Role Delineation Study

BCOP – Oncology Pharmacy

March 2022

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 2021 and 2022 to develop the content outline and other specifications for the specialty certification examination for pharmacists who specialize in oncology pharmacy. 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 oncology pharmacy specialty practice area. The outcome of this study was the creation of an examination blueprint that will be used to construct the oncology 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 and Subdomains		# Items
1	Oncology Diagnosis and Testing	28
1A	Oncology Diagnosis	11
1B	Oncology Testing	11
1C	Cancer Detection and Prevention	6
2	Therapeutics and Patient Management	61
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Introduction

The Board of Pharmacy Specialties (BPS) performed a role delineation study (RDS) in 2021 and 2022 to develop the content outline and other specifications for the specialty certification examination for pharmacists who specialize in oncology pharmacy.

A role delineation study 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 licensed 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 the practice area in question. The role delineation study 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 oncology pharmacy
2. Development, administration, and analysis of a survey to other qualified pharmacists who are currently engaged in oncology pharmacy, 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 Testing[4] and applicable accreditation standards (NCCA[5] and ISO/IEC 17024[6]). 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.
[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.

1. Definition of Tasks and Knowledge

BPS assembled a panel that consisted of 22 subject-matter experts in oncology pharmacy, 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. Three additional subject-matter experts in oncology pharmacy were interviewed individually on a 1-hour teleconference. See Appendix A for the qualifications and professional characteristics of the RDS panel and interviewees.

The interviews took place on 5 October 2021 and 6 October 2021. The interview questions focused on changes in the specialty area, key competency areas, and any limitations of the outgoing examination content outline that should be addressed by the role delineation study.

The panel met via teleconference on three occasions to develop, define, and update the tasks performed and knowledge required to practice as a specialist in oncology pharmacy. The dates of the meetings were 29 September 2021, 21 October 2021, and 22 October 2021.

On the first session, the panelists were 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 and the interview notes. See Appendix B for the presentation used to orient the role delineation study panelists.

The panel developed 16 task statements that describe the work activities performed by an oncology pharmacist.

1	Obtain and assess pertinent patient-specific information.
2	Evaluate genomic and molecular test results to optimize therapeutic decisions.
3	Evaluate biomarker test results to enhance the value and effectiveness of therapy.
4	Establish therapeutic goals related to oncology treatment and supportive care.
5	Design, modify, and optimize treatment and supportive care for individuals with oncologic diseases and/or non-malignant hematologic disorders.
6	Design, modify, and optimize pharmacotherapeutic regimens based on tumor resistance mechanisms.
7	Monitor and manage complications and toxicities in the oncology patient population.
8	Identify and/or manage long-term complications of oncology treatment.
9	Educate patients and caregivers regarding treatment and supportive care.
10	Educate and/or mentor learners and health care professionals on topics associated with the oncology patient population.
11	Evaluate applicability of available literature and clinical data to the oncology patient population and/or individual oncology patients.
12	Implement and/or evaluate investigational protocols for oncology treatments and supportive care.
13	Establish and/or evaluate drug-use guidelines, policies, procedures, and formularies.
14	Establish and/or maintain systems, tools, technology, and processes to manage and optimize oncology medication use and safety.
15	Optimize processes to improve the availability, cost-effectiveness, and efficacy of oncology treatment and supportive care.

16	Promote public health awareness of cancer prevention, screening, education, and resources.

The panel identified three content domains that describe the key high-level components of oncology pharmacy. Across the three content domains, the panel identified 8 content sub-domains and developed 47 knowledge areas that describe specific job knowledge associated with the practice of oncology pharmacy. 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	**Oncology Diagnosis and Testing**
1A	Oncology Diagnosis
1A1	Cancer Etiology and Pathophysiology
1A2	Types of Cancer
1A3	Cancer-Related Molecular Biology
1A4	Mechanisms of Tumor Resistance
1B	Oncology Testing
1B1	Genomics (e.g., genomic alterations, gene amplification, types of mutations)
1B2	Prognostic and Predictive Testing (e.g., IPI, FLIPI, Oncotype DX)
1B3	Next-Generation Sequencing (NGS)
1B4	Biomarker Testing (e.g., PDL1, TMB, TPS, CPS)
1C	Cancer Detection and Prevention
1C1	Cancer Detection (e.g., screening frequency, early detection)
1C2	Cancer Prevention and Risk-Reduction
1C3	Cancer-Support and Cancer-Education Resources
2	**Therapeutics and Patient Management**
2A	Treatment Planning
2A1	Treatment of Cancer
2A2	Treatment of Non-Malignant Hematologic Disorders (e.g., aplastic anemia, sickle cell disease, ITP)
2A3	Palliative and Supportive Care
2A4	End-of-Life Care
2A5	Survivorship Care
2A6	Social Determinants of Health (e.g., caregiver support, access to care, health literacy, socioeconomic status, cultural practices and preferences)
2A7	Clinical Standards and Guidelines (e.g., NCCN, ASCO)
2B	Therapeutic Implementation
2B1	Pharmacotherapy
2B2	Non-Pharmacologic Treatment Modalities (e.g., surgery, radiation therapy)
2B3	Pharmacogenomics
2B4	Patient and Caregiver Education
2B5	Interdisciplinary Care Coordination (e.g., transitions of care, specialty pharmacy services, patient assistance programs)
2B6	Drug Administration (e.g., dosage forms, routes of delivery)
2B7	Complementary and Alternative Therapies
2C	Cancer Outcomes and Treatment Monitoring
2C1	Drug Interactions (with foods, supplements, laboratory tests, and other drugs)
2C2	Mechanisms of Drug Resistance
2C3	Toxicity Prevention, Monitoring, and Management
2C4	Oncologic Emergencies
2C5	Complications of Cancer Therapy
2C6	Complications of Stem Cell Transplantation and Cellular Therapy

2C7	Long-Term Complications of Cancer Therapy
3	**Professional Practice**
3A	Clinical Trials and Research
3A1	Research Methods (e.g., study design, validity)
3A2	Statistics (e.g., statistical power, number needed to treat, results interpretation)
3A3	Research Outcomes (e.g., clinical benefit, patient reported outcomes)
3A4	Laws and Ethics associated with Research and Clinical Trials
3A5	Clinical Trial Design in Oncology (e.g., phases, objectives, endpoints)
3A6	Institutional Review Boards (IRB)
3A7	Drug Approval Process
3A8	Investigational Drug Management
3B	Practice Management
3B1	Quality Management (e.g., medication use evaluation, root cause analysis, patient safety)
3B2	Medication Inventory Management (e.g., pharmacoeconomics, procurement, allocation, tracking)
3B3	Drug Handling and Disposal (e.g., USP<800>, radiopharmaceuticals)
3B4	Risk Evaluation Mitigation Strategy (REMS) Programs
3B5	Compassionate Use Processes (e.g., IND process, right-to-try)
3B6	Biosimilar Medications
3B7	Professional Practice Standards, Guidelines, and Regulations (e.g., NIOSH, ASCO-ONS)

The panel also helped create a definition of the oncology pharmacist, the target population for the BCOP credential, and a statement describing the purpose of the BCOP credentialing program.

