

2010 PHARMACOTHERAPY PREPARATORY COURSE

Program Faculty Affiliations and Learning Objectives

SESSION 1: Pediatrics, Geriatrics, Fluids, Electrolytes, and Nutrition, and Endocrine and Metabolic Disorders

PEDIATRICS

Kirsten H. Ohler, Pharm.D., BCPS

Clinical Assistant Professor

University of Illinois,

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 (RSV).
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 managing patients with attention deficit-hyperactivity disorder (ADHD).

GERIATRICS

Norma J. Owens, Pharm.D, BCPS, FCCP

Professor of Pharmacy

University of Rhode Island

Rhode Island Geriatric Education Center

Kingston, Rhode Island

1. Identify age-related changes in pharmacokinetics in older people.
2. Evaluate the pharmacotherapy regimens of older people to support the maintenance of optimal physical and mental function.
3. Identify inappropriate prescribing in the medication regimens of older people.
4. Recommend appropriate pharmacotherapy for Alzheimer's disease.
5. Evaluate the risks and benefits of the use of atypical antipsychotics 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.

FLUIDS, ELECTROLYTES, AND NUTRITION

Judith Kristeller, Pharm.D., BCPS

Associate Professor

Wilkes University

Wilkes Barre, Pennsylvania

1. Calculate the osmolarity of intravenous (IV) fluids and compare to normal plasma osmolarity.
2. Recommend an appropriate IV 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 insure safe and effective use of these IV 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.
6. Recommend a patient-specific enteral formula, infusion rate, and monitoring parameters.
7. Recommend a patient-specific parenteral nutrition formula and monitoring plan based on type of IV access, nutritional needs, comorbidities, and clinical condition.
8. Discuss strategies for preventing complications associated with enteral and parenteral nutrition.

ENDOCRINE AND METABOLIC DISORDERS

Brian K. Irons, Pharm.D., BCPS, BC-ADM

Associate Professor of Pharmacy Practice

Division Head– Primary Care

Texas Tech University Health Sciences Center

Lubbock, Texas

1. Differentiate between the diagnostic and classification criteria for various metabolic and endocrine disorders including type 1 and 2 diabetes mellitus (DM), 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 options for a given patient presenting with one of the above disorders
4. Describe the therapeutic management of diabetes-related complications

SESSION 2: Biostatistics: A Refresher, and Clinical Trials: Fundamentals of Design and Interpretation

BIOSTATISTICS: A REFRESHER

G. Robert DeYoung, Pharm.D., BCPS

Clinical Pharmacist, Ambulatory Care

Advantage Health Physicians and St. Mary's Health Care

Grand Rapids, Michigan

1. Describe differences between descriptive and inferential statistics.
2. Identify different types of data (continuous, nominal, and ordinal) to determine an appropriate statistical test (parametric or nonparametric).
3. Describe advantages and disadvantages to using measures of central tendency
4. Describe the concepts of normal distribution, population, and sample.
5. State the appropriate type of statistical test to use for a given type of data and trial design.
6. State the meaning of a p-value and confidence intervals (CIs), including pitfalls, in their interpretation.
7. Describe the role of the 95% CI in determining statistical significance and clinical significance.
8. Describe areas of misuse or misrepresentation that are associated with various statistical methods.
9. Interpret statistical significance for results from a chi-square test and a t-test.
10. State the types of decision errors that can occur when using statistical tests and the conditions under which they can occur.
11. Understand the differences between correlation and regression; learn how to apply them appropriately.
12. Identify the use of survival analysis and different ways to perform and report it.

CLINICAL TRIALS: FUNDAMENTALS OF DESIGN AND INTERPRETATION

G. Robert DeYoung, Pharm.D., BCPS

Clinical Pharmacist, Ambulatory Care

Advantage Health Physicians and St. Mary's Health Care

Grand Rapids, Michigan

1. Describe the important elements of a well-designed clinical trial.

2. Compare the advantages and disadvantages of various clinical trial designs (e.g., retrospective, case-control, cohort).
3. Identify potential sources of bias in clinical trials; select strategies to eliminate or control for bias.
4. Apply various biostatistical descriptors and techniques to clinical trial design and use them to interpret results.

