

KING SAUD UNIVERSITY COLLEGE OF MEDICINE

WEEK 1 – RESPIRATORY BLOCK A (Male)

Week (1) Starting:

20/2/2010 (6/3/1431H)

CHAIR PERSON : Dr.Sami Al-Nassar

CO-CHAIR: Prof.Abdulmajeed Kambal

Saturday	Sunday	Monday	Tuesday	Wednesday
8:00 - 9:00 am Functions and Organization of the Respiratory System(Phys) Dr. Tariq	8:00-9:30am Small Group Discussion	8:00 - 9:00 am Histology of the Nasal Cavity, Larynx and Trachea Dr.Ali Mohammed	8:00 - 9:00am Small Group Discussion	8:00 - 9:00 am Chronic Obstructive Airways Diseases (Path) Dr.Ammar AL-Rikabi
9:00 - 10:00 am Muscles involved in respiration Dr.Ahamed Fathallah	9:30- 11:00am Independent Learning	9:00 - 10:00 am (Practical) Histology of the Nasal Cavity, Larynx and Trachea Room 122 1st Floor	9:00 - 10:30 am Independent Learning	9:00- 10:30 am (Practical) Chronic Obstructive Airways Diseases Dr.Ammar AL-Rikabi Dr.Amer Al-Shafi Pathology Dept. Student Lab Room 051142
10:00 - 11:00am Atopy , Allergic Disease and Anaphylaxis (Immunology) Prof.Gad El-Rab	11:00 -12:00am Mechanism of Breathing (Phys) Dr. Tariq	10:00 - 11:00am Respiratory Ventilation (Phys1) Dr. Tariq	10:30 - 12:00pm Nasal Cavity, Larynx and Trachea Dr.Essam	10:30 - 12:00pm Pharmacological Treatment of Asthma and COPD (2) Prof. Al-Haider
11:00- 12:00 pm Bronchial Asthma(Path) Dr.Ammar AL-Rikabi		11:00 - 12:00 Pharmacological Treatment of Asthma and COPD (1) Prof. Al-Haider		
Lunch	Lunch	Lunch	Lunch	Lunch
1:00 - 3:00 pm (Practical) Thoracic wall , Intercostals Space	1:00 -3:00pm Salam	1:00 - 3:00 pm Independent Learning	1:00 - 3:00 pm (Practical) Nasal Cavity, Larynx and Trachea Room 118 1st Floor	1:00-300pm Salam

LECTURE THEATER:

Room No. 2141- Level 2- Seat Cap.153

**KING SAUD UNIVERSITY
COLLEGE OF MEDICINE**

WEEK 2 – RESPIRATORY BLOCK A (Male)				
Week (2) Starting: 27/2/2010 (13/3/1431H)				
CHAIR PERSON : Dr.Sami Al-Nassar				
CO-CHAIR: Prof.Abdulmajeed Kambal				
Saturday	Sunday	Monday	Tuesday	Wednesday
8:00 - 9:00 am Development of Larynx, Trachea, Bronchi Dr.Mojahed	8:00 - 9:30 am Small Group Discussion	8:00 - 9:00 am Respiratory Ventilation (Phys 2) Dr. Tariq	8:00 - 9:30am Small Group Discussion	8:00 - 9:00 am Oxygen Transport Carbon Dioxide Transport (Phys) Dr. Tariq
9:00 - 10:00 am Lung and Pleura Dr.Saeed	9:30 – 11:00 am (Practical) History taking & principles of Respiratory examination Group (1) Medical_education department, skills lab., level 2 & 3	9:00 - 10:00am Mediastinum Dr.Saeed	9:30 – 10:30am Histology of the Lung(Anatomy)	9:00 - 10:00 am Alveolar-Arterial Equation (Phys) Dr. Tariq
10:00 - 11:00am Fatty acid oxidation Dr.Sherif Salih	11:00 - 12:00 pm Tuberculosis (Micro) Prof . KAMBAL	10:00 - 11:00am Utilization of ketone bodies Dr.Sherif Salih	10:30 - 12:00pm (Practical) History taking & principles of Respiratory examination Group (2) Medical_education department, skills lab., level 2 & 3	10:00 - 11:00am Tuberculosis Treatment (Microbiology) Prof . KAMBAL
11:00- 12:00 pm Immunology of T.B (1) Prof.Gad El-Rab		11:00- 12:00pm Gas Transfer (Phys) (2) Dr. Tariq		11:00- 12:00pm Drugs for Treatment of T.B (1) Dr.Saeed
Lunch	Lunch	Lunch	Lunch	Lunch
1:00 - 3:00 pm (Practical) Lung and pleura	1:00 - 3:00 pm Salam	1:00 - 3:00 pm (Practical) Mediastinum	1:00 - 3:00 pm (Practical) Histology of the Lung Room 122 1st Floor	1:00 - 3:00 pm Salam

