**Course Description Form**

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| 1. Course Name:
 |
| Applied Therapeutics I |
| 1. Course Code:
 |
| **559 CpAt1** |
| 1. Semester / Year:
 |
| First semester/ Fifth |
| 1. Description Preparation Date:
 |
| 02/2024 |
| 1. Available Attendance Forms:
 |
| On campus |
| 1. Number of Credit Hours (Total) / Number of Units (Total)
 |
| 3 Hours /3 Units |
| 1. Course administrator's name (mention all, if/ more than one name)
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| Name: **Dr.** **Samer Imad Mohammed**Email: **samer.jameel@copharm.uobaghdad.edu.iq** Name: **Dr.** **Basma Zuheir Muhammed Naji** Email: **basma.naji@copharm.uobaghdad.edu.iq**Name: **Dr.** **Fadia Thamir Ahmed**Email: **fadia.ahmed@copharm.uobaghdad.edu.iq** |
| 1. Course Objectives
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| **Course Objectives** | * The course provides students with the basic knowledge about pathophysiology, symptoms and aims of treatment.
* In addition to the basic knowledge on the drug's use, kinetics, drug interactions, dose calculations, side effects, treatment algorithms and patient awareness are provided.
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| 1. Teaching and Learning Strategies
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| **Strategy** |  Lectures SeminarsSimple quizzesBrainstorming questions |
| 1. Course Structure
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| **Week**  | **Hours**  | **Required Learning Outcomes**  | **Unit or subject name**  | **Learning method**  | **Evaluation method**  |
| 1 | 2 | 1. Differentiate between Sensitivity and Specificity of lab tests.
2. Identify reference ranges of lab tests.
3. Identify normal and abnormal liver function tests.
4. Identify normal and abnormal renal function tests.
5. Interpretation of complete blood count test results.
6. Interpretation of urinalysis main findings.
7. Interpretation of hematological lab investigations
 | Interpretation of clinical laboratory data | Lectures.Discussions. | Simple quizzes. |
| 2 | 2 | 1. Identify the common types of lipid disorders.
2. Identify the statin-benefit groups and intensity of statin therapy.
3. Recommend appropriate therapeutic lifestyle changes (TLC) and pharmacotherapy interventions for dyslipidemia.
4. Determine a patient’s atherosclerotic cardiovascular disease risk and corresponding treatment goals.
5. Identify patients who are indicated for non-statin therapy.
6. Describe components of a monitoring plan to assess effectiveness and adverse effects of pharmacotherapy for dyslipidemias.
7. Educate patients about the disease state, appropriate TLC, and drug therapy required for effective treatment.
 | Dyslipidemia. | Lectures.Simple discussions. | Simple quizzes. |
| 3 | 1 | 1. Differentiate types of cerebrovascular disease including transient ischemic attack (TIA), ischemic stroke (cerebral infarction), and hemorrhagic stroke.
2. Identify modifiable and nonmodifiable risk factors associated with ischemic stroke and hemorrhagic stroke.
3. Explain the pathophysiology of ischemic stroke and hemorrhagic stroke.
4. Describe the clinical presentation of TIA, ischemic stroke, and hemorrhagic stroke.
5. Formulate strategies for primary prevention of acute ischemic stroke.
6. Evaluate treatment options for acute ischemic stroke.
7. Determine whether fibrinolytic therapy is indicated in a patient with acute ischemic stroke.
8. Evaluate the role of endovascular therapy in a patient with acute ischemic stroke.
9. Formulate strategies for secondary prevention of acute ischemic stroke.
10. Evaluate treatment options for acute hemorrhagic stroke.
 | Stroke. | Lectures.Simple discussions. | Simple quizzes. |
| 4 | 1 | 1. Assess a patient’s kidney function based on clinical presentation, laboratory results, and urinary indices.
2. Identify pharmacotherapeutic outcomes and endpoints of therapy in patients with acute kidney injury (AKI).
3. Apply knowledge of the pathophysiology of AKI to develop a treatment plan.
4. Develop strategies to minimize the occurrence of drug-induced AKI.
5. Monitor and evaluate the safety and effectiveness of the treatment plan.
 | Acute kidney injury | Lectures.Simple discussions. | Simple quizzes. |
| 5 | 2 | 1. List the risk factors that increase susceptibility for chronic kidney disease (CKD).
2. Explain the mechanisms associated with progression of CKD.
3. Outline the desired outcomes for treatment of CKD.
4. Develop a therapeutic approach to slow progression of CKD including lifestyle modifications and pharmacologic therapies.
