

Kingdom of Saudi Arabia
Ministry of Higher Education
Majmaah University
College of Medicine



المملكة العربية السعودية
وزارة التعليم العالي
جامعة المجمعة
كلية الطب

Body Fluids, Electrolytes and Blood

MODULE

MED 122

STUDY GUIDE

Phase - 2, Second Year, Second Semester



Academic Year: 1432-1433 H (2011 - 2012 G)

بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ

(وقتل ربّی ذی حدی علماً)

طه. ۱۱۴

MESSAGE FROM THE DEAN

The Medical College challenges the best and the brightest minds to learn the science of medicine and public health, and the art of compassionate care, that is rigorous, and committed to professionalism. The faculty takes pride in its commitment to educating the next generation of scientists, community health practitioners and clinicians.

Our college has become a better place to pursue medical education. With modernized facilities, and curriculum that introduces early clinical experiences, and global initiatives, including a state of the art clinical skills and simulation centre which is fully equipped and has started working.

The achievements are the generosity of the Majmaah University, college of Medicine is a tribute to our faculty, our students, our staff, and our alumni. We select each new entering semester with the intention of ensuring that the college will train tomorrow's medical leaders, secure in the knowledge that they will be well prepared to practice their chosen specialties and to meet the needs of the community.

Dr. Mohammed O Al-Rukban
Dean, College of Medicine
Majmaah University

Dear students,

We welcome you, in new and exciting module that provides trainees with background information as to how well can our body adapt for problems concerning body fluid. This module will highlight, the primary role of kidney in maintenance of constancy of an internal environment, and the other main parameter of kidney function i.e. clearance. In short a systemic approach for the Integration of body fluids, renal, and blood.

Lectures will provide the core information and provide an indication on the scope or knowledge and understanding required. Laboratory classes will support the development of practical and related skills, PBL, CD, seminars and their involvement to face the future challenges.

We have teaching and learning materials to complete the highly relevant content topics that will be introduced to you during this module, and in addition a visit to the kidney dialysis ward and microbiology department in king Khalid hospital.

Best wishes from

Your module committee members

Dr Qazi Imtiaz Rasool
(module coordinator) is
available everyday 24 hrs
during this module.

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General Module Information

Module Title : Body Fluids, Electrolytes and Blood
Module Code & Number : MED122
Credit Hour : 5 Hours
Module Duration : 7 Weeks
Module Starting Dates : 3-6-1433 (24-4-2012)
Module Coordinator : Dr. QAZI IMTIAZ RASOOL
Assistant Module Coordinator : Dr. Alhadhif -Abdulrahman

Module executive Members

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Dr Wahengbam PK(Waheed)
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Dr.Fahim Haider Jafari
Dr. Mohammed Alimullah Fawaz
Dr.Sherif Saleh

Module planning Committee members:

All Faculty members

Module Tutors: Dr. khalid Alabdclwahab (Ophthalmology)
Prof. Mazen K. Qato (Therapeutics)
Dr. Wahengbam PS (Community Medicine)
Dr. Qazi Imtiaz Rasool (Physiology)
Dr. Mohammed Yunus (Pathology)
Dr. Fahim Haider Jafari (Anatomy)
Dr. Mohammed Alimullah Fawaz (Microbiology)
Dr.Sherif Saleh (Biochemistry)
Dr. Muhammad Ashraf (Internal Medicine)
Dr. Mohammed Rehan (Anatomy)
Dr. Khwaja Mohammad Amir (Physiology)
Dr. Kamran Afzal (Physiology)
Dr. Mansour Alzahrani (Family Medicine)
Dr. Mohammed Almansour (Family Medicine)

General Module Information

COURSE CODE & NO.	COURSE TITLE	COURSE TITLE		CREDITS
		THEORY	TUTORIAL / PRACTICAL	
MED 122	Body Fluids, Electrolytes and Blood	41 hrs	10/29	5
		41 hrs	34 hrs	

Course Description: (DURATION: 7 WEEKS)

The course is divided into three major sub-themes :-

- a) body fluids along with electrolytes
- b) urinary system and
- c) blood. The major emphasis of this module is to develop a thorough understanding of body's internal environment, its regulation and vital role of kidney in its maintenance. The theme will expand to include the patho-physiology of major diseases affecting the body fluids, kidneys, along with other excretory organs and blood. Three integration cases will be used to consolidate understanding of the course. The emphasis on the third sub-theme blood and its component will be more on composition, functions, hemato poiesis, and coagulation.

Course Objectives: Broadly, the overall goal is to develop, an understanding of the basics of body fluids, which will include blood and electrolyte physiology and their applications in health and disease.

At the end students are expected,

- a) To develop understanding of the critical function of internal fluid milieu of the body in the maintenance of health and its regulation (A,C)

- b) To develop a thorough understanding of role of kidney in maintenance of body's fluid and electrolyte status (A,B)
- c) To discuss the mechanism of urine formation , micturition and its control (A,B)
- d) To describe the patho-physiological processes of the major presenting symptoms related to derangement of body fluids ,renal functions (A,B,D,E)

e) To discuss the principles of management and prevention of renal diseases(A,B,C,E)

f) To describe various components of blood and their functions(A)

g) To describe the process involved in blood cell formation and explain the defect in hemato poiesis(A,B,D)

h) To describe the morphology of various types of blood cells and interpret the underlying pathophysiological processes(A,B,C)

i) To describe the pathophysiological processes related to common presenting symptoms in blood i.e, anemia and coagulation disorders (A,B,D,E)

The overall learning outcomes of the course are :- (A) - scientific approach to practice; (B) - clinical expertise; (C) - professionalism ; (D) - community orientation (E) - scholarship .

MODULE CONTENTS

THEME NO 1

(A) Introduction to fluid milieu of the body

1) Introduction to the module

2) Body fluids compositions, and their measurements

Resource; -

- Textbook of medical physiology by Guyton 12th Ed (pg 285-290)
- Ganong's Review of Medical Physiology 23rd Ed (pg 2-4)
- Vander Human Physiology The Mechanism of Body Function 8th Ed (pg 7, 8, 17- 18, 520)

3) Role of body fluids in maintenance of homeostasis

Resource; -a)

- Textbook of medical physiology by Guyton 12th Ed (pg 4-9, 372-378)
- Ganong's Review of Medical Physiology 23th Ed (pg 4-7)
- Vander Human Physiology The Mechanism of Body Function 8th Ed (pg 157, 520, 530-532)

4) Acid -Base balance of body fluids

- Resource; - a) Textbook of medical physiology by Guyton 12th Ed (pg 380-390)
- Lipincott's illustrated reviews: Biochemistry, 3RD edition pg 5-9, 56, 102, 192-195)
 - Textbook of biochemistry with clinical correlation 6th Ed (pg 6, 9, 194-197)

5) Acid-Base balance of body fluids

- Resource; - a) Textbook of medical physiology by Guyton 12th Ed (pg 51-53, 288-291)
- Ganong's Review of Medical Physiology 23th Ed (pg 6)
 - Lipincott's illustrated reviews: Biochemistry, 5th edition (pg 5-9, 56, 102, 192-195))
 - Textbook of biochemistry with clinical correlation 6th Ed (pg 6, 9, 194-197)

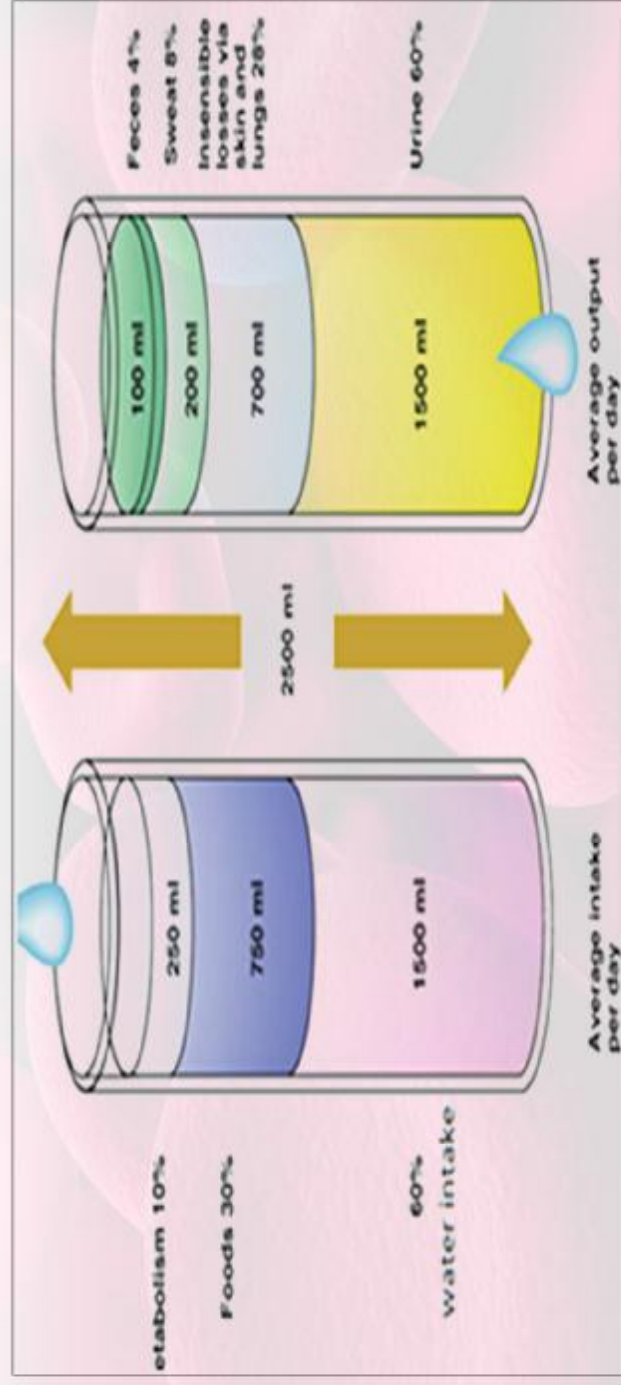
6) loss of Body fluids, and its consequenc

es

- Resource; - a) Textbook of medical physiology by Guyton 12th Ed (pg 294-296, 803-804)
- Ganong's Review of Medical Physiology 23rd Ed (pg 473)

7) Characteristics of parenteral fluid therapy

- Resource; - a) Current Medical Diagnosis and treatment Ed 2010 (pg 788-815)



MODULE CONTENTS

THEME NO 2

(A) Urinary structures and their functions;

1) Introduction to the urinary system

Resources: a) Junqueira's Basic Histology 12th Ed. Chapter No. 19 (pg: 332)

b) Wheater's Functional histology 5th Ed. Chapter No. 16 (pg: 302)

c) Clinical Anatomy by Regions: R. S. Snell 8th Ed. (pg: 262-264)

d) Vander Human Physiology The Mechanism of Body Function 8th Ed (pg 506-508)

2) Development of urinary system

Resources: a) Langman,s Medical Embryology 11th Ed. (pg 235 - 245).

3) Clinical anatomy of kidney

Resources: a) Clinical Anatomy by Regions: R. S. Snell 8th Ed. (pg: 260-265)

b) BRS Gross Anatomy 6th Ed Abdomen (pg 201 - 212).

c) Junqueira's Basic Histology 12th Ed (pg: 332 - 342)

d) Wheater's Functional histology 5th Ed. (pg: 302 - 325)

4) Clinical anatomy of lower urinary system (ureter, urinary bladder, urethra) and suprarenal gland

Resources: a) Clinical Anatomy by Regions: R. S. Snell 8th Ed. (pg 266-270)

b) BRS Gross Anatomy 6th Ed. (pg 212 - 214, 256 - 258.)

c) Junqueira's Basic Histology 12th Ed. (pg 342 - 347)

d) Wheater's Functional histology 5th Ed. (pg 326 - 327.)

5) Mechanism of micturition and its control

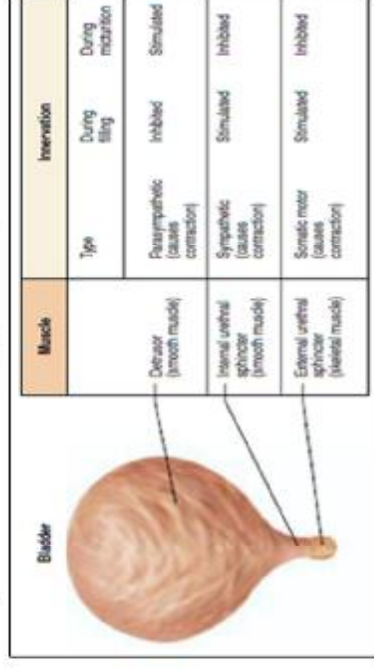
Resources: a) Clinical Anatomy by Regions: R. S. Snell 8th Ed. (pg 282 - 298, .356 - 360)

b) BRS Gross Anatomy 6th ed. Chapter No.5 Abdomen (pg: 259 - 260)

c) Textbook of medical physiology by Guyton 12th Ed (pg 306-310, 738)

d) Ganong's Review of Medical Physiology 23rd Ed (pg 639-640)

e) Vander Human Physiology The Mechanism of Body Function 8th Ed (pg 517-520)



6) GFR (glomerular filtration rate) mechanism and its regulation

Resource; -a) Textbook of medical physiology by Guyton 12th Ed (pg 304-324)

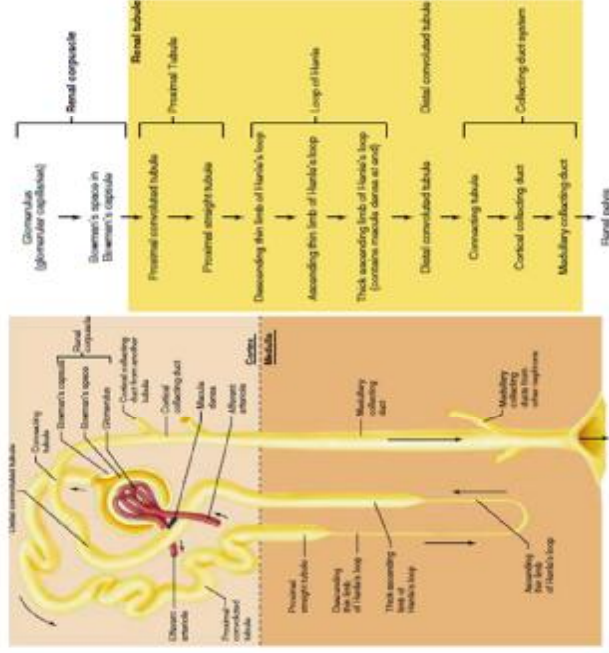
b) Ganong's Review of Medical Physiology 23th Ed (pg 639, 645-647)

C) Vander Human Physiology The Mechanism of Body Function 8th Ed (pg 510-513)

MODULE CONTENTS

7) Renal tubular transport

Resource; - a) Textbook of medical physiology 12th edition (pg 54, 55, 324-354)
 b) Ganong's Review of Medical Physiology 23rd edition (pg 645)



8) Thirst, mechanism and management

Resource; -a) Textbook of medical physiology by Guyton12thEd (pg 357-360,716)
 b) Ganong's Review of Medical Physiology 23rd Ed (pg 276)
 C) Vander Human Physiology The Mechanism of Body Function 8th Ed (pg-532-534)

9) Diuretics drugs, mechanism of actions, usages, and contraindications.
 Resource; -a) Katzung Basic and clinical pharmacology Ed 11th (pg 251-270)
 b) Vander Human Physiology The Mechanism of Body Function 8th Ed (pg 549)

(B) Patho- physiological Processes of urinary system

10) Dysuria ,with illustrative conditions of renal infections(microbiology and management)

Resource; -a) Textbook of medical microbiology by Javeitz Ed 23th (pg. 348,750-751)
 b) Current Medical Diagnosis Ed 2010 (pg 46-48)
 c) Basic pathology - Robbins Ed8th (pg 327,542,560-561)

11) Hematuria, with Illustrative condition: renal stone; and renal parenchymal disease such as nephritis

