

# SUMANDEEP VIDYAPEETH

(Declared as Deemed to be University under Section 3 of the UGC Act 1956)

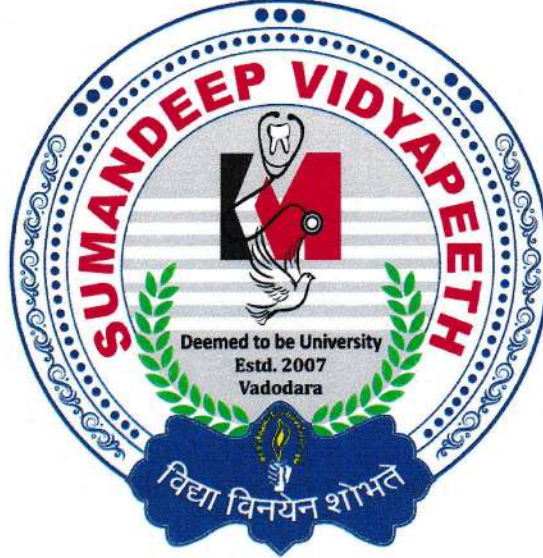
Accredited by NAAC with a CGPA of 3.53 out of four-point scale at 'A' Grade

Category – I deemed to be university under UGC Act - 2018

At & Post Piparia, Tal: Waghodia 391760 (Gujarat) India.

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## CURRICULUM

### Doctor of Medicine (M.D.)

### TUBERCULOSIS & RESPIRATORY DISEASE / PULMONARY MEDICINE

Attested CTC

*Sharaney*  
15/2/2021

Vice-Chancellor

Sumandeep Vidyapeeth

An Institution Deemed to be University

VIII. Piparia, Taluka: Waghodia.

Dist. Vadodara-391 760. (Gujarat)



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AMENDED UP TO DECEMBER -2020

## Curriculum for DTCD (TB & Respiratory Medicine)

### **Programme outcome : MD**

The purpose of MD education is to create specialists who would provide high quality health care and advance the cause of science through research & training. The goal of postgraduate medical education shall be to produce competent specialists and/or Medical teachers.

### **Programme specific outcome : MD**

**POS 1.** Scholars shall recognize the health needs of the community, and carry out professional obligations ethically and in keeping with the objectives of the national health policy.

**POS 2.** Scholars shall have acquired the basic skills in teaching of the medical and paramedical professionals.

**POS 3.** Practice the specialty concerned ethically and in step with the principles of primary health care.

**POS 4.** Demonstrate sufficient knowledge of the basic sciences relevant to the concerned specialty.

**POS 5.** Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students, general physicians and paramedical health workers.

**COURSE OUTCOME (CO):** Each student should obtain proficiency in the following domains during the period of MD training:

1. Theoretical knowledge of different aspects of Pulmonary Medicine including the status in health and disease.
2. Acquire clinical skills.
3. Acquire practical skills.
4. Management of emergencies including intensive care.
5. Preparation of thesis as per MCI guidelines.
6. Fulfilling objectives like patient management in the outpatient, inpatient and emergency situations, case presentations, didactic lectures, seminars, journal reviews, clinico-pathological conferences and mortality review meetings and working in the laboratories.

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## 1. GOAL

The goals of Postgraduate training in Respiratory Diseases is to train MBBS doctor who will fulfill the following:

- 1.1. Achieve the competency in the field of Respiratory Diseases
  - 1.2. Can practice at the secondary and tertiary level of the health care delivery system efficiently and effectively, backed by a sound scientific knowledge and skill base.
  - 1.3. The person must be trained in tuberculosis disorders keeping with the objective of the Nation Health Policy (RNTCP).
  - 1.4. The person shall be abreast with the recent advances and developments in the specialty of chest medicine.
  - 1.5. The person should be oriented to the principles of research methodology and epidemiology and must acquire basic skills in teaching the specialty.
  - 1.6. Exercise empathy and a caring attitude and maintain high ethical standards.
  - 1.7. Continue to evince keen interest in continuing medical education
  - 1.8. Be a motivated 'teacher' –to share his knowledge and skills with a colleague or a junior.
  - 1.9. Shall recognize the health needs of the community, and carry out professional obligations ethically and in keeping with the objectives of the national health policy.
- To prepare the candidate to practice Evidence Based Respiratory Medicine*

## 2. OBJECTIVES

***Upon completion of the evidence based Respiratory Medicine education, the trainee should be able to:***

- 2.1. ***Demonstrate significance of Evidence Based Respiratory Medicine***
- 2.2. ***Demonstrate awareness of epidemiologically-based needs assessments through research and systematic reviews of research evidence.***
- 2.3. ***Contribute to the appraisal process.***
- 2.4. ***Understand quality assurance in the delivery of Respiratory care.***

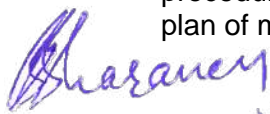
The Objectives may be considered under the subheadings.

## 3. Knowledge:

At the end of the course of Respiratory Medicine, the student shall be able to:

- 3.1. Demonstrate sound knowledge of common respiratory diseases, their clinical manifestations, including emergent situations and of investigative procedures to confirm their diagnosis
- 3.2. Demonstrate comprehensive knowledge of various ***evidence based*** modes of therapy used in treatment of respiratory diseases; and be acquainted with the most current guidelines for expert management of the respiratory illnesses.
- 3.3. Demonstrate detailed knowledge of pulmonary as well as extra pulmonary tuberculosis and to offer a comprehensive plan of management (Including National TB control programme and DOTS)
- 3.4. Describe the mode of action of commonly used drugs, their doses, side-effect/toxicity, indications and contra-indications and interactions;
- 3.5. Describe commonly used modes of management including medical and surgical procedures available for treatment of various diseases and to offer a comprehensive plan of management.

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**Upon completion of Evidence based Respiratory Medicine education the trainee should be able to describe:**

- Evidence based clinical practice including cost effectiveness.
- The development and application of clinical guidelines and standards.
- The process of risk assessment as relevant to clinical practice
- Multi-disciplinary clinical care pathways and appropriate integration of Respiratory Medicine.

