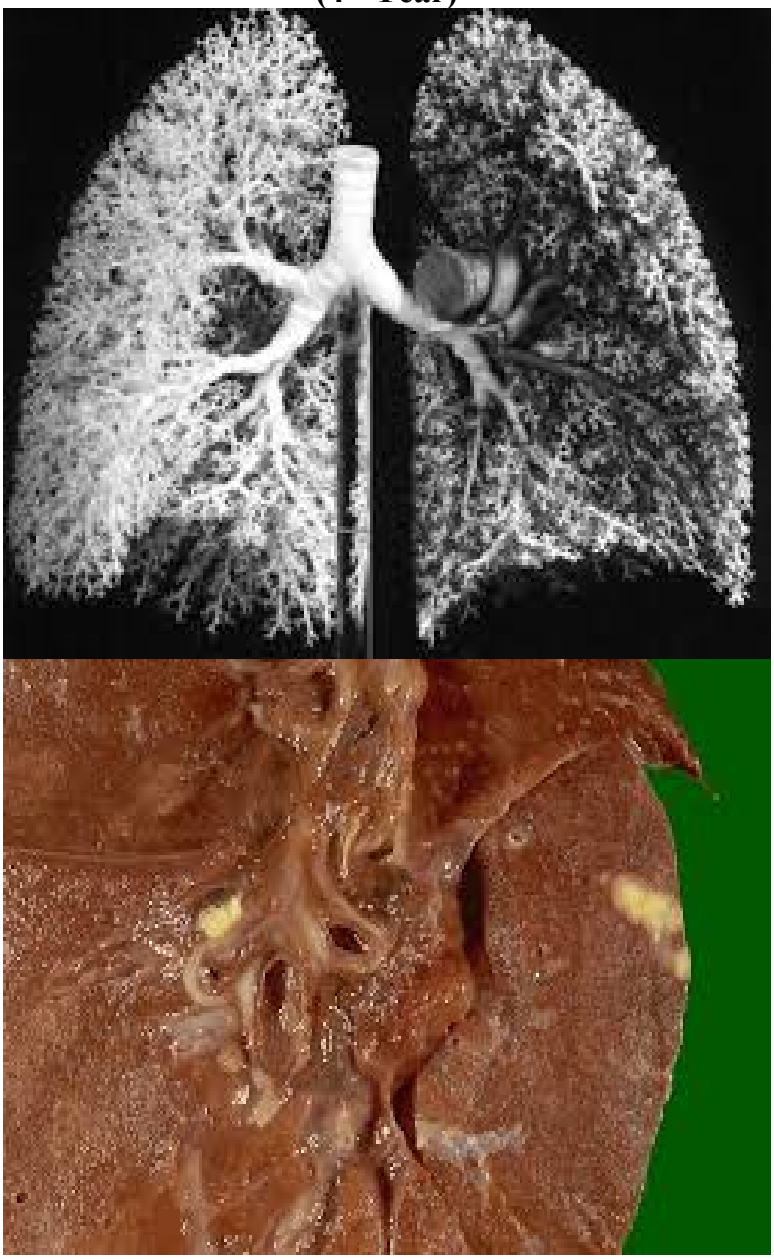
AJK Medical College, Muzaffarabad

STUDY GUIDE
Respiratory Module II
(4th Year)



Pre-Requisites:
NEU-II, SPS-I (Eye), Endocrine & SPS-II (ENT) Modules

DEPARTMENT OF MEDICAL EDUCATION

CONTENTS

MODULE TEAM

Name	Designation
Prof. Dr. Anwar-Ul-Haque	(Module Planner)
Brig$^{(R)}$ Prof. Dr. Ahmed Khan	(Module Coordinator)
Dr. Ziyad Afzal Kayani	DME
Dr. Robina Rafique	(Member)
Dr. Kh. Tahir Aziz	(Member)
Dr. Naheem Akhtar	(Member)