Resource;-a) Robbins Basic Pathology, 8th Ed. (pg 542 & 554)
 b) Current Medical Diagnosis and treatment Ed 2010 (pg 850-851)

12)Proteinuria, with illustrative condition: (nephrotic syndrome)

Resource; - a) Textbook of medical physiology by Guyton12th Ed (pg, 835.)
 b) Ganong's Review of Medical Physiology 23rd Ed (pg16-18,531, 660).
 c) Robbins Basic Pathology, 8th Ed. (pg.542 & 549)
 d) Current Medical Diagnosis and treatment Ed 2010 (pg 840-843)

13) Acute and chronic glomerulo-nephritis

Resource; - Robbins Basic Pathology, 8th Ed. (pg.541-559)

14) Acute and chronic pyelonephritis

Resource;-a) Robbins Basic Pathology, 8th Ed. (pg 327,542,560-561)
 b) Robbins Basic Pathology, 8th Ed. (pg 542)
 c) Current Medical Diagnosis and treatment Ed 2010 (pg 852,853)

MODULE CONTENTS

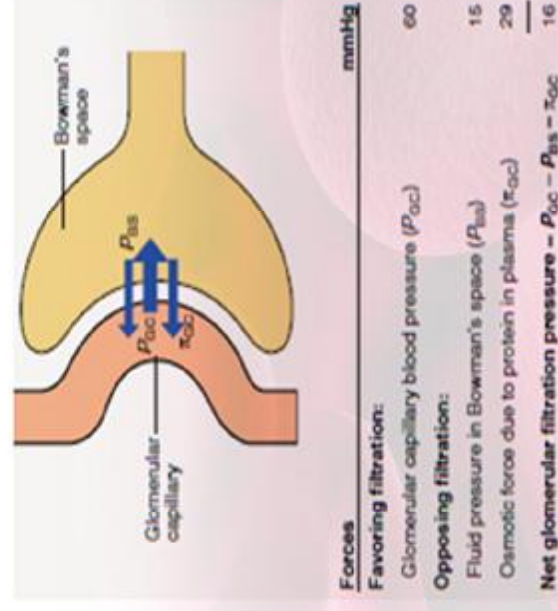
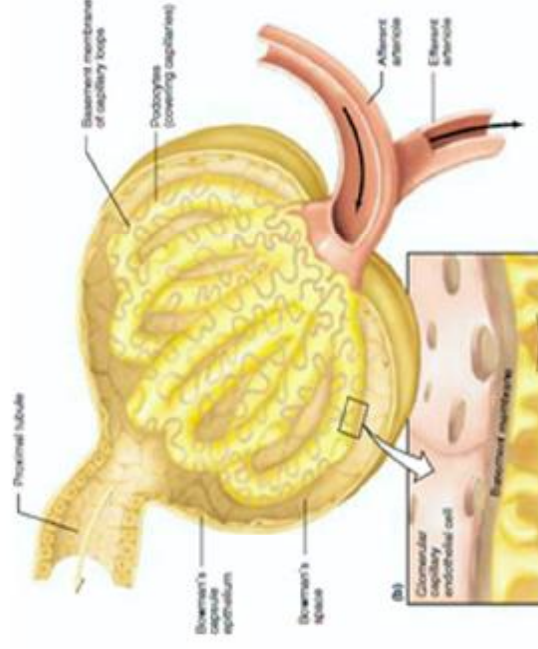
15) Lower urinary tract infections (hesitancy, dribbling, urgency etc.), Illustrative condition (prostatic-hypertrophy)
Resource;- a) Textbook of medical microbiology by David greenwood 17th Ed (pg111, 276- 277,287-291,401-404, 694,) b) Current Medical Diagnosis Ed 2010 (pg 850-856, 866-871,724-725) c) Robbins Basic Pathology, 8th Ed. (pg 542)

16) Renal stones, types, symptoms, signs and radiological diagnosis and their management.
Resource;- a) Robbins Basic Pathology, 8th Ed. (pg 571 -572). b) Current Medical Diagnosis and treatment Ed 2010 (pg 857-860)

17) Oliguria and acute renal failure (ARF)
Resource;- a) Robbins Basic Pathology, 8th Ed. (pg 542) b) Current Medical Diagnosis and treatment Ed 2010 (pg 816-824,) C) Vander Human Physiology the Mechanism of Body Function 8th Ed (pg 548-550)

18) Chronic renal failure (including endocrinal disturbances)
Resource;- a) Textbook of medical physiology by Guyton12th Ed (pg 399-410) b) Ganong's Review of Medical Physiology 23rd Ed (pg 657-660) c) Robbins Basic Pathology, 8th Ed. (pg 542) d) Current Medical Diagnosis and treatment Ed 2010 (pg 825-833) e) Vander Human Physiology The Mechanism of Body Function 8th Ed (pg 550)

19) Pathology of the kidney in hypertension and diabetes
Resource;- a) Robbins Basic Pathology, 8th Ed. (pg 554) b) Robbins Basic Pathology, 8th Ed. (pg 783-784) c) Current Medical Diagnosis and treatment Ed 2010 (pg 387-411, 1079-1117)



MODULE CONTENTS

THEME NO 3

Blood

- 1) **Composition and functions of blood**
Resource; - a) Textbook of medical physiology by Guyton 12th Ed (pg 277,414-415)
b) Ganong's Review of Medical Physiology 23rd Ed (pg 521-554)



Total erythrocytes - 5,000,000 per mm³ of blood
Total leukocytes - 7000 per mm³ of blood
Percent of total leukocytes
Polymorphonuclear granulocytes
Neutrophils 50-70%
Eosinophils 1-4%
Basophils 0.1%
Monocytes 2-8%
Lymphocytes 20-40%
Total platelets - 250,000 per mm³ of blood

Plasma - 55 %

"Buffy coat" Leukocytes and platelets
Erythrocytes - 45% (hematocrit - 45%)

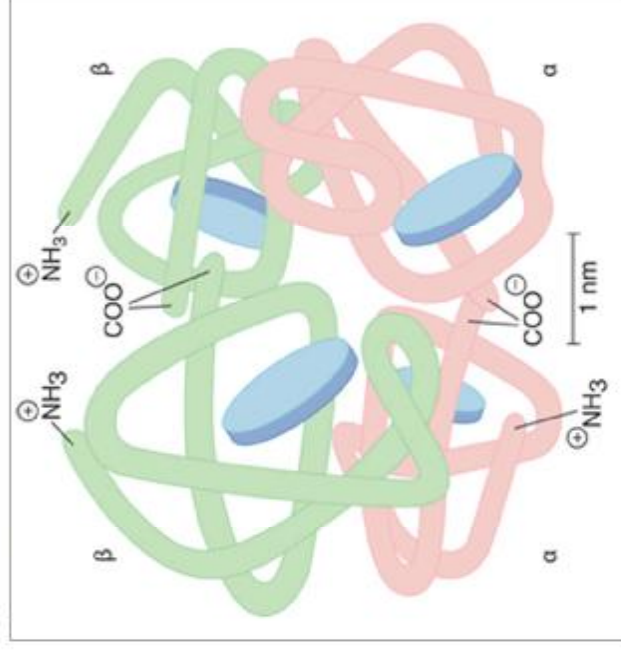
2) Plasma proteins

- Resource; -a) Textbook of medical physiology by Guyton 12th Ed (pg184, 278,833-835)
b) Ganong's Review of Medical Physiology 23thEd (pg530-531)

3) Structure and function of red blood cells

- Resource; - a) Textbook of medical physiology by Guyton 12th Ed (pg 413-420)
b) Ganong's Review of Medical Physiology 23rdEd (pg 523)

- 4) **Hemoglobin; structure, synthesis, degradation, function, types**
Resource; - a) Textbook of medical physiology by Guyton 12thEd (pg 413-420, 840, 1006)
b) Ganong's Review of Medical Physiology 23rdEd (pg 523-526)
c) Current Medical Diagnosis and treatment Ed 2010 (pg 442-452,817)

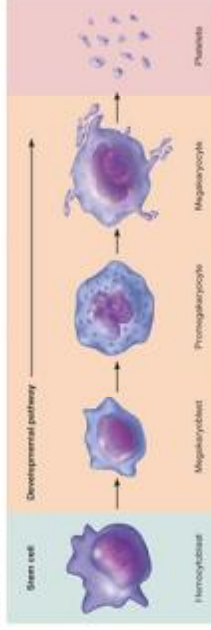


- 5) **White blood cells; types, functions,**
Resource; - a) Textbook of medical physiology by Guyton 12th Ed (pg 423-425, 432, 1024)
b) Ganong's Review of Medical Physiology 23rdEd (pg 522-523)
c) Current Medical Diagnosis and treatment Ed 2010 (pg 457,850-851)

MODULE CONTENTS

6) Platelet structure and functions

Resource; -a) Textbook of medical physiology by Guyton12thEd (pg 423-424,451-457)
b) Ganong's Review of Medical Physiology 23rdEd (pg 523)

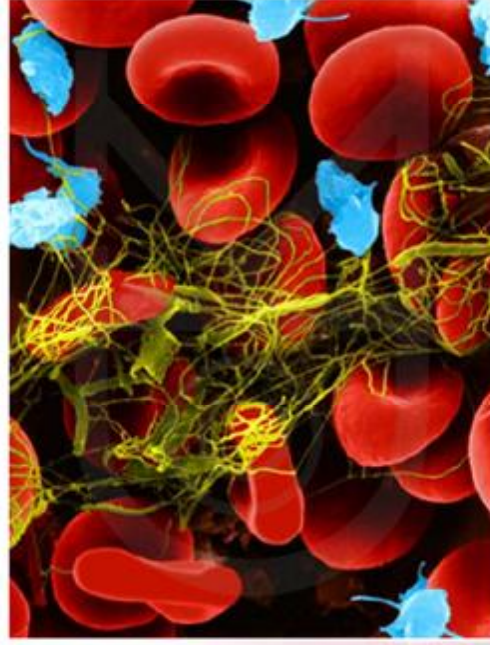


7) Blood groups

Resource; - a) Textbook of medical physiology by Guyton12th Ed (pg 280-281,445-449)
b) Ganong's Review of Medical Physiology 23thEd (pg 527-530)

8) Mechanism of hemostasis and coagulation

Resource; -a) Textbook of medical physiology by Guyton12th Ed (pg 454-460,)
b) Ganong's Review of Medical Physiology 23thEd (pg 531-535)



9) Coagulation disorders and their treatment

Resource; -a) Katzung Basic and clinical pharmacology 11th Ed (pg 587-603)
b) Ganong's Review of Medical Physiology 23rdEd (pg 535)

10) Bleeding disorders (Purpura)

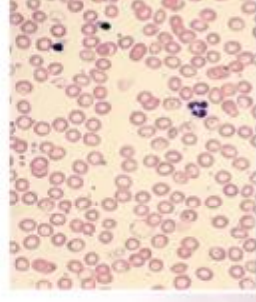
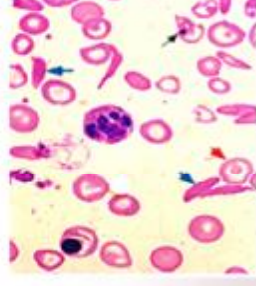
Resource;-a) Textbook of medical physiology by Guyton12th Ed (pg 413-420, 840, 1006)
b) Ganong's Review of Medical Physiology 23rd Ed (pg 535)
c) Robbins Basic Pathology, 8th Ed. (pg 468, 475)

11) Anemia (classification, common types, microscopic appearance and principles of treatment)

Resource; -a) Textbook of medical physiology by Guyton12 th Ed (pg 420-421,800,1010)
b) Ganong's Review of Medical Physiology 23rd Ed (pg 617)
c) Katzung Basic and clinical pharmacology Ed 11th (pg 569-586)

12) Introduction to preventive approach and community interventions of common hematological disorders (thalassemia and sickle cell anemia)

Resource;-a) Current Medical Diagnosis and treatment Ed 2010 (pg 442-474)



13) Overview of stem cells

Resource; - a) Ganong's review of Medical Physiology 23rdEd (pg 522)
b) Current Medical Diagnosis and treatment Ed 2010 (pg 474-476)

Detailed objectives of the module contents

THEME NO 1

1) Overview of the module

At the end of the session the students should be able to describe the overview of the block, including the objectives, contents, teaching methods, assessment systems, references and all other related issues of the module.

2) Body fluids compositions and their measurements

At the end of the session the students should be able to:

- Discuss the distribution of total body water (TBW) in the body
- List the ionic composition of different body compartments
- Explain the principles of measurements

3) Role of body fluids in maintenance of homeostasis

At the end of the session the students should be able to:

- Describe the regulation of volume and concentration of body fluids
- Discuss the various related examples of homeostasis
- Discuss the mechanism of dehydration and over hydration

4) Acid – Base balance of body fluids

At the end of the session the students should be able to:

- Discuss the clinical laboratory investigations currently used for the assessment of acid-base balance and blood gas homeostasis

- Verify the general basic biochemical & clinical chemistry concepts of disorders of acid-base balance e.g. biochemical and clinical differences between compensated and uncompensated acidosis and alkalosis.

5) Acid – Base balance

At the end of the session the students should be able to:

- Describe common clinical causes of acidosis and alkalosis with brief reference to clinical manifestations and clinical chemistry laboratory investigations

6) Body fluids loss and its effects

At the end of the session the students should be able to:

- Describe the various causes
- Discuss the consequences of hemorrhage
- Define vomiting and diarrhea
- Discuss the management

7) Characteristic of parenteral fluid therapy

At the end of the session the students should be able to:

- List the various types of parental fluid
- Discuss the principles of parental fluid therapy in fluid loss conditions

Detailed objectives of the module contents

THEME NO 2

(A) Urinary structures and their functions;

1) Introduction to the urinary system

At the end of the session the students should be able to:

- Enlist the various components of urinary system
- Describe general arrangement of viscera's in relation to posterior abdominal walls
- Enumerate the functions of these organs

2) Development of urinary system

At the end of the session the students should be able to:

- Enlist the source of development of various organs
- Differentiate between pronephros, mesonephros and metanephros
- Describe the development of connecting system
- Describe the development of urinary system
- Correlate major development abnormality with clinical conditions

3) Clinical anatomy of kidney

At the end of the session the students should be able to :

- Describe the relations of kidney
- Discuss the macroscopic structure of kidney
- Discuss the microscopic structure of kidney
- Enlist the functions of kidney
- Explain the clinical correlation

4) Clinical anatomy of lower urinary system (ureter , urinary bladder, urethra) and suprarenal gland

At the end of the session the students should be able to:

- Describe the relation ,structure, functions and clinical correlation of ureter.
- Describe the relation ,structure, functions and clinical correlation of urinary bladder .
- Describe the relation ,structure, functions and clinical correlation of urethra.
- Describe the relation ,structure, functions and clinical correlation of suprarenal gland.

