2013 PHARMACOTHERAPY PREPARATORY REVIEW AND RECERTIFICATION COURSE
Program Faculty Affiliations and Learning Objectives

SESSION 1: Pediatrics, Geriatrics and Gastrointestinal Disorders

PEDIATRICS

Kirsten H. Ohler, Pharm.D., BCPS
Clinical Assistant Professor
University of Illinois Medical Center at Chicago
Chicago, Illinois

1. Describe the most common pathogens associated with neonatal and pediatric sepsis/meningitis.
2. Describe current therapeutic options for the management of neonatal and pediatric sepsis/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

Jennifer M. Dugan, Pharm.D., BCPS
Clinical Assistant Professor
University of Colorado
Aurora, Colorado

1. Identify age-related pharmacokinetic and pharmacodynamic changes in older people.
2. Evaluate the pharmacotherapy regimens of older people to support optimal physical and mental function.
3. Identify inappropriate medication prescribing in older people.
4. Recommend appropriate pharmacotherapy for patients with dementia.
5. Evaluate the risks and benefits of the use of antipsychotics (APs) (including atypical APs) in older patients with dementia.
6. Recommend appropriate interventions for patients suffering from behavioral symptoms related to dementia.
7. Identify the types of urinary incontinence and recommend appropriate treatments.
8. Given a patient's American Urology Association Symptom Index for benign prostatic hyperplasia, recommend appropriate therapy.
9. Recommend appropriate analgesic therapy for older patients with osteoarthritis.
10. Discuss risks and benefits of medication classes used to treat rheumatoid arthritis.

GASTROINTESTINAL DISORDERS

Brian Hemstreet, Pharm.D., BCPS
Associate Professor
University of Colorado at Denver and Health Sciences Center
Aurora, Colorado

1. Review and apply 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 both Helicobacter pylori– and

NSAID–associated PUD.
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 regarding the appropriate use of pharmacologic agents for various GI disorders.
9. Recommend appropriate pharmacologic and nonpharmacologic interventions for diarrhea and con-
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.

SESSION 2: Biostatistics: A Refresher and Study Designs

BIOSTATISTICS: A REFRESHER

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; learn how to apply them appropriately.
11. Identify the use of survival analysis and different ways to perform and report it.

STUDY DESIGNS: FUNDAMENTALS OF DESIGN AND INTERPRETATION

Kevin M. Sowinski, Pharm.D., FCCP

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.

SESSION 3: Neurology and General Psychiatry

NEUROLOGY

Melody Ryan, Pharm.D., BCPS
Associate Professor
University of Kentucky
Lexington, Kentucky

1. Differentiate between various antiepileptic drugs 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 treatment of Parkinson disease.
6. Differentiate between regimens for acute and prophylactic treatment of migraine, tension, and cluster head-aches.
7. Identify common adverse effects of disease-modifying therapies for multiple sclerosis.

GENERAL PSYCHIATRY

Kelly C. Lee, Pharm.D., BCPP
Assistant Professor of Clinical Pharmacy, University of California San Diego,
Skaggs School of Pharmacy and Pharmaceutical Sciences,
La Jolla, California

1. Describe pharmacotherapeutic options for managing the following psychiatric disorders: major depression, bipolar disorder, schizophrenia, anxiety disorders, insomnia, and alcohol withdrawal/dependence.
2. Describe the drugs used to treat the above disorders with respect to unique pharmacologic properties, therapeutic uses, adverse effects, and cognitive and behavioral effects.
3. Formulate a pharmacotherapeutic treatment plan when presented with a patient having major depression, bipolar disorder, schizophrenia, anxiety disorder, insomnia, and alcohol withdrawal/dependence.

SESSION 4: Ambulatory Care & Endocrine and Metabolic Disorders

AMBULATORY CARE

Ila M. Harris, Pharm.D., FCCP, BCPS
Associate Professor
Medical School

Department of Family Medicine and Community Health
University of Minnesota
Bethesda Family Medicine
St. Paul, Minnesota

1. Select and monitor appropriate acute and preventive treatment for pediatric and adult patients with asthma, adult patients with chronic obstructive pulmonary disease, and conditions requiring anticoagulation, depending on patient-specific factors.
2. Classify a patient according to asthma severity class, and assess his or her control, according to the current National Institutes of Health National Heart, Lung and Blood Institute guidelines.
3. Discuss indications for warfarin and goal international normalized ratio (INR) and therapy duration for specific patients, and adjust therapy according to INR, other clinical findings, and/or patient factors.
4. Describe how to design a treatment plan for a patient receiving warfarin who needs to undergo an invasive procedure.
5. Determine the appropriate immunizations for an adult given his or her age and medical conditions.

