BOARD OF PHARMACY SPECIALTIES
CRITICAL CARE PHARMACY SPECIALIST CERTIFICATION
CONTENT OUTLINE/CLASSIFICATION SYSTEM
FINALIZED SEPTEMBER 2017/FOR USE ON FALL 2018 EXAMINATION AND FORWARD

UNDERSTANDING THE CONTENT OUTLINE/CLASSIFICATION SYSTEM

The following domains, tasks, and knowledge statements were identified by the BPS Specialty Council on Critical Care Pharmacy and validated through a role delineation study, most recently updated in 2017. The proportion of examination items allotted to each domain was determined through analysis and discussion of the results of the role delineation study by the Specialty Council.

Each of the major areas/domains of Critical Care Pharmacy practice noted below will be tested. Questions will not be grouped by domain. Items testing each domain are distributed throughout the total examination. Please note that this examination will SAMPLE a candidate's knowledge rather than trying to test all of his/her knowledge.

Here is a brief primer to understand the structure of the content outline/classification system.

Domains: A domain is a major responsibility or duty. You can think of a domain as a major heading in an outline format. You will see the domains displayed as black bars on the outline. Three domains are included in the content outline and are noted below.

1. Clinical Knowledge and Application (65 percent of examination)
2. Practice Management, Policy, and Quality Improvement (15 percent of examination)
3. Evidence-Based Medicine, Scholarship, Education, and Professional Development (20 percent of examination)

Tasks: A task statement defines an activity that elaborates on the domain or subdomain. The set of task statements in a domain offer a comprehensive and detailed description of the domain. You will see the tasks are light gray bars on the outline.

Knowledge Statement: For each task, it is valuable to understand what knowledge and skills are essential to competent performance. The set of knowledge statements clarifies the expectations for newly certified pharmacists. You will find the knowledge statements under each task statement.

DESCRIPTION **Domain I: Clinical Knowledge and Application**
Tasks in this domain detail the comprehensive management of a critically ill patient, including collecting, interpreting, and integrating pertinent clinical data, as well as designing, implementing, monitoring, and modifying patient-specific plans of care in collaboration with the healthcare team. Topics may include but are not limited to pathophysiology, epidemiology, infectious diseases, pulmonology, cardiology, endocrinology, hematology, oncology, neuroscience, nephrology, hepatology, psychiatry, nutrition, immunology, gastroenterology, surgery, trauma, burn, pharmacology, toxicology, transplantation, supportive care, and medical emergencies.
Task 1: Collect information about a patient's present illness, allergies, and past medical, surgical, social, and family histories by using interviews and medical records to ensure safe and effective use of medications.
Knowledge of:
1. Process for collecting pertinent patient data
2. Electronic health records and comparable paper-based records

3. Relationship between critical illness and pre-existing conditions (e.g., endocrine disorders, cardiovascular diseases, infectious diseases)
Task 2: Perform a comprehensive reconciliation of a patient's current and past medications by using data collected from interviews and medical records to determine the pharmacotherapy plan.
Knowledge of:
1. The principles and process of medication reconciliation
2. Appropriateness of prescription medications and self-care (e.g., over-the-counter medications, dietary supplements, complementary and alternative medicines)
3. Adverse drug reactions
4. Drug interactions (e.g., drug-drug, drug-nutrient, drug-disease)
5. Barriers to care (e.g., nonadherence, psychosocial status, socioeconomic status)
6. Patient-specific factors (e.g., culture, religion, quality of life)
7. Transitions of care
Task 3: Integrate relevant data from physical examinations, vital signs, laboratory studies, imaging studies, procedures, advanced critical care monitoring, and other pertinent information by using clinical reasoning to comprehensively assess a patient's physiological condition and severity of illness.
Knowledge of:
1. Diagnosis, pathophysiology, epidemiology, and risk factors of disease states and clinical conditions
2. Changes in patient clinical status (e.g., hemodynamics, organ dysfunction, nutrition)
3. Methods for obtaining, interpreting, and analyzing pertinent patient data
4. Diagnostic tests and findings
5. Medical and surgical devices and therapies (e.g., renal replacement therapies, cardiopulmonary bypass, mechanical ventilator)
6. Pharmacokinetics and pharmacodynamics
7. Relationship between nutrition status and disease states
Task 4: Develop therapeutic regimens by using patient-specific data and evidence-based medicine to implement a prioritized pharmacotherapy plan that ensures optimal resource utilization and patient outcomes.
Knowledge of:
1. Pharmacology
2. Evidence-based literature and clinical practice guidelines
3. Pharmacodynamics and pharmacokinetics (e.g., effects of hypothermia, hypermetabolic states, volume status, altered absorption)
4. Alterations in anatomy and physiology (e.g., trauma, surgery or congenital causes) that affect medication therapy
5. Disease states and patient-specific factors impacting drug selection (e.g., nutrition, organ dysfunction)
6. Pharmacoeconomics (e.g., cost effectiveness, cost minimization, stewardship)
7. Pharmacogenomics
8. Medical emergencies
Task 5: Collaborate as a member of an interprofessional team by using effective strategies to establish patient- and family-centered goals of care.
Knowledge of:
1. Interprofessional scopes of practice

