Syllabus for
MD (Pulmonary Medicine)
Programme

Atal Medical & Research University

A state University established by the Govt of H.P

Atal Medical & Research University, H.P.

(A State Govt. University)

(SLBS Govt. Medical College & Hospital Campus, Ner Chowk, Mandi, H.P.)

Minutes of meeting of PG Board of Studies (Pulmonary Medicines) held on 3rd May, 2023 in Conference Hall, AMRU at 11:00 AM

A meeting of PG Board of Studies (Pulmonary Medicines) held on 3rd May, 2023 at 11:00 AM at Conference Hall, AMRU under the Chairmanship of Dr. Malay Sarkar, Professor & HOD Pulmonary Medicine, IGMC, Shimla.

Following members attended the meeting:

1. Dr. Malay Sarkar, Professor & HOD Pulmonary Medicine, IGMC, Shimla-cum-Chairperson.
2. Dr. Rekha Bansal, Professor & HOD Pulmonary Medicine, SLBSGMC&H, Mandi-cum-Member.
3. Dr. Dimple Kumar Bhaglani, Assistant Professor, Dept. of Pulmonary Medicine, IGMC Shimla-cum-Member.
4. Dr. Varinder Saini, Professor & HOD Pulmonary Medicine, Govt. Medical College and Hospital, Sec-32 Chandigarh-cum-Member (Outside Expert) nominated by the Hon'ble Vice Chancellor.

The meeting started with the Chairperson welcoming the members.

The following decisions were taken:

1. First point on agenda was to change the name of postgraduate degree to MD Respiratory Medicine from MD Pulmonary Medicine as per guidelines of NMC.
2. Syllabus for the degree of Respiratory Medicine as per NMC guidelines was discussed among the member Dr. Malay Sarkar, Dr. Rekha Bansal, Dr. Dimple Kumar Bhaglani, Dr. Varinder Saini and the required changes were done with consensus decision.
3. Then syllabus for the degree of Respiratory Medicine already being used by other universities (e.g. HPU, PU) was also discussed and relevant points were included.
4. New format of the question papers was discussed and it was decided that maximum coverage is given to the topics included in that paper accordingly sample papers were made by the concerned Dr. Malay Sarkar, Dr. Rekha Bansal, Dr. Dimple Kumar Bhaglani, Dr. Varinder Saini and sample paper attached enls.
5. It was discussed in the meeting that assessments will be done periodically and log book will be maintained by the students and will be monitored and checked by the faculty on regular basis. The sample of log book has been submitted.

The meeting ended with a vote of thanks to the chair.

3/5/2023

Dr. Malay Sarkar,
Professor & HOD Pulmonary Medicine,
Shimla

Dr. Rekha Bansal,
Professor & HOD Pulmonary Medicine IGMC,
SLBSGMCH, Ner Chowk

3/5/2023

Dr. Dimple Kumar Bhaglani,
Assistant Professor, Dept. of Pulmonary
IGMC, Shimla

Dr. Varinder Saini,
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GMC& H, Sec-32, Chandigarh.

M D Respiratory Medicine curriculum

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 Pulmonary Medicine as applied to critical care. The person shall be abreast with the recent advances and developments in the specialty of Pulmonary 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 pulmonary 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 Pulmonary 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".

Need and scope:

Lung disease is a major cause of morbidity and mortality worldwide. Tuberculosis is highly prevalent in our country. In 2012, out of the estimated global annual incidence of 8.6 million TB cases, 2.3 million were estimated to have occurred in India. The problem of tuberculosis is further complicated by its association with human immunodeficiency virus (HIV) infection and multi-drug resistant tuberculosis. Besides tuberculosis, there are also heavy burden of non-tuberculous lung diseases and respiratory emergencies. Diseases such as bronchial asthma, respiratory infections, lung cancer, chronic obstructive pulmonary disease (COPD) and others account for 70% of the lung

