REGULATIONS AND CURRICULUM GOVERNING

MD RESPIRATORY MEDICINE PROGRAM

(2024-25)

Name of the Constituent Unit/Centre: Yenepoya Medical College



YENEPOYA

Deemed to be University

Deralakatte, Mangalore, Karnataka.

NOTIFICATION FROM THE UNIVERSITY

YENEPOYA
(DEEMED TO BE UNIVERSITY)
Recognized under Sec 3(A) of the UGC Act 1956
Accredited by NAAC with 'A' Grade

NOTIFICATION – 34-ACM/2019 dtd. 20.02.2019

Sub:- Implementation of Competency Based Medical Education PG Curriculum

Ref. : Resolution of the Academic Council at its 34th Meeting held on 08.02.2019 vide Agenda 33

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The Academic Council at its 34th Meeting held on 08.02.2019 and subsequently the 45th meetings of Board of Management held on 09.02.2019 have accepted the proposal for implementation of Competency Based Medical Education (CBME) for the PG Curricula of the following programs as per the MCI Norms.

1. MD in Pathology
2. MD in General Medicine
3. MD in Anaesthesiology
4. MD in Paediatrics
5. MD in Respiratory Medicine
6. MD in Radio-diagnosis
7. MD in Anatomy
8. MD in Physiology
9. MD in Biochemistry
10. MD in Microbiology
11. MD in Pharmacology
12. MD in Forensic Medicine
13. MD in Psychiatry
14. MD in Dermatology
15. MD in Community Medicine
16. MS in General Surgery
17. MS in OBG
18. MS in Otorhinolaryngology
19. MS in Ophthalmology
20. MS in Orthopaedics

This revised curriculum shall come into effect from the academic year 2019-2020 onwards.

REGISTRAR

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MD IN RESPIRATORY MEDICINE

PREAMBLE

The purpose of PG education is to create specialists who would provide high quality health care and advance the cause of science through research & training.

Evolution of critical care medicine makes it imperative that the post graduates are trained in the basic principles of Respiratory Medicine as applied to critical care. The person shall be abreast with the recent advances and developments in the specialty of Respiratory Medicine. It is expected that the person will develop a spirit of enquiry and get oriented to apply recent advances and medical evidence to the practice of Respiratory Medicine. He would also grasp the fundamentals of research methodology. Medical Science is dynamic with a continuous enhancement of knowledge. The process of acquiring knowledge and skills continues even after formal education. The syllabus to be covered during post graduate training in Respiratory Medicine given below is designed to develop a sound and scientific foundation. It is intended to serve as a guide to impart basic knowledge and develop skills and does not impose any limits to expansion beyond the areas listed.

The purpose of this document is to provide teachers and learners illustrative guidelines to achieve defined outcomes through learning and assessment. This document was prepared by various subject-content specialists. The Reconciliation Board of the Academic Committee has attempted to render uniformity without compromise to purpose and content of the document. Compromise in purity of syntax has been made in order to preserve the purpose and content. This has necessitated retention of “domains of learning” under the heading “competencies”.

SUBJECT SPECIFIC OBJECTIVES

The primary goal of the MD course in Respiratory Medicine is to produce post graduate clinicians able to provide health care in the field of Respiratory Medicine. It is expected that a physician qualified in Respiratory Medicine at the end of the course should be able to diagnose and treat pulmonary diseases, take preventive and curative steps for these diseases in the community at all levels of health care and qualify as a consultant and teacher in the subject. Each student should obtain proficiency in the following domains during the period of training:

1. Theoretical knowledge of different aspects of Respiratory 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.

These involve patient management in the outpatient, inpatient and emergency situations, case presentations, didactic lectures, seminars, journal reviews, clinico-patholgical conferences and mortality review meetings and working in the laboratories.

SUBJECT SPECIFIC COMPETENCIES

By the end of the course, the student should have acquired knowledge (cognitive domain), professionalism (affective domain) and skills (psychomotor domain) as given below:

A. Cognitive domain

At the end of the MD course in Respiratory Medicine, the students should be able to:

1. Demonstrate sound knowledge of common pulmonary diseases, their clinical manifestations, including emergent situations and of investigative procedures to confirm their diagnosis. A comprehensive knowledge of epidemiological aspects of pulmonary diseases should be acquired.
2. Demonstrate comprehensive knowledge of various modes of therapy used in treatment of pulmonary diseases.
3. Describe the mode of action of commonly used drugs, their doses, side-effects / toxicity, indications and contra-indications and interactions.
4. 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 inclusive of National tuberculosis Elimination Programme.
5. Manage common pulmonary emergencies and understand the basic of intensive care in patients with pulmonary diseases.
6. Practice the field of respiratory medicine ethically and assiduously, show empathy

and adopt a humane approach towards patients and their families.

7. Recognize the national priorities in Respiratory Medicine and play an important role in the implementation of National Health Programmes including tuberculosis.
8. Demonstrate competence in medical management.
9. Should inculcate good reading habits and develop ability to search medical and develop basic concept of medical research.

B. Affective domain

1. Should be able to function as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.
2. Always adopt ethical principles and maintain proper etiquette in dealings with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.
3. Develop communication skills to word reports and professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching.

