PROGRAM FACULTY AFFILIATIONS AND LEARNING OBJECTIVES

SESSION 1: PEDIATRICS, GERIATRICS, NEUROLOGY, AND GENERAL PSYCHIATRY
ACTIVITY NO. 0217-0000-16-030-H01-P; 3.25 CONTACT HOURS.

PEDIATRICS

Kirsten H. Ohler, Pharm.D., BCPS, BCPPS
Clinical Assistant Professor, University of Illinois Hospital and Health Sciences System, Chicago, Illinois

1. Describe the most common pathogens associated with neonatal and pediatric sepsis and meningitis.
2. Describe current therapeutic options for the management of neonatal and pediatric sepsis and meningitis.
3. Identify the drugs available for preventing and treating respiratory syncytial virus.
4. Describe the most common causative organisms of otitis media and potential treatment options.
5. Identify the recommended pediatric immunization schedule and barriers to routine immunization.
6. Discuss the differences in anticonvulsant pharmacokinetics and adverse effects between children and adults.
7. Describe the current drug therapy for treating patients with attention-deficit/hyperactivity disorder.

GERIATRICS

Lisa C. Hutchison, Pharm.D., FCCP, BCPS
Professor, University of Arkansas for Medical Sciences College of Pharmacy, Little Rock, Arkansas

1. Summarize common age-related pharmacokinetic and pharmacodynamic changes in older adults.
2. Evaluate the pharmacotherapeutic regimens of older adults to support optimal risk and benefit of medications.
3. Assess inappropriate medication prescribing in older adults using accepted tools.
4. Recommend appropriate pharmacotherapy for patients with dementia.
5. Evaluate the risks and benefits of antipsychotic use in older adults with dementia.
6. Recommend appropriate interventions for patients with BPSD (behavioral and psychological symptoms of dementia).
7. Differentiate between the types of urinary incontinence and recommend appropriate treatments.
8. Recommend an appropriate BPH (benign prostatic hypertrophy) treatment based on the AUASI (American Urological Association Symptom Index).
9. Recommend appropriate analgesic therapy for older adults with osteoarthritis.
10. Discuss the risks and benefits of medication classes used to treat rheumatoid arthritis and associated comorbidities.

NEUROLOGY

Melody Ryan, Pharm.D., MPH, FCCP, BCPS, CGP
Professor, University of Kentucky College of Pharmacy, Lexington, Kentucky

1. Differentiate between various seizure medications on the basis of use and adverse effects.
2. Develop a treatment strategy for status epilepticus.
3. Identify appropriate treatment strategies for primary and secondary stroke prevention.
4. Determine the appropriateness of treatment with tissue plasminogen activator for acute stroke.
5. Examine common adverse effects associated with the treatment of Parkinson disease.
6. Differentiate between regimens for acute and prophylactic treatment of migraine, tension, and cluster headaches.
7. Identify common adverse effects of disease-modifying therapies for multiple sclerosis.

GENERAL PSYCHIATRY

Jacintha S. Cauffield, Pharm.D., BCPS
Associate Professor of Pharmacy Practice, The Lloyd L. Gregory School of Pharmacy, Palm Beach Atlantic University, West Palm Beach, Florida

1. Examine pharmacotherapeutic options for managing major depression, bipolar disorder, schizophrenia, anxiety disorders, insomnia, and substance use disorder.
2. Select a drug used to treat these disorders with respect to its unique pharmacologic properties, therapeutic uses, adverse effects, and cognitive and behavioral effects.

3. Formulate a pharmacotherapeutic treatment plan when presented with a patient with diagnoses of major depression, bipolar disorder, schizophrenia, anxiety disorder, insomnia, or substance use disorder.

SESSION 2: ENDOCRINE AND METABOLIC DISORDERS, NEPHROLOGY, AND FLUIDS, ELECTROLYTES, AND NUTRITION
ACTIVITY NO. 0217-0000-16-031-H01-P, 3.5 CONTACT HOURS.

ENDOCRINE AND METABOLIC DISORDERS
Brian K. Irons, Pharm.D., FCCP, BCACP, BCPS, BC-ADM
Professor of Pharmacy Practice, Division Head-Ambulatory Care, Texas Tech University Health Sciences Center, Lubbock, Texas

1. Differentiate between the diagnostic and classification criteria for various endocrine and metabolic disorders, including type 1 and type 2 diabetes mellitus, diabetes insipidus, polycystic ovary syndrome, obesity, and disorders of the thyroid, adrenal, and pituitary glands.
2. Review the various therapeutic agents used in treating endocrine and metabolic disorders.
3. Select appropriate treatment and monitoring options for a given patient presenting with one of the above endocrine or metabolic disorders.
4. Recommend appropriate therapeutic management for secondary complications from diabetes or thyroid disorders.

