Role Delineation Study

BCEMP – Emergency Medicine Pharmacy

October 2021

Board of Pharmacy Specialties®

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Executive Summary

The Board of Pharmacy Specialties (BPS) performed a role delineation study (RDS), a multi-method approach into defining a job role or competency area in terms of the relevant tasks and associated knowledge areas, in 2020 and 2021 to develop the content outline and other specifications for a specialty certification examination for pharmacists who specialize in emergency medicine. In accordance with relevant professional and accreditation standards, the study consisted of three major phases:

1. Definition of tasks and knowledge areas
2. Development, administration, and analysis of a survey
3. Finalization of the exam content outline

This report provides evidence for the exam content outline developed and its applicability to the emergency medicine pharmacy specialty practice area. The outcome of this study was the creation of an examination blueprint that will be used to construct the emergency medicine pharmacy specialty certification examination such that it aligns with the competencies identified and in equal proportions across all forms (versions) of the examination.

Examination Content Domains		
1	Patient Care/Management	75%
2	Practice Management	15%
3	Education and Research	10%

Introduction

The Board of Pharmacy Specialties (BPS) performed a role delineation study in 2020 and 2021 to develop the content outline and other specifications for the specialty certification examination for pharmacists who specialize in emergency medicine.

A role delineation study (RDS) is another name (more commonly used in healthcare certification settings) for a job analysis[1], a multi-method approach to defining a job role or competency area in terms of the relevant tasks or work activities and the associated competencies (operationalized as knowledge, skills, and abilities) and/or other attributes. Indeed, job analysis can also be thought of as referring to a family of related approaches to establishing the foundations of content validity[2] for an assessment[3], in this case applied to the assessment of competencies associated with a specialty area in the practice of pharmacy. A job analysis (or RDS) is considered a multi-method approach because it incorporates both qualitative and quantitative evidence in support of the definition of the practice area in question. The role delineation study consists of three major phases:

1. Definition of tasks and knowledge areas
2. Development, administration, and analysis of a survey
3. Finalization of the exam content outline

The subsequent sections describe the methods, results, and outcomes of the study, complemented by appendices which describe the qualifications and professional characteristics of the subject matter experts who contributed to this study, the actual text of the survey administered, and the final exam content outline produced by this study.

[1] Sackett, P.R., Laczo, R.M. (2003). Job and Work Analysis. Handbook of Psychology.
[2] Cronbach, L.J., Meehl, P.E. (1955). Construct Validity in Psychological Tests. Psychological Bulletin, 52(4), 281-302.
[3] Kane, M.T. (2013). Validating the Interpretations and Uses of Test Scores. Journal of Educational Measurement, 50(1), 1-73.

1. Definition of Tasks and Knowledge

A role delineation study was conducted in 2017 and was one part of an extended feasibility analysis to determine whether BCEMP would be established as a specialty certification program. Because of its relative recency, the BPS board of directors and the established BCEMP subject matter expert council determined that the 29 tasks and 46 knowledge areas developed in the 2017 role delineation study be moved forward to the survey process rather than convene the role delineation study panel to review and revise.

	Content Domain	# Tasks	# Knowledge
1	Patient Care and Therapeutics	13	20
2	Translation of Evidence into Practice	11	16
3	Practice Management and Population Health	5	10

2. Survey Administration and Analysis

A survey was created for the purpose of soliciting ratings of endorsement from the larger practitioner population. Survey results are used to validate the appropriateness of the knowledge areas and tasks developed by the panelists and to inform content weighting decisions. The survey was developed with the following components:

- Description of the purpose of the survey
- Definition of the target population identified by the specialty practice area
- Demographic questions that assess survey respondents' professional characteristics
- Respondent ratings of endorsement for the tasks and knowledge areas, organized by the three content domains
- Respondent ratings of recommended content distribution
- Open field for any additional comments

The ratings of endorsement from the survey respondents were solicited using two scales: Point of Acquisition and Criticality. Each scale consists of a prompt, numerical responses with an associated text anchor (description), and associated instructions.

The Point of Acquisition scale is used to identify knowledge areas and tasks that may fall outside of the scope of the those who would be considered entry-level in the specialty area. This scale organizes responses in nominal categories, with the latter three options ascending in an ordinal manner.

The Criticality scale is used to determine the importance and relevance to practice in the specialty area, with particular focus given to clinical outcomes and safety. This scale organizes responses in ordinal categories that exhibits characteristics of an interval scale in that the options can be considered to have equal distances between them.

Point of Acquisition	At what point in relation to entering the specialty is the task performed or knowledge required?
1	Not at all
2	Within the first year of entering the specialty
3	Between 1-4 years of entering the specialty
4	Beyond 4 years of entering the specialty
Criticality	To what degree would the inability to perform this task or apply this knowledge cause harm to stakeholders?
1	No Harm
2	Minimal Harm
3	Moderate Harm
4	Substantial Harm
5	Extreme Harm

See Appendix A for a copy of the full survey text.

The survey was open and available from 1 March 2021 to 1 April 2021. All pharmacists who hold the BCPS (pharmacotherapy) and BCCCP (critical care pharmacy) credential were directly invited via email to complete the online survey. The survey was also disseminated through the following affiliate organizations:

- American Society of Health-System Pharmacists (ASHP)
- American College of Clinical Pharmacy (ACCP)
- Society of Critical Care Medicine (SCCM)

The survey yielded 547 usable responses. Responses were not used if the survey was not completed or if the respondent indicated spending less than 10% of pharmacy practice in emergency medicine.

Responses to Demographic Questions		
Percentage of Pharmacy Practice Time in Emergency Medicine	**Mean**	**SD**
	81.2	28.0
Number of Hours Per Week in Emergency Medicine Pharmacy	**Mean**	**SD**
	33.6	13.1
Pharmacy Residency (select all that apply)	***n***	
PGY-1 Pharmacy practice	203	
PGY-1 Pharmacy practice / PGY2	151	
PGY2	31	
Highest Pharmacy Degree	***n***	**%**
Bachelor's degree	2	0%
Master's degree	2	0%
Pharm.D.	438	98%
Ph.D.	1	0%
Other	3	1%
Year Highest Pharmacy Degree Completed	***n***	**%**
Before 2000	6	1%
2000 - 2005	29	7%
2006 - 2010	75	18%
2011 - 2015	162	38%
2016 - 2020	153	36%
Primary Source of Emergency Medicine Pharmacy Training	***n***	**%**
Part of pharmacy school curriculum	5	1%
Part of post-graduate program	236	53%
Practice-based continued education (certificate program)	7	2%
Corporate sponsored training	1	0%
On-the-job training	195	44%
Other	2	0%
BPS Certification	***n***	**%**
Ambulatory Care Pharmacy (BCACP)	3	1%
Cardiology Pharmacy (BCCP)	3	1%
Critical Care Pharmacy (BCCCP)	147	29%

