Dow University of Health Sciences

Respiratory Module 2021

(RSP 1)

Semester II

First Year MBBS

FIVE YEAR CURRICULAR ORGANIZATION

<table>
<tr><th>Spiral</th><th>year</th><th colspan="4">Modules</th></tr>
<tr><td rowspan="4">First Spiral</td><td rowspan="2">I</td><td colspan="2">FND1- Foundation
Cell, Genetics & Cell Death
(Basics of Anatomy, Physiology, Biochemistry, Gen. Pathology, Gen. Pharmacology, Community Medicine & Behavioral Sciences,

9 Weeks</td><td colspan="2">HEM1- Blood Module
Immunity, Inflammation, Tissue repair, Antimicrobials & Neoplasia
9Week</td></tr>
<tr><td colspan="2">LCM1- Locomotion
Bones, Joints, Nerves & Muscles, 9weeks</td><td>RSP1- Respiratory System 6 weeks</td><td>CVS1- Cardiovascular System 4 weeks</td></tr>
<tr><td rowspan="2">II</td><td colspan="2">NEU1- Nervous System
8 weeks</td><td>HNN1- Head & Neck & Special
6 weeks</td><td>END1- Endocrinology
5weeks</td></tr>
<tr><td colspan="2">GIL 1-GIT and Liver
8 weeks</td><td>EXC1- Renal and Excretory System
5 weeks</td><td>REP1- Reproductive System 5 weeks</td></tr>
<tr><td rowspan="4">Second Spiral</td><td rowspan="2">III</td><td>IDD 1- Infectious diseases 5 weeks</td><td>HEM2- Hematology
5 weeks</td><td>RSP2- Respiratory System 5 weeks</td><td>CVS2- Cardiovascular System 5 weeks</td></tr>
<tr><td colspan="2">GIL 2-GIT and Liver (including Nutritional Disorders)
8weeks</td><td>EXC2- Renal & Excretory System
5 weeks</td><td>END2- Endocrinology
5 weeks</td></tr>
<tr><td rowspan="2">IV</td><td colspan="2">ORT2- Orthopedics, Rheumatology, Trauma
7 weeks</td><td>REP2- Reproductive System
8 Weeks</td><td colspan="2">PMR-Physical Medicine & Rehabilitation
DPS-Dermatology Plastic Surgery / Burns
GEN-Genetics
6 weeks</td></tr>
<tr><td colspan="2">NEU2- Neurosciences and Psychiatry
8 weeks</td><td>OPH / ENT*
4 weeks</td><td>ENT/OPH *
4 weeks</td></tr>
<tr><td>Third Spiral</td><td>V</td><td colspan="2">Clinical Rotation 9:30 to 3:00 (with Ambulatory, Emergency, Intensive care)
In Medicine, Pediatrics, Cardiology and Neurology units
▪ Lecture on problem based approach, twice a week
▪ Ward tutorial twice a week
▪ Student research presentation once a week</td><td colspan="2">Clinical Rotation 9:30 to 3:00
(Inpatient, Ambulatory, Emergency, Intensive care and Operation Theatres)
In Surgery, Gynecology & Obstetrics, Orthopedics and Neurosurgery.
▪ Lecture on problem based approach, twice a week
▪ Ward tutorial twice a week
▪ Student research presentation once a week</td></tr>
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Rationale:

In our community there is a high prevalence of respiratory diseases particularly in children, where the leading cause of morbidity and mortality is ARI and pneumonia. To be able to manage these, the basis of oxygen administration and artificial ventilation should be taught in earlier years. The understanding of air flow dynamics will enable the student to understand the diseases like asthma, chronic bronchitis and their remedies. At the same time the diseases related to smoking like lung cancer and chronic bronchitis are also on the rise. A firm understanding of the respiratory system will enable the student to prevent such diseases through spreading relevant health education messages. The student training should also include mechanism and uses of inhalers.

Terminal Objectives:

By the end of respiratory module, the students will be able to:

1. Describe the normal and abnormal structures and functions of respiratory system.
2. Interpret the biochemical changes in the body related to the respiratory system with reference to some common respiratory disorders.
3. Describe normal changes that occur in respiratory system functioning from infancy to old age.
4. Describe the pathophysiology and types of infective respiratory disorders
5. Explain obstructive pathologies involving respiratory system
6. Identify role of respiratory system in controlling acid-base balance
7. Take history and perform a satisfactory physical examination of the respiratory system.

