THE UNIVERSITY OF JORDAN

FACULTY OF MEDICINE

DEPARTMENT OF INTERNAL MEDICINE

Course Outline

Classification:	Medicine
Course Code:	0508601
Course Title:	Medicine-2
Year Level :	6th. Year
Round Schedule:	Daily (Sunday – Thursday) • Ward rounds • Outpatient training • On call 5-12 pm
Duration (Weeks):	8 Weeks
Tutorial Schedule	5 days a week, 8am-5pm
Credit Hours	9
Course Coordinator	Dr. Nathir Obeidat Dr. Faris Bakri
Prepared by:	Committee formed of teaching staff members of the Department of Medicine
Date of Outline Preparation:	19-05-2005
Date of Last Revision:	29-11-2012
Checked by:	Members of Department
Approved by Head of Department:	Dr. Nathir Obeidat

General Medicine
6th year

I. Rotation Description

This is a two month clinical rotation for sixth year medical students during which will advance their skills in the field of internal medicine. The students will be divided in 4 rotations with 2 weeks each. Students will see patients with a wide variety of acute and chronic medical diseases. Emphasis is place on thorough history taking and physical examination, formulation of diagnostic and therapeutic plans with appropriate use of laboratory studies .
Students will participate with the staff in the evaluation and management of patients with medical problems. Basic mechanisms in the pathophysiology of the disease process will be stressed, as well as the practical aspects of diagnosis and therapy .
The Preceptorship method and small group discussions will be employed as the main teaching modalities. Students will make regularly scheduled rounds. Seminars ,clinical and physiological conferences and other small group exercises will supplement clinical experiences and emphasize the scientific basis of clinical problems. 6th year medical students are required to attend two afternoon clinics weekly.

II. Rotation Objectives & Expected Outcomes

General objectives

Upon completion of the course, students should be able to:

1. To highlight the concept of health and disease and provide knowledge of the common medical disorders

2. Offer information regarding approach to patients, identification of disease, reaching diagnosis, and how to provide care and respond to patient needs

3. Offer information about how to obtain medical history and perform physical examination and how and what investigations to request. Further assist the student to develop skills of interviewing, communication, and rapport establishment

4. To provide the students information regarding formulation, broad lines of management and safety use of medications and drug interactions

5. To develop concept of health and disease, case identification and approach to diagnosis and management

6. Learn how to perform proper clinical assessment

7. Developed skill of interviewing, communication, establishment of rapport and meeting different patient needs

8. Obtained knowledge of available clinical diagnostic facilities and investigations, treatment methods, safety use of drugs, and awareness of non-pharmacological approaches

9. Become aware of the ethical issues of medical practice and patient rights

Specific Objectives

1) Cardiovascular System:

I. Knowledge/Mix of Diseases/Patients

A. Ischemic heart disease and myocardial infarction including practice guidelines for the management of unstable angina. Recognize RV infarct, MI complications
B. Congestive heart failure practice guidelines. Systolic vs diastolic
C. Congenital heart disease which may occur in adults
D. Valvular heart disease—causes
E. Clinical diagnosis of rheumatic fever
F. Cardiomyopathies
G. Pericardial disease
H. Hypertension: essential and secondary
I. Arrhythmias
    1. Distinction between ventricular and supraventricular arrhythmias
    2. Atrial fibrillation, atrial flutter, SVT and MAT
    3. Heart block 1o, 2o, 3o
    4. Bundle branch and hemiblocks

II. History Skills

A. Obtain history of risk factors for coronary artery disease
B. Obtain history for rheumatic fever or congenital heart disease
C. Recognize importance of family history in assessment of cardiovascular disease
D. Differentiate between cardiac and non-cardiac chest pain
E. In hypertensive patient, obtain careful history of medication compliance

III. Physical Exam Skills

A. Measure arterial blood pressure in both arms using palpation method initially. Know how to avoid all common errors in blood pressure measurement
B. Determine heart size by palpation of the PMI

C. Appreciate the significance of abnormal pulsations, right and left ventricular heave, thrills
D. Determine venous pressure by examination of neck veins
E. Assess arterial pulses and recognize pulsus alternans, bisferiens pulse, and paradoxical pulse
F. Perform hepatojugular reflux test to assess venous pressure
H. On cardiac auscultation, recognize:

1. S-1, S-2, and normal physiologic splitting
2. S-3, S-4, and how they are best appreciated
3. Systolic and diastolic murmur--effects of physiologic and pharmacologic interventions
4. Special characteristics of the murmur of MVP and HCM
5. Pericardial friction rub

I. Assessment of peripheral vascular disease.

IV. Diagnostic Tests

A. EKG interpretation
B. Chest X-ray--recognize classical findings in HF, pericardial effusion, chamber enlargement
C. Echocardiography--Be able to order when appropriate in evaluation of valvular heart disease, LVH, cardiomyopathy, endocarditis, pericardial effusion

V. Therapeutic Interventions

A. Know therapeutic indications for angioplasty and other therapeutic applications of catheterization
B. Describe therapeutic approach to clinical syndromes described in I. Emphasize particularly

1. Indications for thrombolytic therapy in MI
2. Contraindications for thrombolytic therapy in MI
3. Analgesia, oxygen, and sedation
4. Role of ASA, anticoagulation, Beta blockers, magnesium
5. Recognize and treat complications of MI including ventricular tachycardia and fibrillation, idioventricular rhythm, sinus bradycardia, conduction disturbances and heart block.
6. Know how to use common drugs for angina pectoris including types of nitrates, Beta blockers and calcium channel blockers.
7. Understand all modalities in the management of CHF including reduction of workload, control of salt and fluid, diet, diuretic vasodilators and digoxin. Use additional options in acute pulmonary edema.
8. Describe drugs of choice for bradyarrhythmias and tachyarrhythmias
9. Know the approach to acute pericarditis and evaluation of the patient with possible tamponade

VI. Prevention of Cardiac Disease

A. Have plan of intervention for hyperlipidemia
B. Approach patient with options for cessation of cigarette smoking
C. Be able to advise patient on diet, exercise program, and stress reduction
D. Identify patients who are at highest risk

A. EKG interpretation

B. Chest X-ray--recognize classical findings in congestive heart failure, pericardial effusion, chamber enlargement

C. Echocardiography--Be able to order when appropriate in evaluation of valvular heart disease, LVH, cardiomyopathy endocarditis, pericardial effusion

E. Know all antibiotic regimens for prophylaxis of endocarditis in at-risk patients

Clinical Pharmacology

I. Knowledge

A. Principles of drug therapy

1. Loading and maintenance dosing
2. Calculate creatinin clearance
3. Drug interaction lists (particularly coumadin, theophylline, Dilantin, digoxin)

B. Adverse reactions

1. Endocrine, metabolic, dermatologic, hematologic, renal, cardiovascular, neurologic and psychiatric, GI
2. Polypharmacy and the elderly

C. Action and side effects of nonsteroidals (NSAIDs)

D. Indications and physiologic effects of autonomic drugs (adrenergic, dopaminergic, alpha and beta blocking agents)

II. History Skills

A. Ability to take careful drug history

B. Assess compliance

C. History of herbal use

III. Physical Exam

A. Recognize drug rashes

B. Recognize Stevens Johnson syndrome

C. Recognize angioedema, gingival hyperplasia, dental discoloration

D. Evaluate and categorize mental status changes associated with drug effects

IV. Diagnostic Tests

A. Interpret peak and trough levels of aminoglycoside and vancomycin

B. Appropriate use of digoxin levels

C. Drug screens – indications

V. Therapeutic Interventions

A. Treatment of drug toxicities and overdose

1. Fundamentals
2. Management of specific poisons - acetaminophen, acids and alkali, salicylate, carbon monoxide, digoxin, theophylline, methemoglobinemia, lithium

2) Diseases of the kidney & urinary tract:

I. Knowledge/Mix of Diseases/Patients

A. Acute renal failure--The student must distinguish prerenal, renal, and post renal disease using clinical and laboratory parameters

B. Chronic renal failure and its associated metabolic-endocrine, GI, cardiovascular hematologic, and neuromuscular complications
C. The major glomerulopathies including acute GN, rapidly progressive GN, GN associated with nephritic syndrome, and glomerulopathies associated with multisystem disease
D. Tubulointerstitial disease
E. Vascular injury
F. Causes of renal stones--associated underlying diseases

II. History Skills

In the patient who presents with a problem of the urinary tract, the student will determine by history:
A. Frequency and volume of urine (polyuria, oliguria, anuria)
B. Urine color, hematuria
C. Dysuria, diminished stream
D. Family history of renal disease or stones
E. Past history of stones or urinary tract infection
F. Flank or groin pain
G. History of nephrotoxic drugs or drugs that effect bladder emptying or urine color
H. Recognize the clinical syndrome of uremia

III. Physical Exam Skills

A. Recognize signs of uremia--cognitive, asterixis, odor of breath
B. Auscultate for bruits
C. Attempt to palpate for kidneys
D. Percuss bladder size
E. Recognize any signs of multisystem disease as might be seen in SLE and scleroderma, Schonlein-Henoch purpura, PAN

IV. Diagnostic Tests

A. The student should be able to:
B. Calculate fractional excretion of sodium as a measure of prerenal vs post renal azotemia
C. Evaluate the patient with glomerulonephritis for multisystem disease
D. Choose the most appropriate imaging test for the specific patient problem

V. Therapeutic Interventions

The student should be able to:
A. Manage the patient with acute renal failure and know all indications for dialysis
B. Recognize the possibility of urinary tract obstruction and perform urethral catheterization using sterile technique
C. Recognize the indications for consultation for performance of peritoneal and hemodialysis, lithotripsy or stone surgery, nephrostomy tube, renal vascular surgery, suprapubic cystotomy, renal transplantation

3) Disorders of the respiratory system:

I. Knowledge/Mix of Diseases/Patients

A. Diseases of Airflow Limitation

1. Asthma
2. Bronchitis
3. Emphysema
4. Bronchiectasis
5. Cystic fibrosis

B. Interstitial Lung Diseases
1. Occupational lung disease
2. Hypersensitivity pneumonias
3. Sarcoidosis
4. Idiopathic pulmonary fibrosis