C. Psychomotor domain

At the end of the course, the student should acquire following clinical skills and be able to:

1. Interview the patient, elicit relevant and correct information and describe the history in chronological order.
2. Conduct clinical examination, elicit and interpret clinical findings and diagnose common pulmonary disorders and emergencies.
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-rays and lung function tests.
4. Interpret and manage various blood gases abnormalities in various pulmonary diseases.
5. Develop management plans for various pulmonary diseases.

6. Assist in the performance of common procedures, like bronchoscopic examination, pleural aspiration and biopsy, pulmonary physiotherapy, endo tracheal intubation and pneumo-thoracic drainage / aspiration etc.
7. Recognize emergency situations in intensive care, respond to these appropriately and perform basic critical care monitoring and therapeutic procedures.
8. Collect, compile, analyse, interpret, discuss and present research data.
9. Teach Respiratory medicine to undergraduate and postgraduate students.

To acquire the above skills, the student should be exposed and trained in the following tests and procedures:

1. Diagnostic tests: Performance and interpretation

Sputum and other body fluids examination with ZN stain for AFB, culture methods for pathogenic bacteria, fungi and viruses

- Newer diagnostic techniques for tuberculosis including molecular techniques
- FNAC of lung masses (blind and image-guided)
- Arterial blood gas analysis and pulse oximetry
- Imaging: Interpretation of plain radiography, ultrasound examination, Computed tomogram, PET scan, MRI
- Sputum cytology
- Simple hematological tests
- Immunological and Serological tests
- Polysomnography (full-night and split-night studies) including CPAP
    - titration; evaluation of daytime sleepiness
- Cardiopulmonary exercise testing
- Pulmonary function tests and interpretation (Spirometry, lung volume, diffusions, body plethysmography, other lung function tests)
- Bronchoprovocation tests
- BCG vaccination
- Mantoux testing; interferon gamma release assays
- Bronchoscopy: fibreoptic/rigid, diagnostic and therapeutic

- ECG, 2D and Doppler echocardiography
- Thoracic USG, Venous Doppler ultrasound
- Skin tests for hypersensitivity
- Sputum induction and non-invasive monitoring of airway inflammation
- Medical thoracoscopy

2. Therapeutic procedures

- Fine needle aspiration and other guided procedures
- Tube thoracostomy
- Cardiopulmonary rehabilitation exercises
- Postural drainage
- Pleural biopsy, lymph node biopsy
- Administration of inhalation therapy
- Administration of oxygen therapy
- Administration of continuous positive airway pressure (CPAP)/ Bilevel
- Positive Airway Pressure (BiPAP)
    - Monitoring and emergency procedures in intensive care

SYLLABUS

Course Content

The student should acquire knowledge in the following:

Basic Sciences

A. Anatomy and Histology of Respiratory System

1. Development and Anatomy of Respiratory System
2. Applied embryology of lungs, mediastinum and diaphragm
3. Developmental anomalies

B. Physiology and Biochemistry

1. Assessment of pulmonary functions
2. Control of ventilation; pulmonary mechanics
3. Ventilation, pulmonary blood flow, gas exchange and transport
4. Non-respiratory metabolic functions of lung
5. Principles of electrocardiography
6. Inhalation kinetics and its implication in aerosol therapy, and sputum inductionetc.
7. Acid-base and electrolyte balance
8. Physiology of sleep and its disorders
9. Pulmonary innervation and reflexes
10. Pulmonary defence mechanisms
11. Principles of exercise physiology and testing
12. Physiological changes in pregnancy, high altitude, aging
13. Physiological basis of pulmonary symptoms

C. Microbiology

1. Mycobacterium tuberculosis and other mycobacteria
2. Bacteria causing pulmonary diseases
3. Atypical organisms and respiratory tract infections

4. Anaerobes in pleuropulmonary infections
5. Laboratory diagnosis of non-tubercular infections of respiratory tract
6. Laboratory diagnosis of TB including staining, culture and drug sensitivity testing
7. Virulence and pathogenecity of mycobacteria
8. Respiratory viruses: Viral diseases of the respiratory system and diagnostic methods
9. Respiratory fungi: (i) Classification of fungal diseases of lung: candidiasis, Actinomycosis, Nacardiosis, Aspergillosis, Blastomycosis etc. (ii) Laboratory diagnostic procedures in pulmonary mycosis
10. Opportunistic infections in the immuno-ompromised individuals
11. HIV and AIDS. Virological aspects, immuno-pathogenesis, diagnosis
12. Parasitic lung diseases

D. Pathology

1. Acute and chronic inflammation: Pathogenetic mechanisms in pulmonary diseases
2. Pathology aspects of Tuberculosis
3. Pathology aspects of Pneumonias and bronchopulmonary suppuration
4. Chronic bronchitis and emphysema, asthma, other airway diseases
5. Occupational lung diseases including Pneumoconiosis
6. Interstitial lung diseases including sarcoidosis, connective tissue diseases, pulmonary vasculitis syndromes, pulmonary eosinphilias
7. Tumours of the lung, mediastinum and pleura

E. Epidemiology

1. Epidemiological terms and their definitions
2. Epidemiological methods
3. Epidemiology of tuberculosis, pneumoconiosis, asthma, lung cancer, COPD and other pulmonary diseases
4. National Tuberculosis Control Programme and RNTCP; Epidemiological aspects of BCG
5. Epidemiological aspects of pollution-related pulmonary diseases
6. Research methodology, statistics and study designs

