

ACCP Updates in Therapeutics 2013®:

The Ambulatory Care Pharmacy Preparatory Review and Recertification Course -- Learning Objectives

Arrhythmias

Jessica Tilton, Pharm.D., BCACP

Clinical Assistant Professor

Clinical Pharmacist

Medication Therapy Management Clinic

Operations Manager

University of Illinois at Chicago,

Chicago, Illinois

1. Identify the Vaughan-Williams 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 adverse 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 the following arrhythmias: atrial fibrillation, atrial flutter, atrioventricular nodal reentrant tachycardia, atrioventricular reentrant tachycardia, and sustained and nonsustained ventricular tachycardia.

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 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.

Bone/Joint and Rheumatology

Daniel S. Longyhore, Pharm.D., BCACP

Associate Professor

Wilkes University

Wilkes Barre, Pennsylvania;

Ambulatory Care Pharmacist

St. Luke's Hospital & Health Network

Bethlehem, Pennsylvania

1. Systematically identify patients to screen for osteoporosis, and use the screening results to guide the decision on how to treat the patient.
2. Use a STEPS-wise approach for comparing, recommending, and justifying a drug therapy regimen for osteoporosis.
3. Evaluate the severity and prognostic indicators of rheumatoid arthritis to choose the most appropriate initial regimen with disease-modifying antirheumatic drugs (DMARDs).
4. Identify appropriate health maintenance interventions when caring for a patient receiving biologic and nonbiologic DMARD therapy.
5. Create an algorithm or stepwise approach to minimize pain and maximize functionality in patients with osteoarthritis.
6. Formulate a care plan to help patients decrease their uric acid concentrations, gout symptoms, and gouty attacks using nonpharmacologic and pharmacologic interventions.

Dermatology/HEENT

Daniel S. Longyhore, Pharm.D., BCACP

Associate Professor

Wilkes University

Wilkes Barre, Pennsylvania;

Ambulatory Care Pharmacist

St. Luke's Hospital & Health Network

Bethlehem, Pennsylvania

1. Determine how patients with acne should initiate, switch, or modify topical or oral therapeutic agents using a treatment algorithm.
2. Educate a patient using isotretinoin about therapy and the various monitoring parameters that will take place to ensure drug safety and efficacy.
2. Construct an individualized pharmacy care plan for a patient with allergic rhinitis who has not received relief with only intranasal corticosteroids.
3. Effectively educate a patient on an infestation and the purpose, proper use, and potential adverse reactions of the first-line treatment options for scabies and/or lice.
4. Evaluate antioxidant and multivitamin supplements for components and doses consistent with the AREDS (Age-Related Eye Disease Study) formulation for preventing the progression of macular degeneration.
5. Formulate an ophthalmologic drug therapy regimen for a patient that will decrease the patient's elevated intraocular pressures using agents that work synergistically (increased aqueous outflow and decreased production).
6. Recommend single or multiple topical agents for treating plaque psoriasis given the patient's disease presentation, severity, and (if applicable) previously used therapies.
7. Discuss the risks and benefits of agents used in addition to non-sedating histamine-1 antihistamines for treatment of urticaria.

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Diabetes Mellitus

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

1. Describe 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 the short- and long-term complications associated with diabetes as well as strategies to prevent or slow its progression.

Dyslipidemia

Karen J. McConnell, Pharm.D., BCPS (AQ Cardiology)
Clinical Pharmacy Specialist in Cardiology
Kaiser Permanente of Colorado;
Clinical Associate Professor,
University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences Colorado Denver,
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 plan for treating angioedema caused by medications.
6. Explain the demographic characteristics of toxic exposures and develop a general treatment plan.
7. Describe the functions of an emergency department (ED)-based pharmacist and opportunities for pharmacists in any setting to ensure appropriate medication use when transitioning through the ED.

Endocrine Disorders

Michael P. Kane, Pharm.D., FCCP, BCPS, BCACP

Professor of Pharmacy Practice,

Albany College of Pharmacy and Health Sciences,

Clinical Pharmacy Specialist,

The Endocrine Group,

Albany, New York

1. Identify the most vulnerable patient populations receiving thyroid hormone replacement and the importance of consistent levothyroxine replacement in these patients.
2. Review the pharmacotherapy of Graves disease, including the advantages and disadvantages of antithyroid drugs versus radioactive iodine and surgery.
3. Recommend appropriate patient-specific pharmacotherapy for the treatment of polycystic ovary syndrome.
4. Recognize the clinical presentation and treatment of a patient with adrenal insufficiency.
5. Medically manage a patient presenting with hyperprolactinemia.
6. Compare and contrast the available weight-loss medications with respect to efficacy and adverse effects, and design a patient-specific treatment plan for a patient who wishes to lose weight.
7. Compare and contrast the role of drug therapy, transsphenoidal surgery, and radiation therapy for a patient with a diagnosis of acromegaly, and design a patient-specific pharmacologic treatment and monitoring plan.
8. Describe the typical clinical features of patients with growth hormone deficiency, and design an appropriate pharmacologic treatment and monitoring plan based on patient-specific factors.
9. Identify indications when patients with Cushing syndrome would be candidates for pharmacologic treatment.
10. List symptoms of hyperaldosteronism and recommend appropriate drug therapy for its treatment.
11. List appropriate monitoring parameters for a man with hypogonadism receiving testosterone replacement therapy.

