

## **2022 Updates in Therapeutics®: Pharmacotherapy Preparatory Review and Recertification Course**

### **Learning Objectives**

#### **2022 Pharmacotherapy Preparatory Review and Recertification Course -- Fluids, Electrolytes, and Nutrition, Endocrine and Metabolic Disorders, Pulmonary Disorders and Adult Immunizations, and Geriatrics**

1. Recommend an appropriate intravenous fluid regimen and monitoring parameters given a patient clinical scenario.
2. Discuss the appropriate roles 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.
3. Assess electrolyte abnormalities and recommend an appropriate pharmacologic treatment plan based on individual patient signs and symptoms.
4. Recommend a patient-specific enteral nutrition (EN) or parenteral nutrition (PN) formula, infusion rate, and monitoring parameters based on nutritional needs, comorbidities, and clinical condition.
5. Differentiate between the diagnostic and classification criteria for various endocrine and metabolic disorders, including type 1 and type 2 diabetes, diabetes insipidus, polycystic ovary syndrome, obesity, and disorders of the thyroid, adrenal, and pituitary glands.
6. Discriminate between the various therapeutic agents used in treating endocrine and metabolic disorders.
7. Select appropriate treatment and monitoring options for a given patient presenting with one of the previously mentioned endocrine or metabolic disorders.
8. Recommend appropriate therapeutic management for secondary complications from diabetes or thyroid disorders.
9. Design a patient-centered pharmacotherapy plan for initial treatment of asthma and chronic obstructive pulmonary disease according to evidence-based guidelines.
10. Assess the severity of a patient's asthma and chronic obstructive pulmonary disease on the basis of clinical presentation.
11. Adjust a patient's medication therapy for asthma and chronic obstructive pulmonary disease on the basis of symptom severity and clinical presentation.
12. Determine appropriate immunizations for an adult on the basis of patient-specific considerations, including age, medical conditions, contraindications, and immunization status.
13. Evaluate the impact of pharmacokinetic and pharmacodynamic changes in older adults on risk and benefit of medications.
14. Assess inappropriate medication prescribing in older adults using accepted tools.
15. Recommend appropriate pharmacotherapy for patients with dementia, including appropriate interventions for patients with behavioral and psychological symptoms of dementia (BPSD).
16. Recommend appropriate treatment for urinary incontinence and benign prostatic hyperplasia (BPH).
17. Evaluate the risks, benefits, safety, and efficacy of medication classes used in the treatment of osteoarthritis, rheumatoid arthritis, and gout.

**2022 Pharmacotherapy Preparatory Review and Recertification Course -- Biostatistics: A Refresher, Study Designs: Fundamentals and Interpretation, Neurology**

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 on the basis of the sample distribution, data type, and study design.
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 hypothesis testing and decision errors; state the meaning of and distinguish between p-values and confidence intervals.
5. Describe the similarities and differences between statistical tests, and state how to apply and interpret them appropriately.
6. Define, compare, and contrast the concepts of internal and external validity, bias, and confounding in clinical study design, and identify potential sources in clinical trials.
7. Outline the hierarchy of evidence generated by various study designs, and compare and contrast the advantages and disadvantages of various study designs.
8. Compute, define, and evaluate odds, odds ratio, risk/incidence rate, risk ratio/relative risks (RRs), and other risk estimates.
9. Compute and evaluate number needed to treat and number needed to harm
10. Define point and period prevalence, incidence rate, prevalence rate, absolute risk difference, and RR difference.
11. Describe the steps of the professional writing and peer-review processes.
12. Determine seizure type and appropriate use of antiepileptic drugs on the basis of their activity, adverse effects, and drug interactions for epilepsy and status epilepticus.
13. Establish appropriate interventions for primary and secondary prevention of stroke and appropriate treatment for acute stroke.
14. Initiate and monitor pharmacotherapy for Parkinson disease.
15. Differentiate between regimens for acute and prophylactic treatment of migraine, tension, and cluster headaches.
16. Identify appropriate therapies for individuals with multiple sclerosis.
17. Establish appropriate treatment for peripheral neuropathy.