NEPHROLOGY
John M. Burke, Pharm.D., FCCP, BCPS
Professor of Pharmacy Practice and Associate Dean for Post-Graduate Education, St. Louis College of Pharmacy St. Louis, Missouri

1. Categorize acute kidney injury (AKI) as prerenal, intrinsic, or postrenal, based on patient history, physical examination, and laboratory values.
2. Identify risk factors for AKI.
3. Formulate preventive strategies to decrease the risk of developing AKI in specific patient populations.
4. Formulate a therapeutic plan to manage AKI.
5. Identify medications and medication classes associated with acute and chronic kidney damage.
6. Describe characteristics that determine the efficiency of removal of drugs by dialysis.
7. Classify the stage or category of chronic kidney disease (CKD) based on patient history, physical examination, and laboratory values.
8. Identify risk factors for the progression of CKD.
9. Formulate strategies to slow the progression of CKD.
10. Assess for the presence of common complications of CKD.
11. Develop a care plan to manage the common complications observed in patients with CKD (e.g., anemia, secondary hyperthyroidism).

FLUIDS, ELECTROLYTES, AND NUTRITION
Leslie A. Hamilton, PharmD, BCPS, BCCCP
Assistant Professor, Department of Clinical Pharmacy, University of Tennessee Health Science Center, College of Pharmacy, Knoxville, Tennessee

1. Calculate the osmolarity of intravenous fluids and compare with normal plasma osmolarity.
2. Recommend an appropriate intravenous fluid regimen and monitoring parameters given a patient clinical scenario.
3. Discuss the appropriate role and risks of hypertonic and hypotonic saline, recommend treatment regimens, and discuss appropriate monitoring parameters to ensure safe and effective use of these intravenous fluids.
4. Assess electrolyte abnormalities and recommend an appropriate pharmacologic treatment plan based on individual patient signs and symptoms.
5. Discuss appropriate indications for the use of enteral nutrition (EN) and parenteral nutrition (PN).
6. Recommend a patient-specific EN formula, infusion rate, and monitoring parameters based on nutritional needs, comorbidities, and clinical condition.
7. Recommend a patient-specific PN formula and monitoring plan based on the type of intravenous access, nutritional needs, comorbidities, and clinical condition.

8. Discuss strategies for preventing complications associated with EN and PN.

SESSION 3: BIOSTATISTICS, STUDY DESIGNS: FUNDAMENTALS, INTERPRETATION, AND RESEARCH TOPICS, AND ONCOLOGY SUPPORTIVE CARE
ACTIVITY NO. 0217-0000-16-032-H01-P, 4.0 CONTACT HOURS.

BIOSTATISTICS

Kevin M. Sowinski, Pharm.D., FCCP
Professor of Pharmacy Practice, Purdue University College of Pharmacy, Adjunct Professor of Medicine, Indiana University School of Medicine, Indianapolis, Indiana

1. Describe differences between descriptive and inferential statistics.
2. Identify different types of data (nominal, ordinal, continuous [ratio and interval]) to determine an appropriate type of statistical test (parametric vs. nonparametric).
3. Describe strengths and limitations of different types of measures of central tendency (mean, median, and mode) and data spread (standard deviation, standard error of the mean, range, and interquartile range).
4. Describe the concepts of normal distribution and the associated parameters that describe the distribution.
5. State the types of decision errors that can occur when using statistical tests and the conditions under which they can occur.
6. Describe hypothesis testing and state the meaning of and distinguish between p-values and confidence intervals.
7. Describe areas of misuse or misrepresentation that are associated with various statistical methods.
8. Select appropriate statistical tests on the basis of the sample distribution, data type, and study design.
9. Interpret statistical significance for results from commonly used statistical tests.
10. Describe the similarities and differences between statistical tests; state how to apply them appropriately.
11. Identify the use of survival analysis and different ways to perform and report it.

