GOAL

1) To develop competent pulmonary specialist and medical teaching who can appreciate health needs of the community, perform professional obligations observing ethics and keeping in view the objectives of national health policy at various levels of health care delivery system as well as be aware of contemporary and recent developments in the pulmonary medicine and updating with latest advances.

i) Nomenclature – The nomenclature of Postgraduate degree and diploma should be broad based. (Either M.D. Pulmonary Medicine or Diploma in Pulmonary Medicine)

ii) Duration –PG Diploma should be of two years duration & PG degree should be of three years duration

iii) Affiliation- The department of a Medical College and Institution are affiliated to Dr.M.G.R.Medical University.

Department on Clinical Side Should have :

1. No. of units-(at least one)

The qualifications and experience prescribed by Medical Council of India.

a) **HOD Professor** is a Senior person in Civil Medical list with administration experience.

b) **Unit head-** Prof./Addl.Prof / Asso.Prof.(preferably either recognized or eligible to be recognized for PG teacher ship) if there is one unit it should be headed by Professor only but second or subsequent additional unit may be headed by either Prof ./ Addl. Prof/ Asso. Prof.

c) **Other faculty-** at least one more qualified teaching faculty (preferably either recognized or eligible to be recognized for PG teacher ship)

   Any PG teacher can simultaneously be recognized for MD and PG diploma and can enroll students for both.

d) **Bed strength-** minimum 30 sanctioned beds in an indoor unit (at least one unit)For MD /MS and minimum 20 sanctioned beds in an indoor unit for PG Diploma if recognition is for both MD & PG Diploma minimum 30 sanctioned beds in an indoor unit (at least one unit) required.

e) **Residents-** As per MCI Norms.

f) Other staffs :

In addition to teaching faculty staff the strength of technical paramedical staff shall be as per the staff strength prescribed for admitting 50-100-150 or multiple of 100 MBBS admissions regulations.

g) **Enrollment :**

Each PG teacher can enroll only one student for MD /MS per year and one PG Diploma student per year.

2) **Laboratory facilities :**

a) **Central Lab facilities –** for training Postgraduate students should be available preferably computerized automatic analytic type equipments be available. Central Direct microscopy, Fluorescent microscopy, Culture & Susceptibility for organism inclusive of AFB will be available either in the institute or attached institutes / Hospitals.

b) **Equipments-** should be functional throughout the year quality control and accuracy will be monitor periodically. The facilities should be updated in lieu of the advancement in Knowledge, technology and research.

c)Central Biomedical waste management is mandatory.

3) **Radiology :**

Conventional, Ultrasound, Spiral CT/Multislice CT,MRI,2D Echo, Colored Venous and arterial Doppler, CT guided Biopsy are few of the facilities that should be available. Further as per as advancement in our knowledge the facilities should be updated. Department as well as Central **Medical Record Section** should be available (preferably computerized) either in the institute or attached institutes / Hospitals.

4) **Library :**

Department as well as Central medical library in possession of standard text books, index journals, yearbooks, recent advances periodical should be available. At least central

Library should have PC's with colored laser printer, Internet facilities, Fax, Xeroxing machine along with educational CD's.

5) Equipments :

Each unit of the department should have clinical / procedure room with facilities for pleural tapping and biopsy, FNAC, Pulseoximeter, multifunction bed, trolleys, with at least four X-ray and scanplate mountable viewing box, four to five nebulizers.

1) Polysomnography machine with adequate channels, S_pO_2 measurement having facilities for up gradation.

2) Monitoring treatment modality with unilevel / bilevel positive airway pressure

   equipment.