INTRODUCTION

Respiratory diseases are a group of chronic diseases affecting the airways and the other structures of the lungs Hundreds of millions of people around the world suffer from preventable respiratory diseases. Respiratory symptoms are among the major causes of consultation at primary health care centers. A recent report of the WHO for underdeveloped countries have shown that the proportion of patients with respiratory symptoms, among those over 5 years of age, who visit primary health care centers range from 8.4% to 37.0%Asthma and respiratory allergies. Some of the most common and most prevalent diseases of the respiratory system include Asthma, Bronchiectasis and Chronic obstructive lung disease, including bronchitis and emphysema lung cancer and Pneumoconiosis. The common symptoms include cough, Dyspnoea, Strider, Wheezing and Haemoptysis.

Respiratory system functions in integration and co-ordination with CNS and CVS. A healthy, normal functioning respiratory system is of immense importance for maintenance of normal life and healthy body. Respiratory system disorders are common problems and leading cause of morbidity and mortality in Pakistan especially tuberculosis and chronic lung disorders arising mainly from inhalation of pollutants. Similarly carcinoma lung is also a common lung malignancy and is a major cause of morbidity and mortality. The rate of incidence of carcinoma lung has alarmingly increased with increase of pulmonary carcinogens in the atmosphere.

A medical student will have to deal manage and treat with many patients suffering from respiratory diseases/disorders: hence he has to be appraised about the knowledge of this important part of medicine. He should have an understanding about the signs and symptoms diagnosis and treatment of these disorders.

Core contents of this module includes three (2) themes. Clinical cases have been developed to create clinical relevance to whatever is being taught and learned in this module.

The time table has been designed to guide better implementation of this module and the learning strategies will be elaborated during each session.

1.1 Organization of Module

Organization

The module consists of three themes, each based on a real life situation. The module will employ different modes of instruction, briefly described below. Major emphasis will be on discussion, analysis and deductions; all by the students under the guidance of the faculty

1.2 Content Delivery/ Teaching Strategy

Entire curriculum will be delivered by clinical case scenarios each covering a theme. Read cases and learning objectives of the theme which you are supposed to encounter next day, Understand and explain the case to yourself and read the relevant information.

The content of this module will be delivered by a combination of different teaching strategies. These include large group interactive sessions (LGIS), small group interactive discussions (SGID), demonstrations in pathology laboratories, practicals and clinical skill sessions at skill lab/clinical sessions. In addition there will be a group project which will be assessed at the end of the block

Small Group Interactive Discussion (SGID):

Main bulk of the course content will be delivered in small group sessions. Each theme has an associated case. The case will be the core around which learning will take place. Depending on the case you might be required to deduce objectives and learning issues or only learning issues. Every group will have a facilitator assigned to it. The facilitator will be there to keep you on track, giving you maximum liberty to discuss and achieve the objectives as a group. Small groups in some cases may be followed by a wrap up session. Rest of the information will be there in the schedule.

Large group Interactive Sessions (LGIS):

Large group instruction will be employed at times sparingly. Attend large group sessions with the following focus

- Identify important points
- Ask questions of points not well understood in the text
- Measure your learning comprehension

Videos:

Video demonstrations on history taking, clinical examination and clinical skills like chest tube intubation and communication skills etc. will be shown to give you an idea into the disease process, testing and practical aspect of communicating with the patients.

Hands-on Activities/ Practical:

Practical activities, linked with the case, will take place.

Skill Lab/ Laboratory:

Attend your scheduled skill lab/ laboratory sessions and take advantage of free time for study. Use your labs to correlate text with actual specimens in lab.

1.3 **Assessment:**

- **SUMMATIVE ASSESSMENT:** will be conducted at the end of RES Module.
- Marks obtained in the module examination (internal assessment) will constitute 30% of total marks at the end of year-Professional /University Examination.