C. Infectious Lung Diseases
1. Community acquired pneumonia
2. Nosocomial pneumonias
3. Mycotic lung diseases
4. Tuberculosis

D. Pulmonary Vascular Lung Diseases
1. Pulmonary thromboembolism
2. Pulmonary hypertension
3. Noncardiogenic pulmonary edema (ARDS)

E. Neoplastic Disease of the Lung
1. Bronchogenic carcinoma
2. Paraneoplastic syndromes

F. Diseases of the Pleura
1. Pleural effusion
2. Pneumothorax

II. History Skills

A. Correctly characterize respiratory symptoms of dyspnea, cough, and expectoration
B. Obtain careful history of accidental or occupational exposure to potential lung toxins
C. Obtain a precise history of tobacco use, including passive cigarette smoke
D. Obtain family history for cystic fibrosis, emphysema, asthma, tuberculosis, collagen vascular diseases, and lung neoplasm
E. Obtain history of drug exposure and medication use
F. Determine risk factors for HIV and TB
G. Obtain reports of prior pulmonary tests such as CXRs, PFTs, ABGs, and PPD

III. Physical Exam Skills

A. Examine the chest by inspection
1. Identify abnormal respiratory patterns
2. Recognize findings suggesting pulmonary disease such as deviated trachea, digital clubbing, HPO, and Horner's syndrome

B. Examine the chest by palpation
1. Appreciate the significance of supraclavicular adenopathy, crepitation, and tenderness

C. Examine the chest by percussion
1. Distinguish normal and abnormal resonance
2. Further define areas of dullness by special maneuvers such as vocal and tactile fremitus

D. Examine the chest by auscultation

1. Recognize normal breath sounds and characterize
2. Recognize adventitious breath sounds such as crackles, rhonchi, and wheezes
3. Understand the diagnostic implications of the adventitious sound

IV. Diagnostic Test Skills

A. The student should be able to:

1. Interpret arterial blood gases including mixed acid base abnormalities
2. Use the A-a gradient to determine the causes of hypoxemia
3. Use the a/A ratio as an expression of patient's ability for gas exchange
4. Understand the use and limitations of the pulse oxymeter
5. Interpret spirometry including Flow-Volume loops
6. Interpret the chemical profile of pleural effusions
7. Utilize the Gram stain, AFB stains, and Wright stain
8. Interpret the standard PA and lateral chest radiograph

B. The student should understand the indications for:

1. Pulmonary function tests
2. Sleep studies
3. Serology and special immunofluorescent stains
4. Thoracentesis
5. Pleural biopsy
6. Chest tube insertion
7. Bronchoscopy
8. Transthoracic needle biopsy
9. Open lung biopsy
10. Mediastinoscopy

V. Therapeutic Skills

A. The student must be familiar with the management of all diseases listed in I.

B. The student should be able to:

1. Properly clear and maintain an airway
2. Perform therapeutic and diagnostic thoracentesis
3. Teach incentive spirometry
4. Correctly select antimicrobial agents for respiratory infection
5. Recognize a significant reaction to PPD
6. Know the indications and side effects for the commonly used medications in pulmonary medicine

VI. Preventive Measures

A. The student must recognize the value of:

1. Immunization with the Pneumovax
2. Immunization with the influenza vaccine
3. Prophylactic use of amantadine in influenza outbreaks
4. Immunization with the BCG vaccine
5. Measures to prevent the spread of tuberculosis
6. High risk screening for tuberculosis infection
7. INH prophylaxis
8. Low flow oxygen

4) Endocrine & metabolism:

I. Knowledge/Mix of Diseases/Patients

A. Diseases of the pituitary
    1. Diabetes insipidus
        a. Central
        b. Nephrogenic
    2. Pituitary tumors
        a. Acromegaly
        b. Cushing Disease
        c. Prolactinoma
    3. Hypopituitarism
    4. Empty Sella Syndrome

B. Thyroid Disease
    1. Hypothyroidism causes
        a. Primary hypothyroidism
        b. Secondary hypothyroidism
    2. Hyperthyroidism
        a. Graves disease
        b. Toxic multinodular goiter
        c. Toxic adenoma
        d. Factitious
    3. Thyroiditis
        a. Chronic thyroiditis (Hashimoto's)
        b. Subacute thyroiditis (painful and painless)
    4. Approach to thyroid nodule

C. Diseases of the Adrenal Cortex
    1. Cushing Syndrome
    2. Hyperaldosteronism
        a. Primary hyperaldosteronism
        b. Secondary hyperaldosteronism
    3. Addison's Disease
    4. Hypoaldosteronism
    5. Incidental adrenal mass
    6. Congenital adrenal hyperplasia (classical and non-classical)

D. Pheochromocytoma

E. Diabetes mellitus
    1. Diagnosis
    2. Classification and pathogenesis
    3. Clinical features
    4. Complications
        a. DKA
        b. Hyperosmolar coma
        c. Vascular disease

d. Ocular
e. Nephropathy
f. Neuropathy (somatic and autonomic)
g. Foot ulcers
h. Other infections

5. Treatment
a. Diet
b. Insulin
c. Oral agents
d. HTN Rx

F. Hypoglycemia
1. Fasting
a. Insulinoma vs. factitious
2. Reactive

G. Testicular function
1. Primary hypogonadism
a. Klinefelter's
2. Secondary hypogonadism
a. Pituitary tumor
b. Hyperprolactinemia
3. Pubertal development
a. Delayed puberty
b. Cryptorchidism

H. Disorders of ovary and female genital tract
1. Hirsutism and virilization
2. Amenorrhea/galactorrhea (hyperprolactinemia)
3. Estrogen replacement

I. Multiple endocrine disorders

J. Disorders of the parathyroid gland and of calcium metabolism (hyperparathyroidism differential of hypercalcemia, hypocalcemia)

K. Metabolic bone disease
1. Osteoporosis
2. Osteomalacia
3. Paget's
4. Renal osteodystrophy

II. History Skills

A. Demonstrates knowledge necessary to take a proper history for a patient suspected of having an endocrine or metabolic disorder. This might include the special significance of:
1. Growth and development
2. Sexual precocity
3. Menstrual function
4. History of thyroid or other endocrine disorders
5. Family history of diabetes mellitus
6. Obesity

B. In a patient with diabetes mellitus, the Student must obtain and put in chronological order a detailed history of the disease, including all complications, hospitalizations,

medications. The history should include history of coma, neuropathy, nephropathy, foot problems, and infections.

III. Physical Exam

A. Know importance of:

1. Weight
2. Height
3. Skeletal proportions

B. Recognize exophthalmus and abnormal ocular motility

C. Evaluate thyroid size, nodularity, tenderness, and bruit

D. Evaluate skin-temperature, moisture, pigmentation, lesions, such as acne, pretibial myxedema, diabetic dermopathy, and necrobiosis

E. Evaluate quality of voice

F. Evaluate texture and pattern of hair

G. Recognize gynecomastia and its differential

H. Recognize diabetic retinopathy

IV. Diagnostic Skills

A. Understand the use of thyroid function tests in the diagnosis of thyroid disease and thyroid abnormalities in non-thyroidal diseases

1. TSH
2. I 123 uptake
3. Thyroid scan

B. Clinical circumstances for the use of the following tests:

1. Water deprivation
2. Growth hormone suppression by glucose
3. Dexamethasone suppression
4. ACTH stimulation
5. PRA, aldosterone
6. Prolactin, LH, FSH, ACTH
7. Vitamin D and related metabolites
8. Serum catecholamines (clonidine stimulatix)
9. Cortisol
10. DHEA - sulfate
11. Testosterone
12. 17 0H progesterone

C. Urinary

1. Hydroxysteroids/urine free corticoid
2. Pregnancy test
3. Metanephrine, VMA
4. 5-hydroxy indoleacetic acid

D. Describe the tests necessary to diagnose diseases listed in I.

V. Therapeutic Interventions

A. Understand the indications, side effects, adverse reactions and approach to follow-up for each of the following:

1. ACTH
2. L-thyroxine
3. Cortisones

4. Testosterone
5. Vasopressin
6. Antithyroid drugs
7. Oral hypoglycemics
8. Insulin (all forms)
9. Glucagon
10. Bromocriptine
11. Hypolipidemic agents

B. Recognize the need for consultation for the following:
1. Transsphenoidal hypophysectomy
2. Partial thyroidectomy
3. Adrenalectomy

4. Parathyroid exploration and resection

5) Gastroenterology:

I. Knowledge/Mix of Diseases/Patients

A. Diseases of the esophagus: anatomic and motor causes of esophagitis
B. Peptic ulcer and gastritis role of Helicobacter, Zollinger Ellison syndrome
C. Neoplasms of the esophagus and stomach
D. Disorders of absorption
E. Inflammatory bowel disease
F. Diseases of the large and small bowel
G. Liver and biliary tract disease
1. Acute and chronic hepatitis
2. Cirrhosis and alcoholic liver disease
3. Infiltrative disease of the liver
4. Diseases of the gallbladder

H. Pancreatic diseases
1. Acute pancreatitis
2. Chronic pancreatitis
3. Pancreatic cancer
4. Endocrine tumors

II. History Skills

In obtaining history from a patient with a GI complaint:
A. Describe all characteristics of abdominal pain
B. Recognize potential importance of family history (CA, polyposis, etc.), medication history and GI side effects of all drugs
C. History of diet, weight, food intolerance, bowel pattern, and bleeding
D. Compare and contrast history of inflammatory bowel disease vs. irritable bowel syndrome
E. In inflammatory bowel disease, determine length of illness and risk of cancer
F. In alcoholic patient, determine length and quantity of alcohol. Include all aspects of potential impact of alcohol on health

G. In both GI patients and liver disease patients, obtain careful drug history, including over counter drugs and careful history of exposure and toxins
H. Precise history taking in GERD and dysphagia

III. Physical Exam Skills

A. Students must do complete exam of abdomen and rectal exam including:
1. General observation including abdominal contour, nodules, scars, striae, venous pattern
2. Auscultation for bowel sounds and bruits
3. Light and deep palpation
4. Percussion for liver size
5. Percussion in Traube's space to evaluate for splenomegaly
6. Palpation for spleen