The BPS Board Certified Oncology Pharmacist (BCOP) program is a credential for pharmacists who have met the eligibility criteria and who design, implement, monitor, and modify pharmacotherapeutic treatments; manage adverse events or clinical situations associated with cancer, cancer therapies, and non-malignant hematology; and facilitate and/or evaluate clinical trials, research, and investigational drugs.
The purpose of the BCOP program is to validate that the oncology pharmacist has the advanced knowledge and experience necessary to provide treatment and education that optimizes safety and outcomes for individuals receiving treatment for cancer or non-malignant hematologic conditions, palliative and supportive care, and/or survivorship care; as well as support for cancer detection, screening, and risk-reduction.

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	15	16
1																
1A																
1A1	x	x	x	x	x	x				x						
1A2	x	x	x	x	x	x				x	x					
1A3	x	x	x	x	x	x				x						
1A4		x	x		x	x				x						
1B																
1B1	x	x	x	x	x	x				x						
1B2	x	x	x	x	x	x				x						
1B3	x	x	x		x	x				x						
1B4	x	x	x		x	x				x						
1C																
1C1										x						x
1C2										x						x
1C3										x						x
2																
2A																
2A1		x	x	x	x	x	x	x	x	x	x					
2A2		x		x	x		x	x	x	x						
2A3		x		x	x		x		x	x						
2A4		x		x	x											
2A5		x		x	x			x								
2A6	x			x	x				x							
2A7		x	x	x	x	x	x	x		x						
2B																
2B1		x	x	x	x	x	x	x	x	x	x					
2B2				x	x		x	x	x	x						
2B3	x	x	x	x	x	x				x						
2B4									x							
2B5					x											
2B6	x				x				x	x						
2B7	x	x		x	x		x			x						
2C																
2C1	x	x	x	x	x		x			x						
2C2		x	x		x	x				x						
2C3	x	x	x	x	x		x	x	x	x						
2C4					x		x			x						
2C5				x	x		x	x		x						
2C6				x	x		x	x		x						
2C7				x	x		x	x	x	x						
3																
3A																
3A1											x	x				
3A2											x	x				
3A3											x	x				
3A4											x	x				

3A5		x	x			
3A6			x			
3A7		x	x			
3A8			x			
3B						
3B1				x	x	x
3B2				x	x	x
3B3				x	x	
3B4				x	x	
3B5				x	x	x
3B6				x	x	x
3B7				x	x	x

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
- 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 oncology pharmacy practice? How important is this knowledge area to oncology pharmacy 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 oncology pharmacy practice? How frequently is this knowledge applied in oncology pharmacy 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 RDS panelists, the specialty examination council, and BPS staff persons. The pilot test was conducted during the dates of 2 November 2021 to 15 November 2021. Pilot testers identified one fix to a demographic question to allow multiple selections as intended, one instance of repeated text in a knowledge statement, and a change to 3A6 to now read "Institutional Review Boards (IRB) and Independent Ethics Committees (IEC)" to 3A6 as IEC represents the term more commonly understood outside of the United States. See Appendix C for a copy of the final survey text.

The survey was open and available from 5 January 2022 to 8 February 2022. All pharmacists who hold the BCOP (oncology pharmacy) credential were directly invited via email to complete the online survey. The survey was also disseminated through the following affiliate organizations:

- American College of Clinical Pharmacy (ACCP)
- Hematology/Oncology Pharmacy Association (HOPA)

The survey yielded 243 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 oncology.

Responses to Demographic Questions		
Percentage of Time in Oncology Pharmacy **Mean = 93.0 | SD = 13.1**	***n***	
0 – 25	0	
26 – 50	9	
51 – 75	20	
76 – 99	55	
100	159	
Hours Per Week in Oncology Pharmacy	***n***	
0 – 10	4	
11 – 20	12	
21 – 30	22	
31 – 40	131	
41+	74	
Residency	***n***	
PGY-1 Community-Based	2	
PGY-2 Oncology	110	
PGY-1 Pharmacy	148	
PGY-2 Clinical Pharmacogenomics	1	
PGY-2 Critical Care	1	
PGY-2 Palliative Care / Pain Management	1	
PGY-2 Pediatric	1	
PGY-2 Pharmacotherapy	1	
PGY-2 Specialty Pharmacy	3	
Highest Pharmacy Degree	***n***	**%**
BS	17	7%
MS	7	3%
Pharm.D	206	85%
PhD	5	2%
Other	8	3%
Year Highest Pharmacy Degree Completed	***n***	**%**
Before 2000	50	21%
2000-2005	32	13%
2006-2010	41	17%
2011-2015	62	26%
2016-2021	58	24%

Primary Source of Oncology Pharmacy Training	***n***	**%**
Pharmacy School Curriculum	5	2%
Post-Graduate Program (e.g., residency, fellowship)	127	52%
Practice-Based Continuing Education (e.g., certificate program, exam preparation)	39	16%
Corporate-Sponsored Training (e.g., pharmaceutical industry, proprietary training)	0	0%
On-the-Job Training	68	28%
Other	4	2%
BPS Certifications	***n***	
BCACP – Ambulatory Care	1	
BCCCP – Critical Care	0	
BCCP – Cardiology	0	
BCGP – Geriatric	2	
BCIDP – Infectious Diseases	0	
BCNP – Nuclear	0	
BCNSP – Nutrition Support	1	
BCOP – Oncology	235	
BCPP – Psychiatric	0	
BCPPS – Pediatric	0	
BCPS – Pharmacotherapy	2	
BCSCP – Compounded Sterile Preparations	0	
BCTXP – Solid Organ Transplantation	0	
Years of Experience in Pharmacy **Mean = 15.4**	***n***	**%**
0-5	50	21%
6-10	61	25%
11-15	37	15%
16-20	21	9%
20+	77	32%
Years of Experience in Oncology Pharmacy **Mean = 12.1**	***n***	**%**
0-5	75	31%
6-10	65	27%
11-15	31	13%
16-20	21	9%
20+	51	21%
Primary Practice Setting	***n***	**%**
Academic Institution / Educational Institution	23	9%
Academic Medical Center or Hospital	80	33%
Children's Hospital	4	2%
Community Hospital	20	8%
Community Pharmacy	0	0%
Home Infusion / Ambulatory Infusion	8	3%
Hospice	0	0%
Hybrid Academic-Community Hospital	6	2%
Integrated Health System / Accountable Care Organization	6	2%
Investigational Drug Service	5	2%

Long-Term Care Pharmacy	0	0%
Managed Care	4	2%
Oncology Clinic / Oncology Office	56	23%
Pharmaceutical Industry	7	3%
Specialty Pharmacy	8	3%
Governmental Healthcare Facility / Veterans Affairs Hospital	11	5%
Other	5	2%
Time Spent in Professional Role	***n* (>50%)**	**Mean %**
Direct Patient Care	137	53.21%
Administration and Management	25	20.25%
Teaching / Precepting	3	13.50%
Research	6	8.38%
Other	9	4.66%
Initiation Order for Drug Therapy	***n***	**%**
Yes, under a collaborative practice agreement or CDTM protocol	67	28%
Yes, under other prescribing privilege	13	5%
Yes, with physician (or other physician designee) co-signature	82	34%
No, I do not have authority to initiate orders	81	33%
Location of Primary Practice	***n***	**%**
United States	**219**	**90.5%**
Alabama	2	0.8%
Alaska	1	0.4%
Arkansas	1	0.4%
California	27	11.2%
Colorado	11	4.5%
Connecticut	2	0.8%
Delaware	1	0.4%
District of Columbia	1	0.4%
Florida	16	6.6%
Georgia	4	1.7%
Idaho	5	2.1%
Illinois	4	1.7%
Indiana	8	3.3%
Iowa	2	0.8%
Kansas	2	0.8%
Kentucky	9	3.7%
Louisiana	1	0.4%
Maryland	5	2.1%
Massachusetts	9	3.7%
Michigan	6	2.5%
Minnesota	5	2.1%
Mississippi	1	0.4%
Missouri	2	0.8%
Nebraska	2	0.8%