Nutrition Support Pharmacy (BCNSP)	1	0%
Pediatric Pharmacy (BCPPS)	5	1%
Pharmacotherapy (BCPS)	308	61%
None	34	7%
Years of Experience in Pharmacy	***n***	**%**
0 – 4	124	28%
5 – 8	142	32%
9 – 13	109	25%
14+	67	15%
Years of Experience in Emergency Medicine Pharmacy	***n***	**%**
0 – 4	234	53%
5 – 8	137	31%
9 – 13	52	12%
14+	19	4%
Primary Practice Setting	***n***	**%**
Academic medical center or hospital	206	46%
Children's hospital	13	3%
Community pharmacy	13	3%
Integrated Health System / ACO	3	1%
Mixed academic/community hospital	182	41%
VA Hospital	15	3%
Other	14	3%
Proportion of Time Spent in Each Aspect of Professional Role	**Mean**	**SD**
Direct Patient Care	68	17
Administration	8	8
Teaching / Precepting Trainees	14	9
Research	4	5
Leadership / Management	5	7
Other	1	4
Authority to Initiate Drug Therapy	***n***	**%**
Yes, under a collaborative practice agreement or CDTM protocol	173	39%
Yes, under other prescribing privilege	21	4%
Yes, with physician (or other physician designee) co-signature	180	41%
No, I do not have authority to initiate orders	57	13%
Location of Primary Practice	***n***	**%**
Alabama	4	1%
Arizona	8	2%
Arkansas	1	0%
California	36	9%
Colorado	2	1%
Connecticut	5	1%
Delaware	2	1%
Florida	22	6%
Georgia	7	2%

Idaho	1	0%
Illinois	11	3%
Indiana	14	4%
Iowa	4	1%
Kansas	5	1%
Kentucky	11	3%
Louisiana	1	0%
Maine	1	0%
Maryland	7	2%
Massachusetts	13	3%
Michigan	10	3%
Minnesota	13	3%
Mississippi	3	1%
Missouri	5	1%
Montana	4	1%
Nebraska	2	1%
Nevada	3	1%
New Hampshire	5	1%
New Jersey	6	2%
New Mexico	1	0%
New York	19	5%
North Carolina	10	3%
North Dakota	1	0%
Ohio	33	8%
Oklahoma	4	1%
Oregon	5	1%
Pennsylvania	21	5%
Rhode Island	1	0%
South Carolina	8	2%
Tennessee	12	3%
Texas	20	5%
Utah	9	2%
Virginia	11	3%
Washington	11	3%
West Virginia	1	0%
Wisconsin	10	3%
Wyoming	1	0%
District of Columbia	1	0%
Outside the United States: Canada, Egypt, Saudi Arabia, Thailand	6	2%

Task Statements – Criticality Scale			
1	**Patient Care/Management**	***n***	**Mean**
1.01	Participate in the bedside management of medical emergencies (e.g., trauma, stroke, psychiatric, toxicological) and resuscitations to optimize the medication use process.	489	4.22
1.02	Identify and prioritize (triage) ED patients by analyzing the relevant acuity indices and opportunities for optimization of pharmacotherapy.	488	3.01
1.03	Collect essential patient information (including patient history, medication use) by utilizing available resources (e.g., pre-hospital providers).	487	3.14
1.04	Identify and evaluate medication-related problems based on clinical presentation, available history, or laboratory data.	486	3.38
1.05	Contribute to the formulation of a differential diagnosis in the setting of limited information.	488	2.72
1.06	Design pharmaceutical care plan utilizing available patient-specific information and best available evidence to provide patient and family-centered care.	486	3.30
1.07	Recommend and support implementation of the pharmaceutical care plan in the ED.	488	3.29
1.08	Expedite the preparation/procurement and administration of time-sensitive therapeutic regimens.	487	4.03
1.09	Make evidence-based recommendations for alternative routes of administration.	488	3.11
1.10	Monitor and evaluate patient response to initial therapy and re-design treatment plan as necessary.	485	3.31
1.11	Serve as the primary source of drug information for all practitioners and patients within the ED.	485	3.57
1.12	Ensure continuity of care during healthcare transition and across levels of care.	486	3.00
1.13	Identify and seek appropriate outside resources available to assist in the management of the ED patient.	482	2.82
2	**Practice Management**	***n***	**Mean**
2.01	Anticipate, monitor, detect, report, and review adverse drug events and medication errors.	442	3.47
2.02	Recognize trends, system failures, and gaps in the medication use process, and perform quality assurance activities (e.g., MUE) that promote safe and effective medication use.	444	3.15
2.03	Ensure a process to maintain and optimize inventory and availability of medications essential to provide timely care in the ED.	443	3.20
2.04	Ensure an appropriate process exists for medication order review in the ED.	441	3.46
2.05	Assist the organization in achieving compliance with accreditation, legal, regulatory, and safety requirements related to the medication use process.	445	2.82
2.06	Contribute to contingency planning that addresses limited availability of critical drugs that affect patients in the ED (e.g., drug shortages, emergency preparedness).	444	3.29
2.07	Participate in emergency/disaster preparedness planning or response activities.	445	3.02
2.08	Develop, maintain, monitor, and support evidence-based medication use guidelines and pathways to assure safe and cost-effective medication use.	444	3.21

2.09	Identify and implement opportunities for practice advancement and growth within the ED (e.g., collaborative practice agreements, public health initiatives, expanded coverage).	443	2.69
2.10	Advocate for and justify emergency medicine pharmacy services.	445	3.02
2.11	Serve as a liaison on committees to represent the interests of pharmacy and ED patients.	444	2.92
3	**Education and Research**	***n***	**Mean**
3.01	Provide emergency medicine-focused education, training, or mentoring for healthcare professionals and trainees.	431	2.96
3.02	Educate patients and caregivers using appropriate techniques tailored to the audience, with a focus on high-risk medications or where the visit resulted from an adverse drug event.	434	3.44
3.03	Participate in continuous professional development related to emergency pharmacy practice (e.g., professional organizations, continuing education, clinical pharmacy networks).	433	2.68
3.04	Retrieve and critically evaluate biomedical literature and other sources regarding study design methodology, statistical analysis, and applicability of study results to emergency medicine.	431	3.08
3.05	Contribute to the body of knowledge in the field of emergency medicine.	432	2.36

Task Statements – Point of Acquisition Scale						
1	**Patient Care/Management**	***n***	**No**	**In Year 1**	**1-4 Years**	**4+ Years**
1.01	Participate in the bedside management of medical emergencies (e.g., trauma, stroke, psychiatric, toxicological) and resuscitations to optimize the medication use process.	544	4	414	113	13
1.02	Identify and prioritize (triage) ED patients by analyzing the relevant acuity indices and opportunities for optimization of pharmacotherapy.	545	10	355	170	10
1.03	Collect essential patient information (including patient history, medication use) by utilizing available resources (e.g., pre-hospital providers).	545	13	485	41	6
1.04	Identify and evaluate medication-related problems based on clinical presentation, available history, or laboratory data.	542	8	413	111	10
1.05	Contribute to the formulation of a differential diagnosis in the setting of limited information.	544	9	149	336	50
1.06	Design pharmaceutical care plan utilizing available patient-specific information and best available evidence to provide patient and family-centered care.	542	3	333	194	12
1.07	Recommend and support implementation of the pharmaceutical care plan in the ED.	541	8	336	185	12
1.08	Expedite the preparation/procurement and administration of time-sensitive therapeutic regimens.	543	7	462	68	6
1.09	Make evidence-based recommendations for alternative routes of administration.	543	3	341	190	9
1.10	Monitor and evaluate patient response to initial therapy and re-design treatment plan as necessary.	540	1	290	238	11
1.11	Serve as the primary source of drug information for all practitioners and patients within the ED.	544	7	314	192	31
1.12	Ensure continuity of care during healthcare transition and across levels of care.	544	10	280	222	32
1.13	Identify and seek appropriate outside resources available to assist in the management of the ED patient.	542	10	287	216	29
2	**Practice Management**	***n***	**No**	**In Year 1**	**1-4 Years**	**4+ Years**
2.01	Anticipate, monitor, detect, report, and review adverse drug events and medication errors.	462	3	260	191	8
2.02	Recognize trends, system failures, and gaps in the medication use process, and perform quality assurance activities (e.g., MUE) that promote safe and effective medication use.	462	3	95	316	48
2.03	Ensure a process to maintain and optimize inventory and availability of medications essential to provide timely care in the ED.	462	10	162	262	28
2.04	Ensure an appropriate process exists for medication order review in the ED.	462	3	241	198	20

