

Materials for this course will release 09/21/2022

Critical Care Pharmacy Review Course, Pract Exam, and Core Therapeutic Modules Package (Cert # L229263)

Teaser: This online Specialty Review Course, Practice Exam, and Core Therapeutic Modules package will help you prepare for the Board of Pharmacy Specialty (BPS) examination. With this course, get comprehensive, practical guidance, with a variety of complex cases, including references for further study.

Tag: Critical Care



ACPE Numbers: Various – see listing below

Pre-Sale Date: 08/31/2022

Content Release Date: 09/21/2022

Expiration Date: 08/22/2023

Activity Type: Application-based

CE Credits: 26.25 contact hours (ACPE only)

Activity Fee: \$425 (ASHP member); \$625 (non-member)

Accreditation for Pharmacists



The American Society of Health-System Pharmacists is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education.

Target Audience

These activities are intended for pharmacists who are seeking to update their knowledge and skills commensurate with a board certification examination in the areas listed below.

Activity Overview

This online course provides a robust preparatory curriculum for the pharmacy professional preparing for the Board of Pharmacy Specialties (BPS) Critical Care Specialty Certification Examination. Designed based on the domains, tasks, and knowledge statements developed by the BPS for the certification examination, this course will help you prepare for the exam by identifying areas needed for in-depth review of pharmacotherapy issues by:

- Reviewing pertinent clinical topics and practice skills
- Providing exam practice questions
- Listing valuable references for further study

This course is **NOT** intended for those obtaining recertification credit. To earn recertification credit, please see courses here: <http://elearning.ashp.org/catalog/ptherapy-recert>

These activities are part of the ASHP professional development program.

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REVIEW COURSE

This course consists of 21 activities (see table below) and provides up to 26.25 contact hours of continuing pharmacy education credit. The Review Course includes case-based presentations for application to real-life scenarios, a practice exam along with correct answers, and links to the reference sources, and domains, tasks, and knowledge statements. To help you further prepare, this package includes a compilation of practice questions in the same format and rigor to help you prepare for the BPS Specialty Examination.

| Learning Activity | ACPE Number | Contact Hours | ACPE Expiration Date |
|---|------------------------|---------------|----------------------|
| Complex Case: Complications after Cardiac Surgery - Glucose, Sedation, and Thrombocytopenia | 0204-0000-22-633-H01-P | 1.50 ACPE | 09/22/2024 |
| Complex Case: Acute Coronary Syndrome | 0204-0000-22-634-H01-P | 1.50 ACPE | |
| Complex Case: Antithrombotic-Associated Intracerebral Hemorrhage | 0204-0000-22-635-H01-P | 1.50 ACPE | |
| Complex Case: Sepsis | 0204-0000-22-636-H01-P | 1.50 ACPE | |
| Complex Case: Hyperglycemic Emergency and Community-Acquired Pneumonia | 0204-0000-22-637-H01-P | 1.50 ACPE | |
| Complex Case: Pneumonia | 0204-0000-22-638-H01-P | 1.50 ACPE | |
| Complex Case: Oncologic Emergencies: Febrile Neutropenia, Tumor Lysis Syndrome, and Hypercalcemia of Malignancy | 0204-0000-22-639-H01-P | 1.50 ACPE | |
| Complex Case: GI Bleeding and Acute Kidney Failure | 0204-0000-22-640-H01-P | 1.50 ACPE | |
| Practice Administration and Development Part 1 | 0204-0000-22-641-H04-P | 1.00 ACPE | |
| Practice Administration and Development Part 2 | 0204-0000-22-642-H04-P | 1.00 ACPE | |
| Statistics, Evidence-Based Medicine, and Clinical Trial Design | 0204-0000-21-985-H04-P | 2.00 ACPE | 05/16/2024 |

Learning Objectives

After participating in this CPE activity, learners should be able to:

Complex Case: Complications after Cardiac Surgery - Glucose, Sedation, and Thrombocytopenia

ACPE #: 0204-0000-22-633-H01-P

- Develop treatment and monitoring plans for a complex post-cardiac surgery patient to include pain, agitation and delirium, glucose management, and heparin-induced thrombocytopenia.
- Evaluate the impact of critical illness on pre-existing conditions (e.g., endocrine disorders, pain).
- Summarize quality assurance and process improvement methods relevant to critical care.
- Assess the relationship between institutional guideline development and evidence-based critical care literature.