LEARNING OBJECTIVES OF THE MODULE

1. **Describe the thoracic cavity development, divisions and relations of constituent structures.**
2. **Discuss the role of thoracic skeleton in respiration.**
3. **Explain the developmental and structural anatomy related to respiratory system and associated anomalies.**
4. **Explain Respiration in relation to (A: Anatomical movements, B: Physiological mechanism, C: Biochemical changes)**
5. **Recognize the importance of lung volumes and capacities for breathing and diagnosis of disorders.**
6. **Discuss the mechanism of gaseous exchange, transport and role in metabolism.**
7. **Compare regular breathing acclimatization in normal and abnormal body states.**
8. **Recognize the common signs and symptoms of respiratory disorders like cough, hemoptysis, SOB, etc.**
9. **Describe the Pathophysiology of disorders of respiratory system: ARDS, Pulmonary embolism, COPD / Asthma**
10. **Enumerate the important and common disorders of the respiratory tract. (Enlist common infections related to upper & lower respiratory tract (URI, LRI))**
11. **Recognize risk factors, causes, pathogenesis and preventive measures(if any) of various lung diseases**

MODULE CONTENTS:

ANATOMY

Gross Anatomy:

1. RSP 1Ang 1 General description of upper respiratory tract & lower respiratory tract
2. RSP 1Ang 2 Intro to A.N.S (sympathetic and parasympathetic)
3. RSP 1Ang 3 Overview of Thorax (Skeleton, wall, Outlet, inlet)
4. RSP 1Ang 4 Gross Features of sternum
5. RSP 1Ang 5 General Features + attachment of typical Ribs
6. RSP 1Ang 6 General Features + attachment of Atypical Ribs
7. RSP 1Ang 7 General Features of vertebrae+ Curvatures of vertebral column
8. RSP 1Ang 8 Thoracic vertebrae (typical + atypical)
9. RSP 1Ang 9 Thoracic cavity, Division & boundaries of mediastinum & Joints of thoracic cage
10. RSP 1Ang 10 Thoracic inlet- relations & cross – sectional Anatomy
11. RSP 1Ang 11 Thoracic muscles, wall & Inter costal spaces
12. RSP 1Ang 12 Diaphragm (Thoracic outlet)
13. RSP 1Ang 13 Thoracic Movements with respiration (including involvement of abdominal wall)
14. RSP 1Ang 14 Pleura
15. RSP 1Ang 15 Gross Lungs
16. RSP 1Ang 16 Vasculature of Lungs- bronchial & pulmonary
17. RSP 1Ang 17 Superior mediastinum and its contents
18. RSP 1Ang 18 Contents of Anterior Mediastinum (Thymus) +Posterior Mediastinum (Thoracic Aorta ,Oesophagus, Azygous vein)
19. RSP 1Ang 19 Thoracic Sympathetic Trunk,Phrenic and Vagus nerve,Thoracic duct
20. RSP 1Ang 20 Lymphatics of Thorax

Anatomy Histology:

1. RSP 1 Anh1 Respiratory epithelium+Larynx & Trachea
2. RSP 1 Anh2 Histology of Lungs
3. RSP 1 Anh 3 Histology of alveolar capillary membrane + general description of tissue arrangement in hollow viscera
4. RSP 1 Anh 4 Respiratory epithelium + trachea (Practical)
5. RSP 1 Anh 5 Lungs (Practical)

Anatomy Embryology:

1. RSP 1 Ane1 Development of respiratory system & Developmental anomalies of respiratory system
2. RSP 1 Ane2 Development of ribs & vertebrae

PHYSIOLOGY

1. **RSP 1Phy 1 Functional organization of respiratory system**
2. **RSP 1Phy 2 Mechanics of respiration**
3. **RSP 1Phy 3 Surfactant and Lung Compliance**
4. **RSP 1Phy 4 Diffusion of gases through respiratory membrane**
5. **RSP 1Phy 5 Lung volume and capacities + PFTs**
6. **RSP 1Phy 6 Pulmonary circulation V/Q RELATIONSHIP**
7. **RSP 1Phy 7 Transport of O2 in blood and O2-Hb dissociation curve**
8. **RSP 1Phy 8 Transport of CO2 in blood**
9. **RSP 1Phy 9 Regulation of respiration (Chemical & Neural)**
10. **RSP 1Phy 10 Hypoxia & its types**
11. **RSP 1Phy 11 Respiratory adjustment to exercise, high altitude and deep sea**
12. **RSP 1Phy 12 Introduction to Power Lab with respect to respiration (Practical)**
13. **RSP 1Phy 13 To record the normal rate and pattern of breathing and to examine the effects of breath holding on respiration(Practical)**
14. **RSP 1Phy 14 To record the effect of voluntary hyperventilation on breath holding & the recovery of normal breathing rhythm (Practical)**
15. **RSP 1Phy 15 To determine the Lung Volume & Capacities by spirometry (Practical)**

