy and the outpatient and inpatient management of patient with respiratory cancers. Endoscopic training in the diagnosis and management of respiratory malignancy.

F. <u>Training in Respiratory Endoscopy (Bronchoscopy)</u>

At the completion of training, the trainee should have achieved the following:

1. The ability to recommend bronchoscopic procedures based on findings of a personal consultation and in consideration of specific indications, contraindications, and diagnostic / therapeutic alternatives.
2. The ability to perform a specific procedure safely, completely, and expeditiously.
3. The ability to interperet most bronchoscopic finding correctly.
4. The ability to integrate bronchoscopic findings or therapy into the patient management plan.
5. The ability to understand the risk factors attendant to bronchoscopic procedures

and to be able to recognize and manage complications.

6. The ability to recognize personal and procedural limits and to know when to request help.

Guidelines for Bronchoscopic Training in Routine Procedures

The P.G. Students should able to perform Fiberoptic bronchoscopy Including endobronchial biopsy, bronchoalveolar lavage, therapeutic bronchial toileting, transbronchial biopsy, Needle aspiration, Pulmonary rehabilitation and Physiotherapy, RNTCP-OP, Operational Research, Clinical Research & Epidemiology.

The trainee must be exposed to a sufficient number of new and follow-up inpatients and outpatients of varied age (Pediatric, adult and geriatric) and of both sexes and with a variety of common and uncommon Respiratory disorders to permit a broad endoscopic experience. All trainees should have a clear understanding of the indications, limitations, complications, and medical and surgical implications of the findings of respiratory Endoscopy. Essential components of patient safety during endoscopic procedures must be mastered, including the intravenous administration of medications that produce conscious sedation and the application and interpretation of noninvasive patient monitoring devices. Trainees should be familiar with the care, cleaning, and proper maintenance of respiratory equipment. After suitable supervision, the trainee should be capable of independently performing routine respiratory procedures.

Postings:

It is recommended that postings should be undertaken in the following departments:

Intensive Care	: 2 Months
Emergency	: 1 Month
PFT Lab	: 15 Days

Bronchoscopy Lab	: 1 Month
Radiology	: 1 Month
Pathology	: 15 Days
Microbiology & Mycobacteriology	: 15 Days
Sleep Lab	: 15 Days
RNTCP and PMDT	: 1 Month

IV. COMPETENCIES

- **History and examination.**

  History taking and complete physical examination including general examination.

- **Bedside procedures**

  Monitoring skills: Temperature recording, capillary blood sampling, arterial blood sampling.

1. Chest X-ray and interpretation
2. Blood test and serology relevant to Respiratory medicine
3. Sputum induction
4. Sputum analysis
5. Tuberculin skin testing
6. Allergy skin testing
7. Thoracic ultrasound imaging
8. Thoracentesis
9. Closed needle pleural biopsy
10. Medical thoracoscopy
11. Flexible bronchoscopy
12. Transbronchial lung biopsy
13. Transbronchial needle aspiration
14. Endobronchial ultrasound
15. Bronchalveolar lavage

16. Rigid bronchoscopy
17. Interventional bronchoscopic technique including fluorescent bronchoscopy,
18. Brachytherapy, endobronchial radiotherapy, afterloading laser and
19. Electrocoagulation cryotherapy, Photodynamic therapy and airway stents.
20. Transthoracic needle aspiration & biopsy
21. Fine needle lymphnode aspiration for cytology
22. Analysis of exhaled breath components including NO, CO and breath condensate
23. Cytology

Procedures performed collaboratively

1. Thoracic imaging (X-ray, CT, MRI)
2. Nuclear medicine techniques (Pulmonary and Bone scan PET)
3. Electrocardiogram
4. Echocardiography
5. Right heart catheterization
6. Flouroscopy
7. Ultrasound
8. Transoesophageal ultrasound
9. Oesophageal pH monitoring
10. Cytology/Histology
11. Microbiology testing

Treatment modalities and prevention measures

1. Systemic and inhaled drug therapy
2. Chemotherapy
3. Other systemic antitumour therapy
4. Immunotherapy for allergic disorders
5. Oxygen therapy
6. Vaccination and infection control