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Complex Case: Acute Coronary Syndrome

ACPE #: 0204-0000-22-634-H01-P

- Develop treatment and monitoring plans for a complex critical care patient with acute coronary syndrome.
- Modify treatment and monitoring plans related to alterations of pharmacodynamics and pharmacokinetics in the critically ill.
- Select devices required for treatment and monitoring of a critical care patient.
- Select fluid, electrolyte and acid/base management and monitoring based on patient-specific factors.

Complex Case: Antithrombotic-Associated Intracerebral Hemorrhage

ACPE #: 0204-0000-22-635-H01-P

- Develop treatment and monitoring plans for a complex critical care patient with antithrombotic-associated intracerebral hemorrhage (ICH).
- Select appropriate neurologic monitoring techniques.
- Recommend agents for acute volume resuscitation and hemostasis (e.g., blood products, hemostatic agents).
- Evaluate the impact of critical illness on preexisting conditions (e.g., cardiovascular diseases).
- Recommend fluid and electrolyte management based on patient-specific factors.

Complex Case: Sepsis

ACPE #: 0204-0000-22-636-H01-P

- Develop treatment and monitoring plans for a complex critical care patient with an intra-abdominal infection, sepsis/SIRS, and shock.
- Select appropriate routes of administration for medications in critically ill patients.
- Modify treatment and monitoring plans related to alterations of pharmacodynamics and pharmacokinetics in the critically ill.
- Recommend agents for acute volume resuscitation and hemostasis (e.g., crystalloids, colloids).

Complex Case: Hyperglycemic Emergency and Community-Acquired Pneumonia

ACPE #: 0204-0000-22-637-H01-P

- Develop treatment and monitoring plans for a complex critical care patient with hyperglycemic emergency and community-acquired pneumonia.
- Select appropriate routes and methods of administration for medications in critically ill patients.
- Select fluid, electrolyte and acid/base management and monitoring based on patient-specific factors.
- Choose agents for acute volume resuscitation.
- Identify medication safety issues patients requiring care in the ICU.
- Explain nutrition support in the critically ill patient.

Complex Case: Pneumonia

ACPE #: 0204-0000-22-638-H01-P

- Develop treatment and monitoring plans for a complex critical care patient with multiple conditions, including pneumonia and acute respiratory distress syndrome (ARDS).
- Identify drug interactions and adverse drug events common in critical care and methods to document.

Complex Case: Oncologic Emergencies: Febrile Neutropenia, Tumor Lysis Syndrome, and Hypercalcemia of Malignancy

ACPE #: 0204-0000-22-639-H01-P

- Develop treatment and monitoring plans for a complex critical care patient with febrile neutropenia, tumor lysis syndrome, or hypercalcemia of malignancy.
- Select fluid, electrolyte and acid/base management and monitoring based on patient-specific factors.
- Evaluate the impact of critical illness on pre-existing conditions (e.g., cancer).

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Complex Case: GI Bleeding and Acute Kidney Failure

ACPE #: 0204-0000-22-640-H01-P

- Develop treatment and monitoring plans for a complex critical care patient with gastrointestinal bleeding, alcohol withdrawal, refeeding syndrome, hepatorenal syndrome, cirrhosis, and acute kidney failure with kidney replacement therapy.
- Modify treatment and monitoring plans related to alterations of pharmacodynamics and pharmacokinetics in the critically ill.
- Select appropriate routes of administration for medications in critically ill patients.
- Recommend agents for acute volume resuscitation and hemostasis (e.g., blood products, hemostatic agents).

Statistics, Evidence-Based Medicine, and Clinical Trial Design

ACPE #: 0204-0000-21-985-H04-P

- Determine quality and appropriateness of a study by examining study design, statistical analysis, sources of bias, quality of conclusions, and interpretation of graphs.
- Determine clinical and statistical significance of a study outcome.
- Determine whether the study applies to a specified patient population.

Practice Administration and Development Part 1

ACPE #: 0204-0000-22-641-H04-P

- Develop a plan to monitor and evaluate compliance with, and impact of, policies and guidelines (e.g., institutional, evidence based).
- Describe the application and integration of evidence-based critical care literature into institutional guidelines and processes.
- Evaluate regulatory/IRB requirements relative to conducting critical care research.
- Select quality assurance methods and improvement activities, including needs assessment techniques, aimed at enhancing the safety and effectiveness of medication-use processes in the critical care area.