F. Allergy and Immunology

1. Various mechanisms of hypersensitivity reactions seen in pulmonary diseases
2. Diagnostic tests in allergic diseases of lung - in vitro and in vivo tests, bronchial provocation test
3. Immunology of tuberculosis, Sarcoidosis and other diseases with an immunological basis of pathogenesis

G. Pharmacology

1. Pharmacology of antimicrobial drugs
2. Pharmacology of antitubercular drugs
3. Pharmacology of antineoplastic and immunosuppressant drugs
4. Bronchodilator and anti-inflammatory drugs used in pulmonary diseases
5. Drugs used in viral, fungal and parasitic infections
6. Other drugs pharmacokinetics and drugs interaction of commonly used drugs in pulmonary diseases
7. Pharmacovigilance

II. Clinical Respiratory Medicine

Clinical Respiratory Medicine covers the entire range of pulmonary diseases. All aspects of pulmonary diseases including epidemiology, aetiopathogenesis, pathology, clinical features, investigations, differential diagnosis and management are to be covered.

A. Infections

1. Tuberculosis

1. Aetiopathogenesis
2. Diagnostic methods
3. Differential diagnosis
4. Management of pulmonary tuberculosis, DOTS, and DOTS-Plus; International Standards of TB Care
5. Complications in tuberculosis

6. Tuberculosis in children
7. Geriatric tuberculosis
8. Pleural and pericardial effusion and empyema
9. Mycobacteria other than tuberculosis
10. Extrapulmonary tuberculosis
11. HIV and TB; interactions of antitubercular drugs with antiretrovirals
12. Diabetes mellitus and tuberculosis
13. Management of MDR and XDR tuberculosis

2. Non-tuberculous infections of the lungs

- Approach to a patient with pulmonary infection
- Community-acquired pneumonia
- Hospital-associated pneumonia, ventilator-associated pneumonia
- Unusual and atypical pneumonias including bacterial, viral, fungal and
- parasitic and ricketsial, anerobic
- Bronchiectasis, lung abscess and other pulmonary suppurations
- Acquired immunodeficiency syndrome and opportunistic infections in immuno-compromised host
- Principles governing use of antibiotics in pulmonary infections
- Other pneumonias and parasitic infections, Zoonosis

B. Non-infectious Lung Diseases

1. Immunological disorders

- Immune defence mechanisms of the lung
- Sarcoidosis
- Hypersensitivity pneumonitis and lung involvement
- Eosinophilic pneumonias and tropical eosinophilia
- Pulmonary vasculitides
- Connective tissue diseases involving the respiratory system
- Interstitial lung disease of other etiologies
- Reactions of the interstitial space to injury, drugs
- Occupational and environmental pulmonary diseases

2. Other non-infectious disorders of the lungs and airway

- Aspiration and inhalational (non-occupational) diseases of the lung
- Drug induced pulmonary diseases
- Bullous lung disease
- Uncommon pulmonary diseases (metabolic, immunological, unknown
- etiology), pulmonary haemorrhagic syndromes
- Other pulmonary diseases of unknown etiology including PLCH, LAM,
- PAP, alveolar microlithiasis
- Cystic fibrosis and disorders of ciliary motility
- Obesity-related pulmonary disorders
- Upper airways obstruction syndromes
- Occupational lung diseases and pneumoconiosis
- Air-pollution induced diseases, toxic lung and other inhalational injuries
- Health hazards of smoking
- Drug-induced lung diseases

3. Pulmonary Circulatory disorders

- Pulmonary hypertension and cor pulmonale
- Pulmonary edema Pulmonary thromboembolic diseases and infarction
- Cardiac problems in a pulmonary patient and pulmonary complications
- produced by cardiac diseases

4. Obstructive diseases of the lungs

- Asthma including allergic bronchopulmonary aspergillosis, specific allergen immunotherapy and immunomodulation
- Chronic obstructive lung disease and diseases of small airways
- Special aspects of management including Long term oxygen therapy, Inhalation therapy and Pulmonary rehabilitation

5. Tumors of the lungs

- Comprehensive knowledge of neoplastic and non-neoplastic diseases of lung

including epidemiology, natural history, staging, and principles of treatment (medical, surgical, and radiation)

- Solitary pulmonary nodule

6. Diseases of the mediastinum

- Non-neoplastic disorders
- Benign and malignant (primary and secondary) neoplasms and cysts

7. Disorders of the pleura

- Pleural dynamics and effusions
- Non-neoplastic and neoplastic pleural diseases
- Pneumothorax
- Pyothorax and broncho-pleural fistula
- Fibrothorax

8. Critical Care Respiratory Medicine

- Management of emergency problems of different pulmonary diseases
- Adult respiratory distress syndrome
- Respiratory failure in the patient with obstructive airway disease
- Respiratory failure in other pulmonary diseases
- Management of sepsis
- Respiratory and haemodynamic monitoring in acute respiratory failure
- Non-invasive and Mechanical ventilation
- Principles of critical care, diagnosis and management of complications; severity of illness scoring systems
- Ethical and end-of-life issues in critical care

