



IN THE NAME OF ALLĀH,
THE MERCIFUL,
THE MERCY-GIVING



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King Abdulaziz University
Faculty of Medicine

IMMUNOLOGY BLOOD LYMPHATIC SYSTEM
(IBLS MODULE)

Study Guide [13]

Phase II, MBBS

1428/1429 H (2007/2008 G)

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Welcome

Dear Students,

Welcome to the second year medicine. As you have already started in the Faculty curriculum (System- Based Curriculum), this year you are in Phase II of the program.

Phase I : Premedical Year (First Year)

Phase II : Second and Third Years

Phase III : Fourth, Fifth and Sixth Years

Congratulations, you passed phase I. But what about phase II? Phase II includes many core modules and also System-Based Modules. The aim of this phase is to lay down a solid foundation for the subsequent full-time clinical study in stage III of the MBBS program. It will also integrate the basic sciences knowledge with the clinical sciences. This include knowledge, skill and attitudes, particularly attitudes towards the learning process. The curriculum philosophy in stage II is enforcing the development of a mixture of teaching approaches including System-Based Learning, Problem-Based Learning and also stressing on the idea of "Student Self-Directed Learning".

The department has the honor to introduce this study guide to you hoping that it may be helpful in making you oriented with the aims, objectives, contents of our courses, and through it, you will find the answers of the frequently asked questions.

All the Best

Department Chairman

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OUTCOMES OF THE MEDICAL UNDERGRADUATE CURRICULUM

1) Knowledge

Graduate should have sufficient knowledge and understanding of:

- a. The normal structure, function and development of the human body and interaction between body and mind
- b. The normal pregnancy and child birth, the principles of antenatal and postnatal care
- c. The aetiology, pathogenesis, clinical presentation, natural history and prognosis of common physical and mental disease, particular those which pose acute danger to function, life or the community.
- d. Common diagnostic tests and procedures, their uses, limitations and costs
- e. The management of common conditions including pharmacological, psychological, physical and nutritional therapy
- f. The principles of health education, disease prevention, rehabilitation and the care of the suffering and dying.
- g. The principles and ethics related to health care and the Islamic and legal responsibilities of the medical profession

2) Skills

Graduate should acquire the skills of

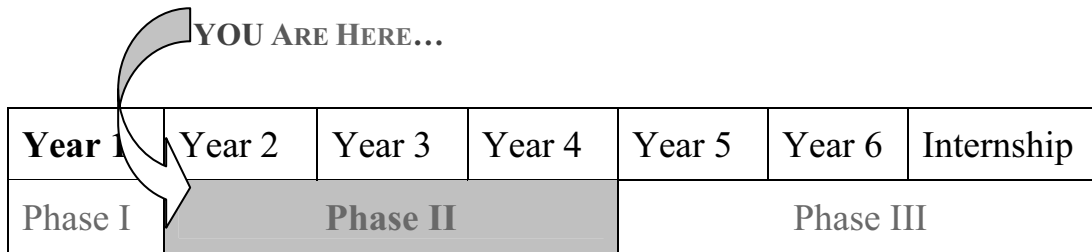
- a. Take a tactful, accurate and organised medical history
- b. Perform a gentle and accurate physical and mental examination
- c. Integrate history and physical examination to reach a provisional diagnosis of differential diagnosis
- d. Select the most appropriate and cost effective diagnostic procedures
- e. Formulate a management plan
- f. Counsel patients and families clearly regarding diagnostic and therapeutic procedures before eliciting consent
- g. Perform common life-saving procedures
- h. Use information resources to obtain further knowledge and interpret medical evidence critically and scientifically
- i. Communicate clearly and considerately with other health professionals

3) Attitudes

Graduate should have the attitude of

- a. Respect for every human being and abide by relevant Islamic ethics
- b. A desire to ease pain and suffering
- c. Willingness to work in a team with other health professionals
- d. Responsibility to remain a life-long learner and maintain the highest ethical and professional standards
- e. Referring patients to other health professional when needed
- f. A realization that it is not always in the interest of patients to pursue every diagnostic or therapeutic possibility

CURRICULUM MAP



Phase 1, is the first stage towards achieving the objectives specified in the curriculum. The aim is to lay down a solid foundation for the subsequent full-time integrated study in phase 2 of the MBBS program. This foundation will include knowledge, skills and attitudes, particularly attitudes toward the learning process. The curriculum philosophy in Phase 1 is enforcing the development of a mixture of teaching approaches including “student-directed learning”. By the end of Phase 1, you should be ready to be much more involved in the control of the learning process.

SECOND YEAR	
3RD SEMESTER	4TH SEMESTER
Cells and Tissues	General Anatomy (2)
Biochemical Basis of Medicine (1)	Biochemical Basis of Medicine (2)
General Anatomy (1)	Basic Emergency Care
Embryology	Cardiovascular System
Pathology (1)	Respiratory System
Communication Skills (1)	Immune, Blood lymphatic System
Musculoskeletal System	Islamic Studies (4) and Medical Ethics
Islamic Studies (3)	Arabic Language (2)

STRUCTURE OF THE MODULE

TIMETABLED HOURS: (36L)+(8T)+(13P)+(6CP)+(5PBL)+(3SDL)

TEACHING DEPARTMENTS:

Anatomy, Clinical Biochemistry, Hematology, Internal Medicine or Pediatrics (Clinical Immunology), Microbiology (Basic Immunology), Pharmacology, Pathology, Physiology.

INTRODUCTION

WELCOME to the basic science FOUNDATION module. This course aimed to introduce students you to the concepts, philosophy and objectives of medical school. The basic science foundation course is a multidisciplinary course covering both the needs of the students and the basic science department.

❖ Student needs:

a) Introduction to human psychology:

This lecture gives the students an understanding of the psychological mechanisms underlying his or her thinking and behaviour

b) Study skills:

Introduce the students to university life and how to utilize lecture, study, and utilize library and how to deal with examinations.

❖ Basic science department needs:

This section covers the prerequisites for core courses and modules for basic science departments: anatomy, physiology, pharmacology, biochemistry and biology

AIMS & OBJECTIVES

At the end of this course, you should be able to:

- Understand principles of adult education
- Describe the concepts of self-directed learning, PBL and students' centred learning
- Understand the principles of assessment and their different tools
- Outline the concepts of curriculum development and continuous medical education
- Appreciate the importance of multi-professional education, holistic approach, and interdisciplinary concepts.
- Describe and demonstrates the basic knowledge and skills of basic medical sciences including Anatomy, Physiology, Biochemistry, Biology and Pharmacology.

TEACHERS CONTACTS

Name	Department	Section	E-mail
Prof. Emad A Koshak	Internal Medicine	Clinical Immunology	ekoshak@hotmail.com
Dr. Faten Alsayes	Haematology		@hotmail.com
Dr. Mohammed Qarri	Haematology		@hotmail.com
Dr Hanan Ali Mostafa			@hotmail.com
Dr Ali S Sawan			@hotmail.com
Dr Zainy M Banjer			@hotmail.com
Dr Mohammed F Farouq			@hotmail.com
Dr Asef A Fatani			@hotmail.com
Dr Hanan Alkadi			@hotmail.com

ASSESSMENT

1. Formative:

This form of assessment is designed to give you feedback to help you to identify areas for improvement. It includes a mixture of MCQs, short answer-questions (SAQs), extended matching questions (EMQs), problems-solving exercises and independent learning activities in all subjects. These will be given during tutorial sessions and practicals. The Answers are presented and discussed immediately with you after the assessment. The results will be made available to you.

2. Summative

This type of assessment is used for judgment or decisions to be made about your performance. It serves as:

- a. Verification of achievement for the student satisfying requirement
- b. Motivation of the student to maintain or improve performance
- c. Certification of performance
- d. Grades

In this Course your performance will be assessed according to the following:

1. Continuous Assessment	20 Marks
2. Assignment	20 Marks
3. Final End of Semester Exam (Two Hours)	40 Marks
4. Final OSPE (Practical)	20 Marks

Total = 100 Marks

Exams:

Written Exams will include short answer and multiple choice questions (**MCQs**). They will cover material presented in lecture, readings, and discussion. All exams must be taken on the date scheduled. In case of an emergency, the coordinator must be notified. No make-up exams will be provided if you fail to notify and discuss your situation with the coordinator. Practical Exam will be in an **OSPE** (Objective Structured Practical Exam) format, where you will pass through several stations representing all the subjects.

Assignment paper:

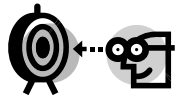
The purpose of the work is to provide you with the opportunity to explore an area of basic medical sciences or medical education in depth. The paper is to be a 10-15 page literature review of the topic will constitute **20%** of your final grade. Policy: Topics must be approved in writing by the coordinator. Directions for topic submission will be discussed during the first week of class. Topics that have not been approved will not be accepted.

All papers must reference a minimum of eight references from refereed journals. All papers must be typed, double-spaced, have 1 inch margins.

Note: We will be making the journey from "**womb to tomb**" in **15** weeks. Therefore, this course requires an intensive coursework load. Class attendance and participation are extremely important to your learning and as such are considered in the evaluation of your course grade. This course is recommended for students that can make the required time and energy commitment. If there is anything that the coordinator can do to assist you during the course, please feel free to contact him.

Icons (standards)

The following icons have been used to help you identify the various experiences you will be exposed to.



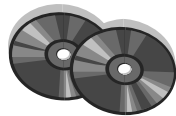
Learning objectives



Content of the lecture



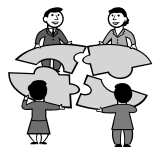
Independent learning from textbooks



Independent learning from the CD-ROM.
The computer cluster is in the 2nd floor of the medical library,
building No. 7.



Independent learning from the Internet



Problem-Based Learning



Self- Assessment (the answer to self-assessment exercises will
be discussed in tutorial sessions)



The main concepts

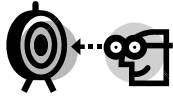
Topic Outlines

Lecture 1: Introduction to IBLs: an overview**Student Notes:**

Department: Physiology

Lecturer: Prof. Hussam Awad

Dr. Hanan Al-Kadi



At the end of the lecture you should be able to:

1. Be introduced to the concepts of hematopoiesis and its integration with the immune and lymphatic system
2. Understand the function of blood as a tissue
3. Describe the composition of the blood.
4. State normal values of hematocrit, blood and plasma volume.
5. Describe the composition of plasma.
6. Classify plasma proteins and outline their functions.
7. Describe innate and adaptive immunity



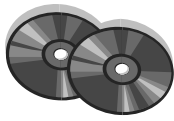
- Definition of Hematopoiesis and its site
- The function of the blood
- Blood volume, plasma volume and hematocrit
- The component of immune and lymphatic system with its integration with blood
- Hematopoiesis at various stage of life
- Composition of plasma and serum

Types of innate and adaptive immunity



Guyton, Medical Physiology. Sherwood, Human Physiology.

(Insert here handouts and additional pages for notes if needed)

Continue ...Lecture 1: Introduction to IBLS: an overview

You have the opportunity to watch the CD-ROM about the Cardiac contractility. You can access the CD-ROM during your spare time.



In the computer cluster also you have the opportunity to see some useful web site about the IBL system but these should not be the final one. I would recommend you look at the following search engine in the web sites:

<http://www.google.com>



Self-assessment

Briefly answer the following short question:

- Please prepare some important questions here for workout.