STUDY DESIGNS: FUNDAMENTALS, INTERPRETATION, AND RESEARCH TOPICS

Kevin M. Sowinski, Pharm.D., FCCP
Professor of Pharmacy Practice, Purdue University College of Pharmacy, Adjunct Professor of Medicine, Indiana University School of Medicine, Indianapolis, Indiana

1. Define, compare, and contrast the concepts of internal and external validity, bias, and confounding in clinical study design.
2. Identify potential sources of bias in clinical trials; select strategies to eliminate or control for bias.
3. Outline the hierarchy of evidence generated by various study designs.
4. Compare and contrast the advantages and disadvantages of various study designs (e.g., prospective; retrospective; case-control; cohort; cross-sectional; randomized controlled clinical trials; systematic review; meta-analysis). Delineate the difference between parallel and crossover study designs.
5. Select from various biostatistical measures to appropriately compare groups or their assessments from various study designs and use their findings/output to interpret results.
6. Define and evaluate odds, odds ratio, risk/incidence rate, risk ratio/relative risks (RRs), and other risk estimates. Compute and evaluate number needed to treat and number needed to harm. Define and calculate terms such as point and period prevalence, incidence rate, prevalence rate, absolute risk difference, and RR difference.
7. Define and calculate terms such as true positive, false positive, true negative, false negative, sensitivity, specificity, positive predictive value, negative predictive value, positive likelihood ratio, and negative likelihood ratio.
8. Define research and differentiate it from quality improvement activities.
9. Define the composition, functions, and roles of the institutional review board (IRB).
10. Describe the various steps of the professional writing and peer-review processes.

ONCOLOGY SUPPORTIVE CARE
LeAnn B. Norris, Pharm.D., BCPS, BCOP
Clinical Assistant Professor, Department of Clinical Pharmacy and Outcomes Sciences, South Carolina College of Pharmacy, Columbia, South Carolina

1. Identify, assess, and recommend appropriate pharmacotherapy for managing common complications of cancer chemotherapy, including nausea and vomiting, myelosuppression and the appropriate use of growth factors, infection, anemia and fatigue, cardiotoxicity, and extravasation injury.
2. Assess and recommend appropriate pharmacotherapy for managing cancer-related pain.
3. Assess and recommend appropriate pharmacotherapy for managing oncologic emergencies, including hypercalcemia, tumor lysis syndrome, and spinal cord compression.

SESSION 4: CRITICAL CARE, PHARMACOKINETICS, AND PULMONARY DISORDERS, GOUT AND ADULT IMMUNIZATIONS
ACTIVITY NO. 0217-0000-16-033-H01-P, 3.5 CONTACT HOURS

CRITICAL CARE
Christopher Paciullo, Pharm.D., BCCCP, FCCM
Clinical Pharmacy Specialist in Critical Care and Cardiothoracic Surgery, Emory University Hospital, Atlanta, Georgia

1. Interpret hemodynamic parameters and acid-base status in critically ill patients.
2. Differentiate between presentation of and treatment strategies for hypovolemic, obstructive, and distributive shock.
3. Discuss the appropriate use of fluids, vasopressors, antibiotics, and corticosteroids in patients with sepsis, severe sepsis, or septic shock.
4. Discuss strategies to optimize the safety and efficacy of therapeutic hypothermia for patients after cardiac arrest.
5. Recommend therapeutic options to minimize delirium and provide optimal analgesia, sedation, neuromuscular blockade, and nutritional support in critically ill patients.
6. Recommend therapeutic options to prevent stress ulcers, venous thromboembolism, hyperglycemia, and ventilator-associated pneumonia in critically ill patients.
7. Recommend treatment options for acute intracranial hemorrhage.

PHARMACOKINETICS
Curtis L. Smith, Pharm.D., BCPS
Professor, Ferris State University, Lansing, Michigan

1. Identify and solve pharmacotherapy problems using basic pharmacokinetic concepts, including bioavailability, volume of distribution, clearance, and the elimination rate constant.
2. Describe specific pharmacokinetic characteristics of commonly used therapeutic agents, including aminoglycosides, vancomycin, phenytoin, and digoxin, as well as pharmacokinetic alterations in patients with renal and hepatic disease.
3. Define important issues as they pertain to drug concentration sampling and interpretation.