2.05	Assist the organization in achieving compliance with accreditation, legal, regulatory, and safety requirements related to the medication use process.	462	8	88	258	108
2.06	Contribute to contingency planning that addresses limited availability of critical drugs that affect patients in the ED (e.g., drug shortages, emergency preparedness).	462	4	145	264	49
2.07	Participate in emergency/disaster preparedness planning or response activities.	461	8	86	282	85
2.08	Develop, maintain, monitor, and support evidence-based medication use guidelines and pathways to assure safe and cost-effective medication use.	462	4	146	274	38
2.09	Identify and implement opportunities for practice advancement and growth within the ED (e.g., collaborative practice agreements, public health initiatives, expanded coverage).	462	6	69	244	143
2.10	Advocate for and justify emergency medicine pharmacy services.	459	3	144	213	99
2.11	Serve as a liaison on committees to represent the interests of pharmacy and ED patients.	461	4	134	269	54
3	**Education and Research**	***n***	**No**	**In Year 1**	**1-4 Years**	**4+ Years**
3.01	Provide emergency medicine-focused education, training, or mentoring for healthcare professionals and trainees.	447	2	93	298	54
3.02	Educate patients and caregivers using appropriate techniques tailored to the audience, with a focus on high-risk medications or where the visit resulted from an adverse drug event.	446	2	271	160	13
3.03	Participate in continuous professional development related to emergency pharmacy practice (e.g., professional organizations, continuing education, clinical pharmacy networks).	447	3	161	237	46
3.04	Retrieve and critically evaluate biomedical literature and other sources regarding study design methodology, statistical analysis, and applicability of study results to emergency medicine.	447	4	228	178	37
3.05	Contribute to the body of knowledge in the field of emergency medicine.	446	10	45	162	229

Knowledge Areas – Criticality Scale			
1	**Patient Care/Management**	***n***	**Mean**
1.1	Age-related diagnosis, pathophysiology, epidemiology, risk factors, initial treatment and monitoring of emergency medicine patients in the following therapeutic areas:		
1.01.01	Pulmonary	476	3.80
1.01.02	Cardiovascular	474	4.07
1.01.03	Neurology and neurological injuries	476	3.98
1.01.04	Psychiatry	475	3.01
1.01.05	Renal	475	3.43
1.01.06	Hepato-gastrointestinal	474	3.23
1.01.07	Immunology	472	2.92
1.01.08	Endocrine	472	3.40
1.01.09	Hematology	471	3.25
1.01.10	Infectious diseases	474	3.98
1.01.11	Toxicology	475	4.03
1.01.12	Surgery/Trauma	472	3.74
1.01.13	Dermatology	476	2.47
1.01.14	Rheumatology	474	2.48
1.01.15	Eyes, Ears, Nose, Dental, and Throat	475	2.79
1.01.16	Fluid and Electrolyte	473	3.76
1.01.17	Genitourinary	471	3.01
1.01.18	Obstetrics/Gynecology	476	3.17
1.01.19	Oncology	474	2.91
1.01.20	Health Maintenance/Public Health	476	2.51
1.01.21	Environmental (e.g., hypothermia, altitude sickness, wilderness medicine)	476	2.92
1.02	Procedural sedation and analgesia	462	4.01
1.03	Airway management (e.g., difficult airway, rapid sequence intubation (RSI), post-intubation management)	462	4.34
1.04	Treatment of acute psychoses and chemical restraint	461	3.53
1.05	Procedures commonly performed in the emergency department (e.g., chest tube placement, orthopedic procedures, pace-maker placement, vascular access)	459	2.94
1.06	Devices commonly utilized in emergency medicine that affect pharmacotherapy (e.g., smart pumps, arterial lines, etCO2 monitors)	461	3.31
1.07	Emergency resuscitation principles and guidelines (e.g., Advanced Cardiac Life Support (ACLS), Pediatric Advanced Life Support (PALS))	459	4.44
1.08	Drug-induced and addiction-related problems (e.g., adverse drug effects, drug interactions, withdrawal syndromes)	461	3.45
1.09	Pre-hospital care systems	460	2.44
1.10	Relevant acuity indices (e.g., Emergency Severity Index (ESI), Canadian Triage Assessment Score (CTAS), Glasgow Coma Score (GCS))	460	2.65
1.11	Routes of drug administration and compatibilities (e.g., intraosseous, intranasal)	458	3.66
1.12	Preparation, compounding, and administration of medications used in emergency medicine	460	4.12

1.13	Time-sensitive therapies (e.g., thrombolytic therapy, vasoactive agents, antibiotics)	460	4.45
1.14	Roles and responsibilities of healthcare team members	461	2.86
1.15	U.S. and international clinical guidelines (e.g., IDSA, AHA, WHO, EMA)	459	3.15
1.16	End of life care (e.g., palliative care, advanced directives)	460	2.53
1.17	Understanding and application of common tests and results in the emergency department	461	3.21
1.18	Public health standards and recommendations (e.g., CDC)	460	2.80
1.19	Appropriate drug information resources that apply to emergency medicine	460	3.30
1.20	Pain management	460	3.17
2	**Practice Management**	***n***	**Mean**
2.01	Comprehensive knowledge of the medication use process (e.g., preparation, cost-effectiveness, resource stewardship, formulary management)	438	3.00
2.02	Medication safety principles and best practices pertinent to EM patient care (e.g., ISMP, ASHP, AHRQ, PQA, FDA, Naranjo), including medication error reduction strategies	439	3.16
2.03	Regulatory and accrediting agency requirements for reporting adverse medication events and medication errors.	439	2.71
2.04	Relevant accreditation standards (e.g., TJC, ASHP)	435	2.63
2.05	Relevant regulatory requirements pertinent to EM patient care (e.g., EMTALA)	437	2.54
2.06	Expert Consensus Guidelines (e.g., stocking of antidotes in hospitals that provide emergency care)	436	3.20
2.07	National and international emergency preparedness/response resources (e.g., FEMA, WHO, CDC)	436	2.76
2.08	Systems of medication procurement (e.g., orphan or investigational agents, limited distribution agents, compassionate use)	437	2.40
2.09	Principles of evidence-based clinical pathway/protocol development	439	2.98
2.10	Principles of quality assurance and continuous quality improvement (e.g., RCA, MUE)	438	2.76
2.11	Published documents from professional societies related to EM pharmacist practice (e.g., ASHP, ACCP, ACEP)	437	2.59
2.12	Evidence-based literature supporting roles and value of EM Pharmacists	438	2.59
2.13	Institutional processes/committees with charges relevant to the ED or EM Pharmacist practice.	432	2.71
2.14	Technologies used throughout the EM medication use process (e.g., EMR, infusion pump operation, automated dispensing cabinet)	439	3.33
2.15	Effective interpersonal/interprofessional communication skills (e.g., conflict resolution, facilitation strategies, change management strategies)	438	3.38
2.16	General health care financing principles (e.g., billing for services, insurance coverage)	437	2.14
3	**Education and Research**	***n***	**Mean**
3.01	Techniques for educating emergency medicine patients and caregivers	426	2.95
3.02	Principles and methods for educating health professionals and trainees (e.g., preceptor development)	429	2.74
3.03	Research design, methodology, and statistical analysis	430	2.34