3) Separate room with proper ventilation

a) Pulmonary Function Laboratory having facilities to perform spiometry, Airways resistance and conductance, diffusion study, Bronchial challenge test, allergy-testing with emergency management arrangement, six minutes walk test facilities and body Plethysmography.

b) Bronchoscopy room having flexible fibroptic bronchoscope, with standard accessories, leakage tester, monitor, CCTV camera, recording facilities, nebulizer scope sterilization tray, central cupboard to hang the scope with punch biopsy, brush biopsy, channel cleaning forceps, suction and oxygen ports or portable machine and cylinder.

c)Respiratory critical care/ high dependency ward: to take care of seriously / critically ill patients. Preferably at least four bedded ward having facilities of centralized oxygen and suctioning Non-invasive / invasive ventilators ABG and different types of masks and oxygen canulae. If departmental critical centre is not available hospitals central intensive care unit must be available with easy access to the patient from the department.

d) Sleep Laboratory :

<u>MD Pulmonary Medicine</u>

The Government Medical College offers various PG Programme one of the course under this is MD Pulmonary Medicine. The Department of Pulmonary Medicine

offers this course. The syllabus of Pulmonary Medicine should include prevention, early detection, diagnosis, and treatment of pulmonary diseases in children, adolescents, and adults. Comprehensive pulmonary medicine programmes should include specialized treatment of specific diseases such as asthma, chronic obstructive pulmonary diseases, sleep-disordered breathing, interstitial lung diseases, cystic fibrosis, occupational lung diseases, Pneumonias and other infections, pulmonary rehabilitation, tuberculosis, lung cancers and dedicated smoking cessation programme. Diagnostic facilities should include pulmonary function testing, exercise testing, allergy testing, diffusion studies, flexible video bronchoscopic investigation, BAL and endobronchial stenting, spiral & higher resolution CT imaging guided biopsies, ventilation perfusion scans for pulmonary embolism and thoracoscopic procedure.

DIPLOMA COURSE IN TUBERCULOSIS AND CHEST DISEASES

(DIPLOMA IN PULMONARY MEDICINE)

BRANCH XVII

I YEAR

BASIC SCIENCES POSTING -**2 WEEKS**

PATHOLOGY

MICROBIOLOGY

BIO-CHEMISTRY

ANATOMY

CARDIO THORACIC WARD - **2 WEEKS**

LUNG / PLEURAL SURGERIES

ICD / POST OPERATIVE CARE INCLUDING VENTILATORS

RADIOLOGY **- 2 WEEKS**

ULTRASOUND, CT, MRI & INTERVENTIONAL PROCEDURES INCLUDING

BRONCHIAL ARTERY EMBOLISATION

FLUROSCOPY

ANAESTHESIA - 1 WEEK

BASIC LIFE SUPPORT

&

ADVANCED LIFE SUPPORT

DERMATOLOGY - **1 WEEK**

TUBERCULOSIS RESEARCH CENTRE - 2 WEEKS

THORACIC MEDICINE – (42 WEEKS)

1. INSTITUTE OF THORACIC MEDICINE, CHETPET
2. GOVERNMENT GENERAL HOSPITAL / MADRAS MEDICAL COLLEGE
3. GOVT. THIRUVOTEESWARAR HOSPITAL OF THORACIC MEDICINE
4. GOVT. HOSPITAL OF THORACIC MEDICINE TAMBARAM

II YEAR

INTENSIVE MEDICAL CARE UNIT – 2 WEEKS

CHEMOTHERAPY & RADIOTHERAPY – 2 WEEKS

OCCUPATIONAL LUNG DISEASES

DIFFUSION STUDIES

SLEEP STUDIES

PFT (PULMONARY FUNCTION TEST)

BRONCHOSCOPY & RELATED PROCEDURE

PULMONARY REHABILITATION INCLUDING PHYSIOTHERAPY

JOURNAL CLUB

RNTCP-OP

OPERATIONAL RESEARCH

CLINICAL RESEARCH & EPIDEMIOLOGY

CME

WORKSHOP

CONFERENCE

DIPLOMA COURSE IN TUBERCULOSIS AND CHEST DISEASES

(DIPLOMA IN PULMONARY MEDICINE)

BRANCH XVII

EXAMINATIONS

THEORY

(AT THE END OF FIRST YEAR)

	Title	Duration in Hours	Maximum Marks
Paper -I	Applied Basic Sciences (as application to pulmonary Medicine)	3	100

Paper -II	Tuberculosis (Pulmonary and Extrapulmonary)	3	100
Paper -III	Non-Tuberculosis Chest Diseases	3	100
		TOTAL	300

