

Job Analysis

Pharmacotherapy (BCPS)

March 2023



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Executive Summary

The Board of Pharmacy Specialties (BPS) performed a job analysis, a multi-method approach into defining a job role or competency area in terms of the relevant tasks and associated knowledge areas, in 2023 to develop the content outline and other specifications for the specialty certification examination for pharmacists who specialize in the pharmacotherapy specialty area. 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 pharmacotherapy specialist practice area. The outcome of this study was the creation of an examination blueprint that will be used to construct the pharmacotherapy specialist certification examination such that it aligns with the competencies identified and in equal proportions across all forms (versions) of the examination.

Content Domains and Subdomains of ECO		
1	Patient Care Specialty Areas	36.0%
1A	Primary Pharmacotherapy Specialty Areas	13.6%
1B	Secondary Pharmacotherapy Specialty Areas	13.6%
1C	Tertiary Pharmacotherapy Specialty Areas	8.8%
2	Therapeutics and Patient Management	36.0%
2A	Treatment Planning	10.4%
2B	Therapeutic Implementation	12.8%
2C	Treatment Outcomes and Monitoring	12.8%
3	Professional Practice	28.0%
3A	Quality of Care	12.8%
3B	Evidence-Based Practice	7.2%
3C	Practice Management	8.0%

Introduction

The Board of Pharmacy Specialties (BPS) performed a job analysis in 2023 to develop the content outline and other specifications for the specialty certification examination for pharmacists who specialize in the pharmacotherapy specialist practice area.

A job analysis¹, sometimes called a role delineation study or practice analysis in healthcare certification settings, is 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 validity² for an assessment³, in this case applied to the assessment of competencies associated with a specialty area in the licensed practice of pharmacy. A job analysis is considered a multi-method approach because it incorporates both qualitative and quantitative evidence in support of the definition the practice area in question. The job analysis consisted of three major phases:

1. Definition of tasks and knowledge areas, organized in a content outline format and completed by an assembled panel of qualified pharmacists who are currently engaged in the pharmacotherapy specialist practice area
2. Development, administration, and analysis of a survey to other qualified pharmacists who are currently engaged in the pharmacotherapy specialist practice area, requesting their ratings either endorsing the inclusion or exclusion of each task and knowledge area identified by the committee
3. Finalization of the exam content outline, completed by the assembled panel and with consideration given to the survey results to help determine the retention, discard, or editing of knowledge and task lists, as well as the relative weights assigned to each content area

The study described in this report was conducted according to the Standards for Educational & Psychological Testing⁴ and applicable accreditation standards (NCCA⁵ and ISO/IEC 17024⁶). 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., Laczko, 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.

⁴ American Educational Research Association, the American Psychological Association, National Council on Measurement in Education. (2014). Standards for Educational & Psychological Testing.

⁵ National Commission for Certifying Agencies. (2014). Standards for the Accreditation of Certification Programs.

⁶ International Organization for Standardization, International Electrotechnical Commission. (2012). Conformity Assessment: General Requirements for Bodies Operating Certification of Persons.

Definition of Tasks and Knowledge

BPS assembled a panel that consisted of 15 subject-matter experts in the pharmacotherapy specialist practice area, who were representative of the diversity of professional characteristics within the specialty with respect to practice setting, patient populations served, years of experience, and geographic dispersion within the United States. See Appendix A for the qualifications and professional characteristics of the job analysis panel and interviewees.

The panel met via teleconference on 23-24 January 2023 to develop, define, and update the tasks performed and knowledge required to practice as a specialist in the pharmacotherapy specialist practice area.

The panelists were first oriented to the objectives of the study and the meeting, and then were presented a draft examination content outline and list of associated tasks that drew from the outgoing examination content outline. See Appendix B for the presentation used to orient the job analysis panelists.

The panel developed 14 task statements that describe the work activities performed by a pharmacotherapy specialist.

- 1 Evaluate patient medical history, medication history, present illness, clinical status, health risks, and other pertinent patient characteristics
- 2 Establish goals of care in collaboration with the patient, caregivers, and/or interprofessional healthcare team
- 3 Develop patient-centered therapeutic plans in alignment with evidence-based medicine, practice guidelines, and goals of care
- 4 Optimize the administration of medications to patients by assessing availability, route, compatibility, stability, and medication-delivery technology
- 5 Monitor and evaluate patient safety and progress toward healthcare goals
- 6 Modify therapeutic plans in response to changes in clinical status, healthcare goals, and other pertinent patient factors
- 7 Develop and provide healthcare education and counseling to patients, caregivers, family members, and/or members of the general public
- 8 Provide healthcare education and support to other pharmacists, pharmacy learners, and members of the interprofessional healthcare team
- 9 Lead or participate in healthcare quality improvement, safety, and public health initiatives
- 10 Evaluate, establish, and/or align policies and practices according to accreditation standards, regulatory requirements, and evidence-based practice
- 11 Develop and/or utilize drug-selection strategies to improve cost effectiveness, resource utilization, and risk mitigation
- 12 Utilize health information technology and clinical informatics to optimize pharmacotherapeutic decisions
- 13 Engage in professional development in the pharmacotherapy specialty area, such as healthcare committee involvement, scholarly activities, and continuing education
- 14 Evaluate clinical literature and its applicability to pharmacotherapy practice

The panel identified three content domains that describe the key high-level components of the pharmacotherapy specialty area. Across the three content domains, the panel identified eight content sub-domains and developed 55 knowledge areas that describe specific job knowledge associated with the pharmacotherapy specialist practice area. In some cases, the panelists wrote examples in parenthesis, which are meant to be non-exhaustive, to help better illustrate the intended scope of the knowledge area listed.