3.04	Responsible research conduct (e.g., adherence to regulatory/IRB requirements)	431	2.52
3.05	Continuing professional development opportunities in emergency medicine (e.g., professional organizations, committees, CE, mentoring)	429	2.48
3.06	Mentorship principles, techniques, and strategies	429	2.43
3.07	Applicable primary, secondary, and tertiary literature databases/resources	429	2.89
3.08	Opportunities for disseminating EM knowledge and scholarly activities (e.g., presentations, manuscripts, abstracts, and posters)	428	2.36
3.09	Medical literature publication and review process	429	2.27
3.10	Clinical application and limitations of published data and reports	428	2.79

Knowledge Areas – Point of Acquisition Scale						
1	**Patient Care/Management**	***n***	**No**	**In Year 1**	**1-4 Years**	**4+ Years**
1.1	Age-related diagnosis, pathophysiology, epidemiology, risk factors, initial treatment and monitoring of emergency medicine patients in the following therapeutic areas:					
1.01.01	Pulmonary	504	0.6%	71.0%	26.2%	2.2%
1.01.02	Cardiovascular	502	0.4%	74.1%	24.1%	1.4%
1.01.03	Neurology and neurological injuries	503	0.8%	67.2%	29.2%	2.8%
1.01.04	Psychiatry	502	1.0%	35.5%	56.2%	7.4%
1.01.05	Renal	503	0.4%	66.2%	30.8%	2.6%
1.01.06	Hepato-gastrointestinal	501	0.4%	51.5%	45.7%	2.4%
1.01.07	Immunology	504	1.8%	24.8%	56.5%	16.9%
1.01.08	Endocrine	503	0.4%	56.7%	39.6%	3.4%
1.01.09	Hematology	504	0.8%	34.7%	54.2%	10.3%
1.01.10	Infectious diseases	502	0.6%	76.9%	21.5%	1.0%
1.01.11	Toxicology	503	0.4%	60.0%	34.2%	5.4%
1.01.12	Surgery/Trauma	503	0.6%	61.0%	33.4%	5.0%
1.01.13	Dermatology	502	4.4%	21.9%	52.2%	21.5%
1.01.14	Rheumatology	500	6.2%	16.2%	51.2%	26.4%
1.01.15	Eyes, Ears, Nose, Dental, and Throat	503	1.6%	42.3%	49.7%	6.4%
1.01.16	Fluid and Electrolyte	504	0.6%	76.0%	22.2%	1.2%
1.01.17	Genitourinary	500	1.6%	58.2%	38.4%	1.8%
1.01.18	Obstetrics/Gynecology	503	1.4%	33.0%	54.1%	11.5%
1.01.19	Oncology	503	5.0%	21.1%	46.7%	27.2%
1.01.20	Health Maintenance/Public Health	503	3.6%	28.4%	49.7%	18.3%
1.01.21	Environmental (e.g., hypothermia, altitude sickness, wilderness medicine)	504	2.2%	30.6%	50.4%	16.9%
1.02	Procedural sedation and analgesia	487	0.4%	79.5%	18.7%	1.4%
1.03	Airway management (e.g., difficult airway, rapid sequence intubation (RSI), post-intubation management)	486	0.6%	82.5%	14.8%	2.1%
1.04	Treatment of acute psychoses and chemical restraint	484	0.0%	67.4%	31.2%	1.4%
1.05	Procedures commonly performed in the emergency department (e.g., chest tube placement, orthopedic procedures, pace-maker placement, vascular access)	485	2.1%	39.6%	52.2%	6.2%
1.06	Devices commonly utilized in emergency medicine that affect pharmacotherapy (e.g., smart pumps, arterial lines, etCO2 monitors)	484	0.6%	58.1%	37.0%	4.3%
1.07	Emergency resuscitation principles and guidelines (e.g., Advanced Cardiac Life Support (ACLS), Pediatric Advanced Life Support (PALS))	484	0.4%	86.6%	11.0%	2.1%

1.08	Drug-induced and addiction-related problems (e.g., adverse drug effects, drug interactions, withdrawal syndromes)	484	0.4%	62.4%	33.9%	3.3%
1.09	Pre-hospital care systems	485	4.1%	33.8%	52.8%	9.3%
1.10	Relevant acuity indices (e.g., Emergency Severity Index (ESI), Canadian Triage Assessment Score (CTAS), Glasgow Coma Score (GCS))	484	1.2%	58.3%	36.0%	4.5%
1.11	Routes of drug administration and compatibilities (e.g., intraosseous, intranasal)	484	0.4%	78.1%	19.0%	2.5%
1.12	Preparation, compounding, and administration of medications used in emergency medicine	484	0.2%	86.0%	12.8%	1.0%
1.13	Time-sensitive therapies (e.g., thrombolytic therapy, vasoactive agents, antibiotics)	485	0.2%	86.6%	11.8%	1.4%
1.14	Roles and responsibilities of healthcare team members	484	1.7%	73.1%	23.1%	2.1%
1.15	U.S. and international clinical guidelines (e.g., IDSA, AHA, WHO, EMA)	485	0.6%	55.3%	40.4%	3.7%
1.16	End of life care (e.g., palliative care, advanced directives)	485	4.1%	29.5%	56.9%	9.5%
1.17	Understanding and application of common tests and results in the emergency department	483	0.6%	68.9%	29.0%	1.4%
1.18	Public health standards and recommendations (e.g., CDC)	484	1.4%	49.6%	43.6%	5.4%
1.19	Appropriate drug information resources that apply to emergency medicine	485	1.0%	76.9%	20.2%	1.9%
1.20	Pain management	484	0.8%	67.4%	29.5%	2.3%
2	**Practice Management**	***n***	**No**	**In Year 1**	**1-4 Years**	**4+ Years**
2.01	Comprehensive knowledge of the medication use process (e.g., preparation, cost-effectiveness, resource stewardship, formulary management)	454	0.0%	33.5%	58.1%	8.4%
2.02	Medication safety principles and best practices pertinent to EM patient care (e.g., ISMP, ASHP, AHRQ, PQA, FDA, Naranjo), including medication error reduction strategies	453	0.0%	30.9%	60.5%	8.6%
2.03	Regulatory and accrediting agency requirements for reporting adverse medication events and medication errors.	454	1.8%	33.5%	54.8%	9.9%
2.04	Relevant accreditation standards (e.g., TJC, ASHP)	453	1.1%	24.1%	60.0%	14.8%
2.05	Relevant regulatory requirements pertinent to EM patient care (e.g., EMTALA)	451	3.3%	26.2%	55.7%	14.9%
2.06	Expert Consensus Guidelines (e.g., stocking of antidotes in hospitals that provide emergency care)	452	0.7%	30.1%	58.4%	10.8%
2.07	National and international emergency preparedness/response resources (e.g., FEMA, WHO, CDC)	453	2.4%	17.2%	58.9%	21.4%
2.08	Systems of medication procurement (e.g., orphan or investigational agents, limited distribution agents, compassionate use)	451	6.4%	12.9%	51.2%	29.5%

