

**ACCP's Updates in Therapeutics 2011:
The Ambulatory Care Pharmacy Preparatory Review Course -- Learning Objectives**

Arrhythmias

Jessica Tilton, Pharm.D.

Clinical Assistant Professor

Clinical Pharmacist

Medication Therapy Management Clinic

Operations Manager

University of Illinois at Chicago,

Chicago, Illinois

1. Identify the Vaughan-Williams system classification of each antiarrhythmic drug.
2. Describe the mechanism of action of each antiarrhythmic drug, according to the ion channel it affects and the electrophysiologic outcome.
3. Discuss the side effect profile of each antiarrhythmic drug.
4. Evaluate a patient's medication list for possible drug interactions with his or her antiarrhythmic drugs.
5. Develop a comprehensive treatment plan for a patient with following arrhythmias: atrial fibrillation, atrial flutter, atrioventricular nodal reentrant tachycardia, atrioventricular reentrant tachycardia, sustained and nonsustained ventricular tachycardia, torsades de pointes.

Biostatistics: A Refresher

Kevin M. Sowinski, Pharm.D., FCCP

Professor of Pharmacy Practice

Purdue University College of Pharmacy

Indiana University School of Medicine

West Lafayette and Indianapolis, Indiana

1. Describe the differences between descriptive and inferential statistics.
2. Identify different types of data (e.g., nominal, ordinal, continuous [ratio and interval]) to determine an appropriate type of statistical test (parametric vs. nonparametric).
3. Describe the strengths and limitations of different types of measures of central tendency (e.g., mean, median, mode) and data spread (e.g., standard deviation, standard error of the mean, range, 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 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 correlation and regression; learn how to apply them appropriately.
11. Identify the use of survival analysis and different ways to perform and report it.

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Bone/Joint and Rheumatology

Daniel S. Longyhore, Pharm.D., BCPS
Associate Professor
Wilkes University
Wilkes Barre, Pennsylvania;
Ambulatory Care Pharmacist
St. Luke's Hospital & Health Network
Bethlehem, Pennsylvania

1. Discuss the role of various therapeutic agents for primary and secondary prevention of fragility fractures.
2. Evaluate the clinical presentation and severity of rheumatoid arthritis in order to choose the most appropriate disease-modifying antirheumatic drug.
3. Create an algorithm or stepwise approach to minimize pain and maximize functionality in patients with osteoarthritis.
4. Recommend treatment and preventive therapies for patients experiencing acute gout and hyperuricemia.

Clinical Trials: Fundamentals of Design and Interpretation

Kevin M. Sowinski, Pharm.D., FCCP
Professor of Pharmacy Practice
Purdue University College of Pharmacy
Indiana University School of Medicine
West Lafayette and 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).
5. Select from various biostatistical tests 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, and other risk estimates. Compute and evaluate number needed to treat and number needed to harm.

Dermatology/HEENT

Daniel S. Longyhore, Pharm.D., BCPS
Associate Professor
Wilkes University
Wilkes Barre, Pennsylvania;
Ambulatory Care Pharmacist
St. Luke's Hospital & Health Network
Bethlehem, Pennsylvania

1. Be prepared for common "by the way," "doorknob," or "could you look at this" issues that are regularly brought up during patient care encounters.
2. Assess disease severity with respect to impact on daily activities, and use that information to choose the most appropriate pharmacologic therapy.
3. Understand the risk versus benefit of each therapeutic decision, and take them into account when choosing medications for common patient complaints.

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Diabetes Mellitus

Michael P. Kane, Pharm.D., FCCP, BCPS
Professor of Pharmacy Practice
Albany College of Pharmacy and Health Sciences;
Clinical Pharmacy Specialist
The Endocrine Group
Albany, New York

1. Demonstrate an understanding of the normal regulation of blood glucose with respect to the actions of insulin, cortisol, growth hormone, glucagon, and incretins in glucose homeostasis.
2. Identify differences between prediabetes, type 1 diabetes mellitus (DM), type 2 DM, and gestational diabetes, including differences in diagnostic criteria and clinical presentation.
3. Explain sick-day rules for a patient with diabetes.
4. Compare agents used in the treatment of DM, including their mechanisms of action, adverse effects, contraindications, and overall effectiveness.
5. Select appropriate insulin regimens for patients based on desired onset, peak, and duration of insulin effects.
6. Individualize a comprehensive glycemic treatment and monitoring plan for a patient with DM.
7. State appropriate lipid and blood pressure targets for patients with diabetes.
8. Discuss short-term and long-term complications associated with diabetes as well as strategies to prevent or slow their progression.