New Hampshire	1	0.4%
New Jersey	4	1.7%
New York	9	3.7%
North Carolina	7	2.9%
Ohio	6	2.5%
Oklahoma	2	0.8%
Oregon	5	2.1%
Pennsylvania	11	4.5%
Rhode Island	1	0.4%
South Carolina	2	0.8%
South Dakota	1	0.4%
Tennessee	3	1.2%
Texas	9	3.7%
Utah	5	2.1%
Virginia	5	2.1%
Washington	10	4.1%
West Virginia	2	0.8%
Wisconsin	9	3.7%
Outside of the United States	**23**	**9.5%**
Australia	2	0.8%
Canada	3	1.2%
Egypt	1	0.4%
Hong Kong	3	1.2%
Jordan	1	0.4%
Oman	1	0.4%
Spain	7	2.9%
Taiwan	1	0.4%
Thailand	3	1.2%
UAE	1	0.4%

Mean Ratings for Task Statements		*n*	Importance	Frequency
1	Obtain and assess pertinent patient-specific information.	243	4.88	4.77
2	Evaluate genomic and molecular test results to optimize therapeutic decisions.	243	4.21	3.39
3	Evaluate biomarker test results to enhance the value and effectiveness of therapy.	243	4.29	3.60
4	Establish therapeutic goals related to oncology treatment and supportive care.	243	4.51	4.10
5	Design, modify, and optimize treatment and supportive care for individuals with oncologic diseases and/or non-malignant hematologic disorders.	243	4.75	4.48
6	Design, modify, and optimize pharmacotherapeutic regimens based on tumor resistance mechanisms.	243	3.92	2.90
7	Monitor and manage complications and toxicities in the oncology patient population.	243	4.81	4.53
8	Identify and/or manage long-term complications of oncology treatment.	243	4.23	3.30
9	Educate patients and caregivers regarding treatment and supportive care.	243	4.72	4.13
10	Educate and/or mentor learners and health care professionals on topics associated with the oncology patient population.	243	4.48	4.01
11	Evaluate applicability of available literature and clinical data to the oncology patient population and/or individual oncology patients.	243	4.57	4.10
12	Implement and/or evaluate investigational protocols for oncology treatments and supportive care.	243	4.12	3.24
13	Establish and/or evaluate drug-use guidelines, policies, procedures, and formularies.	243	4.38	3.79
14	Establish and/or maintain systems, tools, technology, and processes to manage and optimize oncology medication use and safety.	243	4.27	3.65
15	Optimize processes to improve the availability, cost-effectiveness, and efficacy of oncology treatment and supportive care.	243	4.31	3.60
16	Promote public health awareness of cancer prevention, screening, education, and resources.	243	3.61	2.23

Mean Ratings for Knowledge Areas		*n*	Importance	Frequency
1	**Oncology Diagnosis and Testing**			
1A	Oncology Diagnosis			
1A1	Cancer Etiology and Pathophysiology	243	4.15	3.65
1A2	Types of Cancer	243	4.57	4.34
1A3	Cancer-Related Molecular Biology	243	4.29	3.73
1A4	Mechanisms of Tumor Resistance	243	3.98	3.07
1B	Oncology Testing			
1B1	Genomics	243	4.24	3.46
1B2	Prognostic and Predictive Testing	243	3.95	3.29
1B3	Next-Generation Sequencing (NGS)	243	4.13	3.40

1B4	Biomarker Testing	243	4.52	4.03
1C	Cancer Detection and Prevention			
1C1	Cancer Detection	243	3.64	2.57
1C2	Cancer Prevention and Risk-Reduction	243	3.56	2.51
1C3	Cancer-Support and Cancer-Education Resources	243	4.11	3.44
2	**Therapeutics and Patient Management**			
2A	Treatment Planning			
2A1	Treatment of Cancer	243	4.87	4.79
2A2	Treatment of Non-Malignant Hematologic Disorders	243	4.02	3.41
2A3	Palliative and Supportive Care	243	4.56	4.09
2A4	End-of-Life Care	243	4.00	2.92
2A5	Survivorship Care	243	3.79	2.54
2A6	Social Determinants of Health	243	3.85	2.79
2A7	Clinical Standards and Guidelines	243	4.87	4.74
2B	Therapeutic Implementation			
2B1	Pharmacotherapy	243	4.88	4.76
2B2	Non-Pharmacologic Treatment Modalities	243	3.70	2.89
2B3	Pharmacogenomics	243	4.16	3.31
2B4	Patient and Caregiver Education	243	4.60	4.04
2B5	Interdisciplinary Care Coordination	243	4.37	3.81
2B6	Drug Administration	243	4.67	4.51
2B7	Complementary and Alternative Therapies	243	3.40	2.85
2C	Cancer Outcomes and Treatment Monitoring			
2C1	Drug Interactions	243	4.64	4.30
2C2	Mechanisms of Drug Resistance	243	4.04	3.19
2C3	Toxicity Prevention, Monitoring, and Management	243	4.80	4.58
2C4	Oncologic Emergencies	243	4.70	4.01
2C5	Complications of Cancer Therapy	243	4.71	4.29
2C6	Complications of Stem Cell Transplantation and Cellular Tx	243	4.35	3.25
2C7	Long-Term Complications of Cancer Therapy	243	4.19	3.17
3	**Professional Practice**			
3A	Clinical Trials and Research			
3A1	Research Methods	243	4.22	3.36
3A2	Statistics	243	3.99	3.07
3A3	Research Outcomes	243	4.34	3.62
3A4	Laws and Ethics associated with Research and Clinical Trials	243	3.83	2.83
3A5	Clinical Trial Design in Oncology	243	4.14	3.32
3A6	Institutional Review Boards (IRB)	243	3.77	2.78
3A7	Drug Approval Process	243	3.91	3.05
3A8	Investigational Drug Management	243	3.84	2.96
3B	Practice Management			
3B1	Quality Management	243	4.06	3.28
3B2	Medication Inventory Management	243	3.77	3.23
3B3	Drug Handling and Disposal	243	4.20	3.75
3B4	Risk Evaluation Mitigation Strategy (REMS) Programs	243	4.03	3.39
3B5	Compassionate Use Processes	243	3.69	2.57
3B6	Biosimilar Medications	243	4.47	4.32
3B7	Professional Practice Standards, Guidelines, and Regulations	243	4.40	4.00

An exploratory factor analysis[7] using maximum likelihood extraction and varimax rotation[8] was performed on the importance ratings provided for the knowledge areas. One factor emerged as the primary factor explaining 35.9% of the variability in importance ratings. The eigenvalue for the first factor was 16.88 and all subsequent factors had eigenvalues of 3.26 or less, and each explained less than 7.0% 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).