Practice Administration and Development Part 2

ACPE #: 0204-0000-22-642-H04-P

- Identify metrics for evaluating the quality of critical care pharmacy services (e.g., lengths of ICU stay, mortality, cost-effectiveness, ROI).
- Summarize the evidence-based literature that supports the value of critical care pharmacy.
- Summarize the factors that enhance the education and training of critical care pharmacists available in published documents from relevant professional societies (e.g., ASHP, ACCP, SCCM).

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CORE THERAPEUTIC MODULES

The Core Therapeutic Modules Review Package consists of 10 activities in which faculty review clinical topics and practice skills using a case-based approach. The activities are designed to assist the learner in identifying knowledge gaps in preparation for a pharmacy specialty board examination. In addition to a recorded presentation, each activity includes links to resources for further self-study and a practice test developed in the same format and rigor as the specialty exam.

| Learning Activity | ACPE Number | Contact Hours | ACPE Expiration Date |
|---|------------------------|---------------|----------------------|
| Select Topics in Acid-Base Disorders | 0204-0000-21-610-H01-P | 1.25 ACPE | 09/20/22 |
| Select Topics in Infectious Diseases in Critical Care Patients | 0204-0000-22-643-H01-P | 1.00 ACPE | 09/21/25 |
| Select Neurology Topics in Critical Care Patients | 0204-0000-20-990-H01-P | 1.00 ACPE | 09/22/23 |
| Alterations in Pharmacokinetics and Pharmacodynamics in Critical Care | 0204-0000-21-611-H01-P | 1.00 ACPE | 09/20/22 |
| Select Topics in Prevention and Supportive Care in Critical Care Patients | 0204-0000-20-991-H01-P | 1.00 ACPE | 09/22/23 |
| Select Topics in Toxicology | 0204-0000-21-612-H01-P | 1.00 ACPE | 09/20/22 |
| Select Topics in Pulmonary Disorders | 0204-0000-22-644-H01-P | 1.00 ACPE | 09/25/25 |
| Cardiac Arrhythmias and Advanced Cardiac Life Support | 0204-0000-20-992-H01-P | 1.00 ACPE | 09/22/23 |
| Pharmacotherapy Considerations in the Management of Shock | 0204-0000-20-993-H01-P | 1.00 ACPE | 09/22/23 |
| Fluid, Electrolytes, and Nutrition | 0204-0000-22-617-H01-P | 1.00 ACPE | 09/21/25 |

Learning Objectives

After participating in this CPE activity, learners should be able to:

Select Topics in Acid-Base Disorders

ACPE #: 0204-0000-21-610-H01-P

For the following specific acid/base disorders - respiratory, metabolic acid base disorders including anion gap/non-anion gap acidosis, renal tubular acidosis, as well as delta gap equation:

- Interpret laboratory and diagnostic tests.
- Recommend the most appropriate treatment and monitoring plans based on patient-specific information and current guidelines

Select Topics in Infectious Diseases in Critical Care Patients

ACPE #: 0204-0000-22-643-H01-P

For the following specific infectious disease topics: urinary tract infections, meningitis, catheter related infections, bacteremia, and infective endocarditis:

- Interpret laboratory and diagnostic tests.
- Recommend the most appropriate treatment and monitoring plans based on patient-specific information and current guidelines.

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Select Neurology Topics in Critical Care Patients

ACPE #: 0204-0000-20-990-H01-P

- For the following specific critical care topics: status epilepticus, traumatic brain injury, ischemic stroke, subarachnoid hemorrhage:
 - Interpret laboratory and diagnostic tests.
 - Evaluate benefits and risks of drug therapy considering other medication, and other patient-specific factors.
 - Recommend the most appropriate treatment and monitoring plans based on patient-specific information and current guidelines.