Dyslipidemia

Karen J. McConnell, Pharm.D., BCPS
Clinical Pharmacy Specialist
Clinical Pharmacy Cardiac Risk Service
Clinical Associate Professor
Department of Clinical Pharmacy
University of Colorado Denver
Aurora, Colorado

1. Integrate an understanding of the mechanism of action and effects of lipid medications to select appropriate pharmacologic therapy and develop a monitoring plan.
2. Create an evidence-based lipid-lowering medication regimen for primary and secondary prevention.
3. Formulate an appropriate pharmacotherapeutic regimen for patients with dyslipidemia and specific case situations (e.g., chronic kidney disease, potential drug interactions, chronic creatine kinase elevations).
4. Develop a treatment strategy for patients who require combination lipid-lowering therapy to achieve their lipid goals.

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Emergency Medicine

Michael C. Thomas, Pharm.D., BCPS
Assistant Professor
Department of Pharmacy Practice
South University – Savannah
Savannah, Georgia

1. Assess effective cardiopulmonary techniques in the management of sudden cardiac arrest and factors that contribute to improved survival.
2. Recommend appropriate interventions to care for the arrest victim when advanced care is being provided.
3. Distinguish between the types of allergic reactions and management strategies.
4. Recognize the signs and symptoms of anaphylaxis and plan treatment strategies based on presentation.
5. Create a treatment plan for treating angioedema caused by medications or genetic deficiencies (i.e., hereditary angioedema).
6. Develop a treatment plan for a victim of a toxic exposure including initial treatments and antidote administration.
7. Describe the functions of an emergency department–based pharmacist.

Epilepsy and Headache/Migraine

Jacquelyn L. Bainbridge, Pharm.D., FCCP
Professor
Department of Clinical Pharmacy
Department of Neurology in the School of Medicine
University of Colorado Denver
Aurora, Colorado

1. Identify the seizure type and devise a treatment plan for a patient with new onset and refractory epilepsy.
2. Describe the mechanisms of action of recommended antiepileptic drugs (AEDs).
3. Discuss the role of ambulatory care clinical pharmacy services as it pertains to patients with a neurologic disorder.
4. Identify ways in which the ambulatory care pharmacy practitioner can track and reconcile medication errors.
5. Distinguish between AEDs that are cytochrome P450 system enzyme inducers and inhibitors.
6. Identify common adverse effects and drug interactions for first and second-generation AEDs.
7. Formulate a monitoring plan for a given patient on AED therapy.
8. Discuss pertinent patient education counseling points together with patient assistance programs.
9. Choose an appropriate AED for a special population patient (pregnant, status epilepticus, etc.).
10. List resources available to guide patients and practitioners on current information regarding neurologic care.
11. Discuss the importance of identifying and managing adverse drug reactions and drug-drug interactions and of appropriately reporting them to MedWatch.
12. Differentiate between the signs and symptoms of headache types.
13. Choose an appropriate prophylaxis regimen for a patient with a migraine headache.
14. Recommend an appropriate pharmacologic therapy for a patient with an acute migraine headache.
15. Identify agents that have been implicated in causing medication overuse headache.
16. List common migraine triggers.
17. Counsel a patient regarding specific migraine agents.

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Gastrointestinal Disorders

Tiffany E. Kaiser, Pharm.D., BCPS

Assistant Professor of Medicine,
Assistant Director of The PGY-2 Transplant Specialty Residency,
University of Cincinnati Medical Center
Cincinnati, Ohio

1. Evaluate guideline-based treatment strategies for patients with gastroesophageal reflux disease (GERD), peptic ulcer disease (PUD), complications of cirrhosis, and viral hepatitis.
2. Describe appropriate preventive strategies for GERD, PUD, complications of cirrhosis, and viral hepatitis.
3. Compare and contrast the efficacy and adverse event profiles of medications used for the treatment of GERD, PUD, complications of liver cirrhosis, and viral hepatitis.
4. Discuss the advantages and disadvantages of various diagnostic tests used in GERD, PUD, complications of liver cirrhosis, and viral hepatitis.
5. Formulate treatment plans for patients with newly diagnosed GERD, PUD, complications of liver cirrhosis, or viral hepatitis.
6. Review and understand treatment options for patients who are refractory to standard therapies and determine the best option on the basis of each patient's medication history and profile.
7. Educate patients, caregivers, and prescribers regarding appropriate use and toxicities of pharmacologic agents used for the management of GERD, PUD, complications of cirrhosis, and viral hepatitis.