B. Recognize need for additional physical exam maneuvers such as:
1. Shifting dullness and fluid wave when ascites is suspected
2. Murphy's sign for right upper quadrant pain or tenderness
3. Liver scratch test when percussion is equivocal or cannot be done
4. Eliciting signs of peritonitis
5. Check inguinal area for masses and hernia
6. Perform rectal digital exam and check for fecal blood

IV. Diagnostic Studies

A. Know indications for and properly perform paracentesis and placement of nasogastric tube

B. Properly interpret the following laboratory tests:
1. Serologic studies for hepatitis
2. Liver function tests
3. Stool electrolytes and osmolality
4. Serum B12

C. The student should know sensitivity and specificity of imaging modalities for diseases in I. including:
1. Radionucleotide scan of liver
2. Abdominal ultrasound & CT scan
3. Upper, lower GI barium studies
4. Esophagoscopy, gastroscopy and colonoscopy
5. Small bowel biopsy
6. Endoscopic retrograde cannulation of pancreas and bile duct (ERCP)

V. Therapeutic Skills

A. Places nasogastric tube for pancreatitis or other GI symptoms
B. Performs therapeutic paracentesis
C. Requests appropriate consultation for consideration of the following:
1. Surgical abdomen
2. Sclerotherapy or banding for esophageal varices
3. Control of GI bleed
4. Bowel resection for inflammatory bowel disease
5. Esophageal dilatation
6. Portacaval shunt
7. GI cases where surgical intervention is indicated

D. The student knows indications, mechanism of action, side effects, interactions and follow-up for the following medications:

1. Laxatives
2. Anti-emetics
3. Bile sequestrants
4. Anti-diarrheals
5. Antacids
6. Pancreatic enzymes
7. Corticosteroids
8. H2 antagonists
9. Anti-helminthics
10. PPI's
11. Prokinetic agents

VI. Preventive Measures

A. Knows indications for occult blood screening and for periodic colonoscopy in high-risk patients

B. Knows approach to follow up of the patient with history of polyp disease

6) Hematology:

I. Knowledge/Mix of Diseases/Patients

A. Pathophysiology of anemia
B. Anemia of chronic disease
C. Iron deficiency anemia
D. Megaloblastic anemia
E. Hemolytic anemias (congenital and acquired)
F. Iron overload states
G. Bone marrow failure
H. Myeloproliferative disorders
I. Leukemias (acute and chronic)
J. Myelodysplastic syndromes
K. Lymphoma (Hodgkins, non-Hodgkins and plasma cell myeloma)
L. Clotting disorders

1. Platelet and vessel wall
2. Coagulation and Thrombosis
3. Hypercoagulable state

II. History Skills

A. Knowing presenting signs of anemia recognizing these to be variable and dependent on severity, chronicity and underlying disease

B. Recognize dizziness, shortness of breath, headache, exercise tolerance, sensitivity to cold, may be presenting symptoms

C. Recognize symptoms of angina, claudication, TIA may be unmasked by anemia

D. Recognize the value of reviewing all previous hematologic lab data in evaluation of hematologic disorders

E. Recognize symptoms of platelet disorders (spontaneous mucocutaneous bleeding, immediate bleeding with trivial trauma) versus symptoms of clotting-factor deficiency (delayed bleeding, deep muscular hematomas, hemarthroses)
F. Recognize the importance of "B" symptoms (fever, night-sweats, weight loss) in patients with lymphoma
G. Recognize the importance of the family history in patients with anemia and coagulation disorders

III. Physical Diagnosis Skills

A. Recognize ecchymotic or petechial rash
B. Palpate all lymph node areas, spleen and liver
C. Check vital signs for tachycardia, postural hypotension, pulse pressure, hyperdynamic precordium, and systolic "flow" murmur
D. Evaluate tongue, bones and joints
E. Perform rectal exam with stool for occult blood

IV. Diagnostic Skills

A. Perform peripheral blood smear on all patients with suspicion of blood disorders
B. Evaluate:
    1. Red blood cell size and shape. Determine if there is variation in red blood cell size
    2. Determine platelet count on smear
    3. Leucocyte morphology
C. Identify:
    1. Burr cells
    2. Helmet cells
    3. Target cells
    4. Spherocytes
    5. Rouleaux formation
    6. Hypersegmented polys
    7. Reactive lymphocytes
    8. Leukemic cells
    9. Schistocytes and fragmented RBC's
    10. Platelet clumps
    11. Nucleated red blood cells
    12. Howell-Jolly bodies
    13. Basophilic stippling
D. Know the value of the following tests in the work-up of a patient with hemolytic anemia:
    1. Blood smear review
    2. Reticulocyte count
    3. Coombs test
    4. Serum haptoglobin
    5. Glucose 6 phosphate dehydrogenase deficiency
    6. Hemoglobin electrophoresis
    7. Urine hemosiderin
E. In the evaluation of leukemia recognize the importance of:
    1. Leukocyte alkaline phosphatase

2. Auer rods
3. Ph chromosome
4. Flow cytometry: Principles of immunophenotyping

F. Recognize need to obtain consultation for:
1. Bone marrow examination
2. Lymph node biopsy/fine needle biopsy

G. Know the proper evaluation for bleeding disorder and to diagnosis disseminated intravascular coagulation

H. Know the principles of:
1. Bleeding time
2. Prothrombin time (PT)
3. Partial Thromboplastin Time (PTT)

V. Therapeutic Interventions

A. Know the appropriate indications for transfusion of erythrocytes and platelets

B. Write note to document need in all patients receiving these treatments

C. Know indications for fresh frozen plasma, cryoprecipitate, and purified factor concentrates

D. Know mechanism of action, indication side effects, and method of follow-up for each of the following drugs:
1. Glucocorticoids
2. Oral and parenteral iron
3. Folic acid
4. Vitamin B12

E. Recognize necessity for consultation with hematologist for the following surgical procedures:
1. Splenectomy
2. Staging laparotomy
3. Bone marrow transplant

VI. Prevention

A. Diet importance in nutritional anemias

B. Recognize the need to obtain consultation for genetic counseling in some patients with hemoglobinopathies and hemophilia

7) Infectious diseases:

I. Knowledge/Mix of Diseases/Patients

A. Clinical syndromes
1. Gram-negative sepsis
2. Infective endocarditis
3. Upper and lower respiratory infections
4. Urinary tract infections
5. Infectious arthritis and osteomyelitis
6. Sexually transmitted disease
7. Soft tissue infection
8. Tuberculosis

9. Syphilis and other spirochetal diseases
10. Rocky Mountain spotted fever and other rickettsial diseases
11. Mycoplasma pneumoniae pneumonia
12. Infections caused by drug-resistant organisms

B. Viral infection
1. Influenza and prevention
2. Herpes infection, Hepatitis A, B and C
3. Infectious mononucleosis and cytomegalovirus

C. Fungal infection
1. Deep seated mycoses
2. Clinical syndromes of aspergillus
3. Cryptococcal infection
4. Mucormycoses

D. Protozoal infection
E. Helminthic infection
F. Leishmaniasis
G. Antibiotic, antifungal, antiviral therapy
H. AIDS and its opportunistic infections

II. History Skills

A. Demonstrate at bedside ability to elicit history with special attention to relevant travel and residential history, animal contact, work and recreational activity, drug use and sexual history
B. Elicit any co-existing disease which may be relevant to pathogenesis of infection

III. Physical Examination

A. Demonstrate ability to perform thorough physical exam in effort to determine source of infection
B. Recognize skin lesions which may provide diagnostic clues to etiology of infection
1. Review slides of photos of:
a. ECM in Lyme disease
b. Palms and soles rash of RMSF
c. Ecthyma gangrenosum in pseudomonas infection
d. Erysipelas and impetigo
e. Dermatomal rash of herpes Zoster
2. Superficial dermatophytes
3. Skin lesions of bacterial endocarditis - Osler nodes, Janeway lesions, and splinter hemorrhages
4. Toxic shock syndrome (staphylococcal/streptococcal)

C. Recognize fever patterns and their possible diagnostic indications
D. Use physical diagnosis skills to recognize potentially infected joint effusion, pleural effusion, ascitic fluid
E. Recognize the clinical picture of candida pharyngitis, otitis media, malignant otitis externa, sinusitis including mucor infection
F. Perform Kernig and Brudzinski tests in evaluating for meningitis

IV. Diagnostic Tests

A. Obtain sputum on patients with pneumonia
B. Obtain appropriate body fluid (CSF, pleural, peritoneal, joint)

C. Perform and interpret gram stain in patients with UTI, septic arthritis, empyema, meningitis
D. Perform acid fast stain for active pulmonary tuberculosis
E. Order appropriate serologic and imaging tests for all clinical syndromes described in I
F. Interpret antibiotic susceptibility tests including MIC's and serum bactericidal test
G. Recognize need for special tests and procedures such as bronchoscopy, liver biopsy, colonoscopy; special stains for Legionella, chlamydia, pneumocystis

V. Therapeutic Interventions

A. Choose appropriate antibiotic regimens based on the principles of:
1. Spectrum of activity
2. Distribution
3. Toxicity
4. Synergy and antagonism
5. Cost

B. Compare and contrast these principles with respect to penicillins, cephalosporins, aminoglycosides, monobactams, quinolones, macrolides
C. Identify indications for determining MIC's, serum bactericidal test and antibiotic levels
D. Recognize the necessity to stop antibiotic therapy for potentially life threatening side effects such as allergy, antibiotic associated diarrhea, bone marrow suppression
E. Understand indications for amphotericin vs imidazoles in fungal infection. Be able to use amphotericin with respect to dosing and monitoring
F. Recognize need for consultation for surgical intervention (including valve replacement for endocarditis), drainage of abscess, chest tube for empyema, fasciotomy for necrotizing skin infection
G. Initiation of empiric antibiotic treatment in the febrile neutropenic patient

VI. Prevention

A. Know target population for influenza and pneumococcal vaccine.
B. Know all agents useful in the prophylaxis of opportunistic infections in AIDS - i.e., pneumocystis, fungal infection,MAI
C. Know proper sources to gain knowledge about specific prophylactic measures for travelers

8) Rheumatology:

I. Knowledge

A. Clinical manifestations of SLE
B. Rheumatoid arthritis
C. Scleroderma
D. Mixed connective tissue disease
E. Sjogren's syndrome
F. Ankylosing spondylitis
G. Vasculitic syndromes
H. Sarcoidosis
I. Osteoarthritis
J. Psoriatic arthritis and arthritis associated with GI diseases