1	Patient Care Specialty Areas
1A	Primary Pharmacotherapy Specialty Areas
1A1	Cardiology
1A2	Critical Care
1A3	Emergency Medicine and Toxicology
1A4	Endocrinology
1A5	Gastroenterology
1A6	Geriatrics
1A7	Infectious Diseases
1A8	Nephrology
1A9	Pediatrics
1A10	Psychiatry and Mental Health
1A11	Pulmonology
1B	Secondary Pharmacotherapy Specialty Areas
1B1	Allergy, Immunology, and Rheumatology
1B2	Dermatology
1B3	Hospice and Palliative Care
1B4	Neurology
1B5	Nutrition Support
1B6	Oncology and Hematology
1B7	Ophthalmology
1B8	Pain Management
1B9	Urology
1B10	Women's Health (e.g., gynecology, obstetrics)
2	Therapeutics and Patient Management
2A	Treatment Planning
2A1	Clinical Assessment (e.g., functional, cognitive, physical)
2A2	Diagnosis and Diagnostic Testing
2A3	Pharmacodynamics and Pharmacokinetics
2A4	Pharmacogenomics
2A5	Shared Decision-Making and Goals of Care
2A6	Goals of Treatment (e.g., risk vs. benefit, time to benefit)
2A7	Social Determinants of Health
2B	Therapeutic Implementation
2B1	Pharmacotherapeutic Modalities (e.g., medications, supplements, herbals)
2B2	Non-Pharmacologic Treatments and Lifestyle Modification
2B3	Interprofessional Care Coordination
2B4	Medication Reconciliation and Optimization
2B5	Medication Delivery (e.g., routes of administration, delivery devices, anatomic alterations)
2B6	Patient and Caregiver Education and Counseling
2C	Treatment Outcomes and Monitoring

2C1	Therapeutic Targets and Endpoints
2C2	Therapeutic and Physiological Monitoring
2C3	Adverse Drug Events
2C4	Drug Interactions
2C5	Medication Adherence
3	Professional Practice
3A	Quality of Care
3A1	Public Health
3A2	Preventative Care
3A3	Continuity of Care
3A4	Clinical Practice Guidelines
3A5	Medication Safety
3A6	Ethics and Patient Advocacy
3B	Evidence-Based Practice
3B1	Research Methods (e.g., hypothesis, outcomes, study design)
3B2	Statistics
3B3	Levels of Evidence
3B4	Drug Information Resources and Databases
3C	Practice Management
3C1	Professional Practice Standards, Guidelines, and Regulations
3C2	Quality Management and Process Improvement
3C3	Clinical Informatics (e.g., clinical decision support, MUEs, CPOE)
3C4	Pharmacoeconomics
3C5	Formulary Management
3C6	Emergency Preparedness

The panel also helped create a description of the target population for the BCPS credential and a statement describing the purpose of the BCPS certification program.

The BPS Board-Certified Pharmacotherapy Specialist (BCPS) program is a credential for pharmacists who ensure the safe, appropriate, and economical use of medications in a variety of practice settings, with emphasis on direct patient care and optimization of medication therapy.

The purpose of the BCPS program is to validate that the pharmacist has the advanced knowledge, skills, and experience necessary to optimize the safety and efficacy of healthcare outcomes in diverse patient populations across a variety of practice settings.

The panel also refined a list of demographic questions to be provided to survey respondents which would help better understand the professional characteristics of the respondent sample, which is described in more detail in the next section.

Lastly, the panel engaged in a linkage analysis, which is an exercise to identify the inter-relationships among the knowledge areas and tasks. Each panelist was asked to individually develop a linkage matrix

in which tasks are listed as columns and knowledge areas as rows, and an x-mark indicating that the knowledge area is required for performance of the task. Individual matrices were aggregated such that any proposed linkage (x-mark) by more than half of the panelists was counted in the final (consensus) linkage matrix.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1A1	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1A2	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1A3	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1A4	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1A5	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1A6	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1A7	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1A8	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1A9	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1A10	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1A11	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1B1	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1B2	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1B3	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1B4	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1B5	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1B6	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1B7	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1B8	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1B9	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1B10	x	x	x	x	x	x	x	x	x	x	x	x	x	x
2A1	x				x	x								
2A2	x					x								
2A3	x		x	x	x	x		x						
2A4	x		x			x								
2A5		x	x		x	x	x							
2A6		x	x	x	x	x	x							
2A7	x	x	x	x		x	x							
2B1	x	x	x	x		x		x						
2B2	x	x	x			x		x						
2B3	x	x	x			x		x						
2B4	x		x	x	x	x								
2B5	x		x	x		x								
2B6	x	x				x	x							
2C1	x	x	x	x	x	x	x	x						
2C2	x		x	x	x	x		x						
2C3	x		x	x	x	x	x							
2C4	x		x	x	x	x		x						
2C5	x		x	x	x	x								
3A1									x	x				
3A2									x	x				
3A3	x	x							x					
3A4	x	x	x	x			x	x	x	x			x	
3A5	x		x	x	x	x	x	x	x	x	x	x		
3A6	x	x							x	x				
3B1									x	x			x	x
3B2								x	x	x			x	x
3B3								x	x	x			x	x
3B4	x		x	x				x	x	x	x	x	x	x
3C1	x	x	x	x	x	x	x	x	x	x	x	x	x	x
3C2									x	x	x		x	
3C3									x	x	x	x		
3C4									x		x			
3C5	x										x			
3C6									x					

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
- Respondent ratings of endorsement for the task statements
- Respondent ratings of endorsement for the knowledge areas
- Demographic questions that assess survey respondents' professional qualifications
- Open field for any additional comments

The ratings of endorsement from the survey respondents were solicited using two scales: Importance and Frequency. Each scale consists of a prompt for task statement, prompt for knowledge areas, and numerical responses with an associated text anchor (description).