PULMONARY DISORDERS, GOUT AND ADULT IMMUNIZATIONS
Ila M. Harris, Pharm.D., FCCP, BCPS
Professor, University of Minnesota Medical School, Minneapolis, Minnesota

1. Accurately classify patients, assess control, and select and monitor appropriate acute and preventive treatments for pediatric and adult patients with asthma and for adult patients with chronic obstructive pulmonary disease, incorporating patient-specific factors.
2. Appropriately assess, classify, and select pharmacotherapy (acute and chronic, including nonpharmacologic therapy), and monitor, reassess, and adjust pharmacotherapy in patients with gout.
3. Determine appropriate immunizations for an adult given his or her age and medical conditions and correctly apply cautions, contraindications, and drug interactions with immunizations to adult patients.

SESSION 5: CARDIOLOGY I, CARDIOLOGY II, AND MEN'S AND WOMEN'S HEALTH
ACTIVITY NO. 0217-0000-16-034-H01-P, 3.5 CONTACT HOURS.

CARDIOLOGY I

Shannon W. Finks, Pharm.D., FCCP, BCPS
Associate Professor, University of Tennessee College of Pharmacy, Clinical Pharmacy Specialist, Cardiology, Veterans Affairs Medical Center, Memphis, Tennessee

1. Distinguish between the treatment strategies for acute coronary syndromes: ST-segment elevation myocardial infarction and non–ST-segment elevation acute coronary syndrome.
2. Formulate evidence-based treatment strategies for patients with acute decompensated heart failure.
3. Devise a treatment plan for patients presenting with ventricular or life-threatening arrhythmias.
4. Differentiate between goals and treatment for hypertensive emergencies and hypertension without progressive organ damage.
5. Provide evidence-based treatment for a patient given a diagnosis of idiopathic pulmonary arterial hypertension.

CARDIOLOGY II

Karen J. McConnell, Pharm.D., FCCP, BCPS (AQ Cardiology)
Clinical Director and Cardiology Subject Matter Expert, Cardinal Health, Clinical Associate Professor, University of Colorado Anschutz Medical Campus, Skaggs School of Pharmacy & Pharmaceutical Sciences Denver, Colorado

1. Recommend patient-specific pharmacologic therapy for the management of chronic heart failure, with an emphasis on mortality-reducing agents and their target doses.
2. Develop an evidence-based pharmacologic regimen and monitoring plan for patients with atrial fibrillation.
3. Develop an optimal pharmacologic management plan for a patient with hypertension according to practice guidelines and clinical trial evidence.
4. Identify patients at risk of atherosclerotic cardiovascular disease (ASCVD) according to the pooled cohort equation to estimate the 10-year ASCVD risk and determine in whom statin therapy should be initiated and the appropriate intensity of statin therapy when applicable.
5. Determine the appropriate secondary prevention therapy for patients with coronary heart disease.

MEN'S AND WOMEN'S HEALTH

Shareen Y. El-Ibiary, Pharm.D., FCCP, BCPS
Professor, Department of Pharmacy Practice, Midwestern University College of Pharmacy-Glendale, Arizona

1. Recommend appropriate treatment options for patients with menopausal symptoms, osteoporosis, and conditions in pregnancy, infertility, and sexual dysfunction.
2. Identify drugs that are considered safe and unsafe in pregnancy and lactation.
3. Modify contraceptive regimens on the basis of estrogen- and progestin-related adverse effects or drug interactions.
4. Devise a pharmacotherapeutic plan for appropriate contraceptive use, contraceptive method mishaps, and use of emergency contraception.
5. Identify common sexually transmitted diseases and recommend appropriate pharmacotherapy.

SESSION 6: GASTROINTESTINAL DISORDERS, INFECTIOUS DISEASES, AND HIV/INFECTIOUS DISEASES
ACTIVITY NO. 0217-0000-16-035-H01-P, 3.00 CONTACT HOURS.

GASTROINTESTINAL DISORDERS

Sheila M. Wilhelm, Pharm.D., BCPS
Clinical Associate Professor, Wayne State University, Detroit, Michigan

1. Review national guideline treatment strategies to the following gastrointestinal (GI) disorders: gastroesophageal reflux disease (GERD), peptic ulcer disease (PUD), ulcerative colitis (UC), Crohn disease (CD), viral hepatitis, chronic liver disease, constipation, diarrhea, irritable bowel syndrome (IBS), nausea, vomiting, pancreatitis, and upper GI bleeding, including prevention of stress-related mucosal disease (SRMD).
2. Recommend appropriate pharmacologic and nonpharmacologic interventions for the management of GERD.