Important reminders

Student Notes:

(Insert here handouts and additional pages for notes if needed)

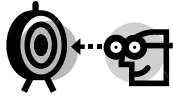
Lecture 2: Haemopoiesis and Maturation Of Red Blood Cell

Student Notes:

Department: Physiology

Lecturer: Prof. Hussam Awad

Dr. Hanan Al-Kadi



At the end of the lecture you should be able to:

1. Describe the structure and functions of red blood cells.
2. Describe process of erythropoiesis and stages of RBC production.
3. State the dietary requirements for RBC production.
4. Discuss the regulation of RBC production and the factors that stimulate erythropoietin release
5. Know components of RBC and their structure / function relationship



- Shape and size of RBC (functional significance of shape).
- Normal RBC count in both sexes
- Hemoglobin concentration in blood.
- Life span and destruction of RBCs.
- Functions of hemoglobin and carbonic anhydrase
- Production of RBCs: stages of differentiation of RBCs.
- Maturation of RBCs- requirements for vitamin B₁₂ and folic acid
- Regulation of RBCs production- role of erythropoietin.
- Tissue oxygenation and effect of hypoxia on RBCs production.
- Role of kidney in erythropoietin formation



Guyton, Medical Physiology. Sherwood, Human Physiology.

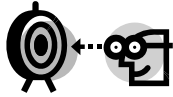
(Insert here handouts and additional pages for notes if needed)

Lecture 3: Energy metabolism of red blood cells**Student Notes:**

Department: Biochemistry

Lecturer: Dr. Zainy Banjer

Dr. Enayat Ali



At the end of the lecture you should be able to:

1. Comprehend the chemical anatomy of different cellular component of RBC'S
2. Realize the adaptation of chemical structure of the RBC'S to its function
3. Recognize the vital role of anaerobic glycolysis and hexose monophosphate pathway in maintenance of RBC'S function



- Adaptation of the structure to function
- Membrane organization, membrane lipids, proteins and carbohydrates
- Cytoskeleton proteins
- Red cell metabolism
The role of anaerobic glycolysis in ATP & 2,3 bisphosphoglycerate production and their function
- The role of hexose monophosphate pathway in maintenance of RBC'S membrane

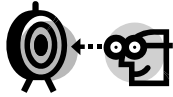


Wills' Biochemical basis of medicine.

(Insert here handouts and additional pages for notes if needed)

Lecture 4: Haem synthesis, porphyrias and lead poisoning**Student Notes:**

Department: Biochemistry
Lecturer: Dr. Zainy Banjer
Dr. Enayat Ali



At the end of the lecture you should be able to:

1. Draw the structure of haem and understand its function
2. Know the main location and site of haem biosynthesis
3. Outline haem synthetic pathway and the key regulatory step
4. Understand the effect of lead poisoning on haem synthesis
5. Realize porphyria's as enzymatic defect in haem biosynthesis



- Structure and function of haem
- Haem biosynthesis; site and overview of the pathway
- Regulation of haem synthesis
- Lead poisoning
- Porphyrias



Wills' Biochemical basis of medicine.

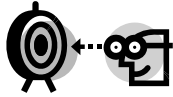
(Insert here handouts and additional pages for notes if needed)

Lecture 5: Pathophysiology of Anemia and Polycythemia**Student Notes:**

Department: Physiology

Lecturer: Prof. Hussam Awad

Dr. Hanan Al-Kadi



At the end of the lecture you should be able to:

1. Know the definition of anaemia and polycythemia
2. Understand the compensation of the body in response to anaemia
3. Comprehend the uncompensated anaemia effect
4. Discuss the various anaemias effect on the body
5. Classify anaemia according to its cause and the red cell size.
6. Describe different types of polycythemia and their causes.
7. Describe the hemodynamic effects of anemia and polycythemia



- Clinical definition of anemia and polycythemia.
- Causes of anemia:
 - ❖ Blood loss
 - ❖ Aplastic
 - ❖ Megaloblastic
 - ❖ Hemolytic
- Classification of anemia according to red cell size: Normocytic, macrocytic and microcytic.
- Causes of primary and secondary polycythemia.
- Effects of anemia and polycythemia on function of the circulatory system



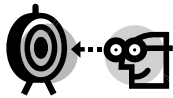
Guyton, Medical Physiology. Sherwood, Human Physiology.

(Insert here handouts and additional pages for notes if needed)

Lecture 6: Red Blood Cell Destruction**Student Notes:**

Department: Biochemistry

Lecturer: Dr. Zainy Banjer
Dr. Enayat Ali



At the end of the lecture you should be able to:

1. Recognize the biochemical changes leading to RBC'S destruction
2. Know the main location and site of haem breakdown
3. Outline the pathway for haem degradation
4. Understand the biochemical basis of different types of jaundice



- Biochemical changes leading to RBC'S destruction
- Degradation of haem location and site
- Pathway for haem degradation
- Biochemical basis of different types of jaundice

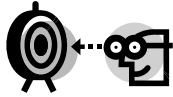


Wills' Biochemical basis of medicine.

(Insert here handouts and additional pages for notes if needed)

Lecture 7: Red Blood Cell Disorders**Student Notes:**

Department: Hematology
Lecturer: Dr. Mohamad Qari
Dr. Fatin Al Sayes



At the end of the lecture you should be able to:

1. Know the different types of anaemia
2. Describe the clinical features of each types of anaemia
3. Understand the causes of anaemia
4. Describe laboratory assessment of different types of anaemia



- Different types of anaemia (microcytic, hypochromic, macrocytic and normocytic, normochromic)
- Outline causes of anaemia
- Clinical features and effects of a anaemia on different organs
- Laboratory diagnosis of anaemias



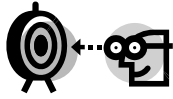
Essential Haematology.

(Insert here handouts and additional pages for notes if needed)

Lecture [^]: Drug treatment of anaemias

Student Notes:

Department: Pharmacology
Lecturer: Prof. Zuhair Damanhuri
 Dr. Majdah Hajrasy



At the end of the lecture you should be able to:

1. Describe the normal mechanism of regulation of iron absorption and storage in the body
2. List the anaemias for which iron supplement is indicated and those for which it is contraindicated
3. Describe the acute and chronic toxicity of iron
4. Sketch the dTMP cycle and show how folic acid and vitamin B12 affect the cycle
5. Name the major hematopoietic growth factors and their uses



A. Drug used anaemia

1. Iron
2. Vitamins: B12 Folic acid

B. Growth factors used in anaemia

- | | |
|-------------------|------------------------|
| 1. Erythropoietin | megakaryocytes factors |
| 2. G-CSF | } granulocytes factor |
| 3. GM-CSF | |
| 4. IL-11 | |
| 5. Thrombopoietin | megakaryocytes factors |



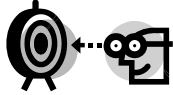
READING: Katzung/ Lippincott

(Insert here handouts and additional pages for notes if needed)

Lecture 9: White blood cells and platelets

Department: Physiology

Lecturer: Prof. Hussam Awad
Dr. Hanan Al-Kadi



At the end of the lecture you should be able to:

- a. Distinguish between the five types of the white blood cell (WBC'S) and describe the function of each type.
- b. Describe the general characteristics of WBC total & differential (count, site of formation, life span and fate).
- c. List example for physiological and pathological variation in the leucocytic count.
- d. Describe the general characteristics of the blood platelets (count, site of formation, origin, life span and fate).
- e. Describe the structure and function of the blood platelets.



- Types of white blood cells (granulocyte and non granulocyte)
- General characteristics of WBC (count ,site of formation ,life span, fate and the function of each type)
- Defense action of neutrophile and lymphocytes role in immunity
- General characteristics of the blood platelets (count, site, of formation life span and fate)
- Structure of the blood platelets and their role in haemostasis



Guyton, Medical Physiology. Sherwood, Human Physiology

Student Notes:

(Insert here handouts and additional pages for notes if needed)

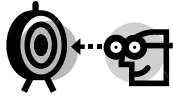
Lecture 10: Mechanism of homeostasis, coagulation & fibrinolysis

Student Notes:

Department: Physiology

Lecturer: Prof. Hussam Awad

Dr. Hanan Al-Kadi



At the end of the lecture you should be able to:

1. AT the end of this lecture the student should be able to:
2. Define haemostasis
3. Describe the mechanisms that prevent blood loss after an injury.
4. Describe cascade mechanism of blood coagulation and clotting.
5. Describe the fibrinolytic system and mechanism of clot lysis.
6. How blood clotting is prevented in normal vascular system.



- Definition of hemostasis.
- Mechanisms of hemostasis: Vascular spasm, Platelet plug formation, Blood coagulation, Clot retraction
- Factors required for blood coagulation
- The cascade mechanism of blood coagulation: the extrinsic clotting pathway and the role of tissue factor, the intrinsic pathway and contact activation, and the common pathway.
- Role of calcium ions and vitamins K in blood clotting.
- Fibrinolytic system and mechanism of fibrinolysis.
- Activation of plasminogen to form plasmin.
- Natural anticoagulants: normal endothelium-prostacyclin, thrombomodulin–thrombin complex, antithrombin III, Heparin
- Mechanism of action of anticoagulants in clinical use.



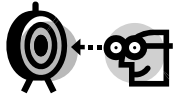
Guyton, Medical Physiology. Sherwood, Human Physiology.

(Insert here handouts and additional pages for notes if needed)

Lecture 1¹: Coagulation disorders; Clinical approach**Student Notes:**

Department: Haematology

Lecturer: Dr. Mohamad H. Qari
Dr. Fatin Al Sayes



At the end of the lecture you should be able to:

1. Know the causes of thrombocytopenia (hereditary & acquired)
2. Know the clinical approach to a bleeding disorders
3. Understand congenital and acquired coagulation factors deficiencies
4. Describe causes of thrombosis
5. Describe inherited thrombotic disorders



- Different causes of congenital and acquired thrombocytopenia
- Clinical presentations of a bleeding patient
- Review the coagulation factors defect (congenital and acquired)
- Discuss clinical presentation of hemophilia
- Laboratory diagnosis of hemophilia
- Understand various causes of thrombosis.



Essential Haematology

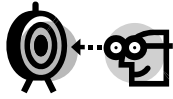
(Insert here handouts and additional pages for notes if needed)

Lecture 1^٢: Overview of the Lymphatic drainage

Student Notes:

Department: Anatomy

Lecturer: Dr. Jamal Saeed
Dr. Hanan Mostafa



At the end of the lecture you should be able to:

1. Understand the origin, composition and circulation of lymph all over the body
2. Describe gross anatomy of lymphoid organs; spleen, tonsils, thymus and lymph nodes
3. Identify the anatomical features of cisterna chyli, thoracic duct and right lymphatic duct
4. Understand the general plan of lymphatic drainage of the head and neck demonstrating the superficial and deep lymph nodes
5. Understand the lymphatic drainage of the upper and lower limbs, the intercostal spaces, thoracic cavity, abdomen and pelvis and its clinical importance



- Primary and secondary lymphatic organs
- Structure of lymphatic vessels
- Histological structure and functions of the thymus gland, lymph node, spleen and MALT
- Circulation of lymph in lymph node and blood circulation in spleen
- Structure of blood-thymic barrier
- Sites of phagocytes and antigen presenting cells all over the body



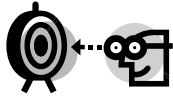
Histology by Gartner & Hiatt.