CLINICAL EXAMINATIONS

	NO. OF CASES	DURATION IN HOURS	MAXIMUM MARKS
1. LONG CASE	ONE	1 HOUR	80
2. SHORT CASE	ONE	20 MINUTES	40
3. SPOTTEER	ONE	10 MINUTES	30
		TOTAL	150

PRACTICALS

(TOTAL – 50 MARKS)

LOG BOOK -10 MARKS

4 STATIONS (10 x 4 = 40)

A	B	C	D
SLIDES / SPECIMEN	CHART ABG PFT ECG SLEEP STUDY	RADIOLOGY OSCE	INSTRUMENTS

Marks Qualifying for a Pass:

50% of Marks in the University Theory Examination	150 / 300
50% of Marks in the University Clinical Examinations	75 / 150
50% aggregate in Theory / Clinical / Practical / oral Dissertation	250 / 500

1. Lung India.
2. Indian Journal of Chest Diseases and Allied Sciences.

3. Indian Journal of Tuberculosis.
4. Thorax.
5. Chest.
6. European Journals of Respiratory Diseases.
7. Lancet.
8. Journal of Indian Medical Association.
9. Journal of Association of Physicians of India.
10. Journal of Thoracic and Cardiovascular Surgery.
11. Bulletin of IUAT & LD.
12. American Review of Respiratory Diseases.
13. Journal of Infectious Diseases.

NON-TUBERCULOSIS

1. Fishman's Pulmonary diseases and disorders.
2. Crofton and Douglas Respiratory diseases.
3. Text book of Respiratory Medicine Murray and Nadal.
4. Fraser and Pare's diagnosis of diseases of Chest.
5. Harrison's principle of Internal Medicine.
6. Text book of Radiology and Medical Imaging David Sutton.
7. Diagnostic Imaging Peter Armstrong.
8. Diagnostic Bronchoscopy Peter Strading.
9. Occupational Lung diseases Morgun and Section.
10. Goodman and Gilman's - The Pharmacological basics of Therapeutics.
11. Respiratory Physiology -The Essentials John B West.
12. Respiratory Medicine by G.John Gibson.
13. Egan's fundamentals of Respiratory Care.
14. Flexible Bronchoscopy - Atul C Mehta.
15. Baum's text book of Pulmonary diseases.
16. Imaging of diseases of the Chest – Peter Armstrong.
17. Nunn's applied Physiology.
18. Pleural diseases - Lights.
19. Bronchial Asthma - Behera.
20. Essentials of Pulmonary and Critical care Medicine.
21. Therapeutic strategies in COPD.
22. Bate's Physical examinations.
23. CPDT (Current Pulmonary Diagnosis and Treatment).
24. Mally Clinical Blood Gases.
25. Wilkins clinical assessment in Respiratory care.
26. Kacema - Essentials of Respiratory care.
27. The Brompton's Hospital guide to Chest Physiotherapy.
28. Introduction to clinical exam- Macleods.
29. Chamberlin - symptoms and signs.
30. Clinical Medicine - Hutchison.

TUBERCULOSIS

1. Tuberculosis by William N.Rom and Stuart Garay.
2. Tuberculosis S.K.Sharma.
3. Tuberculosis Case find and Chemotherapy.
4. Tuberculosis – Schlossberg.
5. Tuberculosis Monir Madkour.
6. Tuley's skeletal Tuberculosis.
7. Medicine in Tropics – Tuberculosis in Children.
8. Pulmonary Tuberculosis – P.S. Shankar.
9. Toman – Tuberculosis.
10. Updates on RNTCP.

NOTE:

Recent Text Books and updates will be added in phased manner.

SYLLABUS

Lung Anatomy (Development, macro and microanatomy and electron microscopy). Lung Physiology (Respiratory Physiology) Ventilation, Lung mechanics, gas exchange, blood gas transport, control of respiration.

Lung function assessment: Volume indices, airway (Spirometry), Diffusion, Compliance, airway resistance, blood gas and PH estimation, measurement of functional residual capacity with Plethysmography, control of respiration, Drugs and mediators in Respiratory control. Integration and adaption of Respiratory tract. Diagnostic procedures in Respiratory medicine, Immunologic disorders or respiratory system, interstitial diseases; Non infectious disorders of the pulmonary parenchyma; Pulmonary circulatory disorders: Obstructive Disease of the Airways. Hypoventilation syndromes and sleep disorders: Non tuberculous infections of the lungs – general aspects; specific disorders. Mycobacterial diseases of the lungs; Cancer of the lungs, Diseases of the mediastinum. Disorders of the pleura. Acute Respiratory failure; Special therapeutic interventions; Surgical aspects of Chest medicine; Practical assessment of pulmonary performance.