LISTOFICONS

INTRODUCTION TO CASE

OBJECTIVES

CRITICALQUESTIONS

ASSESSMENT

LABORATORY SESSIONS

RESOURCEMATERIAL

KEYWORDS

Table of Specifications (TOS)

SR. NO.	THEME	WEIGHT%
1	Cough with Hemoptysis	50%
2	Breathlessness	50%

RESPIRATORY MODULE THEMES

1) Cough with Hemoptysis
2) Breathlessness

LEARNING OBJECTIVES

THEME-1: Breathlessness

At the end of the theme the student should be able to:

1. Describe congenital anomalies of respiratory tracts
2. Describe the salient features of gross anatomy of upper respiratory tract
3. Enlist common causes of upper airway obstruction
4. Enumerate the main steps involved in the management of upper air way obstruction.
5. Describe clinical features of chest trauma and its management.
6. Define pneumothorax and its types. Differentiate between pneumothorax and haemothorax.
7. Describe the steps of chest drain insertion and its management.
8. Describe causes, pathogenesis of acute lung injury/ ARDS
9. Describe the etiology, pathogenesis of obstructive airway diseases
10. Correlate biochemical changes with structural changes in the airways and lung parenchyma
11. Interpret relevant investigations like PFTs, ABGs, x-ray chest
12. Enlist the steps of pleural biopsy.
13. Describe Epidemiology, Types and Mode of Transmission & Prevention of Pneumoconiosis.
14. Describe the path physiology and clinical presentation, diagnosis and management of chronic obstructive pulmonary disease.(it includes chronic bronchitis with emphysema)
15. Investigate a case of breathlessness by an algorithm sheet
16. Compare and contrast the pathogenesis clinical presentation diagnosis management of restrictive and obstructive pulmonary disease
17. Describe etiology, clinical feature of typical and atypical pneumonia
18. Describe etiology, clinical feature of pneumoconiosis
19. Describe histopathological aspects of pneumonia and pneumoconiosis

THEME-2: Cough with Hemoptysis

At the end of the theme the student should be able to:

1. Construct a differential diagnostic list of granulomatous lesions with morphology.
2. Describe etiology, pathogenesis, morphology and clinical presentation of Bronchiectasis
3. Describe etiology, pathogenesis, morphology and clinical course of tracheobronchial and pulmonary malignancies
4. Describe various clinical modalities to diagnose and stage lung tumors.
5. Enlist the indications & steps of thoracotomy
6. Describe pneumonectomy and its complications
7. Differentiate among bronchopulmonary tumors on H&E stained tissue sections
8. Describe etiology clinical features and management of multiple drug resistant (MDR) tuberculosis.
9. Enlist many different causes of Hemoptysis
10. Describe the epidemiology prevalence and preventive measures of Tuberculosis.
11. Describe the epidemiology prevalence and preventive measures of Influenza, Diphtheria & Whooping Cough
12. Describe the epidemiology prevalence and preventive measures of Respiratory infections Chicken Pox/ Small pox & Acute Respiratory Infections
13. Describe the Epidemiology prevalence and preventive measures of Measles, Rubella & Mumps
14. Handling of TB patient in healthcare settings.

Clinical Cases of Themes

THEME-1: Cough with Hemoptysis

CASE HISTORY:

Patient Profile:

Presenting Complaint: A 46-year-old male presented with complaints of several months of increasing dyspnea on exertion, cough and haemoptysis

History of Present Illness: He is a rikshaw driver; however, her dyspnea prevented her from performing daily tough routine. He also reported increasing fatigue, dry cough, and occasional haemoptysis .He last 10 kg of his weight for last 6 months The patient had a 2.25 pack-year (0.25 packs/day for 9 years) smoking history before she quit twenty years prior to presentation.

Past Medical History (PMH): Diabetes mellitus type-II (DM), Hypertension (HTN)

Allergies: The patient denies any significant drug or environmental allergies.

Surgical History: The patient has had no surgery.

Hospitalizations: No significant history.

REVIEW OF SYSTEMS:.