ENDOCRINE AND METABOLIC DISORDERS

Brian K. Irons, PharmD, FCCP, BCACP, BCPS, BC-ADM
Associate 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 2 diabetes mellitus, obesity, polycystic ovary syndrome, and disorders of the thyroid, adrenal, and pituitary glands.
2. Compare and contrast 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 disorders.
4. Recommend appropriate therapeutic management for secondary complications from diabetes or thyroid disorders.

SESSION 5: Oncology Supportive Care, Men's and Women's Health and Pharmacokinetics: A Refresher

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 hyper-calcemia, hyperuricemia, and spinal cord compression.

MEN'S AND WOMEN'S HEALTH

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

1. Recommend appropriate treatment options for patients with menopausal symptoms, osteo-porosis, 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.

PHARMACOKINETICS: A REFRESHER

Curtis L. Smith, Pharm.D., BCPS

1. Identify and provide examples using basic pharmacokinetic concepts commonly used in clinical practice, including elimination rate constant, volume of distribution, clearance, and bioavailability.
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.

SESSION 6: Infectious Diseases, HIV/Infectious Diseases and Nephrology

INFECTIOUS DISEASES

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

1. Describe appropriate treatment of patients with pneumonia, urinary tract infections, central nervous system infections, skin and soft tissue infections, osteomyelitis, intra-abdominal infections, and endocarditis.
2. Identify appropriate preventive therapy for pneumonia, central nervous system infections, endocarditis, and surgical wound infections.

HIV/INFECTIOUS DISEASES

Curtis L. Smith, Pharm.D., BCPS

1. Formulate an appropriate regimen to prevent or treat human immunodeficiency virus infections, including initiation 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.

NEPHROLOGY

John M. Burke, Pharm.D., FCCP, BCPS
Director, Division of Pharmacy Practice,
St. Louis College of Pharmacy
St. Louis, Missouri

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

SESSION 7: Fluids, Electrolytes & Nutrition and Critical Care

FLUIDS, ELECTROLYTES & NUTRITION

Judith Kristeller, Pharm.D., BCPS
Associate Professor
Wilkes University,
Wilkes Barre, Pennsylvania

1. Calculate the osmolarity of intravenous fluids and compare with normal plasma osmolarity.
2. Recommend an appropriate intravenous fluid regimen and monitoring parameters based on a patient's clinical characteristics.
3. Discuss the appropriate use and risks of hypertonic and hypotonic saline, and recommend a treatment regimen and 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 and parenteral nutrition (EN and PN).
6. Recommend a patient-specific EN formula, infusion rate, and monitoring parameters.
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.

CRITICAL CARE

Judith Kristeller, Pharm.D., BCPS

1. Interpret hemodynamic parameters and acid base status in critically ill patients.
2. Discuss the differences in treatment of hypovolemic and septic shock.
3. Discuss appropriate use of fluids, vasopressors, antibiotics, and corticosteroids in patients with severe sepsis or septic shock.
4. Discuss strategies to optimize the safety and efficacy of therapeutic hypothermia for patients following cardiac arrest.

5. Recommend therapeutic options to minimize delirium and provide optimal analgesia, sedation, and paralysis in critically ill patients.
6. Recommend therapeutic options to prevent stress ulcers, venous thromboembolism, hyperglycemia, and ventilator-associated pneumonia in critically ill patients.

SESSION 8: Cardiology I and Cardiology II

CARDIOLOGY I

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

1. Distinguish between the acute coronary syndromes (ACS); ST-segment elevation myocardial infarction (STEMI), non–ST-segment elevation myocardial infarction (NSTEMI), and unstable angina (UA) by diagnosis and treatment.
2. Formulate evidence-based treatment strategies for patients with acute decompensated heart failure.
3. Differentiate between goals and treatment for hypertensive emergencies and hypertension without progressive organ damage.
4. Devise a treatment plan for patients presenting with a life-threatening arrhythmia.
5. Provide evidence-based treatment for a patient given a diagnosis of idiopathic pulmonary arterial hypertension.

CARDIOLOGY II

Barbara S. Wiggins , Pharm.D., FCCP, BCPS (AQ Cardiology), CLS, FAHA
Pharmacy Clinical Manager,
CJW Medical Center,
Richmond, Virginia

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 based on practice guide-lines and clinical trial evidence.
4. Create an evidence-based pharmacologic regimen for a patient with coronary artery disease in both the presence and absence of stable angina.
5. Identify and determine the appropriate therapeutic goals for a patient with dyslipidemia based on cardiovascular (CV) risk factors and the Framingham risk score.
6. Develop a pharmacologic treatment plan for a patient with dyslipidemia based on various cholesterol goals, and CV risk factors.