SESSION 3: Critical Care and Ambulatory Care

CRITICAL CARE

Judith Kristeller, Pharm.D., BCPS

Associate Professor

Wilkes University

Wilkes Barre, Pennsylvania

1. Discuss strategies for preventing complications in intubated critically ill patients.
2. Recommend a regimen to provide optimal analgesia and sedation in critically ill patients.
3. Discuss the differences in treatment of hypovolemic and septic shock.
4. Discuss appropriate use of fluids, vasopressors, antibiotics, corticosteroids, and recombinant human activated protein C in patients with severe sepsis or septic shock.
5. Recommend pharmacologic therapy to prevent stress ulcers, venous thromboembolism, and hyperglycemia in critically ill patients.

AMBULATORY CARE

Ila M. Harris, Pharm.D., FCCP, BCPS

Associate Professor

University of Minnesota Medical School

Minneapolis, Minnesota

1. Select appropriate acute and preventative treatment for patients with asthma, chronic obstructive pulmonary disease (COPD), disorders requiring anticoagulation, and dyslipidemia.
2. Classify a patient according to their asthma severity class, and assess their control, according to the National Institutes of Health National Heart, Lung, and Blood Institute.
3. Discuss indications for warfarin and goal INR for specific patients, and adjust therapy according to INR.
4. Describe how to approach and treat a patient receiving warfarin who needs to undergo an invasive procedure.

5. Describe coronary heart disease risk factors according to National Cholesterol Education Panel (NCEP) guidelines and determine LDL goals for specific patients.
6. Determine the appropriate immunizations for an adult given his/her age and medical conditions.

SESSION 4: Neurology and General Psychiatry

NEUROLOGY

Melody Ryan, Pharm.D., BCPS

Associate Professor
University of Kentucky
Lexington, Kentucky

1. Differentiate between various antiepileptic drugs based on 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 headaches.
7. Identify common adverse effects of disease-modifying therapies for multiple sclerosis.

GENERAL PSYCHIATRY

William A. Kehoe, Pharm.D., FCCP, BCPS

Professor of Clinical Pharmacy and Psychology
Chairman, Department of Pharmacy Practice
University of the Pacific
Stockton, California

1. Describe pharmacotherapeutic options for managing the following psychiatric problems: depression, bipolar disorder, schizophrenia, anxiety disorders, insomnia, and alcohol withdrawal.
2. Describe the drugs used to treat the above disorders in terms of unique pharmacological properties, therapeutic uses, adverse effects, and cognitive and behavioral effects.

3. Formulate a pharmacotherapeutic treatment plan when presented with a patient having depression, bipolar disorder, schizophrenia, an anxiety disorder, or insomnia.
4. Discuss the treatment of substance abuse using alcohol abuse as a model.

SESSION 5: Infectious Diseases, HIV/Infectious Diseases, Nephrology, and Gastrointestinal Disorders

INFECTIOUS DISEASES

Curtis L. Smith, Pharm.D., BCPS

Professor

Ferris State University

Lansing, Michigan

1. Describe appropriate treatment for 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.
3. Discuss appropriate therapy for patients with pneumonia, central nervous system infections, and endocarditis involving drug-resistant organisms.

HIV/INFECTIOUS DISEASES

Curtis L. Smith, Pharm.D., BCPS

Professor

Ferris State University

Lansing, Michigan

1. Describe appropriate treatment of patients with human immunodeficiency virus (HIV), including initiation and monitoring therapy.
2. Discuss appropriate treatment of the various acquired immunodeficiency syndrome (AIDS) opportunistic infections, including primary and secondary prophylaxis.
3. Describe appropriate treatment and preventive therapy for TB, including infections with drug-resistant organisms.

NEPHROLOGY

Edward F. Foote, Pharm.D., BCPS, FCCP

Associate Professor

Wilkes University

Wilkes-Barre, Pennsylvania

1. Categorize acute kidney injury (AKI) as prerenal, intrinsic, or postrenal, based on patient history, physical examination, and laboratory values.
2. List risk factors for AKI and formulate strategies to decrease risk of AKI in specific patient populations.
3. Develop a care plan to manage AKI.
4. Identify medications and medication classes associated with acute and chronic kidney damage.
5. Discuss factors that determine the efficiency of dialysis of drugs. For specific agents, calculate the amount of drug removed by dialysis.
6. Identify the stage of chronic kidney disease (CKD) based on 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).