3. Differentiate between clinical signs, symptoms, risk factors, and treatment of PUD associated with both Helicobacter pylori and nonsteroidal anti-inflammatory drugs.
4. Discuss the role of pharmacologic intervention in the treatment of nonvariceal upper GI bleeding and the prevention of SRMD.
5. Review the clinical differences in signs, symptoms, and treatment of CD and UC.
6. Identify the common manifestations of chronic liver disease and their treatment.
7. Review the treatment and prevention of both acute and chronic viral hepatitis.
8. Recognize pertinent information for educating patients and prescribers about the appropriate use of pharmacologic agents for various GI disorders.
9. Recommend appropriate pharmacologic and nonpharmacologic interventions for diarrhea and constipation.
10. Review recommendations for the treatment and prevention of nausea and vomiting.
11. Discuss the clinical and treatment differences between acute and chronic pancreatitis.
12. Discuss the role of pharmacologic intervention in the treatment of IBS.
13. Understand commonly encountered statistical tests and concepts, using GI disorders as examples.

INFECTIOUS DISEASES
Curtis L. Smith, Pharm.D., BCPS
Professor, Ferris State University, Lansing, Michigan

1. Identify the presenting signs and symptoms, etiology, and risk factors of respiratory tract infections, urinary tract infections, skin and soft tissue infections, osteomyelitis, central nervous system (CNS) infections, intra-abdominal infections, Clostridium difficile infections, and endocarditis.
2. Recommend appropriate treatment for patients with respiratory tract infections, urinary tract infections, skin and soft tissue infections, osteomyelitis, CNS infections, intra-abdominal infections, C. difficile infections, and endocarditis.
3. Select appropriate preventive therapy for respiratory tract infections, CNS infections, endocarditis, and surgical wound infections.

HIV/INFECTIOUS DISEASES
Curtis L. Smith, Pharm.D., BCPS
Professor, Ferris State University, Lansing, Michigan

1. Formulate an appropriate regimen to prevent or treat human immunodeficiency virus infections, including initiating and monitoring therapy.
2. Discuss appropriate treatment of the various acquired immunodeficiency syndrome opportunistic infections, including primary and secondary prophylaxis.
3. Describe appropriate treatment and preventive therapy for tuberculosis, including infections with drug-resistant organisms.
4. Classify the various antifungal agents and explain their role in common fungal infections.

SESSION 7: POLICY, PRACTICE, AND REGULATORY ISSUES AND ECONOMIC AND PATIENT-REPORTED OUTCOMES ASSESSMENT
ACTIVITY NO. 0217-0000-16-036-H04-P, 2.25 CONTACT HOURS.

POLICY, PRACTICE, AND REGULATORY ISSUES
Anna Legreid Dopp, Pharm.D.
Editor, Journal of the Pharmacy Society of Wisconsin, Madison, Wisconsin

1. List the congressional committees and government agencies that regulate health care in the United States.
1. Explain recent federal legislative and regulatory activity that affects the delivery of health care.
2. Describe the regulatory actions that govern the prescription drug approval process and the conduct of human subjects' research.
3. Identify the regulatory and oversight bodies with jurisdiction over health system delivery of care.
4. Describe national quality initiatives aimed at improving health care delivery and patient health outcomes.
5. Explain medication policy implications at an institutional level.

ECONOMIC AND PATIENT-REPORTED OUTCOMES ASSESSMENT

Linda G. Martin, Pharm.D., BCPS, MBA
Associate Dean of Operations and Academic Affairs, School of Pharmacy, University of Wyoming, Laramie, Wyoming

1. Describe the concept of value in the health care system.
2. Differentiate between the concepts of outcomes research, pharmacoeconomics, and patient-reported outcomes assessment.
3. Classify outcomes using the ECHO (economic, clinical, and humanistic outcomes) model.
4. Categorize costs by classification and perspective.
5. Describe the mechanisms for valuation of productivity costs.
6. Determine the role of the different types of economic study designs.
7. Use discounting and sensitivity analysis in pharmacoeconomic analyses.
8. Assess the differences between the pharmacoeconomic analysis types.
9. Determine the utility of a health state using the three common methods.
10. Calculate quality-adjusted life-years using the components.
11. Describe the use of patient-reported outcomes to place valuation on health-related quality of life.
12. Distinguish the components of a patient-reported outcomes instrument.
13. Appraise the types of reliability and validity required for a patient-reported outcomes instrument.
14. Differentiate between generic and disease-specific instruments.