2.09	Principles of evidence-based clinical pathway/protocol development	452	0.7%	25.7%	64.6%	9.1%
2.10	Principles of quality assurance and continuous quality improvement (e.g., RCA, MUE)	455	0.9%	23.1%	62.6%	13.4%
2.11	Published documents from professional societies related to EM pharmacist practice (e.g., ASHP, ACCP, ACEP)	454	0.4%	37.0%	48.0%	14.5%
2.12	Evidence-based literature supporting roles and value of EM Pharmacists	453	0.7%	40.0%	49.7%	9.7%
2.13	Institutional processes/committees with charges relevant to the ED or EM Pharmacist practice.	453	0.4%	31.6%	56.7%	11.3%
2.14	Technologies used throughout the EM medication use process (e.g., EMR, infusion pump operation, automated dispensing cabinet)	453	0.7%	62.9%	32.9%	3.5%
2.15	Effective interpersonal/interprofessional communication skills (e.g., conflict resolution, facilitation strategies, change management strategies)	453	0.9%	63.6%	30.5%	5.1%
2.16	General health care financing principles (e.g., billing for services, insurance coverage)	453	8.4%	16.3%	47.2%	28.0%
3	**Education and Research**	***n***	**No**	**In Year 1**	**1-4 Years**	**4+ Years**
3.01	Techniques for educating emergency medicine patients and caregivers	445	0.2%	48.1%	47.9%	3.8%
3.02	Principles and methods for educating health professionals and trainees (e.g., preceptor development)	444	0.7%	21.4%	67.8%	10.1%
3.03	Research design, methodology, and statistical analysis	444	2.5%	16.7%	54.1%	26.8%
3.04	Responsible research conduct (e.g., adherence to regulatory/IRB requirements)	443	3.2%	20.8%	48.3%	27.8%
3.05	Continuing professional development opportunities in emergency medicine (e.g., professional organizations, committees, CE, mentoring)	445	1.1%	26.1%	58.0%	14.8%
3.06	Mentorship principles, techniques, and strategies	445	1.1%	13.7%	60.0%	25.2%
3.07	Applicable primary, secondary, and tertiary literature databases/resources	443	0.9%	56.4%	37.7%	5.0%
3.08	Opportunities for disseminating EM knowledge and scholarly activities (e.g., presentations, manuscripts, abstracts, and posters)	444	1.1%	15.5%	60.1%	23.2%
3.09	Medical literature publication and review process	445	3.6%	12.1%	42.7%	41.6%
3.10	Clinical application and limitations of published data and reports	444	1.4%	37.4%	48.9%	12.4%

3. Finalization of Exam Content Outline

BPS staff reviewed the results of the survey demographic questions and deemed the respondent sample to be representative of the target population, which are pharmacists specializing in emergency medicine pharmacy.

All the tasks and knowledge areas had sufficiently high criticality ratings and point of acquisition ratings that indicate the tasks are applicable to those within the first 4 years of practice such that all tasks and knowledge areas were retained.

Lastly, the content weighting (percentage of exam items per content domain) was established. The sum of the mean criticality ratings for the areas in each domain was tabulated and compared against the sum of the mean criticality ratings for all knowledge areas. Additionally, recommended proportions obtained directly from the survey respondents for each domain were tabulated.

Content Domains	Criticality Ratings	Survey Respondents	Final Weight
1 Patient Care/Management	78%	70%	**75%**
2 Practice Management	15%	18%	**15%**
3 Education and Research	7%	13%	**10%**

See Appendix B for the final Examination Content Outline.

Appendix A – Survey Text

bps Board of Pharmacy Specialties®

Preamble

Please read carefully:

The Mission of the Board of Pharmacy Specialties is to improve patient care by promoting the recognition and value of specialized training, knowledge, and skills in pharmacy and specialty board certification of pharmacists.

The purpose of credentialing through certification is to provide assurance to the public that individuals working in a profession or role, especially ones which impact the health and well being of patients, possess the requisite knowledge to practice safely and effectively. In particular, certifying bodies are entrusted with protecting the public, especially as consumers of health care services, by developing and maintaining programs built around the most critical aspects (knowledge, skills, and abilities) of the specified role. Your responses to this survey will be used to ensure that the certification requirements contribute to this primary role of providing for public protection and patient safety. Please consider your responses to this survey carefully.

Thank you in advance for participating in this very important survey. We value your input and request that you fill out this survey only once, and only if the Emergency Medicine Pharmacy (on the next page) description fits your current practice.

Definition: Emergency Medicine Pharmacist

Emergency Medicine Pharmacists are clinicians who are critical members of the emergency medicine team that care for patients at the bedside across diverse populations and acuity levels. Their practice is focused to optimize pharmacotherapy, improve patient safety, increase efficiency and cost-effectiveness of care, facilitate medication stewardship, educate patients and other healthcare providers, and contribute to scholarly efforts.

If your pharmacy practice includes emergency medicine as described (part-time or full-time), and you are not currently in training, we request that you enter your name in the box below before completing the survey so that we can avoid sending you multiple reminder notices. We will use your name ONLY to monitor participation. No information will be presented in a manner that identifies any individual respondent.

If this does NOT describe your current practice, we thank you for your time. You may close the survey.

If this DOES describe your current practice, please continue to complete the survey. You will be able to go back and complete a partially finished survey until the survey closes on **April 1, 2021**. **Please complete the survey only once**.

Also, for tracking purposes, and to be eligible for survey incentives (you will be entered into a drawing for 1 of 10 $25 Amazon gift cards), please fill in the information below.

First Name:

Last Name:

Email Address:

In your current primary practice setting, what percentage of your time is spent in the practice of Emergency Medicine Pharmacy, as defined at the top of this page?

Please indicate through which organization you received the email invitation to complete this survey (if you received an email from more than one entity, please select the sender from which you clicked the link to reach this survey):

- ◯ American College of Clinical Pharmacy (ACCP)
- ◯ American Society of Health-System Pharmacists (ASHP)
- ◯ Board of Pharmacy Specialties (BPS)
- ◯ Society of Critical Care Medicine (SCCM)

If you experience technical problems, please contact the survey administrator (ymeng@aphanet.org).

If the above description does **NOT** describe your current practice, or if this invitation has reached you in error, please close the survey.

Purpose and Overview of Survey The Board of Pharmacy Specialties (BPS) improves patient care by promoting the recognition and value of specialized training, knowledge, and skills in pharmacy and specialty board certification. BPS is conducting a Role Delineation Study (RDS) survey to review and update the tasks and knowledge of pharmacists with specialty practice in Emergency Medicine Pharmacy. Doing so helps to maintain currency, relevance, and close alignment with best practices in certification.

You have been sent this survey because you are currently board-certified in Emergency Medicine Pharmacy, or because your practice includes specializing in Emergency Medicine Pharmacy. The survey consists of four sections:

Section 1: Task and Knowledge Statement Evaluation: In this section, you will be asked to evaluate and rate 29 task statements and 46 knowledge statements, organized into three primary groups, or domains. The domains are as follows:

I. Patient Care/Management
II. Practice Management
III. Education and Research

Section 2: Domain Evaluation: We ask that you provide ratings for each of the task and knowledge statements in these domains. Then, after you have rated the task and knowledge statements, we ask you to give ratings for the domain as a whole.

Section 3: Demographics: In this section, we ask you to provide brief background information about yourself. This information will be held confidential. It will not be associated with any other information you provide and will be reported only in the aggregate.