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Lecture 1٣: Histology of the Lymphatic system**Student Notes:**

Department: Anatomy

Lecturer: Dr. Jamal Saeed
Dr. Hanan Mostafa



At the end of the lecture you should be able to:

1. Understand primary and secondary lymphoid organs
2. Describe the histological organization and function of thymus gland, lymph nodes, spleen and mucosa associated lymphatic tissue (MALT).
3. Identify the regions rich in B and T lymphocytes in each organ and explain the cellular processes, relevant to immune functions that are taking place in these regions.



- Primary and secondary lymphatic organs
- Structure of lymphatic vessels
- Histological structure and functions of the thymus gland, lymph node, spleen and MALT
- Circulation of lymph in lymph node and blood circulation in spleen
- Structure of blood thymic barrier
- Sites of phagocytes and antigen presenting cells all over the body



Histology by Gartner & Hiatt

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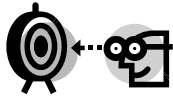
Lecture 14: Immunocompetent and accessory cells

Student Notes:

Department: Microbiology (Basic immunology)

Lecturer: Dr. Aymen Safi

Dr. Mervat Abdulhady



At the end of the lecture you should be able to:

1. List cells associated with innate and adaptive immune system.
2. Identify & classify the various immunocompetent cells depending on their surface definitive marker.
3. Describe various families of their surface molecules (markers)
4. Understand types of cell surface molecules in specialized immune cells (innate and acquired immunity).
5. List types of the antigen presenting cell, and their locations.
6. List types of the accessory cells, and explain their role of co-operation with the immune system elements in immunity.



- Immunocompetent cells of different lineages perform specific functions.
- T and B-lymphocytes express specific antigen receptor and other markers important in performing their functions.
- Surface marker is used to classify the immune cells into types. B cells can specifically recognized, bind to intact pathogens
- T cells require cell to respond to processed pathogens (APC).
- Types of T cells are: T- helper T-cytotoxic T-suppressor.
- Phagocyte cells are either mononuclear or polymorphonuclear.
- Mast cells, Basophiles, Platelets, Endothelial role in immunity



Immunology, Basic and clinical immunology.

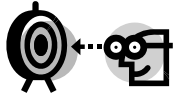
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Lecture 1^o: Humoral immune system: antibody structure & function

Department: Microbiology (Basic immunology)

Lecturer: Dr. Aymen Safi

Dr. Mervat Abdulhady



At the end of the lecture you should be able to:

1. Draw and describe basic structure of the immunoglobulin.
2. Describe the major functions of the immunoglobulins.
3. Explain biological functions of five immunoglobulin isotypes.
4. Describe the immunoglobulin isotype, allotype variation.
5. Explain recognition and interaction between antigen, and antibody- bound B cell interaction and associated molecules.
6. Describe types of bonds, antibody affinity and avidity.



- Immunoglobulins are glycoproteins produced by plasma cell.
- Five major different types; IgM, IgA, IgG, IgE, and IgD.
- IgM is the first Ab made by maturing B cells in primary responses to Ag. IgG is the most abundant Ig isotype in the blood and is produced in large amounts during secondary immune responses. IgA is the predominant in external secretions. IgE mediates immediate hypersensitivity reactions.
- Antigen- binding fragment (Fab) binds to the epitope located on its corresponding cognate and antigen, and cause antigens neutralization. The crystallizable fragment (Fc) binds to its corresponding receptor on immunocompetent cells surface.
- Ab functions: i) neutralization, ii) opsonization, iii) complement fixation, iv) agglutination/precipitation, v) immobilization



Immunology, Basic and clinical immunology.

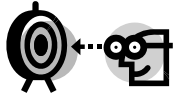
Student Notes:

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Lecture 1^v: MHC function and expression of MHC molecules

Department: Microbiology (Basic Immunology)

Lecturer: Dr. Aymen Safi
Dr. Mervat Abdulhady



At the end of the lecture you should be able to:

1. Discuss the importance of the MHC molecules
2. Draw, compare and contrast the structure of the MHC class I, II
3. Describe role of MHC I in determining type of immune response
4. Describe role of MHC II in determining type of immune response
5. Describe the importance of MHC class II in the process of positive and negative selection of the T cell.
6. Describe relation between the macrophage and MHC class I and II and the relationship between endothelial cells and MHC I.



- The MHC is the group of genes that produce cell surface markers that are important in transplantation , immune regulation and immune responsiveness
- These molecules are used to distinguish self, form non self.
- This distinction allows an appropriate response to non self-antigens while preventing an immune response to self-antigens.
- MHC genes are located on short arm on chromosome number 6.



Immunology, Basic and clinical immunology

Student Notes:

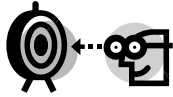
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Lecture 1^v: Antigen recognition by T cell

Student Notes:

Department: Microbiology (Basic immunology)

Lecturer: Dr. Aymen Safi
Dr. Mervat Abdulhady



At the end of the lecture you should be able to:

1. Identify antigens
2. Describe the process of T cell recognition and binding.
3. Describe the role and function of antigen presenting cells APCs
4. Describe the mechanism of the recognition and interaction between TCR and MHC class I or II molecules expressed on APCs
5. Describe the role of the accessory molecules in the interactions.
6. Know activation and proliferation of CD4 and CD8 T cells
7. Know lymphocytes trafficking



- Role of structure, size, chemical nature of antigens in the process of recognition and binding.
- TCR of the T-cells recognized cells bound antigen in the associated with MHC class I and II molecules
- The exogenous or endogenous processed antigenic peptide presented on the groove of MHC I or/and II of APCs to the TCR of CD8 or CD4 T cells, respectively.
- The processed peptide produce in the cytoplasm of the phagocystic cell or the infected one
- Activation and proliferation of CD4 and CD8 T cells
- Rout of migration of cells (lymphocytes trafficking)



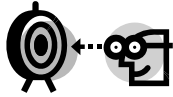
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Immunology, Basics and clinical immunology.

Lecture 1[^]: B-cell, activation, and antibody production

Department: Microbiology (Basic immunology)

Lecturer: Dr. Aymen Safi
Dr Mervat Abdulhady



At the end of the lecture you should be able to:

1. Describe the stages of B cells maturation in bone marrow.
2. List the surface receptors (molecules) regarding to B cells activation and interaction.
3. Describe the B-cells, receptor-gene segment rearrangements.
4. Define the lymphoid follicles, light zone, dark zone, and germinal center
5. Describe the T- dependent and T- independent ways of B-cells activation, isotype class switching, and antibody production.
6. Describe the process of clonal selection, B cell activation , isotypes class switching, and antibody production.



- B-lymphocytes produced by stem cell, and mature in bone marrow, selects genes that code for its B-cell receptors (BCR).
- Virgin B- cell can be activated by the specific recognition and binding to its cognate antigens. The process of activation can be triggered by two ways, T-dependent, and T- independent process. Once virgin B-cell activated, its goes to the next stage maturation
- Maturation steps, isotype switching, in which B cell decide which type of antibody isotype it will produce, affinity maturation, and the decision where B-cells decide whether to become antibody producing cell (APC) or the memory B-cell.



Immunology, Basic and clinical immunology

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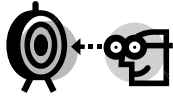
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Lecture 1^a: Generation of clonal diversity in B and T cell receptor

Student Notes:

Department: Microbiology (Basic immunology)

Lecturer: Dr. Aymen Safi
Dr. Mervat Abdulhady



At the end of the lecture you should be able to:

1. Explain the antibody diversity generated by simple V,D, and J gene segment recombination.
2. Describe the diversity generated by T cell receptor (TCR).
3. Describe recombination activating gene (RAG-1 & RAG-2) in controlling recombination of V,D and J gene segment
4. Describe structure modifications (somatic mutation)
4. Describe the N-region diversification, joining site variation, and multiple D region



a). The immune system can recognized and respond to many antigens and that through generating a vast diversity in immunoglobulins produced by the B cells, and in antigen receptor expressed on the T cells.

b). Antibody diversity is generated by the recombination of specific number of V, D and J gene segment to generate a large number of variable domains.

c). Diversity of the TCR receptor occurs by recombination of limited number of between V,D J gene segment and that of antibodies.

d). In addition, diversity depends on the N region diversification, joining -site variation, and multiple D. region. Class switching involves the recombination of VDJ gene with different C region genes and different RNA splicing.



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Immunology, Basic and clinical immunology

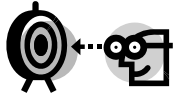
Lecture 20: Cell- mediated immunity

Student Notes:

Department: Microbiology (Basic immunology)

Lecturer: Dr. Aymen Safi

Dr. Mervat Abdulhady



At the end of the lecture you should be able to:

1. Identify T lymphocytes development.
2. Describe the role and properties of T helper cells.
3. Describe the role and properties of T cytotoxic cells.
4. Describe Mechanisms of surveillance
5. Identify mechanisms of activation
6. Describe Natural Killer Cells production and function
7. Describe the main targets of cell-mediated responses.



1. T lymphocytes arise from stem cells in the bone marrow and then travel to the thymus gland, where the helper T and cytotoxic T cells complete their development by acquiring receptors for MHC markers and antigen-specific receptors:
 - a. Effector (clones) helper T cells secrete interleukins, which stimulate further cell divisions and differentiation.
 - b. Clones of cytotoxic T cells recognize the antigen-MHC complexes on infected cells and kill them.
2. Mechanisms of activation: Antigen non-specific, Antigen-specific, Co-stimulatory molecules (Signal 2)
3. NKCs are lymphocyte (not B or T) produced in bone marrow.
4. Main targets of cell-mediated responses are cells infected with intracellular pathogens, tumor cells, and organ transplants.



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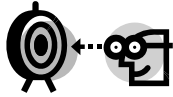
Immunology / Basic and clinical immunology

Lecture 21: Complement system in health and disease

Department: Microbiology (Basic Immunology)

Lecturer: Dr. Aymen Safi

Dr. Mervat Abdulhady



At the end of the lecture you should be able to:

1. Name the different proteins involved in complement system
2. Describe the different mechanism and consequences of complement activation including the regulatory processes
3. Describe the main function of the complement proteins
4. List the different types of complement receptors and their role
5. Briefly describe the assessment of the complement levels



- Complement system consists of a group of serum proteins that act in concert and in orderly sequence to exert their effect.
- Liver is the major site of complement proteins production , also macrophages and fibroblasts can synthesis some
- Inflammation increases the synthesis of complement component, through the action of interleukins-1 and gamma interferon
- Complement proteins function: opsonition, activation of leukocytes, lysis of target cells, chemoattraction for immune cells
- Complement receptors: CR1, CR2, CR3 and CR4.
- Regulatory proteins: decay acceleration factor (DAF), factor H, C-4 binding proteins, and membrane co-factor proteins.
- Inherited deficiencies of C1, C4, or C2 have presented with lupus like syndrome with recurrently pyogenic infection.