7. Ventilatory support (Invasive/ Noninvasive/CPAP)
8. Cardiopulmonary resuscitation
9. Assessment for Anaesthesia/Surgery
10. Smoking cessation
11. Endobronchial therapies
12. Intercostal tube drainage
13. Pleurodesis
14. Home care
15. Palliative care
16. Pulmonary rehabilitation
17. Nutritional interventions
18. Surfactant therapy
19. Gene therapy
20. Principles of stem cell therapy
21. Other preventive measures

Core generic abilities

1. Communication including patient education and public awareness
2. Literature appraisal
3. Research
4. Teaching
5. Audit/ quality assurance of clinical practice
6. Multidisciplinary teamwork
7. Administration and management
8. Ethics

Competencies in the fields shared with other specialties

1. RNTCP and Programmatic management of Drug Resistant Tuberculosis field experience

2. Intensive care
3. High dependency units

Knowledge of associated fields relevant to adult Respiratory medicine

1. Thoracic surgery
2. Radiotherapy
3. Paediatric respiratory medicine
4. Chest physiotherapy
5. Other relevant medical specialty.

Further areas relevant to respiratory medicine

1. Epidemiology
2. Research methods
3. Statistics
4. Evidence based medicine
5. Quality of life measures
6. Psychological factors in the development of respiratory diseases
7. Psychological consequences of chronic respiratory diseases
8. Public health issues
9. Organization of Health care
10. Economics of health care
11. Compensation and legal issues

- **Therapeutic skills:**
  - Nasogastric feeding
  - Endotracheal intubation
  - Cardiopulmonary resuscitation
  - Administration of oxygen
  - Venepuncture and establishment of vascular access, administration of fluids,

blood, blood components

- Paranetal nutrition
- Abscess drainage and basic principles of rehabilitation.

- **Investigative skills:**
  - Sputum microscopy examination, gram stain, ZN stain, gastric aspirate.
  - Pleural, peritoneal, pericardial and lumbar puncture.
  - Pleural biopsy
  - Lung biopsy
  - Fine needle aspiration cytology
  - Trucut biopsy from lung
  - Bronchoscopic alveolar lavage
  - Pulmonary function test
  - Sleep study
  - Bedside investigations. Hemoglobin, TLC, ESR, peripheral smear staining and examination.

- **Interpretation of X-rays of chest, PFT, Ultrasound, CT chest, ECG, ABG findings etc.**

V. LOG BOOK

A candidate shall maintain a log book of operations (assisted / performed) during the training period, certified by the concerned post graduate teacher / Head of the department / senior consultant.

This log book shall be made available to the board of examiners for their perusal at the time of the final examination.

The log book should show evidence that the before mentioned subjects were covered

(with dates and the name of teacher(s) The candidate will maintain the record of all academic activities undertaken by him/her in log book.

1. Personal profile of the candidate
2. Educational qualification/Professional data
3. Record of case histories
4. Procedures learnt
5. Record of case Demonstration/Presentations
6. Every candidate, at the time of practical examination, will be required to produce performance record (log book) containing details of the work done by him/her during the entire period of training as per requirements of the log book. It should be duly certified by the supervisor as work done by the candidate and countersigned by the administrative Head of the Institution.
7. In the absence of production of log book, the result will not be declared.