K. FMF
L. Behcet's disease
M. Gout

II. History Skills

A. Demonstrate ability to elicit history of multisystem disease. Know importance of extra-articular symptoms such as rash, uveitis, aphthous ulcers, alopecia, pleuritic pain
B. In patient with joint disease, determine presence or absence of morning stiffness, redness, heat, swelling, restricted movement
C. Obtain occupational, athletic history
D. Obtain family history of joint disease
E. Elicit history of neck and back pain
F. Elicit history of surgery and prosthetic joints

III. Physical Exam Skills

A. Know the physical findings associated with each of the diseases listed in I.
B. Evaluate each joint for swelling, erythema, tenderness, crepitation, contracture, deformity.
C. Determine range of motion and compare to normal. Identify Heberden node, Bouchard node, ulnar deviation,
Swan neck deformity.
D. Demonstrate joint effusion.
E. Examine the spine. Evaluate chest expansion for spondylitis.
F. Recognize characteristic rashes of SLE, heliotropic rash of dermatomyositis, purpuric rash of vasculitis.
G. Identify characteristic exam findings of scleroderma.
H. Recognize the rheumatoid nodule

IV. Diagnostic Tests

The student should be able to:
A. Aspirate effusion of knee
B. Order appropriate X-rays for joint disease and recognize characteristic abnormalities
C. Know relative sensitivity and specificity of the following: rheumatoid factor, anti DNA, anti SM, anti RNP,
anti RO (SSA), anti LA (SSB), ANCA

V. Therapeutic Interventions

A. Know standard treatment options for all diseases listed in I
B. Seek orthopedic consultation to assess need for: osteotomy, synovectomy, joint reconstruction or replacement, synovial cyst surgery, unstable joint tendon repair
C. Seek physical therapy consultation for: heat treatment, massage, range of motion exercises, ultrasound

VI. Preventive Measures

Know rheumatic fever prophylaxis – indications

1. On-call duty, from 5 to 10 PM, with active participation to admission of acutely-ill patients
2. Attendance of daily morning reports, with presentation of cases and review of the pertinent literature

9) Clinical epidemiology/Medical reasoning

A. Describe phases of clinical reasoning

1. Defining the “clinical problem”
2. Generating a differential diagnosis
3. Ordering of appropriate investigations to narrow down the list of differential diagnosis
4. Planning for treatment and prevention of disease

B. Define:

1. Prevalence
2. Sensitivity
3. Specificity
4. False negative rate
5. False positive rate
6. Negative predictive value (NPV) and positive predictive value (PPV)

IV. Suggested Textbook(s) and Readings

1. Davidson's Principles and Practice of Medicine, 20th Edition With STUDENT CONSULT Online Access. By Nicholas A. Boon, MA, MD, FRCP(Ed), FESC, Nicki R. Colledge, BSc, FRCP(Ed), Brian R. Walker, BSc, MD, FRCP(Ed) and John A. A. Hunter, OBE, BA, MD, FRCP

2. Kumar and Clark's Clinical Medicine, 7th Edition - With STUDENT CONSULT Online Access. By Parveen Kumar, CBE, BSc, MD, FRCP, FRCP(Edin) and Michael L. Clark, MD, FRCP

V. Teaching Materials Made Available to Students

- Textbooks and references

- Lecture Notes, from seminars prepared by the students and moderated by the consultants and teaching assistants.

- Attending outpatient clinics and learn examination methods after seeing patients, supervised by consultants and residents.

VI. Educational Facilities

- Classroom with whiteboard.

- College library.

- Internet.

VII. Rotation Outline

List of lectures for fourth & sixth year students:

1) Cardiovascular

No.	Topic	Objectives
1	Symptoms of Cardiovascular System (CVS)	1. Revision of CVS symptoms 2. Formulation of differential diagnoses for each symptom 3. Important history points differentiating between differential diagnoses
2	Cardiac investigation	1. Identify the invasive and noninvasive investigations used evaluate the heart 2. To know their indications and precautions. 3. Basic interpretation of the results
3	Hypertension (HTN)	1. Define essential HTN and secondary HTN 2. WHO classification of hypertension 3. Suggest initial investigations for hypertensive patients 4. Identify long-term complications of hypertension and hypertensive emergencies 5. Describe the classes of antihypertensive drugs 6. Outline the management of hypertension based on JNC7 recommendations
4	Acute Coronary syndrome (ACS) and Ischemic Heart Disease (IHD) (2 Lectures)	1. Describe the presentation of chronic IHD and acute coronary syndrome. 2. Describe the pathogenesis of IHD and different ACSs. 3. Identify modifiable and non-modifiable risk factors. 4. Define the investigations used to diagnose IHD 5. Outline the current management of chronic IHD
5	Arrhythmias	1. Define arrhythmias 2. Describe the mechanisms of arrhythmias 3. Describe the presentation of arrhythmias 4. Define the investigations used to diagnose arrhythmias 5. Outline the treatment of common arrhythmias
6	Rheumatic Fever (RF)	1. Define and discuss RF 2. Define the epidemiology of RF 3. Describe the criteria for diagnosing RF 4. Discuss complications of RF 5. Outline treatment of RF
7	Infective Endocarditis (IE)	1. Define the etiologic factors of IE 2. Discuss clinical manifestations of IE 3. Identify diagnostic methods for IE

		4. Describe complications of IE requiring surgical treatment 5. Discuss the lines of treatment for IE
8	Heart Failure (HF)	1. Define and list causes of HF 2. Review the pathophysiology of HF 3. Describe clinical manifestations of HF 4. Suggest appropriate investigations for HF 5. Outline the treatment for HF 6. Point out the prognostic markers and mortality of HF
9	Congenital heart disease	1. Review of cardiac embryology and anatomy 2. Review of fetal circulation and postnatal circulation 3. Discuss various Congenital heart diseases 4. Outline management of different Congenital heart diseases
10	Cardiac arrest	1. Define and list causes of Cardiac arrest 2. Review the pathophysiology of Cardiac arrest 3. Identify diagnostic methods for Cardiac arrest 4. Revision of Basic Life Support and Advance Life Support.
11	Pericardial disease	1. Acute Pericarditis: Etiology, Clinical features, investigations and management 2. Pericardial Effusion: Clinical features, ECG changes and management 3. Pericardial Tamponade: Typical physical findings and importance of urgent management 4. Constrictive Pericarditis: Clinical features and associations and overview of surgical management
12	Valvular heart disease (2 Lectures)	1. Mitral Stenosis and Regurgitation: Causes, Presentation, murmur, investigations and management 2. Aortic Stenosis and Regurgitation: Etiology, Symptoms, murmur, investigations and management 3. Tricuspid Stenosis and Regurgitation 4. Pulmonary Stenosis and Regurgitation
13	Cardiac tumors	1. Outline common cardiac tumors 2. Describe the epidemiology and presentation of different cardiac tumors 3. An idea about the treatment.
14	Peripheral vascular disease	1. Define the etiologic factors of Peripheral vascular disease 2. Discuss clinical manifestations and severity of Peripheral vascular disease 3. Identify diagnostic methods for Peripheral vascular disease 4. Describe complications of Peripheral vascular disease requiring surgical treatment 5. Discuss the lines of treatment for Peripheral vascular disease
15	Lipid disorder	1. Discuss varying lipid disorders and their pathophysiology 2. Pointing Lipid profile normal values and therapy targets. 3. Discuss complications of Lipid disorders 4. Outline treatment

16	Cardiomyopathies	1. Define the etiologic factors of Cardiomyopathies 2. Discuss clinical manifestations of Cardiomyopathies 3. Identify diagnostic methods for Cardiomyopathies 4. Describe complications of Cardiomyopathies requiring surgical treatment 5. Discuss the lines of treatment for Cardiomyopathies
17	Myocarditis	1. Define the etiologic factors of Myocarditis 2. Discuss clinical manifestations of Myocarditis 3. Identify diagnostic methods for Myocarditis 4. Discuss the lines of treatment for Myocarditis

2) Diseases of the kidney & urinary tract:

No.	**Topic**	**Objectives**
1	Renal tests	1. Urine analysis : Target Parameters Methods (Urine strip test, Microscopic examination) 2. GFR Detention Cock-gault formula 3. Renal biopsy When to do it and how does it help in diagnosis
2	Acid- base disorders	1. Mechanisms: Henderson-Hasselbach equation Quick review of basic physiology 2. Anion gaps Serum onion Gap and its calculation Urine anion Gap and its calculation 3. Osmolar gap How to calculate it and to utilize it in your calculations 4. Types • Metabolic acidosis : Etiologies Normal anion gap metabolic acidosis High anion gab metabolic acidosis • Metabolic alkalosis: Etiologies • Overview of respiratory acidosis and alkalosis
3	Fluid and electrolytes	1. Osmolality and volume status 2. Hyponatremia • Hyponatremia with Isotonic osmolality • Hyponatremia with Hypertonic osmolality

		• Hyponatremia with Hypotonic osmolality in low volume patients, high volume patients and normal volume patients (Syndrome of inappropriate ADH) • Treatment of Hyponetemia 3.hypernatremia • High volume hypernatremia • Normal volume hypernatremia • Water restriction test
4	Normal renal physiology	1. Overview 2. Proximal Tubule 3. Loop of Henle 4. Distal tubule 5. Medullary collecting duct 6. Renal tubular acidosis (RTA) • Causes, lab results and treatment of Type 1 RTA • Causes, lab results and treatment of Type 2 RTA • Causes, lab results and treatment of Type 4 RTA
5	Minerals	1. Potassium • Causes , Manifestations and treatment of Hyperkalemia • Causes ,Manifestations and treatment of Hypokalemia • Primary vs secondary hyperaldeosteronism and screening with aldestrone concentration and plasma renin activity 2. Calcium • Causes, manifestations and treatment of Hypercalcemia • Causes, manifestations and treatment of Hypocalcemia. 3. Magnesium • Causes , manifestations and treatment of Hypomagnesemia • Causes , manifestations and treatment of Hypermagnesmia 4. Phosphate • Causes of acute and chronic Hyperphosphatemia and their treatments. • Causes and treatment of Hypophosphatemia.
6	Hypertension	1. Primary hypertension • Staging of hypertension • History talking and physical examination 2. Treatment of primary hypertension • Overview and JNC 7 guidelines • Diuretics