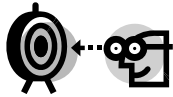
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Lecture 22: The mucosal immune system

Department: Microbiology (Basic Immunology)

Lecturer: Dr. Aymen Safi
Dr. Mervat Abdulhady



At the end of the lecture you should be able to:

1. Identify the types of immune cells associated in mucosal surface
2. Describe the role of the TCR+1 T cells
3. Describe the role of the mucosal mast cells (MMC) associated with mucosal epithelia in immunity
4. Describe the mucosal- associated lymphoid tissue (MALT)
5. Describe the transport and the role of the IgA associated with lymphoid cells circulation at the site of mucosal surface
6. Describe lymphoid cell circulation at the mucosal surfaces



- Lamina propria and submucosal areas of the genitourinary, respiratory, and gastrointestinal tracts contain lymphoid tissue cells that are present as diffuse aggregates or are organized into the solitary or aggregates nodules containing germinal center
- In tonsils considerable amount of lymphoid tissues are found associated with many large germinal centers.
- The respiratory epithelium contains dendritic cells, similar to Langerhans cells found in skin
- The epithelium overlying the payers patches is specialized to allow the transport of antigens into the mucosa of the stomach, the small and large intestine the upper and lower respiratory tract, and in the mucosa of several organs.
- Lymphocytes found in the mucosal surface such as lamina prorpia lymphocyte (LPL), and epithelial lymphocytes (IELS).
- IgA plays a role in the immunity of the mucosal surface.



Essential immunology/ Basic and clinical immunology.

Student Notes:

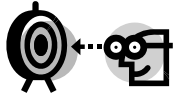
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Lecture 23: Cytokines network and their receptors.

Department: Microbiology (Basic Immunology)

Lecturer: Dr. Aymen Safi

Dr. Mervat Abdulhady



At the end of the lecture you should be able to:

1. Define the term's cytokines, lymphokines, monokines, interleukines, and cytokines antagonists.
2. Describe the main function of the cytokines.
3. Name the cytokines that are involve in hematopoiesis
4. List and describe the cytokines that mediated natural immunity
5. Name and explain the cytokines that regulates the lymphocyte activation, growth, and differentiation.
6. Describe the types of the cytokines



- Defense against microorganisms is mediated by both specific and natural immunity. The defector phases of both types are mediated in large part by proteins called cytokines.
- Immunocompetent cells perform their function through a successful communication among each other. These communications are performing by network of intercellular signaling between cells.
- Cytokines receptors are classified into five large families
- Some cytokines are involve in the regulation of lymphocytes activation , growth and differentiation, many are involved in the regulation of the immune -mediated inflammation , and other are involved in the mediation of the hematopoiesis



Immunology, Basic and clinical immunology

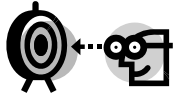
Student Notes:

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Lecture ٧٤: The regulation of the immune response

Department: Microbiology (Basic Immunology)

Lecturer: Dr. Aymen Safi
Dr. Mervat Abdulhady



At the end of the lecture you should be able to:

1. Describe the mechanism regulation by the antigen, including the dose route of the antigen.
2. Describe the immune response regulation through the cell- mediated immunity.
3. Describe the immune response regulation by cell mediated immunity by neuroendocrine modulation
4. Describe the immune response regulation by the genetic control.
5. Describe the regulation of the immune response by antibody



- The initiated immune response due to infection or other causative agent should be regulated, other wise will end up with disaster events and finally death
- There are many ways for the regulation processes.
- APC may affect the immune response
- T cell regulate the immune response (TH1, TH2, Treg)
- Some related to the antigens it self (size, chemical, amount, etc).
- Other related to the antibody production, neuroendocrine and other regulates some of this response by genetic factors.
- Triggered responses are well taken care of by the different regulatory mechanisms.



Immunology, Basic and clinical immunology.

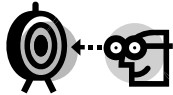
Student Notes:

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Lecture 25: Type 1 Hypersensitivity (Allergy)**Student Notes:**

Department: Pathology

Lecturer: Dr. Ali Sawan
Dr. Eman Imam



At the end of the lecture you should be able to:

- Identify the different types of hypersensitivity reactions
- Understand the details of type 1 hypersensitivity
- Understand pathogenesis
- Learn clinical manifestations i.e. local and systemic anaphylaxis.



- Definition
- Details of type 1 hypersensitivity reaction including primary and secondary mediators
- Pathogenesis
- Clinical manifestations of the reaction



Basic pathology by Kumar Cortan, Rubbins

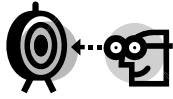
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Lecture 26 : Type II, III and V Hypersensitivity

Student Notes:

Department: Pathology

Lecturer: Dr. Ali Sawan
Dr. Eman Imam



At the end of the lecture you should be able to:

1. Discuss the details of the three different anti body dependent mechanisms of type II hypersensitivity
2. Discuss in detail type III hypersensitivity reaction
3. Discuss in detail type IV hypersensitivity reaction



- Type II hypersensitivity reaction
 - Hypersensitivity reaction (antibody dependent type)
 - Complement mediator cytotoxicity
 - Antibody dependent all mediated cytotoxicity
 - Antibody mediated cellular dysfunction
- TYPE III hypersensitivity reaction
 - Local immune complex disease (arthus reaction) pathogenesis
 - Systemic immune complex disease (serum sickness) morphology and examples
- TYPE IV hypersensitivity reaction

Pathogenesis delayed hypersensitivity reaction, morphology and examples (contact dermatitis, tuberculin test, granuloma)



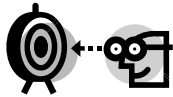
Basic Pathology. by Kumar Cortan, Rubbins.

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Lecture 27 : Pharmacology of type 1 hypersensitivity**Student Notes:**

Department: Pharmacology

Lecturer: Prof. Zuhair Damanhuri
Dr. Majdah Hajrasy



At the end of the lecture you should be able to:

1. Describe the different types of allergic reaction to drugs
2. Learn main drugs used for treatment of hypersensitivity reaction



- Types of antihistamines

- First generation

- Second generation

- Corticosteroids



Katzung basic & clinical pharmacology

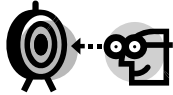
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Lecture 28: Immunity to infections.**Student Notes:**

Department: Basic Immunology/ Microbiology

Lecturer: Dr. Aymen Safi

Dr. Mervat Abdulhady



At the end of the lecture you should be able to:

1. Describe the types of immunological responses and their elements involve in the bacteria infection.
2. Describe the types of the immunological response and their elements involve in the viral infection
3. Describe the types of the immunological response and their elements involve in the parasitic infection
4. Realize the co operation occur between the different types of the immune elements in their process of immunity.



- Pathogens determine the types of elements of the immune system that involve in the defensive mechanism
- Elements of both innate and specific immunity are always co operating to perform the jobs. But some times some immunological elements have more involvement than the others.
- Eosinophils are most likely to be involved in the parasitic infection while the most cells and basophils play a remarkable role in the allergic reaction. The different types of interferons involve in the intracellular infection.
- Antibodies and cell mediated immunity and humoral mediated immunity work together to provide the required protection



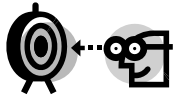
Immunology, Basic and clinical immunology

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Lecture 29: Septicaemia and endotoxin shock**Student Notes:**

Department: Pathology

Lecturer: Dr. Ali Sawan
Dr. Eman Imam



At the end of the lecture you should be able to:

1. Define shock
2. List types of shock
3. Understand the pathogenesis of septic shock
4. Describe the morphology of shock



- Introduction: definition of shock
- Different categories of shock
- Pathogenesis of septic shock
- Clinical manifestation



Basic pathology by. Kumar Cortan, Rubbins

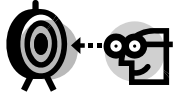
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Lecture 30 : Basic mechanism of immunological tolerance

Student Notes:

Department: Basic Immunology/ Microbiology

Lecturer: Dr. Aymen Safi
Dr. Mervat Abdulhady



At the end of the lecture you should be able to:

1. Discuss the different immunologic mechanism of self-tolerance.
2. Mechanisms of T lymphocyte tolerance to self antigens
3. Describe maturation of the T lymphocytes in the thymus.
4. Mechanisms of B lymphocyte tolerance to self antigens
5. Describe mechanisms of immunoregulation breakdown
6. Describe the role of genetic factors in autoimmunity



- Autoimmune disorder result from the recognition of either or both antibodies or cell mediated immunity to self-antigens.
- T cell tolerance mechanisms to self antigens (peripheral, central).
- B cell tolerance mechanisms to self antigens (peripheral, central).
- Clonal deletion (positive and negative selection) clonal energy and peripheral suppression.
- Secretion of TGF-B down regulate
- Tolorogenic doses of antigens.
- Breakdown of tolerance: genetic cross- reacting of microbial antigens, hidden self antigens, formation of new antigenic determinant, formation of a hapten- carrier complex or depletion of suppressor cells.



Immunology, Basic and clinical immunology

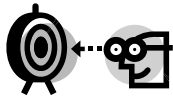
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Lecture 31 : Pathogenesis of autoimmune disease

Student Notes:

Department: Pathology

Lecturer: Dr. Ali Sawan
Dr. Eman Imam



At the end of the lecture you should be able to:

1. Understand the spectrum of autoimmune diseases
2. Understand classification of autoimmune diseases
3. Discuss pathogenesis of autoimmune disease



- The association of autoimmunity with diseases
- Classification and examples of autoimmune diseases: organ specific and non organ specific
- Pathogenesis of autoimmune disease:
 1. Bypass of helper the cell tolerance
 - Modification of molecules
 - Cross reaction
 - Polyclonal lymphocyte
 - Maturation
 2. Imbalance of suppression helper cell function
 3. Emergence of sequestrated antigens
 4. Possible role of genetic factors in autoimmunity
 5. Possible role of microbial agents in autoimmunity



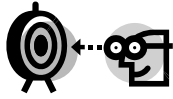
Basic pathology: by Kumar, Cartan, Rubbins

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Lecture 32: Immunosuppressive drugs

Student Notes:

Department: Pharmacology
Lecturer: Prof. Zuhair Damanhuri
 Dr. Majdah Hajrasy



At the end of the lecture you should be able to:

1. Describe the primary features of cell mediated and human immunity
2. Name 7 immunosuppressants with description of mechanism of action, clinical uses and toxicity of antibodies used as immunosuppressants
3. Identify the major cytokines and other immunomodulating agents and know their clinical application
4. Describe the different types of allergic reactions to drugs



1. Immunosuppressant

Drugs

Antibodies

- Cytotoxic agents
- Glucocorticoids
- Antibiotic
- Anti TNF-Agent
- Enzyme inhibitors

11 .Immune potentiator

- Cytokines
- Thymosin
- BCG vaccine



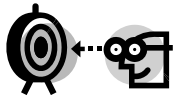
Pharmacology by Katzung/ Lippincott

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Lecture 33 : White blood cell abnormalities**Student Notes:**

Department: Haematology

Lecturer: Dr. Mohamad H. Qari
Dr. Fatin Al Sayes



At the end of the lecture you should be able to:

1. Know the benign disorders of white blood cells
2. Discuss the pathogenesis of clonal disease
3. Understand concept of lymphoproliferation and myeloproliferation
4. Comprehend pathological features of hematological malignancies
5. Know the definition of leukemia and different types



- Different causes of benign white blood cells disorder (quantitative and qualitative)
- Clonality concept
- The maturation leading to hematological malignancies
- Acute and chronic leukemia: type and pathological classification
- Grading and staging
- Pathophysiology of these hematological malignancies
- Clinical feature of acute and chronic leukemia



Essential haematology.