**2022 Pharmacotherapy Preparatory Review and Recertification Course -- Critical Care, Chronic Care in Cardiology, Acute Care in Cardiology, and Anticoagulation**

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

7. Recommend patient-specific pharmacologic therapy for the management of chronic heart failure, with an emphasis on mortality-reducing agents and their target doses.
8. Develop an evidence-based pharmacologic regimen and monitoring plan for patients with atrial fibrillation.
9. Develop an optimal pharmacologic management plan for a patient with hypertension according to practice guidelines and clinical trial evidence.
10. Design an appropriate dyslipidemia regimen based on a patient's atherosclerotic cardiovascular disease (ASCVD) risk.
11. Determine the appropriate pharmacologic therapy for patients with stable coronary heart disease.
12. Distinguish between the treatments for acute coronary syndrome: ST-segment elevation myocardial infarction and non-ST-segment elevation acute coronary syndrome.
13. Formulate evidence-based treatment strategies for patients with acute decompensated heart failure.
14. Devise a treatment plan for patients presenting with ventricular or life-threatening arrhythmias.
15. Differentiate between goals and treatment for hypertensive emergencies and hypertension without progressive organ damage.
16. Recommend a patient-specific pharmacotherapy plan to reduce the risk of stroke in patients with atrial fibrillation.
17. Develop a feasible pharmacologic management plan to reduce thrombotic events in patients receiving aortic or mitral valve replacement.
18. Devise an evidence-based pharmacotherapy plan for preventing and treating venous thromboembolism (VTE).
19. Analyze the need for anticoagulant therapy in patients with atrial fibrillation or VTE.
20. Determine appropriate reversal strategies for patients at risk of bleeding, or actively bleeding, while receiving anticoagulation therapy.
21. Determine appropriate selection and dosing of anticoagulant therapy on the basis of patient-specific factors and drug interactions.

**2022 Pharmacotherapy Preparatory Review and Recertification Course -- General Psychiatry, Infectious Diseases I, Infectious Diseases II, and Men's and Women's Health**

1. Examine pharmacotherapeutic options for managing schizophrenia, major depressive disorder (MDD), bipolar disorder, anxiety and anxiety-like disorders, insomnia, and substance use disorders (SUDs).
2. Select a drug used to treat these disorders on the basis of its unique pharmacologic properties, therapeutic efficacy, adverse effects, and cognitive and behavioral effects.
3. Formulate a pharmacotherapeutic treatment plan for a patient with a diagnosis of schizophrenia, MDD, bipolar disorder, anxiety and anxiety-like disorders, insomnia, or SUD.
4. 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, *Clostridioides difficile* infections, and endocarditis.
5. 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.
6. Select appropriate preventive therapy for urinary tract infections, CNS infections, endocarditis, and surgical wound infections.

7. Formulate an appropriate regimen to prevent or treat HIV infections, including initiating and monitoring therapy.
8. Discuss appropriate treatment of the various acquired immunodeficiency syndrome opportunistic infections, including primary and secondary prophylaxis.
9. Describe appropriate treatment and preventive therapy for tuberculosis, including infections with drug-resistant organisms.
10. Design appropriate therapeutic regimens for treating systemic and superficial fungal infections and classify the various antifungal agents.
11. Recommend appropriate treatment options for patients with menopausal symptoms and osteoporosis.
12. Identify drugs that are considered safe and unsafe during pregnancy and lactation, and differentiate between information resources for pregnancy and lactation.
13. Select the appropriate treatment for infertility or sexual dysfunction on the basis of patient-specific factors.
14. Devise a pharmacotherapeutic plan for appropriate contraceptive use, including assessment of estrogen- and progestin-related adverse effects or drug interactions, contraceptive method mishaps, and use of emergency contraception.
15. Identify common menstrual disorders and sexually transmitted diseases and recommend appropriate pharmacotherapy.