**4. Skill:**

The following list is drawn up with a view to specifying basic minimum skills to be acquired. The student shall be able to:

- 4.1. Interview the patients, elicit relevant and correct information and describe the history in chronological order.
- 4.2. Conduct clinical examination, elicit and interpret clinical findings and diagnose common respiratory disorders and emergencies
- 4.3. Perform simple, routine investigative and office procedures required for making the bedside diagnosis, especially sputum collection and examination for etiologic organisms especially Acid Fast Bacilli (AFB), Interpretation of the chest x-ray respiratory function tests; CT scan & MRI scan of thorax.
- 4.4. Manage common recognizing need for referral for specialized care, of inappropriateness of therapeutic response.
- 4.5. **Utilize critical appraisal skills and be able to apply to research evidence**
- 4.6. Should be able to perform insertion of I.V. lines, nasogastric tubes, urinary catheters, lumbar puncture etc.
- 4.7. Teach undergraduates and interns
- 4.8. Blood sampling – venous and arterial
- 4.9. Communication skills with patients, relatives, colleagues and paramedical staff
- 4.10. Ordering laboratory and radiological investigations and interpretation of the report in light of the clinical picture
- 4.11. Proficiency in common ward procedures
- 4.12. Perform FNAC, Biopsy, Thoracocentesis, Tube thoracostomy, Tracheostomy, Laryngoscopy, Lung biopsy under radiological guidance, drainage of loculated pleural effusion under radiological guidance
- 4.13. Universal precautions against communicable diseases.
- 4.14. Insertion of Arterial lines, Central venous lines, endotracheal tubes
- 4.15. Working knowledge of ventilators and various monitors
- 4.16. Interpretation of Arterial Blood gases and management of abnormality
- 4.17. Correction of Electrolyte disturbances
- 4.18. Cardiopulmonary resuscitation and management of shock and cardio-respiratory failure
- 4.19. Bronchoscopy
- 4.20. Drainage of cervical cold abscess
- 4.21. Performance & Interpretation of spirometry
- 4.22. Performance & Interpretation of diffusion studies of lung
- 4.23. Performance & Interpretation of sleep study in subjects suspected to have obstructive sleep apnea.

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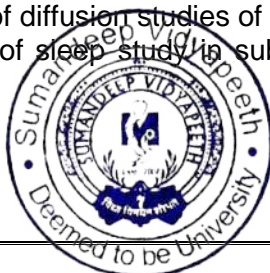
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## 5. ATTITUDES:

Adopt ethical principles in all Respiratory Medicine practice.

Professional honesty and integrity are to be fostered.

Treatment to be delivered irrespective of social status, caste, creed or region of patient.

Willing to share knowledge and clinical experience with professional colleagues.

Willing to adopt new methods and techniques in Respiratory Medicine from time to time based on scientific research, this is in patient's best interest.

Respect patient's rights and privileges including patient's right to information and right to seek second opinion.

**Upon completion of the subject of Respiratory Medicine, the trainee should be able to recognize:**

- 5.1. **Importance of maintaining professional standards by EBM.**
- 5.2. **The need to constantly appraise and evaluate clinical practice and procedures.**

## 6. COMMUNICATIVE ABILITIES:

- 6.1. Develop communication skills, in particular, to explain treatment option available in management and to make patient partner in evidence based decision making
- 6.2. Provide leadership and get the best out of his group in a congenial working atmosphere.
- 6.3. Should be able to communicate in simple understandable language to the patient .He should be able to guide and counsel the patient with regard to various treatment modalities available.
- 6.4. Develop the ability to communicate with professional colleagues through various media like Internet, e-mail, videoconference, and etc. to render the best possible treatment.

## 7. INTEGRATION OF TEACHING

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The goal of effective teaching can be obtained through integration with department of Medicine, Surgery, Microbiology, Pathology, Radiology, Pharmacology & PSM. This shall enable the student to be acquainted with diagnosis and management of common/uncommon systemic diseases that may affect the lung or may affect the management of various chest diseases.

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## 8. TEACHING AND TRAINING

8.1 Students will be posted as full time students in the department of Respiratory Disease. They will work in the concerned wards, attend to bedside clinics, participate in group discussions, seminars, Case presentation, grand rounds, didactic lectures, journal review and interpretation of laboratory data.

8.2 Candidates will have to participate in the Under Graduation teaching to get experience in the methods of teaching medical students.

*8.3 To introduce Basic life support (BLS) and Advanced Cardiac Life Support (ACLS) training for all the First year Postgraduate Resident Doctors from academic year 2017-18. (Board of Studies letter no.: SBKSMIRC/Dean/1777(A)/2017, dated 28/11/2017 and Vide Notification of Board of Management Resolution Ref: No.: SV/8813/2017-18, dated 06/04/2018)*

## 9. SPECIAL ACTIVITIES (COMPULSORY)

9.1. Journal club – Once a month .

- All the post graduate Journal Clubs will be carried out on a prescribed Evidence Based format with emphasis on critical appraisal. A designated teacher/facilitator will assess every post graduate student for each JC presentation

9.2. PG Discussions/Seminars – once a week + as required.

- All PG seminars will have evidence embedded in the presentation and all references relating to the subject matter will be incorporated. AT the end of the seminar all the references will be listed and the seminar will be assessed by the facilitator.

9.3. Case presentation & Discussion – at least once a week in addition to routine ward activities.

9.4. Integrated teaching: - Participation in case discussions.

9.5 In the OPD/ward/ICU every post graduate student will be exposed to at least one encounter of role modeling in which a consultant after raising a relevant query will search for its evidence and demonstrate evidence searching methodologies, its importance and utility to the student.

## 10. DURATION OF THE COURSE

The duration of the courses shall be 2 Academic years (4 Academic terms)

## 11. CLINICAL POSTINGS

First year: Department of Respiratory Diseases

Second year: ICU - 2 Months

And

Dept. of Respiratory medicine 10 months

The candidate shall be posted in outpatient and inpatient concurrently, and in emergency including intensive care unit.

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## **PATTERN OF D.T.C.D. EXAMINATION**

1. **Assessment** – Candidates will be evaluated by marking system exclusively
2. **Pattern for D.T.C.D.** - Theory, Clinical and Viva (Oral) are three heads each candidate should be declared successful on securing at least 50% marks in each head independently.
3. **Theory Examination** will have three papers  
(Each paper – 100 marks, Total – 300 marks)
  - Paper I – Pulmonary and extra pulmonary tuberculosis
  - Paper II – Respiratory diseases other than tuberculosis
  - Paper III – Recent advances and Evidence based management of respiratory Diseases
4. **Practical examination – Total 400 Marks**
  - I. Clinical – one long and two short cases.
    - a. Long Case (One) – 150 marks
    - b. Short Case (Two) – 150 marks, 75 each
  - II. Oral (Two tables) – 100 marks, 50 each

Oral Examination include Viva Voce on all components of course content. The candidate will be given case reports, charts, spirometry reports, ABG reports, instruments, drugs, gross specimens, X-rays, CT scan images for interpretation and question on these will be asked.

