

JINNAH SINDH MEDICAL UNIVERSITY

	Spiral II
MODULE TITLE	Respiratory system- 2
INTRODUCTION	<p>Respiratory diseases like Asthma and Tuberculosis are still common in Pakistan. Along with these, oncological conditions are not unheard of and are a cause of grave concern. This module builds on Respiratory 1 in which students have learned the normal respiratory structures and functions. This module provides the learners with the abnormal functions and corrective measures that need to be taken in order to restore health and prevent illnesses.</p>
RATIONALE	<p>In order to understand the basis of respiratory system related disorders which the students of 3rd year MBBS will come across in their clinical postings, it is imperative that they have a firm grasp on the underlying mechanisms of the diseases and their treatment and prevention aspects.</p>
TARGET STUDENTS	Third year M.B.B.S., 2022
DURATION	4 weeks, June to July
MODULE OUTCOMES	<p>By the end of the module, students should be able to:</p> <ul style="list-style-type: none">• justify initial plans of management and prevention of common respiratory system-related disorders based on knowledge of Pathology, Pharmacology and Community Medicine.• discuss medico-legal aspects related to the respiratory system
DEPARTMENTS	<ol style="list-style-type: none">i. Community Medicineii. Forensic Medicine & Toxicologyiii. Pathology & Microbiologyiv. Pharmacology
OBJECTIVES	By the end of the module, students will be able to:

LECTURES

COMMUNITY MEDICINE

1. Introduction to Occupational health & Diseases

- Describe occupational health
- Classify occupational health diseases
- Discuss measures for prevention and control of occupational health diseases
- Describe Lead poisoning

2. Pneumoconioses and its prevention

- Define pneumoconioses
- List pneumoconioses diseases
- Discuss the control and prevention of pneumoconioses

3. Pulmonary tuberculosis and its prevention

- Discuss the causative organism of tuberculosis
- Explain why Tuberculosis remains a world-wide problem
- List Epidemiological Indices of tuberculosis
- Explain TB-DOTS Therapy
- Discuss Tuberculosis situation in Pakistan
- Discuss the control and prevention of tuberculosis

4. Asthma and its prevention

- Describe Asthma
- Explain the clinical features & diagnosis criteria of Asthma
- Discuss the control and prevention of Asthma

5. Chicken pox and its prevention

- Describe Chicken pox disease
- Describe the epidemiology, clinical features and diagnosis criteria of Chicken pox
- Discuss the control and prevention of Chicken pox

6. Influenza and its prevention

- Describe influenza
- Discuss the history of Spanish flu pandemic
- Describe the epidemiology, clinical features and diagnosis criteria of influenza
- Discuss the control and prevention of influenza

7. Diphtheria and its prevention

- Discuss the epidemiology of Diphtheria
- Explain the risk factors, consequences & clinical features of Diphtheria
- Discuss the control and prevention of Diphtheria

8. Measles and its prevention

- Describe the etiology, epidemiology and clinical features of measles
- Explain the diagnostic criteria of measles
- Discuss the control and prevention of measles

9. Pertussis and its prevention

- Describe the etiology, epidemiology and clinical features of pertussis
- Explain the diagnostic criteria of pertussis
- Discuss the control and prevention of pertussis

10. Air Pollution

- Discuss the situation of air pollution
- List the sources of air pollution
- Explain the effects of air pollution on health
- Discuss the concept of greenhouse effects
- Describe the concept of global warming and ozone depletion
- Discuss the methods to control air pollution

11. Pneumonia, SARS & COVID-19

- Define pneumonia

- Classify different types of pneumonia
- Explain the mode of transmission and predisposing factors of pneumonia
- Describe the measures for control and prevention of Pneumonia and SARS
- Describe COVID-19
- Discuss the epidemiology of COVID-19
- Explain clinical features of COVID-19
- Describe the measures for control and prevention of COVID-19

FORENSIC MEDICINE

1. Asphyxia I

- Define asphyxia
- Summarize the etiology, pathophysiology and classic signs of asphyxia
- Enumerate the different types of asphyxia and violent asphyxial deaths
- Classify tissue anoxia according to Gordon's classification
- List the different types of hanging
- Explain the autopsy findings and medicolegal importance of hanging
- Differentiate between ante-mortem and post-mortem hanging

2. Asphyxia II

- Diagnose strangulation, throttling, suffocation, smothering, gagging and choking based on scenarios
- Discuss the mechanism, diagnostic features, and autopsy findings of traumatic asphyxia