3. Finalization of Exam Content Outline

The role delineation study panel reconvened on 21 February 2022 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 oncology pharmacy.

The panelists agreed to retain all but one task statement. Task 6 (Design, modify, and optimize pharmacotherapeutic regimens based on tumor resistance mechanisms) was discarded due its low survey ratings and because its content was subsumed by Task 2 (Evaluate genomic and molecular test results to optimize therapeutic decisions) and Task 5 (Design, modify, and optimize treatment and supportive care for individuals with oncologic diseases and/or non-malignant hematologic disorders). Task 16 (Promote public health awareness of cancer prevention, screening, education, and resources) was retained despite its low ratings because it was deemed within scope despite not always being listed as a formal job responsibility and is often “the last thing you have time for.”

The panelists agreed to retain all the knowledge statements developed and only one text change was made. The order of the examples in 2A6 (Social Determinants of Health) was revised as follows: health literacy, socioeconomic status, cultural practices and preferences, access to care, caregiver support. Content areas 1C1 (Cancer Detection), 1C2 (Cancer Prevention and Risk-Reduction), and 2A5 (Survivorship Care) were retained despite relatively lower ratings because they were deemed within scope and necessary for a full understanding of oncology even though most patients seen by oncology pharmacists aren’t at those stages of care. 2B2 (Non-Pharmacologic Treatment Modalities) and 2B7 (Complementary and Alternative Therapies) were retained despite relatively lower ratings because pharmacists need to understand these therapies and how they interact with pharmacology even if they aren’t typically the ones imitating these therapies. 3B5 (Compassionate Use Processes) was retained despite relatively lower ratings because the panel agreed that it is indeed rare to receive a request, but knowledge of the process is required when it does happen.

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 panel considered potentially lowering the percentages allocated in Domain 3, but instead agreed to apply the survey-derived weights as is. This was done in recognition that the survey sample accounted for the differences in individual practices they discussed and that the survey sample didn’t over-represent those who focus on clinical trials to skew the ratings.

	Content Domains and Subdomains of ECO	Criticality	Final Weight	# Items
1	**Oncology Diagnosis and Testing**	**155.60**	**22.1%**	**28**
1A	Oncology Diagnosis	63.22	9.0%	11
1B	Oncology Testing	59.93	8.5%	11
1C	Cancer Detection and Prevention	32.45	4.6%	6
2	**Therapeutics and Patient Management**	**345.96**	**49.2%**	**61**
2A	Treatment Planning	110.88	15.8%	20
2B	Therapeutic Implementation	113.79	16.2%	20
2C	Cancer Outcomes and Treatment Monitoring	121.29	17.2%	21
3	**Professional Practice**	**201.78**	**28.7%**	**36**
3A	Clinical Trials and Research	100.54	14.3%	18
3B	Practice Management	101.25	14.4%	18

See Appendix D for the final Examination Content Outline.

Appendix A – Subject Matter Experts

Role Delineation Study Panelists

Name	Credentials	Post-Licensure Experience	Job Title	Employer/ Affiliation	Location	Practice Setting
Alissa Karr	Pharm.D., BCOP	0	Clinical Oncology Pharmacy Manager	Wake Forest Baptist Health	USA:NC	University-Affiliated hospital
Allison Baxley	Pharm.D., BCOP	11	Director of Pharmacy	OU Health Stephenson Cancer Center	USA:OK	Academic Medical Center Affiliated Clinic
Arin Whitman	Pharm.D., BCOP	12	Clinical Associate Professor	Western New England University	USA:MA	Academic Medical Center Affiliated Clinic
Deborah Hass	Pharm.D., BCOP, BCPS	22	Associate Professor	West Coast University	USA:CA	Academic Institution
Deborah Ward	Pharm.D., BCOP, BCPS	20	Clinical Pharmacy Specialist	St Jude Children's Research Hospital	USA:TN	Academic Institution
Ekim Ekinci	Pharm.D., BCOP	3	Clinical Pharmacy Specialist in Oncology	Kaiser Permanente Colorado	USA:CO	Outpatient Clinic
Ethan Sebring	Pharm.D., BCOP, BCPS, CPP	4	Clinical Pharmacist	Novant Health New Hanover Regional Medical Center	USA:NC	Health-System-Affiliated Clinic
Ila Saunders	Pharm.D., BCOP	13	Assoc. Clinical Prof. of Pharmacy and Oncology Clinical Pharmacy Specialist	UC San Diego Skaggs School of Pharmacy	USA:NC	Academic Medical Center Affiliated Clinic
Jessica Lewis-Gonzalez	Pharm.D., BCOP	3	Clinical Oncology Pharmacist, Adult Bone Marrow Transplant and Malignant Hematology	University of New Mexico Comprehensive Cancer Center	USA:NM	Academic Medical Center Affiliated Clinic
Justin Arnall	Pharm.D., BCOP, CPP	0	Clinical Coordinator, Bleeding	Specialty Pharmacy Service, Atrium Health	USA:NC	Academic Institution

Name	Credentials	Post-Licensure Experience	Job Title	Employer/ Affiliation	Location	Practice Setting
			Disorders/ Hematology			
Kami Redecker	Pharm.D., BCOP, BCPS	15	Clinical Pharmacist Specialist	Norton Cancer Institute	USA:KY	Outpatient Clinic
Kelly Gaertner	Pharm.D., BCOP, BCPS	6	Oncology Clinical Pharmacy Specialist	Allegheny Health Network	USA:PA	Academic Medical Center Affiliated Clinic
Mimi Lo	Pharm.D., BCOP, BCPS	15	Heme/BMT Clinical Pharmacist	UCSF Health	USA:CA	NCI designated cancer center
Mohammed Alnuhait	Pharm.D., BCOP, BCPS	3	Assistant professor	Umm Alqura University	Kingdom of Saudi Arabia	University-Affiliated hospital
Nancy Nix	Pharm.D., BCOP, BCPS	12	Oncology Pharmacy Clinical Coordinator	Ballad Health	USA:TN	Outpatient Clinic
Phyllis Bull	Pharm.D., BCOP	17	Director of Clinical Oncology Pharmacy	Lifebridge Health	USA:MD	Academic Medical Center Affiliated Clinic
Roseanne DiMarco	Pharm.D., BCOP, BCPS	8	Advanced Clinical Pharmacist - Breast and Gynecologic Cancer	Thomas Jefferson University Hospital	USA:PA	NCI-Designated Cancer Center
Sarah Kator	Pharm.D., BCOP	7	System Investigational Drug Services Pharmacist	Intermountain Healthcare	USA:UT	Health-System-Affiliated Clinic
Sean Cosgriff	Pharm.D., BCOP	25	Oncology Clinical Pharmacy Specialist	VA Portland Health Care System	USA:OR	VA Health System
Shayna Simon	Pharm.D., BCOP	0	Clinical Pharmacy Coordinator	UT Southwestern	USA:TX	Academic Institution
Sol Atienza	Pharm.D., BCOP	26	Oncology Pharmacy Clinical Specialist	Advocate Aurora Health	USA:WI	Multi-Center Community Hospital
Yun Man	Pharm.D., BCOP	0	Medication Use Quality and Policy Specialist	Dana-Farber Cancer Institute	USA:MA	NCI designated cancer center