Instructions for Completing the Survey: Sections 1 & 2

Section 1: Task and Knowledge Evaluation

Statement Validation Rating Scales: Please consider **newly certified specialists** in Emergency Medicine Pharmacy when evaluating the tasks and knowledge statements using the following scales:

Point of Acquisition: At what point, relative to entry into the specialty area of Emergency Medicine Pharmacy, is this task expected to be performed (or knowledge required) by the Emergency Medicine Pharmacy specialist?

- Not at all
- Within 1 year of entering the specialty
- Between 1 and 4 years after entering the specialty
- Only beyond 4 years after entering the specialty

Criticality: Criticality is linked to the concept of Harm: To what degree would the inability of an Emergency Medicine Pharmacist to exhibit knowledge in the indicated knowledge domain or element be perceived as causing harm to stakeholders? (Harm may be seen as physical, psychological, emotional, legal, financial, etc.) Criticality is rated on a five-point scale:

- No Harm: Inability to exhibit knowledge within this domain or element would lead to error with no adverse consequences.
- Minimal Harm: Inability to exhibit knowledge within this domain or element would lead to error with minimal adverse consequences.
- Moderate Harm: Inability to exhibit knowledge within this domain or element would lead to error with moderate adverse consequences.
- Substantial Harm: Inability to exhibit knowledge within this domain or element would lead to error with substantial adverse consequences.
- Extreme Harm: Inability to exhibit knowledge within this domain or element would definitely lead to error with severe adverse consequences.

Please note, you will need to provide a response for each task and knowledge statement to advance through the survey.

	Point of Acquisition				Criticality (Harm)				
	Not At All	Within 1 year	1-4 years	Beyond 4 years	No	Min.	Mod.	Sub.	Ext.
1. Participate in the bedside management of medical emergencies (e.g., trauma, stroke, psychiatric, toxicological) and resuscitations to optimize the medication use process.	○	○	○	○	○	○	○	○	○
2. Identify and prioritize (triage) ED patients by analyzing the relevant acuity indices and opportunities for optimization of pharmacotherapy.	○	○	○	○	○	○	○	○	○
3. Collect essential patient information (including patient history, medication use) by utilizing available resources (e.g. pre-hospital providers).	○	○	○	○	○	○	○	○	○
4. Identify and evaluate medication-related problems based on clinical presentation, available history, or laboratory data.	○	○	○	○	○	○	○	○	○
5. Contribute to the formulation of a differential diagnosis in the setting of limited information.	○	○	○	○	○	○	○	○	○
6. Design pharmaceutical care plan utilizing available patient-specific information and best available evidence to provide patient and family-centered care.	○	○	○	○	○	○	○	○	○
7. Recommend and support implementation of the pharmaceutical care plan in the ED.	○	○	○	○	○	○	○	○	○

	Not At All	Within 1 year	1-4 years	Beyond 4 years	No	Min.	Mod.	Sub.	Ext.
8. Expedite the preparation/procurement and administration of time-sensitive therapeutic regimens.	○	○	○	○	○	○	○	○	○
9. Make evidence-based recommendations for alternative routes of administration.	○	○	○	○	○	○	○	○	○
10. Monitor and evaluate patient response to initial therapy and re-design treatment plan as necessary.	○	○	○	○	○	○	○	○	○
11. Serve as the primary source of drug information for all practitioners and patients within the ED.	○	○	○	○	○	○	○	○	○
12. Ensure continuity of care during healthcare transition and across levels of care.	○	○	○	○	○	○	○	○	○
13. Identify and seek appropriate outside resources available to assist in the management of the ED patient.	○	○	○	○	○	○	○	○	○

Are there any tasks that you did not see, that you would recommend adding to Domain 1?

1. Knowledge of age-related diagnosis, pathophysiology, epidemiology, risk factors, initial treatment and monitoring of emergency medicine patients in the following therapeutic areas:

	Point of Acquisition				Criticality (Harm)				
	Not At All	Within 1 year	1-4 years	Beyond 4 years	No	Min.	Mod.	Sub.	Ext.
a) Pulmonary	○	○	○	○	○	○	○	○	○
b) Cardiovascular	○	○	○	○	○	○	○	○	○
c) Neurology and neurological injuries	○	○	○	○	○	○	○	○	○
d) Psychiatry	○	○	○	○	○	○	○	○	○
e) Renal	○	○	○	○	○	○	○	○	○
f) Hepato-gastrointestinal	○	○	○	○	○	○	○	○	○
g) Immunology	○	○	○	○	○	○	○	○	○
	Not At All	Within 1 year	1-4 years	Beyond 4 years	No	Min.	Mod.	Sub.	Ext.
h) Endocrine	○	○	○	○	○	○	○	○	○
i) Hematology	○	○	○	○	○	○	○	○	○
j) Infectious diseases	○	○	○	○	○	○	○	○	○
k) Toxicology	○	○	○	○	○	○	○	○	○
l) Surgery/Trauma	○	○	○	○	○	○	○	○	○
m) Dermatology	○	○	○	○	○	○	○	○	○
n) Rheumatology	○	○	○	○	○	○	○	○	○
	Not At All	Within 1 year	1-4 years	Beyond 4 years	No	Min.	Mod.	Sub.	Ext.
o) Eyes, Ears, Nose, Dental, and Throat	○	○	○	○	○	○	○	○	○
p) Fluid and Electrolyte	○	○	○	○	○	○	○	○	○
q) Genitourinary	○	○	○	○	○	○	○	○	○
r) Obstetrics/Gynecology	○	○	○	○	○	○	○	○	○
s) Oncology	○	○	○	○	○	○	○	○	○
t) Health Maintenance/Public Health	○	○	○	○	○	○	○	○	○
u) Environmental (e.g., hypothermia, altitude sickness, wilderness medicine)	○	○	○	○	○	○	○	○	○

	Point of Acquisition				Criticality (Harm)				
	Not At All	Within 1 year	1-4 years	Beyond 4 years	No	Min.	Mod.	Sub.	Ext.
2. Procedural sedation and analgesia	○	○	○	○	○	○	○	○	○
3. Airway management (e.g., difficult airway, rapid sequence intubation (RSI), post-intubation management)	○	○	○	○	○	○	○	○	○
4. Treatment of acute psychoses and chemical restraint	○	○	○	○	○	○	○	○	○
5. Procedures commonly performed in the emergency department (e.g., chest tube placement, orthopedic procedures, pace-maker placement, vascular access)	○	○	○	○	○	○	○	○	○
6. Devices commonly utilized in emergency medicine that affect pharmacotherapy (e.g., smart pumps, arterial lines, etCO2 monitors)	○	○	○	○	○	○	○	○	○
7. Emergency resuscitation principles and guidelines (e.g. Advanced Cardiac Life Support (ACLS), Pediatric Advanced Life Support (PALS))	○	○	○	○	○	○	○	○	○

8. Drug-induced and addiction-related problems (e.g., adverse drug effects, drug interactions, withdrawal syndromes)	○	○	○	○	○	○	○	○	○
9. Pre-hospital care systems	○	○	○	○	○	○	○	○	○
10. Relevant acuity indices (e.g., Emergency Severity Index (ESI), Canadian Triage Assessment Score (CTAS), Glasgow Coma Score (GCS))	○	○	○	○	○	○	○	○	○
11. Routes of drug administration and compatibilities (e.g., intraosseous, intranasal)	○	○	○	○	○	○	○	○	○
	Not At All	Within 1 year	1-4 years	Beyond 4 years	No	Min.	Mod.	Sub.	Ext.
12. Preparation, compounding, and administration of medications used in emergency medicine	○	○	○	○	○	○	○	○	○
13. Time-sensitive therapies (e.g., thrombolytic therapy, vasoactive agents, antibiotics)	○	○	○	○	○	○	○	○	○
14. Roles and responsibilities of healthcare team members	○	○	○	○	○	○	○	○	○
15. U.S. and international clinical guidelines (e.g., IDSA, AHA, WHO, EMA)	○	○	○	○	○	○	○	○	○

16. End of life care (e.g., palliative care, advanced directives)	○	○	○	○	○	○	○	○	○
17. Understanding and application of common tests and results in the emergency department	○	○	○	○	○	○	○	○	○
18. Public health standards and recommendations (e.g., CDC)	○	○	○	○	○	○	○	○	○
19. Appropriate drug information resources that apply to emergency medicine	○	○	○	○	○	○	○	○	○
20. Pain management	○	○	○	○	○	○	○	○	○

Are there any knowledge statements that you did not see, that you would recommend adding to Domain 1?