KING SAUD UNIVERSITY COLLEGE OF MEDICINE

WEEK 3 – RESPIRATORY BLOCK A (Male)

Week (3) Starting:

6/3/2010 (20/3/1431H)

CHAIR PERSON : Dr.Sami Al-Nassar

CO-CHAIR: Prof.Abdulmajeed Kambal

Saturday	Sunday	Monday	Tuesday	Wednesday
8:00 - 9:00am Alveolar-Arterial Equation (Phys) Dr. Tariq	8:00 - 9:30 am Small Group Discussion	8:00 - 9:00am Preferential utilization of energy by tissues Dr.Azhar	8:00 - 9:30 am Small Group Discussion	8:00 - 9:00 am Effect of Low and High Gas Pressure on the Body (Physiology) Dr. Tariq
9:00 - 10:00 am Restrictive Lung Diseases (Path) Dr.Ammar AL-Rikabi	9:30 – 10:30 am Independent Learning	9:00 - 11:00am (Practical) Microbiology (Staph and Strep Infections)	9:30 – 11:00am Independent Learning	9:00 - 10:00 am Cancers of the Lung (1) (Path) Dr.Ammar AL-Rikabi
10:00 - 11:00am Viral Infection of the Respiratory Tract(Influenza, Adenoviruses) Dr M. Arif	10:30 - 12:00am Respiratory tract Infections (1) (Pharmacology) Prof. Al-Humayyd	Dr Ali Somily/ Dr Al-Khattaf	11:00 - 12:00 am Control of Breathing (Phys) Dr. Tariq	10:00 - 11:00am Pulmonary Infections (Path) Dr.Ammar AL-Rikabi
11:00- 12:00pm Bacteria Causing Lower Respiratory Tract Infection Dr Ali Somily		11:00- 12:00pm Bacteria Causing Upper Respiratory Tract Infection Dr. Ali Somily		11:00- 12:00pm Respiratory Tract Infection (2) (Pharma) Prof. Al-Humayyd
Lunch	Lunch	Lunch	Lunch	Lunch
1:00 - 3:00 pm (Practical) Restrictive lung Diseases(Path - Dr.Ammar AL-Rikabi Dr.Amer Al-Shafi Pathology Dept. Student Lab Room 051142	1:00 -3:00 pm Salam	1:00 - 2:00 pm Respiratory Chain Dr.Azhar 2:00 - 3:00 pm Candidiasis (Micro) Prof. Saleh Al- Hedaithy	1:00 - 3:00 pm (Practical) Lung volumes and Capacity Student Spirometry	1:00 -3:00 pm Salam

➤ **Thursday: (11/3/2010) (25/3/1431H)**

Mid-Exam

10:00am-12:00pm

at the M1 and M2 and L1 and L2 and A Halls and B Halls

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WEEK 4 – RESPIRATORY BLOCK A (Male)

Week (4) Starting:

13/3/2010 (27/3/1431H)