BIOCHEMISTRY

1. **RSP 1Bio 1 Chemistry of inflammatory mediators in respiratory disorders**
2. **RSP 1Bio 2 Role of Buffers in Hydrogen Ions Homeostasis**
3. **RSP 1Bio 3 Role of respiratory system for Acidosis**
4. **RSP 1Bio 4 Role of respiratory system for Alkalosis + Acid Base Balance**
5. **RSP 1Bio 5 Metabolism of Phospholipids and its Role in ARDS**
6. **RSP 1Bio 6 Determination of pH (Tutorial)**
7. **RSP 1Bio 7 Interpretation of ABG's (Tutorial)**

PATHOLOGY

1. **RSP 1Pth 1 Congenital anomalies, Atelactasis, Pneumothorax & Pleural effusion**
2. **RSP 1Pth 2 Acute Respiratory Distress Syndrome (ARDS) + Pulmonary Oedema**
3. **RSP 1Pth 3 COPD I ,Emphysema**
4. **RSP 1Pth 4 COPD II ,Bronchiectasis ,Chronic Bronchitis**
5. **RSP 1Pth 5 COPD III Asthma**
6. **RSP 1Pth 6 Diseases of Vascular origin**
7. **RSP 1Pth 7 Pulmonary infections - classification of pneumonia, differences between local and bronchopneumonia**
8. **RSP 1Pth 8 Pathology of Tuberculosis**
9. **RSP 1Pth 9 Microscopic features of pneumonia (Practical)**
10. **RSP 1Pth 10 Microscopic features of Asthma, Emphysema, Bronchitis & Bronchiectasis (Practical)**
11. **RSP 1Pth 11 Microscopic features of Tuberculosis (Practical)**

Microbiology

1. RSP 1 Mic1 **Common pathogens causing community acquired pneumonia (typical and atypical)**
2. RSP 1 Mic2 **Zeihl Nelson Staining (Practical)**

COMMUNITY MEDICINE

1. RSP 1 Com 1 **Acute respiratory tract infections**
2. RSP 1 Com 2 **Effects of smoking on community**
3. RSP 1 Com 3 **Asthma**
4. RSP 1 Com 4 **Tuberculosis**

RADIOLOGY

1. RSP 1 Rad 1 **Normal respiratory structure on chest radiograph**
2. RSP 1 Rad 2 **CT Scan related to Respiratory system**

Medicine

1. RSP 1 Med 1 **Pulmonary function test**
2. RSP 1 Med 2 **ABG's**
3. RSP 1 Med 3 **Lab investigation and interpretation for respiratory status**
4. RSP 1 Med 4 **Signs & symptoms & Clinical Examination of respiratory system**

Behavioral Sciences

1. RSP 1 Beh 1 **Doctor Patient Relationship**
2. RSP 1 Beh 2 **Communication Skills**

Skill Lab and Digital Lab

1. RSP 1 Skl **Introduction to respiratory system. (Auscultation of Lungs**

CBL

1. RSP 1 Cbl1 **COPD / Asthma**
2. RSP 1 Cbl2 **Pneumonia**
3. RSP 1 Cbl3 **Tuberculosis**
4. RSP 1 Cbl4 **Pulmonary embolism**

LEARNING OBJECTIVE OF SKILL LAB CURRICULUM

I. Introduction To Respiratory System Examination:

INTRODUCTION/RATIONALE: Respiratory system examination is performed as an integral part of physical examination, or when a patient presents with respiratory problems (for example: shortness of breath, cough or chest pain).

LEARNING OBJECTIVES: At the end of the session students should be:-

- Familiar with the correct method of inspection, palpation and percussion of chest.
  To demonstrate correct technique of auscultation of chest

CASE BASED LEARNING

CBL 1:

- Enlist different types of COPDs.
- Explain different lung capacities and volumes.
- Interpret the effect of bronchodilators on lung volumes in a obstructive scenario.
- Describe different treatment options for the given pathology.