5. Identify specific consequences associated with CKD.
6. Design an appropriate therapeutic approach for specific consequences associated with CKD.
 | Chronic and end-stage kidney disease. | Lectures.Simple discussions. | Simple quizzes. |
| 6 | 1 | 1. Identify indications for dialysis.
2. List advantages and disadvantages of hemodialysis and peritoneal dialysis.
3. Describe the principles and procedures of hemodialysis and peritoneal dialysis.
4. Identify complications of hemodialysis and peritoneal dialysis and their management.
 | Hemodialysis and peritoneal dialysis. | Lectures.Simple discussions. | Simple quizzes. |
| 7 | 1 | 1. Definition of pharmacovigilance.
2. Recognize who should report the pharmacovigilance reports.
3. Describe the importance of pharmacovigilance.
4. Historical events reported ADRs.
5. Describe Causality Assessment.
6. Identify terms used in pharmacovigilance.
7. Identify the importance of pharmacovigilance.
 | Pharmacovigilance. | Lectures.Simple discussions. | Simple quizzes. |
| 8 | 2 | 1. Explain the pathophysiology of cirrhosis and portal hypertension.
2. Identify signs and symptoms of cirrhosis.
3. Identify laboratory abnormalities that result from liver disease and describe the associated pathophysiology.
4. Describe the consequences associated with decreased hepatic function.
5. Identify treatment goals for a patient with complications of cirrhosis.
6. Recommend a specific treatment regimen for a patient with cirrhosis that includes lifestyle changes, nonpharmacologic measures, and pharmacologic therapy.
 | Cirrhosis and portal hypertension. | Lectures.Simple discussions. | Simple quizzes. |
| 9 | 1 | 1. Differentiate the five types of viral hepatitis by epidemiology, etiology, and clinical presentation.
2. Identify modes of transmission and risk factors among the major types of viral hepatitis.
3. Evaluate hepatic serologies to understand how the type of hepatitis is diagnosed.
4. Create treatment goals for a patient infected with viral hepatitis.
5. Recommend appropriate pharmacotherapy for prevention of viral hepatitis.
6. Develop a care plan for treatment of chronic viral hepatitis.
 | Viral hepatitis. | Lectures.Simple discussions. | Simple quizzes. |
| 10 | 1 | 1. Characterize the pathophysiologic mechanisms underlying inflammatory bowel disease (IBD).
2. Recognize the signs and symptoms of IBD, including major differences between ulcerative colitis (UC) and Crohn disease (CD).
3. Identify appropriate therapeutic outcomes for patients with IBD.
4. Describe pharmacologic treatment options for patients with acute or chronic symptoms of UC and CD.
5. Create a patient-specific drug treatment plan based on symptoms, severity, and location of UC or CD.
6. Recommend appropriate monitoring parameters for drug treatments for IBD.
 | Inflammatory bowel disease. | Lectures.Simple discussions. | Simple quizzes. |
| 11 | 1 | 1. List the types and etiologies of shock syndromes.
2. Describe the major hemodynamic abnormalities that occur in patients with shock.
3. Describe the clinical presentation including signs, symptoms, and laboratory test measurements for the typical shock patient.
4. Prepare a treatment plan with clearly defined outcome criteria for a shock patient that includes both fluid management and pharmacologic therapy.
5. Compare and contrast relative advantages and disadvantages of crystalloids, colloids, and blood products in the treatment of shock.
 | Shock syndromes. | Lectures.Simple discussions. | Simple quizzes. |
| 12 | 2 | 1. Estimate the volumes of various body fluid compartments.
2. Identify the electrolytes primarily found in the extracellular and intracellular fluid compartments.
3. Describe the unique relationship between serum sodium concentration and total body water (TBW).
4. Review the etiology, clinical presentation, and management for disorders of sodium, potassium, calcium, phosphorus, and magnesium.
 | Disorders of fluids and electrolytes. | Lectures.Simple discussions. | Simple quizzes. |
| 13 | 1 | 1. Describe the epidemiology and social impact of epilepsy.
2. Define terminology related to epilepsy, including seizure, convulsion, and epilepsy.
3. Describe the basic pathophysiology of seizures and epilepsy.
4. Differentiate and classify seizure types given a description of the clinical presentation of the seizure and electroencephalogram.
5. Identify key therapeutic decision points and therapeutic goals in the treatment of epilepsy.
6. Discuss nonpharmacologic treatments for epilepsy.
7. Recommend an appropriate pharmacotherapeutic regimen with monitoring parameters for the treatment of epilepsy.
8. Devise a plan for switching a patient from one antiepileptic regimen to a different regimen.
9. Manage potential drug interactions with antiepileptic drugs (AEDs).
10. Determine when and how to discontinue AED therapy.
 | Epilepsy. | Lectures.Simple discussions. | Simple quizzes. |
| 14 | 1 | 1. Identify risk factors for multiple sclerosis (MS).