diseases seen in any large hospital in India. A more recent data from four different parts of the country revealed that the prevalence of COPD to be 4.1% of 35295 subjects, with a male to female ratio of 1.56 : 1 and a smoker to non-smoker ratio of 2.65 : 1.16. In another multicentric study involving 85,105 men and 84,470 women, an overall prevalence of asthma and chronic bronchitis of 2.05% (adults aged ≥15 years) and 3.49% (adults aged ≥35 years) were reported respectively. The national burden of asthma and chronic bronchitis was estimated at respectively 17.23 and 14.84 million. Smoking related respiratory diseases are other important issues for the chest physicians of this country. Tobacco kills more than five million people worldwide. It is the number one cause of cancer and the number one cause of preventable death around the globe. Tobacco use both in the smoking and non-smoking forms is quite common in India; about 15% to over 50% men use tobacco in this country. Thus, tobacco smoke related respiratory diseases like COPD, lung cancer etc., are increasing rapidly. Furthermore, tobacco consumption has a deleterious effect on the course of bronchial asthma, pulmonary tuberculosis, lung functions and other lung diseases. There are other diseases too, like interstitial lung diseases (ILDs), diseases due to both indoor and outdoor pollution, occupational lung diseases etc., which are being recognized more frequently. With rapid industrialization and increased pollution levels and varying new occupations coming up, more and more lung diseases related to these areas are expected in the near future. Lung cancer is another important disease that is rising in this country. Various respiratory infections, including community acquired, hospital acquired and ventilator associated pneumonia are important challenges both for diagnosis and management. Immunosuppression because of HIV/AIDS, use of immunosuppressive drugs and solid organ transplantation programmes has increased the chances of development of pneumonias in these individuals. Newer agents have been identified and implicated as the causative agents including bacteria, fungi and parasites. Further, the world has seen the emergence of newer forms of pneumonias and infections like severe acute respiratory syndrome (SARS), avian flu, Tsunami lung, climate change and lung diseases among others. We had further recognized newer problems like sarcoidosis and cystic fibrosis, which were though to be rare or a non-existent in this country. Sleep related disorders are gaining importance in our country also. Intensive care or critical care medicine has recently emerged as an important addition to be tackled by the

chest physicians. Use of ventilators and management of associated multi-organ involvement needs further expansion of the knowledge of the respiratory physicians. Newer diagnostic and therapeutic modalities are being added in the arena of the pulmonary physician. Knowledge of respiratory physiology, increasing role in lung transplant program have further widened the scope. The curriculum of MD (Respiratory medicine) is, therefore, designed to impart an intensive clinical training in pulmonary medicine and critical care. The syllabus to be covered during postgraduate 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 is does not impose any limits to expansion beyond the areas listed. Since the curriculum is a dynamic process to meet the needs and objectives which change with the time, a suitable revision from time to time is required so as to support social economic and provisional traditions.

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 NMC guidelines. These involve 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.

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 Control 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 literature 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 bronchoscopy, pleural aspiration and biopsy, pulmonary physiotherapy, endotracheal 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 pulmonary 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 haematological 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) □
- Broncho provocation tests
- BCG vaccination
- Montoux testing; interferon gamma release assays
- Bronchoscopy: fibreoptic/rigid, diagnostic and therapeutic □
- ECG, 2D and Doppler echocardiography
- 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

Course contents: The student should acquire knowledge in the following:

I. 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 induction etc.

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 pathogenicity 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, Nocardiosis, Aspergillosis, Blastomycosis etc. (ii) Laboratory diagnostic procedures in pulmonary mycosis

10. Opportunistic infections in the immuno-compromised 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. NTEP

5. Epidemiological aspects of BCG

6. Epidemiological aspects of pollution-related pulmonary diseases

7. 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 Pulmonary Medicine including medical emergencies

All aspects of pulmonary diseases including epidemiology, aetiopathogenesis, pathology, clinical features, investigations, differential diagnosis and management are to be covered

A. Infections

1. Tuberculosis

- Aetiopathogenesis
- Diagnostic methods
- Differential diagnosis
- Management of pulmonary tuberculosis; RNTCP, NTEP, DOTS, and DOTS-Plus; International Standards of TB Care
- Complications in tuberculosis
- Tuberculosis in children

- Geriatric tuberculosis
- Extrapulmonary TB
- Non-tuberculous Mycobacterial lung diseases
- HIV and TB; interactions of antitubercular with antiretroviral drugs
- Diabetes mellitus and tuberculosis
- Management of MDR and XDR tuberculosis/PMDT guidelines
- Latent TB infection & PMTPT guideline

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, parasitic, 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

3. 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

4. Other non-infectious disorders of the lungs and airways

- 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

5. 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

6. 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

7. 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

8. Diseases of the mediastinum □

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

9. Disorders of the pleura

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

10. Critical Care Pulmonary 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

11. Extrapulmonary manifestations of pulmonary diseases

12. Sleep-related pulmonary diseases □

- Polysomnography
- Sleep apneas
- Other sleep-disordered breathing syndromes

13. 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

14. 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 Pulmonary 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 11 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 specialties/super specialties would be required to present one poster presentation, to read one paper at a national/state conference and to present 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 a 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.

Thesis

All MD (Respiratory Medicine) post graduate students should carry out work on an assigned topic under the direct guidance of a recognized post graduate teacher. A written protocol of the proposed work should be submitted before the end of the first 6 months. Subsequently, the post graduate student should carry out the proposed work for at least 1 year (not inclusive of the period for submitting the protocol and writing-up the final thesis).

During the training programme, patient safety is of paramount importance; therefore, skills are to be learnt initially on the models, later to be performed under supervision followed by performing independently. For this purpose, provision of skills laboratories in medical colleges is mandatory.