5) Mechanism of micturition and its control

At the end of the session the students should be able to:

- Describe the nervous control of bladder
- Explain the mechanism of micturition and its control
- List various route of infections of bladder and their defense
- Imaging of urinary systems

6) GFR (glomerular filtration rate) mechanism and its regulation

At the end of the session the students should be able to:

- Define GFR (glomerular filtration rate)
- Discuss the mechanism
- Discuss the regulatory factors

7) Renal tubular transport

At the end of the session the students should be able to:

- Describe the absorption of various ions

Detailed objectives of the module contents

- b) Explain the counter-current mechanisms
- c) Discuss the mechanism of urine formation
- d) Discuss the role of urea

8) Thirst, mechanism and management

- At the end of the session the students should be able to:
- a) Describe the basic physiological mechanism of thirst
 - b) Discuss body's response to thirst

9) Diuretics drugs, mechanism of actions, uses, and contraindications

- At the end of the session the students should be able to:
- a) List the various types of diuretics
 - b) Discuss their mechanism of action
 - c) Discuss the principle of their usages in diseases
 - d) Enumerate their adverse effects and drug interaction

B) Patho -physiological processes of urinary System;

10) Dysuria with illustrative conditions of renal infections (microbiology and management);

- At the end of the session the students should be able to:
- a) Define dysuria
 - b) Enumerate the major causes of dysuria
 - c) Discuss common microbiological agents responsible for dysuria
 - d) Explain the patho - physiological changes
 - e) Describe the symptoms and signs of presentation
 - f) Discuss the investigations and principles of management

11) Hematuria with Illustrative condition: renal stone; and renal parenchymal disease such as nephritis;-

At the end of the session the students should be able to:

- a) Define Hematuria
- b) Describe the patho- physiological changes
- c) Discuss the medical conditions associated
- d) Discuss the investigations and principles of management

12) Proteinuria with illustrative condition: (nephrotic syndrome);-

At the end of the session the students should be able to:

- a) Define Proteinuria
- b) Discuss the various causes
- c) Describe the patho- physiological changes
- d) Discuss the investigations and principles of management

13) Acute and chronic glomerulonephritis

At the end of the session the students should be able to:

- a) Define acute and chronic glomerulonephritis
- b) Determine the causes and pathogenesis
- c) Identify the morphological features
- d) Describe the clinical features
- e) Discuss the investigations, principles of management and prevention

14) Acute and chronic pyelonephritis

At the end of the session the students should be able to:

Detailed objectives of the module contents

- a) Define acute and chronic pyelonephritis
- b) Determine the causes and pathogenesis
- c) Identify the morphological features
- d) Describe the clinical features
- e) Discuss the investigations, principles of management and prevention

15) Lower urinary tract infections (hesitancy, dribbling, urgency etc.), Illustrative condition (prostatic-hypertrophy);-

- At the end of the session the students should be able to:
- a) Define lower urinary tract infections
 - b) Determine the various causes
 - c) Explain the patho-physiological changes
 - d) List the various medical conditions associated
 - e) Describe the symptoms and signs of presentation
 - f) Discuss the investigations and principles of management

16). Renal stones, types, symptoms, signs and radiological diagnosis and their management;-

- At the end of the session the students should be able to:
- a) Discuss the chemical types, etiological factors
 - b) Explain the pathogenesis
 - c) List the Risk factors
 - d) Describe the clinical features and complications
 - e) Discuss radiological and biochemical investigations and principles of management and preventive measures

17) Oliguria and (ARF) acute renal failure

- At the end of the session the students should be able to:
- a) Define Oliguria
 - b) List the various causes
 - c) Explain the patho-physiological changes
 - d) Enumerate the various medical conditions associated
 - e) Discuss the symptoms and signs of presentation
 - f) Discuss the investigations and principles of management

18) Chronic renal failure(CRF) (including endocrinal disturbances)

- At the end of the session the students should be able to:
- a) Enumerate the various causes
 - b) Describe the patho-physiological changes
 - c) List the various medical conditions associated
 - d) Discuss the symptoms and signs of presentation
 - e) Discuss the investigations and principles of management
 - f) Explain the principles of renal replacement therapy

19) Pathology of kidney in hypertension and diabetes

- At the end of the session the students should be able to:
- a) List the causes of hypertension
 - b) Discuss the presentation
 - c) Explain the patho-physiological lesions
 - d) Discuss the principles of management

Detailed objectives of the module contents

THEME NO 3

Blood

1) Composition and functions of blood

At the end of the session the students should be able to:

- Discuss its Composition (cellular and non-cellular)
- Describe the various functions

2) Plasma proteins

At the end of the session the students should be able to:

- Discuss the origin and functions of plasma proteins
- Enumerate the types of plasma proteins and their functions
- Explain the variations in plasma proteins concentrations

3) Structure and functions of red blood corpuscles (RBC).

At the end of the session the students should be able to:

- Describe the structure of RBC
- Discuss in detail the erythropoiesis mechanism
- Describe the life-cycle of RBC (circulation, and their breakdown)

4) Haemoglobin (structure , synthesis, degradation functions, types)

At the end of the session the students should be able to:

- Describe in detail the synthesis, and catabolism of Hb
- Function of hemoglobin
- Discuss the various abnormal types of hemoglobin's.

5) White blood cells, types functions, (WBC)

At the end of the session the students should be able to:

- Describe the different types
- Discuss the functions of different types
- Describe the physiology of phagocytosis

6) Platelets structure and functions

At the end of the session the students should be able to:

- Describe the structure and functions
- Describe the thrombopoiesis
- Discuss the role of platelet in coagulation

7) Blood groups

At the end of the session the students should be able to:

- Classify and describe different types of blood group
- Enumerate the significance of blood grouping

8) Mechanism of haemostasis and coagulation

At the end of the session the students should be able to:

- Define coagulation
- Describe the mechanism of coagulation

9) Coagulation disorders and their treatment

At the end of the session the students should be able to:

- Discuss the basis of major categories of coagulation disorders
- Discuss the common anti-coagulant drugs

Detailed objectives of the module contents

10) Bleeding disorders (Purpura)

At the end of the session the students should be able to:

- Classify the bleeding disorders
- Discuss the causes of purpura
- Explain the clinical importance of purpura

11) Anemia (classification, common types, microscopic appearance and principles of treatment);-

At the end of the session the students should be able to:

- Classify the anemia based on etiology and morphology
- Describe the basis of investigations in a patient presenting with anemia
- Explain the basic approach of treatment (diet and drugs)

12) Introduction to Preventive approach and community interventions of common hematological disorders (sickle cell disease and thalassemia)

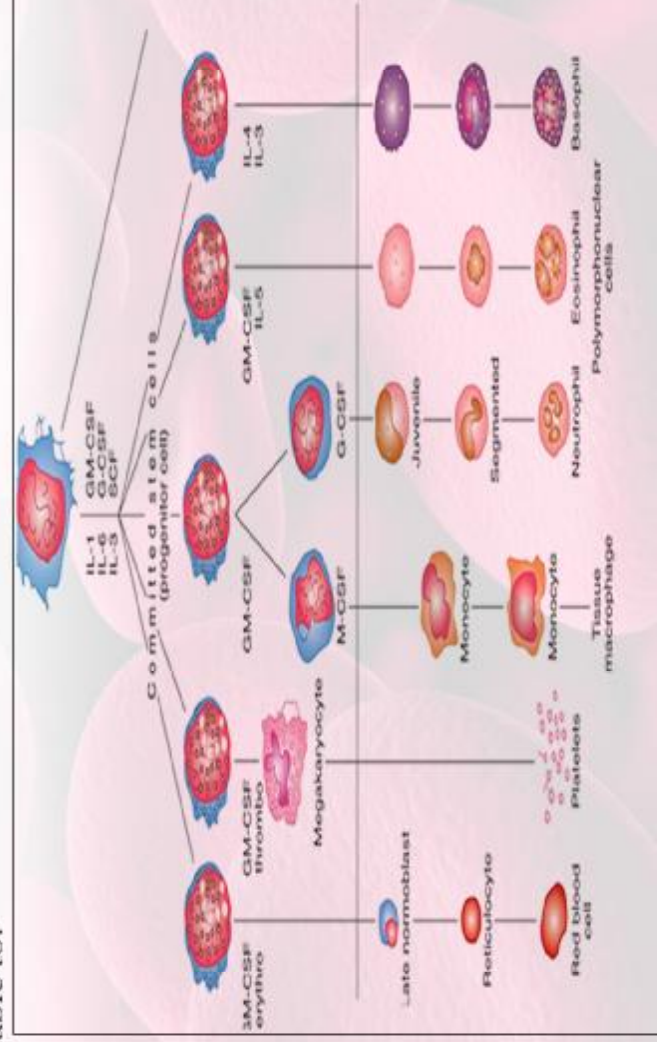
At the end of the session the students should be able to:

- Describe the measures that community should be taking regarding the issue of genetically related hematological disorder (sickle cell anemia, thalassemia)
- Explain the precautions to avoid the complications of Sickle Cell Disease
- Explain the precautions to avoid the complications of Thalassemia

13) Overview the stem cell

At the end of the session the students should be able to:

- Define Stem cells and their sources
- Discuss the role of stem cells in health
- Describe the promising clinical applications of stem cells.



BLUE PRINT OF TEACHING BY STUDENTS

S. No	PBL	CD	SEMINARS
THEME NO 1	RENAL DISEASE	AC; GASTROENTERITIS	pH
THEME NO 2	BLOOD	DIABETES AND CHRONIC RENAL FAILURE	RENAL STONE RENAL CLEARANCE TESTS
THEME NO 3	BLEEDING DISORDER	HYPERTENSION IN PREGNANCY	ANEMIAS

SEMINARS

1. Guidelines for Seminar Sessions:

- 1-Four seminars are scheduled during the block. Duration of each seminar is 2 hours.
- 2-The whole batch of 2nd year students of the College of Medicine will be divided into four groups A,B,C and D (10 students for each group).
- 3-Groups are recommended to assign a group leader chosen by students. Each group leader will be incharge for contacting the module coordinator Dr QAZI IMTIAZ RASOOL.
- 4-A staff member will work as a Seminar Supervisor for each group.
The seminar supervisor will take care of his group regarding:
 - a) Assigning students for giving presentations in coordination with the group leader.
 - b) Assigning topics of seminar in coordination with group leader.
 - c) Directly helping and advising students during preparation of presentations.
 - d) Leading and supervising of seminars regarding securing convenient venue, managing timing for each presentation and keeping order during seminar session.
 - e) Facilitating group discussion after each presentation.
 - f) Assessing students (those who give presentations and also who do not give presentations).
- 5- Three to five students are assigned for giving presentation in each seminar.

- 6- Each of the assigned students has to prepare a presentation for his assigned topic.
 - a) The presentation should be formatted by Microsoft office PowerPoint program.
 - b) Only 10-15 slides are required for each presentation.
 - c) Presentation should last for 15 minutes only.
 - d) 5 minutes will be allowed for whole group discussion.
 - e) 5-10 minutes are devoted for the tutor for giving feedback and comments.
- 7- Other students (not giving presentations) have to prepare among themselves, with active collaboration and discussion by reading topics related to seminar before attending the seminar (and not to remain just listening passively).
- 8- All students should consider that they are being assessed by the assigned tutor.

NOTE :-

Topics discussed during seminars will be examined in the written examinations in the form of scenario based questions and/or MCQs, SEQs.

SEMINARS & PBL

OBJECTIVES:-

1. Acidosis and alkalosis

- Assessment of acid-base balance in clinical practice.
- Acidosis: Common Clinical Causes, Clinical Manifestations (in brief) & Laboratory Results
- Alkalosis: Common Clinical Causes, Clinical Manifestations (in brief) & Laboratory Results

2. Renal stones

- Etiological factors for common renal stones
- Types of renal stones and their special clinical characteristics and diagnostic investigations for each.
- Therapeutic approaches of common renal stones

3. Anaemia's

- Discuss the various types of anaemia
- Discuss the causes of anaemia
- Describe the investigation of a patient presenting with anaemia
- Discuss the principles of management of common anaemia's (diet and drugs)

4. Renal function tests

- Urea & Creatinine Blood estimation with interpretation of results
- Urea & Creatinine Clearance Tests
- Discuss renal clearance test applications to measure glomerular filtration rate, renal blood flow

PBL

Problem (1):

A 12 year old boy passing dark reddish colour urine

Problem (2).

A 42 year old lady complaining of tiredness and easy fatigability

Problem (3):

A 52-year-old man with nasal bleeding

Case Discussion (CD)

Guide- lines for CD Sessions:

1- Two scheduled CD sessions will be held during the module.

2- Instructional method: Team based learning

3- Students preparation for the CD sessions:

Before each scheduled CD session, students will be given the full scenario of the case to be discussed. All students are asked and highly encouraged to read the scenario carefully and try to prepare themselves for the small group based learning discussion by trying to answer questions provided. Utilizing textbooks in the Medical Library/ websites are of profound help in achieving convenient preparation in advance.

4- CD Sessions:

On the day of every CD session, the whole batch of students will be divided into groups of 8-10 with nominated faculty members. During each session, the case will be presented and discussed by the students in collaboration with the faculty. The faculty will be in charge for facilitating discussions and clarifying points issued by students. The faculty also may give some critical questions related to the topic during the discussion. Active collaboration of all the students in discussion and response to faculty questions is highly motivated.

5- Assessment of students for CD sessions:

NOTE ;-

Topics discussed during CD sessions will be examined in the written examinations in the form of scenario based questions and/or MCQs, SEQs.

CASE DISCUSSION

Case 1

An 18 month old baby is admitted to the hospital. Her parents complained, she had 15 episodes of diarrhea and 5 episodes of vomiting during last 24 hours.

On examination she appears weak, pale and her eyes are sunken, she has a temperature of 39.4°C. Her weight is 11.0 kg which is less by 0.6 kg recorded 3 days ago. Her pulse was 120/min. respiratory rate was 40/min; blood pressure 80/60mm of Hg, O₂ saturation is 100% in room air. She does not look toxic and not irritable. Her oral mucosa is sticky (tacky). heart regular, no murmurs, lungs are clear. Abdomen is scaphoid, soft and non-tender with hyperactive bowel sounds. Her skin turgor is diminished, but no tenting is present. Her extremities are cold, but body is warm.

She is clinically assessed to be 10% dehydrated by clinical criteria.. She is given 220 cc of normal saline IV over one hour and she feels much better. A stool examination for rapid assay of rota-virus is done which is positive
Her blood chemistry investigation showed

Na 134meq/L (normal values 138-146 mEq/L)

K3.4mEq/L (normal values 3.8-5.0 mEq/L)

Cl 97 mEq/L (normal values 103-112 mEq/L)

HCO₃ 21 mEq/L (normal values 24-32 mEq/L)

The appearance of her eyes has normalized and she is more active. Small amounts of fluids were allowed orally.

Questions for discussion

- What is normal fluid and electrolyte requirement for an 18 month old baby?
- What is normal fluid regulation mechanism of the body?
- What is the composition of intracellular and extracellular fluid?
- What are the routes of fluid loss from the body?
- What are the presenting features in a child with dehydration?
- What is the electrolyte solutions commonly utilized for oral and intravenous rehydration?
- Why is the baby not given oral fluids initially?
- What would be the body's response to dehydration?
- Why does a child become tachycardia after prolong vomiting and diarrhea?"

CASE DISCUSSION

Case No. 2

A 70-year-old woman (known case of diabetic mellitus) was brought to hospital, as she has noticed that during the past month, she felt all the time thirsty, and used to get up several times at night to urinate. She would also consume more than 10 glasses of water. She was eating more than usual, yet she lost about 5 kg within a few weeks.

At the hospital, blood and urine samples were taken. The following lab results were noted:

Fasting blood sugar: 270 mg/dl (15mmol/l)

HbA1c: 9%

Urine: glucose +3, ketone -nil,

Protein; albuminuria +++

Creatinine; 9 mg/dL

On enquiring about her past history it was revealed, she was diagnosed to have type-2 diabetes mellitus long back and started on oral hypoglycaemic medication, she had shown non-compliance towards her medications. Later on after 20 years she began to show early signs of diabetic nephropathy (kidney disease), consisting of persistent proteinuria, hypertension, and gradual decrease in renal function as measured by laboratory tests.

1. Fasting blood sugar: 216 mg/dl (12mmol/l)

2. BUN (blood urea nitrogen) = 80 mg / dl

3. Creatinine; 4 mg/dL

4. Urine; glucose+1, proteins ;+(mainly albumin),ketone bodies ;nil

She was advised by her physician that her kidneys were not functioning normally. She was conveyed that she needed to go for haemodialysis/peritoneal dialysis and a renal transplant.



In 1984, Dr. Claudio Ronco, treated this child with CAVH in Vicenza, Italy. This is the first patient purposely treated with CAVH in the world. The patient survived.

Questions for discussion

- Why is her blood-glucose level elevated?
- What is glycosylated haemoglobin?
- What are the early signs of chronic renal failure?
- What is the pathophysiology of chronic renal failure?
- What signifies renal failure? What is dialysis, advised by her physician after noting that her kidneys are failing?