Role Delineation Study Interviewees

Name	Credentials	Post-Licensure Experience	Job Title	Employer/ Affiliation	Location	Practice Setting
Anu Pradhan	Ph.D., BCOP	6	IDS Supervisor	Moffitt Cancer Center	USA:FL	NCI-Designated Cancer Center
Brendan Rasor	Pharm.D., BCOP	3	Oncology Pharmacist	Kettering Health	USA:OH	Health-System-Affiliated Clinic
Carolyn Oxencis	Pharm.D., BCOP	15	Clinical Pharmacist - Hematology/ Oncology	Froedtert & the Medical College of Wisconsin	USA:WI	Academic Institution

Appendix B – Orientation Presentation

Role Delineation Study

CREDENTIAL NAME

bps Board of Pharmacy Specialties®

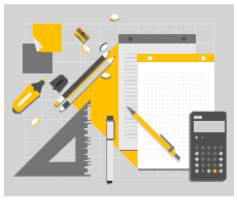
Role Delineation Study

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

The key points of inquiry in a JA (or RDS) 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



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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

Interviews → Committee Develops ECO → Survey Development → Survey Administration → Survey Analysis → Committee Finalizes ECO

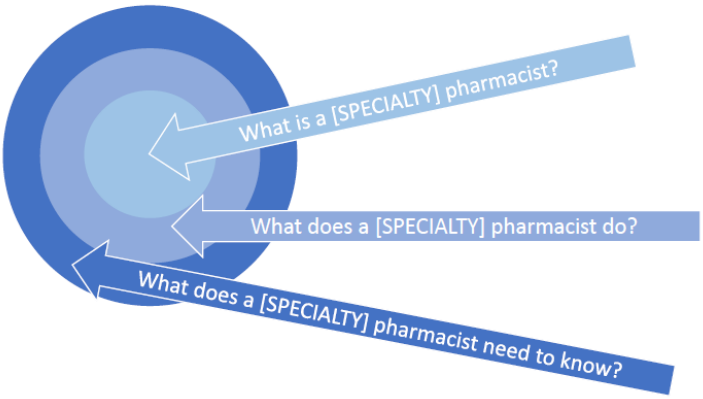
you are here

Multiple Levels of Analysis

Consider how you would describe a job role to someone

All three levels help define the scope

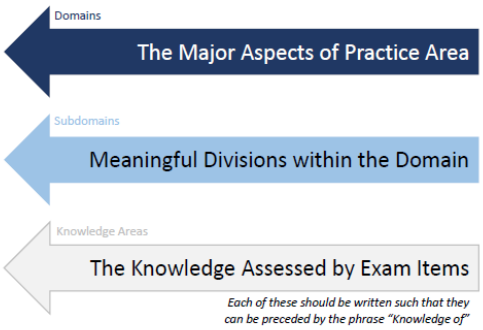
But only the outer layer is the level at which an examinee is assessed



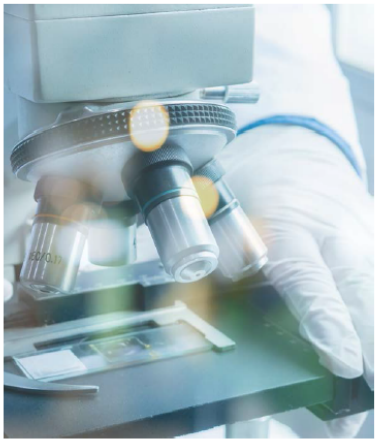
Exam Content Outline

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

Exam Content Outline Structure and Components		*(Somewhat Silly) Example*
1	Content Domain	Chocolate
1A	Content Subdomain	History
1A1	Knowledge Area	Mesoamerican Usage
1A2	Knowledge Area	European Adaptation
1A3	Knowledge Area	Modern Production
1B	Content Subdomain	Types
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

	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

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

Helpful Hints

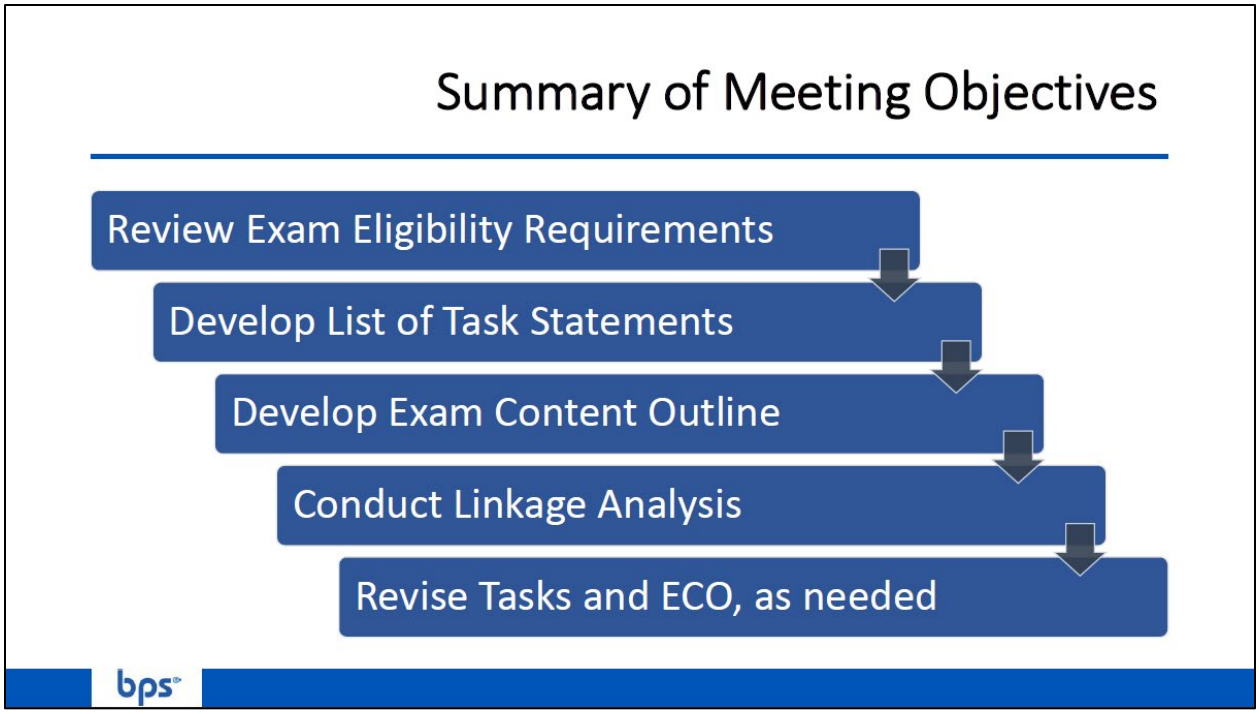
- An x-mark means that the specific knowledge is needed to perform that specific task.
- For example, knowledge of different types of chocolate is needed to *Develop Chocolate Recipes* but history of chocolate is not needed for that same task.