ASSESSMENT

FORMATIVE ASSESSMENT, ie., assessment during training Formative assessment should be continual and should assess medical knowledge, patient care, procedural & academic skills,

interpersonal skills, professionalism, self directed learning and ability to practice in the system.

General Principles

Internal Assessment should be frequent, cover all domains of learning and used to provide feedback to improve learning; it should also cover professionalism and communication skills. The Internal Assessment should be conducted in theory and practical/clinical examination.

Quarterly assessment during the MD training should be 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

The student to be assessed periodically as per categories listed in postgraduate student appraisal form (Annexure I).

SUMMATIVE ASSESSMENT, ie., assessment at the end of training

The summative examination would be carried out as per the Rules given in POSTGRADUATE MEDICAL EDUCATION REGULATIONS, 2000.

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 Theory and Clinical / Practical examination. The thesis shall be examined by a minimum of three examiners; one internal and two external examiners, who shall not be the examiners for Theory and Clinical examination. A post graduate student shall be allowed to appear for the Theory and Practical/Clinical examination only after the acceptance of the Thesis by the examiners.

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 for MD / MS 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:

Theory papers: total marks 400

Theory exam consists of four papers of 100 marks each as detailed below:

Paper I: General pulmonary medicine and basic sciences;

Paper II: Clinical pulmonary medicine including medical emergencies;

Paper III: Clinical pulmonary medicine including critical care medicine;

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

The final qualifying examination should include an assessment of clinical skills in the form of case presentations and discussions. Other rules laid down by the NMC regarding MD examinations shall apply here as well.

3. Practical/Clinical and Oral/viva voce Examination:

The post graduate students shall examine a minimum of one long and two short cases & oral/viva voce examination The oral examination shall be thorough and shall aim at assessing the knowledge and competence of the post graduate student on the subject, investigative procedures, therapeutic technique and other aspects of the specialty which form a part of the examination.

The Clinical Examination consists of examination and discussion of

1. One long case: 100 marks
2. Two short cases: 50 marks each (Total 100)
3. Spot examination: 50 marks
4. Internal assessment: 50 marks
5. Viva voce: **100** marks

All contents should include recent advances & relevance to National programme
Clinical part includes Epidemiology aspect also. Social aspects respiratory medicine is an integral part of respiratory diseases & therefore to be included wherever necessary

RECOMMENDED LIST OF BOOKS & JOURNALS

1	Principles and Practice of Sleep Medicine, 6th Edition	Meir H. Kryger Thomas Roth William Dement	Saunders; 6th edition
2	TEXTBOOK OF PULMONARY DISEASE	GERALD.L.BAUM	LITTLE BROWN PUBLISHERS,7th EDITION
3	HIGH RESOLUTION CT OF CHEST; A COMPREHENSIVE ATLAS	SWENSEN,STERN,K ANNE	LWW,4th edition
4	PRINCIPLES OF PULMONARY MEDICINE	Steven Weinberger	SAUNDERS,6th edition
5	Textbook of Lung Cancer	Heine Hansen	Informa Healthcare; 2 edition (March 17, 2008)
6	MURRAY AND NADEL'S TEXTBOOK OF RESPIRATORY MEDICINE	Robert Mason Jay Nadel John Murray	SAUNDERS 5th edition
7	RESPIRATORY MEDICINE	JOHN GIBSON	SAUNDERS
8	TEXTBOOK OF TUBERCULOSIS	M Monir Madkour, DA Warrell	SPRINGER VERLAG
9	EGAN'S FUNDAMENTALS OF RESPIRATORY CARE	Robert Wilkins	ELSEVIER 10th edition
10	Noninvasive Ventilation Made Easy	M.K. Agarwal (Author)	Jaypee Brothers Medical Publishers
11	FRASER AND PARE'SDIAGNOSIS OF DISEASES OFTHE CHEST	R.FRASER N.MULLER	SAUNDERS 4-VOLUME SET

12	Tuberculosis A Comprehensive Clinical Reference	H.S. Schaaf and A.I. Zumla	WB Saunders Elsevier, UK
13	Endobronchial Ultrasound-Guided Transbronchial Needle Aspiration (EBUS-TBNA	Monaco S.E. Khalbuss W.E. Pantanowitz L	Karger 2014
14	Noninvasive mechanical Ventilation Theory, Equipment, and Clinical Applications	Esquinas, Antonio (Ed.)	Springer 2010
15	Physiologic Basis of Respiratory Disease	Q. Hamid, J. Shannon and J. Martin	BC Decker Inc., Hamilton, Ontario, Canada
16	ACCP POULMONARY MEDICINE BOARD REVIEW	ACCP	2013
17	CHEST RADIOLOGY	James Reed	SAUNDERS,2010
18	CLINICAL EXAMINATION	N.TALLEY	CHURCHILL LIVINGSTONE,2010
19	MOSBY'S GUIDE TO PHYSICAL EXAMINATION	Henry Seidel	MOSBY,2010
20	Bronchoscopy and Central Airway Disorders: *A Patient-Centered Approach: Expert Consult Online and Print*	Colt & Murgu	Elsvier 2012
21	Bedside Respiratory Medicine	DM, FCCP Dr Basanta Hazarika MD (Author), Dr V. Dharma Rao MD	Paras Medical Books; First edition (2013)