Importance	How important is this task to pharmacotherapy practice?
	How important is this knowledge area to pharmacotherapy practice?
0	not at all / not applicable
1	of very little importance
2	somewhat important
3	moderately important
4	very important
5	critically important
Frequency	How frequently is this task performed in pharmacotherapy practice?
	How frequently is this knowledge used in pharmacotherapy practice?
0	not at all / not applicable
1	very rarely
2	rarely
3	occasionally
4	often
5	very often

The survey was pilot tested with a sample that consisted of the job analysis panelists, the specialty examination council, and BPS staff persons. The pilot test was conducted during the dates of 25-31 January 2023. Pilot testers identified one typographical error, which was corrected, and deemed no other changes were needed. See Appendix C for a copy of the final survey text.

The survey was open and available during the dates of 2-27 February 2023. All pharmacists who hold the BCPS credential were directly invited via email to complete the online survey. The survey was also disseminated by the American College of Clinical Pharmacy and American Society of Health-System Pharmacists to their respective membership.

The survey yielded 813 usable responses. Responses were not used if the survey was not completed or if the respondent indicated spending less than 50% of their pharmacy practice in the pharmacotherapy practice area.

Responses to Demographic Questions		
Percentage of Time in BCPS practice area	Mean = 84.44 SD = 16.04	<i>n</i>
50 – 75		231
76 – 99		295
100		287
Post-graduate Pharmacy Residency Programs		<i>n</i>
PGY1 Pharmacy		521
PGY1 Managed Care Pharmacy		7
PGY1 Community-Based Pharmacy		10
PGY2 Ambulatory Care Pharmacy		37
PGY2 Cardiology Pharmacy		8
PGY2 Clinical Pharmacogenomics		2
PGY2 Community-Based Pharmacy Administration and Leadership		4
PGY2 Corporate Pharmacy Administration and Leadership		2
PGY2 Critical Care Pharmacy		24
PGY2 Emergency Medicine Pharmacy		12
PGY2 Geriatric Pharmacy		5
PGY2 Health System Pharmacy Administration and Leadership		5
PGY2 Infectious Diseases Pharmacy		19
PGY2 Internal Medicine Pharmacy		32
PGY2 Investigational Drugs and Research		1
PGY2 Medication Use Safety and Policy		7
PGY2 Neurology		3
PGY2 Oncology Pharmacy		5
PGY2 Palliative Care / Pain Management Pharmacy		6
PGY2 Pediatric Pharmacy		9
PGY2 Pharmacotherapy		42
PGY2 Pharmacy Informatics		2
PGY2 Population Health Management and Data Analytics Pharmacy		2
PGY2 Psychiatric Pharmacy		4
PGY2 Solid Organ Transplant Pharmacy		5
PGY2 Specialty Pharmacy Administration and Leadership		2
Other		78
BPS Certifications		<i>n</i>
BCACP - Ambulatory Care		26
BCCCP - Critical Care		51
BCCP - Cardiology		20

BCGP - Geriatric	24	
BCIDP - Infectious Diseases	24	
BCNP - Nuclear	1	
BCNSP- Nutrition Support	3	
BCOP - Oncology	15	
BCPP - Psychiatric	10	
BCPPS - Pediatric	10	
BCPS - Pharmacotherapy	794	
BCSCP - Compounded Sterile Preparations	5	
BCTXP - Solid Organ Transplantation	4	
Years of Experience in Pharmacy	Mean = 13.22 SD = 9.64	n %
0-5	176	21.65%
6-10	212	26.08%
11-15	175	21.53%
16-20	112	13.78%
20+	138	16.97%
Time Spent in Professional Role	n (>50%)	AVG %
Direct Patient Care	537	61.56%
Administration / Management	48	14.34%
Teaching / Precepting	3	13.58%
Research / Scholarship	5	5.33%
Other	22	5.19%
Primary Practice Setting	n	%
Academic Institution / Educational Institution	55	6.77%
Academic Medical Center or Hospital	207	25.46%
Children's Hospital	9	1.11%
Community Hospital	285	35.06%
Community Pharmacy	20	2.46%
Governmental Healthcare Facility / Veterans Affairs Hospital	63	7.75%
Home Infusion / Ambulatory Infusion	7	0.86%
Hospice	2	0.25%
Hybrid Academic-Community Hospital	18	2.21%
Integrated Health System / Accountable Care Organization	10	1.23%
Investigational Drug Service	2	0.25%
Long-Term Care Pharmacy	4	0.49%
Managed Care	14	1.72%
Outpatient Clinic / Ambulatory Clinic	68	8.36%
Pharmaceutical Industry	5	0.62%
Specialty Pharmacy	9	1.11%
Other	35	4.31%
Location of Primary Practice	n	%
United States	726	89.42%

AK	8	0.99%
AL	9	1.11%
AR	7	0.86%
AZ	20	2.46%
CA	63	7.76%
CO	23	2.83%
CT	8	0.99%
DC	6	0.74%
FL	26	3.20%
GA	8	0.99%
HI	4	0.49%
IA	9	1.11%
ID	8	0.99%
IL	28	3.45%
IN	19	2.34%
KS	2	0.25%
KY	15	1.85%
LA	3	0.37%
MA	22	2.71%
MD	9	1.11%
ME	1	0.12%
MI	19	2.34%
MN	28	3.45%
MO	28	3.45%
MS	4	0.49%
MT	6	0.74%
NC	29	3.57%
ND	4	0.49%
NE	7	0.86%
NH	1	0.12%
NJ	11	1.35%
NM	5	0.62%
NV	4	0.49%
NY	37	4.56%
OH	36	4.43%
OK	6	0.74%
OR	13	1.60%
PA	30	3.69%
PR	1	0.12%
RI	3	0.37%
SC	8	0.99%
SD	8	0.99%

TN	20	2.46%
TX	40	4.93%
UT	10	1.23%
VA	23	2.83%
VT	1	0.12%
WA	16	1.97%
WI	25	3.08%
WV	5	0.62%
Outside of the United States	86	10.59%
Australia	1	0.12%
Canada	4	0.49%
China	1	0.12%
Egypt	27	3.33%
Hong Kong	4	0.49%
India	1	0.12%
Jordan	6	0.74%
Lebanon	1	0.12%
Malaysia	3	0.37%
Pakistan	2	0.25%
Qatar	1	0.12%
Romania	1	0.12%
Saudi Arabia	12	1.48%
Singapore	3	0.37%
Spain	6	0.74%
Sudan	1	0.12%
Taiwan	1	0.12%
Thailand	2	0.25%
United Arab Emirates	9	1.11%
Missing	1	0.12%