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(s) and devise a treatment plan for a patient with new-onset or refractory epilepsy.
2. Describe the mechanisms of action of recommended antiepileptic drugs (AEDs).
3. Select an appropriate AED regimen for a patient with epilepsy.
4. Discuss the role of ambulatory care clinical pharmacy services as it pertains to patients with a neurologic disorder.
5. Identify ways in which the ambulatory care pharmacy practitioner can track and reconcile medication errors.
6. Identify common adverse effects and drug interactions for first- and second-generation AEDs, focusing on the cytochrome P450 system.
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 regimen for a special population patient (e.g., pregnant, status epilepticus).
10. Distinguish between the signs and symptoms of headache types.
11. Recommend an appropriate pharmacologic therapy for a patient with an acute migraine headache.
12. Choose an appropriate prophylaxis regimen for a patient with a migraine headache.
13. Identify agents that have been implicated in causing medication overuse headache.
14. List common migraine triggers.
15. Provide patient education regarding pharmacologic and lifestyle interventions for migraine headache.

Gastrointestinal Disorders

Tiffany E. Kaiser, Pharm.D., BCPS

Associate 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. Develop a comprehensive therapeutic plan for patients with GERD, PUD, complications of liver cirrhosis, or viral hepatitis.
3. 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.
4. 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.
5. 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.

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Heart Failure

Samuel G. Johnson, Pharm.D., BCPS (AQ Cardiology)

Clinical Pharmacy Specialist,

Kaiser Permanente Colorado;

Clinical Assistant Professor,

University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences;

Institute of Medicine Anniversary Fellow in Pharmacy 2012-2014,

Denver, Colorado

1. Detect care delivery gaps to ensure optimal heart failure (HF) treatment according to published evidence-based guidelines.
2. Develop patient-specific treatment, monitoring, and follow-up plans for patients with HF.
3. Detail the role of the clinical pharmacist in HF management.

HIV & AIDS

Frank Romanelli, Pharm D., MPH, BCPS

Associate Dean

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 (AQ Cardiology)

Clinical Pharmacy Specialist in Cardiology

Kaiser Permanente of Colorado;

Clinical Associate Professor,

University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences Colorado Denver,

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 mellitus, 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.

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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.

Infectious Diseases

Elizabeth A. Coyle, Pharm.D., FCCM, BCPS

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. Design appropriate pharmacologic and nonpharmacologic treatment regimens for various patient populations with urinary tract infections, prostatitis, community-acquired pneumonia, influenza, upper respiratory tract infections, otitis media, 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. 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 among the types 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. Formulate treatment strategies for BPH, urinary incontinence, and ED using patient-specific information.
6. Provide pertinent education for patients and prescribers regarding pharmacologic agents for BPH, urinary incontinence, and ED.

Nephrology

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

Professor and Chair of Pharmacy Practice

Nesbitt College of Pharmacy and Nursing

Wilkes University

Wilkes-Barre, Pennsylvania

1. Using appropriate data, assess kidney function in a patient. Compare and contrast the available methods to assess kidney function.
2. Formulate an evidence-based treatment plan for managing the most common medical problems in patients with chronic kidney disease (CKD) including anemia, CKD mineral and bone disorder, and renal osteodystrophy.
3. Construct a treatment plan to slow the progression of CKD in patients with hypertension and diabetes.
4. Describe the pharmacokinetic effects of peritoneal and hemodialysis on drug disposition.
5. List the most common nephrolithiasis prevention measures and treatment options.

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 effect of cognitive and functional impairment on the risk of medication discrepancies during transitions of care.

Obstetrics/Gynecology

Alicia B. Forinash, Pharm.D., BCPS, BCACP

Associate Professor of Pharmacy Practice

St. Louis College of Pharmacy

St. Louis, Missouri

1. Recommend contraceptive products, infertility, menstrual disorders, endometriosis, and postmenopausal therapy on the basis of 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.