- Gastrointestinal — Heart Burn and Epigastric Pain On & Off
- Genital/Reproductive — NAD
- Urinary — NAD
- Musculoskeletal. — Vague Body Aches
- Endocrine — NAD
- Neuro — Intact
- Psych — Patient feels anxious about the passage of blood in the Sputum

GENERAL PHYSICAL EXAMINATION:

- Temperature: 37.6^{o}C
- Pulse: 92 bpm with normal peripheral pulses
- Respiration: 24 bpm
- Blood Pressure: 160/105 mmHg
- Weight: 60 KG
- Height: 5'9"

General Appearance: ill looking , pale and anxious

Examination of respiratory system : Dull percussion notes on right upper chest with bronchial breathing and fine crackles at that area .

INVESTIGATIONS:

Labs:

- WBC: 7800/mm3, Neutrophils51%, Lymphocytes 40%, Monocytes 2 %, Eosinophils 1%
- Hemoglobin: 11.8g/dl
- Lab Tests: Normal RFT, Fasting Blood Sugar 150mg/dL
- CXR PA View A chest radiograph revealed right upper lobe collapse.
- CT Scan Chest Computerized tomography (CT) of the chest showed a mass involving the right upper lobe bronchus with associated atelectasis

- Tran bronchial biopsy confirm the diagnosis of the Small cell Carcinoma of lung

Diabetes mellitus type-II (DM), Hypertension (HTN), Atelectasis,

??? CRITICALQUESTIONS:

1. How will you differentiate Haemoptysis from Haematemesis?
2. What are the possible causes of cough with blood tinged sputum in a 50 year old patient?
3. What lab tests you will request for this patient?
4. How the imaging studies will help us in the diagnosis of his disease?
5. What is the role of skin testing in the diagnoses of an infectious disease?
6. Is there any role of bronchoscopy in the diagnosis of his disease?
7. What are the causes of dysponea in a middle aged person?
8. What is the role of type-II Diabetes mellitus in causing the disease?

Clinical Cases of Themes

THEME-2
Breathlessness

CASE HISTORY-1:

Patient Profile:
Presenting Complaint: A 66-year-old man with a smoking history of one pack per day for the past 47 years presents with progressive shortness of breath and cough,
History of Present Illness:

The Ptient had noticed increasing Shortness of breath after climbing upstairs. Althogh the physician prescribed

inhaler to alleviate his symptoms but he felt very little improvement after using them. He had cough mostly productive and wheezing

Past Medical History (PMH): NAD
Allergies: The patient denies any significant drug allergies.
Surgical History: The patient has had no surgery.
Hospitalizations: No significant history.

GENERAL PHYSICAL EXAMINATION:
Temperature: 37.4^{o}C
Pulse: 80 bpm with normal peripheral pulses
Respiration: 28 bpm
Blood Pressure: 110/75mmHg
Weight: 60 Kg
Height: 6 feet '
General Appearance: On examination he appears cachectic and in moderate respiratory distress while walking to the examination room,He has pursed-lip breathing. His neck veins are mildly distended
RESPIRATORY: Lung examination reveals a barrel chest and poor air entry bilaterally, with moderate inspiratory and expiratory wheezing.
Heart and abdominal examination are within normal limits. Lower extremities exhibit edema
INVESTIGATIONS:
Labs:
WBC: 7800/mm3, Neutrophils50%, Lymphocytes 40%, Monocytes 4%, Eosinophils 1%
Hemoglobin: 13g/dl
Lab Tests: Normal RFT, Fasting Blood Sugar 80mg/dl

Clinical Cases of Themes

THEME-2 *Dyspnea*

CASE HISTORY-2:
Patient Profile:
Presenting Complaint: A 62 year old man has history of cough, sputum production and breathlessness for last 12 years.
History of Present Illness:

This man is suffering above mentioned symptoms for last 12 years. Breathlessness has progressively worsened and at present he becomes breathless on climbing 12 stairs at a normal pace. He produces 2 to 3 tea spoon full of sputum per day for most of the time. he is comfortable at rest and has no nocturnal chest symptoms.
He is taking beta blocker for his hypertension which is well controlled.