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



Appendix C – Survey Text

The Board of Pharmacy Specialties is conducting a Role Delineation Study for the Board-Certified Oncology Pharmacist (BCOP) 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 Role Delineation Study, we request your participation in this survey to provide ratings and feedback for the tasks and knowledge areas identified as representing current pharmacy practice in oncology.

Survey respondents will be prompted to rate each task and knowledge area on its importance to oncology practice 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.

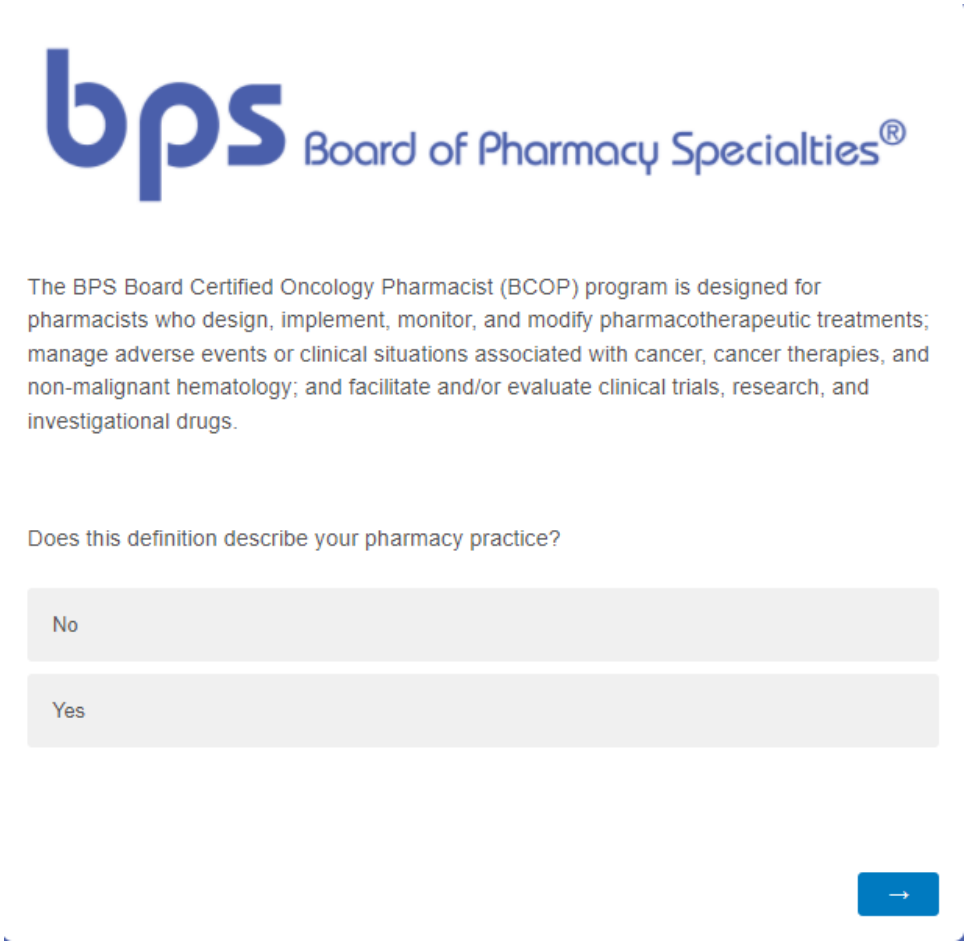
Responses will only be reviewed in aggregate and will not be used for any other purpose than the Role Delineation Study.

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

If you have any questions about this survey or the Role Delineation Study, please feel free to contact rds@aphanet.org.

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

- No
- Yes



TASK STATEMENTS

You will be asked to rate each task statement according to its importance and frequency. Below is an explanation of each rating scale.

How important is this task to oncology pharmacy practice?

0 = not at all / not applicable
1 = of very little importance
2 = somewhat important
3 = moderately important
4 = very important
5 = critically important

How frequently is this task performed in oncology pharmacy practice?

0 = not at all / not applicable
1 = very rarely
2 = rarely
3 = occasionally
4 = often
5 = very often

Please rate each task.

	Importance						Frequency					
	0	1	2	3	4	5	0	1	2	3	4	5
Obtain and assess pertinent patient-specific information.	○	○	○	○	○	○	○	○	○	○	○	○
Evaluate genomic and molecular test results to optimize therapeutic decisions.	○	○	○	○	○	○	○	○	○	○	○	○
Evaluate biomarker test results to enhance the value and effectiveness of therapy.	○	○	○	○	○	○	○	○	○	○	○	○
Establish therapeutic goals related to oncology treatment and supportive care.	○	○	○	○	○	○	○	○	○	○	○	○
Design, modify, and optimize treatment and supportive care for individuals with oncologic diseases and/or non-malignant hematologic disorders.	○	○	○	○	○	○	○	○	○	○	○	○
Design, modify, and optimize pharmacotherapeutic regimens based on tumor resistance mechanisms.	○	○	○	○	○	○	○	○	○	○	○	○

Monitor and manage complications and toxicities in the oncology patient population.	○	○	○	○	○	○	○	○	○	○	○	○
Identify and/or manage long-term complications of oncology treatment.	○	○	○	○	○	○	○	○	○	○	○	○
Educate patients and caregivers regarding treatment and supportive care.	○	○	○	○	○	○	○	○	○	○	○	○
Educate and/or mentor learners and health care professionals on topics associated with the oncology patient population.	○	○	○	○	○	○	○	○	○	○	○	○
Evaluate applicability of available literature and clinical data to the oncology patient population and/or individual oncology patients.	○	○	○	○	○	○	○	○	○	○	○	○
Implement and/or evaluate investigational protocols for oncology treatments and supportive care.	○	○	○	○	○	○	○	○	○	○	○	○
Establish and/or evaluate drug-use guidelines, policies, procedures, and formularies.	○	○	○	○	○	○	○	○	○	○	○	○
Establish and/or maintain systems, tools, technology, and processes to manage and optimize oncology medication use and safety.	○	○	○	○	○	○	○	○	○	○	○	○

Optimize processes to improve the availability, cost-effectiveness, and efficacy of oncology treatment and supportive care.	○	○	○	○	○	○	○	○	○	○	○	○
Promote public health awareness of cancer prevention, screening, education, and resources.	○	○	○	○	○	○	○	○	○	○	○	○

What task performed by oncology pharmacists is missing from this list, if any?

KNOWLEDGE STATEMENTS

You will be asked to rate each knowledge statement according to its importance and frequency. Below is an explanation of each rating scale.

How important is this knowledge area to oncology pharmacy practice?

0 = not at all / not applicable
1 = of very little importance
2 = somewhat important
3 = moderately important
4 = very important
5 = critically important

How frequently is this knowledge applied in oncology pharmacy practice?

0 = not at all / not applicable
1 = very rarely
2 = rarely
3 = occasionally
4 = often
5 = very often

Please rate each knowledge area in the Oncology Diagnosis and Testing content domain.