**2022 Pharmacotherapy Preparatory Review and Recertification Course -- Pharmacokinetics: A Refresher, Nephrology, Oncology Supportive Care, and Gastrointestinal Disorders**

1. Identify and solve pharmacotherapy problems using basic pharmacokinetic concepts, including bioavailability, volume of distribution, clearance, and the elimination rate constant.
2. Describe clinically relevant issues related to drug transport proteins, cytochrome P450 metabolism, pharmacogenomics, and drug sampling and interpretation.
3. Describe specific pharmacokinetic characteristics and target concentrations of commonly used therapeutic agents, including aminoglycosides, vancomycin, phenytoin, valproic acid, and digoxin, as well as pharmacokinetic alterations in patients with renal and hepatic disease.
4. Categorize acute kidney injury (AKI) and chronic kidney disease (CKD) on the basis of patient history, physical examination, laboratory values, and risk factors.
5. Formulate therapeutic plans to slow progression of CKD or decrease the risk of AKI.
6. Develop a care plan to manage common complications observed in patients with CKD (e.g., anemia, hyperphosphatemia, secondary hyperparathyroidism).
7. Interpret results of clinical trials related to the treatment of patients with kidney disease or complications.
8. 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.
9. Assess and recommend appropriate pharmacotherapy for managing cancer-related pain.
10. Assess and recommend appropriate pharmacotherapy for managing oncologic emergencies, including hypercalcemia, tumor lysis syndrome, and spinal cord compression.
11. Review national guideline treatment strategies for the following gastrointestinal (GI) disorders: gastroesophageal reflux disease (GERD); peptic ulcer disease (PUD); ulcerative colitis (UC); Crohn disease (CD); chronic liver disease, including viral hepatitis and cirrhosis; constipation; diarrhea;

irritable bowel syndrome (IBS); nausea; vomiting; pancreatitis; and upper GI bleeding, including prevention of stress-related mucosal disease (SRMD).

12. Recommend appropriate pharmacologic and nonpharmacologic interventions given a specific patient with one or more GI disorders.
13. Recognize pertinent information for educating patients and prescribers regarding the appropriate use of pharmacologic agents for various GI disorders.
14. Evaluate and apply evidence related to GI disorders for patient care, including appropriate interpretation or use of study designs and statistical tests.

## **2022 Pharmacotherapy Preparatory Review and Recertification Course -- Pediatrics, Healthcare Systems and Population Health, and Drug Information and Communication Strategies in Pharmacy**

1. Recommend therapeutic options to target the most common organisms in neonatal and pediatric sepsis and meningitis.
2. Identify the drugs available for preventing and treating respiratory syncytial virus and indications for use.
3. Explain the most common causative organisms of otitis media and potential treatment options.
4. Apply the recommended pediatric immunization schedule and discuss barriers to routine immunization.
5. Examine the differences in anticonvulsants, including pharmacokinetics and adverse effects, between children and adults.
6. Implement an appropriate treatment regimen for patients with attention-deficit/hyperactivity disorder.
7. Choose the quality improvement tools, surveillance activities, and technology support needed by an interprofessional team when evaluating medical errors, adverse drug events, appropriateness of treatment, and new services for potential failures.
8. Recommend resources to use when planning immunizations and screenings for individuals and populations.
9. Evaluate an emergency preparedness plan for an organization, noting the basic components.
10. Select evidence-based and best practices for instruction for didactic presentations, experiential learning, and patient education.
11. Distinguish among primary, secondary, and tertiary drug information resources.
12. Outline the levels of evidence according to standard classifications.
13. Use the PICOS method to define a clinical drug information question.
14. Given a drug information question type, list key background questions and drug information resources to consider.
15. Describe strategies to maximize success of a PubMed search.
16. Review effective techniques for communicating drug information to patients and health care professionals.
17. Describe how to tailor drug information and provide effective education for individual patients and health care professionals.
18. Discuss strategies for assessing a patient's health literacy and demonstrating cultural sensitivity while providing drug information to patients.