TUBERCULOSIS: Historical aspects, epidemiology, primary reaction, immunity diagnostic criteria, Methods of therapy and merits, Field and mass surveys. Surgery in Tuberculosis, Design and execution trials, Mantoux and BCG. Bacteriology of mycobacterium.

NON-TUBERCULOSIS CHEST DISEASES: Common symptoms and their analysis.

Physical signs and their correlation to diseases.
Respiratory failure and management principles of O_2 therapy and dangers.
Artificial ventilation - methods.

GENERAL

1. Development of the Respiratory Tract.
2. Structure and Functions of the Respiratory tract.
3. Control of Ventilation, Control of Respiration during sleep.
4. Balance of Ventilation Perfusion.
5. Transport of Blood Gases and Tissue Respiration.
6. Non-Respiratory Function including Endocrine function of the Lung.
7. Fundamentals of Acid base balance and Adaptation to high altitude and abnormal respiratory movements.
8. Basic Symptomatology in Chest Diseases and Clinical Approach to Respiratory Diseases.
9. Diagnostic Procedures.
    - Sputum Examination including Cytology.
    - Bronchoscopy and related procedures.
    - Lung and Pleural Biopsy.
    - Radiology and Imaging of Lungs including CAT SCAN Ultrasound and MRI
    - PET Scan, Medical Thoracoscopy
    - Interventional Pulmonology
    - DIAGNOSTIC

      TTNA, TBCB, EBUS etc.,
    - THERAPEUTIC

      Electrocautery, Lasers, LVRS, Thermoplasty, etc.,
10. Assessment of Lung dysfunction.
11. Immunology as applied to lung.
12. Diffuse Parenchyma Lung Disorders including disorders induced by Radiation, Occupational Exposure and Environmental disorders.
13. Pulmonary manifestations of systemic diseases.
    - Drug induced Lung diseases

- Lung and Pregnancy
- ALVEOLAR DISEASES
- Alveolar Hemorrhage
- Aspiration disorders
- Pulmonary Alveolar Proteinosis
- Critical Care
- Vaccination in Pulmonary infections

14. Occupational Lung Diseases.
15. Sleep and disordered ventilation.
16. Pneumonia.
17. Diseases caused by Virus & Fungus.
18. Lung in Immunocompromised Diseases including HIV

    Non infectious Pulmonary disease in HIV
19. Mycobacterial Diseases including Atypical mycobacteria with full emphasis on epidemiology and atypical case detection, case holding and relapse management.
20. Microbiology of Tuberculosis, modern Drug therapy to Tuberculosis.
    - Rapid methods of diagnosis of Tuberculosis including DNA amplification technique.
    - National Programmes
    - Atypical Mycobacterial infections
21. Assessment of Drug resistance and methods to overcome it.
22. Biology and Clinical Features of Lung Cancer.
23. International Classification and staging of Lung Cancer.
24. Medical, Surgical, Radiation Management of Lung Cancer.
25. Diseases of Mediastinum and pleura.
26. Pattern of acute respiratory failure, including ARDS with Management of acute Respiratory Failure.

27. Role of Mechanical Ventilator and setting up of I.R.C.U.
28. Major indications of Surgery in Lung Diseases.
29. Modern concepts of Heart Lung Transplantation.
30. Promotion of Lung Function through exercise and Oxygen supplementation.

COURSE CONTENT:

I – ANATOMY OF THE LUNG & DEVELOPMENT & GENETICS OF LUNG DISEASES.

II – PHYSIOLOGY:

Respiratory Mechanics

Physiology of Respiration & Ventilation.

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

III – PATHO-PHYSIOLOGY OF ALL DISORDERS PERTAINING TO PULMONARY MEDICINE.