22	Manual of Clinical Problems in Pulmonary Medicine	Timothy A Morris MD, FACCP , Andrew L Ries MD, MPH , Richard A Bordow MD	WOLTERS KLUWER Edition: Seventh
23	Critical Care Medicine: Principles of Diagnosis and Management in the Adult	Joseph E. Parrillo, R. Phillip Dellinger	elsvier (4th edition)
24	Flexible Bronchoscopy	Ko-Pen Wang, Atul C. Mehta and J. Francis Turner Jr	2012
25	Atlas of Flexible Bronchoscopy	Pallav Shah	
26	Advances in Combination Therapy for Asthma and COPD	Jan Lotvall	2012
27	Clinical Chest Ultrasound: From the ICU to the Bronchoscopy Suite (Progress in Respiratory Research)	C. T. Bolliger	
28	Tuberculosis	Rom and Gary	
29	Principle of chest X ray diagnosis	George simon	
30	Textbook of pleural diseases	Richard w light	
31	Clinical assessment in respiratory care	Wilkins, Sheldon, Krider	
32	Pulmonary rehabilitation	John e Hodgkin,Bartolome Celli, Gerilynm	
33	Tuberculosis – Case finding by Toman.		
34	Clinical respiratory Medicine	Albert & Spiro	

35	Essentials of Pulmonary and Critical Care Medicine	George and Light
36	Thoracic imaging	Webb & Higgins
37	Respiratory Physiology	JB west
38	The ICU book	Paul Marino
39	Diagnostic thoracic imaging	Miller
40	Respiratory Diseases – 2 volumes	Crofton & Douglas
41	Principles of critical care	Udwadia
42	Clinical Applications of Mechanical Ventilation	Chang
43	Harrisons Principles of Internal Medicine	Fauci et al
44	Clinical Examination	Macleods

Recommended List of Journals

1. Lung India
2. Indian Journal of Chest diseases and allied sciences
3. Indian Journal of tuberculosis
4. Thorax
5. International Journal of TB and Lung Diseases
6. Chest
7. American Journal of Respiratory and Critical care medicine
8. European Respiratory journal
9. European Respiratory review
10. The Lancet
11. Journals of Indian medical association
12. New England Journal of Medicine
13. Journal of association of physicians of India
14. Clinics in chest medicine

15. American journal of roentgenology
16. Cancer
17. Cancer research
18. Journal of thoracic and cardiovascular surgery
19. Respiration
20. Current opinion in pulmonary medicine

The questions in the papers will cover the areas listed against each and include a mix of essay type and short-note questions with greater emphasis on the latter. The essay type questions may be on clinical scenarios.

1. Kindly set the question papers strictly as per the topic/heading of the paper/specialty mentioned in your appointment letter.
2. The questions should be relevant to the topic/heading of the paper/specialty.
3. There should be no repetition of questions and moreover the questions should be specific
4. Even no question be picked up from the enclosed model question paper
5. Question should not be vague and non-specific

MD (Respiratory Medicine)

Model question paper

Paper-IV: Recent advances in Respiratory Medicine, and Research methodology

Time: 3 hours Maximum marks:100

Answer all questions

Draw diagrams wherever necessary

Write notes on:

I. Non-invasive ventilation

II. Bronchial thermoplasty

III. Extra-corporeal membrane oxygenator (ECMO)

IV. Impulse Oscillometry

V. Recent advances in management of acute Pulmonary Medicine

VI. Airway stenting

VII. Lung transplantation

VIII. Ethics in Bio-medical research

IX. Study designs in biomedical research

X. A patient presented with fever, headache, and myalgia for three days. He is not responding to any medication. On auscultation, bilateral crackles are present. Chest X-ray and HRCT thorax are normal.

a) what is the probable diagnosis?

b) What investigations should be done?

c) what will be the management in this case?

MD (Respiratory Medicine)

Model question paper

Paper-III: Clinical pulmonary medicine including critical care medicine

Time: 3 hours Maximum marks:100

Answer all questions

Draw diagrams wherever necessary

Write notes on:

I. Preoperative pulmonary evaluation
II. Role of biologicals in Bronchial Asthma
III. Long covid syndrome
IV. Ventilator-Induced lung injury
V. Ventilatory management of ARDS
VI. Management of stable COPD
VII. Management of IPF
VIII. Approach to cystic lung disease
IX. Radiological signs of bronchiectasis
X. A 40 years old female presented to emergency department with wheeze, shortness of breath, cough and chest tightness. She has symptoms often worse at night or early morning. Her FEV1/FVC is <0.7 and bronchodilator reversibility test is positive.
   a. What is your diagnosis?
   b. What is bronchodilator reversibility test? What are other spirometric findings in this patient?
   c. How will you manage this case?