Mean Ratings for Task Statements		Importance	Frequency
1	Evaluate patient medical history, medication history, present illness, clinical status, health risks, and other pertinent patient characteristics	4.59	4.71
2	Establish goals of care in collaboration with the patient, caregivers, and/or interprofessional healthcare team	4.04	4.02
3	Develop patient-centered therapeutic plans in alignment with evidence-based medicine, practice guidelines, and goals of care	4.54	4.48
4	Optimize the administration of medications to patients by assessing availability, route, compatibility, stability, and medication-delivery technology	4.21	4.30
5	Monitor and evaluate patient safety and progress toward healthcare goals	4.20	4.20
6	Modify therapeutic plans in response to changes in clinical status, healthcare goals, and other pertinent patient factors	4.45	4.37
7	Develop and provide healthcare education and counseling to patients, caregivers, family members, and/or members of the general public	3.86	3.56
8	Provide healthcare education and support to other pharmacists, pharmacy learners, and members of the interprofessional healthcare team	3.87	3.71
9	Lead or participate in healthcare quality improvement, safety, and public health initiatives	3.42	3.00
10	Evaluate, establish, and/or align policies and practices according to accreditation standards, regulatory requirements, and evidence-based practice	3.69	3.23
11	Develop and/or utilize drug-selection strategies to improve cost effectiveness, resource utilization, and risk mitigation	3.63	3.40
12	Utilize health information technology and clinical informatics to optimize pharmacotherapeutic decisions	3.55	3.44
13	Engage in professional development in the pharmacotherapy specialty area, such as healthcare committee involvement, scholarly activities, and continuing education	3.48	3.32
14	Evaluate clinical literature and its applicability to pharmacotherapy practice	3.98	3.70

Mean Ratings for Knowledge Statements		Importance	Frequency
1	Patient Care Specialty Areas		
1A	Primary Pharmacotherapy Specialty Areas		
1A1	Cardiology	4.36	4.44
1A2	Critical Care	3.85	3.67
1A3	Emergency Medicine and Toxicology	3.52	3.23
1A4	Endocrinology	3.92	4.01
1A5	Gastroenterology	3.46	3.60
1A6	Geriatrics	3.80	3.96
1A7	Infectious Diseases	4.52	4.54
1A8	Nephrology	4.03	4.12
1A9	Pediatrics	2.97	2.48
1A10	Psychiatry and Mental Health	3.44	3.33
1A11	Pulmonology	3.78	3.76
1B	Secondary Pharmacotherapy Specialty Areas		
1B1	Allergy, Immunology, and Rheumatology	2.93	2.79
1B2	Dermatology	2.33	2.22
1B3	Hospice and Palliative Care	3.01	2.91
1B4	Neurology	3.66	3.56
1B5	Nutrition Support	3.08	2.97
1B6	Oncology and Hematology	3.22	2.90
1B7	Ophthalmology	2.11	1.94
1B8	Pain Management	3.94	4.01
1B9	Urology	2.82	2.83
1B10	Women's Health (e.g., gynecology, obstetrics)	3.07	2.82
2	Therapeutics and Patient Management		
2A	Treatment Planning		
2A1	Clinical Assessment (e.g., functional, cognitive, physical)	3.50	3.47
2A2	Diagnosis and Diagnostic Testing	3.39	3.49
2A3	Pharmacodynamics and Pharmacokinetics	4.27	4.24
2A4	Pharmacogenomics	2.64	2.09
2A5	Shared Decision-Making and Goals of Care	3.77	3.64
2A6	Goals of Treatment (e.g., risk vs. benefit, time to benefit)	4.14	4.04
2A7	Social Determinants of Health	3.31	3.12
2B	Therapeutic Implementation		
2B1	Pharmacotherapeutic Modalities (e.g., medications, supplements, herbals)	3.50	3.54
2B2	Non-Pharmacologic Treatments and Lifestyle Modification	3.31	3.15
2B3	Interprofessional Care Coordination	3.94	3.96
2B4	Medication Reconciliation and Optimization	4.31	4.30
2B5	Medication Delivery (e.g., routes of administration, delivery devices, anatomic alterations)	3.91	3.96
2B6	Patient and Caregiver Education and Counseling	3.95	3.67
2C	Treatment Outcomes and Monitoring		
2C1	Therapeutic Targets and Endpoints	4.16	4.13

2C2	Therapeutic and Physiological Monitoring	4.13	4.11
2C3	Adverse Drug Events	4.33	4.17
2C4	Drug Interactions	4.45	4.41
2C5	Medication Adherence	4.01	3.80
3	Professional Practice		
3A	Quality of Care		
3A1	Public Health	3.13	2.74
3A2	Preventative Care	3.67	3.22
3A3	Continuity of Care	3.99	3.74
3A4	Clinical Practice Guidelines	4.47	4.44
3A5	Medication Safety	4.47	4.30
3A6	Ethics and Patient Advocacy	3.55	3.08
3B	Evidence-Based Practice		
3B1	Research Methods (e.g., hypothesis, outcomes, study design)	3.22	2.88
3B2	Statistics	3.16	2.83
3B3	Levels of Evidence	3.51	3.28
3B4	Drug Information Resources and Databases	4.20	4.27
3C	Practice Management		
3C1	Professional Practice Standards, Guidelines, and Regulations	4.03	3.99
3C2	Quality Management and Process Improvement	3.52	3.36
3C3	Clinical Informatics (e.g., clinical decision support, MUEs, CPOE)	3.49	3.30
3C4	Pharmacoeconomics	2.93	2.66
3C5	Formulary Management	3.35	3.23
3C6	Emergency Preparedness	3.21	2.46

An exploratory factor analysis⁷ using maximum likelihood extraction and varimax rotation⁸ was performed on the importance ratings provided for the knowledge areas. One factor emerged as the primary factor explaining 27.92% of the variability in importance ratings. The eigenvalue for the first factor was 15.36 and all subsequent factors had eigenvalues of 4.02 or less, and each explained less than 7.31% of the variability in importance ratings. This provides additional evidence for the consistency of the knowledge areas developed and their applicability to the intended measurement construct.