CHAIR PERSON : Dr.Sami Al-Nassar

CO-CHAIR: Prof.Abdulmajeed Kambal

Saturday	Sunday	Monday	Tuesday	Wednesday
8:00 – 9:00 am Effect of Exercise on the Respiratory System Dr. Tariq	8:00 ~ 9:30am Small Group Discussion	8:00 ~ 9:00 am Drugs for Treatment of T.B (2) Dr.Saeed	8:00 ~ 9:30am Small Group Discussion	8:00 ~ 9:00 am Pharmacological Treatment of Acute and Chronic Rhinitis and Cough(2) Dr.Saeed
9:00 ~ 10:00 am Cancers of the Lung (2) (Path) Dr.Ammar AL-Rikabi	9:30 – 11:00 am Independent Learning	9:00 ~ 10:00am Radiological Anatomy of the Chest (1) Dr.Essam	9:30 – 11:00am Independent Learning	9:00 ~ 10:00 am Diagnosis of Type I Allergy Prof.Gad El-Rab
10:00 ~ 11:00am Phospholipids of clinical significance(1) Dr.Azhar	11:00- 12:00 pm Pharmacological Treatment of Acute and Chronic rhinitis and Cough (1) Dr.Saeed	10:00 ~ 11:00am Globular proteins : hemoglobin and myoglobin (Bio) Dr.Waheed	11:00 ~ 12:00 am Parameters for Measuring Work Capacity (Phys) Dr. Tariq	10:00 ~ 11:00am Globular proteins : hemoglobin and myoglobin 2 (Bio) Dr.Waheed
11:00- 12:00pm Phosphatidylinositol and phospholipases (2) Dr.Azhar		11:00- 12:00pm Respiratory Fungal Infection (Aspergillosis) Prof. Saleh Al-Hedaithy		11:00- 12:00pm Independent Learning
Lunch	Lunch	Lunch	Lunch	Lunch
1:00 ~ 3:00 pm (Practical) Cancers of the lung Dr.Ammar AL-Rikabi Dr.Amer Al-Shafi	1:00 ~ 3:00 pm Salam	1:00 ~ 3:00 pm Skills Lab (System Examination Respiratory)	1:00 ~ 3:00 pm (Practical) Dynamic Spirometry Room 2149 2 nd Floor Room 3149 3 rd Floor	1:00 ~ 3:00 pm Salam

LECTURE THEATER :

Room No. 2141- Level 2- Seat Cap.153

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BIOCHEMISTRY

Respiratory: (4 weeks)

- 1. ATP production(3)**
 - Fatty acid oxidation
 - Utilization of ketone bodies
 - Preferential utilization of energy by tissues
- 2. Respiratory chain(1)**
- 3. Phospholipids (2)**
 - Phospholipids of clinical significance
 - Phosphatidylinositol and phospholipases
- 4. Globular proteins: Hemoglobin and myoglobin (2)**

ANATOMY

- 1. Muscles involved in respiration**
- 2. Nasal Cavity.Larynx and Trachea**
- 3. Lung and Pleura**
- 4. Meduastinum**

Topics of Histology

- 1. Histology of the Nasal Cavity, Larynx and Trachea**
- 2. Histology of the Lung**

Topics of Embryology

- 1. Development of Larynx, Trachea and bronchi**

PHARMACOLOGY

Pharmacotherapeutics of Pulmonary Disorders: 8 hours

1. Pharmacological treatment of Asthma and COPD: (4)

Discussion of the ANS Pharmacology of the Respiratory tract is pivotal before starting especially the foundation course is ANS Pharmacology-Free. Histamine and Leukotrienes are two main autacoids which are better briefly explained before starting. Therefore the general objectives would be.

- Adrenergic and Cholinergic Molecular Targets in Respiratory Airway
- Histological and Leukotrienes Pharmacology
- What are the main problems of concern to be pharmacologically targeted?
- Pharmacological Treatment, Strategies and Goals
- Main Treatment Modalities in Asthma:
 - Beta 2 Adrenergic Agonists
 - AntiCholinergic Agents
 - Corticosteroids, Inhalation vs. Systemic
- Alternative Pharmacologic Treatment
 - Methylxanthines
 - Mast Cell Stabilizers
 - Leukotriene Modifiers

Monoclonal Antibody Therapy

Combinations

Future Potential Therapies (PDE-IV Inhibitors?)

At the end, Asthma Classes according to NIH would be briefly discussed and drugs allocated into different categories to make a link with coming therapeutic course

2. Pharmacological Treatment of acute and Chronic Rhinitis and Cough (2)

Refer to applied physiology and anatomy of the nose as a start point

What are the main concerns to be pharmacologically targeted?

Pharmacological Treatment Strategies and Goals

Main treatment Modalities in Rhinitis:

- Antihistamine Drugs
- Nasal vs. Oral Antihistamines
- Cromolyn Therapy
- Intranasal Corticosteroids
- Leukotriene Modifiers
- Subcutaneous Immunotherapy (SIT)

Cough Treatment

- Mucokinetic Agent
- Mucolytic therapy
- Opioid and Non-Opioid Antitussives
- Local acting Antitussives; Demulcents, Local Anesthetic and steam Aerosols

3. Respiratory Tract Infections: (2) (Integrated with Microbiology)

Bronchial Infections Treatment

Pneumonia Treatment

Different types of Pneumonia

Chemotherapy Treatment in Pneumonia

4. Tuberculosis Treatment (1)

PHYSIOLOGY

Learning Objectives.