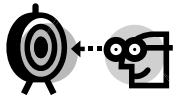
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Lecture ٣٤: Introduction to IBL: an overview

Student Notes:

Department: Pathology

Lecturer: Dr. Ali Sawan
Dr. Eman Imam



At the end of the lecture you should be able to:

1. Know the definition of lymphoma
2. Understand different type of lymphoma
 - 1st. Hodgkin's
 - 2nd. Non Hodgkin's



Hodgkin's lymphoma

- Classification of lymphocyte predominance, mixed cellularity nodular Sclerosis lymphocyte depletion
- Etiology and pathogenesis
- Clinical course

- Non Hodgkin's lymphoma

- Classification
- Morphology



Basic Pathology. Kumar, Cotran, Rubbins.

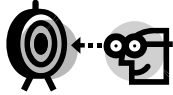
(Insert here handouts and additional pages for notes if needed)

Lecture ٣٥: Blood Group Serology & Transfusion Medicine

Student Notes:

Department: Haematology

Lecturer: Dr. Mohamad H. Qari
Dr. Fatin Al Sayes



At the end of the lecture you should be able to:

1. Know the concept of blood transfusions
2. Understand red cell antigens
3. Discuss blood group antibodies
4. Learn platelets and blood products transfusion
5. Complication of blood transfusions



- Red cells antigens
 - a. ABO system
 - b. Rh system
 - c. Other blood group system
- Blood group antibodies and its clinical implication in transfusion
- Platelets and blood products transfusion: clinical indications
- Complication of blood transfusion
 - ◆ Early
 - ◆ Late



Essential Haematology.

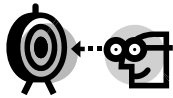
(Insert here handouts and additional pages for notes if needed)

Lecture ٣٦: Immunization

Student Notes:

Department: Microbiology (Basic Immunology)

Lecturer: Dr. Aymen Safi
Dr. Mervat Abdulhady



At the end of the lecture you should be able to:

1. Definition of immunization
2. Understand types of immunization
3. Describe mechanisms of immunization
4. Understand types of vaccines for active immunization
5. Understand examples of vaccines for passive immunization
6. Understand applications of vaccines for diseases prevention



1. Active versus passive immunization
2. Application of immunization in the prevention of diseases
3. Types of vaccines for active immunization:
whole organism, attenuated, inactivated, Purified macromolecules (olysaccharides, toxoids, recombinant antigens), recombinant vector, DNA, synthetic peptide, multivalent subunit, anti-idiotypic Vaccines
4. Examples of vaccines for passive immunization
Humanized antibodies, applications



Immunology by Roitt, Clinical immunology by Stites.

(Insert here handouts and additional pages for notes if needed)

Practical 1:

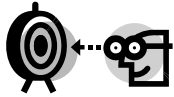
Anatomy and cytology of Bone marrow

Department: Anatomy

TEACHING LOCATION: Lab

TUTOR: Dr. Jamal Saeed / Dr. Hanan Mostafa

SUMMARY:



OBJECTIVES:

1. Identify Macroscopic features of normal bone marrow
2. Identify Microscopic features of normal bone marrow
3. Learn techniques of bone marrow sampling and biopsy



- Macroscopic features of normal bone marrow
- Microscopic features of normal bone marrow: structures (cords and sinuses).
- Cells of normal bone marrow hematopoietic and non hematopoietic cells.
- Techniques of bone marrow sample and biopsy

TRANSFERABLE SKILLS:

The use of microscope and multihead Microscope interpretation of normal and abnormal blood film and bone marrow.



READING: Snell, Clinical anatomy

Practical 2:

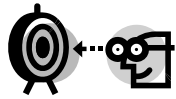
Blood cytology

Department: Anatomy

TEACHING LOCATION: Lab

TUTOR: Dr. Jamal Saeed / Dr. Hanan Mostafa

SUMMARY:



OBJECTIVES:

1. Read a blood report
2. Do a peripheral blood film and stain it with leishman stain
3. Do a differential leucocytic count
4. Know the relation between leucocytes and diseases



1. Blood smear slide (Leishman stain) showing different blood elements (RBCs, WBCs and platelets) morphology.
2. Steps of preparation and staining of a blood film.
3. Examination of the blood film under the light microscope and do a differential leucocytic count

TRANSFERABLE SKILLS:

The student should distinguish and draw RBCs, WBCs and platelets in the blood smear.



READING: Clinical anatomy by Snell

Practical 3:

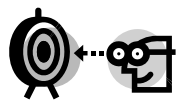
Anatomy of Lymphatic System

Department: Anatomy

TEACHING LOCATION: Lab

TUTOR: Dr. Jamal Saeed / Dr. Hanan Mostafa

SUMMARY:



OBJECTIVES:

1. Recognize the gross structure of the thymus.
2. Recognize the structure of LN
3. Differentiate macroscopically between organs containing lymphoid tissue
4. Understand the gross anatomical features of spleen, tonsils, peyer`s patches and the appendix



- Macroscopic features of Thymus Gland
- Macroscopic features of Lymph Node
- Macroscopic features of Spleen
- Macroscopic features of Palatine tonsil
- Macroscopic features of Peyer`s patches
- Macroscopic features of Appendix

TRANSFERABLE SKILLS:

Learn the microscopic features of thymus and LN



READING: Clinical anatomy by Snell

Practical 4:

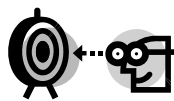
Histology of Lymphatic System

Department: Anatomy

TEACHING LOCATION: Lab

TUTOR: Dr. Jamal Saeed / Dr. Hanan Mostafa

SUMMARY:



OBJECTIVES:

1. Recognize how microscopic features of thymus relates function.
2. Understand structure and function of the blood thymic barrier
3. Trace the flow of T- lymphocytes through the thymus
4. Recognize how the structure of the lymph node accommodates its function
5. Trace the lymphocytic circulation through the lymph node
6. Differentiate microscopically between organs containing lymphoid tissue
7. The microscopic features and histological structure of spleen, tonsils, peyer's patches and the appendix



- Thymus Gland (H&E) Slide microscopy
- Lymph Node (H&E) Slide microscopy
- Spleen (H&E) slide microscopy
- Palatine tonsil (H&E) slide microscopy
- Peyer's patches (H&E) slide microscopy (MALT)
- Appendix (H&E) slide microscopy

TRANSFERABLE SKILLS:

Learn the microscopic features of lymphatic system tissues.



READING: Clinical anatomy by Snell.

Practical 5:

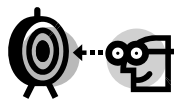
Determination of immunoglobulin, C3 and C4

Department: Basic Immunology/ Microbiology

TEACHING LOCATION: Immunology Lab

TUTOR: Dr. Aymen Safi / Dr. Mervat Abdulhady

SUMMARY:



OBJECTIVES:

1. Understand the role of diagnostic immunology
2. Describe the principle of radial double immunodiffusion assay
3. Acquired the skills for running radial immunodiffusion assay
4. Interpret the result obtained with the comparison to the positive and negative controls normal high and low values
5. Interpret the result with comparison with patients clinical reports
6. Recognized and appreciated the role of the laboratory services in the diagnosis and prognosis of the patients



- Introduction to types of immunological techniques
- Radial double immunodiffusion assay (Ouchterlony Technique) is based on phenomenon of precipitation.
- By measuring the radius, immunoglobulins or complement can be identified and their concentration also can be measured.

TRANSFERABLE SKILLS:

- Integrate the information from the lecture, practical session, tutorial clinical presentation, and independent learning activities.

Gain practical skills associated with the evaluation of the obtained result using immunoprecipitation techniques.



READING: Immunology. Roitt

Practical 6:

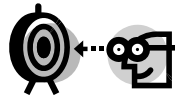
Cytokines measurements

Department: Basic Immunology/ Microbiology

TEACHING LOCATION: Immunology Lab

TUTOR: Dr. Aymen Safi / Dr. Mervat Abdulhady

SUMMARY:



OBJECTIVES:

1. Describe the principle of direct and indirect ELISA technique.
2. Acquired the skills for running immune assay.
3. Interpret the result obtained (positive and negative control) and normal high and low values.
4. Interpret the result in comparison with patient's clinical report.
5. Recognized the role of laboratory immunology in the diagnosis and prognosis of the patients



- Direct and indirect enzyme linked immunosorbent assay (ELISA) is an important, highly specific and sensitive technique.
- An enzyme such as alkaline phosphatase or peroxidase conjugated to monoclonal antibody directed against specific immunoglobulin or complement can give identification and qualification by adding a specific substrate to the reactant.
- Proper result interpretation can provide useful information

TRANSFERABLE SKILLS:

- Integrate the information from the lecture, practical session, tutorial, clinical presentation, and independent learning activities.
- Gain practical skills associated with the evaluation of the obtained result using ELISA technique.



READING: Immunology, Roitt

Practical 7:

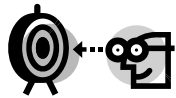
Blood Groups

Department: Haematology

TEACHING LOCATION: Lab

TUTOR: Dr. Mohamad H. Qari / Dr. Fatin Al Sayes

SUMMARY:



OBJECTIVES:

1. Identify the component of the red blood cell membrane
2. Know the normal blood groups system the ABO/RH system and the other clinical significant antigens
3. Be able to use Ag/Ab reaction in identifying ABO/RH blood groups



Theory of the normal blood groups variation

Ag/Ab reaction in blood grouping

Complete and incomplete antibodies concept

Screening for the antibodies, Ag and identification.

TRANSFERABLE SKILLS:

Performance of full blood grouping and utilize the Ag/Ab reaction in transfusion serology.



READING: Essential Hematology

Practical 8:

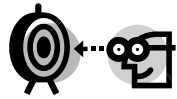
Histopathology of Hypersensitivity

Department: Pathology

TEACHING LOCATION: Pathology Lab

TUTOR: Dr. Ali Sawan / Dr. Eman Imam

SUMMARY:



OBJECTIVES:

1. Discuss the different macroscopic and microscopic examples regarding the different types hypersensitivity reaction



- Macroscopic and microscopic example of the different types of hypersensitivity reactions

TRANSFERABLE SKILLS:

The use of microscope

Relating theoretical knowledge to laboratory findings in the different types of hypersensitivity reactions



READING: Basic pathology by Kumar Cortan, Rubbins

Practical 9:

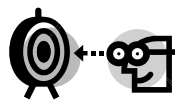
Glucose 6-PDH determination

Department: Biochemistry

TEACHING LOCATION: Lab

TUTOR: Dr. Zainy Banjer / Dr. Enayat Ali

SUMMARY:



OBJECTIVES:

1. To determine glucose 6- phosphate dehydrogenase
2. Use ultraviolet absorption of NADPH, to follow its formation
3. Integrate the biochemical defect of G6PD to pathophysiology of disease process and its clinical picture
4. Utilize biochemical knowledge in management



- Determination of red cell glucose -6 phosphate dehydrogenase activity in units /gm Hb
- The cause of changes in the laboratory finding in such case
- Function of glucose -6- phosphate dehydrogenase in different tissues
- Chemical characteristics of drugs which would be expected to bring on a hemolytic crisis
- The role of vitamins in treatment of G6PD deficiency

TRANSFERABLE SKILLS:

- Clinical laboratory technique in used the diagnosis of G6PD deficiency
- Interrelate laboratory data with clinical findings.