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## SYLLABUS

### TUBERCULOSIS

1. History
2. Epidemiology
3. The mycobacteria
4. Pathology
5. Susceptibility factors in pulmonary tuberculosis
6. Laboratory diagnosis
7. Tuberculin test
8. Roentgenographic manifestations of pulmonary tuberculosis
9. Differential diagnosis
10. Clinical manifestation
11. Pulmonary tuberculosis
12. Lower lung field tuberculosis
13. Endobronchial tuberculosis
14. Tuberculosis pleural effusion
15. Silicotuberculosis
16. Abdominal tuberculosis
17. Granulomatous hepatitis
18. Neurological tuberculosis
19. Tuberculosis and the heart
20. Skeletal tuberculosis
21. Cutaneous tuberculosis
22. Lymph node tuberculosis
23. Tuberculosis in otorhinolaryngology
24. Ocular tuberculosis
25. Tuberculosis in pregnancy
26. Female genital tuberculosis
27. Genitourinary tuberculosis
28. Tuberculosis in chronic renal failure
29. Disseminated / miliary tuberculosis
30. Complication of pulmonary tuberculosis
31. Haematological manifestations of tuberculosis
32. Adrenocortical reserve in tuberculosis
33. Endocrine implications of tuberculosis
34. Tuberculosis and cancer
35. Tuberculosis and HIV
36. Tuberculosis in children
37. Surgical aspect of childhood tuberculosis
38. Tuberculosis in elderly
39. Atypical mycobacterial infection
40. Drug Resistant tuberculosis
41. Current and future treatment of tuberculosis
42. Tuberculosis and acute lung injury
43. Surgery for pleuro-pulmonary tuberculosis
44. Nutrition and tuberculosis
45. RNTCP

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## **RESPIRATORY DISEASES**

### **1. Historical Perspectives**

### **2. Development of the lungs**

- a. Development of the airways and vessels
- b. Cellular development of lung
- c. Post natal development

### **3. Structure of the respiratory tract**

#### **Anatomy**

- a. Anatomy of respiratory system
- b. Bronchopulmonary anatomy
- c. Functional design of the lung for gas exchange.
- d. Respiratory muscles
- e. Blood supply, lymphatics and nerve supply
- f. Surfactant and associated proteins
- g. Non-respiratory function of the lungs

### **4. Lung Functions**

#### **Physiology**

- a. Pulmonary mechanics
- b. Respiration and its control
- c. Ventilation, perfusion, Diffusion
- d. Assessment of pulmonary function.
- e. Blood gas transport
- f. Inhalation kinetics and its implication in aerosol therapy
- g. Arterial blood gases.
- h. Acid-Base Balance.

### **5. Lungs in different Physiological states**

- a. Sleep
- b. Exercise
- c. High Altitude
- d. Pregnancy
- e. Ageing

### **6. Lung immunology**

- a. Lung defense
- b. Lymphocytes & Macrophages in inflammation
- c. Mast cells and eosinophils
- d. Mechanisms of hypersensitivity reactions

### **7. Lung injury and repair**

- a. Cytokines & Chemokines
- b. Nitric oxide
- c. Inflammatory reactions
- d. Reactions to acute and chronic injury
- e. Pulmonary fibrosis

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## 8. Clinical Aspect

- a. Symptomatology: Breathlessness, Cough, Haemoptysis, chest pain
- b. Physical signs
- c. Dermatological manifestations of lung diseases.
- d. Pulmonary-systemic interactions

## 9. Diagnostic Imaging

- a. Chest Radiography
- b. CT, MRI, Ultrasonography, Echocardiography
- c. Lung Scintigraphy
- d. Pulmonary Angiography
- e. Barium Study
- f. Fluoroscopy

## 10. Diagnosis procedures

- a. Pulmonary function testing
- b. Cardiopulmonary exercise testing
- c. Blood gas analysis
- d. Bronchoscopy, Bronchial lavage, Biopsy.
- e. Transthoracic needle aspiration and biopsy
- f. Pleural fluid aspiration, Pleural biopsy
- g. Transtracheal Aspiration
- h. Thoracoscopy, Mediastinoscopy
- i. Skin test: tuberculin, allergen
- j. Bronchoprovocation tests

## 11. Epidemiology

- a. Epidemiological terms
- b. Epidemiological techniques
- c. Epidemiology of tuberculosis and other respiratory diseases
- d. National Tuberculosis Control Programme and RNTCP
- e. Research methods and study designs cohort, case control, randomized Clinical trials, observative and cross-sectional studies.
- f. Common statistical methods for analysis of research.

## 12. Development and Genetic abnormalities

- a. Dimorphic lung
- b. Tracheal agenesis Tracheal stenosis
- c. Tracheomalacia
- d. Vascular ring anomalies
- e. Bronchial cyst
- f. Agenesis of the lung
- g. Congenital lobar emphysema
- h. Cystic adenomatoid malformation
- i. Bronchopulmonary sequestration
- j. Azygos lobe
- k. Horse shoe lung
- l. Scimitar syndrome
- m. Diaphragmatic hernia
- n. Congenital eventration of the diaphragm
- o. Primary ciliary dyskinesia

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### 13. Evidence Based Respiratory Medicine

- a. Introduction To Evidence-Based Decision Making
- b. Assessing Evidence
- c. Implementing Evidence- Based Decision In Clinical Practice


### 14. Infection

- a. Microbial flora and colonization of the respiratory tract
- b. Pulmonary clearance of infectious agents
- c. Approach to the patient with pulmonary infections
- d. Community acquired pneumonia
- e. Pneumonias:
  - Gram-positive bacteria
  - Gram-negative bacteria
- f. Legionellosis
- g. Rickettsial Pneumonia
- h. Mycoplasmal Pneumonia
- i. Chlamydia Pneumonia
- j. Radiation Pneumonia
- k. Lipoid pneumonia
- l. Varicella Pneumonia
- m. Pulmonary meliodosis
- n. Opportunistic infections
- o. Anaerobic bacterial infections
- p. Pulmonary infections in AIDS
- q. Pulmonary infections in neutropenia and cancer
- r. Pneumonia in organ transplant patient
- s. Pulmonary infections in patient with primary immune defects.
- t. Postoperative pneumonia
- u. Hantavirus Pulmonary Syndrome
- v. Ventilator-associated pneumonia
- w. Pulmonary ehrlichiosis
- x. Rhodococcus equi infections
- y. Actinomycosis