IV - PHARMACOLOGICAL ASPECTS OF PULMONARY MEDICINE

V - PUBLIC HEALTH & EPIDEMIOLOGY:

Epidemiological aspects of major respiratory and public health problems like Asthma, COPD, Interstitial lung disease, Occupational & Environmental disorders, Smoking related disorders and Infective diseases of lung including Tuberculosis and Pneumonias.

VI – PULMONARY REHABILITION

VII – SURGICAL ASPECTS

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

VIII – MEDICO-LEGAL ASPECTS:

Principles of care for patient requiring mechanical ventilation.

Long term oxygen therapy Compensation (occupational lung disorders) Fitness & disability evaluation.

Personal Protective measures for occupational health, biosafety guidelines for medical equipment & waste disposal.

Human Rights, ethical aspects, consent for procedures/newer drug development.

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

IX – RECENT ADVANCES:

. Drug development in respiratory medicine.
. Sleep Medicine
. Invasive diagnostic techniques
. Lung in extreme conditions.

X – INFECTIONS:

XI – ENVIRONMENTAL MEDICINE RELATED TO PULMONARY MEDICINE WITH SPECIAL REFERENCE TO AIR POLLUTION, NOXIOUS GASES & OCCUPATIONAL DISEASES, HIGH ALTITUDE, SPACE AND AVIATION AND DECOMPRESSION SICKNESS.

XII – PULMONARY CRITICAL CARE ASPECTS

XIII – CONVENTIONAL CHEST RADIOLOGY & LUNG IMAGING

XIV – PULMONARY CIRCULATORY DISORDERS

XV – DISEASES OF AIRWAYS

XVI – NEOPLASTIC DISEASES

XVII – DISEASES OF MEDIASTINUM

XVIII – INTERSTITIAL LUNG DISEASE

XIX – DISEASES OF PLEURA

XX – PROBLEM BASED LEARNING FOR THEORY & PRACTICAL ON EACH ASPECT

A. Syllabus of Pulmonology

Anatomy and Development of the Respiratory Tract :

1. Anatomy of Thorax.
2. Normal Anatomy of Lungs including Bronchopulmonary segments, upper and lower respiratory tract.
3. Growth, Aging and Adaptation, Embryology & Developmental anomaly.
4. Pulmonary Circulation and its peculiarities.

5. Genetics related to pulmonary diseases.

Respiratory Physiology:

6. Ventilation, Blood flow and Gas exchange.
7. Respiratory Functions of the Lung.
8. Respiratory Mechanics.
9. Pulmonary Circulation, Lung fluid and Solute Exchange.
10. Acid Base Balance.
11. Control of Breathing.
12. Non-respiratory Functions of the Lung.
13. The Respiratory Muscles.
14. Molecular Biology of Lung Disease.

Defense Mechanisms and Immunology

15 Mucus Secretion and Ion Transport in Airways.
16 Deposition and Clearance.
17 Macrophages, Lymphocytes, Antibody, Hypersensitivity and Cell mediated immunity.
18 Host defenses in the Lung.

Pathology of Pulmonary diseases

Diagnostic Methods

19. Pulmonary Radiology & Imaging.
20. Pulmonary Function Testing.
21. Cardiac evaluation including ETT, color Doppler Echocardiography and Pulmonary angiogram.
22. Pleural Anatomy, Physiology, and Diagnostic Procedures.
23. Approach to the Clinical and Radiographic Evaluation of Patients with Common Pulmonary syndromes.

Pulmonary Pharmacology

24. Aerosols including inhaled medication with devices.
25. Theophyline and Glucocorticoids.
26. Surfactant.
27. Vascular Pharmacology.
28. Anti T.B drugs.
29. Systemic anti-fungal drugs.
30. Antibiotics.
31. Antivirals

32.Anti-cancer drugs

33.Diuretics

34.Drug induced lung diseases

40.Vaccines

Manifestations of Pulmonary Diseases

37. Dyspnea.
38. Cough.
39. Chest pain.
40. Wheeze.
41. Hemoptysis.

Inflammatory and Interstitial Diseases

42. Interstitial Lung Diseases.
43. Immunologically Medicated Lung Diseases.
44. Pulmonary Eosinophilia and Eosinophilic Granuloma.
45. Pulmonary alveolar Proteinosis.