9. Extra pulmonary manifestations of pulmonary diseases

10. Sleep-related pulmonary diseases

- Polysomnography
- Sleep apneas

- Other sleep-disordered breathing syndromes

11. Miscellaneous aspects

- Diseases of the diaphragm
- Disorders of chest wall
- Obesity-related pulmonary disorders
- Oxygen therapy
- End-of-life care
- Aerospace Medicine
- Pulmonary problems related to special environments (high altitude, diving, miners)
- Assessment of quality of life using questionnaires
- Health impacts of global warming

12. Preventive Pulmonology

- Principles of smoking cessation and smoking cessation strategies
- Cardiopulmonary rehabilitation
- Preventive aspects of pulmonary diseases
- Vaccination in pulmonary diseases

III. Surgical aspects of Respiratory Medicine

- Pre- and post-operative evaluation and management of thoracic surgical patients
- Chest trauma/trauma related lung dysfunction
- Lung transplantation

TEACHING AND LEARNING METHODS

Postgraduate teaching programme

General principles

Acquisition of practical competencies being the keystone of PG medical education, PG training should be skills oriented. Learning in PG program should be essentially self-directed and primarily emanating from clinical and academic work. The formal sessions are merely meant to supplement this core effort.

Teaching methodology

This should include regular bedside case presentations and demonstrations, didactic lectures, seminars, journal clubs, clinical meetings, and combined conferences with allied departments. The post graduate student should be given the responsibility of managing and caring for patients in a gradual manner under supervision.

Formal teaching sessions

In addition to bedside teaching rounds, at least 5-hr of formal teaching per week are necessary. The departments may select a mix of the sessions, as given under formative assessment. Further, the student should:

- Attend accredited scientific meetings (CME, symposia, and conferences).
- Attend additional sessions on resuscitation, basic sciences, biostatistics, research methodology, teaching methodology, hospital waste management, health economics, medical ethics and legal issues related to medical practice are suggested.
- There should be a training program on Research methodology for existing faculty to build capacity to guide research.
- The postgraduate students shall be required to participate in the teaching and training programme of undergraduate students and interns.
- A postgraduate student of a postgraduate degree course in broad specialities/super specialities would be required to present one poster / to read one paper at a national/state conference / one research paper which should be published/accepted for publication/sent for publication during the period of his postgraduate studies so as to make him eligible to appear at the postgraduate degree examination
- Log book: During the training period, the post graduate student should maintain an e- Log Book indicating the duration of the postings/work done in Wards, OPDs and Casualty. This should indicate the procedures assisted and performed, and the teaching sessions attended. The Log book shall be checked and assessed periodically by the faculty members imparting the training. • Department should encourage e-learning activities.

INTERNAL ASSESSEMNT PATTERN

FORMATIVE ASSESSMENT

Formative assessment is continuous and assesses medical knowledge, patient care, procedural & academic skills, interpersonal skills, professionalism, self-directed learning and ability to practice in the system.

General Principles.

Internal Assessment is frequent, covering all domains of learning and is used to provide feedback to improve learning; it also covers professionalism and communication skills.

Quarterly assessment during the MD training is based on:

1. Journal based / recent advances learning
2. Patient based /Laboratory or Skill based learning
3. Self-directed learning and teaching
4. Departmental and interdepartmental learning activity
5. External and Outreach Activities / CMEs

In addition to the above, theory examination and clinical examination for 100 marks each is conducted at the end of each academic year of training. For the final year postgraduates, these serve as mock exams and are conducted one month prior to the final university examination in the same format as that of university examination.

SUMMATIVE ASSESSMENT

The Post Graduate Examination shall be in three parts:

1. Thesis:

Every post graduate student shall carry out work on an assigned research project under the guidance of a recognised Post Graduate Teacher, the result of which shall be written up and submitted in the form of a Thesis. Work for writing the Thesis is aimed at contributing to the development of a spirit of enquiry, besides exposing the post graduate student to the techniques of research, critical analysis, acquaintance with the latest advances in medical science and the manner of identifying and consulting available literature.

Thesis shall be submitted at least six months before the final theory and clinical examination.

2. Theory Examination:

The examinations shall be organised on the basis of 'Grading'or 'Marking system' to evaluate and to certify post graduate student's level of knowledge, skill and competence at the end of the training. Obtaining a minimum of 50% marks in 'Theory' as well as 'Practical' separately shall be mandatory for passing examination as a whole. The examination shall be held at the end of 3rd academic year. An academic term shall mean six month's training period.

There shall be four theory papers:

Paper I: General Respiratory Medicine and basic sciences;

Paper II: Clinical Respiratory medicine including medical emergencies;

Paper III: Clinical Respiratory medicine including critical care medicine;

Paper IV: Recent advances in Respiratory medicine, and research methodology.

3. Clinical and viva voce Examination:

The Postgraduate students shall examine a minimum of one long and two short cases.

Thesis needs to be presented before the external examiners.

OSCE (Objective Structured Clinical Examination) shall also be held as part of clinical examination.

Viva voce Examination:

The oral examination shall be thorough and shall aim at assessing the knowledge and competence of the Postgraduate student on the subject, investigative procedures, Therapeutic technique and other aspects of the specialty which form a part of the examination.