CASE DISCUSSION

Case 3

A 30 year old woman in her second pregnancy is admitted to the emergency ward at 37 weeks of gestation. She was complaining of severe headache, diplopia, upper abdominal pain, vomiting, and increasing swelling of legs ankles, fingers, face, for last twenty days. On physical examination, she appeared disorientated, suffering from breathlessness, cyanosed, cold peripheries and peripheral tibial edema,. Her blood pressure was 170/120 mm/Hg the respiratory rate was 30/minutes. Her nervous examination showed hyperreflexia, clonus,

Blood Investigations done showed:

- a. Hb 6.3gms/dL
- b. TLC 26,200 cu.mm³
- c. DLC 68/17/1/12/2
- d. Urca \downarrow sc 193.47 mg/ dL
- e. Creatinine; 8.88 mg/dL
- f. Sodium 145.26 mEq/L Potassium 5.7 mEq/L
- g. Bilirubin 1.41 (0.3-1mg /dL) -- SOPT \downarrow sc 138.5 (0-35U/L)

Urine dip sticks testing shows 3+ of protein

Urine protein: creatinine ratio (PCR): PCR > 30

She has no past medical history of significance. Her blood pressure when pregnancy was first confirmed at 10 weeks was 120/70.

She is reviewed by an obstetrician and moved into a room with equipment for cardiovascular monitoring. A 14G intravenous cannula is inserted

Questions for discussion

Why is her blood pressure raised?

What is the most likely reason for these clinical signs?

What other symptoms and signs should be looked for?

What more investigations should be performed?

How is the condition dangerous for mother?

What is the effect on fetus?

How will you manage?

OBJECTIVES OF CLINICAL SKILLS SESSIONS

1. HISTORY TAKING FROM A PATIENT WITH A BLOOD AND RENAL DISEASES.

At the end of the session the students should be able:

- To know the chief complaints of the patient with a blood and renal diseases.
- To take detailed present, past and family history from patient with a blood and renal diseases

2. EXAMINATION OF A PATIENT WITH BLOOD DISEASE

At the end of the session the students should be able:

- To perform relevant clinical examination of patient with blood diseases e.g. to palpate spleen and liver
- To identify clinical signs of pallor, cyanosis, clubbing, petechae, ecchymosis, purpura, bony tenderness, oedema etc

3. VENOUS CANNULISATIONS (SIMULATION LEARNING IN MANIKINS)

At the end of the session the students should be able:

- To perform peripheral venous cannulisation with various sizes of cannulas
- To perform the correct steps for taking venous blood sample

4. CLINICAL EXAMINATION OF RENAL-SYSTEM

At the end of the session the students should be able:

- To do a general and systemic examination of abdomen

5. CATHETERIZATION IN MALE AND FEMALE (SIMULATION LEARNING IN MANIKINS)

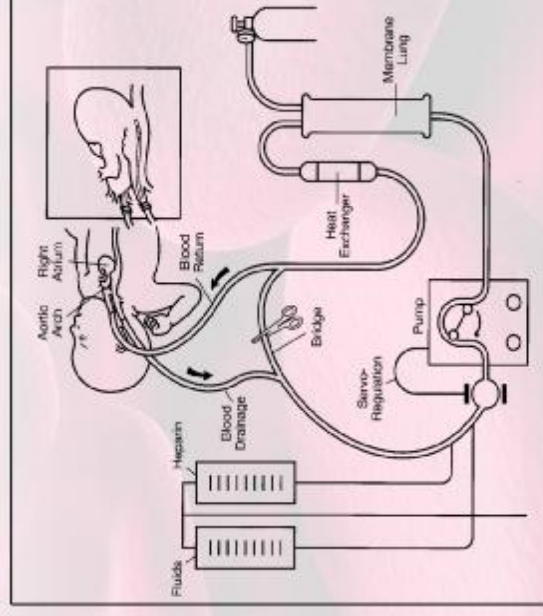
At the end of the session the students should be able:

- To perform /practice catheterization in male and female

History Taking: Data Collection

The basic information required for ALL patients:

Date of visit: Patient Record #:
Name: (last) (first) (middle)
Home address: Home phone:
Business Address: Business phone:
Occupation: Emergency Contact:
Date of birth:
Sex: M / F
Marital status (S/M/D/W): Weight:
Height: PCP, Name & #:



LEARNING OBJECTIVES OF PRACTICALS OF ANATOMY

1. DEVELOPMENT OF THE URINARY SYSTEM

At the end of the session the students should be able to;--

- Identify and draw the pronephros, mesonephros and metanephros on models
- Identify and draw the developing connecting system on models
- Identify and draw the excretory system on models

2. POSTERIOR ABDOMINAL WALL

At the end of the session the students should be able to;--

- Identify various structures on cadavers' plastinated specimens and models
- Explain the relation of these structures on cadaver's plastinated specimens and models

3. MICROANATOMY OF THE KIDNEY

At the end of the session the students should be able to;--

- Describe the histological structures of kidney
- Identify the structures on slides using microscope
- Draw the histological structures
- Correlate clinically

4. MICROANATOMY OF URETER, URINARY BLADDER, URETHRA

At the end of the session the students should be able to;--

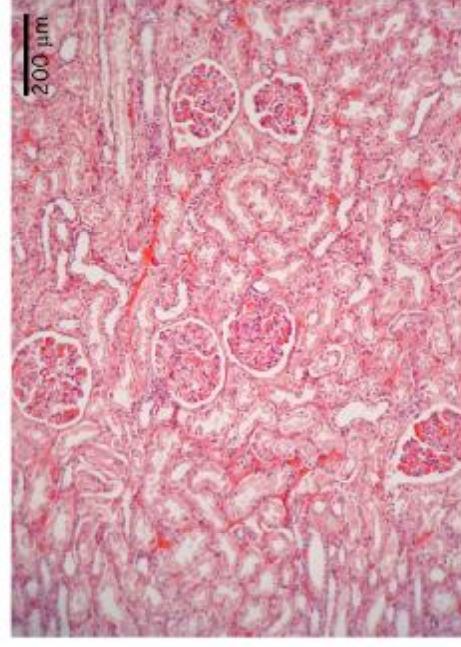
- Describe the histological structures of ureter, urinary bladder, and urethra
- Identify the structures on slides using microscope
- Draw the histological structures
- Correlate clinically

5. CLINICAL ANATOMY OF THE URINARY SYSTEM (KIDNEY, URETER, BLADDER, URETHRA)

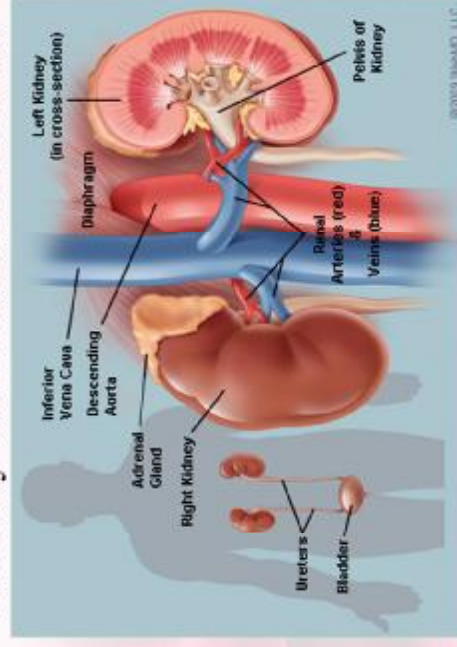
At the end of the session the students should be able to;--

- Identify the gross structure of the organs
- Appreciate the relation of these organs
- Describe the nerve supply, blood supply and lymphatics of these organs
- Clinical correlate

histology of kidney



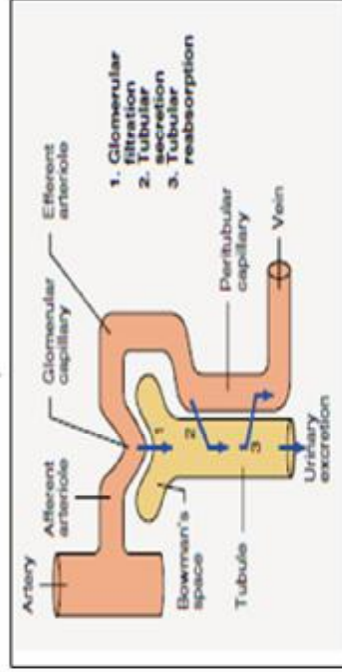
Kidney and its correlations



1. Renal excretory function tests;

At the end of the session the students should be able:-

- To list the normal values of various ions excreted by kidney
- To discuss the variation in the of normal values
- To discuss the relation of various values to abnormal kidney conditions



The three basic components of renal function. This figure is to illustrate only the directions of reabsorption and secretion, not specific sites or order of occurrence. Depending on the particular substance, reabsorption and secretion can occur at various sites along the tubule.

2. Osmotic fragility test

At the end of the session the students should be able:-

- To describe the principle and mechanism of this test
- To discuss the normal range of values
- To list the abnormal conditions related with the test
- To discuss the clinical usage of this invest

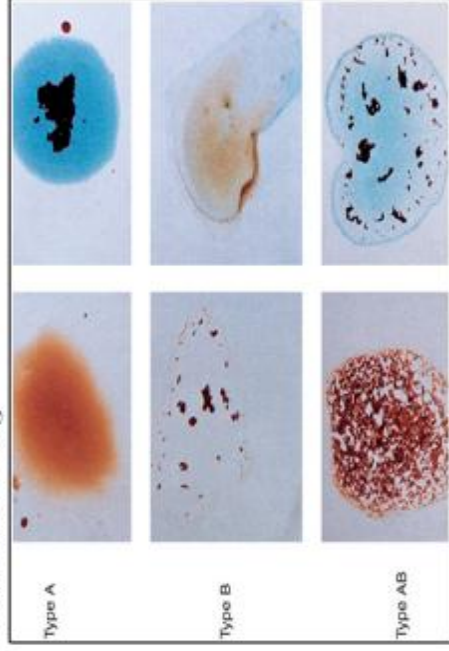


3. Blood group

At the end of the session the students should be able:-
a) To identify the blood group of the subject

- To list the different classification of Blood groups
- To explain the mechanism of testing
- To explain about the importance of Cross matching

Cross matching



4. Clotting time of blood

At the end of the session the students should be able:-

- To identify the method of assessing the clotting time
- To explain about the anti-coagulants used in the laboratory
- To explain variations of clotting time in major clinical conditions and there Significance

5. Bleeding time

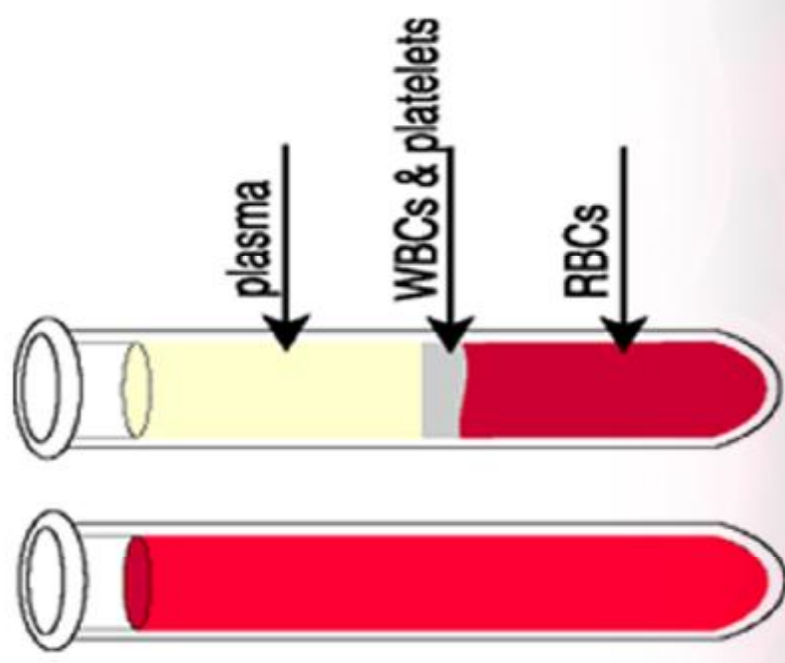
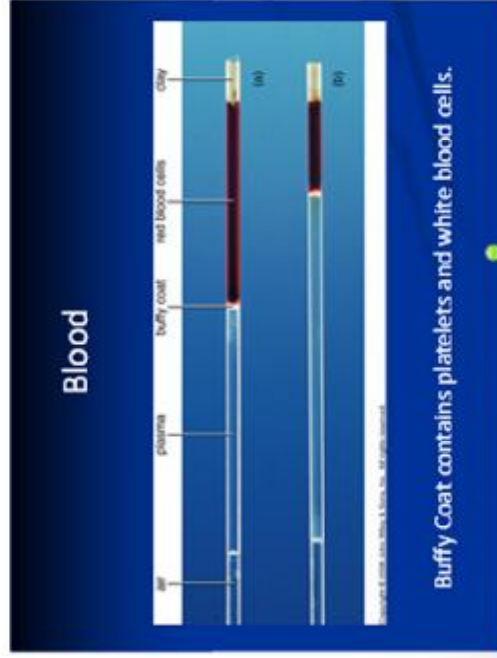
At the end of the session the students should be able:-

- To identify the method of assessing the bleeding time
- To explain the significance and clinical application of the practical
- To discuss the variation on bleeding time in different clinical conditions

6. Blood indices

At the end of the session the students should be able to:-

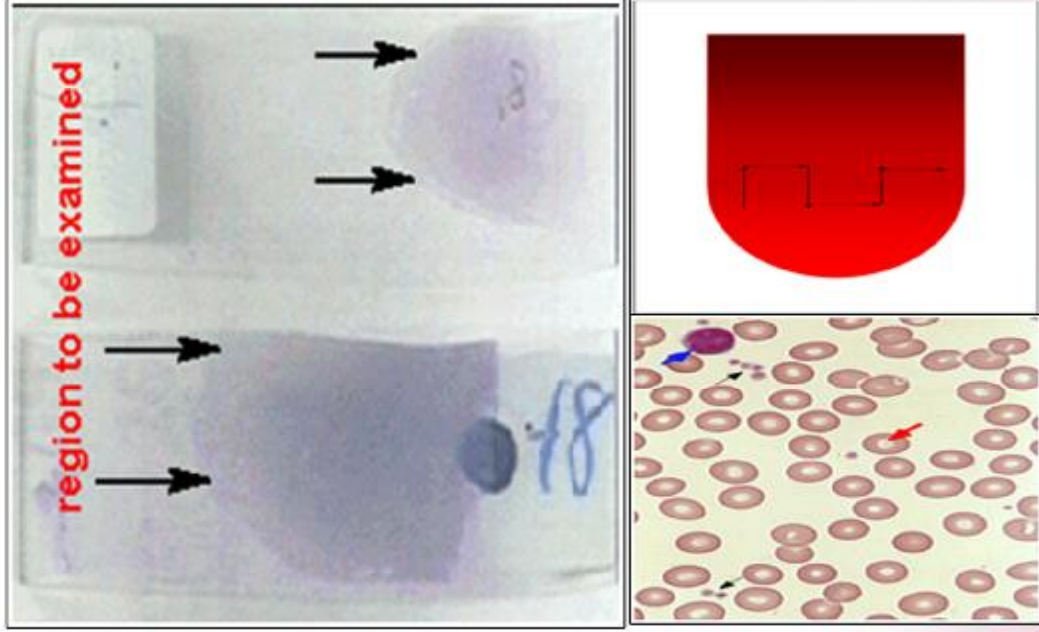
- Calculate the normal values and discuss the normal range
- Describe the correlation of these values in clinical settings (MCV, MCH, MCHC, RDW)
- Discuss ESR, PCV



1. Peripheral blood smear

At the end of the session the students should be able to;--

- Identify normal and abnormal cells
- Identify various anaemia's
- Identify the blood parasites



2. Body fluids cytology

(pleural,ascetic,CSF,pericardial, synovial fluids)