MD (Respiratory Medicine)

Model question paper

Paper-II: Clinical Pulmonary Medicine including medical emergencies

Time: 3 hours Maximum marks: 100

Answer all questions

Draw diagrams wherever necessary

Write notes on:

I. Open negative syndrome
II. Delamanid & Pretomanid
III. Fall and rise phenomenon
IV. Epituberculosis
V. Diffuse alveolar haemorrhage
VI. IRIS in TB with HIV
VII. Newer methods of assessment of fluid status and responsiveness in critically ill patients.
VIII. Management of Haemoptysis
IX. Management of Respiratory Acidosis
X. A 25 years old female presented with sharp left sided chest pain and shortness of breath since morning. She was in good health until yesterday. The pain has been progressively increasing in severity and now, she has severe left shoulder pain also. There is no history of cough, fever, Haemoptysis. She married 3 years ago and currently on birth control pills. Her blood pressure is 116/80 and pulse rate is 120/minute. Answer the following
    a) List diagnosis that could fit the history of this patient as an Etiology for pleuritic pain.
    b) Chest X-ray revealed obliteration of the left angle. The left diaphragam is elevated. Interpret the X-ray and write explanation for her shoulder pain.
    c) What additional studies would you like to do?

MD (Respiratory Medicine)

Model question paper

Paper-I: General pulmonary medicine and Basic sciences

Time: 3 hours Maximum marks:100

Answer all questions

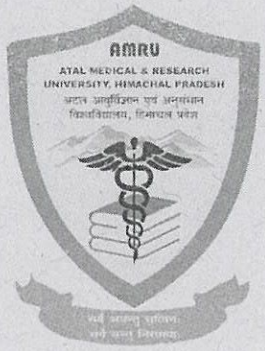
Draw diagrams wherever necessary

Write notes on:

I. Lung compliance
II. MRI in respiratory disease
III. Newer bronchodilators
IV. Aegophony
V. Alpha-one antitrypsin deficiency
VI. Molecular diagnosis in tuberculosis
VII. Diffusion capacity
VIII. Developmental anomaly of trachea
IX. Ghon's complex

Test	Pre- Bronchodilator			Pre- Bronchodilator	
	Actual	Predicted	% Predicted	Actual	% change
FVC(L)	3.19	4.22	76	4.00	25
FEV1(L)	2.18	3.99	64	2.83	30
FEV1/FVC(%)	68	80		71	4

a) Interpret the results
b) How will you perform post-bronchodilator test
c) Write appropriate treatment for this patient



Atal Medical and Research University

at NerChowk, Distt. Mandi, Himachal Pradesh

LOG BOOK

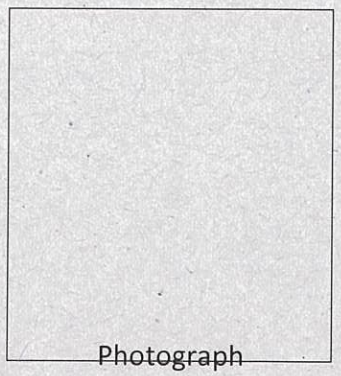
For

Degree in MD Respiratory Medicine

Name of student: .....

Batch: .....

PERSONAL DETAILS



Name: .....

Age: ..... Years

Gender: Male / Female

S/D/W/o: .....

Address:

Permanent: .....

Correspondence:.....

Mobile number: .....

E-mail ID: .....

Details about MBBS:

Institution: .....

Year of passing: .....

MBBS Registration details:

Name of Medical Council: .....

Registration Number with Date:.....

Signature of HOD

Signature of Student

CONTENTS

OBJECTIVES

At the end of training, the MD student shall be able to:

1. Diagnose and manage respiratory disease, make timely decision for referral to higher level.
2. Use discreetly the essential drugs, infusions, blood or its substitutes and laboratory services.
3. Manage all type of respiratory emergencies.
4. Demonstrate skills required in Respiratory Medicine.
5. Develop leadership qualities to function effectively as a leader of the health team organized to deliver the health services in existing socio-economic and cultural environment.
6. Render services to chronically sick, disabled and patients at "end of life."

GUIDELINES

1. The log book provides performa(s) in specialties which indicate knowledge and skills to be acquired while undergoing that specific posting.
2. The record of the achievements should be verified by the Head of the Units/Faculty, countersigned by the Head of the Department, immediately after the completion of the Posting.
3. Responsibility of safe custody of the log book rest on the students.
4. The privilege of training will start only from the date of joining to the MD course.
5. The MD students shall be entrusted with clinical responsibilities under direct supervision of faculty.
6. The Log book should be maintained during all rotational posting. On completion of rotational postings, the log book is to be submitted to the Faculty In-charge, for issue of the completion certificates.