### 15. Fungal infection

- a. Histoplasmosis
- b. Coccidioidomycosis
- c. Aspergillosis
- d. Candidiasis
- e. Cryptococcosis
- f. Nocardiosis
- g. Blastomycosis

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**16. Parasitic pulmonary diseases**

- a. Plueropulmonary amoebiasis
- b. Malarial lung disease
- c. Toxoplasmosis
- d. Pnemumocystis pneumonia Nematodes
- e. Pulmonary dirofilarais
- f. Pulmonary echinococcosis
- g. Schistomiasis
- h. Paragonimiasis
- i. Pulmonary eosinophil syndrome

**17. Zoonotic pulmonary diseases**

- a. Plague
- b. Q fever
- c. Tularemia
- d. Pasteurellosis
- e. Rhodococcus pneumonia
- f. Leptospiral Pneumonia
- g. Hantavirus pulmonary syndrome
- h. Acute equine respiratory syndrome

**18. Suppuration**

- a. Suppurative pneumonia
- b. Lung abscess
- c. Bronchiectasis
- d. Gangrene of the lung

**19. Pleural diseases**

- a. Pleural dynamics and effusion
- b. Pleurisy and effusion
- c. Non-neoplastic and neoplastic effusions
- d. Pneumothorax
- e. Empyema thoracis
- f. Bronchopleural fistula and its complications
- g. Pleural thickening
- h. Primary pleural tumours
- i. Malignant mesothelioma

**20. Immunology**

- a. Pulmonary hypersensitivity
- b. Extrinsic allergic alveolitis
- c. Goodpasture's syndrome

**21. Airflow obstruction**

- a. Chronic obstructive pulmonary disease
- b. Chronic cor pulmonale
- c. Unilateral hyperradiancy of the lung
- d. Broinchial asthma
- e. Bronchiolar disease
- f. Reactive airways dysfunction syndrome
- g. Small airway disease
- h. Upper airway obstruction
- i. Cystic fibrosis
- j. Bronchiolitis
- k. Bullous diseases of the lungs

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## 22. Occupational and environmental disorders

- a. Silicosis
- b. Coal workers' pneumonosis
- c. Asbestos-related lung disease
- d. Berylliosis
- e. Hard-metal lung disease
- f. Byssinosis
- g. Bagassosis
- h. Hypersensitivity Pneumonitis
- i. Industrial bronchitis
- j. Toxic inhalations
- k. Air pollution
- l. High altitude
- m. Diving injuries
- n. Thermal lung injury

## 23. Disorders of Pulmonary Circulation

- a. Pulmonary hypertension & cor pulmonale
- b. Pulmonary oedema
- c. Pulmonary infarction
- d. Pulmonary embolism
- e. Pulmonary vasculitis
- f. Pulmonary arteriovenous malformations
- g. Cardiac problems in pulmonary Patient
- h. Pulmonary diseases produced in cardiac patients
- i. Diffuse alveolar haemorrhage

## 24. Respiratory failure

- a. Types
- b. Hypoxemia and Hypercarbia
- c. Clinical features, diagnosis & treatment
- d. Respiratory problems in neuromuscular disorders
- e. Respiratory failure in patient with obstructive airway disease
- f. Respiratory distress syndrome of newborn
- g. Acute respiratory distress syndrome
- h. Systemic inflammatory response syndrome & multiple organ dysfunction Syndrome
- i. Respiratory failure in the surgical patient.

## 25. Diseases of undetermined origin

- a. Sarcoidosis
- b. Idiopathic pulmonary fibrosis
- c. Bronchiolitis obliterans organizing pneumonia
- d. Lungs in collagen vascular diseases
- e. Pulmonary angiitis and granulomatosis
- f. Wegener's granulomatosis
- g. Pulmonary lymphocytic angiitis and granulomatosis
- h. Honeycomb lungs
- i. Histiocytosis
- j. Pulmonary tuberous sclerosis
- k. Pulmonary amyloidosis
- l. Idiopathic pulmonary hemosiderosis
- m. Pulmonary alveolar proteinosis
- n. Pulmonary alveolar microlithiasis

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**26. Sleep and sleep disorders**

- a. Breathing and sleep
- b. Sleep related respiratory disorders
- c. Sleep apnoea syndrome
- d. Obesity hypoventilation syndrome

**27. Neoplastic Diseases**

- a. Genetic and molecular changes of human lung cancer
- b. Cigarette smoking and health
- c. Bronchogenic carcinoma
- d. Bronchioloalveolar carcinoma
- e. Pulmonary metastases
- f. Solitary pulmonary nodule
- g. Bronchial adenoma
- h. Hamartoma, fibroma, lipoma

**28. Drug-induced lung disease**

**29. Hyperventilation syndrome**

**30. Diseases of the mediastinum**

- a. Anatomy & diagnosis approach
- b. Congenital cysts & bronchopulmonary foregut anomalies
- c. Mediastinitis
- d. Mediastinitis mass
- e. Nonneoplastic disorders
- f. Benign & malignant conditions

**31. Disorders of diaphragm**

**32. Disorders of the chest wall**

- a. Neuromuscular diseases of the chest wall
- b. Spinal and thoracic cage abnormalities

**33. Pulmonary manifestations of systemic disease**

**34. Paediatric influence on adult lung**

**35. Diving and Lung**

**36. Management and therapeutic interventions**

- a. Pulmonary pharmacotherapy
- b. Oxygen therapy
- c. Cardiorespiratory resuscitation
- d. Hyperbaric oxygen
- e. Bronchial hygiene
- f. Mechanical ventilation: indications, modes complications and weaning
- g. Respiratory hemodynamic Monitoring in acute respiratory failure
- h. Liquid assisted ventilation
- i. Principles of critical care
- j. Inhalation therapy
- k. Gene therapy
- l. Pulmonary rehabilitation
- m. Terminal care in respiratory disease
- n. Ethics and withdrawal of life support

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### 37. Surgical aspects of lung diseases

- a. Thoracic trauma and trauma related lung dysfunction
- b. Pre and post-operative evaluation and management of thoracic surgical patient
- c. Perioperative care in lung resection
- d. Post-operative pulmonary complications
- e. Lung transplantation

### 39. Preventive Pulmonology

- a. Prevention & control of lung diseases smoking behavior and counseling.
- b. Patient education in bronchial asthma, tuberculosis,, COPD