Past Medical History (PMH): He remained in good health with no history of previous hospitalization
Personal History: He is a chain smoker and had been smoking one pack per day for last 42 years. He was a teacher by profession and is retired for last 2 years.
Hospitalizations: No significant history.

GENERAL PHYSICAL EXAMINATION:

Temperature	37degree centigrade
Pulse	96/minute
Blood pressure	160/90
Oxygen saturation	88%
JVP	not raised
Oedema pedal or sacral	negative
Chest	barrel shape, bilaterally decreased expension, percussion is hyper resonant but there are inspiratory crackles and ronchi on auscultation
Heart	NAD
Abdomen	NAD
CNS	NAD

INVESTIGATIONS:

Haemoglobin	16.5g/decilitre
WBC	78000/mm3
Biochemistry	
(LFT, RFT, blood sugar level)	normal
Chest x-ray	normal cardio thoracic ratio and hyper inflation, flat hemi diaphragm, large central pulmonary arteries increased bronco vesicular marking

- Spirometry post bronco dilater FEV1 is <80% of predicted value accompanied by FEV1/FVC <70%

???CRITICALQUESTIONS:

1. What can be the differential diagnosis of chronic progressive dyspnoea with cough?
2. How can we differentiate between obstructive and restrictive lung disease by spirometery?
3. What is the clinical diagnosis of this patient?
4. Enumerate steps of management?

PROBLEM BASED LEARNING

PBL-1

60 year old Sadaqit Khan was admitted with worsening shortness of breath and a dry nonproductive cough occurring over a 3-week period. He had complaints of mild exertional dyspnea for 2 years prior to this. The patient was a non-smoker but gave a history of diesel, asbestos and fiberglass exposure. His examination was remarkable for severe hypoxemia, tachypnea and bibasilar inspiratory crackles on chest auscultation. Laboratory studies revealed leucocytosis with normal hemoglobin and albumin levels. Antinuclear antigen (ANA), antineutrophilic cytoplasmic antibody (ANCA), Jo-1 antibody, Scl-70, anti-citrullinated antibody and mycoplasma titers were negative. Rheumatoid factor (RF) and C-reactive protein (CRP) levels were markedly elevated. Computed tomography (CT) of the chest showed bilateral ground-glass opacities with ill-defined reticular changes (Figure 1A). The patient declined to undergo a surgical or bronchoscopic biopsy and was empirically started on high-dose corticosteroids (methylprednisolone 240 mg/day) and antibiotics for community-acquired pneumonia. His condition improved, and he was discharged on a tapering dose of prednisone over the next 8 weeks. CRP levels normalized and his RF titers fell from 27 to 17 U (normal 0–14 IU/mL).