	Importance						Frequency					
	0	1	2	3	4	5	0	1	2	3	4	5
Cancer Etiology and Pathophysiology	○	○	○	○	○	○	○	○	○	○	○	○
Types of Cancer	○	○	○	○	○	○	○	○	○	○	○	○
Cancer-Related Molecular Biology	○	○	○	○	○	○	○	○	○	○	○	○
Mechanisms of Tumor Resistance	○	○	○	○	○	○	○	○	○	○	○	○
Genomics (e.g., genomic alterations, gene amplification, types of mutations)	○	○	○	○	○	○	○	○	○	○	○	○
Prognostic and Predictive Testing (e.g., IPI, FLIPI, Oncotype DX)	○	○	○	○	○	○	○	○	○	○	○	○
Next-Generation Sequencing (NGS)	○	○	○	○	○	○	○	○	○	○	○	○
Biomarker Testing (e.g., PDL1, TMB, TPS, CPS)	○	○	○	○	○	○	○	○	○	○	○	○
Cancer Prevention and Risk-Reduction	○	○	○	○	○	○	○	○	○	○	○	○
Cancer-Support and Cancer-Education Resources	○	○	○	○	○	○	○	○	○	○	○	○

Please rate each knowledge area in the Therapeutics and Patient Management content domain.

	Importance						Frequency					
	0	1	2	3	4	5	0	1	2	3	4	5
Treatment of Cancer	○	○	○	○	○	○	○	○	○	○	○	○
Treatment of Non-Malignant Hematologic Disorders (e.g., aplastic anemia, sickle cell disease, ITP)	○	○	○	○	○	○	○	○	○	○	○	○

Palliative and Supportive Care	○	○	○	○	○	○	○	○	○	○	○	○
End-of-Life Care	○	○	○	○	○	○	○	○	○	○	○	○
Survivorship Care	○	○	○	○	○	○	○	○	○	○	○	○
Social Determinants of Health (e.g., caregiver support, access to care, health literacy, socioeconomic status, cultural practices and preferences)	○	○	○	○	○	○	○	○	○	○	○	○
Clinical Standards and Guidelines (e.g., NCCN, ASCO)	○	○	○	○	○	○	○	○	○	○	○	○
Pharmacotherapy	○	○	○	○	○	○	○	○	○	○	○	○
Non-Pharmacologic Treatment Modalities (e.g., surgery, radiation therapy)	○	○	○	○	○	○	○	○	○	○	○	○
Pharmacogenomics	○	○	○	○	○	○	○	○	○	○	○	○
Patient and Caregiver Education	○	○	○	○	○	○	○	○	○	○	○	○
Interdisciplinary Care Coordination (e.g., transitions of care, specialty pharmacy services, patient assistance programs)	○	○	○	○	○	○	○	○	○	○	○	○
Drug Administration (e.g., dosage forms, routes of delivery)	○	○	○	○	○	○	○	○	○	○	○	○
Complementary and Alternative Therapies	○	○	○	○	○	○	○	○	○	○	○	○
Drug Interactions (with foods, supplements, laboratory tests, and other drugs)	○	○	○	○	○	○	○	○	○	○	○	○
Mechanisms of Drug Resistance	○	○	○	○	○	○	○	○	○	○	○	○

Mechanisms of Drug Resistance	○	○	○	○	○	○	○	○	○	○	○	○
Toxicity Prevention, Monitoring, and Management	○	○	○	○	○	○	○	○	○	○	○	○
Oncologic Emergencies	○	○	○	○	○	○	○	○	○	○	○	○
Complications of Cancer Therapy	○	○	○	○	○	○	○	○	○	○	○	○
Complications of Stem Cell Transplantation and Cellular Therapy	○	○	○	○	○	○	○	○	○	○	○	○
Long-Term Complications of Cancer Therapy	○	○	○	○	○	○	○	○	○	○	○	○

Please rate each knowledge area in the Professional Practice content domain.

	Importance						Frequency					
	0	1	2	3	4	5	0	1	2	3	4	5
Research Methods (e.g., study design, validity)	○	○	○	○	○	○	○	○	○	○	○	○
Statistics (e.g., statistical power, number needed to treat, results interpretation)	○	○	○	○	○	○	○	○	○	○	○	○
Research Outcomes (e.g., clinical benefit, patient reported outcomes)	○	○	○	○	○	○	○	○	○	○	○	○
Laws and Ethics associated with Research and Clinical Trials	○	○	○	○	○	○	○	○	○	○	○	○
Clinical Trial Design in Oncology (e.g., phases, objectives, endpoints)	○	○	○	○	○	○	○	○	○	○	○	○
Institutional Review Boards (IRB) and Independent Ethics Committees (IEC)	○	○	○	○	○	○	○	○	○	○	○	○
Drug Approval Process	○	○	○	○	○	○	○	○	○	○	○	○

Investigational Drug Management	○	○	○	○	○	○	○	○	○	○	○	○
Quality Management (e.g., medication use evaluation, root cause analysis, patient safety)	○	○	○	○	○	○	○	○	○	○	○	○
Medication Inventory Management (e.g., pharmacoeconomics, procurement, allocation, tracking)	○	○	○	○	○	○	○	○	○	○	○	○
Drug Handling and Disposal (e.g., USP<800>, radiopharmaceuticals)	○	○	○	○	○	○	○	○	○	○	○	○
Risk Evaluation Mitigation Strategy (REMS) Programs	○	○	○	○	○	○	○	○	○	○	○	○
Compassionate Use Processes (e.g., IND process, right-to-try)	○	○	○	○	○	○	○	○	○	○	○	○
Biosimilar Medications	○	○	○	○	○	○	○	○	○	○	○	○
Professional Practice Standards, Guidelines, and Regulations (e.g., NIOSH, ASCO-ONS)	○	○	○	○	○	○	○	○	○	○	○	○

What knowledge required by oncology pharmacists is missing from this list, if any?

SURVEY RESPONDENT DEMOGRAPHICS

What percentage of your professional practice is spent in oncology pharmacy?

On average, how many hours per week do you spend in oncology pharmacy?

Which pharmacy residencies have you completed? Select all that apply and leave blank if none.

PGY-1 Pharmacy	PGY-2 Internal Medicine
PGY-1 Community-Based	PGY-2 Investigational Drugs
PGY-1 Managed Care	PGY-2 Medication-Use Safety
PGY-2 Ambulatory Care	PGY-2 Neurology
PGY-2 Cardiology	PGY-2 Oncology
PGY-2 Clinical Pharmacogenomics	PGY-2 Palliative Care / Pain Management
PGY-2 Corporate Pharmacy Leadership	PGY-2 Pediatric
PGY-2 Critical Care	PGY-2 Pharmacotherapy
PGY-2 Emergency Medicine	PGY-2 Pharmacy Informatics
PGY-2 Geriatric	PGY-2 Population Health and Data Analytics
PGY-2 Health System	PGY-2 Psychiatric
PGY-2 Health System (w/ Masters)	PGY-2 Solid Organ Transplant
PGY-2 Infectious Diseases	PGY-2 Specialty Pharmacy

What is the highest pharmacy degree you've completed?

- BS
- MS
- PharmD
- PhD
- Other (please specify)

When did you complete your highest pharmacy degree?

What was the primary source of your oncology pharmacy training?