3. Asphyxia III

- Define the types, mechanism and postmortem findings of drowning
- Describe the causes of death due to drowning
- Highlight the importance of diatoms in deaths by drowning
- Define Sexual asphyxia (auto-erotic hanging)

4. Toxicology– Organophosphate insecticides poisoning

- List commonly used insecticides
- Classify organophosphate compounds
- Describe the mode of action, signs and symptoms, treatment, postmortem findings and medico legal

importance of organophosphate and Carbamate poisoning

5. Toxicology- Chloro group of insecticides (D.D.T.)

- Describe the mode of action, signs, symptoms, treatment and postmortem findings of DDT Poisoning

6. Spinal Poisons

- Describe the mode of action, signs and symptoms, treatment, postmortem findings and medico legal aspects of poisoning by Strychnine and other spinal poisons

7. Barbiturates and tranquillizers

- Describe the mode of action, signs and symptoms depending upon concentration in blood, treatment and postmortem findings of poisoning by Barbiturates and tranquillizers (therapeutic poisons)

PATHOLOGY & MICROBIOLOGY

1. Congenital Anomalies of respiratory system, Atelectasis, Pulmonary edema

- Define Atelectasis and Pulmonary edema
- List the types of congenital anomalies, Atelectasis and Pulmonary edema
- Describe the embryologic pathology, microscopic and clinical features of Congenital anomalies of Respiratory system
- Discuss the classification, pathogenesis, morphology, causes and clinical features of Atelectasis and Pulmonary edema
- Differentiate between pathogenesis of hemodynamic and micro vascular alveolar injury

2. Acute lung injury (ALI) and acute respiratory distress syndrome (ARDS)

- Define ARDS and ALI
- List the conditions associated with development of ARDS
- Discuss pathogenesis, morphological and clinical features of ARDS / ALI

3. Obstructive lung diseases I (emphysema, chronic bronchitis)

- Define emphysema and chronic bronchitis
- Classify emphysema
- Describe the various clinical forms of emphysema.

- Discuss the etiology, pathogenesis, morphology and clinical features of emphysema and chronic bronchitis

4. Obstructive lung diseases II (asthma, and bronchiectasis)

- Define asthma and bronchiectasis
- Classify asthma
- List the causes of asthma, and bronchiectasis
- Discuss the etiology, pathogenesis, morphology and clinical features of asthma, and bronchiectasis

5. Chronic Interstitial restrictive lung diseases

- Define restrictive diseases of lung (idiopathic pulmonary fibrosis, Nonspecific Interstitial Pneumonia, Cryptogenic Organizing Pneumonia, pneumoconioses and Pulmonary Involvement in Autoimmune Diseases)
- Classify restrictive diseases of lung
- Discuss the etiopathogenesis, morphology and clinical features of Chronic Interstitial restrictive lung diseases (idiopathic pulmonary fibrosis, Nonspecific Interstitial Pneumonia, Cryptogenic Organizing Pneumonia, pneumoconioses and Pulmonary Involvement in Autoimmune Diseases)

6. Pneumoconioses

- Define Pneumoconioses
- List the causative agents of Pneumoconioses
- Discuss the pathogenesis, morphology and clinical features of Pneumoconioses

7. Granulomatous diseases (Sarcoidosis, hypersensitivity pneumonitis, pulmonary eosinophilia, Smoking related interstitial diseases)

- Define granulomatous diseases (Sarcoidosis)
- Classify granulomatous diseases (Sarcoidosis)
- Discuss the pathogenesis, morphology and clinical features of Granulomatous diseases

8. Pulmonary Infections (Pneumonia)

- Define pneumonia
- Classify pneumonia. (community acquired pneumonia, hospital acquired pneumonia, healthcare

associated pneumonia, aspiration pneumonia, chronic pneumonia, necrotizing pneumonia and pneumonia in the immunocompromised host)

- Discuss the morphology, pathogenesis, clinical features and diagnosis of Pulmonary Infections (Pneumonia)
- Briefly discuss aspiration pneumonia and lung abscess

9. Pulmonary tuberculosis

- Define Pulmonary tuberculosis
- Discuss the morphology, pathogenesis, clinical features (primary, secondary latent and miliary) laboratory investigations of pulmonary tuberculosis.

10. Lung Tumors

- Describe lung tumors (Squamous cell carcinoma, small cell carcinoma, adenocarcinoma, large cell carcinoma)
- Classify lung tumors according to WHO
- Discuss the risk factors, pathogenesis, morphology, clinical features of lung tumors
- Briefly discuss the staging & grading of carcinoma.