		• ACE inhibitors, ARBs and Renin inhibitors • Calcium-Channel Blockers • Beta-Blockers 3. Hypertensive crisis • Malignant HTN • Hypertensive encephalopathy • treatment 4. Secondary hypertension • Causes, diagnosis and treatment of Renovascular HTN • Screening, diagnosis and treatment of Primary Hyperaldosternosim • Knowing Cusing syndrome and Pheochromcytoma as causes of 2ry HTN
7	Acute kidney injury	1. Pre- renal AKI • Causes of Pre-renal AKI • Lab results in Pre-renal AKI 2. Post- renal AKI • Causes of Post-renal AKI • Lab results in post-renal AKI
8	Acute tubular necrosis	1. Causes 2. Labs in ATN 3. Treatment 4. ATN and rhabdomylysis
9	Interstitial disease	1. Acute interstitial nephritis • Causes • Lab results in AIN • Treatment 2. Chronic interstitial nephritis • Causes • Labs in Chronic interstitial nephritis • Treatment
10	Glomerular disorders	1. Nephritic syndromes • Nephritic with low Complement/ 1ry kidney presentation: 1.post infectious GN 2.Membranoproliferative GN • Systemic presentations of Nephritic with low Complement • Nephritic with normal Complement/ 1ry kidney presentation: 1.IgA Nephropathy 2.Hereditary Nephritis (Alport Syndrome) • Systemic presentation of Nephritic with normal complement:

		1.Anti-GBM Disease 2.Vasculitdies 2. Nephrotic syndrome • Nephrotic /1ry kidney presentation: 1.Minimal Change Diseases 2.Focaal and segmental Glomerulosclerosis 3.membranous Nephropathy • Nephrotic/ Systemic presentations: 1.Diabetic Nephropathy 2.Amyloidosis • Treatment of Nephrotic syndrome
11	Drug- induced nephropathies	Overview of Drugs that causes Nephropathies and mechanisms in which these drugs cause Nephropathy
12	Chronic kidney disease	1. Overview and staging 2. Bone disease in CKD • Renal Osteodystrophy • Adynamic Bone Disease • Osteomalacia 3. Anemia in CKD 4. Gout in CKD 5. Treatment of CKD 6. Dialysis 7. Renal transplant
13	Hereditary kidney diseases	1. Alport 2. Polycystic kidney disease 3. Medullary disease
14	Renal stones	1. Types and causes 2. Workup for renal stones 3. Treatment for renal stones.

3) Disorders of the respiratory system:

No.	Topic	Objectives
1	Respiratory System Anatomy	1. Revision of the respiratory system anatomy from the nose down to the alveoli. 2. Differentiate between upper and lower respiratory tract. 3. Functional anatomy and lung lobes.
2	Respiratory System Physiology & Pulmonary Function Tests (PFTs)	1. Revision of lung volumes and capacities and their normal values. 2. Describe the tests used to identify abnormal lung function. 3. Summarize the characteristic features of obstructive and restrictive ventilatory diseases, and extent of severity. 4. Study the dynamics of air movement and factors influencing

		blood gas exchange.
3	Arterial Blood Gases (ABG) & Acid-Base Disorders (ABD)	1. Review the biochemical bases of ABD. 2. Define related concepts such as A-a gradient, FiO_2, O_2 dissociation curve, and the basic mechanisms of hypoxia. 3. Discuss metabolic and respiratory ABD, both simple and complex. 4. Describe the utility of arterial blood gases in ABD.
4	Chronic Obstructive Pulmonary Disease (COPD)	1. Describe the epidemiology and identify the risk factors of COPD. 2. Describe the pathophysiology of COPD. 3. Describe the clinical manifestations of COPD. 4. Define the investigations used to diagnose COPD. 5. Describe the classes of drugs and modes of delivery available in the management of COPD in general and COPD exacerbations.
5	Bronchial Asthma	1. Define bronchial asthma and studying its pathophysiology. 2. List triggering and risk factors of asthma. 3. Describe clinical features of asthma with emphasis on indicators of severity. 4. Define the investigations used to diagnose asthma. 5. Outline the stepwise approach to management of asthma based on international guidelines.
6	Bronchiectasis & Cystic Fibrosis	1. Define Bronchiectasis. 2. Review its causes; both congenital and acquired. 3. Clinical features of Bronchiectasis. 4. Management and prognosis. 5. Reviewing Cystic Fibrosis as a cause of Bronchiectasis, elaborating on its genetic basis and complications.
7	Pneumonia	1. Define pneumonia. 2. Describe the clinical and radiological features. 3. Classify pneumonias according to being Community-acquired or Hospital-acquired, and to the causative agent. 4. Diagnosis of pneumonia. 5. Identify markers of severity of pneumonia (CURB-65 score). 6. Outline the principles of management of pneumonia.
8	Tuberculosis (TB)	1. Define TB and identify subtypes of Mycobacteria. 2. Pathology of TB and its risk factors. 3. Clinical features of primary pulmonary TB, Miliary TB, Secondary pulmonary TB with its complications. 4. Investigations done to diagnose TB. 5. Treatment of TB.
9	Thromboembolic Disease: Deep Venous Thrombosis (DVT) & Pulmonary Embolism (PE)	1. Identify risk factors for DVT & PE. 2. Clinical manifestations of DVT and of PE 3. Modalities to Diagnose of DVT and PE. 4. Guidelines for management of DVT and of PE.
10	Interstitial Lung Diseases (ILDs) and Sarcoidosis	1. Identify the major ILDs and their risk factors. 2. Define Sarcoidosis.

		3. Clinical presentation of Sarcoidosis. 4. Investigations to diagnose Sarcoidosis. 5. Staging according to Chest X-Ray findings. 6. Prognosis of Sarcoidosis.
11	Obstructive Sleep Apnea (OSA)	1. Definitions of Apnea, Hypopnea, Central Apnea, Obstructive Apnea, and mixed Apnea. 2. History and physical exam finding in patients. 3. Comorbidities of OSA. 4. Recognize polysomnography findings of Obstructive and central sleep apnea. 5. Main lines of treatment of OSA.
12	Bronchogenic Carcinoma	1. Identify the epidemiology and risk factors for bronchogenic carcinoma. 2. Review the pathological classification of bronchogenic carcinoma. 3. Describe the clinical manifestations of bronchogenic carcinoma. 4. Outline the staging of bronchogenic carcinoma. 5. Outline the treatment of bronchogenic carcinoma.
13	Pleural Effusion	1. Classification to Exudative and Transudative according to lights criteria. 2. Listing the causes of Pleural Effusion. 3. Investigations used for diagnosis. 4. Treatment.
14	Acute Respiratory Failure	1. Distinguishing type 1 from type 2. 2. Main causes of Respiratory Failure. 3. Appropriate O_2 therapy and methods of administration.
15	Acute Respiratory Distress Syndrome (ARDS)	1. Criteria defining ARDS 2. Conditions predisposing to ARDS. 3. Phases of ARDSS.
16	Hemoptysis	1. Define hemoptysis 2. List common causes of hemoptysis 3. Diagnostic approach to patients with hemoptysis

4) Endocrine & metabolism:

No.	**Topic**	**Objectives**
1	Pituitary gland	1. Anterior and posterior pituitary glands overview 2. Pituitary tumors, with special emphasis on: Acromegaly, Prolactinomas 3. Diabetes insipidus: • Causes of neurogenic and nephrogenic DI • How to distinguish neurogenic from nephrogenic DI

		using history and lab tests • Management 4. SIADH: causes, manifestations and management
4	Thyroid gland	1. Normal physiology of the thyroid gland 2. Thyroid function tests and their interpretation, and other thyroid tests including : uptake, scan, ultrasound and biopsy 3. Hypothyroidism: • Abnormal findings in history, physical examination and lab and radiological studies. • Diagnosis of hypothyroidism depending on the history, physical examination and lab and radiological studies • Treatment and follow- up of patients with hyperthyroidism • Myxedema coma: definition, clinical manifestations, lab results and management 4. Hyperthyroidism: • Abnormal findings in history, physical examination and lab and radiological studies. • How to differentiate between different causes of hyperthyroidism • Graves disease: definition, overview of grave's disease specific findings, diagnosis and different modalities of treatment 5. Thyroiditis: • Types of thyroiditis and their causes. • Clinical manifestation and lab results in different types of thyroiditis • Management of patients with thyroiditis 6. Euthyroid sick syndrome: • Definition • When to suspect ESS • Management of ESS 7. Nodules and goiters: • Overview and risk factors for thyroid nodules • Workup for patients with thyroid nodules (single or multiple) • Benign nodular disease and toxic adenoma: clinical manifestations, lab and radiological findings and management. • Thyroid carcinomas: overview of the 4 histological types of thyroid carcinoma, treatment modalities and long term follow- up • Goiter: types of goiter, clinical manifestations of different types of goiter, how to differentiate (based

		on lab results radiological findings and biopsy), and management
5	Adrenal gland	1. Steroid synthesis pathway and the normal physiology of the adrenal glands 2. Congenital adrenal hyperplasia: • Types and how to differentiate between them based on the clinical presentation • Management and follow- up 3. Cushing's syndrome: • Clinical manifestations and different causes of Cushing's syndrome • Workup for patients with Cushing's syndrome and how to differentiate from Cushing's disease and ectopic ACTH production 4. Adrenal insufficiency: • Types, causes and clinical manifestations • Lab results and their interpretation • Treatment 5. Mineralocortcoids: • Overview of rennin- angiotensin- aldosteron system • Hyperaldosteronism: primary and secondary: causes and workup, management options 6. Pheochromocytoma: • Overview of pheochromocytoma • Risk factors and clinical manifestations • Workup and diagnosis • Treatment 7. Other adrenal masses : management and follow- up of patients with incidentaloma
6	Hormones of reproduction	1. Amenorrhea: • Primary and secondary amenorrhea • Causes and clinical manifestations • Lab and radiological investigations • Management according to the specific cause of amenorrhea 2. Hirsutism: causes and how to differentiate according to the history, physical examination and lab studies 3. Hypogonadism: • Types and different causes of hypogonadism • Clinical features and lab studies in patients with hypogonadism • Erectile dysfunction and its causes • Gynecomastia and its causes
7	Lipoproteins	1. Review of the lipoproteins pathways including: chylomicrons, VLDL, IDL, LDL and HDL