### 40. Medicolegal aspects of lung diseases

#### REFERENCE BOOKS

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17. Harrison's Text Book of Medicine.
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19. Iseman book on Tuberculosis
20. Felson's Chest Radiodiagnosis
21. Simons's Chest Radiodiagnosis
22. Frayser Pavev's Book on Respiratory Diseases
23. Murray and Nadal's Book on Respiratory Diseases

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## **JOURNALS**

1. Clinics in Chest Medicine
2. North American Clinics in Respiratory Medicine
3. Lung India
4. Chest
5. Thorax
6. Indian Journal of Tuberculosis
7. Journal of Critical Care
8. Indian journal of critical care medicine
9. Indian journal of chest diseases & allied science
10. American journal of respiratory and critical care medicine

## **LOG BOOK**

A log book should be maintained by the candidate and he/she must get it signed by the teacher immediately after the assignment. The log book is a record of the important activities of the candidates during his training. Internal assessment should be based on the evaluation of the log book. Collectively, log books are a tool for the evaluation of the training programme of the institution by external agencies. The record includes academic activities as well as the presentation and procedures carried out by the candidate.

### **Academic work quota in two years**

**1.Seminars-5 (Incorporation of recent evidences as per the hierarchy of evidences in seminar)**

**2.Journal club-5 (Formulation of clinical question to critical appraisal of evidence and decision making as per the principles of Evidence Based Decision Making in journal club)**

**3.Case presentation-10 (diagnosis/treatment plan to be supported with higher level of evidences)**

**4.Poster/paper presentation in speciality conference-1**

**5.Short research-1**

**6 .Publication in peer review journal-1**

### **Curriculum for MD (TB & Respiratory Medicine)**

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## 12. GOAL

The goals of Postgraduate training in Respiratory Diseases is to train MBBS doctor who will fulfill the following:

- 12.1. Achieve the competency in the field of Respiratory Diseases
  - 12.2. Can practice at the secondary and tertiary level of the health care delivery system efficiently and effectively, backed by a sound scientific knowledge and skill base.
  - 12.3. The person must be trained in tuberculosis disorders keeping with the objective of the Nation Health Policy (RNTCP).
  - 12.4. The person shall be abreast with the recent advances and developments in the specialty of chest medicine.
  - 12.5. The person should be oriented to the principles of research methodology and epidemiology and must acquire basic skills in teaching the specialty.
  - 12.6. Exercise empathy and a caring attitude and maintain high ethical standards.
  - 12.7. Continue to evince keen interest in continuing medical education
  - 12.8. Be a motivated 'teacher' –to share his knowledge and skills with a colleague or a junior.
  - 12.9. Shall recognize the health needs of the community, and carry out professional obligations ethically and in keeping with the objectives of the national health policy.
- To prepare the candidate to practice Evidence Based Respiratory Medicine*


## 13. OBJECTIVES

***Upon completion of the evidence based Respiratory Medicine education, the trainee should be able to:***

- 13.1. ***Demonstrate significance of Evidence Based Respiratory Medicine***
- 13.2. ***Demonstrate awareness of epidemiologically-based needs assessments through research and systematic reviews of research evidence.***
- 13.3. ***Contribute to the appraisal process.***
- 13.4. ***Understand quality assurance in the delivery of Respiratory care.***

The Objectives may be considered under the subheadings.

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#### 14. Knowledge:

At the end of the course of Respiratory Medicine, the student shall be able to:

- 14.1. Demonstrate sound knowledge of common respiratory diseases, their clinical manifestations, including emergent situations and of investigative procedures to confirm their diagnosis
- 14.2. Demonstrate comprehensive knowledge of various ***evidence based*** modes of therapy used in treatment of respiratory diseases; and be acquainted with the most current guidelines for expert management of the respiratory illnesses.
- 14.3. Demonstrate detailed knowledge of pulmonary as well as extra pulmonary tuberculosis and to offer a comprehensive plan of management (Including National TB control programme and DOTS)
- 14.4. Describe the mode of action of commonly used drugs, their doses, side-effect/toxicity, indications and contra-indications and interactions;
- 14.5. Describe commonly used modes of management including medical and surgical procedures available for treatment of various diseases and to offer a comprehensive plan of management.

***Upon completion of Evidence based Respiratory Medicine education the trainee should be able to describe:***

- Evidence based clinical practice including cost effectiveness.
- The development and application of clinical guidelines and standards.
- The process of risk assessment as relevant to clinical practice
- Multi-disciplinary clinical care pathways and appropriate integration of Respiratory Medicine.

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## 15. Skill:

The following list is drawn up with a view to specifying basic minimum skills to be acquired. The student shall be able to:

- 15.1. Interview the patients, elicit relevant and correct information and describe the history in chronological order.
- 15.2. Conduct clinical examination, elicit and interpret clinical findings and diagnose common respiratory disorders and emergencies
- 15.3. Perform simple, routine investigative and office procedures required for making the bedside diagnosis, especially sputum collection and examination for etiologic organisms especially Acid Fast Bacilli (AFB), Interpretation of the chest x-ray respiratory function tests; CT scan & MRI scan of thorax.
- 15.4. Manage common recognizing need for referral for specialized care, of inappropriateness of therapeutic response.
- 15.5. **Utilize critical appraisal skills and be able to apply to research evidence**
- 15.6. Should be able to perform insertion of I.V. lines, nasogastric tubes, urinary catheters, lumbar puncture etc.
- 15.7. Teach undergraduates and interns.
- 15.8. Blood sampling – venous and arterial.
- 15.9. Communication skills with patients, relatives, colleagues and paramedical staff.
- 15.10. Ordering laboratory and radiological investigations and interpretation of the report in light of the clinical picture.
- 15.11. Proficiency in common ward procedures.
- 15.12. Perform FNAC, Biopsy, Thoracocentesis , Tube thoracostomy, Tracheostomy, Laryngoscopy, Lung biopsy under radiological guidance, drainage of loculated pleural effusion under radiological guidance.
- 15.13. Universal precautions against communicable diseases.
- 15.14. Insertion of Arterial lines, Central venous lines, endotracheal tubes
- 15.15. Working knowledge of ventilators and various monitors
- 15.16. Interpretation of Arterial Blood gases and management of abnormality
- 15.17. Correction of Electrolyte disturbances
- 15.18. Cardiopulmonary resuscitation and management of shock and cardio-respiratory failure
- 15.19. Bronchoscopy
- 15.20. Drainage of cervical cold abscess
- 15.21. Performance & Interpretation of spirometry
- 15.22. Performance & Interpretation of diffusion studies of lung
- 15.23. Performance & Interpretation of sleep study in subjects suspected to have obstructive sleep apnea