Heart Failure

Wendy A. Gattis Stough, Pharm.D.

Assistant Consulting Professor in Medicine
Department of Medicine
Division of Cardiology
Duke University Medical Center
Durham, North Carolina

1. Demonstrate knowledge of applying guideline-recommended and evidence-based therapies for the management of chronic heart failure (CHF).
2. Detect gaps in the delivery of evidence-based care and the role of the pharmacist to ensure patients with heart failure (HF) are treated according to national guidelines.
3. Delineate the role of the clinical pharmacist in the management of patients with HF.
4. Develop a patient-specific treatment, monitoring, and follow-up plan for patients with CHF.

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HIV & AIDS

Frank Romanelli, Pharm D., MPH, BCPS
Associate Dean
Associate Professor of Pharmacy
Health Sciences, and Medicine
University of Kentucky
Lexington, Kentucky

1. Explain common routes of transmission of human immunodeficiency virus (HIV).
2. Describe current screening guidelines for HIV.
3. Describe the pathophysiology associated with HIV infection.
4. List currently available antiretrovirals used in the management of HIV disease.
5. Explain the mechanisms of action of antiretroviral agents and commonly encountered adverse effects.
6. Formulate treatment strategies for the management of HIV and commonly encountered opportunistic infections.
7. Select appropriate ancillary medications and immunizations as needed for the management of HIV infection and its associated morbidities.

Hypertension

Karen J. McConnell, Pharm.D., BCPS
Clinical Pharmacy Specialist
Clinical Pharmacy Cardiac Risk Service
Clinical Associate Professor
Department of Clinical Pharmacy
University of Colorado Denver
Aurora, Colorado

1. Apply an understanding of the mechanism of action and effects of antihypertensive medications to construct an appropriate pharmacologic and therapeutic monitoring plan for a patient with hypertension (HTN).
2. Design an evidence-based HTN medication regimen based on compelling indications (e.g., chronic kidney disease, diabetes, coronary heart disease).
3. Formulate appropriate pharmacotherapeutic regimens for patients with HTN given unique case situations (e.g., hyperkalemia, bradycardia, drug allergies).
4. Develop a treatment strategy for patients who require combination antihypertensive therapy to achieve their blood pressure goals.

Immunizations

Ann M. Philbrick, Pharm.D., BCPS
Assistant Professor
University of Minnesota,
Clinical Pharmacist
Bethesda Family Medicine
St. Paul, Minnesota

1. Differentiate between passive and active immunity.
2. Compare and contrast live attenuated and inactivated vaccines and their subtypes.
3. Describe the circumstances in which vaccines can be given concurrently and when they need to be separated.
4. Describe vaccines that are routinely administered, including their route of administration, number of doses, indication, contraindications, and common adverse effects.
5. Assess a patient's vaccine history and recommend necessary vaccines.

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Infectious Diseases

Elizabeth A. Coyle, Pharm.D., BCPS, FCCM
Clinical Associate Professor of Infectious Diseases
University of Houston College of Pharmacy;
Director of the infectious diseases Pharmacy Residency
University of Texas M.D. Anderson Cancer Center
Houston, Texas

1. Be able to design appropriate pharmacologic and nonpharmacologic treatment regimens for various patient populations with urinary tract infections, prostatitis, community-acquired pneumonia, influenza, upper respiratory tract infections, skin and soft tissue infections, and sexually transmitted diseases.
2. Identify risk factors and clinical circumstances in which antimicrobial resistance is a risk, and be able to appropriately design antimicrobial regimens to treat resistant infections and prevent future development.
3. Be able to apply patient and clinical factors to design antimicrobial regimens that are appropriate and cost-effective for the patient.

Men's and Women's Health

Sunny A. Linnebur, Pharm.D., FCCP, BCPS
Associate Professor
Department of Clinical Pharmacy
University of Colorado Denver
Aurora, Colorado

1. Describe risk factors and clinical signs/symptoms for benign prostatic hyperplasia (BPH), urinary incontinence, and erectile dysfunction (ED).
2. Differentiate the type of urinary incontinence on the basis of subjective complaints, physical examination, and simple urodynamic evaluations.
3. Evaluate and manage drug-induced causes of urinary incontinence and ED.
4. Evaluate pharmacologic and nonpharmacologic interventions for BPH, urinary incontinence, and ED.
5. Using patient specific information, formulate treatment strategies for BPH, urinary incontinence, and ED.
6. Provide pertinent education for patients and prescribers regarding pharmacologic agents for BPH, urinary incontinence, and ED.