2. Healthcare resources (e.g., institutional, community, payer)
3. Techniques for collaboration, documentation, and communication within and outside the critical care setting
4. Effects of culture, language and language proficiency, education level, comprehension, home environment, and disabilities on educational needs
5. Preventive and supportive care measures
6. Goals of care and disposition (e.g., rehabilitation, palliative care, end-of-life care)
7. Medical emergencies
Task 6: Facilitate the administration of medications to patients by assessing availability, route, compatibility, stability, and medication delivery technology to ensure timeliness, safety, and effectiveness.
Knowledge of:
1. Routes of administration for medications, fluids, and nutrition
2. Alterations in absorption based on disease state
3. Drug-drug, drug-nutrient, and drug-disease interactions
4. Drug delivery considerations (e.g., vascular, enteral, neuraxial)
5. Drug compatibility and stability
6. Drug availability (e.g., formulary considerations, drug shortages)
7. Medication delivery technology (e.g., smart pumps, automated dispensing cabinets)
Task 7: Monitor a patient's response to therapeutic regimens by using appropriate data in order to evaluate progress toward the goals of care, modify the plan of care as needed, and minimize adverse outcomes.
Knowledge of:
1. Monitoring techniques (e.g., hemodynamic, neurologic, cardiovascular)
2. Outcome indicators for pharmacotherapy of disease states
3. Disease progression or resolution
4. Therapeutic drug monitoring
5. Drug interactions
6. Adverse drug events
7. Reassessment and modification of therapeutic regimens
Task 8: Communicate pertinent information by using effective oral and written strategies to ensure continuous and quality care.
Knowledge of:
1. Transitions of care
2. Strategies for engaging, communicating with, and educating patients, families, and members of the interprofessional team
3. Approaches for obtaining and documenting patient data
4. Tools and resources
DESCRIPTION **Domain II: Practice Management, Policy, and Quality Improvement**
Leadership tasks that make up this domain are related to establishing, implementing, and monitoring systems and policies to enhance the quality of critical care pharmacy services.
Task 1: Implement operational and clinical pharmacy services consistent with best practices to promote appropriate and efficient medication use.