		2. Hereditary dyslipidemias • Different types of hereditary dyslipidemias and differentiating between them using lab studies and genetic techniques. 3. Evaluation and treatment of hyperlipidemia: • Primary prevention and screening • Coronary heart disease risk evaluation using NCEP guidelines • Treatment of dyslipidemia using: dietary therapy, exercise, weight loss and pharmacological therapy 4. Lipids in ACS and goal levels in patients with CHD
8	Diabetes mellitus	1. Overview of different categories of DM 2. Diagnosis and screening using finger stick and serum glucose levels, OGTT, FBG, RBG, HgA1c, and risk factors for screening 3. Prediabetes overview • Treatment goals and types 4. Type 1 DM • Overview of the pathophysiology and clinical manifestations of type 1 DM • Treatment, monitoring and follow up for patients with type 1 DM 5. Type 2 DM • Etiology and clinical manifestations of type 2 DM • Treatment modalities in type 2 DM including: lifestyle modification, oral hypoglycemic agents, insulin and other drugs 6. Glycemic treatment goals according to AACE and ADA 7. Complications of DM and management of these complications. 8. Hyperglycemic states: • DKA: clinical manifestations, lab results, diagnosis and treatment • Hyperosmolar hyperglycemic state: clinical manifestations, lab results and management
9	Hypoglycemia	1. Diagnosis according to the Whipple triad and the associated signs and symptoms 2. Reactive and nonreactive hypoglycemia: definition, causes, workup and management
10	Bone/ calcium disorders	1. Normal calcium physiology and the effects of PTH, calcitonin, vit D and other hormones on the GI and renal systems, and bone. 2. Hypercalcemia: • Clinical manifestations and lab tests for different causes of hypercalcemia

		• Treatment of hypercalcemia and indications for surgery in hyperparathyroidism patients. 3. Hypocalcemia: • Causes of hypocalcemia • Osteomalacia: definition, causes, clinical presentation, diagnosis and management
11	Multiple endocrine neoplasia	1. Types of MEN and the clinical manifestations associated with each type of MEN

5) Gastroenterology:

No.	Topic	Objectives
1	GI Procedures	1. Overview of the most common GI procedures, their indications and contraindications
2	Esophageal disorders	1. Dysphagia: • Definition of dysphagia and its pathophysiology • Possible causes of dysphagia and the associated symptoms with each differential diagnosis • Workup used to diagnose the cause of dysphagia 2. Achalasia • Characteristic findings of achalasia in history, histology and esophageal manometry • Complications of achalasia • Treatment modalities used for achalasia patients 3. Diffuse esophageal spasm: • Definition, precipitating factors, and signs and symptoms of DES • Workup and abnormal findings required for diagnosis of DES • Treatment of DES 4. Anatomic obstruction • Lower esophageal ring (schatzki's ring): classical findings in patient's history, diagnostic studies and treatment. • Esophageal stricture: clinical manifestations, risk factors, diagnostic studies and treatment • Plummer Vinson syndrome 5. Neurologic dysfunction: • Causes of neurologic dysfunction, associated complications and their management 6. Scleroderma and systemic sclerosis: • Clinical features related to the esophagus and

		pathophysiology of dysphagia in scleroderma patients • Workup required for diagnosis • Treatment options 7. GERD: • Pathophysiology and risk factors of GERD • Clinical features, extra esophageal manifestations and complications of GERD • Workup required for diagnosis, indication of endoscopy in GERD patients, and indication for esophageal PH monitoring • Treatment protocols for patients with GERD: lifestyle modifications, medical treatment, surgical treatment 8. Barrett esophagus • Definition of Barrett esophagus, causes, histopathologic findings and association with cancer • Guidelines for endoscopy in patients with Barrett esophagus and management options 9. Esophageal cancer: • Histological types and their characteristics • Risk factors for esophageal cancer • Diagnosis based on the clinical features, lab and radiological studies and endoscopy • Treatment options according to the stage of cancer. 10. Zencker's diverticulum: • Definition, signs and symptoms, diagnosis and treatment
3	Stomach	1. Normal physiology of the stomach and its hormones and enzymes 2. Dyspepsia • Definition, causes, workup and management 3. Gastritis: • Classification of gastritis according to histology, classification by etiology • Erosive gastropathy: causes, risk factors, preventive measures, and treatment • H. pylori infection: epidemiology, methods and indications for testing, and treatment 4. Peptic ulcer disease: • Different etiologies of PUD • Diagnostic studies for PUD, indications of endoscopy • Treatment options for patients with PUD,

		indications for surgery • Bleeding peptic ulcers: workup, and management 5. Non- ulcer causes of upper GI bleeding: • Overview of Osler- Weber- Rendu, AVMs, and Peutz- Jeghers syndrome 6. Gastric cancer: • Histological types, risk factors, clinical manifestations • Diagnostic studies for gastric CA, staging, prognosis, and treatment options 7. Post- gastrectomy syndromes: • Overview of dumping syndrome, blind loop syndrome, afferent loop syndrome, and gastroparesis in diabetics
4	Inflammatory bowel disease	7. Crohn's disease • Epidemiology, risk of cancer, course of the disease • Signs and symptoms, extraintestinal manifestations • Diagnosis using history, physical examination, lab and radiological studies, colonoscopy and biopsy. • Medical and surgical treatment options for CD 8. Ulcerative colitis: • Epidemiology, risk of cancer and clinical course of the disease • Signs and symptoms, extraintestinal manifestations • Diagnosis based on the history, physical examination, lab and radiological studies, colonoscopy and biopsy • Surgical treatment and its indication, medical treatment
5	Diarrhea and malabsorption	5. Acute diarrhea: • Causes of acute diarrhea and their clinical features • Investigations and diagnosis • Treatment according to the cause of acute diarrhea 6. Chronic diarrhea: • Mechanisms of chronic diarrhea: secretory, osmotic, increased motility • Causes of chronic diarrhea: AIDS, IBD, DM, carcinoid, microscopic colitis • Carcinoid pathophysiology, common sites, clinical manifestations, and diagnostic studies • Diagnostic studies and treatment 7. Malabsorption: • Etiologies of malabsorption • Celiac disease: definition, clinical features, extraintestinal manifestations, diagnosis and

		treatment • Tropical sprue: causes and treatment • Whipple disease: cause, signs and symptoms, diagnosis and endoscopic findings, treatment • Eosinophilic gastroenteritis: cause, clinical manifestations, and treatment • Short bowel syndrome: causes, management • Malabsorption due to decreased digestion (pancreatic insufficiency, bile acid deficiency) : causes, clinical manifestations, workup and management • Diagnostic studies for patients with malabsorption and how to differentiate between different etiologies
6	Irritable bowel syndrome	5. Overview of epidemiology and clinical features of IBS 6. Diagnosis of IBS according to rome criteria and exclusion of other possible causes 7. Treatment of IBS using different modalities of behavioral and medical therapies
7	Colon cancer	3. Overview of risk factors for colon CA, types of adenomas and their association with colon CA 4. Inherited colon cancer syndromes overview including: • Familial adenomatous polyposis (FAP) • Gardner's syndrome • Peutz- Jeghers syndrome • Juvenile polyposis • Hereditary non- polyposis colon cancer 5. Screening protocol for colon CA 6. Staging system for colon CA 7. Treatment options for colon CA according to the stage
8	Diverticular disease and lower GI bleeding	5. Diverticular Disease: • Types of diverticular disease including: asymptomatic diverticulosis, painful diverticulosis, diverticular bleeding, and diverticulitis • Clinical features of the different types of diverticular diseases • Diagnostic studies for diverticular disease • Treatment options for each type of diverticular disease 6. Angiodysplasia and lower GI bleeding: • Overview of the epidemiology, clinical features, diagnostic studies and treatment
9	Bowel obstruction	1. Most common causes of bowel obstruction 2. Diagnosis using lab and radiological investigations 3. Treatment modalities
10	Intestinal ischemia	3. Types of intestinal ischemia

		4. Ischemic colitis (colonic ischemia): • Causes, clinical manifestations and diagnostic tests • Treatment of colonic ischemia 5. Acute mesenteric ischemia: • Risk factors, causes, and signs and symptoms • Course of the disease, diagnostic studies and treatment options 6. Chronic mesenteric ischemia: • Signs and symptoms of acute mesenteric ischemia • Cause of acute mesenteric ischemia • Diagnostic studies and treatment 7. Mesenteric venous thrombosis: • Types (acute, subacute and chronic), causes, risk factors and clinical features • Diagnostic studies and treatment of MVT
11	Constipation	1. Causes of constipation and how to differentiate based on the history and physical examination 2. Diagnosis and workup required to reach the diagnosis 3. Treatment options according to the cause of constipation 4. Fecal impaction: definition, risk factors, clinical presentation and treatment
12	Pancreas	8. Acute Pancreatitis: • Overview of the causes, clinical manifestations of acute pancreatitis • Factors and results associated with severe pancreatitis • Assessing severity using scoring systems like: (APACHE II, BISAP) • Diagnosis based on history, physical exam and U/S • Management for patients with acute pancreatitis 9. Chronic pancreatitis • Overview of the causes, clinical manifestations, course of the disease of chronic pancreatitis • Diagnosis of chronic pancreatitis based on history and laboratory and radiological studies, MRCP and ERCP • Complications of chronic pancreatitis and their management • Treatment of chronic pancreatitis 10. Autoimmune pancreatitis 11. Pancreatic neoplasms: • Pancreatic cancer: risk factors, clinical presentation, diagnostic studies, staging, prognosis and treatment options • Benign pancreatic tumors: glucagonoma,

		insulinoma, gastrinoma, and VIPoma.
13	Biliary system	4. Cholelithiasis: • Pathophysiology of cholelithiasis, risk factors, and clinical manifestations • Diagnosis based on history and physical exam, radiological and lab studies • Treatment of cholelithiasis 5. Cholestasis • Types of cholestasis according to pathophysiology 6. Cholangitis: • Causes, clinical manifestations (Charcot's triad, Reynaud's pentad), diagnosis and treatment 7. Porcelain gall bladder 8. Primary biliary cirrhosis: • Overview of epidemiology, histopathology, etiology, clinical manifestations • Diagnosis using lab and radiological studies and liver biopsy • Medical treatment and liver transplantation 9. Primary sclerosing cholangitis: • Overview of epidemiology, etiology, clinical manifestations • Diagnosis using lab and radiological studies and MRCP and ERCP • Medical treatment and liver transplantation 10.
14	Liver	1. Interpretation of liver function test 2. Viral hepatitis: • Hepatitis A: review of virology, signs and symptoms, diagnosis and management, indications of HAV vaccine • Hepatitis B: review of virology, signs and symptoms, course of the disease, hepatitis B vaccine, chronic hepatitis B and its complications, treatment options • Hepatitis C: review of virology, risk factors, associated extrahepatic diseases, chronic hepatitis C and its complications, treatment options • Hepatitis D, E, and G 3. Chronic hepatitis: • Autoimmune hepatitis: types, serologic studies, diagnosis including liver biopsy, treatment options • Drug- related chronic hepatitis: acetaminophen, alcohol, methotrexate, INH, OCPs, Aspirin and Reye syndrome

