Paramedical Program

Specialization	**Medical Laboratories**
Course Number	**020807163**
Course Title	**Blood bank**
Credit Hours	**(3)**
Theoretical Hours	**(2)**
Practical Hours	**(3)**

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❖ **تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008**

Brief Course Description:

This course focuses on understanding theoretical, practical application and technical performance of blood bank procedures required for transfusion of blood and blood components and for handling and storage of blood and blood components.

Course Objectives and learning outcomes:

Upon the completion of the course, the student will be able to:

1. Identify the mission, objectives and organizational issues of blood banks.
2. Describe serological identification of donor and recipients blood.
3. Explain ABO, Rh and other blood group system.
4. Describe the principle of direct and indirect antiglobulin testing.
5. Explain the principles and applications of blood banking techniques including blood grouping, antibody screening and identification.
6. Explain the principle of compatibility testing.
7. Identify the steps of donor selection.
8. Describe the process and conditions of blood collection, separation, testing and preservation.
9. Discuss the pathophysiology, management and diagnosis of hemolytic disease of new born (HDN)
10. Identify transfusion transmitted diseases.
11. Explain safety measures that aim to protect patients as well as technicians from blood borne pathogens.
12. List therapeutic uses and clinical indication for usage of each blood component.
13. Describe adverse effects of blood transfusion.
14. Explain the HLA system.
15. Appreciate the importance of accuracy in performing tests in blood banks.

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Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1	Introduction	▪ Safety & quality management of blood bank ▪ Blood bank mission and objectives ▪ Genotypes and phenotypes	
2	Blood collection & donor selection	- Whole blood collection and phlebotomy - Blood preservatives	
3	Blood components preparation , storage	▪ Blood components - preparation -shelf life and storage conditions - Indication for use - glycerolized RBCs • Blood storage (conditions and changes that occur to blood during storage) • Diseases that require frequent blood transfusion and conditions for transfusion	
4	The ABH blood group system	▪ Historical preview ▪ Inheritance of the ABO Groups ▪ ABO subgroups. ▪ ABO antibodies ▪Blood grouping(forward and reverse typing) ABO discrepancies in forward and reverse typing.	
5	The Rh blood group system & other group	▪ Rh system -Definition -Nomenclature -Fischer-Race and weiner theories of inheritance -Antigens and antibodies -Testing -Sources of errors and avoiding them Weak D Antigen and Du test ▪ Lewis system	

		▪ Kell blood group system ▪ Kidd blood group system ▪ Duffy blood group system ▪ MNSs blood group system ▪ P and Pk blood group system Lutheran blood group system	
6	Identification of unexpected antibodies	▪ Antibody screen ▪ Antibody identification ▪ Special problems in antibody identification **The HLA system** Clinical significance of the HLA system - HLA antigen detection techniques - HLA antibody detection techniques	
7	Pre-transfusion testing	**The antiglobulin test (Coombs test)** ▪ Definition ▪ Antihuman Globulin Reagents ▪ Direct antiglobulin test -Principle -Procedure -Application ▪ Indirect antiglobulin test -Principle -Procedure -Application ▪ Factors affecting antiglobulin testing Sources of error **Compatibility Testing** ▪ Definition and importance ▪ Protocols -Testing of the donor sample -Testing of the patient sample ▪ Selection of appropriate donor unit ▪ Crossmatching -Major and minor cross match tests -Interpretation of results - sources of errors and avoiding them ▪ Compatibility testing in special circumstances: - Emergencies - Intrauterine transfusions & transfusions of infants Autologous transfusion	

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8	Adverse effects of lood transfusion	▪ Immediate transfusion reaction -Immediate hemolytic transfusion reaction (IHTR) -Immediate non hemolytic transfusion reaction (INHTR) ▪ Delayed transfusion reaction (DTR) -Delayed hemolytic transfusion reaction (DHTR) - Delayed non hemolytic transfusion reaction (DNHTR) *BloodTransfusion Transmitted Diseases.	
9	**Practical part**	1-Introduction and Labaratory safety in the blood bank Handouts 2-Donor Selection & Preparation 3-Blood phlebtomy,blood processing& component separation. 4-ABO typing& Kell typing & Other Ag typing Handouts 5 Antiglobulin test (Direct) and testing for Du 6 Antibody screening (Indirect Antiglobulin test) 7 Cross-matching: Direct & Indirect 8 Antibody identification &Titration Handouts	

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Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Practical Exam	10%	--/--/----
	Final Exam	35%Theory 15%Practical	--/--/----

Teaching Methodology:

- Lectures
- Slides and posters
- Practice inside labs

Text Books & References:

Reference

1.(2014)Full Text of American Association of Blood Bank-Technical Manual 18th ed. Mark K Fung,Brenda J.Grossman.

2- Modern Blood Banking and Transfusion Practies . 6th ed. Kathy D. Blaney , Paula R. Howard. 2012. FiA.Davis compa.

3- Immunohematolgy; Principles and Practice (point Lippincott Williams & Wiljins). Eva D. Q. uiley. 2rd ed. Wolters ;luwe.2010

4- Transfusion medicine and Hemostasis . Mikhail Roshal Cedior) . 2nd ed 2013. Elsevier.

5- Practical Transfusion medicine. Mikhail Murphy 5th ed. 2017. Willey Blakwell.

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