## 16. ATTITUDES:

*Adopt ethical principles in all Respiratory Medicine practice.*

*Professional honesty and integrity are to be fostered.*

*Treatment to be delivered irrespective of social status, caste, creed or region of patient.*

*Willing to share knowledge and clinical experience with professional colleagues.*

*Willing to adopt new methods and techniques in Respiratory Medicine from time to time based on scientific research, this is in patient's best interest.*

*Respect patient's rights and privileges including patient's right to information and right to seek second opinion.*

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**Upon completion of the subject of Respiratory Medicine, the trainee should be able to recognize:**

- 16.1. **Importance of maintaining professional standards by EBM.**
- 16.2. **The need to constantly appraise and evaluate clinical practice and procedures.**

### **17. COMMUNICATIVE ABILITIES:**

- 17.1. Develop communication skills, in particular, to explain treatment option available in management and to make patient partner in evidence based decision making
- 17.2. Provide leadership and get the best out of his group in a congenial working atmosphere.
- 17.3. Should be able to communicate in simple understandable language to the patient .He should be able to guide and counsel the patient with regard to various treatment modalities available.
- 17.4. Develop the ability to communicate with professional colleagues through various media like Internet, e-mail, videoconference, and etc. to render the best possible treatment.

### **18. INTEGRATION OF TEACHING**

The goal of effective teaching can be obtained through integration with department of Medicine, Surgery, Microbiology, Pathology, Radiology, Pharmacology & PSM. This shall enable the student to be acquainted with diagnosis and management of common/uncommon systemic diseases that may affect the lung or may affect the management of various chest diseases.

### **19. TEACHING AND TRAINING**

19.1 Students will be posted as full time students in the departments of Respiratory Disease. They will work in the concerned wards, attend to bedside clinics, participate in group discussions, seminars, Case presentation, grand rounds, didactic lectures, journal review and interpretation of laboratory data.

19.2 Candidates will have to participate in the Under Graduation teaching to get experience in the methods of teaching medical students.

### **20. SPECIAL ACTIVITIES (COMPULSORY)**

20.1. Journal club – Once a month .

- All the post graduate Journal Clubs will be carried out on a prescribed Evidence Based format with emphasis on critical appraisal. A designated teacher/facilitator will assess every post graduate student for each 10 presentation

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20.2. PG Discussions/Seminars – once a week + as required.

- All PG seminars will have evidence embedded in the presentation and all references relating to the subject matter will be incorporated. AT the end of the seminar all the references will be listed and the seminar will be assessed by the facilitator.

20.3. Case presentation & Discussion – at least once a week in addition to routine ward activities.

20.4. Integrated teaching: - Participation in case discussions.

20.5. In the OPD/ward/ICU every post graduate student will be exposed to at least one encounter of role modeling in which a consultant after raising a relevant query will search for its evidence and demonstrate evidence searching methodologies, its importance and utility to the student.

## 21. DURATION OF THE COURSE

The duration of the courses shall be 3 Academic years (6 Academic terms)

## 22. CLINICAL POSTINGS

First year: Department of Respiratory Diseases

Second year: General Medicine – 3 Months  
ICU - 2 Months  
Radiology – 1 month

Third Year: Department of Respiratory Diseases

The candidate shall be posted in outpatient and inpatient concurrently, and in emergency including intensive care unit.

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## **PATTERN OF MD EXAMINATION**

1. **Assessment** – Candidates will be evaluated by marking system exclusively
2. **Pattern for MD** - Theory, Clinical and Viva (Oral) are three heads each candidate should be declared successful on securing at least 50% marks in each head independently.
3. **Theory Examination** will have four papers  
(Each paper – 100 marks, Total – 400 marks)
  - Paper I – Anatomy and physiology of respiratory system
  - Paper II – Pulmonary and extra pulmonary tuberculosis
  - Paper III – Respiratory diseases other than tuberculosis
  - Paper IV - Recent advances and Evidence based management of respiratory Diseases

### **4. Practical examination – Total 600 Marks**

- III. Clinical – one long and two short cases.
  - c. Long Case (One) – 200 marks
  - d. Short Case (Two) – 200 marks, 100 each
- IV. Oral (Two tables) – 200 marks, 100 each

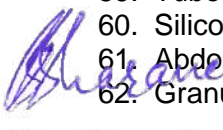
Oral Examination include Viva Voce on all components of course content. The candidate will be given case reports, charts, spirometry reports, ABG reports, PSG reports instruments, drugs, gross specimens, X-rays, CT scan images for interpretation and question on these will be asked. The candidate will also be questioned on his dissertation.

## **SYLLABUS**

### **TUBERCULOSIS**

46. History
47. Epidemiology
48. The mycobacteria
49. Pathology
50. Susceptibility factors in pulmonary tuberculosis
51. Laboratory diagnosis
52. Tuberculin test
53. Roentgenographic manifestations of pulmonary tuberculosis
54. Differential diagnosis
55. Clinical manifestation
56. Pulmonary tuberculosis
57. Lower lung field tuberculosis
58. Endobronchial tuberculosis
59. Tuberculosis pleural effusion
60. Silicotuberculosis
61. Abdominal tuberculosis
62. Granulomatous hepatitis

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63. Neurological tuberculosis
64. Tuberculosis and the heart
65. Skeletal tuberculosis
66. Cutaneous tuberculosis
67. Lymph node tuberculosis
68. Tuberculosis in otorhinolaryngology
69. Ocular tuberculosis
70. Tuberculosis in pregnancy
71. Female genital tuberculosis
72. Genitourinary tuberculosis
73. Tuberculosis in chronic renal failure
74. Disseminated / miliary tuberculosis
75. Complication of pulmonary tuberculosis
76. Haematological manifestations of tuberculosis
77. Adrenocortical reserve in tuberculosis
78. Endocrine implications of tuberculosis
79. Tuberculosis and cancer
80. Tuberculosis and HIV
81. Tuberculosis in children
82. Surgical aspect of childhood tuberculosis
83. Tuberculosis in elderly
84. Atypical mycobacterial infection
85. Drug Resistant tuberculosis
86. Current and future treatment of tuberculosis
87. Tuberculosis and acute lung injury
88. Surgery for pleuro-pulmonary tuberculosis
89. Nutrition and tuberculosis
90. RNTCP

## **RESPIRATORY DISEASES**

### **2. Historical Perspectives**

#### **2. Development of the lungs**

- d. Development of the airways and vessels
- e. Cellular development of lung
- f. Post natal development

#### **3. Structure of the respiratory tract**

##### **Anatomy**

- h. Anatomy of respiratory system
- i. Bronchopulmonary anatomy
- j. Functional design of the lung for gas exchange.
- k. Respiratory muscles
- l. Blood supply, lymphatics and nerve supply
- m. Surfactant and associated proteins
- n. Non-respiratory function of the lungs

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#### 4. Lung Functions

##### Physiology

- i. Pulmonary mechanics
- j. Respiration and its control
- k. Ventilation, perfusion, Diffusion
- l. Assessment of pulmonary function.
- m. Blood gas transport
- n. Inhalation kinetics and its implication in aerosol therapy
- o. Arterial blood gases.
- p. Acid-Base Balance.