READING: Wills' Biochemical basis of medicine

Practical 10:

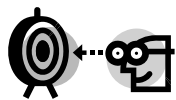
Hemoglobin and Hematochrit estimation

Department: Physiology

TEACHING LOCATION: Lab

TUTOR: Prof. Hussam Awad / Dr. Hanan Al-Kadi

SUMMARY:



OBJECTIVES:

1. Describe the importance of measuring Hemoglobin and Hct
2. Learn how to measure Hemoglobin and Hct
3. List different causes of Hemoglobin and Hct disturbance
4. Conduct measurement techniques



- Determination technique of Hemoglobin
- Determination technique of Hematochrit
- Normal and abnormal values
- Clinical applications

TRANFERABLE SKILLS:

- Clinical laboratory technique used for Hg and Hct
- Interrelate laboratory data with clinical findings.



READING: Guyton, Medical Physiology. Sherwood, Human Physiology

Practical 11:

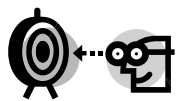
Testing of haemostasis function

Department: Haematology

TEACHING LOCATION: Lab

TUTOR: Dr. Mohamad H. Qari / Dr. Fatin Al Sayes

SUMMARY:



OBJECTIVES:

1. understand the concept of coagulation screening
2. be able to choose the correct hematopoietic test for the suspected homeostasis abnormality
3. understand the method and request utilization
4. know the normal result and their units
5. be able to interpret results appropriately



- Review the coagulation defect; congenital and acquired
- Practical exercise in performing various homeostasis tests and their interpretation
- Performance of bleeding time P.T and A.P.T.T. and thrombin time
- The predictive value of homeostasis screening test

TRANSFERABLE SKILLS:

Ability to perform homeostasis screening test
The principle, result interpretation and their normal ranges.



READING: Essential Hematology

Practical 12:

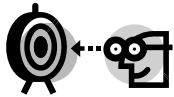
Leukemia

Department: Haematology

TEACHING LOCATION: Lab

TUTOR: Dr. Mohamad H. Qari / Dr. Fatin Al Sayes

SUMMARY:



OBJECTIVES:

1. Differentiate between benign and malignant leucocytosis
2. Evaluate morphological changes in malignant cells
3. Learn the principle of cell counting



- Introduction to malignant proliferation of haematological cell versus their normal counter part
- Cell counting manual and automated methods
- Morphological changes in hematological malignancy particularly leukemia

TRANSFERABLE SKILLS:

Cell counting methods
Microscopy of leukemia.



READING: Essential Heamtology

Practical 13:

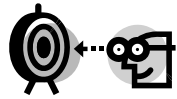
Lymphoma

Department: Pathology

TEACHING LOCATION: Lab

TUTOR: Dr. Ali Sawan / Dr. Eman Imam

SUMMARY:



OBJECTIVES:

1. Demonstrate and discuss simple macroscopic and microscopic features of lymphoma



- Macroscopic and microscopic features of lymphoma

TRANSFERABLE SKILLS:

- The use of microscope.
- Relating pathological finding to clinical picture



READING: Basic pathology by Kumar Cortan, Rubbins

Independent learning

“Independent learning is a very essential skill for tomorrow’s doctors. We will train you to gain this important skill by asking you to read independently about specific topics in cardiovascular system”

Independent learning 1

Study Histology of blood vessels and Relate structure to function in the circulation

You may use the following objectives as guidelines:

- describe the histological structure of different blood vessels
- recognise specific cell types for the different tissues as well as those common to many tissues.
- relate the structure to function in all types of blood vessels.



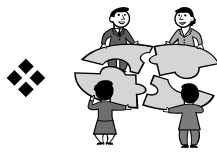
- Ganong, Review of Medical Physiology, 20th edition, page: 556 – 559
- Wheather's Functional Histology (3rd ed) pp. 140 - 152



I would recommend you to use the key word – blood vessels & histology–in the search engine google (www.google.com).

- [http://www. Google.com](http://www.Google.com)

PBL



PBL process

- The clinical scenario
- Key information
- Explore the problem
- What you know
- What you need to know
- Identify learning issues
- Self/group study
- Share the knowledge
- Solve the problem
- Give feedback & reflect

❖ Introduction

During this week you will work through the case of a patient who has a history of chest pain.

50 year old taxi driver admitted with a two hours history of sever “crushing” central chest pain. He has 8 children.

He also gives a history of being tired recently and under stress. He has had “indigestion” for some weeks especially if walking after a heavy meal. His father died of a heart attack aged 48. He takes no exercise and spends his time at work behind the wheel of his taxi. He smokes 40 cigarettes a day.

He is still in pain. Physical examination shows that he is pale clammy and sweating profusely. He has tachycardia of 100/min. Blood pressure is 100/70 mmHG. The jugular venous pressure is elevated to 6 cm. There are no other signs of cardiac failure. The heart sounds are normal.

ECG shows ST elevation in leads II, III, and aVF. The changes are consistent with an acute inferior myocardial infarction.

The first CK is normal. The cardiothoracic ratio on chest X-ray is normal and the lung field is clear. The following day the CK has risen to 1800 U/L.

After making good progress, the patient suddenly becomes breathless. On examination, the pulse is irregularly irregular, the blood pressure is 80/40 mmHg and there is a new pansystolic murmur at the apex radiating to the axilla. There are wide spread crackles over both lung fields. The chest X-ray now shows cardiomegaly with pulmonary congestion most marked around the hila.

Echocardiography shows normal left ventricular function with turbulent Doppler flow in systole from the left ventricle into the left atrium. ECG shows atrial fibrillation.

The patient makes good progress and has no further complications during his convalescence. He is due to go home shortly.

He wishes to know what treatment he has received, what he will receive in the weeks ahead and what rehabilitation program he should follow.

Despite an advice to the contrary you find out that he has returned to work a taxi driver six weeks following his MI.

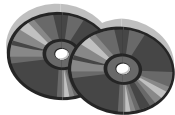
❖ Aims of the PBL sessions

- Provide differential diagnosis of acute chest pain
 - Differentiate chest pain due to cardiac disease from non-cardiac causes
 - Differentiate pain due to angina from pain due to myocardial infarction
 - Describe the principles of management of acute myocardial infarction
 - Describe the principles of management of an acute myocardial infarction and its complications
 - Appreciate the importance of primary and secondary prevention, including cardiac rehabilitation, of acute myocardial infarction.
-
- **Prerequisite**
 - You should be able to describe the gross anatomy of the heart with special reference to the area supplied by each coronary artery.
 - You should be able to take a full cardiovascular history including a risk factor profile
 - You should understand the clinical events which are responsible for each part of the ECG waveform
 - You should be familiar with the biochemical markers of myocardial cell damage.

- **Learning opportunity**



- Fagan, cardiovascular system, Physiology, 2nd edition, page: 121 -140
- Ganong, Review of Medical Physiology, 20th edition



Try to access CD-ROM series about the CVS. The computer cluster is in the 2nd floor of the medical library, building No. 7.



I would recommend you to use the key words – chest pain & case study –in the search engine google (www.google.com). The aim is to recognize the rich resources in the web.

- [http://www. Google.com](http://www.google.com)

- **Learning issues**

At the end of the first session you will be able identify the learning issues which related to the above clinical problem. Try to summarize these learning issues in the table below. We recommend you to learn about these issues. This will help you to solve the problem in the next session.

Learning issues	Notes
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Key Facts

Causes of chest pain include:

- Myocardial infarction
- Pulmonary embolus
- Aortic dissection
- Pneumothorax
- Herpes Zoster
- Pericarditis

Emergency Care of acute myocardial infarction:

- IV access
- Aspirin
- Analgesia with opiates
- Oxygen if breathless
- Thrombolysis if indicated

Indications for thrombolysis

Unequivocal acute myocardial infarction in the absence of contra-indications i.e. chest pain for more than 12 hours with ECG showing ST elevation or a new LBBB.

Contraindications to thrombolysis:

- Suspected aortic dissection
- Recent haemorrhage
- Major surgery or trauma within previous two weeks
- Active peptic ulceration
- CVA in previous six months
- Uncontrolled hypertension
- Aggressive CPR
- Warfarin therapy
- Proliferative diabetic retinopathy

Arrhythmic complications of myocardial infarction:

- Ventricular fibrillation
- Ventricular tachycardia
- Atrial fibrillation
- Atrial flutter
- First second or third (complete) degree heart block

- Asystole
- Electromechanical dissociation

Secondary prevention of myocardial infarction:

Risk factors can be divided into those which are modifiable such as smoking, hypertension and hypercholesterolaemia and those which are not modifiable such as age, sex, ethnic origin, family history, and past medical history.

Secondary preventive treatment is targeted on the modifiable risk factors.



Further Reading

Immune, Blood and Lymphatic System (IBLS)**PBL#1: Case studies in Bleeding disorders****DEPARTMENT:** Haematology**MALE TUTOR:** Dr. Mohamad H. Qari (Mobile: 0505619674)**FEMALE TUTOR:** Dr. Fatin Al Sayes (Mobile: 0504660316)**TEACHING LOCATION:****LEARNING OBJECTIVES:**

By the end of this session the student will

1. Learn how to take history from a patient with bleeding
2. Perform examination of patient with bleeding
3. Use evidence based medicine in haemostasis
4. Know how to identify & manage haemostasis patients

DETAILED CONTENT:

- History taking from patients with bleeding
- Clinical examination of bleeding patient
- Aetiology and pathophysiology of bleeding disorders
- Investigation and management of patients with bleeding

READING: Essential haematology

Immune, Blood and Lymphatic System (IBLS)

PBL#2: Case studies in hemolytic anaemia (hemoglobulopathies)		
DEPARTMENT:	Haematology	
MALE TUTOR:	Dr. Mohamad H. Qari	(Mobile: 0505619674)
FEMALE TUTOR:	Dr. Fatin Al Sayes	(Mobile: 0504660316)
TEACHING LOCATION: Classroom		
LEARNING OBJECTIVES:		
By the end of this session the student will.		
<ol style="list-style-type: none">1. Learn how to take appropriate history of suspected hemoglobulopathies2. Perform the examination of patient with hemoglobulopathies3. Perform the differential diagnosis4. Know the investigations for a case hemoglobulopathies		
DETAILED CONTENT:		
<ul style="list-style-type: none">• Assigning hamatological case for study by small groups• History taking from hamatological patient with hemolytic anaemia / hemoglobulopathies• Examining patient with hemoglobulopathies• Constructing a list of differential diagnosis• Use of screening tests for haemolysis / hemoglobulopathies		
READING: Essential haematology		

Immune, Blood and Lymphatic System (IBLS)

PBL #3: Case studies in Thrombosis	
DEPARTMENT:	Haematology
MALE TUTOR:	Dr. Mohamad H. Qari (Mobile: 0505619674)
FEMALE TUTOR:	Dr. Fatin Al Sayes (Mobile: 0504660316)
TEACHING LOCATION:	
LEARNING OBJECTIVES: By the end of this session the student will	
<ol style="list-style-type: none">1. Learn how to take history from patient with thrombosis2. Perform examination of patient with thrombosis3. Use evidence based medicine in thrombosis4. Know how to identify & manage & thrombosis patients	
DETAILED CONTENT: <ul style="list-style-type: none">• History taking from patients with thrombosis• Clinical examination of thrombosis patient• Aetiology and pathophysiology of coagulation defect (thrombosis)• Investigation and management of thrombosis patients	
READING: Essential haematology	