		4. Non- alcoholic fatty liver disease: • Overview of histopathology, and epidemiology • Risk factors for NAFLD • Diagnosis and treatment of NAFLD 5. Hepatocellular cancer: • Chronic liver diseases associated with HCC • Clinical manifestations of HCC, paraneoplastic syndrome • Lab and radiological investigations for diagnosis of HCC 6. Cirrhosis • Causes and stigmata of liver cirrhosis • Complications of cirrhosis • Esophageal varices: prophylaxis of bleeding, management of active bleeding, TIPs procedure • Hepatic encephalopathy: precipitating factors, signs and symptoms, treatment options for patients with hepatic encephalopathy • Hepatorenal syndrome: definition, causes and management 7. Ascites: • Causes of ascitis • Diagnosis of the cause of ascitis using SAAG and analysis of peritoneal fluid • Spontaneous bacterial peritonitis: common microorganisms, risk factors, clinical presentation, diagnosis and treatment • Treatment of ascitis 8. Hereditary liver disease: • Alpha 1 antitrypsin deficiency: inheritance, clinical manifestations, diagnosis and treatment • Hemochromatosis: types, causes, pathophysiology, clinical features, risk of HCC, diagnosis using lab studies and liver biopsy, and treatment • Wilson disease: inheritance, pathophysiology, clinical features, diagnosis using lab studies and liver biopsy, and treatment
15	Jaundice	1. Causes of jaundice 2. History and physical examination of patients with jaundice and the necessary workup to find the diagnosis

6) Hematology:

No.	Topic	Objectives
1	Approach to an anemic patient	1. Normal erythropoises 2. Detention of anemia 3. Taking history and physical examination of an anemic patient 4. Laboratory evaluation of anemia: • CBC (HB,RBC,MCV,RDW) • Reticulocyte count • Peripheral smear 5. Hepcidin General features 6. Causes of Microcytic , Macrocytic and normocytic Anemia 7. Evolution of Iron deficiency anemia 8. Differential Diagnosis of iron deficiency anemia (Anemia of chronic disease and Thalassemia) 9. Specific etiologies of anemia : • G6PD deficiency • Pyruvate kinase deficiency • Sickle cell syndromes • hereditary spherocytosis
2	Iron Deficiency anemia	1. General definition 2. Causes 3. Clinical presentation 4. Diagnosis 5. Stages of iron deficiency anemia 6. treatment
3	Megaloblastic Anemia	1. Requirements for RBC production 2. Definition and laboratory findings in Megaloblastic anemia 3. Biochemistry if B12,DNA synthesis, dietary vitamin B12 and its absorption and Causes & manifestations of B12 deficiency 4. Definition, signs and symptoms of Pernicious Anemia 5. Schilling Test 6. Biochemistry of folate, Dietary Folate and its absorption and causes & manifestations of Folate deficiency. 7. Laboratory diagnosis of Megaloblastic Anemia 8. Treatment of Megaloblastic anemia
4	Aplastic Anemia	1. Hypoproliferative anmias 2. definition of Aplastic Anemia 3. Epidemiology and Etiology: • Radiation • Chemicals • Drugs • Infections • Immunologic Diseases

		• Pregnancy 4.Definition ,symptoms, diagnosis and treatment of Paroxysmal Nocturnal Hemoglobinurua 5.Inherited (constitutional AA): • Fanconi's anemia • Dyskeratosis congenital • Shwachman-Diamond syndrome 6.Clinical features of Aplastic Anemia (History, physical examination and laboratory studies) 7.Dignosis and prognosis 8.Treatment: • Stem cell transplantation • Immunosuppressant • Other and Supportive therapy
5.	Acquired Hemolytic Diseases	1. G6PD Deficiency and its variants 2. Drugs that should be avoided by persons with G6PD Deficiency 3. Prevalence of G6PD 4. Clinical manifestations of G6PD deficiency 5. Symptoms and Characteristics of favism 6. G6PD and its resistance to malaria 7. Drugs causing Hemolysis in G6PD 8. Treatment of G6PD 9. Definition, inheritance, clinical & laboratory findings and treatment of Hereditary spherocytosis 10. Clinical indication for examination of a blood smear. 11. Variations in RBC size & shape (Anisocytosis, poilkilocytosis and hypochromia)
6.	Red Blood Cells	1. Review of normal HB 2. Qualitative and quantitative hemoglbinopathies 3. Overview, epidemiology and pathogenesis of Sickle cell disease 4. Clinical manifestations of sickle cell disease (in the 1st 20 years, between 20-40 and beyond the 4th decade) 5. Diagnosis, prevention and treatment of sickle cell disease. 6. Overview and types of Thalassemia 7. Pathogenesis of alfa-Thalassemia 8. Pathogenesis, clinical features, diagnosis and treatment of beta-Thalassemia
7.	Hereditary Hemochromatosis	• Definition and classification • Epidemiology: • Prevalence • Penetrance • Inheritance 3.pathophsiology:

		• Iron overload • Hepcidin-ferroportin interaction • Defects in hepcidin-ferroportin interaction • Consequences of iron deposition 4.diagnosis and treatment 5.family screening
8.	Myeloproliferative disorders	1. WHO classification if CMPD 2. True and apparent polycythemia 3. Causes of secondary polycythemia 4. Overview and pathogenesis of Polycythemia vera 5. Clinical features of polycythemia 6. Diagnostic Criteria and treatment of polycythemia 7. Clinical features, Investigations, diagnostic criteria and treatment for Essential Thrombocythemia
9.	Lymphoma	1. Types of Neoplasia of lymphoid origin 2. History, physical examination , investigations and diagnosis for lymphoid malignancies 3. Epidemiology and etiology of Hodgkin lymphoma 4. Diagnosis and variants of HL: • Nodular sclerosing type • Mixed cellularity type • Lymphocyte depleted type • Lymphocyte predominant type 5.Clinical presentation of HL 6.Origin and progression HL 7.Staging evaluation for lymphoma 8.Prognostic factors HL 9.Treatment of HL 10.Relapseof HL 11.Non Hodgkin lymphoma classification 13.epidemiology and Etiology of NHL 14.Chromosomes translocations in NHL 15.Commonest subtypes: • Diffuse large cell lymphoma • Follicular lymphoma 16.Clincal presentation of NHL 17.Prognostic factors in NHL 18.Follicular NHL 19.Large B cell lymphoma 20.Treatment options in advanced indolent lymphoma and in aggressive lymphoma 21.Burkitt's lymphoma 22.T cell lymphoma 23.1ry gastric lymphoma

10.	Acute Lymphoblastic Leukemia	1. Common manifestation of ALL 2. Laboratory evaluation, etiology and diagnosis of ALL 3. Bone marrow in ALL 4. Biology of adult ALL: • Morphologic features • Immunophenotyping 5.Cytogenetic and molecular anomalies • Abnormalities of cell ploidy • Phenotype-specific chromosomal translocations 6.Treatment (Induction, intensification , maintenance, radiation and supportive therapy) 7.Defenition, etiology, incidence and diagnosis of AML 8.French-American-British classification and WHO classification of AML 9.Clincal presentation , prognostic Factors and treatment of AML
11.	Chronic Leukemia	1. Definition, epidemiology, immunology, pathophysiology and Histopathology of Chronic Lymphocytic Leukemia 2. Immunophenotype, karyotype, clinical features and Diagnostic evaluation of CLL 3. Staging and prognosis of CLL: • Rai system • Binet System 4.Treatment of CLL 5. Definition, Epidemiology, Etiology, pathophysiology and Histopathology of Chronic Myeloid Leukemia. 6.Clinical presentation, physical findings , hematological findings and Chromosomal findings of CML 7.Treatment and response criteria in CML
12.	Plasma Cell Disorders	1. Definition of plasma cell disorders 2. Definition, epidemiology, clinical manifestations of Multiple Myeloma 3. International Staging system for symptomatic MM 4. Durie-Salamon staging system 5. Initial diagnostic evaluation of MM 6. Management and therapy of MM 7. Definition of Monoclonal gammopathy of unknown significance
13.	Approach to a Bleeding patient	1. Quick review of Hemostasis 2. Clinical features of bleeding disorders 3. Coagulation factor disorder: • Inherited bleeding disorders (hemophilia A and B, vonWillebrand disease) • Acquired bleeding disorders (Liver disease, Vitamin K deficiency/warfarin overdose, DIC)