CBL 2:

- Define pneumonia?
- List the pathogens known to be causative agents of pneumonia?
- Explain the pathogenic mechanism of pneumonia?
- Describe the findings of lung consolidationand discus its clinical implication?
- Enlist the complications of pneumonia?
- Describe the clinical course of pneumonia?

CBL 3:

- Identify the patient having tuberculosis
- Describe the pathophysiology of the given pathology
- Interpret different types of tuberculosis
- Define the management for the given scenario.

CBL 4:

- To learn types & mechanisms of hypoxia
- To learn common causes of sudden onset of Chest pain
- To learn common causes of acute shortness of breath
- To learn mechanism of hypoxia responsible for acute pulmonary embolism

ASSESSMENT PLAN

	WEIGHTAGE
ANNUAL EXAM	80%
MODULE EXAM (Internal Evaluation)	
Theory	10%
Practical	10%

CREDIT HOURS RESPIRATION MODULE	
RESPIRATION	4.5

CONTACT HOURS

Discipline	Contact Hours
Anatomy	28
Physiology	16.5
Biochemistry	08
Pathology	12.5
Community Medicine	04
Behavioral Sciences	02
Radiology	02
Microbiology	2.5
CBL	06
Skill Lab	1.5
Medicine	04

BOOKS

ANATOMY

- **CLINICALLY ORIENTED ANATOMY**
  KEITH.L.MOORE, Arthur F. Dalley, Anne M.R. Agur
  7th or Latest EDITION

- **GRAY'S ANATOMY FOR STUDENTS**
  Drake & Vogl & Mitchell
  3rd or Latest EDITION

- **CLINICAL ANATOMY BY REGIONS (REFERENCE BOOK)**
  Richard S. SNELL
  9th EDITION

- **LAST'S ANATOMY: REGIONAL & APPLIED (REFERENCE BOOK)**
  Chummy S. Sinnatamby
  12th or Latest EDITION

- **ATLAS OF HUMAN ANATOMY**
  FRANK H.NETTER
  6th EDITION

EMBRYOLOGY

- **LANGMAN'S MEDICAL EMBRYOLOGY**
  T.W.SADLER
  13th EDITION

- **THE DEVELOPING HUMAN CLINICALLY ORIENTED EMBRYOLOGY (REFERENCE BOOK)**
  MOORE & PERSAUD & TORCHIA
  10th EDITION

HISTOLOGY

- **MEDICAL HISTOLOGY**
  LAIQ HUSSAIN SIDDIQUI
  5TH or Latest EDITION

- **WHEATERS FUNCTIONAL HISTOLOGY**
  BARBARA YOUNG
  5th EDITION

- **BASIC HISTOLOGY(TEXT AND ATLAS) (REFERENCE BOOK)**
  LUIZ JUNQUEIRA, JOSE CARNEIRO
  11th or Latest EDITION

PHYSIOLOGY

- **GUYTON AND HALL TEXTBOOK OF MEDICAL PHYSIOLOGY**
  GUYTON AND HALL
  13th EDITION
- **GANONGS REVIEW OF MEDICAL PHYSIOLOGY**
  25TH EDITION

BIOCHEMISTRY

- **LIPPINCOTT'S ILLUSTRATED REVIEWS SERIES**
  DENISE R. FERRIER
  6th EDITION

- **HARPERS ILLUSTRATED BIOCHEMISTRY (REFERENCE BOOK)**
  VICTOR RODWELL, DAVID BENDER, KATHLEEN M. BOTHAM, PETER J. KENNELLY, P. ANTHONY WEIL
  28th EDITION

PATHOLOGY

- **ROBBINS BASIC PATHOLOGY**
  KUMAR & ABBAS
  9TH EDITION

- **ROBBINS & COTRAN PATHOLOGIC BASIS OF DISEASE (REFERENCE BOOK)**
  KUMAR & ABBAS & ASTER
  9th EDITION

COMMUNITY MEDICINE

- **PUBLIC HEALTH AND COMMUNITY MEDICINE**
  SHAH, ILYAS, ANSARI
  7th EDITION

MICROBIOLOGY

- **REVIEW OF MEDICAL MICROBIOLOGY AND IMMUNOLOGY**
  WARREN LEWINSON
  14th EDITION

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