PATTERN OF SUMMATIVE EVALUATION

Distribution of marks for Theory examination

Item	Marks
No.of Theory Papers	4
Marks for each Theory Paper	100
Total marks for Theory Paper	**400**
Passing Minimum marks for Theory	200/400 (40%minimum in each paper) Theory – aggregate 50% (In addition, in each Theory paper a candidate has to secure minimum of 40%)

Clinical and Viva voce Examination

Item	Marks	Total Marks
Long case - 1	1*120	120
Short case - 2	2*60	120
OSCE (Minimum 4 stations out of which two should be manned stations)	40	40
Dissertation viva	20	20
Subtotal of clinical examination	**300**	**300**

Viva voce	100	100
Grand total	**400**	**400**

Passing Minimum marks for clinical examination and viva voce **- aggregate 50% (200/400 marks)**

ELIGIBILITY TO APPEAR FOR UNIVERSITY EXAMINATIONS

1. ATTENDANCE:

80% of the working days during the study period
(Deducting 52 days weekly offs per year) i.e.
For 3 years Course= 751 days out of 939 working days (1095-156)

The period of training will be extended by the same number of days for which any type of leave have been availed during the study period, causing shortage of attendance below 80%.

2. COURSE IN RESEARCH METHODOLOGY:

The students are expected to complete the course (in the first year) and the online Certificate generated from the portal of the designated training Institutions on successful completion will be acceptable evidence.

3. COURSE IN ETHICS:

All Postgraduate students shall complete the Course in Ethics (in the first year) including good clinical practices and good laboratory practices to be conducted by Institutions/Universities.

4. COURSE IN CARDIAC LIFE SUPPORT

All the Postgraduate students shall complete a Course in Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS) Skills to be conducted by the institution (in the first year).

5. THESIS SUBMISSION:

The post graduate trainee shall do thesis related research the progress of which shall be monitored periodically by the guide assigned, shall write thesis on his/her own and submit to the university 6 months before the University examination date.

The Postgraduate trainee will do **AT LEAST ONE** of the following to make him/her eligible.

(a) Poster presentation at a National/Zonal state Conference of his/her specialty

(b) Podium presentation at a National /Zonal/State Conference of his/her specialty

(c) One research paper published/accepted for publication in Journal of his/her specialty as First Author.

6. LOG BOOK:

Postgraduate trainee shall maintain a dynamic E - Log book, which needs to be updated on a weekly basis about the work being carried out by them and the structured training undergone during the period of training.

7. DISTRICT RESIDENCY PROGRAMME (DRP):

District Residency Programme (DRP) is mandatory for the PG trainee admitted with effect from the academic year 2021. DRP log book is to be kept ready duly signed by the District/State authorities. Ideally completed in the 3rd or 4th academic term (second academic year) of the PG course - within the first 9 months of the second year.

Duration: Exactly 3 months (12 weeks)

7. SUGGESTED TEXT BOOKS FOR THEORY AND PRACTICAL

1. Harrison's Principles of Internal Medicine	ed. Petersdorf (McGraw Hill)
2. Cecil Text book of Medicine	ed. Wyngaarden
3. Crofton & Douglas Respiratory diseases	ed. Seaton et al (Oxford)
4. Pulmonary diseases & disorders	by Fishman (McGraw Hill)
5. Textbook on Pulmonary disease	by Fraser & Pare
6. Asthma	by Clarke et al
7. Bronchoscopy	by Straddling
8. Tuberculosis	by SK Sharma
9. Lung diseases in the Tropics	ed. OP Sharma (Marcel Dekker)
10. The Normal Lung	by Murray (Saunders)
11. Pulmonary Function Testing	by Clausen (Academic Press)
12. Respiratory Physiology	by J.B. West (Williams & Wilkins)
13. Physiology of Respiration	by J.H. Comroe (Yearbook Med Pub.)
14. Respiratory Function in disease	by Bates et al (Saunders)

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BLUE PRINT: MARKS DISTRIBUTION FOR THEORY QUESTION PAPER

PAPERI: GENERAL RESPIRATORY MEDICINE AND BASIC SCIENCES

Sl. No.	Discipline	Topics	Weightage	Marks Allotted	No. of Questions
1	Anatomy	Development and Anatomy of Respiratory System; Applied embryology of lungs, mediastinum and diaphragm; Developmental anomalies.	20%	20	2
2	Biochemistry	Biochemical mechanisms relevant to normal and abnormal respiratory conditions; Acid-base and electrolyte balance.	10%	10	1
3	Physiology	Physiological basis of pulmonary symptoms Assessment of pulmonary functions Control of ventilation; Pulmonary Mechanics Ventilation, Pulmonary Blood Flow, Gas Exchange And Transport; Non- respiratory metabolic functions of lung; Inhalation kinetics and its implication in aerosol therapy; Physiology of sleep and its disorders; Pulmonary innervations and reflexes; Pulmonary defense mechanisms; Principles of exercise physiology and testing Physiological changes in pregnancy, high altitude and aging.	40%	40	4
4	Pharmacology	Pharmacology of antimicrobial drugs Pharmacology of anti tubercular drugs Pharmacology of anti neoplastic and immunosuppressant drugs Bronchodilator and anti-inflammatory drugs used in pulmonary diseases Drugs used in viral, fungal and parasitic infections Other drugs pharmacokinetics and drugs interaction of commonly used drugs in pulmonary diseases Pharmacovigilance	10%	10	1