2. Distinguish between forms of MS based on patient presentation and disease course.
3. Compare and contrast MS disease-modifying treatment choices for a given patient.
4. Determine appropriate symptomatic treatment choices for a given patient.
5. Develop a monitoring plan for a patient placed on specific medications.
 | Multiple sclerosis. | Lectures.Simple discussions. | Simple quizzes. |
| 15 | 1 | 1. Evaluate patient-specific parameters to determine whether EN is appropriate.
2. Compare clinical efficacy, complications, and costs of EN versus parenteral nutrition (PN).
3. Describe the components of EN and their role in nutrition support therapy.
4. Develop a plan to design, initiate, and adjust an EN formulation for an adult patient based on patient-specific factors.
5. Describe the etiology and risk factors for EN-associated complications in adult patients receiving EN.
6. Select appropriate medication administration techniques for an EN patient.
 | Enteral nutrition. | Lectures.Simple discussions. | Simple quizzes. |
| 16 | 1 | 1. List appropriate indications for parenteral nutrition (PN) in adult patients.
2. Describe the components of PN and their role in nutrition support therapy.
3. Develop a plan to design, initiate, and adjust a PN formulation for an adult patient based on patient- specific factors.
4. Describe the etiology and risk factors for PN macronutrient-associated complications in adult patients receiving PN.
5. Describe the etiology and risk factors for refeeding syndrome, as well as measures to prevent refeeding syndrome.
 | Parenteral nutrition. | Lectures.Simple discussions. | Simple quizzes. |
| 17 | 1 | 1. Identify risk factors and signs and symptoms of deep vein thrombosis (DVT) and pulmonary embolism (PE).
2. Describe the processes of hemostasis and thrombosis.
3. Determine a patient’s relative risk of developing venous thrombosis.
4. Formulate an appropriate prevention strategy for a patient at risk for DVT.
5. Select and interpret laboratory test(s) to monitor antithrombotic drugs.
6. Identify factors that place a patient at high risk of bleeding while receiving antithrombotic drugs.
7. State at least two potential advantages of newer anticoagulants (ie, low molecular weight heparins [LMWHs], fondaparinux, oral direct thrombin inhibitors [DTIs], and oral direct factor Xa inhibitors) over traditional anticoagulants (ie, unfractionated heparin and warfarin).
8. Manage a patient with toxicity secondary to warfarin (elevated international normalized ratio [INR] with or without bleeding).
9. Identify anticoagulant drug–drug and drug–food interactions.
10. Formulate an appropriate treatment plan for a patient who develops a DVT or PE.
 | Deep venous thrombosis. | Lectures.Simple discussions. | Simple quizzes. |
| 18 | 2 | 1. Describe the phases of cardiac action potential.
2. Describe the modified Vaughan Williams classification of antiarrhythmic drugs.
3. Compare and contrast risk factors for and features, mechanisms, etiologies, symptoms, and goals of therapy of (a) sinus bradycardia, (b) atrioventricular (AV) block, (c) atrial fibrillation (AF), (d) paroxysmal supraventricular tachycardia (PSVT), (e) premature ventricular complexes (PVCs), (f) ventricular tachycardia (VT, including torsades de pointes [TdP]), and (g) ventricular fibrillation (VF).
4. Compare and contrast appropriate treatment options for sinus bradycardia and AV block.
5. Compare and contrast mechanisms of action of drugs used for ventricular rate control, conversion to sinus rhythm and maintenance of sinus rhythm in patients with AF.
6. Compare and contrast the advantages and disadvantages of warfarin and the non-vitamin K antagonist oral anticoagulants (NOACs) for prevention of stroke and systemic embolism in patients with AF.
7. Discuss nonpharmacologic methods for termination of PSVT, compare and contrast mechanisms of action of drugs used for acute termination of PSVT, and compare and contrast appropriate treatment options for long-term prevention of PSVT recurrence.
8. Compare and contrast mechanisms of action of drugs used for treatment of acute episodes of VT, and describe options and indications for nonpharmacologic treatment of VT and VF.
9. Design individualized drug therapy treatment plans for patients with (a) sinus bradycardia, (b) AV block, (c) AF, (d) PSVT, (e) PVCs, (f) VT (including TdP), and (g) VF.
 | Arrhythmias. | Lectures.Simple discussions. | Simple quizzes. |
| 19 | 2 | 1. Identify characteristics of the types of pain: nociceptive, inflammatory, neuropathic, and functional.