		4.Approach to bleeding patient: • History and family history • Site of bleeding • Drug history • Systemic disease • Other associated signs and symptoms 5.Bleeding and screening Tests: • CBC, Platelets count, Blood film • PT,PTT, Thrombin Time • Clot retraction • Specialized tests (Platelets aggregation, factors assay) 6.Labrotaty Evaluation of the coagulation Pathways 7.Treatment Approaches to the bleeding patient(platelet transfusion, fresh frozen plasma, cryoprecipitate, Homeostatic drugs)
14.	Hemophilia	1. Inherited Hemophilia: Hemophilia A: • Mode of inheritance • prevalence • pathobiology • clinical features, • diagnosis • Lab findings • Treatment and prophylaxis in severe cases • Complications (Inhibitor formation, infectious diseases) Hemophilia B: • Mode of inheritance • Clinical features • Pathobilogy • Treatment 2. Acquired Hemophilia • Epidemiology and pathobiology • Clinical Manifestation and diagnosis • Treatment
15.	Platelets Disorders	1.Qulitative platelets defects (Hereditary defects and acquired defects) 2.Glanzmann Thromoasthenia: • Clinical manifestations • Laboratory and diagnostic tests 3. Von-Willebrand's disease: • Clinical features • Classification • Treatment

		• Acquired von Willebrand Syndrome (Immune mediated and Proteolysis mediated)
16.	Factor 8 and Hemophilia	1. A study of Jordanian Patient in November 2001 done By Dr.Abdallah Abaddi 2. Hemophilia in arabic history 3. The F8 gene 4. F8 intron 22 inversion 5. F8 intron 1 inversion 6. Severity of hemophilia 7. Genetic screening for Hemophilia A and F8 mutation in Jordanian HB patients
17.	Thrombocytopenia	9. Quick review of platelets 10. Definition and causes of thrombocytopenia 11. Clinical effects caused by different levels of platelets count. 12. Pathophysiology, clinical presentation, investigation and treatment of immune thrombocytopenic purpura 13. Pathophysiology, clinical features, workup of thrombotic thrombocytopenic purpura. 14. Causes of TTP/HUS 15. Treatment of TTP
18.	Venous thromboembolism	8. VTE(DVT and PE) as a leading cause of death in Europe and USA 9. Absolute risk of DVT 10. Causes of VTE (inherited and acquired causes) 11. Medical patients at risk for VTE 12. Overview of Antiphospholipid Antibody Syndrome as a cause for VTE 13. VTE in Jordan 14. Factor V Leiden 15. PE and DVT treatment and duration of therapy 16. Complications of Heparin therapy. 17. Heparin induced thrombocytopenia as a clinic-pathological syndrome • HIT clinical manifestations • Approach to diagnose HIT • Thrombotic Complications of HIT • Risk for developing HIT • Factors Influencing frequency of HIT • Detection of HIT antibodies • Neurological Consequences of HIT • Cardiac Syndromes of HIT • Management of HIT 18. Heparin induced skin necrosis 19. Adrenal Hemorrhagic Infarction 20. Overview of warfarin, its resistance and sensitivity and its

		Complications.

7) Infectious diseases:

No.	Topic	Objectives
1.	Antibiotics	• Overview; classification, mechanism of action, Antimicrobial spectrum, clinical examples, resistance, side effects and contraindications • Subtypes: inhibitors of cell wall synthesis (Pencillins/ Cephalosporins/ Carbapenems/ Monobactams/ Bactiracin), protein synthesis inhibitors (Tetracyclines/ Aminoglycosides/ Macrolides/ Clindamycin), Quinolones. • Vancomycin; mechanism of action, pharmacokinetics, spectrum, resistance • MIC definition and clinical use. • Selection according to Spectrum of activity, resistance, distribution, toxicity Synergy and antagonism.
2.	Antibiotic resistance	• Testing methods of antibiotic susceptibility; disc diffusion method, E-test (MIC level). • Mechanisms of resistance • MRSA, VRSA and other common resistant strains • Impact on health care • Therapeutic approach • Prevention
3.	Sepsis	• Definitions; bacteremia, septicemia, SIRS, sepsis, septic shock, MODS. • Pathophysiology; triggering factors, Host response, mediators. • Symptoms and signs, acid base disturbances, ARDS, electrolytes imbalance. • Diagnosis, empirical treatment, therapy plan.
4.	TB	• Mycobacterium; microbiological description, life cycle, transmission. • Disease epidemiology, subtypes. • Diagnosis; sputum AFB smears, Lowenstein-Jensen medium cultures, PCR. • Treatment; lines of combined therapy (Anti-mycobacterial drugs), resistant strains.
5.	Gastroenteritis	• Definition, underlying etiology. • Symptoms and alarming signs • Laboratory work up; stool culture.

		• Antibiotic therapy • Therapy management plan.
6.	Fever of unknown origin	• Definition of fever and hyperthermia, Sites of temperature measurements, pathophysiology of fever. • Antipyretics; types and clinical use • Fever of unknown origin; definition, causes. • Approach methods to patient with fever of unknown origin; History& physical examination, ESR, serological tests, liver function test, imaging studies, Cultures. • Management plan.
7.	Opportunistic infections	• Definition, examples, classification. • Prevention and prophylaxis.
8.	HIV	• Introduction, HIV virology classification, structure, life cycle and transmission mode. • Epidemiology, diagnosis, clinical course and manifestation. • AIDS definition and diagnosis. • CDC classification for HIV infection • Antiviral drugs used • Prognosis and management methods (HAART)
9.	Brucellosis	• Malta fever definition • Brucella subtypes. • Clinical features, life cycle, differential diagnoses. • Approach methods, cultures, Brucella titers, imaging test, complete blood count, liver and bone marrow biopsies. • Follow-up and Treatment; combined therapy regimens.
10.	Staphylococcal Infections	• Microbiology; subtypes; coagulase positive (S.areus), coagulase negative species. • Pathogenesis. • S.areus; diseases, resistance, treatment and eradication.

8) Rheumatology:

No.	Topic	Objectives
1.	Investigation and Auto-antibodies	▪ Definition of Auto-antibodies., methods of auto-antibodies clinical measurement. ▪ The importance of auto-antibodies in CT-diseases and their combination with specific diseases. ▪ ESR, CRP use in clinical medicine. ▪ ANA definitions, clinical use in multisystem disease screening, follow up.

		▪ .Anti-ds DNA, Extractable Nuclear Antigens (anti-Sm, anti-Ro, anti-La, anti-RNP) definitions, when to use, and specific associated with. ▪ RF definition, method of measurement, specific CT-diseases relation , clinical use ▪ Differentiate the use of C- & P- ANCA
2.	Osteoarthritis	▪ Definition, normal cartilage physiology, underlying pathology. ▪ Symptoms and signs. ▪ Management overview non-pharmacologic and systemic pharmacologic. ▪ Radiological evaluation.
3.	Rheumatoid arthritis	▪ Definition, epidemiology, etiology underlying pathology and pathogenesis. ▪ Clinical features; symptoms and signs. ▪ Disease common patterns ▪ Criteria for diagnosis (ACR criteria) ▪ Images illustration for joint deformities and radiological figures for joints. ▪ Systemic manifestations for RA. ▪ Treatment plan.
4.	Spondyloarthropathies	▪ Types and entities (Ankylosing Spondylitis, Reactive arthritis, Psoriatic arthritis, Acute anterior uveitis, Juvienile SpA, arthritis associated with IBD, Undifferentiated SpA). ▪ Epidemiology, HLA-b27 association, pathogenesis. ▪ Symptoms and signs. ▪ Diagnostic criteria. ▪ Physical signs, special tests ▪ Radiological grading (erosions, sclerosis, narrowing, fusion.). X-rays and MRI figures. ▪ Treatment methods.
5.	Polymayalgia Rheumatica (PMR) & Giant Cell Arthritis (GCA)	▪ Definitions ▪ Symptoms and signs ▪ Investigations ▪ List of Differential diagnosis ▪ Treatment methods.
6.	Crystal Arthropathies	▪ Definition of GOUT disease. ▪ Relation to hyperuricemia. ▪ Clinical presentation, epidemiology, pathogenesis, risk factors. ▪ Uric acid definition and foods reach in purines. ▪ Hperuricemia; causes, precipitating factors, pathophysiology. ▪ Systemic impact. ▪ Treatment methods.

7.	Systemic Lupus Erythmatosus (SLE)	▪ Definition, etiology, epidemiology, auto-antibodies, Susceptibility. ▪ Criteria for diagnosis ▪ Disease clinical patterns ▪ Physical signs characteristic for SLE. ▪ Systemic manifestations and complications. ▪ Treatment plan.
8.	Scleroderma	▪ Definition, epidemiology, etiology, pathogenesis. ▪ Spectrum of disorders, disease clinical course. ▪ Limited scleroderma (CREST), Rynaud's phenomena. ▪ Systemic impact. ▪ Auto-antibodies associated with scleroderma ▪ Investigations ▪ Treatment methods.
9.	Septic Arthritis	▪ Definition, risk factors, etiology and underlying pathology. ▪ Diagnosis; symptoms, signs, laboratory tests, imaging studies. ▪ Treatment.
10.	Arthralgia & Myalgia	▪ Fibromyalgia definition. ▪ Differentiation between inflammatory causes and soft-tissue pain syndromes. ▪ Psychological aspect ▪ Treatments.
11.	Polymyositis & Dermatomyositis	▪ Classification, definition. ▪ Criteria for diagnosis, investigations used. ▪ Complications and malignancy risk. ▪ Treatment
12.	Behcet's disease	▪ Definition ▪ International criteria for diagnosis ▪ Symptoms, signs , systemic manifestations ▪ .Treatment.
13.	Vasculitis	▪ Classification of vasculitis syndromes, etiology ; genes and environment, Overview of the following: ▪ Takayasu's arteritis; ACR criteria, arteriography figures, Radiological images. ▪ Giant cell arteritis; symptoms and signs, systemic manifestations, arteriogram, ACR criteria, Diagnosis. ▪ Small vessel vasculitis ▪ Henoch-shönlein purpura ▪ ANCA and vasculitis ▪ Polyarteritis Nodosa and Wegner's vasculitis.

VIII. Instructional Methods

- Morning report.
- Seminars.
- Bed-side teaching.
- Outpatient clinics.
- Homework and Quizzes.
- Case Studies.
- Problem solving sessions.

IX. Student Rotation Evaluation Methods

Evaluation will be done based on the following:

- Attendance of clinics and seminars.
- In course evaluation (taking history and performing physical examination).
- Preparing seminars, and sharing in discussions.
- Behavior and relation to staff (including nurses and residents).
- Quizzes.
- Homework assignments.
- Examination

X. Major Evaluation Dates

Rotation Final Evaluation	Short cases - End of Rotation
End of Year Final Exam	Written (multiple choice questions)