5	Microbiology	Mycobacterium tuberculosis and other Mycobacteria; Bacteria causing pulmonary diseases A typical organisms and respiratory tract infections Anaerobes in pleuro pulmonary infections Laboratory diagnosis of non- tubercular infections of respiratory tract; Laboratory diagnosis of TB including staining, culture and drug sensitivity testing; Virulence and pathogenecity of Mycobacteria; Respiratory viruses: Viral diseases of the respiratory system and diagnostic methods Respiratory fungi: Laboratory diagnostic procedures in pulmonary mycosis HIV and other Opportunistic infections in the immuno- compromised individuals Parasitic lung diseases.	10%	10	1
6	Pathology	Pathogenetic mechanisms in pulmonary diseases Pathology aspects of Tuberculosis Pathology aspects of Pneumonias and Broncho pulmonary suppuration Chronic bronchitis and emphysema, asthma, other airway diseases; Occupational lung diseases including Pneumoconiosis Interstitial lung diseases including sarcoidosis, connective tissue diseases, pulmonary vasculitis syndromes, pulmonary eosinophilia Tumors of the lung, mediastinum and pleura.	10%	10	1

Sl. No	Section	Topics	Weightage	Marks Allotted	No. of Questions
1	Infections: Tuberculosis	• Aetiopathogenesis, Diagnostic methods, Differential diagnosis, and Management of pulmonary tuberculosis. • NTEP(RNTCP), DOTS, and DOTS-Plus, International Standards of TB Care. • Complications in tuberculosis. • Tuberculosis in children • Geriatric tuberculosis • Pleural and pericardial effusion and Empyema • Mycobacteria other than tuberculosis • Extra pulmonary tuberculosis • HIV and TB. • Diabetes mellitus and tuberculosis • Management of MDR and XDR tuberculosis	40%	40	4
2	Infections: Non-Tuberculous infections of the lungs	• Community-acquired pneumonia • Hospital- associated pneumonia, ventilator-associated pneumonia • Unusual and atypical pneumonias including bacterial, viral, fungal and parasitic and Rickettsial, anaerobic • Bronchiectasis, lung abscess and other pulmonary suppurations • Acquired immunodeficiency syndrome and opportunistic infections in immune-compromised host • Other pneumonias and parasitic infections, Zoonoses	10%	10	1
3	Non- infectious disorders of the lungs	• Immune defense mechanisms of the lung • Sarcoidosis • Hypersensitivity Pneumonitis • Eosinophilic pneumonias and tropical eosinophilia • Pulmonary vasculitides • Connective tissue diseases involving the respiratory system • Interstitial lung disease of other etiologies • Occupational and environmental	10%	10	1

Paper II: Clinical Respiratory Medicine Including Medical Emergencies

		Pulmonary diseases • Aspiration and inhalational(non-occupational)diseases of the lung • Drug induced pulmonary diseases • Bullous lung disease • Uncommon pulmonary diseases (metabolic, immunological, unknown etiology), pulmonary hemorrhagic syndromes • Other pulmonary diseases of unknown etiology including PLCH, LAM, PAP, alveolar microlithiasis • Cystic fibrosis and disorders of ciliary motility • Obesity-related pulmonary disorders Upper airways obstruction syndromes • Air-pollution induced diseases, Smoking, toxic lung and other inhalational injuries			
4	Obstructive diseases of the lungs	• Asthma including allergic Broncho pulmonary aspergillosis, • Specific allergen immunotherapy and Immuno-modulation • Chronic obstructive lung disease and diseases of small airways • Special aspects of management including Long term oxygen therapy, Inhalation therapy and Pulmonary rehabilitation.	10%	10	1

5	Medical and surgical respiratory emergencies	• Management of emergency problems of different pulmonary diseases • Adult respiratory distress syndrome • Respiratory failure in the patient with obstructive airway disease • Respiratory failure in other pulmonary diseases • Approach to and management of Hemoptysis • Approach to and management of respiratory failure • Acute exacerbations of airway diseases; acute exacerbations of interstitial lung diseases • Pulmonary edema • Pulmonary thrombo embolic diseases and infarction • Cardiac problems in a pulmonary patient and pulmonary complications produced by cardiac diseases, • Tension pneumothorax and Pneumomediastinum • Management of acute drug toxicity • Chest trauma/trauma related lung dysfunction; oxygen therapy	30%	30	3

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Paper III: Clinical Respiratory Medicine including Critical Care Medicine

Sl. No	Section	Topics	Weigh tage	Marks Allotted	No. of Questions
1	Infections: Tuberculosis &Non-Tuberculous infections of the lungs	Etiopathogenesis; Diagnostic methods; Differential diagnosis; Management of pulmonary tuberculosis; NTEP (RNTCP), DOTS, And DOTS-Plus; International Standards of TB Care; Complications in tuberculosis; Tuberculosis in children; Geriatric tuberculosis; Pleural and Pericardial effusion and Empyema; Mycobacteria other than tuberculosis; Extra pulmonary tuberculosis; HIV and TB; Diabetes mellitus and tuberculosis; Management of MDR and XDR tuberculosis; Community- acquired pneumonia; Hospital-associated pneumonia, ventilator-associated pneumonia; Unusual and atypical pneumonias including bacterial, viral, fungal and parasitic and Rickettsial, anaerobic; Bronchiectasis, lung	20%	20	2

		abscess and other pulmonary suppurations; Acquired immunodeficiency syndrome and opportunistic infections in immuno-compromised host; Other pneumonias and parasitic infections, Zoonoses			