⁷ Thompson, B. (2004). Exploratory and confirmatory factor analysis: Understanding concepts and applications. American Psychological Association: Washington DC.

⁸ Kaiser, H. (1958). The varimax criterion for analytic rotation in factor analysis. Psychometrika, 23(3).

Finalization of Exam Content Outline

The job analysis panel reconvened on 14 March 2023 via teleconference to review the results of the survey and to finalize the exam content outline.

The panelists 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 the pharmacotherapy practice area.

The panelists agreed to retain all the task statements developed. The panelists made one edit to Task 9, which was to replace “and” with “and/or” to reflect pharmacists’ variable involvement with different aspects of healthcare quality improvement, safety, and public health initiatives. The panelists noted that the two tasks with the lowest ratings (Tasks 9 and 13) may be in part explained due to lower levels of employer support for these tasks and staffing shortages that require prioritization of direct patient care over these tasks.

The panelists agreed to discard the three knowledge statements with an importance rating less than 2.8, which were 1B2 (Dermatology), 1B7 (Ophthalmology), and 2A4 (Pharmacogenomics), acknowledging that these content areas are less likely to be encountered by a pharmacotherapy specialist. The panelists agreed to combine 3C4 (Pharmacoeconomics) and 3C5 (Formulary Management) into a knowledge statement that reads “Pharmacoeconomics (e.g., formulary management, cost effectiveness)” and retain the higher of the two associated ratings (the ratings for 3C5).

The panelists agreed to re-organize the content areas in domain one into three content sub-domains (primary, secondary, and tertiary) rather than two and assign knowledge statements in those three categories according to their importance rating. This subdomain grouping is solely to ensure content distribution that favors practice areas that a BCPS pharmacist will be more likely to encounter over practice areas less likely to be encountered.

Lastly, the panelists were tasked with determining the content weighting, the proportion of examination content to be distributed to each content domain and sub-domain. The sum of the mean criticality ratings for the knowledge areas in each domain was tabulated and compared against the sum of the mean criticality ratings for all knowledge areas. The panelists confirmed that the survey ratings yielded content distribution that was appropriate to evaluate the breadth of knowledge required by a pharmacotherapy specialist. The panel made one adjustment but made one adjustment such that the total number of items equal 125, which was to reduce the number of items in 2A by one in acknowledgement that the content areas in domain one would also present opportunities to assess patients and conduct analysis that would inform treatment planning.

	Content Domains and Subdomains of ECO	Criticality	% Weight	# Items
1	Patient Care Specialty Areas	239.15	36.0%	45
1A	Primary Pharmacotherapy Specialty Areas	88.03	13.6%	17
1B	Secondary Pharmacotherapy Specialty Areas	91.71	13.6%	17
1C	Tertiary Pharmacotherapy Specialty Areas	59.42	8.8%	11
2	Therapeutics and Patient Management	256.87	36.0%	45
2A	Treatment Planning	82.85	10.4%	13
2B	Therapeutic Implementation	86.93	12.8%	16
2C	Treatment Outcomes and Monitoring	87.10	12.8%	16
3	Professional Practice	191.13	28.0%	35
3A	Quality of Care	85.33	12.8%	16
3B	Evidence-Based Practice	47.64	7.2%	9
3C	Practice Management	58.16	8.0%	10

See Appendix D for the final Examination Content Outline.

Appendix A – Subject Matter Experts

Name	Credentials	Post-Licensure Experience	Job Title	Employer/ Affiliation	Location
Allison Gorseth	PharmD, BCPS	3 Years	Clinical Pharmacist II	Hartford Hospital	CT
Amanda Galiano	PharmD, MSHI, BCPS	15 Years	Staff Pharmacist	Arkansas Heart Hospital	AR
Cheryl Scantlen	BPharm, BCPS	39 Years	Clinical Pharmacist II	Advocate Aurora	IL
David James Margraf	PharmD, MS, PhD, BCPS	14 Years	Pharmaceutical Research Scientist	University of Minnesota	MN
Hakeem Abayomi	PharmD, BCCCP, BCIDP, BCPPS, BCPS	14 Years	Clinical Staff Pharmacist	University of Chicago	IL
Jennifer Forman	PharmD, BCPS, BCSCP	10 Years	Pharmacy Manager-Oncology Infusion Services	Ascension St. John Hospital	MI
Joseph Jeremy Volk	PharmD, BCPS	21 Years	Clinical Pharmacist	Monument Health	SD

Julie MacDougall	PharmD, MBA, BCPS	7 Years	Coordinator Quality and Outcomes	University of Vermont Medical Center	VT
Leita Rocco	PharmD, BCPS	10 Years	Clinical Pharmacy Specialist	CarepathRx	PA
Marwan Sheikh-Taha	PharmD, BCCP, BCPS	16 Years	Clinical Associate Professor	Lebanese American University	Lebanon
Namareq Fahad Aldardeer	PharmD, BCCCP, BCNSP, BCPS	10 Years	Critical Care Clinical Pharmacist	King Faisal Specialist Hospital and Research Center	Saudi Arabia
Peter Koval	PharmD, BCPS	28 Years	Director of Pharmacy Education	Greensboro AHEC - Cone Health	NC
Peter Pasek	PharmD, BCGP, BCPS	14 Years	Clinical Pharmacy Specialist	Department of Veteran Affairs	FL
Rebekah Wahking	PharmD, MBA, BCPS	4 Years	Internal Medicine Clinical Pharmacist	University of Kentucky	KY
Yvonne Ng	PharmD, BCPS	3 Years	Clinical Pharmacist Practitioner	Department of Veteran Affairs	CA