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's disease, viral hepatitis, alcoholic liver disease, and upper GI bleeding.
2. Recommend appropriate pharmacologic and nonpharmacologic interventions for the treatment of GERD.
3. Differentiate between clinical signs, symptoms, risk factors, and treatment of both *Helicobacter pylori*- and nonsteroidal anti-inflammatory drug (NSAID)-associated PUD.
4. Discuss the role of pharmacologic intervention in the treatment of nonvariceal upper GI bleeding.
5. Review the clinical differences in signs, symptoms, and treatment of Crohn's disease and UC.
6. Identify the common manifestations of alcoholic liver disease and their treatment.

7. Review the treatment 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. Understand commonly encountered statistical tests and concepts using GI disorders as examples.

SESSION 6: Oncology Supportive Care, Men's and Women's Health, and Pharmacokinetics: A Refresher

ONCOLOGY SUPPORTIVE CARE

Linda R. Bressler, Pharm.D., BCOP

Clinical Associate Professor

Director of Regulatory Affairs (Cancer and Leukemia Group B)

University of Illinois

Chicago, Illinois

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; nephrotoxicity; hemorrhagic cystitis; 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, hyperuricemia, and spinal cord compression.

MEN'S AND WOMEN'S HEALTH

Shareen El-Ibiary, Pharm.D., BCPS

Associate Professor

Department of Pharmacy Practice

Midwestern University College of Pharmacy

Glendale, Arizona

1. Recommend appropriate treatment options for patients with osteoporosis, gynecologic infections, prostatic infections, and sexual dysfunction.
2. Identify drugs that are considered safe and unsafe in pregnancy and lactation.
3. Modify contraceptive regimens based on estrogen- and progestin-related adverse effects or drug interactions.
4. Devise a pharmacotherapeutic plan for appropriate contraceptive use, misused contraceptive methods, and use of emergency contraception.

5. Identify the common sexually transmitted diseases and recommend appropriate pharmacotherapy

INFECTIOUS DISEASES

Curtis L. Smith, Pharm.D., BCPS

Professor

Ferris State University

Lansing, Michigan

1. Identify and provide examples using basic pharmacokinetic concepts commonly used in clinical practice, including elimination rate constant, volume of distribution (Vd), clearance, and bioavailability.
2. Describe specific pharmacokinetic characteristics of commonly used therapeutic agents.
3. Define important issues as they relate to drug concentration sampling and interpretation.

SESSION 7: Acute Care Cardiology and Outpatient Cardiology

ACUTE CARE CARDIOLOGY

Jo E. Rodgers, Pharm.D., BCPS

Clinical Associate Professor

Division of Pharmacotherapy and Experimental Therapeutics

School of Pharmacy

University of North Carolina

Chapel Hill, North Carolina

1. Formulate treatment strategies for patients with acute decompensated heart failure (ADHF) and formulate an appropriate pharmacotherapeutic regimen for a given case situation (e.g., warm and wet, cold and dry, other).
2. Create an evidence-based medication regimen for a patient with acute coronary syndrome (ACS) in a variety of clinical situations (e.g., invasive/
3. Describe an appropriate treatment strategy for ventricular arrhythmias using evidence-based medicine.
4. Prepare a treatment strategy for a newly diagnosed patient with idiopathic pulmonary arterial hypertension (IPAH).
5. Develop an appropriate pharmacologic and monitoring plan for antihypertensive drug therapy for managing hypertensive emergencies.

OUTPATIENT CARDIOLOGY

Robert L. Page, II, Pharm.D.,MSPH,FCCP, FASHP, FAHA, BCPS, CGP

Associate Professor of Clinical Pharmacy & Physical Medicine

Clinical Specialist

Division of Cardiology

University of Colorado at Denver Health Sciences Center

School of Pharmacy

Aurora, Colorado

1. Recommend patient-specific pharmacologic management of chronic heart failure (HF), with an emphasis on mortality-reducing drugs and their target dosages.
2. Develop an appropriate pharmacologic and monitoring plan for patients with atrial fibrillation.
3. Given a patient with hypertension, outline the optimal pharmacologic management based on practice guidelines and clinical trial evidence.
4. Create an evidence-based drug regimen for a patient with coronary artery disease (CAD) in both the presence and absence of stable angina.