2.	Non-infectious disorders of the lungs	Sarcoidosis; Hypersensitivity Pneumonitis ;Eosinophilic pneumonias and tropical eosinophilia; Pulmonary vasculitides; Connective tissue diseases involving the respiratory system; Interstitial lung disease of other etiologies; Occupational and environmental pulmonary diseases; Aspiration and inhalational (non-occupational) diseases of the lung; Drug induced pulmonary diseases. Bullous lung disease; Uncommon pulmonary diseases (metabolic, immunological, unknown etiology), pulmonary hemorrhagic syndromes; Other pulmonary diseases of unknown etiology including PLCH, LAM, PAP, alveolar	20%	20	2

		microlithiasis; Cystic fibrosis and disorders of ciliary motility; Obesity-related pulmonary disorders Upper airways obstruction syndromes Air-pollution induced diseases, Smoking, toxiclung and other inhalational injuries			
3.	Pulmonary Circulatory disorders& Diseases of the Mediastinum, Pleura, diaphragm and chest wall	Pulmonary hypertension and cor pulmonale; Pulmonary thrombo embolic diseases and infarction; Non-neoplastic mediastinal disorders; Benign and malignant (primary and secondary) neoplasms and cysts; Non-neoplastic and neoplastic pleural diseases; Pneumothorax Pyothorax and broncho-pleural fistulaFibrothorax; Diseases of the diaphragm; Disorders of chest wall.	10%	10	1

4.	Tumors of the lungs	Neoplastic and non-neoplastic diseases of lung including epidemiology, natural history, staging, and principles of treatment (medical, surgical, And radiation); Solitary Pulmonary nodule	10%	10	1
5.	Sleep Medicine; Surgical and preventive aspects of Pulmonary Medicine	Polysomnography; Sleep apneas; Other sleep- disordered breathing syndromes; Obesity-related pulmonary disorders; Principles of smoking cessation and smoking cessation strategies; Cardiopulmonary rehabilitation Vaccination in pulmonary diseases; Pre- and post-operative evaluation and management of thoracic surgical patients Lung transplantation.	10%	10	1
6.	Critical Care Pulmonary Medicine	Management of sepsis; Respiratory and hemodynamic monitoring in acute respiratory failure; Non- invasive and Mechanical ventilation; Principles of critical care, diagnosis and management of complications; severity	30%	30	3

Sl. No	Section	Topics	Weightage	Marks Allotted	No. of Questions
1	Infections: Tuberculosis & Non-Tuberculous infections of the lungs	Current advances in the diagnosis , therapeutics and Management of pulmonary tuberculosis; Updates on the programmatic TB Management –NTEP,DOTS, and DOTS-Plus; International Standards of TB Care; END TB Strategy; Guidelines on the management of Mycobacteria other than tuberculosis and Extra pulmonary tuberculosis; HIV and TB; Diabetes mellitus and tuberculosis; Management of MDR And XDR tuberculosis; Current guidelines on the diagnosis, therapeutics and management of Community-acquired pneumonia;Hospital-associated pneumonia, ventilator-associated Pneumonia.	20%	20	2
2.	Non-infectious disorders of the lungs	Current guide lines on the diagnosis, therapeutics and Management of Sarcoidosis; Pulmonary vasculitides; Connective tissue diseases involving the respiratory system; IPF and Interstitial lung disease Of other etiologies; Occupational And environmental pulmonary diseases; Orphan and Uncommon pulmonary diseases (metabolic ,immunological, Unknown etiology),pulmonary Hemorrhagic syndromes; Cystic Fibrosis and disorders of ciliary motility; Obesity-related Pulmonary disorders; Smoking,	20%	20	2

Paper IV: Recent Advances in Respiratory Medicine and Research Methodology

		Toxic lung and other Inhalational injuries			
3.	Pulmonary neoplasms and vascular disorders	Current guidelines on the diagnosis, therapeutics and management of lung malignancies including epidemiology, natural history, staging, and principles of treatment (medical, surgical, and radiation); Updated recommendations on approach to Solitary pulmonary nodule; Current guidelines on the diagnosis, therapeutics and management Pulmonary hypertension and cor pulmonale; Pulmonary thromboembolic diseases and infarction;	10%	10	1
4.	Critical care and sleep medicine	Advances in Management of sepsis; Respiratory and hemodynamic monitoring in acute respiratory failure; Non-invasive and Mechanical ventilation; Palliative care in Respiratory Medicine Recent advances in Sleep Medicine	20%	20	2
5.	Interventional Pulmonology	Recent advances in Bronchoscopy, Thoracoscopy, Guided interventional procedures.	20%	20	2
6.	Research Methodology	Research methodology, statistics and study designs	10%	10	1

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MODEL QUESTION PAPERS

M.D. Respiratory Medicine Model Examination – Model paper

Time: 3 hours [Max Marks: 100]