	Point of Acquisition				Criticality (Harm)				
	Not At All	Within 1 year	1-4 years	Beyond 4 years	No	Min.	Mod.	Sub.	Ext.
1. Anticipate, monitor, detect, report, and review adverse drug events and medication errors.	○	○	○	○	○	○	○	○	○
2. Recognize trends, system failures, and gaps in the medication use process, and perform quality assurance activities (e.g., MUE) that promote safe and effective medication use.	○	○	○	○	○	○	○	○	○
3. Ensure a process to maintain and optimize inventory and availability of medications essential to provide timely care in the ED.	○	○	○	○	○	○	○	○	○
4. Ensure an appropriate process exists for medication order review in the ED.	○	○	○	○	○	○	○	○	○
5. Assist the organization in achieving compliance with accreditation, legal, regulatory, and safety requirements related to the medication use process.	○	○	○	○	○	○	○	○	○
6. Contribute to contingency planning that addresses limited availability of critical drugs that affect patients in the ED (e.g. drug shortages, emergency preparedness).	○	○	○	○	○	○	○	○	○

	Not At All	Within 1 year	1-4 years	Beyond 4 years	No	Min.	Mod.	Sub.	Ext.
7. Participate in emergency/disaster preparedness planning or response activities.	○	○	○	○	○	○	○	○	○
8. Develop, maintain, monitor, and support evidence-based medication use guidelines and pathways in order to assure safe and cost effective medication use.	○	○	○	○	○	○	○	○	○
9. Identify and implement opportunities for practice advancement and growth within the ED (e.g. collaborative practice agreements, public health initiatives, expanded coverage).	○	○	○	○	○	○	○	○	○
10. Advocate for and justify emergency medicine pharmacy services.	○	○	○	○	○	○	○	○	○
11. Serve as a liaison on committees to represent the interests of pharmacy and ED patients.	○	○	○	○	○	○	○	○	○

Are there any tasks that you did not see, that you would recommend adding to Domain 2?

	Point of Acquisition				Criticality (Harm)				
	Not At All	Within 1 year	1-4 years	Beyond 4 years	No	Min.	Mod.	Sub.	Ext.
1. Comprehensive knowledge of the medication use process (e.g., preparation, cost-effectiveness, resource stewardship [i.e., antimicrobials, opioids], formulary management)	○	○	○	○	○	○	○	○	○
2. Medication safety principles and best practices pertinent to EM patient care (e.g., ISMP, ASHP, AHRQ, PQA, FDA, Naranjo), including medication error reduction strategies	○	○	○	○	○	○	○	○	○
3. Regulatory and accrediting agency requirements for reporting adverse medication events and medication errors.	○	○	○	○	○	○	○	○	○
4. Relevant accreditation standards (e.g., TJC, ASHP)	○	○	○	○	○	○	○	○	○
5. Relevant regulatory requirements pertinent to EM patient care (e.g., EMTALA)	○	○	○	○	○	○	○	○	○
6. Expert Consensus Guidelines (e.g., stocking of antidotes in hospitals that provide emergency care)	○	○	○	○	○	○	○	○	○
7. National and international emergency preparedness/response resources (e.g., FEMA, WHO, CDC)	○	○	○	○	○	○	○	○	○
8. Systems of medication procurement (e.g., orphan or investigational agents, limited distribution agents, compassionate use)	○	○	○	○	○	○	○	○	○

	Not At All	Within 1 year	1-4 years	Beyond 4 years	No	Min.	Mod.	Sub.	Ext.
9. Principles of evidence-based clinical pathway/protocol development	○	○	○	○	○	○	○	○	○
10. Principles of quality assurance and continuous quality improvement (e.g., RCA, MUE)	○	○	○	○	○	○	○	○	○
11. Published documents from professional societies related to EM pharmacist practice (e.g., ASHP, ACCP, ACEP)	○	○	○	○	○	○	○	○	○
12. Evidence-based literature supporting roles and value of EM Pharmacists	○	○	○	○	○	○	○	○	○
13. Institutional processes/committees with charges relevant to the ED or EM Pharmacist practice.	○	○	○	○	○	○	○	○	○
14. Technologies used throughout the EM medication use process (e.g., EMR, infusion pump operation, automated dispensing cabinet)	○	○	○	○	○	○	○	○	○
15. Effective interpersonal/interprofessional communication skills (e.g., conflict resolution, facilitation strategies, change management strategies)	○	○	○	○	○	○	○	○	○
16. General health care financing principles (e.g., billing for services, insurance coverage)	○	○	○	○	○	○	○	○	○

Are there any knowledge statements that you did not see, that you would recommend adding to Domain 2?

	Point of Acquisition				Criticality (Harm)				
	Not At All	Within 1 year	1-4 years	Beyond 4 years	No	Min.	Mod.	Sub.	Ext.
1. Provide emergency medicine-focused education, training, or mentoring for healthcare professionals and trainees.	○	○	○	○	○	○	○	○	○
2. Educate patients and caregivers using appropriate techniques tailored to the audience, with a focus on high risk medications or where the visit resulted from an adverse drug event.	○	○	○	○	○	○	○	○	○
3. Participate in continuous professional development related to emergency pharmacy practice (e.g., professional organizations, continuing education, clinical pharmacy networks).	○	○	○	○	○	○	○	○	○

	Not At All	Within 1 year	1-4 years	Beyond 4 years	No	Min.	Mod.	Sub.	Ext.
4. Retrieve and critically evaluate biomedical literature and other sources with regard to study design methodology, statistical analysis, and applicability of study results to emergency medicine.	○	○	○	○	○	○	○	○	○
5. Contribute to the body of knowledge in the field of emergency medicine.	○	○	○	○	○	○	○	○	○

Are there any tasks that you did not see, that you would recommend adding to Domain 3?