2. Explain the mechanisms involved in pain transmission.
3. Select an appropriate method of pain assessment.
4. Recommend an appropriate choice of analgesic, dose, and monitoring plan for a patient based on type and severity of pain and other patient-specific parameters.
5. Perform calculations involving equianalgesic doses, conversion of one opioid to another, rescue doses, and conversion to a continuous infusion.
6. Educate patients and caregivers about effective pain management, dealing with chronic pain, and the use of nonpharmacologic measures.
 | Pain management. | Lectures.Simple discussions. | Simple quizzes. |
| 20 | 1 | 1. Differentiate types of headache syndromes based on clinical features.
2. Recommend nonpharmacologic measures for headache treatment and prevention.
3. Determine when the pharmacologic treatment of headache is indicated.
4. Construct individualized treatment regimens for the acute and chronic management of headache syndromes.
5. Monitor headache treatment to ensure its safety, tolerability, and efficacy.
 | Headache. | Lectures.Simple discussions. | Simple quizzes. |
| 21 | 2 | 1. Describe the pathophysiology of Parkinson disease (PD) related to neurotransmitter involvement and targets for drug therapy.
2. Recognize the cardinal motor symptoms of PD and determine a patient’s clinical status and disease progression.
3. For a patient initiating therapy for PD, recommend appropriate drug therapy and construct patient- specific treatment goals.
4. Recognize and recommend appropriate treatment for nonmotor symptoms.
5. Formulate a plan to minimize patient “off-time” and maximize “on-time” including timing, dosage, and frequency of medications.
6. Recognize and treat various motor complications in PD.
7. Construct appropriate patient counseling regarding medications and lifestyle modifications for PD.
8. Develop a monitoring plan to assess effectiveness and adverse effects of treatment.
 | Parkinson’s disease. | Lectures.Simple discussions. | Simple quizzes. |
| 22 | 1 | 1. Explain the pathophysiology of benign prostatic hypertrophy (BPH).
2. Recognize the symptoms and signs of BPH.
3. List the desired treatment outcomes for BPH.
4. Identify factors that guide selection of a particular α­1-adrenergic antagonist for an individual patient.
5. Compare and contrast α­1-adrenergic antagonists versus 5α­-reductase inhibitors in terms of mechanism of action, treatment outcomes, adverse effects, and interactions.
6. Describe the indications, advantages, and disadvantages of various combination drug regimens that include an α­1-adrenergic antagonist, 5α­-reductase inhibitor, anticholinergic agent, tadalafil, or mirabegron.
7. Describe the indications for surgical intervention.
8. Apply the patient care process to develop an individualized treatment plan.
 | Benign prostatic hyperplasia. | Lectures.Simple discussions. | Simple quizzes. |
| 23 | 1 | 1. Identify risk factors for the development of primary open-angle glaucoma (POAG) and acute angle-closure glaucoma.
2. Recommend a frequency for glaucoma screening based on patient-specific risk factors.
3. Compare and contrast the pathophysiologic mechanisms responsible for open-angle glaucoma and acute angle-closure glaucoma.
4. Outline the clinical presentation of chronic open-angle glaucoma and acute angle-closure glaucoma.
5. List the goals of managing patients with POAG suspect, POAG, and acute angle-closure glaucoma.
6. Choose the most appropriate therapy based on patient-specific data for open-angle glaucoma, glaucoma suspect, and acute angle-closure glaucoma.
7. Develop a monitoring plan for patients on specific pharmacologic regimens.
8. Counsel patients about glaucoma, drug therapy options, ophthalmic administration techniques, and the importance of adherence to the prescribed regimen.
 | Glaucoma. | Lectures.Simple discussions. | Simple quizzes. |
| 1. Course Evaluation
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| Midterm exam 25 marks, Quizzes and attendance 5 marks, Final exam 70 marks |
| 1. Learning and Teaching Resources
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| Required textbooks (curricular books, if any) | Pharmacotherapy: A pathophysiologic approach.Pharmacotherapy: principles and practice.Applied therapeutics.Clinical pharmacy and therapeutics.Pharmacotherapy handbook.ACCP updates in therapeutics. |
| Main references (sources) | Pharmacotherapy: A pathophysiologic approach.Pharmacotherapy: principles and practice.Applied therapeutics.ACCP updates in therapeutics. |
| Recommended books and references (scientific journals, reports...) | Pharmacotherapy: A pathophysiologic approach.Pharmacotherapy: principles and practice. |
| Electronic References, Websites | Electronic books and review articles. |