11. Pleural pathology (pleural effusion, Pneumothorax, pleural tumors)

- Briefly discuss pleural effusion and pneumothorax
- Discuss the pathogenesis, morphology and clinical course of pleural tumors

12. Pulmonary vascular diseases

- Define pulmonary vascular diseases (pulmonary embolisms, hemorrhage, infarction, hypertension and diffuse pulmonary hemorrhage syndrome)
- List the risk factors of pulmonary vascular disease
- Discuss the pathogenesis, morphology and clinical features of pulmonary vascular disease

MICROBIOLOGY

13. classification of streptococci and Streptococcus Pneumoniae

- Discuss the classification of streptococci and important properties, transmission, epidemiology, & pathogenesis of Streptococcus pneumoniae

- Describe clinical findings and laboratory diagnosis of *Streptococcus pneumoniae*.
- Discuss treatment and prevention of *Streptococcus pneumoniae*.

14. Fungi Causing Pneumonia (*Coccidioides*, *Histoplasma*, *Blastomyces*, *Paracoccidioides*, *Aspergillus*, *Pneumocystis*, *Mucor* and *Rhizopus*)

- Discuss the properties of fungi causing systemic fungal diseases
- Discuss the process of transmission, pathogenesis, and clinical findings of these fungal infections
- Discuss the epidemiology of these fungal infections
- Discuss the laboratory diagnosis, treatment and prevention of fungi causing pneumonia

15. *Mycobacterium Tuberculosis*

- Discuss the important properties, transmission, epidemiology, & pathogenesis of *M. Tuberculosis* and *Mycobacterium Leprae*
- Describe clinical findings and laboratory diagnosis of *M. Tuberculosis* and *M. Leprae*
- Discuss treatment and prevention of *M. Tuberculosis* and *M. Leprae*

16. *Mycobacterium Leprae* and Atypical *Mycobacteria*

- Discuss the important properties, transmission, epidemiology, & pathogenesis of *Mycobacterium Leprae*
- Describe clinical findings and laboratory diagnosis of *M. Leprae*
- Discuss treatment and prevention of *M. Leprae*
- Briefly describe Atypical *Mycobacteria*

17. Gram positive rods (*Corynebacterium diphtheriae* and *Listeria monocytogenes*, *Bacillus* and *Clostridium*)

- Discuss the important properties, transmission, epidemiology, & pathogenesis of (*Corynebacterium diphtheriae* and *Listeria monocytogenes*, *Bacillus* and *Clostridium*)
- Describe the clinical findings and laboratory diagnosis of infections caused by these bacteria
- Discuss treatment and prevention of *Corynebacterium diphtheriae* and *Listeria monocytogenes*, *Bacillus* and *clostridium*

18. Gram negative rods (*Haemophilus*, *Bordetella*, *Legionella*)

- Discuss the important properties, transmission, epidemiology, & pathogenesis of Gram negative rods

- Describe clinical findings and laboratory diagnosis of Gram negative rods
- Discuss treatment and prevention of Gram negative rods

19. Respiratory viruses (Influenza and Parainfluenza, Respiratory Syncytial virus Coxsackie, Adenoviruses, SARS AND SARS II COVID 19)

- Discuss the important properties, transmission, epidemiology, & pathogenesis of respiratory virus.
- Describe replication cycle, clinical findings and laboratory diagnosis of respiratory virus
- Discuss treatment and prevention of respiratory virus
- Discuss SARS & SARS II (COVID 19)

20. Childhood viruses (Measles, Mumps, Rubella)

- Discuss the important properties, transmission, epidemiology, & pathogenesis of childhood viruses
- Describe replication cycle, clinical findings and laboratory diagnosis of childhood viruses
- Discuss treatment and prevention of childhood viruses

21. Respiratory virus Parainfluenza (adeno, Corona, rhino)

- Discuss the important properties, transmission, epidemiology, & pathogenesis of Parainfluenza virus
- Describe replication cycle, clinical findings and laboratory diagnosis of parainfluenza virus
- Discuss treatment and prevention of parainfluenza virus

22. Bacteria causing atypical pneumonia (nocardia, actinomycetes and mycoplasma)

- Define atypical pneumonia
- Discuss the important properties, pathogenesis of Actinomycetes and Mycoplasma
- Describe clinical findings and laboratory diagnosis of Actinomycetes and Mycoplasma
- Discuss treatment and prevention of Actinomycetes and Mycoplasma

PHARMACOLOGY

1. Drugs used in the treatment of Bronchial Asthma & COPD

- Classify drugs used in the treatment and prevention of bronchial asthma and COPD
- Discuss their basic and clinical pharmacology