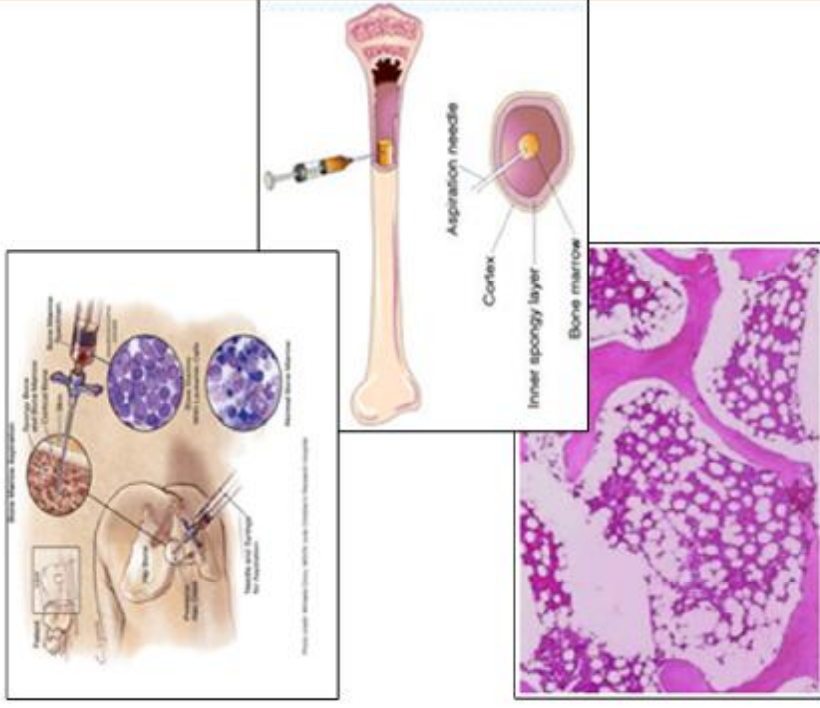
At the end of the session the students should be able to have an overall understanding of;--

- Cell count
- Differential counts
- Differential diagnosis based on cytology
- Importance of physical, chemical and bacteriological analysis in the diagnosis

3. Bone marrow examination

At the end of the session the students should be able to;--

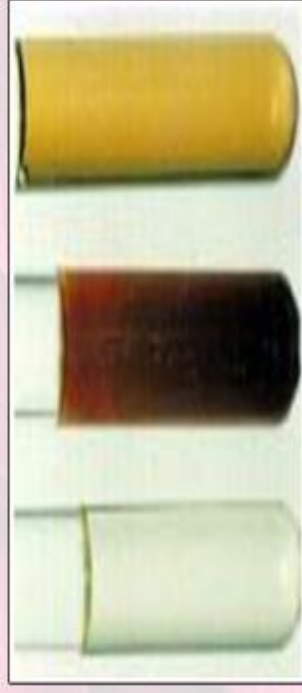
- Identify normal and abnormal cells
- Identify the blood parasites



4. URINE EXAMINATION

At the end of the session the students should be able to;--

- Determine the normal and abnormal features of physical, chemical and microscopically examination



Normal values

- Negative results for glucose, ketones, bilirubin, nitrites, leukocyte esterase and blood
- Protein negative or trace
- pH 5-8.0
- Urobilinogen 0.2-1.0 Ehrlich units

5. GROSS AND MICROSCOPY OF RENAL PATHOLOGY ON SLIDES

A) Acute and chronic pyelonephritis

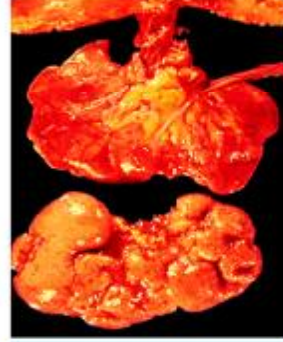
At the end of the session the students should be able to:-

- Describe the specimens
- Identify the lesion
- Explain the possible causes
- Discuss Immediate and long term consequences

Acute PN

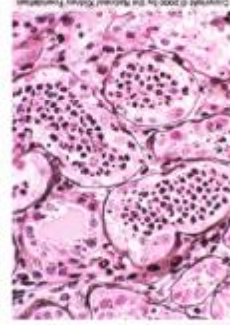
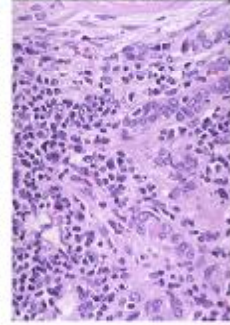


Chronic PN



Microscopy; - a) Describe microscopically the lesions

- Do differential diagnosis with rationale



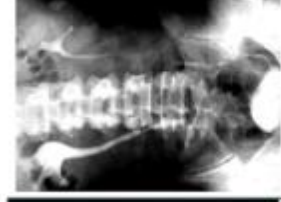
B) Hydronephrosis

At the end of the session the students should be able to:-

- Describe the specimens
- Identify the lesion
- Explain the possible causes
- Discuss Immediate and long term consequences

Microscopy; - a) Describe microscopically the lesions

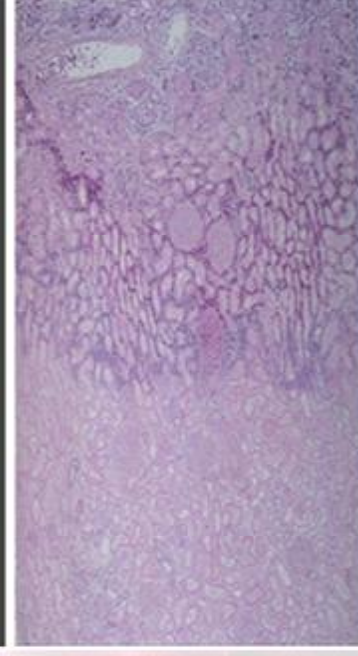
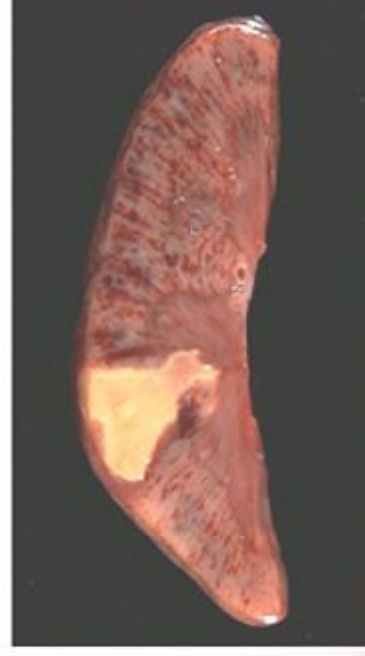
- Do differential diagnosis with rationale



C) Kidney infarct

At the end of the session the students should be able to:-

- Describe the specimens
- Identify the lesion
- Explain the possible causes
- Discuss Immediate and long term consequences

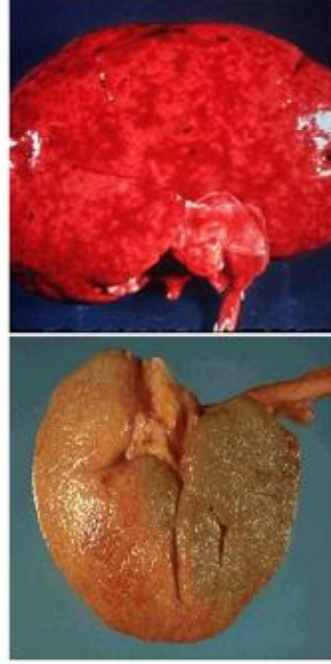


Microscopy; - a) Describe microscopically the lesions
b) Do differential diagnosis with rationale

D) Hypertensive changes in renal disease

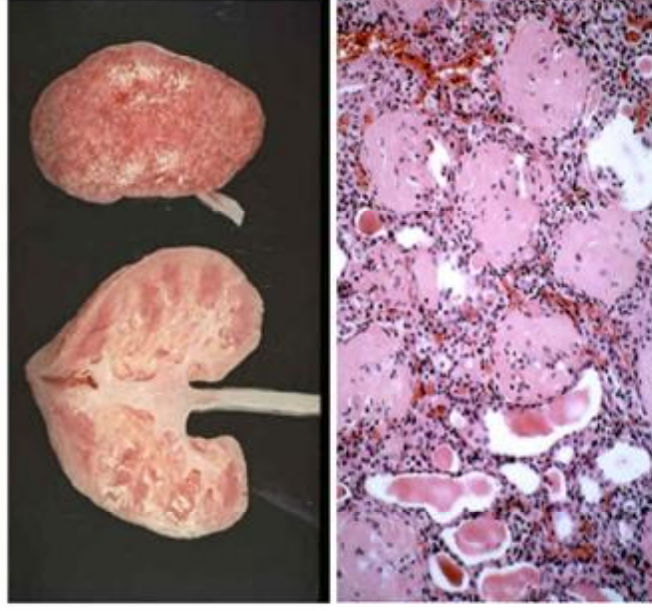
At the end of the session the students should be able to;--

- Gross; - a) Describe the specimens
b) Identify the lesion
c) Explain the possible causes
d) Discuss Immediate and long term consequences



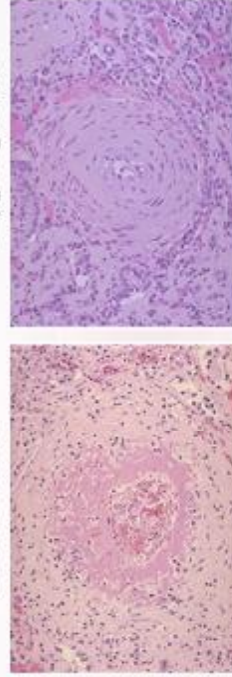
Microscopy; a) Describe microscopically the lesions
b) Do differential diagnosis with rationale

Chronic glomerulonephritis



Microscopy; a) Describe microscopically the lesions
b) Do differential diagnosis with rationale

Malignant nephrosclerosis
Hyperplastic



E) Chronic glomerulonephritis

At the end of the session the students should be able to ;--

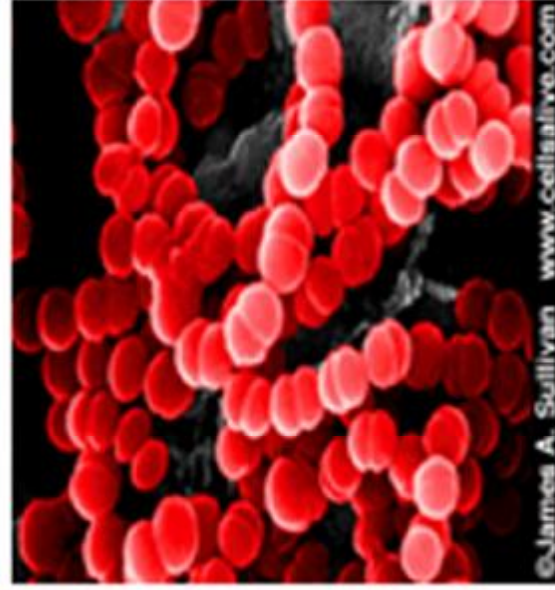
- Gross; - a) Describe the specimens
b) Identify the lesion
c) Explain the possible causes
d) Discuss Immediate and long term consequences

LEARNING OBJECTIVES OF PRACTICALS OF MICROBIOLOGY

1. BLOOD CULTURES

At the end of the session the students should be able to;--

- a) Explain process of blood culture.
- b) Name the most frequently detected organisms isolated from blood cultures and differentiate possible blood culture contaminants from pathogens
- c) Discuss the significance of a positive blood culture

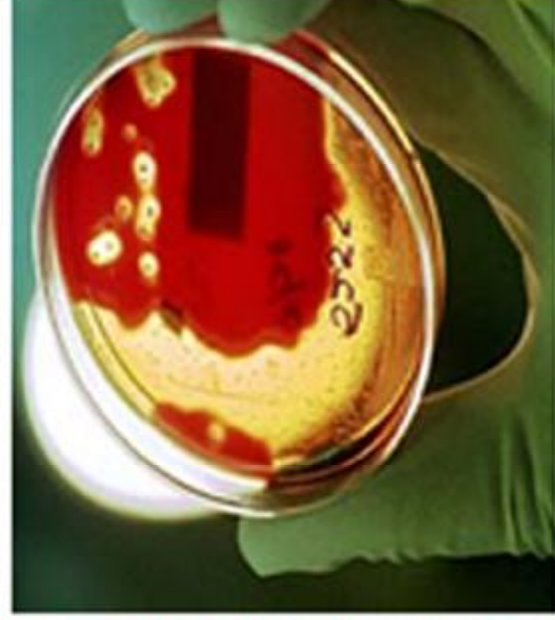


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2. URINE CULTURES

At the end of the session the students should be able to;--

- a) Discuss the process of urine culture
- b) Compare the different methods employed to obtain urine specimens suitable for microbiologic analysis.
- c) Identify the organisms causing Urinary tract infections and List organisms that are often urine contaminants.
- d) Compare urine screening methods available



Week-1							
Starting Date:	24-4-2012 (3-6-1433)						
Theme:	<u>Introduction to fluid milieu of the body</u>						
Day:	Saturday	Sunday	Monday	Tuesday	Wednesday		
Date:			2-6-1433	3-6-1433	4-6-1433		
8-9 am				INTRODUCTION TO THE MODULE DR QAZI	ROLE OF BODY FLUIDS IN MAINTAINING HOMEOSTASIS DR. KAMRAN		
9-10 am				BODYFLUID, COMPOSITIONS AND ITS MEASUREMENT DR QAZI	COMPOSITION OF LOSS OF FLUIDS DR WAHENGHAM		
10-12 am				TAKING OF HISTORY BATCH A+B DR ASHRAF	DSL BATCH C +D Dr. Amir	EXAM OF PATIENTS (BLOOD DISEASES) BATCH A +B Dr. ASHRAF	DSL BATCH C +D DR WAHENGHAM
12-1 pm	Prayer Break						
1-3 pm				TAKING OF HISTORY BATCH C +D DR ASHRAF	DSL BATCH A +B DR KAMRAN	CD 1 Group A Dr. Mazen Group B Dr. Wahengbam Group C Dr. Qazi Group D Dr. Rehan	

- theory
- Recent society issues
- Clinical Skills sessions
- PBL
- CD+SEMINAR
- Direct student learning+ tutorials
- Arab linguistic
- practicals

Week-2										
Starting Date:										
Theme:	Renal structure and functions									
Day:	Saturday	Sunday	Monday	Tuesday	Wednesday					
Date:	7-6-1433	8-6-1433	9-6-1433	10-6-1433	11-6-1433					
8-9 am	PARENTERAL FLUIDS DR WAHENGHAM	ACIDOSIS AND ALKALOSIS DR. SHERIF	DEVELOPMENT OF THE URINARY SYSTEM DR REHAN	CLINICAL ANATOMY OF KIDNEY DR REHAN	ANATOMY OF LUT AND MICTURITION DR REHAN					
9-10 am	ACIDOSIS AND ALKALOSIS DR SHERIF	INTRODUCTION TO THE URINARY SYSTEM DR REHAN	THIRST Dr. KAMRAN	TUBULAR TRANSPORT Dr. AMIR	DIURETICS Dr. MAZEEN					
10-12 am	PBL (Ia) Group A Dr.Mazen Group B Dr. Wahengbam Group C Dr. Qazi Group D DrRehan.	Recent society issues	ARAB LINGUISTICS	DSL Dr Rehan	PBL(Ib) Group A Dr.Mazen Group B Dr. Wahengbam Group C Dr. Qazi Group D DrRehan					
PRAYER BREAK										
1-3 pm	PRAC BODYFLUIDS+ URINE BATCH A+B Dr YUNUS/ DR SHERIF	ANAT PRACT DEV OF URINARY SYSTEM BATCH C+D DR REHAN DR RAYED	EXAM OF PATIENTS WITH BLOOD DISEASES BATCH C +D DR ASHRAF	DSL BATCH A + B Dr Amir	ANATPRACT DEV OF URINARY SYSTEM BATCH A+B DR REHAN DR RAYED	PRAC BODYFLUIDS+ URINE BATCH C+D Dr YUNUS/DR SHERIF	ANA PRACT POST ABDOMINAL WALL BATCH A+B DR REHAN DR RAYED	PHYS. PRACT RENAL FUNCTION TEST BATCH C+D DR KAMRAN	ANAT PRACT POST ABDOMINAL WALL BATCH C+D DR REHAN DR RAYED	PHYS. PRACT RENAL FUNCTION TEST BATCHES A+B DR KAMRAN