Infectious Diseases

45. Upper Respiratory Tract Infections.
46. Community Acquired Pneumonia.
47. Hospital Acquired Pneumonia.
48. Pulmonary Complications of HIV Infection.
49. Pulmonary Fungal Infections.
50. Tuberculosis.
51. Non-Tuberculous Mycobacterial Pulmonary Disease (NTM).
52. Embolic Infections of the Lungs and Lipoid Pneumonia.
53. Aspiration Pneumonia, Lipoid Pneumonia, and Lung Abscess.
54. Viral and parasitic infections.

Obstructive Lung Disease

55. Pneumoconiosis.
56. Occupational Asthma and industrial Bronchitis.
57. Byssinosis and other related diseases.
58. Occupational Pulmonary Neoplasms.
59. Noxious Gases and Fumes.
60. Pulmonary effects of Radiation.
61. Clinical Evaluation of Individuals with Suspected Indoor Air Quality Problems.
62. Hypersensitivity Pneumonitis.

Obstructive Lung Disease

63. Smoking and Other Risk Factors.
64. Bronchial Asthma.
65. Bronchiectasis.
66. Chronic Obstructive Pulmonary Disease.
67. Hypercapnic Respiratory Failure: Acute, Chronic, Acute on Chronic.
68. Mechanical Ventilatory Support and management of Ventilated Patients.
69. Weaning from Ventilatory Support.
70. Chronic Respiratory Failure and Noninvasive Ventilation.
71. Pulmonary Rehabilitation and Outcome Measurement.
72. Sleep Apnea Syndrome and Sleep-Disordered Breathing.
73. Adaptation and maladaptation to High Altitude.
74. Near-Drowning and Diving Accidents.
75. Lung Transplantation.

Pulmonary Vascular Diseases

76. Pulmonary Hypertension. Pathophysiology including Cellular Mechanisms of Vascular Remodeling in Primary Pulmonary Hypertension and Clinical Disorders.
77. Thromboembolic Syndromes.
78. Pulmonary heart Diseases: Cor Pulmonale.
79. Pulmonary Arteriovenous Malformations and other Pulmonary vascular abnormalities.
80. Extrapulmonary Syndromes Associated with Tumors of the Lung.
81. Lymphoma, Lymphoproliferative Diseases.
82. Metastatic Malignant tumors.

Disorders of the Mediastinum

83. Pneumomediastinum.
84. Mediastinitis.
85. Tumors and Cyst of the Mediastinum.

Congenital, Developmental, and Genetic Diseases of the Lung

86. Developmental Anomalies of the Respiratory System.
87. Genetic Diseases of the Lung.
88. Vascular and Other Genetic Diseases Affecting the Lungs.

Pleural Diseases

89. Diseases of the Pleura and Pleural Space : Pleural Effusion, Empyema, Pneumothorax, Hydro-Pneumothorax, Pleural Tumors.
90. Surgery and Pleural Space: Fibrothorax, Thoracoscopy, and Pleurectomy.
91. Prevention of Lung Diseases and Patient Education.

A. Training in Pulmonary Function Testing

Understanding of these procedures, performing adequate number of patients with different testing procedures under the guidance of an experienced pulmonologist, and understanding the rational for, usefulness of and potential pitfalls of the tests. All trainees should have a clear understanding of the indications and potential pitfalls in the performance and the limitations of interpretation of pulmonary function testing.

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 artificial ventilation.
4. Thorough knowledge about Ventilator associated complications.
5. The pharmacology, advice 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. Bronchoscopy mediated bronchial toileting including complications.

Training will also be expected to develop competence in the following:

1. Performing a through respiratory directed history and physical examination.
2. Performing diagnostic and therapeutic respiratory procedures.
3. Performing and interpreting Pulmonary Function Testing.
4. Interpreting plain Chest X-ray films, Bronchograms, Ultrasonography, Chest computed tomographic scans, and magnetic resonance imaging (see Training in Respiratory Radiology).
5. Understanding invasive and noninvasive techniques for diagnosis of Lung, Pleura & Mediastinal diseases.