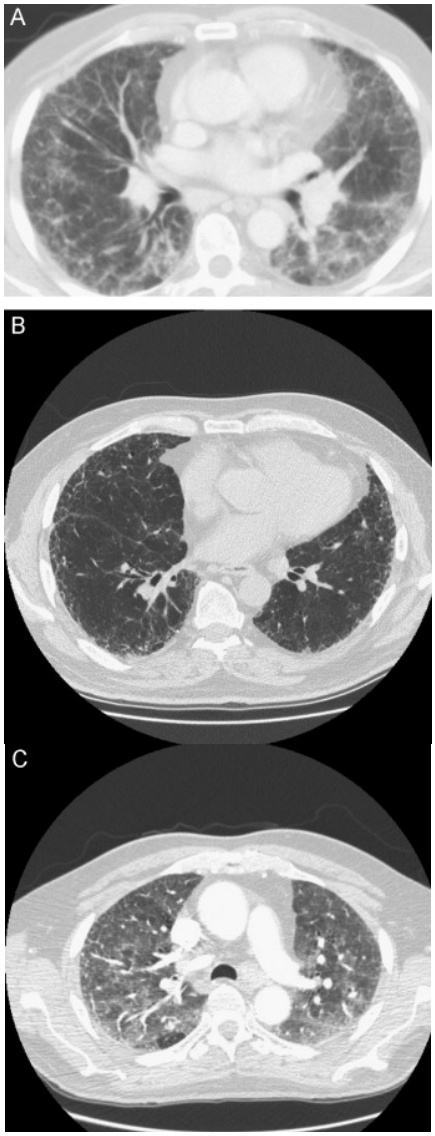
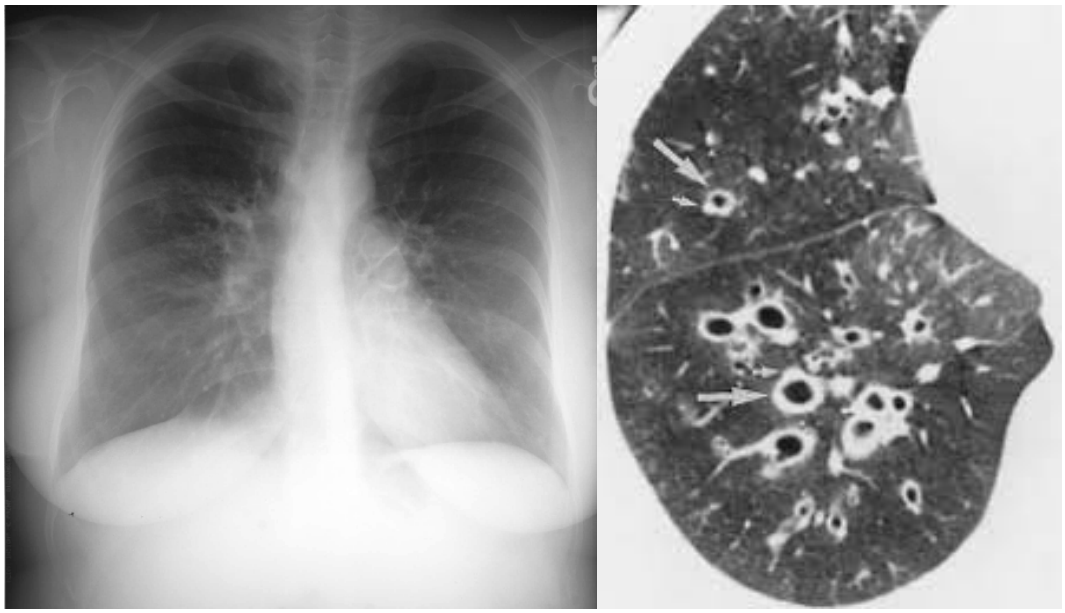


Figure 1: Serial chest HRCT scans. (A) During first acute exacerbation. (B) Following resolution of firs exacerbation showing peripheral reticular opacities. (C) During second exacerbation showing new ground-glass opacities.

PBL-2

A 55-year-old woman presents for evaluation of a chronic cough, productive of thick, yellow sputum that sometimes becomes blood-tinged. She has experienced recurrent episodes of fever associated with pleuritic chest pain. She states that she is embarrassed by the persistent, intractable nature of her cough and has been prescribed multiple courses of antibiotics. Over the last 5 years, she has developed shortness of breath with exertion. Her past medical history is significant for pneumonia as a child and sinus polyps during adulthood for which she has had surgery.



RESOURCE FOR LEARNING

Reference Books

- ROBBINS BASIC PATHOLOGY 8th ED
- JAWETZ, MELNICK & ADELBERG'S MEDICAL MICROBIOLOGY 25TH ED
- ROBBINS AND CORTAN PATHOLOGY BASIS OF DISEASE WITH SEARCHABLE FULL TEXTONLINE 8th ED
- ROBBINS AND CORTAN ATLAS OF PATHOLOGY 2nd ED.
- ROBBINS AND COTRAN REVIEW OF PATHOLOGY 3rd ED
- BRS PATHOLOGY
- CLINICAL PHARMACOLOGY BY KATZUNG
- RANGE AND DALE'S PHARMACOLOGY WITH ONLINE ACCESS 7th ED
- MCQs IN PHARMACOLOGY WITH EXPLANATORY ANSWER
- TEXT BOOK OF FORENSIC MEDICINE AND TOXICOLOGY BY NEGASH KUMAR.
- PARK'S TEXBOOK OF PREVENTIVE AND SOCIAL MEDICINE.
- JE PARK, ILYAS AND ANSARI.