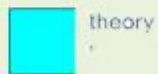
 theory	 Recent society issues	 Clinical Skills sessions	 PBL	 CD+SEMINAR	 Direct student learning+ tutorials	 Arab linguistic	 practicals
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Week-3							
Starting Date:							
Theme:	Renal pathophysiology						
Day:	Saturday	Sunday	Monday	Tuesday	Wednesday		
Date:	14-6-1433	15-6-1433	16-6-1433	17-6-1433	18-6-1433		
8-9 am	CL; ANAT; OF URETER,ETC; DR FAHIM	GFR Dr AMIR	DYSURIA DR MOHAMMED ALMANSOUR	PROTEINURIA DR MOHAMMED ALMANSOUR	ACUTE GLOMERULONEPHRITIS DR YUNUS		
9-10 am	TUTORIALS Dr. YUNUS	ANATOMY OF LUT AND MICTURITION DR.FAHIM	HAEMATURIA DR MANSOUR	LOWER URINARY TRACT DR MANSOUR	OLIGURIA DR WAHENGHAM		
10-12 am	PBL 1 PANEL DISCUSSION	Recent society issues	ARAB LINGUISTICS	ANAT PRACT CL ANAT OF THE KIDN, URE, BL SR GL BATCH A+B DR REHAN DR RAYED	EXAM OF PATIENTS WITH RENAL DISEASES BATCH c+d DR. ASHRAF	ANAT PRACT CL ANAT OTHE KIDN, URE, BL SR GL BATCH C+D DR REHAN DR RAYED	EXAM OF PATIENTS (RENAL DISEASES) BATCH A +B DR. ASHRAF
	Prayer time						
1-3 pm	ANAT; PRACT MICROANATOMY OF KIDNEY BATCH A+B DR REHAN DR RAYED	VENOUS CANNULATION BATCH C+D DR ASHRAF	MICROANATOMY OF KIDNEY BATCH C+D DR REHAN DR RAYED	VENOUS CANNULATION BATCH A+B DR ASHRAF	DSL Dr. Kamran	SEMINAR 1 ACIDOSIS AND ALKALOSIS Group A Dr. Mazen Group B Dr. Wahengbam Group C Dr. Qazi Group D Dr Rehan	HOSPITAL VISIT TO NEPHROGENIC CLINIC (DIALYSIS UNIT) DR WAHENGHAM

 theory	 Recent society issues	 Clinical Skills sessions	 PBL	 CD+SEMINAR	 Direct student learning+ tutorials	 Arab linguistic	 practicals
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WEEK4

STARTING DATE:	RENAL PATHOPHYSIOLOGY						
THEME:	RENAL PATHOPHYSIOLOGY						
DAY:	SATURDAY	SUNDAY	MONDAY	TUESDAY	WEDNESDAY		
DATE:	21-6-1433	22-6-1433	23-6-1433	24-6-1433	25-6-1433		
8-9 AM	MID-TERM EXAMINATION	CHRONIC RENAL FAILURE DR WAHENGAM	HISTOPATHOLOGY KIDNEY IN HYPERTENSION Dr YUNUS	ACUTE PYELONEPHRITIS Dr YUNUS	THE PLASMA PROTEINS DR AMIR		
9-10 AM		RENAL STONES Dr YUNUS	TUTORIAL Dr Mohammed/ Dr. Mansour	COMPOSITION AND FUNCTION OF BLOOD DR. QAZI	MICRO: PRACTICALS CULTURES A+B=9- 10.30 DR FAWAZ PATH: PRACTICALS BLOOD INDICES (SLIDES) C+D=9-10.30 Dr YUNUS		
10-12 AM		Recent society issues	ARAB LINGUISTICS	PBL (2 b) GROUP A Dr. YUNUS GROUP B Dr. Fahim GROUP C Dr. Almullah GROUP D Dr. Saleh	MICRO: PRACTICALS CULTURES C+D=10.30 -12 DR FAWAZ PATH: PRACT BLOOD INDICES A+B 10.30 -12 (SLIDES) Dr YUNUS		
12-1 PM	PRAYER BREAK						
1-3P.M	ANAT; PRACT MICROANATOMY OF URETER, UBD SRL GL BATCH A+B DR REHAN, DR FAHIM DR RAYED	PATH;PRACT PBF BATCH C+D Dr YUNUS	PBL (2a) GROUP A Dr. YUNUS GROUP B Dr. Fahim GROUP C Dr. Almullah GROUP D Dr. Sherif	SEMINAR 2 GROUP A Dr. YUNUS GROUP B Dr. Fahim GROUP C Dr. Almullah G ROUP D Dr. Sherif	ANAT; PRACT MICROANATOMY OF URETER, UBD SRL GL BATCH C+D DR REHAN, DR FAHIM DR RAYED	PATH;PRAC PBF BATCH A+B Dr YUNUS	CD2 GROUP A Dr. YUNUS GROUP B Dr. Fahim GROUP C Dr. Almullah GROUP D Dr. Sherif



theory



Recent society issues



Clinical Skills sessions

PBL



CD+SEMINAR



Direct student learning+ tutorials



Arab linguistic



practicals

Week-5							
Starting Date:							
Theme:	BLOOD						
Day:	Saturday	Sunday	Monday	Tuesday	Wednesday		
Date:	28-6-1433	29-6-1433	30-6-1433	1-7-1433	2-7-1433		
8-9 am	STRUCTURE AND FUNCTION RBC DR KAMRAN	HAEMOGLOBIN DR KAMRAN	WBC; TYPES AND FUNCTIONS DR KAMRAN	PLATELET DR QAZI	BLOOD GROUP DR QAZI		
9-10 am	TUTORIALS DR AMIR	DSL DR WAHENGAM	TUTORIALS Dr KAMRAN	TUTORIALS Dr. YUNUS	TUTORIALS Dr QAZI		
10-12 am	PHYS PRACT BLOOD GROUPS BATCHES A+B DR AMIR	PATH; PRACT RENAL PATHOLOGY GROSS M,/E BATCH C+D Dr YUNUS	Recent society issues	ARAB LINGUISTICS	CATHERTERIZATION IN MALE AND FEMALES BATCH A+B DR ASHRAF	PATH; PRACT BONE MARROW BATCH C + D Dr. YUNUS	PBL 3a GROUP A Dr. Ashraf GROUP B Dr. Kamran GROUP C Dr Mohammed GROUP D Dr.M Alzahrani)
12-1 pm	PRAYER BREAK						
1-3 pm	PBL 2 PANEL DISCUSSION	PHYS PRACT BLOOD GROUPS BATCH C+D DR AMIR	PATH; PRACT RENAL PATHOLOGY GR; M,/E BATCH A+B Dr YUNUS	SEMINAR3 GROUP A Dr.Ashraf GROUP B Dr. Kamran GROUP C Dr. Amir GROUP D Dr.M Alzahrani	DSL Dr. Fahim	CATHERTERIZATION IN MALES AND FEMALES BATCH C+D DR ASHRAF	PATH;PRAC BONE MARROW BATCH A + B Dr YUNUS

theory
 Recent society issues
 Clinical Skills sessions
 PBL
 CD+SEMINAR
 Direct student learning+ tutorials
 Arab linguistic
 practicals

Week-6								
Starting Date:								
Theme:	BLOOD							
Day:	Saturday	Sunday	Monday	Tuesday	Wednesday			
Date:	5-7-1433	6-7-1433	7-7-1433	8-7-1433	9-7-1433			
8-9 am	MECHANISM OF HAEMOSTASIS AND COAGULATION DR AMIR	COAGULATION-DISORDERS AND DRUGS DR MAZEN	BLEEDING DISORDERS DR YUNUS	ANEMIA DR YUNUS	PREVENTIVE APPROACH ANEMIA DR YUNUS			
9-10 am	TUTORIALS Dr AMIR	TUTORIALS DR MAZEN	TUTORIALS Dr. Rehan	OSMOTIC – FRAGILITY DR. QAZI	TUTORIALS Dr WAHENGHAM			
10-12 am	PBL 3 b GROUP A Dr. Ashraf GROUP B Dr. Kamran GROUP C Dr Mohammed GROUP D Dr.M Alzahrani	Recent society issues	ARAB LINGUISTICS	DSL Dr Qazi	DSL Batch A+B Dr. YOUNUS	PHYS. PRACTICALS BLEEDING TIME BATCH C+D DR KAMRAN		
12-1 pm	PRAYER BREAK							
1-3 pm	PATH; PRACT RENAL PATHOLOGY GROSS M/E BATCH A+B Dr YUNUS	PHYS PRACTICALS CLOTTING TIME OF BLOOD BATCH C+D DR KAMRAN	PBL 3 PANEL DISCUSSION	SEMINAR 4 GROUP A DR .Almullah GROUP B Dr. Kamran GROUP C Dr. Amir GROUP D Dr. Mohammed	PATH; PRACT RENAL PATHOLOGY GROSS M/E BATCH C+D Dr YUNUS	PHYS PRACTICALS CLOTTING TIME OF BLOOD BATCH A+B DR KAMRAN	DSL Batch C+D Dr. YOUNUS	PHYS. PRACTICALS BLEEDING TIME BATCH A+B DR AMIR



theory



Recent society issues



Clinical Skills sessions



PBL



CD+SEMINAR



Direct student learning+ tutorials



Arab linguistic



practicals

week 7

Starting Date:					
Theme:	EXAMINATION				
Day:	Saturday	Sunday	Monday	Tuesday	Wednesday
Date:	12-7-1433	13-7-1433	14-7-1433	15-7-1433	16-7-1433
8-9 am	OVERVIEW OF STEM CELLS DR WAHENGHAM	Revision classes	THEORY EXAMINATION	PRACTICAL EXAMINATION	
9-10 am	DSL Dr. Amir				
10-12 am	PBL (3) PANEL DISCUSSION				
12-1 pm	PRAYER BREAK				
1-3 pm	<u>CD 3</u> GROUP A Dr. Ashraf GROUP B Dr Mohammed GROUP C Dr. Amir GROUP D Dr.M Alzahrani				



theory



Recent society issues



Clinical Skills
sessions



PBL



CD+SEMINAR



Direct student
learning+ tutorials



Arab linguistic



practicals

Distribution of Task for the Faculty

NAME	PBL1- a	PBL-1 b	PBL-2 a	PBL-2 b	PBL-3 a	PBL-3b	CD1	CD2	CD3	SEM1	SEM2	SEM3	SEM 4
1.Prof. Mazen	A	A					A			A			
2.Dr. Wahengbam	B	B					B			B			
3 Dr. Qazi	C	C					C			C			
4. Dr Yunus			A	A				A			A		
5. Dr. Fahim			B	B				B			B		
6. Dr Fawaz			C	C				C			C		A
7. Dr. Sherif			D	D				D			D		
8. Dr. Ashraf					A	A			A			A	
8. Dr. Rehan	D	D					D			D			
10 Dr. Kamran					B	B						B	B
11.Dr. Amir									C			C	C
12 Dr.M Alzahrani					D	D			D			D	
13. Dr. Mohammed					C	C			B				D

Teaching & Learning Methods

This section provides an elaboration of the teaching and learning methods that will be used to deliver

this block. Thus, there will be.

- A. Interactive lectures
- B. Small group learning sessions (PBL)
- C. Large group learning sessions (seminars)
- D. Practical sessions
- E. Skills lab sessions
- F. Clinical teaching and learning sessions
- G. Direct student learning

A. Interactive lectures:

Introduction:

Interactive lectures are similar to the lectures used in all other parts of the curriculum. They are not the didactic lectures used in the past.

Process:

The lecturer will involve the students in active discussion, and may provide brief learning activities during the lecture to achieve the learning objectives stated under each topic. Occasionally, there will be more than one lecture/lecturer to achieve all the learning objectives given under one topic. As much as possible, where applicable, the lectures will highlight clinical application of the content material. Students could take notes during a lecture, but the lecture slides will be available on Blackboard (i.e. the learning management system of the university).

B. Problem-Bases Learning (PBL)

Introduction:

These are activities where students are divided in a small group of about 10 under the supervision of a tutor/facilitator. One of the important methods of small group learning is PBL, where the students first will be trained how to work in a PBL.

Process:

A detailed guide as to how a PBL is conducted is provided separately. Please go through this guide carefully before taking on PBL learning.

C. Large group learning sessions (seminars):

Introduction:

In this method students will prepare for a relevant topic on a given 'curriculum facet'. The curriculum facet for discussion will be selected by the tutor. The topics related to a given curriculum facet could be either selected by the tutor or by the student, but pre-agreed with the tutor. The student will prepare for a 30-minute presentation on the topic and deliver it to the whole batch. There will be at approximately one large group learning session every two to three weeks.

Process:

1. Tutor selects a curriculum facet relevant to the module/theme that is being learned at that time.
2. Tutor asks for three student volunteers who are willing to prepare for three, 30-min presentations.
3. The three volunteer students will discuss with the tutor and agree on three topics under a given curriculum facet. These topics will be either selected by the tutor or selected by the students with the concurrence of the tutor.
4. For a given learning session, 2 hours in duration, three students will deliver three,

Teaching & Learning Methods

5. Finally, the tutor will assess and summarize the presentations of the session in the last 10 minutes.

D. Practical sessions:

Introduction:

Practical sessions are designed to practically illustrate the concepts and principles introduced to the student in the lectures. Thus, the practicals will provide an opportunity for the students to acquire hands-on experience on an abstract concept or a principle they learned in the lectures; i.e. the students will experience for themselves how an abstract concept or a principle practically operates. Every theme that is studied within each module will have several practical sessions. These practicals will range from studying microscope to viewing slides using the light microscope. The topics of the practical sessions will be determined by the tutor as appropriate. A practical will be held for 2 hours in the newly built 'system-based laboratories' under the guidance of a tutor. Depending on the nature of the subject matter taught within a module, a given module may or may not contain practical sessions.

Process:

1. Tutors who teach in a particular theme, in collaboration with each other will determine an appropriate number of practical's for a given theme.
2. Objectives of a given practical session will be developed and given to the students by the tutor before the practical.

3. Students will be pre-informed about a given practical topic. Depending on the type of practical and facilities available, 20 to 50 students will take part in a given practical session.
4. Students will record findings of the practical in a separate Practical Record Book.
5. At the end of the session the tutor will summarize the main learning points illustrated during the practical.

E. Skills lab sessions:

Introduction:

Students will use the newly built, state-of-the-art skills laboratory to train the students in certain important practical, clinical skills from year 2; i.e. phase 2

Process

1. The tutors who teach within a module in collaboration with each other will determine the number of skills lab sessions per module.
2. The tutors will then draw up the objectives for each session and inform the students about the objectives of the session prior to the skills lab session.

3. Depending on the nature of the skills lab session, students will either participate in small groups or as the whole batch.
4. Depending on the skill, the students will perform the skill either on themselves, on each other or on a simulator.
5. The students will record the findings of the skills lab session in a separate Skills Lab record Book.
6. The tutor will at the end of the session summarize the main learning points.

F. Guidelines for hospital visits:

- 1- Students should follow instruction given to them prior to the visit.
- 2- A handout is given to students before every visit illustrating program, objectives and other details concerning the visit. Students are required to read handouts carefully.
- 3- Students are encouraged to go to hospital utilizing transportation which is secured by the College Administration. Transportation will be available half an hour prior to visit.
- 4- Students are expected to behave as future doctors. However, any misconduct by any student will be reported to the College Administration for appropriate measures according to University Rules.
5. At the end of each field visit, students are required to give their feedback regarding fulfillment of the objectives of the visit and clarify any comments and suggestions they may have. Feedback will be discussed in a scheduled session that will be held after the visit in the College.