Immune, Blood and Lymphatic System (IBLS)**PBL-4: Case studies in immune deficiency****DEPARTMENT:** Internal Medicine, Pediatric (Clinical Immunology)**MALE TUTOR:** Dr. Emad Koshak (Mobile: 0505625334)**FEMALE TUTOR:** Dr. Hayat Kamfer (Mobile: 0555680108)**TEACHING LOCATION:** Classroom**LEARNING OBJECTIVES:**

By the end of this session the student will:

1. Learn how take appropriate history
2. Understand the clinical features of immune deficiency patient
3. Constructing a list the differential diagnosis
4. Know the investigations for immune deficiency
5. Learn management plans

DETAILED CONTENT:

- History of simulated cases with recurrent infection
- Clinical features of simulated cases with immune deficiency
- List of differential diagnosis
- Pathogenesis of immune deficiency
- Basic laboratory tests for assessing immunity
- Management outlines

READING: Immunology by Roitt. Clinical immunology by Stitz

Immune, Blood and Lymphatic Systems (IBLS)**PBL :#5: Case studies in Autoimmune disorders****DEPARTMENT:** Internal Medicine, Pediatric (Clinical Immunology)**MALE TUTOR:** Dr. Emad Koshak (Mobile: 0505625334)**FEMALE TUTOR:** Dr. Hayat Kamfer (Mobile: 0555680108)**TEACHING LOCATION:** classroom**LEARNING OBJECTIVES:**

By the end of this session the student will

1. Learn how take appropriate history
2. Understand the clinical features of immune deficiency patient
3. Constructing a list the differential diagnosis
4. Know the investigations for immune deficiency
5. Learn management plans

DETAILED CONTENT:

- History of simulated cases with recurrent infection
- Clinical features of simulated cases with immune deficiency
- List of differential diagnosis
- Pathogenesis of immune deficiency
- Basic laboratory tests for assessing immunity
- Management outlines

READING: Immunology by Roitt. Clinical Immunology by Stitz

Immune, Blood and Lymphatic Systems (IBLS)

CLINICAL PRESENTATION:#1: Allergy (Atopic diseases)		
DEPARTMENT:	Internal Medicine, Pediatric (Clinical Immunology)	
MALE TUTOR:	Dr. Emad Koshak	(Mobile: 0505625334)
FEMALE TUTOR:	Dr. Hayat Kamfer	(Mobile: 0555680108)
TEACHING LOCATION: classroom		
LEARNING OBJECTIVES:		
By the end of this session the student will:		
<ol style="list-style-type: none"> 1. Know proper history taking for Allergic disease 2. Perform clinical examination of Allergic case. 3. Select proper diagnostic techniques for diagnosing such case. 4. Know how to manage a case with Allergy 		
DETAILED CONTENT:		
<ul style="list-style-type: none"> •History of patients with Allergy disease. •Physical examination of patients with Allergy disease. •Classification and differential diagnosis of Allergic diseases. •Investigation of Allergy disease. •Management of Allergy disease. 		
TRANSFERABLE SKILLS:		
History and physical examination of Autoimmune disease. Investigation and management of Autoimmune disease		
READING: Immunology by Roitt. Clinical Immunology		

Immune, Blood and Lymphatic System (IBLS)

CLINICAL PRESENTATION#2: Hypochromic microscopic anemia
DEPARTMENT: Haematology
MALE TUTOR: Dr. Mohamad H. Qari (Mobile: 0505619674)
FEMALE TUTOR: Dr. Fatin Al Sayes (Mobile: 0504660316)
TEACHING LOCATION: Classroom
<p>LEARNING OBJECTIVES:</p> <p>By the end of this session the student will</p> <ol style="list-style-type: none"> 1. Understand iron metabolism 2. Know the causes of iron deficiency 3. Discuss the clinical and laboratory features 4. Manage iron deficiency case
<p>DETAILED CONTENT:</p> <ul style="list-style-type: none"> • History and physical examination of patient with anemia • Work up of anaemia • Causes of iron deficiency anaemia • Understand CBC reading • Management of iron deficiency anaemia
<p>TRANSFERABLE SKILLS:</p> <p>History and physical examination of anaemia Differential diagnosis of microcytic hypochromic anaemia</p>
Reading: Essential Hematology

Immune, Blood and Lymphatic System (IBLS)

CLINICAL PRESENTATION# 3: Macrocytic anaemia		
DEPARTMENT:	Haematology	
MALE TUTOR:	Dr. Mohamad H. Qari	(Mobile: 0505619674)
FEMALE TUTOR:	Dr. Fatin Al Sayes	(Mobile: 0504660316)
TEACHING LOCATION: Classroom		
LEARNING OBJECTIVES:		
By the end of this lecture the student will		
<ol style="list-style-type: none"> 1. Understand definition of macrocytic anaemia 2. Discuss the different causes of macrocytic and megaloblastic anaemia 3. Know clinical features of megaloblastic anaemia 4. Understand laboratory investigation of megaloblastic anaemia 		
DETAILED CONTENT:		
<ul style="list-style-type: none"> • Aetiology • Clinical features • Diagnosis • Pathology • Treatment • Prognosis 		
TRANSFERABLE SKILLS:		
History and physical examination of patient with megaloblastic anaemia. Understand differential diagnosis of megaloblastic anaemia		
Reading: Essential Haematology		

Immune, Blood and Lymphatic System (IBLS)

CLINICAL PRESENTATION# 4: Leukemia		
DEPARTMENT:	Haematology	
MALE TUTOR:	Dr. Mohamad H. Qari	(Mobile: 0505619674)
FEMALE TUTOR:	Dr. Fatin Al Sayes	(Mobile: 0504660316)
TEACHING LOCATION: Classroom		
LEARNING OBJECTIVES:		
By the end of this lecture the student will		
<ol style="list-style-type: none"> 1. Understand leukemogenesis 2. Understand morphology and classification of leukemia 3. Know Clinical features, diagnosis, treatment and prognosis 		
DETAILED CONTENT:		
<ul style="list-style-type: none"> • Aetiology • Clinical features • Diagnosis • Pathology • Treatment • Prognosis 		
TRANSFERABLE SKILLS:		
History and physical examination of leukemia patient		
Types of leukemia		
Leukemia management		
Reading: Essential Heamatology		

Immune, Blood and Lymphatic System (IBLS)

CLINICAL PRESENTATION# 5: Lymphoma
DEPARTMENT: Heamatology
MALE TUTOR: Dr. Mohamad H. Qari (Mobile: 0505619674)
FEMALE TUTOR: Dr. Fatin Al Sayes (Mobile: 0504660316)
TEACHING LOCATION: classroom
<p>LEARNING OBJECTIVES:</p> <p>By the end of this session the student will</p> <ol style="list-style-type: none"> 1. Understand the concept of lymphoma 2. Know the mutagenesis and oncogenesis 3. List the classification of lymphoma 4. Comprehend staging, grading and differential diagnosis 5. Discuss management of lymphoma
<p>DETAILED CONTENT:</p> <ul style="list-style-type: none"> • History and physical examination of lymphoma patient • Classification of lymphoma • Diagnosis of lymphoma • Complication and management of lymphoma • Prognosis
<p>TRANSFERABLE SKILLS:</p> <p>History and physical examination of lymphoma patient Classification of Hodgkin's lymphoma and diagnosis Grading and staging Hodgkin's lymphoma</p>
Reading: Essential Heamtology

Immune, Blood and Lymphatic System (IBLS)

CLINICAL PRESENTATION# 6:
Polythythemia

DEPARTMENT: Heamatology

MALE TUTOR: Dr. Mohamad H. Qari (Mobile: 0505619674)

FEMALE TUTOR: Dr. Fatin Al Sayes (Mobile: 0504660316)

TEACHING LOCATION: classroom

LEARNING OBJECTIVES:

By the end of this session the student will

1. Understand the concept of Polythythemia
2. List the classification and causes of Polythythemia
3. Comprehend staging, grading and differential diagnosis
4. Know investigations of Polythythemia
5. Discuss management of Polythythemia

DEATILED CONTENT:

- History and physical examination of Polythythemia patient
- Classification and etiology of Polythythemia
- Diagnosis of Polythythemia and differential diagnosis
- Complication and management of Polythythemia
- Prognosis of Polythythemia

TRANSFEREBLE SKILLS:

History and physical examination of Polythythemia patient
 Classification of Hodgkin's lymphoma and diagnosis
 Grading and staging Hodgkin's lymphoma

Reading: Essential Heamtology

Immune, Blood and Lymphatic System (IBLS)**SELF DIRECTED LEARNING# 1:
Paraproteinaemia****DEPARTMENT:** Heamatology**MALE TUTOR:** Dr. Mohamad H. Qari (Mobile: 0505619674)**FEMALE TUTOR:** Dr. Fatin Al Sayes (Mobile: 0504660316)**TEACHING LOCATION:****LEARNING OBJECTIVES:**

Upon completion of this topic the student should be able to:

1. Definition of paraproteinaemia
2. Understand pathogenesis of multiple myeloma
3. Know clinical presentation of multiple myeloma

DETAILED CONTENT:

- Definition of paraproteinaemia
 - Know the differential diagnosis of paraproteinaemia
 - Discuss epidemiology of multiple myeloma.
 - Understand pathogenesis of multiple myeloma.
- Comprehend different clinical presentations of multiple myeloma

READING: Essential hematology

Immune, Blood and Lymphatic System (IBLS)**SELF DIRECTED LEARNING #2:**

Tumor immunology

DEPARTMENT: Microbiology (Basic Immunology)**MALE TUTOR:** Dr. Aymen Safi (Mobile: 0505246026)**FEMALE TUTOR:** Dr. Mervat Abdulhady (Mobile: 0509306317)**TEACHING LOCATION:** Classroom**LEARNING OBJECTIVES:**

Upon completion of this topic the student should be able to:

1. Theories of tumor etiology.
2. Tumor specific antigen (TSA) vs tumor-associated antigen (TAA).
3. Natural immunity to tumors
4. How tumors evade (escape) immunity
5. Strategies to combat tumors based on immunotherapy

DETAILED CONTENT:

- Tumors arise in individuals whose immunological surveillance mechanisms have been disrupted. Examples in humans in which cancers emerge in immuno-deficient individuals.
- Immunological recognition and natural immunity to tumors include the functions of macrophages, NK cells, and T-cell-mediated immunity to tumors: cytokines and cytotoxic T-cell.
- Immune evasion (escape) mechanisms by tumors include reduced tumor antigen presentation and immunoregulatory factors: inhibitory cytokines and cells.
- Reversal of tolerogenic response is the goal of immunotherapy:
 - passive immunization (antitumor Ab, adoptive Tcell therapy)
 - active immunization (vaccine=antigen plus adjuvant).