ASSESSMENT

1. The MD students shall maintain a record of work which is to be verified and certified by the faculty under whom he/she works.

2. Apart from scrutiny of the record of work, assessment of training, the evaluation shall be undertaken by an objective approach using situation tests in knowledge, skills and attitude during and at the end of the training.

3. Based on the record of work and date of evaluation, the Faculty In-charge shall issue certificate of satisfactory completion of desired skill.
4. Satisfactory completion shall be determined on the basis of the following: -

Sr. No.	Parameter for Assessment	Score
1.	Proficiency of knowledge required for each case	0/1/2/3/4/5
2.	The competency in skills expected to manage each case	0/1/2/3/4/5
3.	Responsibility, punctuality, work up of case, involvement in treatment, follow-up reports	0/1/2/3/4/5
4.	Capacity to work in a team (Behaviour with colleagues, nursing staff and relationship with paramedicals)	0/1/2/3/4/5
5.	Initiative, participation in discussions, research aptitude	0/1/2/3/4/5

Final Grade:

0 – 5	6–10	11-15	16-20	21–25
Poor	Average	Good	Very good	Excellent

Rotational Posting Schedule

Department	
Respiratory intensive Care	
Emergency	
PFT Lab	
Bronchoscopy and Thoracoscopy Lab	
Radiology	
Microbiology and Mycobacteriology Lab	
Sleep Lab	
NTEP and PMDT	

Final Assessment

Sr. No.	Name of Department	Please tick the Final Grade given by Department					Signature o Head of Departmen
1.	Respiratory Intensive Care	Poor	Average	Good	Very good	Excellent	
2.	Emergency	Poor	Average	Good	Very good	Excellent	
3.	PFT Lab	Poor	Average	Good	Very good	Excellent	
4.	Bronchoscopy and Thoracoscopy Lab	Poor	Average	Good	Very good	Excellent	
5.	Radiology	Poor	Average	Good	Very good	Excellent	
6.	Microbiology and Mycobacteriology	Poor	Average	Good	Very good	Excellent	
7.	Sleep Lab	Poor	Average	Good	Very good	Excellent	
8.	NTEP and PMDT	Poor	Average	Good	Very good	Excellent	

NO DUES CERTIFICATE

Sr. No	Department	Remarks	Signature of Head of Deptt. With Stamp
1.	Intensive Care		
2.	Emergency		
3.	PFT Lab		
4.	Bronchoscopy and Thoracoscopy Lab		
5.	Radiology		
6.	Microbiology and Mycabacteriology		
7.	Sleep Lab		
8.	NTEP and PMDT		
9.	Library		
10.	Cashier/ Account Branch		

11.	Hostel Warden		
12.	Mess/Canteen		
13.	Medical Record Department		
14.	Sports		
15.	Pulmonary Medicine		

COURSE COMPLETION CERTIFICATE

Name of Trainee:.....

Period of training: From .....To.....

Eligibility for receiving completion certificate YES ☐ NO ☐

If No, reason to be given: .....

Signature

In-charge Faculty

Department of Pulmonary Medicine

Rotational Posting in Respiratory Intensive Care

Unit of Posting .....

Period of posting: From .....To.....

No. of days absent with leave..... Without Leave.....

ASSESSMENT

Sr. No.	Parameter for Assessment	Score
1.	Proficiency of knowledge required for each case	0/1/2/3/4/5
2.	The competency in skills expected to manage each case:	0/1/2/3/4/5
3.	Responsibility, punctuality, work up of case, involvement in treatment, follow-up reports.	0/1/2/3/4/5
4.	Capacity to work in a team (Behaviour with colleagues, nursing staff and relationship with paramedical staff).	0/1/2/3/4/5
5.	Initiative, participation in discussions, research aptitude.	0/1/2/3/4/5

Final Grade:

0 – 5	6–10	11-15	16-20	21–25
Poor	Average	Good	Very good	Excellent

Training in Wards:

i) Number of case record written .....

ii) Number of ward rounds attended .....

iii) Number of cases presented on the round .....

iv) Number of Endotracheal Intubations performed.....

v) Number of ABG samples taken.....

Training in Routine procedures

S. No.	Particulars	Number (approx.)		Scoring (0-5)
		Observed	Perform	
1.	Venipuncture			
2.	I.M. / I.V. Injection			
3.	Setting up of I.V. Drip			
4.	Blood transfusion with its management			
5.	Passing of Ryle's tube			
6.	Passing of urethral catheter			
7.	Endotracheal intubation			
8.	Abdominal paracentesis			
9.	CVP line			
10.	Lumbar puncture and examination of CSF			
11.	Pleural aspiration			
12.	Cardio=pulmonary resuscitation			

Rotational Posting in Emergency

Unit of Posting .....

Period of posting: From .....To.....

No. of days absent with leave.....without Leave.....