G. Clinical teaching and learning sessions:

Introduction

Where relevant the students in small groups, will visit a clinical setting (e.g. award, a clinic, or a surgical theatre, central sterilization unit) observe (e.g. observing the sterilization process in the central sterilization unit of the hospital) or experience (e.g. speaking with a patient who has a disease related to smoking) how a given concept or principle is clinically applied. Depending on the nature of the subject matter being taught, there may or may not be clinical teaching and learning sessions within a given module.

Process

1. The tutors responsible for teaching and learning for a given module will determine the topics for which there will be clinical teaching and learning sessions.
2. The tutors will then draw up the objectives of a given session and communicate it to the student prior to the session.
3. The students will be divided in groups
4. A tutor will accompany the students to the clinical setting or a clinician (who is aware of the objectives of the session) from the relevant clinical setting will be assigned to show the students the relevant procedures that they need to observe or do. Students will record their experience or observations in a 'Clinical Teaching and Learning Record Book'.

Assessment of the Module

This block comprises two types of assessment.

A. Continuous assessment:

- These assessments will take place throughout the course.
- They are mostly based on the PBL sessions, seminars, skill laboratory, practical and clinical activities.
- Also there will be MCQ, SEQ, etc.; as mid module examination.
- A proportion of marks (40%) from these assessments will contribute to the final summative module assessment.

B. Final assessment:

- The eligibility criterion for sitting the final examination will be the completion of 75% of attendance.
- This exam is held at the end of the module assessment, and will be held under formal examination conditions, including MCQ, OSPE, OSCE and so forth.
- A proportion of marks (60%) from this assessment will contribute to the final summative mark of the module assessment.

Teaching Methodology:

The following instructional strategies are used:

- Interactive Lectures
- Small-group problem-based learning sessions
- Integrated seminars

Assessment:

Total Marks = 100 Marks; distributed as follows:

- A. Midterm examination worth 20% (MCQ).
- B. Student's evaluation throughout the small group sessions 10%.
- C. Students lead seminars /CD or assignment 10%.

D. A final examination at the end of the semester worth 25% (MCQ).

E. Modified Essay Questions (MEQ) 15%

F. OSPE/OSCE 20%

References:-

1. Last's Anatomy: Regional and Applied, 12th Ed
2. Clinical Anatomy by Regions: Richard S. Snell, 9th Ed
3. Langman's Medical Embryology: Thomas W. Sandler, 12th Ed
4. Junqueira's Basic Histology: Text and Atlas, 12th Ed
5. Dorland's Medical Dictionary: Saunders
6. Robin's Basics Pathology, 9th Ed
7. Illustrated Reviews Pharmacology: Lippincott's, 5th Ed
8. Textbook of medical physiology by Guyton 12th Ed
9. Ganong's Review of Medical Physiology 23rd th Ed
10. Vander Human Physiology the Mechanism of Body Function 8th Ed
11. Current medical diagnosis Ed 2010
12. Lippincott's illustrated reviews: Biochemistry, 5th edition
13. Harper's Illustrated Biochemistry, 28th Edition LANGE Basic Science

BLUE PRINT OF TEACHING

	WEEK1	WEEK2	WEEK3	WEEK4	WEEK5	WEEK6	WEEK7	TOTAL
THEORY	4	10	9	6	5	6	1	41
TUTORIALS			1	1	4	4		10
DSL	1	1	1		2	2	1	8
SK; LAB	2		2		1			5
CD	1			1			1	3
SEMINAR			1	1	1	1		4
PBL		1		1		1		3
PRACTICALS		4	3	4	3	3		17

BLUE PRINT OF DISTRIBUTION OF CLASSES THEORY

	WEEK1	WEEK2	WEEK3	WEEK4	WEEK5	WEEK6	WEEK7	TOTAL
PHYSIOLOGY	3	2	1	2	5	2		15
PATHOLOGY			3	3		3		9
ANATOMY		4	2					6
MEDICINE	1	1	2	1			1	6
PHARMACOLOGY		1				1		2
MICROBIOLOGY			1					1
BIOCHEMISTRY		2						2

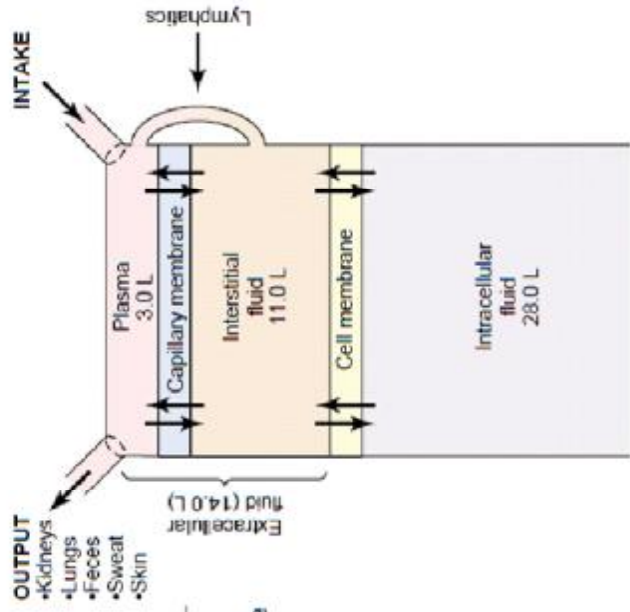
PRACTICALS

	WEEK1	WEEK2	WEEK3	WEEK4	WEEK5	WEEK6	WEEK7	TOTAL
PHYSIOLOGY					1	2	1	4
PATHOLOGY				2	2	1		5
ANATOMY		2	2	1				5
MEDICINE			1					1
PHARMACOLOGY								
MICROBIOLOGY				1				1
BIOCHEMISTRY		1						1

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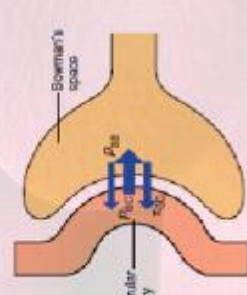
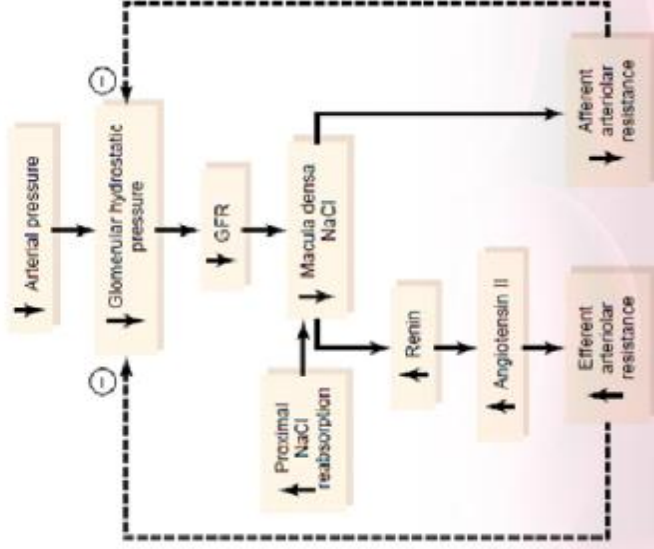
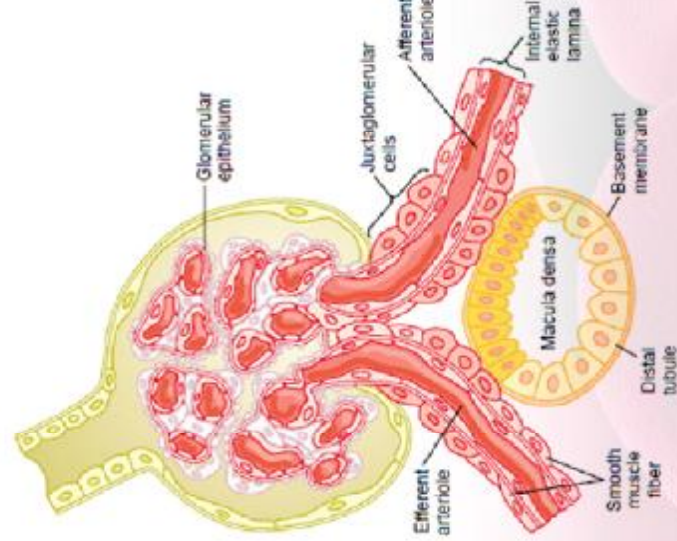


GRAPHS AND TABLES

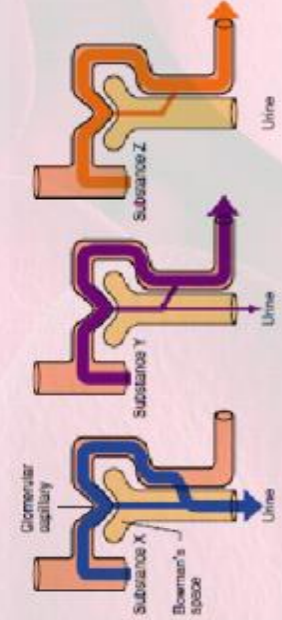


Daily Intake and Output of Water (ml/day)

	Normal	Prolonged, Heavy Exercise
Intake		
Fluids ingested	2100	?
From metabolism	200	200
Total intake	2300	?
Output		
Insensible—skin	350	350
Insensible—lungs	350	650
Sweat	100	5000
Feces	100	100
Urine	1400	500
Total output	2300	6600

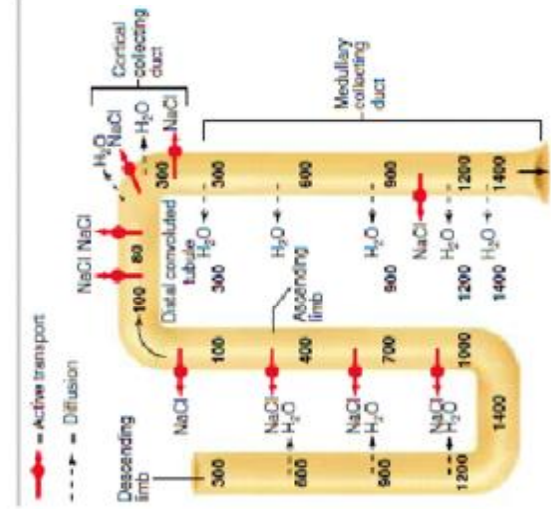


Force	mmHg
Favoring filtration:	
Glomerular capillary blood pressure (P_G)	60
Opposing filtration:	
Fluid pressure in Bowman's space (P_{BC})	16
Colloid force due to protein in plasma (P_{GC})	29
Net glomerular filtration pressure = $P_G - P_{BC} - P_{GC}$	16



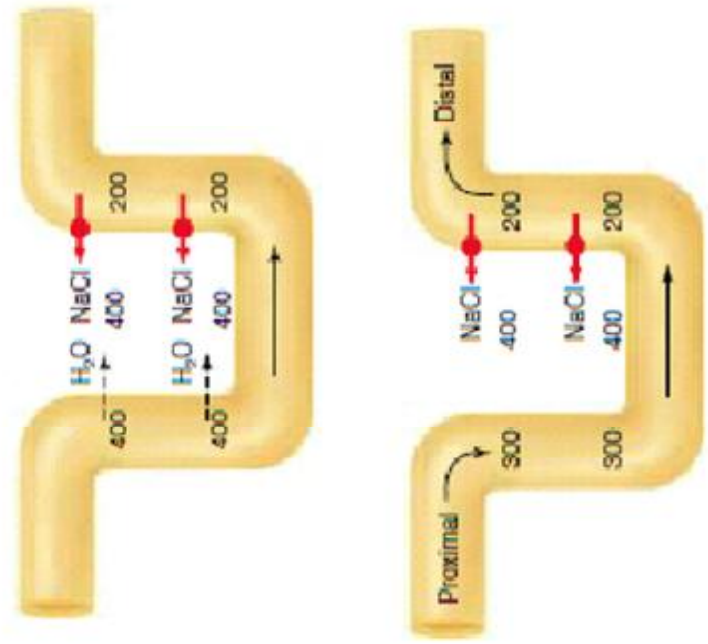
Renal handling of three hypothetical substances X, Y, and Z. X is filtered and reabsorbed. Y is filtered, and a fraction is then reabsorbed. Z is filtered and completely reabsorbed.

GRAPHS AND TABLES

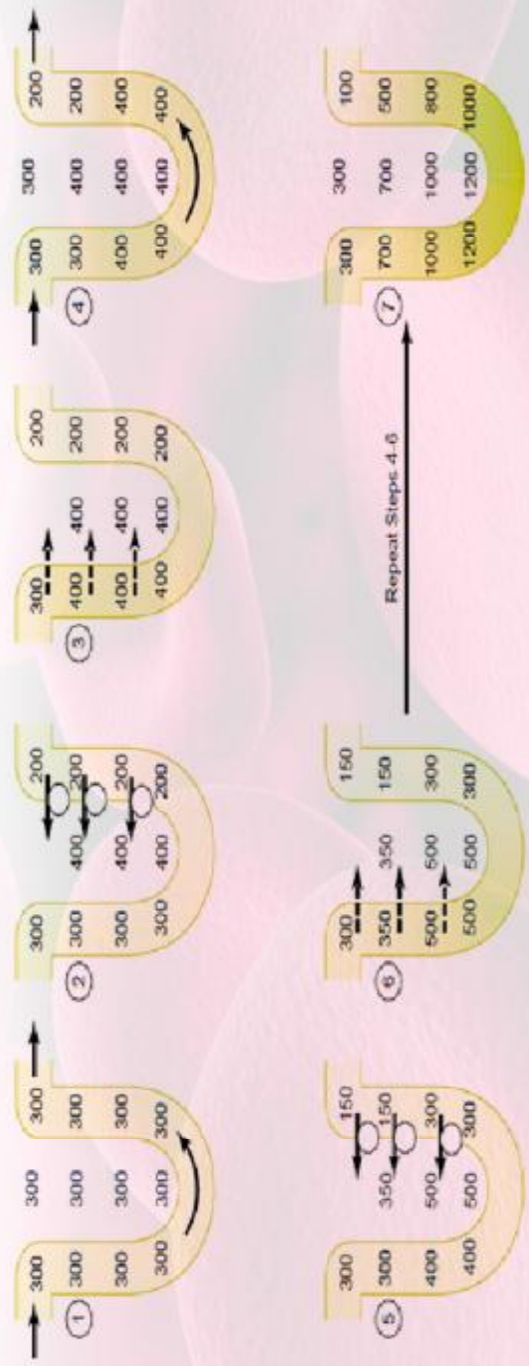


Generation of an interstitial fluid osmolarity gradient by the renal countercurrent multiplier system and its role in the formation of hyperosmotic urine. The transporter in the ascending limb of Henle's loop is actually a Na,K,2Cl cotransporter, but for simplicity we do not include the potassium since this ion does not contribute to the multiplier effect. Another simplification, as discussed in the text, is that the entire ascending limb is shown as actively

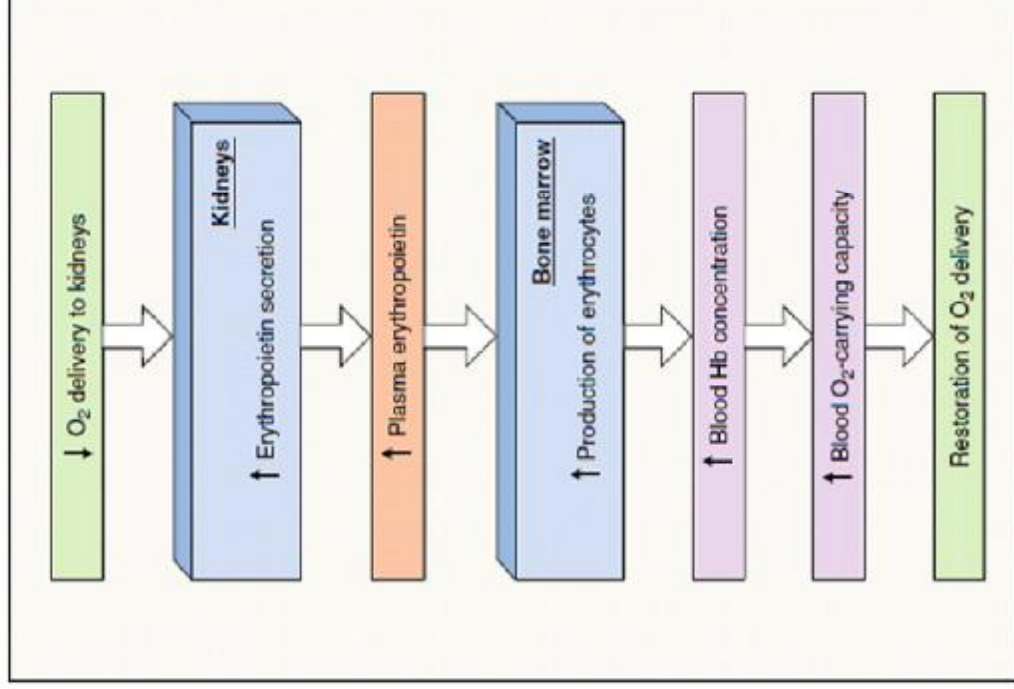
the ascending limb continues to pump sodium chloride to maintain the concentration difference between it and the interstitial fluid.