PAPER I: GENERAL RESPIRATORY MEDICINE AND BASIC SCIENCES

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary.
Answer all questions

Long Essays (10 marks each) **10x10=100 marks**

1. Describe stages of Lung Development. Elaborate on Bronchopulmonary Segments, Bronchial and Pulmonary Circulation. (3+3+2+2)
2. Discuss in detail Metabolic Acidosis, Metabolic Alkalosis, Respiratory Acidosis and Respiratory Alkalosis. (2.5+2.5+2.5+2.5)
3. Discuss respiratory physiological changes happening at the time of birth. Add a note respiratory adaptation to high altitude. (5+5)
4. Discuss DLCO in detail.
5. Classify drugs used to treat COPD with examples. Discuss mechanism of action for each class, dosage and adverse effects of commonly used drugs in each class. (2.5+2.5+2.5+2.5)
6. Discuss
   A. Congenital diaphragmatic hernias
   B. Congenital Tracheo-Esophageal Fistula (5+5)
7. Discuss in detail control of breathing.
8. Discuss pathology of Primary TB, Progressive primary TB, Post primary TB. (3+3+4)
9. Classify organisms causing pneumonia with examples. Discuss in detail various microbiological tests used to diagnose them. (2+8)
10. Discuss non respiratory functions of lung.

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M.D. Respiratory Medicine Model Examination – Model paper

Time: 3 hours [Max Marks: 100]

PAPER II: CLINICAL RESPIRATORY MEDICINE INCLUDING MEDICAL EMERGENCIES

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary.
Answer all questions

Long Essays (10 marks each) **10x10=100 marks**

1. Discuss the clinical symptoms, investigation and management of pleural tuberculosis
2. Discuss the investigations and management of MDR Pulmonary Tuberculosis
3. Discuss NTM (Non-Tuberculous Mycobacterium) in detail.
4. Define Respiratory Failure. Discuss the management of Type 2 Respiratory Failure.
5. Define Pulmonary Thromboembolism. Discuss the management of Pulmonary Thromboembolism.
6. Aspiration Pneumonia.
7. GINA 2025.
8. Cy-TB skin test for Mycobacterium Tuberculosis Infection.
9. Sarcoidosis.
10. Management of status asthmaticus in emergency room.

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M.D. Respiratory Medicine Model Examination – Model paper

Time: 3 hours [Max Marks: 100]

PAPER III: CLINICAL RESPIRATORY MEDICINE INCLUDING CRITICAL CARE MEDICINE

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary.
Answer all questions

Long Essays (10 marks each) **10x10=100 marks**

1. Define Empyema. Discuss light's criteria for pleural effusion. Describe light's Classification of Parapneumonic effusion.
2. Define Lung Abscess. Etiopathogenesis, Clinical Features, Diagnosis and management of Lung abscess.
3. Define Hypersensitivity Pneumonitis. Etiopathogenesis, Clinical features, Diagnosis and management of HP. Types of HP.
4. Define Cystic Fibrosis. Etiopathogenesis, Clinical features, Diagnosis and management Cystic Fibrosis.
5. Define PAH. WHO classification of PAH. Diagnosis and management of each group of PAH according to WHO.
6. Define SPN. Classification of SPN. Diagnosis, management and Follow-up Protocol for SPN.
7. Define OSA and OHS. Mention the difference between OSA and OHS. Describe in brief about Polysomnography.
8. Describe Respiratory Failure. Types of Respiratory Failure. Diagnosis and management of each type.
9. Advantages and disadvantages of Excessive PEEP in ventilated Patients?
   Weaning protocols for intubated patient.
10. Discuss the indications and modalities of Hemodynamic monitoring in ICU.
    – Fluid Resuscitation in SHOCK.

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M.D. Respiratory Medicine Model Examination – Model paper

Time: 3 hours [Max Marks: 100]

PAPER IV: RECENT ADVANCES IN RESPIRATORY MEDICINE, AND RESEARCH METHODOLOGY

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary.
Answer all questions

Long Essays (10 marks each) **10x10=100 marks**

1. Explain the criteria for Recipient Selection, Post-Operative Management and Maintenance Immuno-Suppression following Lung Transplantation
2. List the various study designs and add a note on systematic review.
3. Write the Indication of Bronchial Stents and the Types of Airway Stents.
4. Bronchial Rheoplasty.
5. Discuss in detail the newer bronchodilators used in the management of COPD
6. Describe in detail bronchoscopic management of bronchopulmonary fistula.
7. Describe in detail screening for lung Malignancy. Add a note on smoking cessation.
8. Liquid Biopsy
9. Describe in detail on targeted molecular therapy used in the management of Lung Malignancy
10. Describe in detail the role of DOAC's in the management of Pulmonary Thromboembolism.

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Postgraduate Students Appraisal Form

Pre / Para /Clinical Disciplines

Name of the Department/Unit :

Name of the PG Student :

Period of Training : FROM……TO……

Sr. No.	PARTICULARS	Not Satisfactory	Satisfactory	More Than Satisfactory	Remarks
		1 2 3	4 5 6	7 8 9	
1.	Journal based / recent advances learning				
2.	Patient based /Laboratory or Skill based learning				
3.	Self directed learning				
4.	Departmental and interdepartmental learning activity				
5.	External and Outreach				
6.	Thesis / Research work				
7.	Log Book Maintenance				

Publications **Yes/ No**

Remarks* _____

***REMARKS: Any significant positive or negative attributes of a postgraduate student to be mentioned. For score less than 4 in any category, remediation must be suggested. Individual feedback to postgraduate student is strongly recommended.**

SIGNATURE OF ASSESSEE SIGNATURE OF CONSULTANT SIGNATURE OF HOD