ASSESSMENT

Sr. No.	Parameter for Assessment	Score
1.	Proficiency of knowledge required for each case	0/1/2/3/4/5
2.	The competency in skills expected to manage each case:	0/1/2/3/4/5
3.	Responsibility, punctuality, work up of case, involvement in treatment, follow-up reports.	0/1/2/3/4/5
4.	Capacity to work in a team (Behaviour with colleagues, nursing staff and relationship with paramedical staff).	0/1/2/3/4/5
5.	Initiative, participation in discussions, research aptitude.	0/1/2/3/4/5

Final Grade:

0 – 5	6-10	11-15	16-20	21–25
Poor	Average	Good	Very good	Excellent

Training in Wards:

Number of case record written .....

Number of ward rounds attended .....

Number of cases presented on the round .....

Number of Endotracheal Intubations performed.....

Number of ABG samples taken.....

Training in Routine procedures

S. No.	Particulars	Number (approx.)		Scoring (0-5)
		Observed	Perform	
1.	Venipuncture			
2.	I.M. / I.V. Injection			
3.	Setting up of I.V. Drip			
4.	Blood transfusion with its management			
5.	Passing of Ryle's tube			
6.	Passing of urethral catheter			
7.	Endotracheal intubation			
8.	Abdominal paracentesis			
9.	Stomach wash			
10.	Lumbar puncture and examination of CSF			
11.	Pleural aspiration			
12.	Assisting in external cardiac massage			

Period of posting: From .....To.....

ASSESSMENT

Sr. No.	Parameter for Assessment	Score
1.	Proficiency of knowledge required for each case	0/1/2/3/4/5
2.	The competency in skills expected to manage each case:	0/1/2/3/4/5
3.	Responsibility, punctuality, work up of case, involvement in treatment, follow-up reports.	0/1/2/3/4/5
4.	Capacity to work in a team (Behavior with colleagues, nursing staff and relationship with paramedical staff).	0/1/2/3/4/5
5.	Initiative, participation in discussions, research aptitude.	0/1/2/3/4/5

Final Grade:

0	6-10	11-15	16–20	21–25
Poor	Average	Good	Very good	Excellent

Training in PFT Lab:

Number of tests performed .....

Number of tests reported .....

Number of PFTs done with reversibility tests .....

Training in Routine procedures

S. No.	Particulars	Number (approx.)		Scoring (0-5)
		Observed	Perform	
1.	Spirometry			
2.	Reporting			
3.	Spirometry with reversibility			
4.	Diffusion Studies			

In-charge

PFT Lab

Rotational Posting in Bronchoscopy Lab

Period of posting: From .....To.....

ASSESSMENT

Sr. No.	Parameter for Assessment	Score
1.	Proficiency of knowledge required for each case	0/1/2/3/4/5
2.	The competency in skills expected to manage each case:	0/1/2/3/4/5
3.	Responsibility, punctuality, work up of case, involvement in treatment, follow-up reports.	0/1/2/3/4/5
4.	Capacity to work in a team (Behavior with colleagues, nursing staff and relationship with paramedical staff).	0/1/2/3/4/5
5.	Initiative, participation in discussions, research aptitude.	0/1/2/3/4/5

Final Grade:

0	6-10	11-15	16–20	21–25
Poor	Average	Good	Very good	Excellent

Training in Bronchoscopy Lab:

Number of bronchoscopies performed .....

Number of endobronchial biopsies taken .....

Number of bronchoalveolar lavage (BAL) taken.....

Number of transbronchial lung biopsies (TBLB) taken.....

Number of transbronchial needle aspiration (TBNA) done .....

Training in Routine procedures

S. No.	Particulars	Number (approx.)		Scoring (0-5)
		Observed	Perform	
1.	Bronchoscopy			
2.	Endo-bronchial biopsy			
3.	Bronchoalveolar Lavage			
4.	Transbronchial Lung Biopsy			
5.	Transbronchial Needle Aspiration			

In-charge

Bronchoscopy Lab

Rotational Posting in Microbiology and Mycobacteriology

Unit of Posting .....

Period of posting: From .....To.....

No. of days absent with leave.....without Leave.....

ASSESSMENT

Sr. No.	Parameter for Assessment	Score
1.	Proficiency of knowledge required for each case	0/1/2/3/4/5
2.	The competency in skills expected to manage each case:	0/1/2/3/4/5
3.	Responsibility, punctuality, work up of case, involvement in treatment, follow-up reports.	0/1/2/3/4/5
4.	Capacity to work in a team (Behaviour with colleagues, nursing staff and relationship with paramedical staff).	0/1/2/3/4/5
5.	Initiative, participation in discussions, research aptitude.	0/1/2/3/4/5

Final Grade:

0	6-10	11-15	16-20	21–25
Poor	Average	Good	Very good	Excellent

Training in Microbiology and Mycobacteriology:

Number of sputum microscopy performed (Sample collection, ZN staining, AR staining, grading) .....