READING: Immunology by Roitt. Clinical immunology

Immune, Blood and Lymphatic System (IBLS)

SELF DIRECTED LEARNING #3: Transplantation Immunology		
DEPARTMENT:	Microbiology (Basic Immunology)	
MALE TUTOR:	Dr. Aymen Safi	(Mobile: 0505246026)
FEMALE TUTOR:	Dr. Mervat Abdulhady	(Mobile: 0509306317)
TEACHING LOCATION: Classroom		
LEARNING OBJECTIVES:		
<p>Upon completion of this topic the student should be able to:</p> <ol style="list-style-type: none"> 1. The MHC gene complex and MHC antigens 2. Types of graft 3. Direct and indirect alloantigen recognition 4. Basic methods of testing for HLA antigens 5. Pathophysiology of cellular and humoral events to graft rejection. 6. Know components for graft vs. host disease (GVHD) 7. Indications for transplantation 		
DETAILED CONTENT:		
<ul style="list-style-type: none"> • Types of grafts: Autographs, isographs, allografts, and xenographs • First and second set donor tissue rejection from a non-identical MHC recipient • Alloantigen antigen direct and indirect presentation involves donor and host APC, respectively • T-cell activation and proliferation involves the formation of an “immunological synapse” utilizing TCR/MHC and co-stimulating ligands and receptors. • Mechanisms associated with the mixed lymphocyte reaction (MLR) • Tissue rejection may be hyperacute (preexisting Ab) acute (days to weeks) and/or chronic (months to years) <p>The general and specific indications for transplantation and therapeutic principles.</p>		
READING: Immunology by Roitt. Clinical immunology		

Checklist for the preparation of the IBLS module

Item	Description	Completion status		Comment
Organization of the IBLS modules:		Y	N	
1) Aims	Aims were reviewed in relation to: i) FOM ii) 2 nd / 3 rd years and outcomes in relation to that of the IBLS module	✓		
2) Pre-requisites	Pre -requisite were reviewed	✓		
3) Objectives	Objectives were reviewed in relation to i) FOM ii) 2 nd /3 rd years and outcomes in relation to that of the IBLS module	✓		

Checklist for the preparation of the IBLs module

Item	Description	Completion Status		Comment
		Y	N	
4) Transferable skills	Transferable skills were reviewed in relation to the outcomes of the IBLs module	<input checked="" type="checkbox"/>		
	contents of the IBLs module were reviewed by appropriate member of TWG #4	<input checked="" type="checkbox"/>		
	comparisons were made between current curriculum and the IBLs module in relation to learning objectives and detailed contents	<input checked="" type="checkbox"/>		
5) Structure/ Cross Themes/ General outlines	c) Detailed learning objectives and contents were completed in the appropriate forms of i) Lecture	<input checked="" type="checkbox"/>		

Checklist for the preparation of the IBLs module

Item	Description	Completion Status		Comment
		Y	N	
	ii) Tutorial	✓		
	iii) Clinical Presentation	✓		
	iv) PBL-session	✓		
	v) SDL-session	✓		
	d) Table #2 was complete by all participating department	✓		

Checklist for the preparation of the IBLS module

Item	Description	Completion status		Comment
		Y	N	
6. Assessment	Types of examination question were discuss among the TWG #4 and table #3 was complete		N	
7. Suggested Readings	List of Reading reference were compiled and table #4 was complete			
8. Writing an IBLS Introduction	An introductory " Paragraph " of 150 words was prepare and completion of table 5.			

Action plan for the preparation of the Blood, Lymphatic, and Immune System module

Item	Description	Action to be taken	Comment
Organization of the IBLS module:			
1, Aims	To review the aims of: 1)FOM 2)2 ND /3 RD year and outcomes in relation to the IBLS module	Addition of item no.3: to provide basic concepts about haemostasis and serology and other items	
2, Pre-requisite	To review the details of the minimum pre-requisites learning material (bearing in mind that some of such material will be revisited elsewhere	Deleting item no. 5 since it belong to cardiovascular system and adding the following item 1-Describe the basic histology of white and red blood cells 2-Describe the anatomical histological structure of primary lymphatic organ 3-Describe the anatomical & histological structure of secondary lymphatic organ	The new items should be included in the anatomy core

Action plan for the preparation of the Blood, Lymphatic, and Immune System module

Item	Description	Action to be taken	Comment
3.Objectives:	Review the objectives of: a) FOM b) 2 ND /3 RD outcomes in relation to that RS module	1. Deleting item no. 1& 2 and adding to them to pre requisites. 2. Rephrasing item no. 12 adding quantitative & qualitative abnormalities instead of leukopenia neoplasia. 3. Item no.13 erythrocytes replaced by various blood cells &of erthropoiesis replace by hemotopoiesis. 4. Deleting iron from the no.14 and adding it to the pre requisite. 5. Item no.16 adding and bleeding disorders. 6. Item no.17 will be describe red cells serology and transfusion medicine concept.	
4.Transferable skills	To review suggested transferable skills in relation to outcome of the IBLS module you may need to refer to table#1 of possible skills to be covered during 2 nd /3 rd years (a) to review the content of the IBLS modules and assign each part to the respective staff member of TWG#4	a) Item no.2 deleted and added to pre requisites b) deleting item no.3 c) adding new item :perform preliminary basic hematological serology and haemostatic tests	
5.Structure/ cross theme general outcomes;		Distributed according to the following table	

Action plan for the preparation of the Immune, Blood and Lymphatic System module

Item	Description	Action to be taken	Comment
	<p>(b) each staff member will compare content of the IBLS module with what is currently taught by his/her department in relation to:</p> <ul style="list-style-type: none"> i) Learning objectives ii) Lectures objective and detailed contents iii) Practicals objectives and detailed contents iv) Tutorials structure and contents v) Number of teaching hours in relation to lectures /practical /tutorials/ others and to complete table #2 accordingly c) each staff member will compile and complete the objectives for each lectures together with the detailed contents and suggested reference reading in the appropriate forms provided 	<p>This mission fulfilled by the staff members and table 2 completed</p> <p>Completed</p>	

Action plan for the preparation of the Immune, Blood, and Lymphatic System module

Item	Description	Action to be taken	Comment
	<p>d)each staff member will complete for each practical session together with the transferable skills in the appropriate forms provided</p> <p>e) Each staff member will complete the objectives for each Tutorials session (in collaboration with other subject when appropriate)in the appropriate forms provided.</p> <p>f) Each staff member will complete the objectives for each clinical presentation and detailed contents in the appropriate forms provided.</p>	<p>Completed</p> <p>Completed</p>	
6)assessment		<p>Completed</p> <p>The types of questions discussed and accordingly table no. three completed</p>	

Action plan for the preparation of the Immune, Blood and Lymphatic System module

Item	Description	Action to be taken	Comment
7)Compilation of IBSL module	Compiled completed objectives, detailed contents for each part of IBSL module to be reviewed and discussed by the TWG#4 for finalization.	The representatives of the departments wrote the objectives and the content	
8)Suggested Reading	The TWG#4 will compile the list of reference reading for the IBSL module and to complete table #4 accordingly	The suggested readings included in each session	
9)Writing an IBSL introduction	The TWG#4 will compile an introductory paragraph (about 150 words)to describe the importance of the IBSL as part of the core materials needed at this stage of the MBSS	The introductory paragraph wrote done	
10)Compilation of other information for IBSL module	The TWG#4 will complete table #5	Completed	

Action plan for the preparation of the IBLs

Item	Description	Action to be taken	Comment
11) Final Report	The twg#2 will prepare a final report on the CVS module according to the check list provided (checklist)	The final report finalized	

Table 2. The number of teaching hours and session in the current curricula that topics and contents of the IBLs and taught at various level by all departments participating of the IBLs and the number of teaching hours and session from various department that be participating in the teaching of IBLs in the new curriculum.

DEPARTMENT NAME	Number of Teaching Hours and Sessions													
	L		P		T		CP		PBL		SDL			
	C	IBLS	C	IBLS	C	IBLS	C	IBLS	C	IBLS	C	IBLS		
Anatomy	8	2	6	5	7	1								
Physiology	7	5	4	1	2	1	-	-	-	-	-	-		
Clinical Biochemistry	10	3	4	1	5	1	-	-	-	-	-	-		
Pathology	13	4	4	2	2	1	-	-	-	-	-	-		
Pharmacology	8	3	1	-	2	1	-	-	-	-	-	-		
Haematology	20	4	-	4	-	1	-	5	4	3	-	1		
Basic Immunology		15	-	2	4	1	-	-	-	-	-	2		
Clinical Immunology		-	-	-	-	1	-	1	-	2	-	-		
Total		36	-	13		8		6		5		3		

L= Lectures: P= Practical:

SDL= Student -Directed-Learning

IBLS= Blood, Lymphatic, & Immune System

T= Tutorials:

CP= Clinical Presentation:

PBL= Problem-Based Learning

CSL= Clinical Skills Lab:

TABLE 3 Types of examination question for the assessment of the IBL S module

Types of exam	Percent	Types of question	Num of question	Total time (min)	Contributing Department
A) Written	40%	a) MCQs	32	45	All the concerned departments will contribute to all parts of the examination
		b) EMQs			
		c) SAQs			
B) Practical	15%	a)	8	60	
		b) OSPE			
		c)			
C) Course work & continues assessment	40%	a) MCQs	10	15	
		b) SAQs			
		c) Assignment			
D) Oral	10%	a) Structured	2	5	
		b)			

TABLE 4. List of suggested reading reference (Books, e material, etc)

NAME OF BOOKS	AUTHOR	PUBLISHER	YEAR OF PUBLICATION
1.Essential heamatology	V.A. Hoffland		2001
2. Basic pathology	Kumar,Cotran & rubbins	Sauder W.B	
3.Will's Biochemical basis medicine	J. Hywel Thomas Brian Guillman	Butterworth Heinemon	
4.Textbook of Medical physiology	Guyton AC, Hall JE	Sauder W.B	2000
5. Textbook of Human Physiology	Sherwood		
6.Clinical anatomy	Snell		
7.Histology	Gartner & Hiatt		
8. Immunology	Roitt I,		2006
9. Clinical immunology	Stites DP		2005

Checklist for the preparation of the IBLS module

Item	Description	Completion status		Comment
		Y	N	
Organization of the IBLS modules:	Aims were reviewed in relation to:			
1) Aims	i) FOM	<input checked="" type="checkbox"/>		
	ii) 2 nd / 3 rd years and outcomes in relation to that of the IBLS module	<input checked="" type="checkbox"/>		
2) Pre-requisites	Pre -requisite were reviewed	<input checked="" type="checkbox"/>		
3) Objectives	Objectives were reviewed in relation to			
	i) FOM	<input checked="" type="checkbox"/>		
	ii) 2 nd /3 rd years and outcomes in relation to that of the IBLS module	<input checked="" type="checkbox"/>		

Checklist for the preparation of the IBLS module

Item	Description	Completion Status		Comment
		Y	N	
4) Transferable skills	Transferable skills were the reviewed in relation to the outcomes of the IBLS module	✓		
5) Structure/ Cross Themes/ General outlines	contents of the IBLS module were reviewed by appropriate member of TWG #4	✓		
	comparisons were made between current curriculum and the IBLS module in relation to learning objectives and detailed contents	✓		
	c) Detailed learning objectives and contents were completed in the appropriate forms of i) Lecture	✓		

Checklist for the preparation of the IBLs module

Item	Description	Completion Status		Comment
		Y	N	
ii) Tutorial		<input checked="" type="checkbox"/>		
		<input checked="" type="checkbox"/>		
		<input checked="" type="checkbox"/>		
		<input checked="" type="checkbox"/>		
		<input checked="" type="checkbox"/>		
iii) Clinical Presentation		<input checked="" type="checkbox"/>		
		<input checked="" type="checkbox"/>		
iv) PBL-session		<input checked="" type="checkbox"/>		
		<input checked="" type="checkbox"/>		
v) SDL-session		<input checked="" type="checkbox"/>		
		<input checked="" type="checkbox"/>		
d) Table #2 was complete by all participating department		<input checked="" type="checkbox"/>		