#### 5. Lungs in different Physiological states

- f. Sleep
- g. Exercise
- h. High Altitude
- i. Pregnancy
- j. Ageing

#### 6. Lung immunology

- e. Lung defense
- f. Lymphocytes & Macrophages in inflammation
- g. Mast cells and eosinophils
- h. Mechanisms of hypersensitivity reactions

#### 7. Lung injury and repair

- f. Cytokines & Chemokines
- g. Nitric oxide
- h. Inflammatory reactions
- i. Reactions to acute and chronic injury
- j. Pulmonary fibrosis

#### 8. Clinical Aspect

- e. Symptomatology: Breathlessness, Cough, Haemoptysis, chest pain
- f. Physical signs
- g. Dermatological manifestations of lung diseases.
- h. Pulmonary-systemic interactions

#### 9. Diagnostic Imaging

- g. Chest Radiography
- h. CT, MRI, Ultrasonography, Echocardiography
- i. Lung Scintigraphy
- j. Pulmonary Angiography
- k. Barium Study
- l. Fluoroscopy

#### 10. Diagnosis procedures

- k. Pulmonary function testing
- l. Cardiopulmonary exercise testing
- m. Blood gas analysis
- n. Bronchoscopy, Bronchial lavage, Biopsy.
- o. Transthoracic needle aspiration and biopsy
- p. Pleural fluid aspiration, Pleural biopsy
- q. Transtracheal Aspiration
- r. Thoracoscopy, Mediastinoscopy
- s. Skin test: tuberculin, allergen
- t. Bronchoprovocation tests

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## 11. Epidemiology

- g. Epidemiological terms
- h. Epidemiological techniques
- i. Epidemiology of tuberculosis and other respiratory diseases
- j. National Tuberculosis Control Programme and RNTCP
- k. Research methods and study designs cohort, case control, randomized Clinical trials, observational and cross-sectional studies.
- l. Common statistical methods for analysis of research.

## 12. Development and Genetic abnormalities

- p. Dimorphic lung
- q. Tracheal agenesis Tracheal stenosis
- r. Tracheomalacia
- s. Vascular ring anomalies
- t. Bronchial cyst
- u. Agenesis of the lung
- v. Congenital lobar emphysema
- w. Cystic adenomatoid malformation
- x. Bronchopulmonary sequestration
- y. Azygos lobe
- z. Horse shoe lung
- aa. Scimitar syndrome
- bb. Diaphragmatic hernia
- cc. Congenital eventration of the diaphragm
- dd. Primary ciliary dyskinesia.

## 13. Evidence Based Respiratory Medicine

- d. *Introduction To Evidence-Based Decision Making*
- e. *Assessing Evidence*
- f. *Implementing Evidence- Based Decision In Clinical Practice*

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#### 14. Infection

- z. Microbial flora and colonization of the respiratory tract
- aa. Pulmonary clearance of infectious agents
- bb. Approach to the patient with pulmonary infections
- cc. Community acquired pneumonia
- dd. Pneumonias:
  - Gram-positive bacteria
  - Gram-negative bacteria
- ee. Legionellosis
- ff. Rickettsial Pneumonia
- gg. Mycoplasmal Pneumonia
- hh. Chlamydia Pneumonia
- ii. Radiation Pneumonia
- jj. Lipoid pneumonia
- kk. Varicella Pneumonia
- ll. Pulmonary meliodosis
- mm. Opportunistic infections
- nn. Anaerobic bacterial infections
- oo. Pulmonary infections in AIDS
- pp. Pulmonary infections in neutropenia and cancer
- qq. Pneumonia in organ transplant patient
- rr. Pulmonary infections in patient with primary immune defects.
- ss. Postoperative pneumonia
- tt. Hantavirus Pulmonary Syndrome
- uu. Ventilator-associated pneumonia
- vv. Pulmonary ehrlichiosis
- ww. Rhodococcus equi infections
- xx. Actinomycosis

#### 15. Fungal infection

- h. Histoplasmosis
- i. Coccidioidomycosis
- j. Aspergillosis
- k. Candidiasis
- l. Cryptococcosis
- m. Nocardiosis
- n. Blastomycosis

#### 16. Parasitic pulmonary diseases

- j. Plueropulmonary amoebiasis
- k. Malarial lung disease
- l. Toxoplasmosis
- m. Pneumocystis pneumonia Nematodes
- n. Pulmonary dirofilariasis
- o. Pulmonary echinococcosis
- p. Schistosomiasis
- q. Paragonimiasis
- r. Pulmonary eosinophil syndrome

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### 17. Zoonotic pulmonary diseases

- i. Plague
- j. Q fever
- k. Tularemia
- l. Pasteurellosis
- m. Rhodococcus pneumonia
- n. Leptospiral Pneumonia
- o. Hantavirus pulmonary syndrome
- p. Acute equine respiratory syndrome

### 18. Suppuration

- e. Suppurative pneumonia
- f. Lung abscess
- g. Bronchiectasis
- h. Gangrene of the lung

### 19. Pleural diseases

- j. Pleural dynamics and effusion
- k. Pleurisy and effusion
- l. Non-neoplastic and neoplastic effusions
- m. Pneumothorax
- n. Empyema thoracis
- o. Bronchopleural fistula and its complications
- p. Pleural thickening
- q. Primary pleural tumours
- r. Malignant mesothelioma

### 20. Immunology

- d. Pulmonary hypersensitivity
- e. Extrinsic allergic alveolitis
- f. Goodpasture's syndrome