Job Analysis



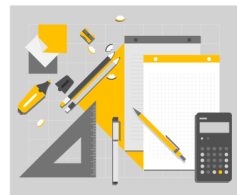
Job Analysis

A job analysis is often called a role delineation study or practice analysis in healthcare certification settings

The key points of inquiry in a Job Analysis are:

- ✓ **Definition of Target Population**
- ✓ **Tasks Performed**
- ✓ **Competencies Required**

The outcome is an exam content outline, which is used for creation of exams that reflect current practice and to identify to other stakeholders the scope of the exam



Multi-Method Approach

Both quantitative and qualitative methods are used in an RDS, which helps bolster the defensibility of the process and outcomes



Qualitative

- Interviews with Practitioners
- Focus Group with Practitioners



Quantitative

- Survey Administration and Analysis

Here is what the process looks like in sequence



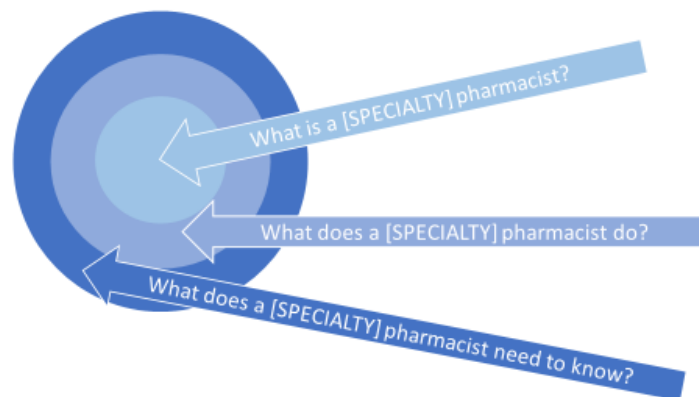
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Multiple Levels of Analysis

Consider how you would describe a job role to someone

All three levels help define the scope

But only the outer layer is the level at which an examinee is assessed



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Exam Content Outline

An ECO is a grouping of examination content areas in a hierarchical list

Exam Content Outline Structure and Components		(Somewhat Silly) Example	Domains
1	Content Domain	Chocolate	The Major Aspects of Practice Area
1A	Content Subdomain	History	
1A1	Knowledge Area	Mesoamerican Usage	Subdomains Meaningful Divisions within the Domain
1A2	Knowledge Area	European Adaptation	
1A3	Knowledge Area	Modern Production	
1B	Content Subdomain	Types	Knowledge Areas The Knowledge Assessed by Exam Items Each of these should be written such that they can be preceded by the phrase "Knowledge of"
1B1	Knowledge Area	Milk Chocolate	
1B2	Knowledge Area	Dark Chocolate	
1B3	Knowledge Area	White Chocolate	

Context Is Key



In addition to creation of an ECO, we will develop an inventory of task statements.

- These tasks identify the objectives and responsibilities of the role.
- These tasks provide the context in which the knowledge is applied.
- Tasks need not be grouped into content domains.
- Tasks will not be used to classify exam items nor determine what is tested.

Linkage Analysis

A linkage matrix looks something like this

Purpose of the Linkage Matrix

- demonstrate which knowledge areas are required for each task
- demonstrate that the knowledge areas are indeed practice-based
- help identify gaps in either inventory
- help identify tasks or knowledge that are superfluous or out-of-scope

	1	2	3	4	5	6	7	8	9
1A1						x		x	
1A2					x				
1A3				x					x
1B1			x	x					
1B2			x				x		
1C1	x	x							
1C2		x					x		x

Helpful Hints

- An x-mark means that the specific knowledge is needed to perform that specific task.
- For example, knowledge of different types of chocolate is needed to *Develop Chocolate Recipes* but history of chocolate is not needed for that same task.

Confidentiality



Although the outcomes of the RDS will eventually be summarized in a public-facing document, please do not disclose information about our deliberations or work in progress



Any information other than that provided by BPS can give an unfair advantage or disadvantage to examinees, thereby threatening the validity of the exam



When asked about your involvement, simply direct prospective examinees and other stakeholders to official channels (BPS website) for information about the certification program

Summary of Meeting Objectives

Review Exam Eligibility Requirements

Develop List of Task Statements

Develop Exam Content Outline

Conduct Linkage Analysis

Revise Tasks and ECO, as needed

Appendix C – Survey Text



BPS 2023 Pharmacotherapy (BCPS) Job Analysis Survey Survey Introduction

The Board of Pharmacy Specialties (BPS) is conducting a Job Analysis for the Board-Certified Pharmacotherapy Specialist (BCPS) certification program to develop an updated examination content outline, which serves as a blueprint for the certification exam and the scope for recertification and eligibility purposes.

As part of this Job Analysis, we request your participation in this survey to provide ratings and feedback for the tasks and knowledge areas identified as representing current practice in the pharmacotherapy specialty area.

Survey respondents will be prompted to rate each task and knowledge area on its importance to the pharmacotherapy specialty area and its frequency of use.

Additionally, respondents will be asked a few demographic questions to better understand the respondent sample's professional qualifications - but no personally identifiable information will be solicited.

Responses will only be reviewed in aggregate and will not be used for any other purpose than the Job Analysis.

Your participation is expected to take 15 to 30 minutes in total.

Those who complete the survey are eligible for entry into a raffle for one of ten \$25 Amazon gift cards.

If you have any questions about this survey or the Job Analysis, please feel free to contact ja@aphanet.org.

Are you willing to participate in this survey and provide your responses to BPS?