	Point of Acquisition				Criticality (Harm)				
	Not At All	Within 1 year	1-4 years	Beyond 4 years	No	Min.	Mod.	Sub.	Ext.
1. Techniques for educating emergency medicine patients and caregivers	○	○	○	○	○	○	○	○	○
2. Principles and methods for educating health professionals and trainees (e.g., preceptor development)	○	○	○	○	○	○	○	○	○
3. Research design, methodology, and statistical analysis	○	○	○	○	○	○	○	○	○
4. Responsible research conduct (e.g., adherence to regulatory/IRB requirements)	○	○	○	○	○	○	○	○	○
5. Continuing professional development opportunities in emergency medicine (e.g., professional organizations, committees, CE, mentoring)	○	○	○	○	○	○	○	○	○
	Not At All	Within 1 year	1-4 years	Beyond 4 years	No	Min.	Mod.	Sub.	Ext.
6. Mentorship principles, techniques, and strategies	○	○	○	○	○	○	○	○	○
7. Applicable primary, secondary, and tertiary literature databases/resources	○	○	○	○	○	○	○	○	○
8. Opportunities for disseminating EM knowledge and scholarly activities (e.g., presentations, manuscripts, abstracts, and posters)	○	○	○	○	○	○	○	○	○

9. Medical literature publication and review process	○	○	○	○	○	○	○	○	○
10. Clinical application and limitations of published data and reports	○	○	○	○	○	○	○	○	○

Are there any knowledge statements that you did not see, that you would recommend adding to Domain 3?

Percentage of Time: Considering the time you spend focused on Emergency Medicine Pharmacy, what percentage of that work time do you spend performing the tasks related to each domain?

I. Patient Care/Management	0 %
II. Practice Management	0 %
III. Education and Research	0 %
Total	0 %

What percentage of questions on the Emergency Medicine Pharmacy examination would you devote to each domain?

I. Patient Care/Management	0 %
II. Practice Management	0 %
III. Education and Research	0 %
Total	0 %

Please feel free to add any additional comments:

What percentage of your pharmacy practice do you spend in emergency medicine?

On average, what number of hours do you work in emergency medicine pharmacy weekly?

Have you completed any of the following as part of your education or training? (Select all that apply.)

- [ ] PGY-1 Pharmacy practice
- [ ] PGY-1 Managed Care
- [ ] PGY2 (specify)

What is the HIGHEST pharmacy-related degree you have earned?

- ◯ Bachelor's degree
- ◯ Master's degree
- ◯ Pharm.D.
- ◯ Ph.D.
- ◯ Other (specify)

Please indicate in which year you completed the HIGHEST pharmacy-related degree indicated above:

Please indicate the primary place where your emergency medicine pharmacy training took place.

- ◯ Part of pharmacy school curriculum
- ◯ Part of post-graduate program
- ◯ Practice-based continued education (certificate program)
- ◯ Corporate sponsored training
- ◯ On-the-job training
- ◯ Other

Are you certified in a BPS specialty? (Select all that apply)

- [ ] No
- [ ] Compounded Sterile Preparations (BCSCP)
- [ ] Ambulatory Care Pharmacy (BCACP)
- [ ] Cardiology Pharmacy (BCCP)
- [ ] Critical Care Pharmacy (BCCCP)
- [ ] Geriatric Pharmacy (BCGP)
- [ ] Infectious Diseases Pharmacy (BCIDP)
- [ ] Nuclear Pharmacy (BCNP)
- [ ] Nutrition Support Pharmacy (BCNSP)
- [ ] Oncology Pharmacy (BCOP)
- [ ] Pediatric Pharmacy (BCPPS)
- [ ] Pharmacotherapy (BCPS)
- [ ] Psychiatric Pharmacy (BCPP)

Please indicate how many years you have been practicing in pharmacy:

Please indicate how many years you have been specializing in Emergency Medicine Pharmacy:

Primary practice setting:

- ◯ Academic medical center or hospital
- ◯ Children's hospital
- ◯ Mixed academic/community hospital
- ◯ VA Hospital
- ◯ Ambulatory care
- ◯ Community pharmacy
- ◯ Home infusion / ambulatory infusion
- ◯ Integrated Health System / ACO
- ◯ Long-term care pharmacy
- ◯ Managed Care
- ◯ Oncology clinic/office
- ◯ Specialty pharmacy
- ◯ Other (Please specify:)

Please estimate what percentage of time you spend in the following professional roles, as part of your primary practice:

Direct patient care	0 %
Administration	0 %
Teaching / precepting trainees	0 %
Research	0 %
Leadership / Management	0 %
Other	0 %
Total	0 %

Within your institution, do you initiate orders for drug therapy? (Select all that apply)

- [ ] Yes, under a collaborative practice agreement or CDTM protocol
- [ ] Yes, under other prescribing privilege
- [ ] Yes, with physician (or other physician designee) co-signature
- [ ] No, I do not have authority to initiate orders

Where do you currently practice pharmacy?

Thank you for participating in this survey.
Clicking the forward arrow will record your responses and redirect you to the BPS website.

Appendix B – Exam Content Outline

1	Patient Care/Management
1.01	Participate in the bedside management of medical emergencies (e.g., trauma, stroke, psychiatric, toxicological) and resuscitations to optimize the medication use process.
1.02	Identify and prioritize (triage) ED patients by analyzing the relevant acuity indices and opportunities for optimization of pharmacotherapy.
1.03	Collect essential patient information (including patient history, medication use) by utilizing available resources (e.g., pre-hospital providers).
1.04	Identify and evaluate medication-related problems based on clinical presentation, available history, or laboratory data.
1.05	Contribute to the formulation of a differential diagnosis in the setting of limited information.
1.06	Design pharmaceutical care plan utilizing available patient-specific information and best available evidence to provide patient and family-centered care.
1.07	Recommend and support implementation of the pharmaceutical care plan in the ED.
1.08	Expedite the preparation/procurement and administration of time-sensitive therapeutic regimens.
1.09	Make evidence-based recommendations for alternative routes of administration.
1.10	Monitor and evaluate patient response to initial therapy and re-design treatment plan as necessary.
1.11	Serve as the primary source of drug information for all practitioners and patients within the ED.
1.12	Ensure continuity of care during healthcare transition and across levels of care.
1.13	Identify and seek appropriate outside resources available to assist in the management of the ED patient.
2	**Practice Management**
2.01	Anticipate, monitor, detect, report, and review adverse drug events and medication errors.
2.02	Recognize trends, system failures, and gaps in the medication use process, and perform quality assurance activities (e.g., MUE) that promote safe and effective medication use.
2.03	Ensure a process to maintain and optimize inventory and availability of medications essential to provide timely care in the ED.
2.04	Ensure an appropriate process exists for medication order review in the ED.
2.05	Assist the organization in achieving compliance with accreditation, legal, regulatory, and safety requirements related to the medication use process.
2.06	Contribute to contingency planning that addresses limited availability of critical drugs that affect patients in the ED (e.g., drug shortages, emergency preparedness).
2.07	Participate in emergency/disaster preparedness planning or response activities.
2.08	Develop, maintain, monitor, and support evidence-based medication use guidelines and pathways to assure safe and cost-effective medication use.
2.09	Identify and implement opportunities for practice advancement and growth within the ED (e.g., collaborative practice agreements, public health initiatives, expanded coverage).
2.10	Advocate for and justify emergency medicine pharmacy services.
2.11	Serve as a liaison on committees to represent the interests of pharmacy and ED patients.
3	**Education and Research**
3.01	Provide emergency medicine-focused education, training, or mentoring for healthcare professionals and trainees.
3.02	Educate patients and caregivers using appropriate techniques tailored to the audience, with a focus on high-risk medications or where the visit resulted from an adverse drug event.

3.03	Participate in continuous professional development related to emergency pharmacy practice (e.g., professional organizations, continuing education, clinical pharmacy networks).
3.04	Retrieve and critically evaluate biomedical literature and other sources regarding study design methodology, statistical analysis, and applicability of study results to emergency medicine.
3.05	Contribute to the body of knowledge in the field of emergency medicine.