### 21. Airflow obstruction

- l. Chronic obstructive pulmonary disease
- m. Chronic cor pulmonale
- n. Unilateral hyperinflation of the lung
- o. Bronchial asthma
- p. Bronchiolar disease
- q. Reactive airways dysfunction syndrome
- r. Small airway disease
- s. Upper airway obstruction
- t. Cystic fibrosis
- u. Bronchiolitis
- v. Bullous diseases of the lungs

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## 22. Occupational and environmental disorders

- o. Silicosis
- p. Coal workers' pneumonosis
- q. Asbestos-related lung disease
- r. Berylliosis
- s. Hard-metal lung disease
- t. Byssinosis
- u. Bagassosis
- v. Hypersensitivity Pneumonitis
- w. Industrial bronchitis
- x. Toxic inhalations
- y. Air pollution
- z. High altitude
- aa. Diving injuries
- bb. Thermal lung injury

## 23. Disorders of Pulmonary Circulation

- j. Pulmonary hypertension & cor pulmonale
- k. Pulmonary oedema
- l. Pulmonary infarction
- m. Pulmonary embolism
- n. Pulmonary vasculitis
- o. Pulmonary arteriovenous malformations
- p. Cardiac problems in pulmonary Patient
- q. Pulmonary diseases produced in cardiac patients
- r. Diffuse alveolar haemorrhage

## 24. Respiratory failure

- j. Types
- k. Hypoxemia and Hypercarbia
- l. Clinical features, diagnosis & treatment
- m. Respiratory problems in neuromuscular disorders
- n. Respiratory failure in patient with obstructive airway disease
- o. Respiratory distress syndrome of newborn
- p. Acute respiratory distress syndrome
- q. Systemic inflammatory response syndrome & multiple organ dysfunction Syndrome
- r. Respiratory failure in the surgical patient.

## 25. Diseases of undetermined origin

- o. Sarcoidosis
- p. Idiopathic pulmonary fibrosis
- q. Bronchiolitis obliterans organizing pneumonia
- r. Lungs in collagen vascular diseases
- s. Pulmonary angiitis and granulomatosis
- t. Wegener's granulomatosis
- u. Pulmonary lymphocytic angiitis and granulomatosis
- v. Honeycomb lungs
- w. Histiocytosis
- x. Pulmonary tuberous sclerosis
- y. Pulmonary amyloidosis
- z. Idiopathic pulmonary hemosiderosis
- aa. Pulmonary alveolar proteinosis
- bb. Pulmonary alveolar microlithiasis

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**26. Sleep and sleep disorders**

- e. Breathing and sleep
- f. Sleep related respiratory disorders
- g. Sleep apnoea syndrome
- h. Obesity hypoventilation syndrome

**27. Neoplastic Diseases**

- i. Genetic and molecular changes of human lung cancer
- j. Cigarette smoking and health
- k. Bronchogenic carcinoma
- l. Bronchioloalveolar carcinoma
- m. Pulmonary metastases
- n. Solitary pulmonary nodule
- o. Bronchial adenoma
- p. Hamartoma, fibroma, lipoma

**28. Drug-induced lung disease**

**29. Hyperventilation syndrome**

**30. Diseases of the mediastinum**

- g. Anatomy & diagnosis approach
- h. Congenital cysts & bronchopulmonary foregut anomalies
- i. Mediastinitis
- j. Mediastinitis mass
- k. Nonneoplastic disorders
- l. Benign & malignant conditions

**31. Disorders of diaphragm**

**32. Disorders of the chest wall**

- c. Neuromuscular diseases of the chest wall
- d. Spinal and thoracic cage abnormalities

**33. Pulmonary manifestations of systemic disease**

**34. Paediatric influence on adult lung**

**35. Diving and Lung**

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### **36. Management and therapeutic interventions**

- o. Pulmonary pharmacotherapy
- p. Oxygen therapy
- q. Cardiorespiratory resuscitation
- r. Hyperbaric oxygen
- s. Bronchial hygiene
- t. Mechanical ventilation: indications, modes complications and weaning
- u. Respiratory homodynamic Monitoring in acute respiratory failure
- v. Liquid assisted ventilation
- w. Principles of critical care
- x. Inhalation therapy
- y. Gene therapy
- z. Pulmonary rehabilitation
- aa. Terminal care in respiratory diseases
- bb. Ethics and withdrawal of life support

### **37. Surgical aspects of lung diseases**

- f. Thoracic trauma and trauma related lung dysfunction
- g. Pre and post-operative evaluation and management of thoracic surgical patient
- h. Perioperative care in lung resection
- i. Post-operative pulmonary complications
- j. Lung transplantation

### **39. Preventive Pulmonology**

- c. Prevention & control of lung diseases smoking behavior and counseling.
- d. Patient education in bronchial asthma, tuberculosis,, COPD

### **40. Medicolegal aspects of lung diseases**

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22. Frayser Parey's Book on Respiratory Diseases
23. Murray and Nadal's Book on Respiratory Diseases

## JOURNALS

1. Clinics in Chest Medicine
2. North American Clinics in Respiratory Medicine
3. Lung India
4. Chest
5. Thorax
6. Indian Journal of Tuberculosis
7. Journal of Critical Care
8. Indian journal of critical care medicine
9. Indian journal of chest diseases & allied science
10. American journal of respiratory and critical care medicine

## LOG BOOK

A log book should be maintained by the candidate and he/she must get it signed by the teacher immediately after the assignment. The log book is a record of the important activities of the candidate during his training. Internal assessment should be based on the evaluation of the log book. Collectively, log books are a tool for the evaluation of the training programme of the institution by external agencies. The record includes academic activities as well as the presentation and procedures carried out by the candidate.

Attested CTC

*Sharan*  
15/2/2021

Vice-Chancellor

Sumandeep Vidyapeeth

An Institution Deemed to be University

VIII, Piparia, Taluka: Waghodia.

Dist. Vadodara-391 760. (Gujarat)



**Academic work quota in three years**

**1.Seminars - 10 (Incorporation of recent evidences as per the hierarchy of evidences in seminar)**

**2.Journal club - 10 (Formulation of clinical question to critical appraisal of evidence and decision making as per the principles of Evidence Based Decision Making in journal club)**

**3.Case presentation - 15 (diagnosis/treatment plan to be supported with higher level of evidences)**

**4. Poster/paper presentation in speciality conference - 2**

**5. Dissertation**

**6. Short research - 1**

**7.Publication in peer review journal - 1**

**Attested CTC**

*Charaney*  
15/2/2021

**Vice-Chancellor**

**Sumandeep Vidyapeeth**

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