Now back to the descending limb. This segment, in contrast to the ascending limb, does not reabsorb sodium chloride and is highly permeable to water.

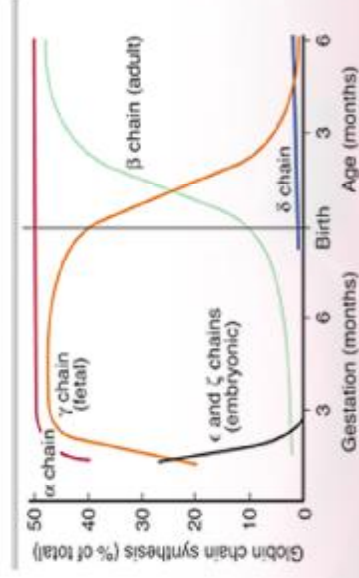
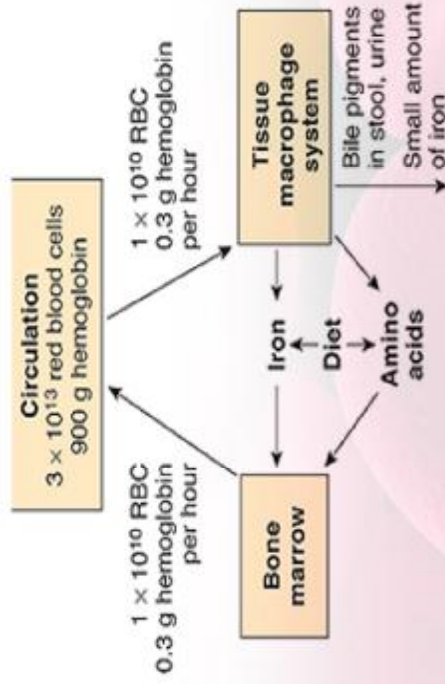
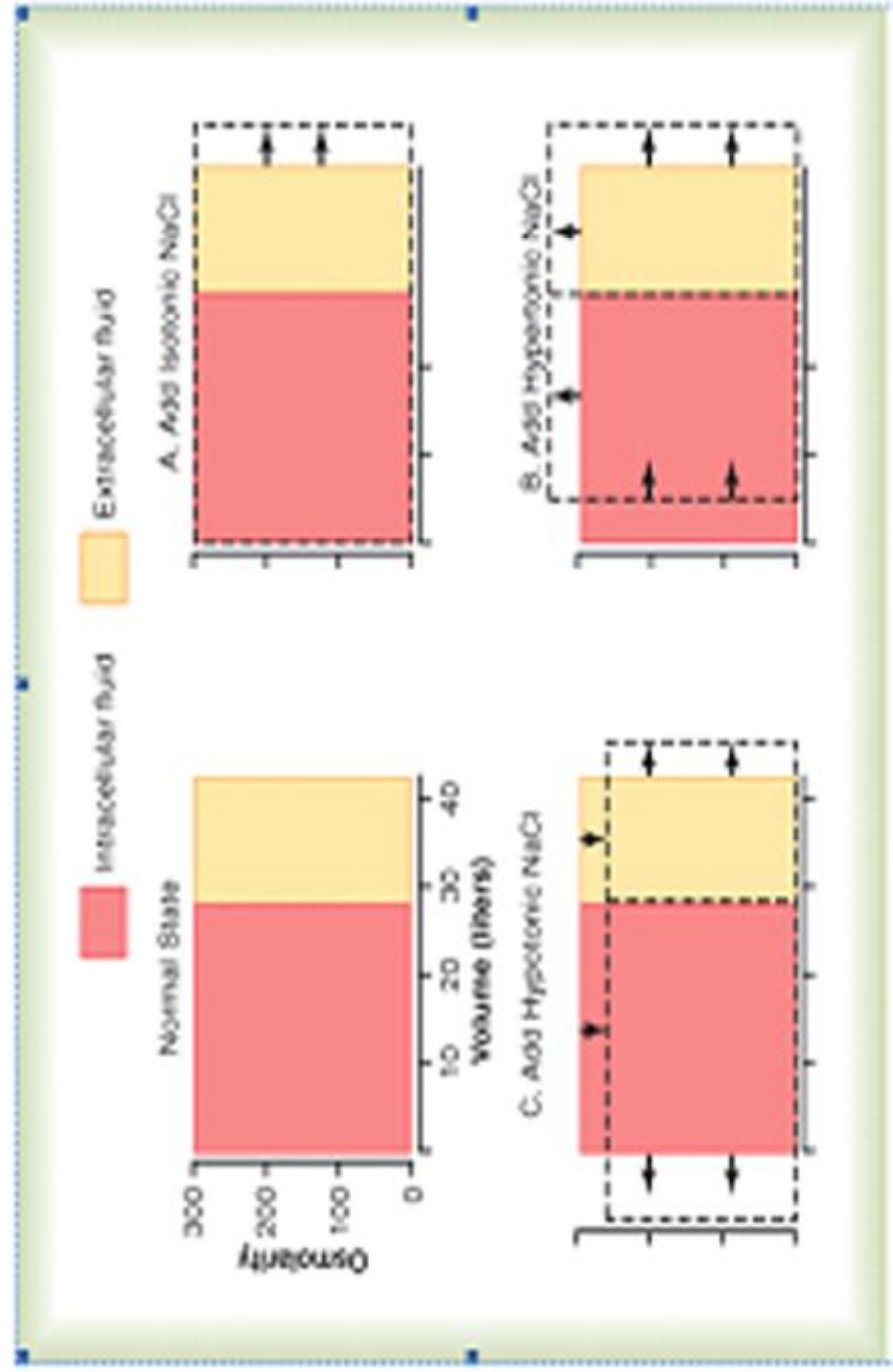


GRAPHS AND TABLES



Route	Range (l/day)	Regulatory influences
Insensible - lungs	0.3-0.4	Atmospheric vapor pressure (temperature)
Insensible - skin	0.3-0.4	10x increase in bum victims
Sweat	0.1-2 (per hour)	Temperature, exercise
Feces	0.1-0.2	Diarrheal disease
Urine	0.5-20	Body fluid composition

GRAPHS AND TABLES



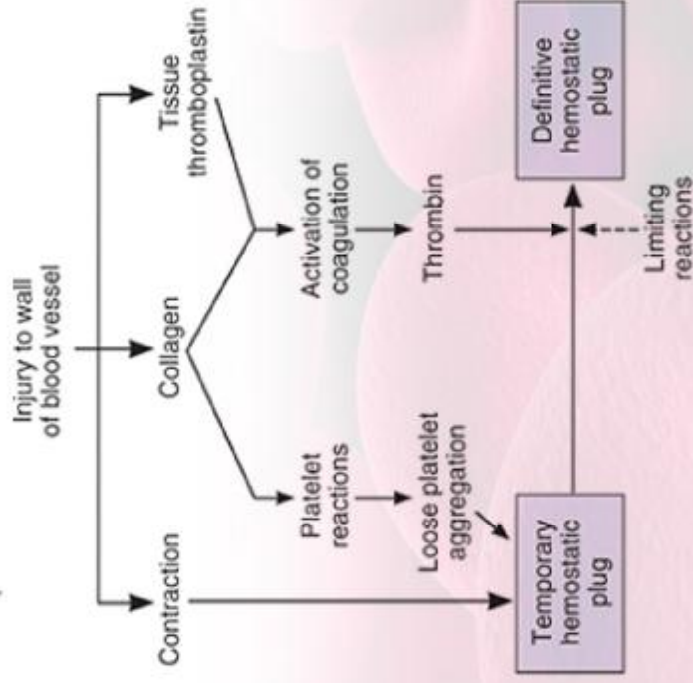
Development of human hemoglobin chains.

Functions of the Kidneys

1. Regulation of water and inorganic-ion balance
2. Removal of metabolic waste products from the blood and their excretion in the urine
3. Removal of foreign chemicals from the blood and their excretion in the urine
4. Gluconeogenesis
5. Secretion of hormones:
 - a. Erythropoietin, which controls erythrocyte production
 - b. Renin, which controls formation of angiotensin, which influences blood pressure and sodium balance
 - c. 1,25-dihydroxyvitamin D₃, which influences calcium balance

GRAPHS AND TABLES

Factor ^a	Names
I	Fibrinogen
II	Prothrombin
III	Thromboplastin
IV	Calcium
V	Proaccelerin, labile factor, accelerator globulin
VII	Proconvertin, SPCA, stable factor
VIII	Antihemophilic factor (AHF), antihemophilic factor A, antihemophilic globulin (AHG)
IX	Plasma thromboplastic component (PTC), Christmas factor, antihemophilic factor B
X	Stuart-Prower factor
XI	Plasma thromboplastin antecedent (PTA), antihemophilic factor C
XII	Hageman factor, glass factor
XIII	Fibrin-stabilizing factor, Laki-Lorand factor
HMW-K	High-molecular-weight kininogen, Fitzgerald factor
Pre-K _a	Prekallikrein, Fletcher factor



Summary of reactions involved in hemostasis. The dashed arrow indicates inhibition.

GRAPHS AND TABLES

	Plasma (mOsm/L H ₂ O)	Interstitial (mOsm/L H ₂ O)	Intracellular (mOsm/L H ₂ O)
Na ⁺	142	139	14
K ⁺	4.2	4.0	140
Ca ⁺⁺	1.3	1.2	0
Mg ⁺	0.8	0.7	20
Cl ⁻	108	108	4
HCO ₃ ⁻	24	28.3	10
HPO ₄ ⁻ · H ₂ PO ₄ ⁻	2	2	11
SO ₄ ⁻	0.5	0.5	1
Phosphocreatine			45
Carnosine			14
Amino acids	2	2	8
Creatine	0.2	0.2	9
Lactate	1.2	1.2	1.5
Adenosine triphosphate			5
Hexose monophosphate			3.7
Glucose	5.6	5.6	
Protein	1.2	0.2	4
Urea	4	4	4
Others	4.8	3.9	10
Total mOsm/L	301.8	300.8	301.2
Corrected osmolar activity (mOsm/L)	282.0	281.0	281.0
Total osmotic pressure at 37°C (mm Hg)	5443	5423	5423

Mnemonic

HAEMATOLOGY

Thrombocytopenia

Causes

Mnemonic: **PLATELETS**

P Platelet disorders: TTP, ITP, DIC

L Leukaemia

A Anaemia

T Trauma

E Enlarged spleen

L Liver disease

E Ethanol

T Toxins: benzene, heparin, aspirin, chemotherapy.

S Sepsis

Sickle cell disease

Signs

Mnemonic: **SICKLE**

S Splenomegaly/Sludging

I Infection

C Cholelithiasis

K Kidney - haematuria

L Liver congestion/Leg ulcers

E Eye changes

Leukaemia

Symptoms and signs

Mnemonic: **LEUKEMIA** (the US spelling!)

L Light skin (pallor)

E Energy decreased/Enlarged spleen, liver, lymph nodes

U Underweight

K Kidney failure

E Excess heat (fever)

M Mottled skin (haemorrhage)

I Infections

A Anaemia

Immune thrombocytopenic purpura

(ITP)

Causes

Mnemonic: **MAID**

M Malignancy

A Autoimmune diseases: SLE, thyroid disease, RA

I Infections: malaria, EBV,

HIV/Idiopathic (commonest cause)

D Drugs, e.g. quinine

Symptoms

Mnemonic: **BBC**

B Bruising

B Bleeding: mucosal and nasal

C Cycles heavy; menorrhagia

Mnemonic

RENAL

Detection of acute renal failure (ARF)

Mnemonic: Acute

A Acute presentation over hours or days

C Creatinine rises

U Urea rises (\pm oliguria <400 ml/24 h)

Causes acute renal failure (ARF)

Mnemonic: ACUTE

A ATN/Acute GN

C Circulatory dysfunction (i.e. shock - hypovolaemia, sepsis, cardiogenic)

U Urinary outflow obstruction

Dialysis

Indications for

Mnemonic: AEIOU

A Acid-base problems (severe acidosis or alkalosis)

E Electrolyte problems (hyperkalaemia)

I Intoxications

O Overload, fluid

U Uraemic symptoms

Or

Mnemonic: SIIARPE

S Severity of condition increases

H Hyperkalaemia persistent ($K^+ >7$ mmol/l)

A Acidosis is metabolic and worsening (pH <7.2 or base excess <-10)

R Refractory pulmonary oedema

P Pericarditis (uraemic)

E Encephalopathy (uraemic)

Complications of dialysis

Mnemonic: CHAIR

C Cardiovascular disease

H Hypertension

A Anaemia

I Infections

R Renal bone disease

Urinary tract malignancies

Features of renal cell carcinoma (RCC)

Mnemonic: RCC

R Renal tubule (proximal) epithelium is involved

C Renal Cancers are 90% RCC

C Clinical features include haematuria, loin pain, abdominal mass, anorexia, malaise and weight loss

Clinical presentation of chronic renal failure

Mnemonic: RESIN & 8 P's

R Retinopathy

E Excoriations (scratch marks)

S Skin is yellow

I Increased blood pressure

N Nails are brown

P Pallor

P Purpura and bruises

P Pericarditis and cardiomegaly

P Pleural effusions

P Pulmonary oedema

P Peripheral oedema

P Proximal myopathy

P Peripheral neuropathy

Complicated urinary tract infections (UTIs)

Mnemonic: MARIO

M Male patients

A Abnormal renal tract

R Renal function is impaired

I Impaired host defences

O Organism that is virulent

Risk factors for UTIs

Mnemonic: UTIs

U Urinary tract obstruction or malformation

T The menopause

I Intercourse (sexual)/Instrumentation/Immunosuppression

S female Sex/Stones

Mnemonic

CLINICAL SKILLS

Full Medical History

When taking a history:

Mnemonic: OPERATES

O Onset of complaint

P Progress of complaint

E Exacerbating factors

R Relieving factors

A Associated symptoms

T Timing

E Episodes of being symptom-free

S Relevant Systemic and general inquiry can be added here

Medications/allergies

Mnemonic: PILLS

P Pills, is the patient taking any?

I Injections/Insulin/Inhalers (as some patients forget to mention when asked about their medications)

LL ILLicit drug use

S Sensitivities to anything, ie allergies

In every history, don't forget to ask about the FAWR non-specific symptoms that the patient may exhibit

Mnemonic: FAWR

F Fever

A Appetite

W Weight loss (unintentional)

R Reduced energy (i.e. fatigue/lethargy)

When assessing psychological state:

Mnemonic: SAD CASE

S Suicidal ideations

A Anxiety

D Decreased

mood/Delusions/Disordered thought

C Difficulty Concentrating

A Auditory or other hallucinations

S Difficulties Sleeping

E Eating normally

When asked to discuss a particular disease, the following surgical sieve is widely regarded as the best way to proceed:

Mnemonic: Dressed In a Surgeons Gown

A Physician Might Make Progress

D Definition

I Incidence

S Sex

G Geography

A Aetiology

P Pathogenesis

M Macroscopic pathology

M Microscopic pathology

P Prognosis