Knowledge of:
1. Needs assessment related to pharmacy services
2. Application of evidence-based literature in designing institutional guidelines and policies
3. Resources (e.g., financial, technological, human) necessary to care for patients
4. Telemedicine
5. Competency development
Task 2: Promote the role and optimal use of critical care pharmacists to key stakeholders by documenting performance metrics, quality improvement, safety, and clinical interventions to demonstrate cost effectiveness and to maintain and expand services.
Knowledge of:
1. Metrics for evaluating quality of pharmacy services (e.g., length of ICU stay, mortality, cost effectiveness, days of therapy per adjusted patient day)
2. Pharmacoeconomic analysis
3. Return on investment
4. Resource utilization (e.g., stewardship principles)
Task 3: Perform quality improvement activities by reviewing current practices and conducting a needs analysis to enhance the safety and effectiveness of medication use processes.
Knowledge of:
1. Needs assessment related to quality of care
2. Medication use and monitoring systems (e.g., Risk Evaluation and Mitigation Strategies, Vaccine Adverse Event Reporting System, FDA MedWatch, Institute for Safe Medication Practices alerts)
3. Quality standards and metrics (e.g., risk adjusted mortality, medication errors)
4. Risk mitigation strategies (e.g., failure mode effects analysis, root cause analysis)
Task 4: Evaluate compliance with institutional policies, accreditation standards, and regulatory requirements by auditing current practices to ensure integrity and quality of care.
Knowledge of:
1. Principles of a medication use evaluation
2. Regulatory and accrediting bodies and their requirements (e.g., Food and Drug Administration, The Joint Commission, Centers for Medicare and Medicaid Services)
3. Quality measures (e.g., core measures, Hospital Consumer Assessment of Healthcare Providers and Systems, Agency for Healthcare Research and Quality)
4. Laws and regulations pertaining to scope of practice
Task 5: Collaborate with interprofessional groups by serving on committees and contributing to local, regional, and national initiatives to improve quality of care.
Knowledge of:
1. Policy and guideline development pertaining to interprofessional care
2. Interprofessional organizations
3. Strategies for collaborating (e.g., conflict resolution, negotiation)
4. Expertise of interprofessional team members
Task 6: Develop formulary management strategies through the Pharmacy and Therapeutics Committee and other appropriate channels to improve cost effectiveness, resource utilization, and risk mitigation.
Knowledge of:
1. Role and responsibilities of a Pharmacy and Therapeutics Committee
2. Drug monograph and class review

3. Criteria for use
4. Drug shortage management strategies
Task 7: Optimize health information technology by using clinical informatics to improve pharmacotherapeutic decision support and minimize patient harm.
Knowledge of:
1. Drug delivery and distribution technology (e.g., automated dispensing cabinets, inventory management systems, electronic pharmacy workflow managers)
2. Intelligent intravenous infusion devices
3. Barcode medication administration
4. Electronic health records
5. Computerized provider order entry
6. Clinical decision support
7. Health information exchanges
8. Alerts and alert fatigue (e.g., drug-drug, drug-dose, drug-disease, duplicate therapy)
DESCRIPTION **Domain III: Evidence-Based Medicine, Scholarship, Education, and Professional Development**
Tasks in this domain are related to the retrieval, generation, interpretation, and dissemination of knowledge; education provided to patients, caregivers, interprofessional teams, and trainees; and professional development.
Task 1: Employ drug information skills by retrieving biomedical literature and evaluating design methodology, statistical analysis, and results to practice evidence-based medicine.
Knowledge of:
1. Literature search strategies and resources
2. Research design, methodology, and statistical analysis
3. Clinical application and limitations of published data and reports
Task 2: Contribute to the critical care body of knowledge by participating in research, delivering presentations, publishing, participating in the peer review process, or engaging in other scholarly activities to advance practice.
Knowledge of:
1. Regulations and IRB requirements for human subjects research
2. Methods for disseminating critical care knowledge and scholarly activity (e.g., presentations, manuscripts, newsletters, abstracts, posters)
3. Biomedical literature publication and review processes
Task 3: Provide interprofessional education through formal and informal methods of dissemination to improve awareness, understanding, and patient outcomes.
Knowledge of:
1. Interprofessional roles, responsibilities, communication, and teamwork
2. Formal and informal educational techniques (e.g., continuing education programs, in-services, practice-based teaching)
Task 4: Educate patients and caregivers on medication therapy by using effective communication strategies to enhance understanding.
Knowledge of:
1. Techniques and principles of educating patients and caregivers
2. Communication strategies and barriers

Task 5: Provide education for practicing pharmacists, post-graduate trainees, and students through didactic and experiential methods to promote best practice.
Knowledge of:
1. Instructional methods (e.g., didactic, simulation)
2. Preceptor roles employed in practice-based teaching: direct instruction, modeling, coaching, and facilitation
3. Assessment and evaluation techniques
Task 6: Mentor pharmacists, post-graduate trainees, and students by using formal and informal methods to promote professional growth.
Knowledge of:
1. Mentorship theories, principles, and methods
Task 7: Engage in continuous professional development through activities such as self-assessment and service to professional organizations to maintain and enhance proficiency.
Knowledge of:
1. Professional organizations and opportunities for involvement
2. Principles of self-assessment and personal change
3. Standards and position papers regarding critical care pharmacy practice
4. Relevant certifications and credentials