C. Training in Asthma & COPD

Purpose

1. Of this training is to identify patients suffering from asthma & COPD.
2. To present chronic and troublesome symptoms.
3. To acquire clinical skills in managing exacerbations of asthma and COPD.
4. By performing relevant procedures to establish the diagnosis of Asthma & COPD.
5. Training on primary and secondary prevention of asthma.
6. Training of patient education program.

Training Procedure

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

1. To familiarize with airway obstruction by lung function testing.
2. To familiarize with reversibility test of airway obstruction.
3. To familiarize with provocation tests of airway obstruction.

Clinical Training

1. To assess and to diagnose Asthma and COPD individually.
2. To be trained in managing critically ill Asthma and COPD patients.
3. To be trained in managing the patients placed in artificial Ventilatory support.
4. Log book to be maintained during the training program.

Evaluation

Trainee should be evaluated at the end of training by short clinical and problem related examination. Trainee must pass evaluation examination before final part of examination.

D. Training in Respiratory Infections

Respiratory inflammation whether infectious, noninfectious, or idiopathic, is a primary reason for referral to specialists with Respiratory disease training if the lesion does not subside within two weeks of antibiotic therapy.. Therefore, it is imperative that trainees be exposed to diagnostic and therapeutic aspects of respiratory inflammatory disorders as a component of their fellowship experience.

Trainees must master in basic knowledge regarding respiratory infections, including and understanding of the following:

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.
   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 Multi drug Resistant cases); infections in immunocompromised hosts (e.g., transplantation patients, patients with AIDS).

E . Training in Respiratory Malignancy

The goals of training can be divided into three general categories the cognitive component, the endoscopic procedures component, and the consultative role.

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.

Cancer is required. Respiratory trainees should become familiar with the appearance of cancer using the following diagnostic techniques.

F . Radiology

1. Respiratory cancer on Chest X-ray films.
2. Lung & Mediastinal tumors on computed tomographic scans or magnetic resonance imaging.

G . Training in Respiratory Endoscopy

(Bronchoscopy)

The objective of bronchoscopic training programs is to provide trainees with critical, supervised instruction in respiratory Endoscopy to assume quality care for patients with Pulmonary Diseases. Bronchoscopic procedures are not isolated technical activities but must be regarded by the instructor and trainee as integral aspects of clinical problem-solving. Bronchoscopic decision-making, technical proficiency, and patient management are equally important, and the interdependence of these skills must be emphasized repeatedly during the training period.

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 and Needle aspiration.

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.

Parameters of Competency

Review records, X-rays, identifies risk factors understands and discuss appropriate alternative procedure Correctly identifies indication, knows how study will influence management Obtains appropriate informed consent.

Demonstrates proper use of premedication and noninvasive patient monitoring devices

Inserts the endoscope using proper technique

Performs procedure with attention to patient comfort and safety

Correctly identifies the bronchopulmonary segments

Conducts thorough examination of the entire organ

Detects and identifies all significant pathology

Completes examination within a reasonable time

Prepares accurate report

Plans correct management and disposition

Discusses findings with patient and other physicians

Conducts proper follow-up, review of pathology, case outcome.

H . Training in Paediatric Pulmonology

Trainees in Pulmonology should not be expected to achieve any level of competency in Paediatric Pulmonology beyond general concepts. Competency requires completion of a Paediatric Pulmonology training program. After their training is completed, trainees in Pulmonology should be able to do the following:

1. Appreciate the unique aspects of the field. A goal of the experience in Paediatric Pulmonology is to increase awareness of the clinical problems of Paediatric Pulmonology.
2. Be prepared to participate in limited scope of care when, in underserved areas, Paediatric Pulmonology consultation is not available. The Paediatric Pulmonology component of the curriculum should focus on several aspects.
    i) Age-related physiological and psychological variable of children and adults.
    ii) Unique aspects of the disease in the Paediatric vs. the adult patient.

I .Training in Respiratory Pathology

An understanding of respiratory pathology, which includes gross, surgical, histological, and cytological pathology as well as pertinent areas of clinical pathology, laboratory medicine, and diagnostic molecular biology, is essential to the practice of modern Pulmonology.