VI. RECOMMENDED TEXT BOOKS AND JOURNALS

1. Text Books

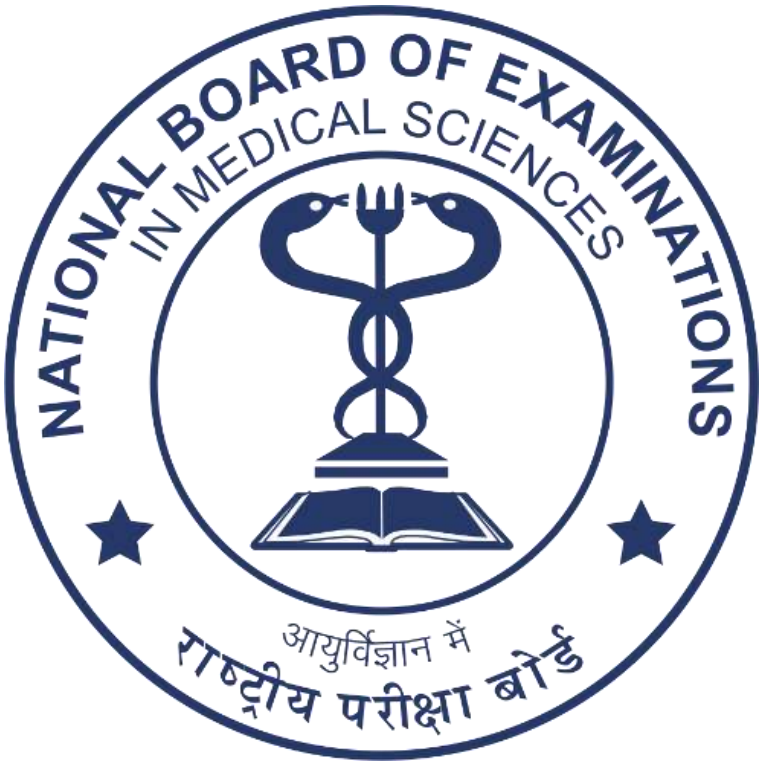
a. Fishmen's Pulmonary Diseases and Disorders
b. Croftan's Pulmonary Diseases
c. Fraser & Pare's Diagnosis of the Diseases of the Chest
d. Murray and Nadel – Textbook of respiratory medicine
e. Pleural Diseases by Light. 5th Edition Lippincott, 2007.
f. Tuberculosis by Dr. S.K Sharma
g. Manual of Tuberculosis by Dr. Rajendra Prasad first edition 2015 jaypee brothers medical publishers.
h. MDR and XDR Tuberculosis by Dr. Rajendra Prasad first edition 2015 jaypee brothers medical publishers.
i. Atlas of Fibreoptic Bronchoscopy by Dr. Rajendra Prasad
j. Atlas of Fibreoptic Bronchoscopy by Dr. Uday B Prakash
k. George and Light – Essentials of Pulmonary and Critical Care Medicine

l. Gibson –Textbook of Respiratory Medicine
m. Egan's Fundamentals of Respiratory Care. 4th edition, Lippincott, 2005.
n. Principles of Chest X-ray Diagnosis – Simon. 4th edition JayPee Bros, 1999.
o. Respiratory Physiology JB west – 8th edition, LANGE McGraw Hill, 2008.
p. Paul Marino – The ICU book – 3rd Edition Lippincott, 2005.
q. Sleep Medicine – Kryger. 4th Edition Elsevier, 2005.
r. Thoracic imaging –Webb & Higgins Lippincott, 2005.
s. Diagnostic thoracic imaging – Miller, McGraw Hill 2006.
t. Macleods – Clinical Examination-11th edition Churchill Livingstone, 2006.
u. Davidson –Principles and Practice of Medicine. 21st Edition
v. Churchill Livingston, 2010.Udwadia- Principles of critical care – 2nd Edition Oxford, 2007.
w. Chang – Clinical Applications of Mechanical Ventilation. 3rd Edition Thomson, 2008.
x. Clinical respiratory Medicine – Albert & Spiro-3rd Edition Elsevier Mosby, 2003.
y. Synopsis of Diseases of the Chest –Fraser & Spiro-3rd Edition Elsevier, 2005.
z. Tuberculosis – Case finding by Toman. 2nd Edition WHO Publication, 2004.
aa. Clinical Tuberculosis-Diagnosis and treatment by Dr. Rajendra Prasad first edition 2015 jaypee brothers medical publishers.

2. Journals

a. Indian J Tuberculosis
b. Chest
c. Chest Clinics
d. Lung India
e. Indian Journal of Chest diseases and allied sciences
f. Indian Journal of tuberculosis
g. Thorax

h. International Journal of TB and Lung Diseases
i. American Journal of Respiratory and Critical care medicine
j. European Respiratory journal
k. European Respiratory review
l. The Lancet Respiratory
m. British Medical journal
n. Journals of Indian medical association
o. New England Journal of Medicine
p. Journal of association of physicians of India
q. Clinics in chest medicine
r. American journal of roentgenology
s. Cancer
t. Cancer research
u. Journal of thoracic and cardiovascular surgery
v. Respiration
w. Current opinion in pulmonary medicine
x. Breathe



आयुर्विज्ञान में राष्ट्रीय परीक्षा बोर्ड

स्वास्थ्य एवं परिवार कल्याण मंत्रालय, भारत सरकार

मेडिकल एन्क्लेव, अंसारी नगर, नई दिल्ली – 110029

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