Lecture 1: Functions and Organization of the Respiratory System

By the end of this lecture the Students should be able to:-

- 1- Understand the difference between internal and external respiration.
- 2- Describe the structures and functions of the conductive and respiratory zones.
- 3- Understand functions of the respiratory system, including non- respiratory functions, like clearance mechanism by mucus and cilia, production of surfactant and converting enzyme.

Lecture 2: Mechanics of breathing

By the end of this lecture the students should be able to:

- 1- List the muscles of respiration and describe their roles during inspiration and expiration.
- 2- Understand the importance of the following pressures in respiration:
Atmospheric, alveolar, intrapleural, and transpulmonary
- 3- Explain why intrapleural pressure is always subatmospheric under normal conditions, and the significance of the thin layer of the intrapleural fluid surrounding the lung.
- 4- Describe pneumothorax.
- 5- Describe the pressure and volume relationships in a single respiratory cycle.
- 6- Define lung compliance and list the determinants of compliance.
- 7- Describe the physiological significance of surfactant and provide an example of abnormal lung function due to a deficiency of surfactant.

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COLLEGE OF MEDICINE

Lectures 3 & 4: Respiratory ventilation

By the end of these lectures the students should be able to: -

- 1- Define the various Lung Volumes and capacities and provide typical values for each.
- 2- Define ventilation rate, their typical values, and their measurement.
- 3- Describe FEV_{1.0} and its role in differentiating obstructive and restrictive lung diseases
- 4- Understand air movement and airway resistance:
Definition, determinants, role of autonomic nervous system and mechanical factors
- 5- Describe the types of dead space. State a volume for the anatomical dead space.
- 6- Define the term minute ventilation and state a typical value.
- 7- Distinguish minute ventilation from alveolar ventilation.
- 8- Understand the work of breathing

Lecture 5: Gas Transfer

By the end of this lecture the students should be able to: -

- 1- Define partial pressure of a gas. Describe how partial pressure of a gas is influenced by altitude.
- 2- Understand that the pressure exerted by each gas in a mixture of gases is independent of the pressure exerted by the other gases (Dalton's Law)
- 3- Understand that gases in a liquid diffuse from higher partial pressure to lower partial pressure (Henry's Law)
- 4- Describe the factors that determine the concentration of a gas in a liquid.
- 5- Describe the components of the alveolar-capillary membrane (i.e., what does a molecule of gas pass through).
- 6- Knew the various factors determining gas transfer: -
Surface area, thickness, partial pressure difference, and diffusion coefficient of gas.

7- State the partial pressures of oxygen and Carbon dioxide in the atmosphere, alveolar gas, at the end of the pulmonary capillary, in systemic capillaries, and at the beginning of a pulmonary capillary.

Lecture 6: Oxygen and Carbon dioxide Transport

By the end of this lecture the students should be able to: -

- 1- Understand the forms of oxygen transport in the blood, the importance of each form and,
- 2- Describe: -
 - a- The relationship between PO_2 and % saturation of hemoglobin with oxygen (Oxygen- hemoglobin dissociation curve), and the significance of the shape of this relationship
 - b- How DPG, temperature, H^+ ions and PCO_2 affect affinity of O_2 for Hemoglobin and the physiological importance of these effects.
- 3- Differentiate between O_2 capacity, O_2 content and O_2 saturation.
- 4- Define the P_{50} and its significance.
- 5- Know the significance of fetal Hb and adult myoglobin.
- 6- Describe the three forms of Carbon dioxide that are transported in the blood, and the chloride shift.
- 7- Describe the role of the enzyme carbonic anhydrase, and the CO_2 dissociation curve.
- 8- Describe how H^+ is transported in the blood.
- 9- Define respiratory acidosis and respiratory alkalosis, and explain how these are related to hypoventilation and hyperventilation respectively.
- 10- Enumerate the differences between the dissociation curves for O_2 and CO_2 .