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Oncology

Sarah L. Scarpace, Pharm.D., BCOP

Associate Professor and Assistant Dean for Pharmacy Professional Affairs,
Albany College of Pharmacy and Health Sciences;
Clinical Pharmacy Specialist, Stratton Veterans' Affairs Medical Center,
Albany, New York

1. Develop a patient-specific care plan for the treatment and monitoring of a patient with cancer of the breast, lung, or prostate.
2. Develop a patient-specific care drug therapy care plan for the supportive care needs of a patient with cancer, including nausea/vomiting, anemia, myelosuppression, and other adverse effects.
3. Describe the practice management challenges unique to oral anticancer drug therapies, including specialty distribution systems, Risk Evaluation and Mitigation Strategies (REMS) programs, and adherence and toxicity monitoring.
4. Describe the screening guidelines for breast and prostate cancers.
5. Describe the controversy about appropriate primary end points in cancer treatment clinical trials (e.g., progression-free survival, overall survival, and response rate).
6. Describe the strengths and limitations of resources available to ambulatory care pharmacists to make patient-specific treatment recommendations, including American Society of Clinical Oncology (ASCO); American Society of Hematology (ASH); Hematology/Oncology Pharmacy Association (HOPA); National Comprehensive Cancer Network (NCCN); American Cancer Society (ACS); and National Cancer Institute (NCI).

Pain Management

Karen F. Marlowe, Pharm.D., BCPS, CPE

Assistant Dean, Associate Department Head,
James T., and Anne Klein Davis Endowed Professor,
Auburn University Harrison School of Pharmacy,
Mobile, Alabama

1. Use current epidemiology to improve identification of pain-related disorders in the ambulatory care setting.
2. Review the current state of Risk Evaluation and Mitigation Strategies (REMS) and legal requirements in the United States for opioids and other medication classes.
3. Construct an evidence-based treatment approach for a patient with chronic low back pain, fibromyalgia, diabetic neuropathy, or headache.
4. Evaluate the current guidelines for the use of chronic opioid therapy in patient care and the role of the interdisciplinary team in providing care to these patients in an outpatient setting.
5. Develop a rational approach to the use of urine drug testing for adherence to medication and prevention of diversion of controlled medications.

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Primary and Secondary Prevention of Coronary Heart Disease Events

Sarah A. Spinler, Pharm.D., FCCP, FAHA, FASHP, BCPS (AQ Cardiology), AACC

Professor of Clinical Pharmacy

Department of Pharmacy Practice and Pharmacy Administration

Philadelphia College of Pharmacy

University of the Sciences

Philadelphia, Pennsylvania.

1. On the basis of current guidelines and performance measures, recommend a regimen for primary prevention of coronary heart disease (CHD) events.
2. On the basis of 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. On the basis of current guidelines and P2Y12 inhibitor 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 these goals.
6. Recommend strategies to improve patient adherence to cardiovascular pharmacotherapy.

Psychiatric Disorders

Carol A. Ott, Pharm.D., BCPP

Clinical Associate 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 therapy duration.
4. Assess treatment regimens for significant drug interactions and appropriateness of therapy, including use of polytherapy.

Pulmonary Disorders 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 and monitor appropriate acute and preventive treatment for pediatric and adult patients with asthma and adult patients with chronic obstructive pulmonary disease (COPD), depending on patient-specific factors.
2. Classify a patient according to his or her 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. Educate a patient about his or her therapy for asthma and COPD, including proper use of inhalers and holding chambers.
4. Provide behavioral counseling in assisting a patient to quit smoking.
5. Select and monitor appropriate pharmacotherapy to assist a patient in quitting smoking.
6. Discuss public health, practice management, and patient advocacy issues as they pertain to asthma, COPD, and smoking cessation.

Solid Organ Transplantation

Tiffany E. Kaiser, Pharm.D., BCPS

Associate Professor of Medicine

Assistant Director of The PGY-2 Transplant Specialty Residency

University of Cincinnati Medical Center

Cincinnati, Ohio

1. Explain the etiology and epidemiology for heart, liver, lung, kidney, pancreas, and intestinal transplantation.
2. Describe the types of rejection and various strategies for prevention and/or treatment.
3. Construct appropriate patient-specific immunosuppressant and prophylaxis regimens for solid organ transplant recipients, considering alterations in regimens based on patient history, risk factors, adverse events, and drug interactions.
4. Describe and apply the treatment options for patients who are refractory to standard therapies, and determine the best option on the basis of patient-specific characteristics.
5. Produce education plans for patients, caregivers, and providers regarding appropriate use and toxicities of immunosuppressant medications.

Study Designs: Fundamentals of Design and Interpretation

Kevin M. Sowinski, Pharm.D., FCCP

Professor of Pharmacy Practice

Purdue University College of Pharmacy

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.

Thromboembolism

Nathan Clark, Pharm.D., BCPS, CACP

Supervisor

Clinical Pharmacy Anticoagulation and Anemia Services

Kaiser Permanente Colorado

Aurora, Colorado

1. Determine when a pharmacologic prevention strategy for a patient at high risk of venous thromboembolism should be continued after hospital discharge on the basis of clinical practice guidelines.
2. Recognize the appropriate diagnosis of deep venous thrombosis and pulmonary embolism, including the use of pretest probability prediction scores.
3. Formulate appropriate treatment strategies for patients who are at risk of and/or develop venous or arterial thrombosis consistent with available consensus panel 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.
6. Describe differences between dabigatran, rivaroxaban, apixaban, and warfarin in the management of atrial fibrillation.