- Pharmacy School Curriculum
- Post-Graduate Program (e.g., residency, fellowship)
- Practice-Based Continuing Education (e.g., certificate program, exam preparation)
- Corporate-Sponsored Training (e.g., pharmaceutical industry, proprietary training)
- On-the-Job Training
- Other (please specify)

Which BPS certifications do you currently hold? Select all that apply and leave blank if none.

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

What other certifications relevant to oncology pharmacy, not issued by BPS, do you currently hold? Leave blank if none.

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

How many years of experience do you have in oncology pharmacy?

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
- Oncology Clinic / Oncology Office
- Pharmaceutical Industry
- Specialty Pharmacy
- Governmental Healthcare Facility / Veterans Affairs Hospital
- Other (please specify)

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

Direct Patient Care	0
Administration and Management	0
Teaching and Precepting	0
Research	0
Other (please specify)	0
Total	0

Do you have authority to initiate orders for drug therapy?

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

Where is your primary practice located?

Alabama	Michigan	Utah
Alaska	Minnesota	Vermont
Arizona	Mississippi	Virginia
Arkansas	Missouri	Washington
California	Montana	West Virginia
Colorado	Nebraska	Wisconsin
Connecticut	Nevada	Wyoming
Delaware	New Hampshire	American Samoa
District of Columbia	New Jersey	Guam
Florida	New Mexico	Northern Mariana Islands

Georgia	New York	Puerto Rico
Hawaii	North Carolina	U.S. Virgin Islands
Idaho	North Dakota	Baker Island
Illinois	Ohio	Howland Island
Indiana	Oklahoma	Jarvis Island
Iowa	Oregon	Johnston Atoll
Kansas	Pennsylvania	Kingman Reef
Kentucky	Rhode Island	Midway Atoll
Louisiana	South Carolina	Navassa Island
Maine	South Dakota	Palmyra Atoll
Maryland	Tennessee	Wake Island
Massachusetts	Texas	Outside of the United States (please specify)

Thank you very much for your interest and participation.

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.

Appendix D – Exam Content Outline

Name of Credential	BPS Board-Certified Oncology Pharmacist
Certification-Issuing Body	Board of Pharmacy Specialties
Designation Awarded	BCOP
Level of Proficiency	Specialty Certification
Target Population	Pharmacists who design, implement, monitor, and modify pharmacotherapeutic treatments; manage adverse events or clinical situations associated with cancer, cancer therapies, and non-malignant hematology; and facilitate and/or evaluate clinical trials, research, and investigational drugs
Program Purpose	To validate that the pharmacist has the advanced knowledge and experience to provide treatment and education that optimizes safety and outcomes for individuals receiving: treatment for cancer or non-malignant hematologic conditions, palliative and supportive care, and/or survivorship care; as well as support for cancer detection, screening, and risk-reduction
Eligibility Requirements	Graduation from a pharmacy program accredited by the Accreditation Council for Pharmacy Education (ACPE) or a program outside the U.S. that qualifies the individual to practice in the jurisdiction, current active license or registration to practice pharmacy in the United States or another jurisdiction, and either: - 4 years of practice experience of post-licensure practice within the past 7 years, with at least 50% of time spent in the scope defined by the exam content outline - PGY-1 residency and 1 year of post-licensure practice within the past 7 years, with at least 50% of time spent in the scope defined by the exam content outline - PGY-2 residency in Oncology Pharmacy
Reporting Scale	Scale range is 200 to 800, with 500 marking the minimum passing score
Examination Length	150 Items: 125 Scored items and 25 Pretest (Unscored) Items
Administration Time	3 Hours 45 Minutes
ECO Creation Date	February 2022

Examination Content Outline		# Items
1	**Oncology Diagnosis and Testing**	**28**
1A	Oncology Diagnosis	11
1A1	Cancer Etiology and Pathophysiology	
1A2	Types of Cancer	
1A3	Cancer-Related Molecular Biology	
1A4	Mechanisms of Tumor Resistance	
1B	Oncology Testing	11
1B1	Genomics (e.g., genomic alterations, gene amplification, types of mutations)	
1B2	Prognostic and Predictive Testing (e.g., IPI, FLIPI, Oncotype DX)	
1B3	Next-Generation Sequencing (NGS)	
1B4	Biomarker Testing (e.g., PDL1, TMB, TPS, CPS)	
1C	Cancer Detection and Prevention	6
1C1	Cancer Detection (e.g., screening frequency, early detection)	
1C2	Cancer Prevention and Risk-Reduction	
1C3	Cancer-Support and Cancer-Education Resources	
2	**Therapeutics and Patient Management**	**61**
2A	Treatment Planning	20
2A1	Treatment of Cancer	
2A2	Treatment of Non-Malignant Hematologic Disorders (e.g., aplastic anemia, sickle cell disease, ITP)	
2A3	Palliative and Supportive Care	
2A4	End-of-Life Care	
2A5	Survivorship Care	
2A6	Social Determinants of Health (e.g., health literacy, socioeconomic status, cultural practices and preferences, access to care, caregiver support)	
2A7	Clinical Standards and Guidelines (e.g., NCCN, ASCO)	
2B	Therapeutic Implementation	20
2B1	Pharmacotherapy	
2B2	Non-Pharmacologic Treatment Modalities (e.g., surgery, radiation therapy)	
2B3	Pharmacogenomics	
2B4	Patient and Caregiver Education	
2B5	Interdisciplinary Care Coordination (e.g., transitions of care, specialty pharmacy services, patient assistance programs)	
2B6	Drug Administration (e.g., dosage forms, routes of delivery)	
2B7	Complementary and Alternative Therapies	
2C	Cancer Outcomes and Treatment Monitoring	21
2C1	Drug Interactions (with foods, supplements, laboratory tests, and other drugs)	
2C2	Mechanisms of Drug Resistance	
2C3	Toxicity Prevention, Monitoring, and Management	
2C4	Oncologic Emergencies	
2C5	Complications of Cancer Therapy	
2C6	Complications of Stem Cell Transplantation and Cellular Therapy	

2C7	Long-Term Complications of Cancer Therapy	
3	**Professional Practice**	**36**
3A	Clinical Trials and Research	18
3A1	Research Methods (e.g., study design, validity)	
3A2	Statistics (e.g., statistical power, number needed to treat, results interpretation)	
3A3	Research Outcomes (e.g., clinical benefit, patient reported outcomes)	
3A4	Laws and Ethics associated with Research and Clinical Trials	
3A5	Clinical Trial Design in Oncology (e.g., phases, objectives, endpoints)	
3A6	Institutional Review Boards (IRB) and Independent Ethics Committees (IECs)	
3A7	Drug Approval Process	
3A8	Investigational Drug Management	
3B	Practice Management	18
3B1	Quality Management (e.g., medication use evaluation, root cause analysis, patient safety)	
3B2	Medication Inventory Management (e.g., pharmacoeconomics, procurement, allocation, tracking)	
3B3	Drug Handling and Disposal (e.g., USP<800>, radiopharmaceuticals)	
3B4	Risk Evaluation Mitigation Strategy (REMS) Programs	
3B5	Compassionate Use Processes (e.g., IND process, right-to-try)	
3B6	Biosimilar Medications	
3B7	Professional Practice Standards, Guidelines, and Regulations (e.g., NIOSH, ASCO-ONS)	