Web Links

Following online medical dictionaries can be referred

www.nlm.nih.gov
www.medterms.com
www.bloodmed.com
www.online-medical-dictionary.org

AJK Medical College, Muzaffarabad

Schedule for RES-II (4th Year)
Week-1

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8 – 9 AM	**LGIS** Introduction to Module **Prof. Sarosh & Team**	**LGIS** ARDS **Maj. Dr. Sobia Irum**	**SKILL LAB** Chest Trauma **Dr. Raja Ejaz, Dr. Farzana, Dr. Naheed**	**SGD** Restrictive Lung Diseases Team-3 **Wrap-Up** **Prof. Anwar**	**LGIS** chest trauma **Dr. Farzana**
9-10 AM	**LGIS** Respiratory Congenital Anomalies **Dr. Naeem Ahmed**	**LGIS** Nasal Obstruction **Dr. Farooq**			**LGIS** Chest Radiography **Dr. Azeem,**
	Tea Break (10:00 – 10:30 AM)				
10.30–12:30	**Clinical Rotation**	**Clinical Rotation**	**Clinical Rotation**	**Clinical Rotation**	**PBL-1B** **Dr. Sarosh & Team 3**
12.30–1:30					**SDL**
	Lunch and Prayer Break (1:30–2:00PM)				
2:00-3:00	**PBL-1A** **Dr. Sarosh & Team-3**	**LGIS** Epidemiology of Pneumoconiosis **Brig(R) Ahmed Khan/Dr. Uzma**	**Skill Lab** ABGs **Dr. Mehmood** **SDL**	**SGD** Obstructive Airway Diseases **Team-3** **Wrap-up** **Dr. Sarosh**	**SDL**
3:00-4:00PM	**SDL**				

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Schedule for RES-II – (4th Year)

Week-2

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8 – 9 AM	**LGIS** Granulomatous Diseases **Dr. Sarosh**	**LGIS** Bronchiectasis **Dr. Rubina**	**LGIS** Pulmonary Malignancies **Dr. Sarosh**	**LGIS** Typical & Atypical Pneumonia **Dr. Munir**	**LGIS** Algorithm Approach of Breathlessness **Dr. Khalid Awan**
9-10 AM	**LGIS** Management of Tuberculosis **Dr. Bashir Trumbo**	**LGIS** Epidemiology & Preventive Measures of Tuberculosis **Brig(R) Ahmed Khan/Dr. Murtaza**	**LGIS** Prevention /Control of Malaria **Brig(R) Ahmed Khan**	**LGIS** Management of Lung Tumors **Prof. Adnan Mehraj**	**LGIS** Nasopharyngeal Diseases **Dr. Tehniat**
	Tea Break (10:00 – 10:30 AM)				
10.30–12:30	**Clinical Rotation**	**Clinical Rotation**	**Clinical Rotation**	**Clinical Rotation**	**PBL-2B** Dr. Munir & Team-3
12.30–1:30					**SDL**
	Lunch and Prayer Break (1:30–2:00PM)				
2:00-3:00	**LGIS** Epidemiology of Measles, Mumps **Dr. Batool Zahra/ Brig(R) Ahmed Khan**	**PBL-2A** **Dr. Munir & Team-3** **SDL**	**PRACTICAL** Lung Tumors **Team-3**	**LGIS** Epidemiology of, Rubella/ Small Pox Chicken Pox, Influenza, & diphtheria **Brig(R) Ahmed Khan & Team**	**DSL**
3:00-4:00PM	**SGD** Pleural Trauma **Team-3**				

Inquires & trouble shooting

Department of Medical Education,
AJK Medical College, Muzaffarabad, AJK, Pakistan
Email: ayub@ajkmc.edu.pk, DME@ajkmc.edu.pk
Tel: +92-5822-920527-8/808, 816