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Nephrology

Bruce A. Mueller, Pharm.D., FCCP
Professor of Pharmacy and Chair,
Department of Clinical, Social and Administrative Sciences
College of Pharmacy
University of Michigan;
Pharmacy Assistant Director
Department of Pharmacy Services
University Hospital
University of Michigan Health Systems
Ann Arbor, Michigan

1. Formulate an evidence-based treatment plan for the management of the most common medical problems in patients with chronic kidney disease (CKD), anemia, and metabolic bone disease.
2. Construct a treatment plan to slow the progression of CKD in patients with hypertension and diabetes consistent with the latest KDOQI (Kidney Disease Outcomes Quality Initiative) guidelines.
3. Describe the pharmacokinetic influences of the use of new peritoneal and hemodialysis therapies on drug therapies in patients receiving them.
4. Contrast the available methods to estimate kidney function and compare the advantages and disadvantages of each.
5. List the most common nephrolithiasis prevention measures.

Neurology: AD/PD

J. Mark Ruscin, Pharm.D., BCPS
Professor,
Department of Pharmacy Practice,
Southern Illinois University Edwardsville, Edwardsville, Illinois

1. Identify signs or symptoms associated with Alzheimer disease (AD) or Parkinson disease (PD) that may be drug induced.
2. Describe reasonable expectations and limitations of available therapies for the treatment of patients with AD or PD.
3. Recommend an appropriate plan for the initiation, titration, monitoring, and altering of pharmacotherapy for cognitive/functional symptoms in patients with AD or PD.
4. Recommend appropriate strategies for the medical management of patients with psychiatric or behavioral symptoms related to AD or PD.
5. Recognize the impact of cognitive and functional impairment on the risk of medication discrepancies during transitions of care, and recommend strategies to reduce the risk of medication-related problems.

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Obstetrics/Gynecology

Alicia B. Forinash, Pharm.D., BCPS
Associate Professor of Pharmacy Practice
St. Louis College of Pharmacy
St. Louis, Missouri

1. Recommend contraceptive products, infertility, menstrual disorders, endometriosis, and postmenopausal therapy based on patient-specific information.
2. Recommend treatment of common acute and chronic conditions in pregnancy.
3. Educate patients regarding medication use during pregnancy and lactation, contraception, infertility, menstrual disorders, endometriosis, and postmenopausal therapy.
4. Identify resources for additional information for health care providers and patients for contraception, infertility, pregnancy and lactation, menstrual disorders, endometriosis, postmenopausal therapy, and patient assistance programs.

Oncology

Sally Y. Barbour, Pharm.D., BCOP, CPP
Clinical Oncology Pharmacist
Duke Comprehensive Cancer Center
Duke University Medical Center
Durham, North Carolina

1. Outline appropriate screening and prevention strategies for the most common cancers seen in the ambulatory setting.
2. Describe the most common treatment modalities for the most common cancers seen in the ambulatory setting.
3. Explain the expected outcomes in survival and toxicity with respect to the above cancers.
4. Devise and communicate prevention and treatment strategies for common toxicities seen with oral therapies used for treatment, including rash, hypertension, and drug interactions.
5. Identify, assess, and recommend appropriate pharmacotherapy for managing the common complications of cancer chemotherapy, including myelosuppression and use of growth factors, nausea and vomiting, and fatigue and anemia.

Other Endocrine Disorders

Michael P. Kane, Pharm.D., FCCP, BCPS
Professor of Pharmacy Practice,
Albany College of Pharmacy and Health Sciences,
Clinical Pharmacy Specialist,
The Endocrine Group,
Albany, New York

1. Compare and contrast the available weight-loss medications with respect to efficacy and adverse effects.
2. Identify the most vulnerable patient populations receiving thyroid hormone replacement, understanding the importance of consistent levothyroxine replacement.
3. Review the pharmacotherapy of Graves' disease, including the advantages and disadvantages of antithyroid drugs versus radioactive iodine.
4. Recommend appropriate pharmacotherapy for the treatment of polycystic ovary syndrome.
5. Recognize the clinical presentation of patients with adrenal insufficiency.
6. Medically manage a patient presenting with hyperprolactinemia.
7. Individualize a comprehensive treatment and monitoring plan for a patient with an endocrine disorder.