Alterations in Pharmacokinetics and Pharmacodynamics in Critical Care

ACPE #: 0204-0000-21-611-H01-P

- Identify pharmacokinetic and pharmacodynamic (PK/PD) changes that occur in critical illness, and the impact on commonly administered medications in this setting.
- Apply knowledge of general PK/PD changes in critical illness to the following patient-specific factors that further complicate drug dosing:
 - Burns
 - Obesity
 - Pregnancy
 - Continuous renal replacement therapy (CRRT)
 - Extracorporeal membrane oxygenation (ECMO)
- Develop a therapeutic strategy to optimize PK/PK for commonly used medications in the intensive care unit. "

Select Topics in Prevention and Supportive Care in Critical Care Patients

ACPE #: 0204-0000-20-991-H01-P

For the following specific critical care topics—stress ulcer prophylaxis (SUP), venous thromboembolism (VTE) prophylaxis, bowel regimens, and ventilator associated pneumonia (VAP) prevention:

- Interpret laboratory and diagnostic tests.
- Recommend the most appropriate treatment and monitoring plans based on patient-specific information and current guidelines.

Select Topics in Toxicology

ACPE #: 0204-0000-21-612-H01-P

For the following specific toxicology topics: acetaminophen, toxic alcohols, calcium channel blockers, beta blockers, opioids, and ecstasy:

- Interpret laboratory and diagnostic tests
- Recommend the most appropriate treatment and monitoring plans based on patient-specific information and current guidelines

Select Topics in Pulmonary Disorders

ACPE #: 0204-0000-22-644-H01-P

For the following specific pulmonary disease topics: asthma exacerbation, acute exacerbation of chronic obstructive pulmonary disease, pulmonary embolism, and pulmonary arterial hypertension:

- Interpret laboratory and diagnostic tests.
- Recommend the most appropriate treatment and monitoring plans based on patient-specific information and current guidelines.

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Cardiac Arrhythmias and Advanced Cardiac Life Support

ACPE #: 0204-0000-20-992-H01-P

- Interpret signs, symptoms and diagnostic tests for cardiac arrhythmias.
- Identify drug-related problems, including drug interactions and adverse effects, associated with pharmacotherapy of cardiac arrhythmias.
- Identify strategies to prevent drug-induced arrhythmias.
- Recommend therapy and monitoring for cardiac arrhythmias based on patient-specific information, current guidelines, and Advanced Cardiac Life Support guided therapies.

Pharmacotherapy Considerations in the Management of Shock

ACPE #: 0204-0000-20-993-H01-P

- Interpret diagnostic and/or laboratory tests, vital signs, and clinical presentation in order to differentiate types of shock (hypovolemic, distributive, cardiogenic)
- Compare and contrast the pharmacologic agents utilized in shock
- Recommend therapy and monitoring based on patient-specific information and current guidelines for the treatment of shock

Fluid, Electrolytes, and Nutrition

ACPE #: 0204-0000-22-617-H01-P

- Interpret laboratory and diagnostic tests for fluid, electrolyte, and nutrition status.
- Recommend the most appropriate therapy and monitoring in patients with fluid, electrolyte, and nutritional disorders based on patient-specific information and current guidelines.
- Apply strategies to manage drug-related electrolyte interactions and nutrient interactions.

Faculty

<https://www.ashp.org/Professional-Development/Board-Certification-Resources/Critical-Care-Pharmacy/Critical-Care-Pharmacy-Review-Course-Faculty>

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Disclosures

In accordance with our accreditor's Standards of Integrity and Independence in Accredited Continuing Education, ASHP requires that all individuals in control of content disclose all financial relationships with ineligible companies. An individual has a relevant financial relationship if they have had a financial relationship with an ineligible company in any dollar amount in the past 24 months and the educational content that the individual controls is related to the business lines or products of the ineligible company.

An ineligible company is any entity producing, marketing, re-selling, or distributing health care goods or services consumed by, or used on, patients. The presence or absence of relevant financial relationships will be disclosed to the activity audience.

No one in control of the content of this activity has a relevant financial relationship (RFR) with an ineligible company.

Methods and CE Requirements

Activities can be completed in any order. Each activity consists of audio, video, and/or PDFs and evaluations. Learners must review all content and complete the evaluations to receive continuing pharmacy education credit for each activity.

Follow the prompts to claim, view, or print the statement of credit within 60 days after completing the activity.

System Technical Requirements

Courses and learning activities are delivered via your Web browser and Acrobat PDF. For all activities, you should have a basic comfort level using a computer and navigating web sites.

View the [minimum technical and system requirements](#) for learning activities.

Development

These activities were developed by ASHP.

To maintain its strict, independent standards for certification, BPS does NOT endorse or provide review information, preparatory courses, or study guides for Board Certification Examinations.