The overall goal of such is competency in recognizing and understanding the significance of the endoscopic, gross pathological, and / or histological characteristics of certain disorders and diseases. The following objectives are important in attaining such competence.

1. Trainees should appreciate the spectrum of normal histology.
2. Trainees should be able to recognize patterms of histo-pathologic change in respiratory disorders. These include normal architectural patterns and those reflecting inflammation, neoplasm, and evolution of a disease over time.
3. Trainees should know the value and limitation of exfoliate and aspiration cytology.
4. Trainees should understand the mechanisms and the usefulness of new techniques, such as flow cytometry, immunohistochemistry, and tests based in molecular biology (e.g. polymerase chain reaction, in situ hybridization).

The teaching of respiratory pathology should rely heavily on multidisciplinary conferences of Respiratory physicians and pathologists, to achieve regular review of biopsy specimen taken.

J . Training in Surgery

Surgery is the primary and preferred method of management of some respiratory disorders, e.g. Tension Pneumothorax, Foreign body in the respiratory tract, Empyema thoracis, In other conditions, surgical management becomes an option after an initial assessment is made by the Respiratory physician; Bronchogenic carcinoma is an example. Still other respiratory problems rarely or never require surgical management, and there are many conditions in this category. Because the usual sequence is referral of a patient by a Respiratory physician to a surgeon, trainees in Pulmonology must learn about the indications and contraindications for surgical treatment and the general principles of the surgical procedures that may be used. Respiratory physicians frequently follow-up patients over the long term postoperatively; therefore, trainees should learn about the expected outcomes of operations that are likely to be performed on their patients.

Trainees should learn the principles of how surgical procedures are conducted and they should become thoroughly knowledgeable about the postoperative care of patients after major and minor surgical procedures.

Trainees should learn the indications and contraindications for a variety of common surgeries for respiratory disorders. It is important for a Respiratory physician to know the basics of judgement about whether surgery is necessary, what kind of surgery is indicated, and when it should be performed. Common complications and their management should be learned, and the trainee should become familiar with the long-term consequences of surgical treatment of Pulmonary Diseases. Specifically, trainees should learn about Chest tube insertion & their management. Thoracotomy, Decortication, Medical Thoracoscopy including Video assisted Thorcoscopic Surgeries, (VATS) and Pleurodesis, Pnemonectomy, Bronchogenic carcinoma surgeries, Surgeries for Medistinal tumour, Volume reduction surgery, lung transplantation.

K . Training in Research

The speciality of Pulmonology is dedicated to continued progress in the prevention, diagnosis, and treatment of respiratory disorders. This mission requires the availability of talented and committed physician investigators appropriately trained to elucidate biological mechanisms and the natural history of Pulmonary Diseases and to develop outcome-based approaches to treatment and the use of resources. It further requires that all future Respiratory physicians be familiar with research principles and methods. It is therefore recommended that all Pulmonology training be performed in institutions where research opportunities are readily available either on site or through programmatic affiliation with a research institution. It is further recommended that every Pulmonology trainee, including those preparing for a career in clinical practice, participate in research for at least a minimum period of 6 months.

Research may either be basic (i.e. laboratory-based) or clinical

(i.e. patient-based).

Trainees seeking careers in patient-based research need to acquire practical skills in clinical research methods, including literature study, the choice of research question and study design, user of cost-effectiveness and quality of life models, approaches to sampling populations and making clinical measurements, techniques of biostatistics and sample size estimations, ways to optimize quality control and data management, and ways to avoid bias. They must develop a clear understanding of current knowledge and important unanswered questions in their area of interest and of the ethics of research and human investigation. They need to acquire practical experience in the critical analysis of current literature, in the use of computers (e.g. literature review, data base management and analysis, communication), in presentation of their work in written and oral form.

The trainee must have sufficient protected time during the training period to participate in the course work outlined above and to initiate a well-defined, prospective, hypothesis-driven research project. He must have procedures as a principal author an article of original work in Pulmonary Diseases accepted in a recognized journal.

A minimum period of one week posting may be included in a recognized research training institute like Tamil Nadu Dr.M.G.R.Medical University / Tuberculosis Research Centre.

L .Training in Surgery

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M . Training in Research

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