2. Drug used in the treatment of Tuberculosis

- Classify anti-tuberculosis drugs
- Discuss the therapeutic classification of Anti-Tuberculosis Therapy (ATT) according to WHO
- Describe mode of action, toxicity and contraindications of ATT
- Describe the drugs used in multi-drug resistant tuberculosis
- Explain the drug management of extensive multi-drug resistant tuberculosis

3. Drug used in the treatment of Leprosy

- Classify anti-leprosy drugs.
- Describe the mode of action, pharmacokinetics, toxicity, contraindications and drug-drug interactions of anti-leprosy drugs

4. Histamine & Anti-Histamines

- Discuss the properties and role of histamine
- Classify anti-histamines
- Discuss their basic & clinical pharmacology

5. Anti-Tussives & Mucolytics (Expectorants)

- Describe the anti-tussives & mucolytic drugs
- Discuss their basic and clinical pharmacology.

6. Drug used in community acquired pneumonia

- Classify drugs used in community acquired pneumonia
- Explain the clinical pharmacology of drugs used in community acquired pneumonia

TUTORIALS

FORENSIC MEDICINE

1. Toxicology- Irrespirable /Asphyxiants gases I (CO₂ & Sewer gas poisoning)

- Describe the mode of action, signs and symptoms, treatment, postmortem findings and medico legal aspects of CO₂ & sewer gas poisoning

2. Toxicology- Irrespirable/Asphyxiants gases II (Carbon monoxide, Hydrogen sulphide and War

gases poisoning)

- List the sources of Carbon monoxide
- Describe the mode of action, signs and symptoms, treatment, postmortem findings and medico legal aspects of Carbon monoxide and hydrogen Sulphide poisoning
- Classify war gases
- Describe lacrimators and their treatment

3. Toxicology-Aluminum Phosphide & Paraquat poisoning

- List the sources of Aluminum phosphide and Paraquat
- Describe the mode of action, signs, symptoms, treatment, postmortem findings and medico legal aspects of Aluminum phosphide and Paraquat poisoning

4. Toxicology Naphthalene Poisoning

- Describe the mode of action, signs, symptoms, treatment, postmortem findings and medico legal aspects of Naphthalene poisoning

PHARMACOLOGY

1. Drugs used in the treatment of Bronchial Asthma & COPD

- Discuss the treatment of bronchial asthma and COPD.
- Discuss the basic and clinical pharmacology of drugs used in the treatment of bronchial asthma

2. Anti-Tuberculosis & Anti-Leprosy Drugs

- Discuss anti-tuberculosis and anti-leprosy drugs with regards to their basic and clinical pharmacology.

3. Anti-Tussives & Mucolytics (Expectorants)

- Discuss anti-tussives and mucolytic drugs.
- Explain the role of anti-tussives and mucolytic drugs in respiratory tract diseases.
- Discuss the basic and clinical pharmacology of anti-tussives and mucolytic drugs

PRACTICALS

PATHOLOGY

1. Histopathology of Chronic Obstructive Pulmonary Disease (COPD)

- Discuss the histopathology of Chronic Obstructive Pulmonary Disease

2. Histopathology of pneumonia

- Discuss the etiology and morphology of pneumonia.

3. Histopathology of Pulmonary Tuberculosis

- Discuss detailed morphology and pathogenesis of Pulmonary Tuberculosis

4. Pathology of lung tumors

- Discuss the etiology, morphology and manifestations of lung tumors.

5. Types of Hemolysis

- Discuss the types of hemolysis on blood agar

6. Acid Fast Staining

- Discuss the principle, procedure and result of acid fast staining

PHARMACOLOGY

1. Methods of Administration of drugs in treatment of bronchial Asthma

- Demonstrate the different methods of administration of drugs used in the treatment of bronchial asthma
- Discuss their clinical importance

2. Effects of Histamine and Anti-histamine/Salbutamol on isolated trachea of Rabbit

- Demonstrate the pharmacological action of histamine and anti-histamine drugs on isolated trachea of Rabbit
- Compare these actions with Salbutamol by using Power Lab System

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INTERNAL ASSESSMENT	<ul style="list-style-type: none">• Internal assessment will be according to JSMU policy. The details of internal assessment will be determined by the respective institutions.• Internal assessment carries 20% weightage in the final, end-of-year examination.
FINAL EXAMINATION	MCQs and OSPE
COURSE EVALUATION	Course will be evaluated through a feedback form which will be posted on the JSMU website