☐ Yes

☐ No

BPS 2023 Pharmacotherapy (BCPS) Job Analysis Survey

Target Population

BPS defines the target population of the Pharmacotherapy Certification program as follows:

Pharmacists who ensure the safe, appropriate, and economical use of medications in a variety of practice settings, with emphasis on direct patient care and optimization of medication therapy

Does this description reflect your current professional role?

☐ Yes

☐ No

BPS 2023 Pharmacotherapy (BCPS) Job Analysis Survey

Task Statements

Please rate each task statement according to its importance to the pharmacotherapy practice area and the frequency of its performance in pharmacotherapy practice.

	Importance	Frequency
Evaluate patient medical history, medication history, present illness, clinical status, health risks, and other pertinent patient characteristics		
Establish goals of care in collaboration with the patient,		

caregivers, and/or interprofessional healthcare team		
Develop patient- centered therapeutic plans in alignment with evidence-based medicine, practice guidelines, and goals of care		
Optimize the administration of medications to patients by assessing availability, route, compatibility, stability, and medication-delivery technology		
Monitor and evaluate patient safety and progress toward healthcare goals		
Modify therapeutic plans in response to changes in clinical status, healthcare goals, and other pertinent patient factors		
Develop and provide healthcare education and counseling to patients, caregivers, family members, and/or members of the general public		
Provide healthcare education and support to other pharmacists, pharmacy learners, and members of the interprofessional healthcare team		
Lead or participate in healthcare quality improvement, safety, and public health initiatives		
Evaluate, establish, and/or align policies and practices according to accreditation standards, regulatory requirements, and		

evidence-based
practice

Develop and/or
utilize drug-selection
strategies to improve
cost effectiveness,
resource utilization,
and risk mitigation

Utilize health
information
technology and
clinical informatics to
optimize
pharmacotherapeutic
decisions

Engage in
professional
development in the
pharmacotherapy
specialty area, such
as healthcare
committee
involvement,
scholarly activities,
and continuing
education

Evaluate clinical
literature and its
applicability to
pharmacotherapy
practice

What task associated with the pharmacotherapy practice area is missing from this list, if any?



BPS 2023 Pharmacotherapy (BCPS) Job Analysis Survey
Knowledge Areas

Please rate each knowledge area in the Patient Care Specialty Areas content domain according to its importance to the pharmacotherapy practice area and the frequency of its use in pharmacotherapy practice.

	Importance	Frequency
Cardiology		
Critical Care		
Emergency Medicine and Toxicology		
Endocrinology		
Gastroenterology		
Geriatrics		
Infectious Diseases		
Nephrology		
Pediatrics		
Psychiatry and Mental Health		
Pulmonology		
Allergy, Immunology, and Rheumatology		
Dermatology		
Hospice and Palliative Care		
Neurology		
Nutrition Support		
Oncology and Hematology		
Ophthalmology		
Pain Management		
Urology		
Women's Health (e.g., gynecology, obstetrics)		

Please rate each knowledge area in the Therapeutics and Patient Management content domain according to its importance to the pharmacotherapy practice area and the frequency of its use in pharmacotherapy practice.

	Importance	Frequency
Clinical Assessment (e.g., functional, cognitive, physical)		
Diagnosis and Diagnostic Testing		
Pharmacodynamics and Pharmacokinetics		
Pharmacogenomics		
Shared Decision-Making and Goals of Care		
Goals of Treatment (e.g., risk vs. benefit, time to benefit)		
Social Determinants of Health		
Pharmacotherapeutic Modalities (e.g., medications, supplements, herbals)		
Non-Pharmacologic Treatments and Lifestyle Modification		
Interprofessional Care Coordination		
Medication Reconciliation and Optimization		
Medication Delivery (e.g., routes of administration, delivery devices, anatomic alterations)		
Patient and Caregiver Education and Counseling		
Therapeutic Targets and Endpoints		
Therapeutic and Physiological Monitoring		
Adverse Drug Events		
Drug Interactions		

Medication
Adherence

Please rate each knowledge area in the Professional Practice content domain according to its importance to the pharmacotherapy practice area and the frequency of its use in pharmacotherapy practice.

	Importance	Frequency
Public Health		
Preventative Care		
Continuity of Care		
Clinical Practice Guidelines		
Medication Safety		
Ethics and Patient Advocacy		
Research Methods (e.g., hypothesis, outcomes, study design)		
Statistics		
Levels of Evidence		
Drug Information Resources and Databases		
Professional Practice Standards, Guidelines, and Regulations		
Quality Management and Process Improvement		
Clinical Informatics (e.g., clinical decision support, MUEs, CPOE)		
Pharmacoeconomics		
Formulary Management		
Emergency Preparedness		

What knowledge area associated with the pharmacotherapy practice area is missing from this list, if any?



BPS 2023 Pharmacotherapy (BCPS) Job Analysis Survey

Survey Respondent Demographics

What percentage of your professional practice is spent in the pharmacotherapy practice area?

On average, how many hours per week do you spend in the pharmacotherapy practice area?

Which post-graduate pharmacy residency programs have you completed?

Select all that apply and leave blank if none.

- ☐ PGY1 Pharmacy
- ☐ PGY1 Managed Care Pharmacy
- ☐ PGY1 Community-Based Pharmacy
- ☐ PGY2 Ambulatory Care Pharmacy
- ☐ PGY2 Cardiology Pharmacy
- ☐ PGY2 Clinical Pharmacogenomics

- ☐ PGY2 Community-Based Pharmacy Administration and Leadership
- ☐ PGY2 Corporate Pharmacy Administration and Leadership
- ☐ PGY2 Critical Care Pharmacy
- ☐ PGY2 Emergency Medicine Pharmacy
- ☐ PGY2 Geriatric Pharmacy
- ☐ PGY2 Health System Pharmacy Administration and Leadership
- ☐ PGY2 Infectious Diseases Pharmacy
- ☐ PGY2 Internal Medicine Pharmacy
- ☐ PGY2 Investigational Drugs and Research
- ☐ PGY2 Medication Use Safety and Policy
- ☐ PGY2 Neurology
- ☐ PGY2 Oncology Pharmacy
- ☐ PGY2 Palliative Care / Pain Management Pharmacy
- ☐ PGY2 Pediatric Pharmacy
- ☐ PGY2 Pharmacotherapy
- ☐ PGY2 Pharmacy Informatics
- ☐ PGY2 Population Health Management and Data Analytics Pharmacy
- ☐ PGY2 Psychiatric Pharmacy
- ☐ PGY2 Solid Organ Transplant Pharmacy
- ☐ PGY2 Specialty Pharmacy Administration and Leadership
- ☐ Other: please specify

Which BPS certifications do you currently hold?