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Primary and Secondary Prevention of Coronary Heart Disease Events

Sarah A. Spinler, Pharm.D., FCCP, BCPS

Professor of Clinical Pharmacy

Department of Pharmacy Practice and Pharmacy Administration

Philadelphia College of Pharmacy

University of the Sciences

Philadelphia, Pennsylvania.

1. Based on current guidelines and performance measures, recommend a regimen for primary prevention of coronary heart disease (CHD) events.
2. Based on current guidelines and performance measures, recommend a regimen for secondary prevention of CHD events in a patient after myocardial infarction (MI).
3. Using the 2008 modified Framingham risk score, calculate a patient's 10-year risk of CHD events.
4. Based on current guidelines and thienopyridine product labeling, recommend an appropriate antiplatelet regimen after percutaneous coronary intervention.
5. In a patient with a history of MI, identify appropriate low-density cholesterol treatment and non-high-density lipoprotein treatment goals, and recommend a regimen to achieve goals.
6. Recommend strategies to improve patient adherence to cardiovascular pharmacotherapy.

Psychiatric Disorders

Carol A. Ott, Pharm.D., BCPP

Clinical Assistant Professor of Pharmacy Practice

College of Pharmacy

Purdue University;

Clinical Pharmacy Specialist in Psychiatry

Wishard Health Services and Midtown Community Mental Health

Indianapolis, Indiana

1. Describe the DSM-IV-TR (Diagnostic and Statistical Manual of Mental Disorders Text Revision) criteria, etiology, risk factors, and disease course for the anxiety disorders, sleep disorders, major depression, bipolar disorder, attention-deficit/hyperactivity disorder, and schizophrenia.
2. Relate common drug and nondrug therapy for the psychiatric disorders, including drug, dose, frequency, adverse effects, drug interactions, and monitoring parameters.
3. Recommend appropriate initial and maintenance treatment for the psychiatric disorders, including duration of therapy.
4. Assess treatment regimens for significant drug interactions and appropriateness of therapy, including use of polytherapy.

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Respiratory and Smoking Cessation

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 appropriate acute and preventive treatment for patients with asthma and chronic obstructive pulmonary disease (COPD).
2. Classify a patient according to his or her asthma severity class, and assess his/her control, according to the National Institutes of Health, National Heart, Lung and Blood Institute (NHLBI).
3. Provide behavioral counseling in assisting a patient to quit smoking.
4. Select appropriate pharmacotherapy to assist a patient in quitting smoking.
5. Discuss public health, practice management, and patient advocacy issues as they pertain to asthma, COPD, and smoking cessation.

Thromboembolism

Edith A. Nutescu, Pharm.D., FCCP

Director of the Antithrombosis Service

Associate Professor,

Department of Pharmacy Practice,

University of Illinois at Chicago

Chicago, Illinois

1. Formulate a prevention strategy for a patient at high risk of deep venous thrombosis (DVT) consistent with the clinical practice guidelines.
2. Recognize the signs and symptoms of DVT and pulmonary embolism.
3. Formulate appropriate treatment strategies for patients who are at risk of and/or develop venous or arterial thrombosis consistent with clinical practice guidelines.
4. Select appropriate dosing and monitoring strategies for patients treated with antithrombotic agents.
5. Develop a comprehensive education plan for patients receiving antithrombotic medications.

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Transplantation

Tiffany E. Kaiser, PharmD, BCPS

Assistant Professor of Medicine,
Assistant Director of The PGY-2 Transplant Specialty Residency,
University of Cincinnati Medical Center, Cincinnati, Ohio

1. Review the etiology and epidemiology for heart, liver, lung, kidney, pancreas, and intestinal transplantation.
2. Discuss the advantages and disadvantages of induction and maintenance immunosuppressant strategies.
3. Describe appropriate surgical prophylaxis strategies as well as bacterial, fungal, and viral (opportunistic infection) prophylaxis post-solid organ transplantation.
4. Formulate prophylaxis and immunosuppressant treatment regimens for solid organ transplant recipients.
5. Compare and contrast drug interactions and adverse event profiles of typical transplant medications.
6. Review and understand treatment options for patients who are refractory to standard therapies and determine the best option based on a patient's medication profile.
7. Demonstrate the need to understand and appreciate the potential drug-drug interactions among transplant medications and other medications in a recipient's profile used to treat concomitant illnesses.
8. Educate patients, caregivers, and prescribers regarding appropriate use and toxicities of immunosuppressant pharmacologic agents.