CBNAAT for M.TB.....

Training in routine procedures

S. No.	Particulars	Number (approx.)		Scoring (0-5)
		Observed	Perform	
1.	Sputum Microscopy			
2.	CBNAAT for M.TB			

HOD Microbiology

Rotational Posting in Sleep Lab

Period of posting: From .....To.....

ASSESSMENT

Sr. No.	Parameter for Assessment	Score
1.	Proficiency of knowledge required for each case	0/1/2/3/4/5
2.	The competency in skills expected to manage each case:	0/1/2/3/4/5
3.	Responsibility, punctuality, work up of case, involvement in treatment, follow-up reports.	0/1/2/3/4/5
4.	Capacity to work in a team (Behaviour with colleagues, nursing staff and relationship with paramedical staff).	0/1/2/3/4/5
5.	Initiative, participation in discussions, research aptitude.	0/1/2/3/4/5

Final Grade:

0	6-10	11-15	16-20	21–25

Poor	Average	Good	Very good	Excellent

Training in Sleep Lab:

Number of sleep studies done .....

Number of reports interpreted .....

Number of patients started on treatment after interpretation of reports .....

Training in Routine procedures

S. No.	Particulars	Number (approx.)		Scoring (0-5)
		Observed	Perform	
1.	Sleep studies			
2.	Reports interpreted			
3.	Treatment initiation after report interpretation			

In-charge

Sleep Lab

Department of Pulmonary Medicine

Rotational Posting in DOTS and PMDT Center

Period of posting: From
.....To.....

ASSESSMENT

Sr. No.	Parameter for Assessment	Score
1.	Proficiency of knowledge required for each case	0/1/2/3/4/5
2.	The competency in skills expected to manage each case:	0/1/2/3/4/5
3.	Responsibility, punctuality, work up of case, involvement in treatment, follow-up reports.	0/1/2/3/4/5
4.	Capacity to work in a team (Behaviour with colleagues, nursing staff and relationship with paramedical staff).	0/1/2/3/4/5
5.	Initiative, participation in discussions, research aptitude.	0/1/2/3/4/5

Final Grade:

0	6–10	11-15	16-20	21–25
Poor	Average	Good	Very good	Excellent

Training in DOTS and PMDT Center:

Number of case record written .....

Number of ward rounds attended .....

Number of cases presented on the round .....

Training in routine procedures

S. No.	Particulars	Number (approx.)		Scoring (0-5)
		Observed	Perform	
1.	Interpretation of CBNAAT and LPA reports			
2.	Preparation of ATT regimens as per NTEP			
3.	Initiation of PMDT regimen and schedules follow-up of patients			
4.	Palliation of patients of DRTB			
5.	Managing Adverse Events of ATT			
6.	Starting ATT in special situations			

NTEP Nodal Officer

Assessment of Department of Pulmonary Medicine

Sr. No.	Parameter for Assessment	Score
1.	Proficiency of knowledge required for each case	0/1/2/3/4/5
2.	The competency in skills expected to manage each case:	0/1/2/3/4/5
3.	Responsibility, punctuality, work up of case, involvement in treatment, follow-up reports.	0/1/2/3/4/5
4.	Capacity to work in a team (Behaviour with colleagues, nursing staff and relationship with paramedical staff).	0/1/2/3/4/5
5.	Initiative, participation in discussions, research aptitude.	0/1/2/3/4/5

Final Grade:

0	6–10	11-15	16-20	21–25
Poor	Average	Good	Very good	Excellent

Training in routine procedures

S. No.	Particulars	Number (approx.)		Scoring (0-5)
		Observed	Perform	
1.	IV cannulation			
2.	Abdominocentesis			
3.	Thoracocentesis			
4.	FNAC Lymph Node			
5.	Cold abscess aspiration			
6.	USG guided FNAC Lung Mass			
7.	CT guided FNAC Lung Mass			
8.	Pleural Biopsy			
9.	Inter-costal drain insertion			
10.	Pig-tail catheter insertion in pleural cavity			
11.	Spirometry			
12.	Spirometry with reversibility			
13.	Bronchoscopy			
14.	Bronchoalveolar Lavage			
15.	Transbronchial Lung Biopsy			
16.	Transbronchial Needle aspiration			
17.	Sputum microscopy (ZN staining/ AR staining)			
18.	Preparation of regimens for Pulmonary and Extrapulmonary Tuberculosis as per NTEP			
19.	Prepartion of regimens for DRTB patients as per PMDT Guidelines			
20.	Initiation of PM TPT			
21.	Inhalational Drug delivery devices			

22.	Oxygen delivery devices			
23.	Six minute walk test			
24.	Montoux Skin Test			
25.	Non-invasive ventilation			
26.	Pain Management			
27.	Aerosol therapy			
28	USG THORAX			

NOTES