Lecture 7: Control of breathing

By the end of this lecture the students should be able to: -

- 1- Understand the role of the medulla oblongata in determining the basic pattern of respiratory activity.
- 2- Describe the pacemaker activity of the medullary inspiratory neurons.
- 3- List some factors that can modify the basic breathing pattern like e.g.
 - a- The Hering-Breuer reflexes, b- The proprioceptor reflexes, and c- The protective reflexes, like the irritant, and the J-receptors.
- 4- Understand the respiratory consequences of changing PO₂, PCO₂, and pH.

- 5- Describe the locations and roles of the peripheral and central chemoreceptors.
- 6- Compare and contrast metabolic and respiratory acidosis and metabolic and respiratory alkalosis.

Lecture 8 & 9: Alveolar - Arterial equilibration

By the end of this lecture the students should be:-

- 1-Define hypoxia and list its various causes.

- 2-Define hypo and hyper-ventilation in terms of arterial PCO₂ and PO₂.

- 3 Define cyanosis

- 4-Understand regional variations in alveolar ventilation and blood flow.

- 5-List causes of abnormal ventilation/perfusion (V_e /Q) ratios.

Lecture 10: Effects of low and high gas pressure on the body

By the end of this lecture the students should be able to: -

- 1-Describe the effects of exposure to low and high barometric pressures on the body.

- 2- Describe the body acclimatization to low barometric pressure.

- 3-Define decompression sickness and explain how it can be avoided.

- 4-Understand the effects of high nitrogen pressure, and nitrogen narcosis.

Lecture 11: Effects of exercise on the respiratory system.

By the end of this lecture the students should be able to: -

- 1-Understand the difference between dynamic and isometric exercise.
- 1- Describe the effects of moderate and severe exercise on oxygen consumption, and ventilation volumes.
- 2-Describe the effects of exercise on arterial PO₂, PCO₂ and H⁺ ions.
- 3- Define the diffusing capacity of the respiratory membrane, and its typical values at rest, and explain its changes in exercise.
- 4-Explain causes of hyperventilation in exercise.

Lecture 12: Parameters for measuring work capacity.

By the end of this lecture the students should be able to: -

- 1-Know aerobic and anaerobic energy sources.
- 2-Understand the relationship between exercise intensity and energy sources.
- 3-Know energy expenditure at rest and during exercise.
- 4-Understand the factors determining aerobic fitness.
- 5-Understand the other major components of physical fitness
- 6-Know how to measure total body fat and lean body mass.
- 7-Define oxygen debt, and oxygen deficit, and explain how they differ between athletes and non-athletes.

PATHOLOGY

RESPIRATORY SYSTEM BLOCK (six lectures) (4 weeks)

1. Lectures 1 and 2:

- Chronic obstructive airways diseases:
 - * General manifestations of chronic obstructive airway diseases.
- Bronchial asthma, chronic bronchitis, pulmonary emphysema and bronchiectasis:
 - * Definitions, classification, pathological findings and pathogenesis with principal complications.

2. Lecture 3 :

- Pulmonary infections: pathology of lobar pneumonia, bronchopneumonia, primary atypical (interstitial) pneumonia, pneumocystis Carinii pneumonia and lung abscess.

3. Lecture 4 :

- Restrictive lung diseases: pathology of acute respiratory distress syndrome, pneumoconiosis (anthracosis, silicosis and asbestosis), hypersensitivity pneumonitis (extrinsic allergic alveolitis) and idiopathic pulmonary fibrosis.

4. Lectures 5 and 6 :

- Cancers of the lung: general considerations regarding primary and metastatic cancers. Pathology of the various types of bronchogenic carcinoma, carcinoid and carcinoma metastatic to the lung.

5. Lectures 7 :

- Viral Infection of the Respiratory Tract(Influenza, Adenoviruses)

6. Lectures 8 :

- Respiratory Fungal Infection (Aspergillosis)

7. Diseases of the pleura with special emphasis on mesothelioma.

Microbiology

- 1. Tuberculosis**
- 2. Tuberculosis Treatment**
- 3. Bacteria Causing Lower Respiratory Tract Infection**
- 4. Candidacies**
- 5. Tuberculosis**

Immunology

- 1. Atopy , Allergic Disease and Anaphylaxis**
- 2. Immunology of T.B (1)**
- 3. Diagnosis of Type I Allergy**