Select all that apply and leave blank if none.

- ☐ BCACP - Ambulatory Care
- ☐ BCCCP - Critical Care
- ☐ BCCP - Cardiology
- ☐ BCEMP - Emergency Medicine
- ☐ BCGP - Geriatric
- ☐ BCIDP - Infectious Diseases
- ☐ BCNP - Nuclear
- ☐ BCNSP- Nutrition Support
- ☐ BCOP - Oncology
- ☐ BCPP - Psychiatric
- ☐ BCPPS - Pediatric
- ☐ BCPS - Pharmacotherapy
- ☐ BCSCP - Compounded Sterile Preparations
- ☐ BCTXP - Solid Organ Transplantation

How many years of experience do you have as a pharmacist?

What is your primary practice setting?

- ☐ Academic Institution / Educational Institution
- ☐ Academic Medical Center or Hospital
- ☐ Children's Hospital
- ☐ Community Hospital
- ☐ Community Pharmacy
- ☐ Home Infusion / Ambulatory Infusion
- ☐ Hospice
- ☐ Hybrid Academic-Community Hospital
- ☐ Integrated Health System / Accountable Care Organization
- ☐ Investigational Drug Service
- ☐ Long-Term Care Pharmacy
- ☐ Managed Care
- ☐ Outpatient Clinic / Ambulatory Clinic
- ☐ Pharmaceutical Industry
- ☐ Specialty Pharmacy
- ☐ Governmental Healthcare Facility / Veterans Affairs Hospital
- ☐ Other (please specify)

Where is your primary practice located?

State or Territory (if in United States)

-- select state --

Nation/Country

What percentage of your time do you spend in each area?

The total must add up to 100%.

Direct Patient Care	
Administration / Management	
Teaching / Precepting	
Research / Scholarship	
Other	



BPS 2023 Pharmacotherapy (BCPS) Job Analysis Survey

Thank You

Please provide any feedback or comments about the survey here.

Those who complete the survey are eligible for entry into a raffle for one of ten \$25 Amazon gift cards. If you would like to be entered into the raffle, please enter your email address below. Your email address will be used for the sole purpose of sending your gift card if you win.

Thank you very much for your interest and participation!

Appendix D – Exam Content Outline

1	Patient Care Specialty Areas	36.0%
1A	Primary Pharmacotherapy Specialty Areas	13.6%
1A1	Infectious Diseases	
1A2	Cardiology	
1A3	Nephrology	
1A4	Pain Management	
1A5	Endocrinology	
1B	Secondary Pharmacotherapy Specialty Areas	13.6%
1B1	Critical Care	
1B2	Geriatrics	
1B3	Pulmonology	
1B4	Neurology	
1B5	Emergency Medicine and Toxicology	
1B6	Gastroenterology	
1B7	Psychiatry and Mental Health	
1C	Tertiary Pharmacotherapy Specialty Areas	8.8%
1C1	Oncology and Hematology	
1C2	Nutrition Support	
1C3	Women's Health (e.g., gynecology, obstetrics)	
1C4	Hospice and Palliative Care	
1C5	Pediatrics	
1C6	Allergy, Immunology, and Rheumatology	
1C7	Urology	
2	Therapeutics and Patient Management	36.0%
2A	Treatment Planning	10.4%
2A1	Clinical Assessment (e.g., functional, cognitive, physical)	
2A2	Diagnosis and Diagnostic Testing	
2A3	Pharmacodynamics and Pharmacokinetics	
2A4	Shared Decision-Making and Goals of Care	
2A5	Goals of Treatment (e.g., risk vs. benefit, time to benefit)	
2A6	Social Determinants of Health	
2B	Therapeutic Implementation	12.8%

2B1	Pharmacotherapeutic Modalities (e.g., medications, supplements, herbals)	
2B2	Non-Pharmacologic Treatments and Lifestyle Modification	
2B3	Interprofessional Care Coordination	
2B4	Medication Reconciliation and Optimization	
2B5	Medication Delivery (e.g., routes of administration, delivery devices, anatomic alterations)	
2B6	Patient and Caregiver Education and Counseling	
2C	Treatment Outcomes and Monitoring	12.8%
2C1	Therapeutic Targets and Endpoints	
2C2	Therapeutic and Physiological Monitoring	
2C3	Adverse Drug Events	
2C4	Drug Interactions	
2C5	Medication Adherence	
3	Professional Practice	28.0%
3A	Quality of Care	12.8%
3A1	Public Health	
3A2	Preventative Care	
3A3	Continuity of Care	
3A4	Clinical Practice Guidelines	
3A5	Medication Safety	
3A6	Ethics and Patient Advocacy	
3B	Evidence-Based Practice	7.2%
3B1	Research Methods (e.g., hypothesis, outcomes, study design)	
3B2	Statistics	
3B3	Levels of Evidence	
3B4	Drug Information Resources and Databases	
3C	Practice Management	8.0%
3C1	Professional Practice Standards, Guidelines, and Regulations	
3C2	Quality Management and Process Improvement	
3C3	Clinical Informatics (e.g., clinical decision support, MUEs, CPOE)	
3C4	Pharmacoeconomics (e.g., formulary management, cost effectiveness)	
3C5	Emergency Preparedness	