Job Analysis

Nutrition Support Pharmacy

August 2023

Board of Pharmacy Specialties®

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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 nutrition support 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 nutrition support pharmacy specialty practice area. The outcome of this study was the creation of an examination blueprint that will be used to construct the nutrition support 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		
1	Nutrition Support	**21%**
1A	Normal and Abnormal Nutrition	12%
1B	Nutrition Support Formulations and Delivery	9%
2	Therapeutics and Patient Management	**53%**
2A	Treatment Planning	18%
2B	Therapeutic Implementation	17%
2C	Treatment Outcomes and Monitoring	18%
3	Professional Practice	**26%**
3A	Quality of Care	12%
3B	Practice Management	14%

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 nutrition support pharmacy.

A job analysis[1], 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 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 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 nutrition support pharmacy
2. Development, administration, and analysis of a survey to other qualified pharmacists who are currently engaged in nutrition support 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 13 subject-matter experts in nutrition support 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. Three additional subject-matter experts in nutrition support pharmacy were interviewed individually on a 1-hour teleconference. See Appendix A for the qualifications and professional characteristics of the job analysis panel and interviewees.

The interviews took place during the dates of March 8 to April 18. 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 job analysis.

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 nutrition support pharmacy. The dates of the meetings were May 2, May 3, and May 16.

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 job analysis panelists.

The panel developed 18 task statements that describe the work activities performed by a nutrition support pharmacist.

1	Evaluate patient nutrition status, medical history, medication history, present illness, clinical status, health risks, allergy, cultural, psychosocial, socioeconomic factors, 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, nutritional requirements, and goals of care
4	Perform the ordering, order review, compounding, labeling, and dispensing of enteral and parenteral nutrition formulations
5	Optimize the administration of nutrition support to patients by assessing availability, route, compatibility, stability, potential interactions, and medication-delivery technology
6	Optimize the administration of medications to patients by assessing availability, route, compatibility, stability, potential interactions, and medication-delivery technology
7	Monitor and evaluate patient safety, adherence, and progress toward nutrition goals
8	Establish plan for and/or coordinate transitions of care in collaboration with interprofessional healthcare team to optimize healthcare outcomes
9	Modify therapeutic plans in response to changes in clinical status, nutrition status, healthcare goals, allergy, cultural, psychosocial, socioeconomic factors, and other pertinent patient factors

10	Develop and provide nutrition and healthcare education and counseling to patients, caregivers, and/or members of the general public
11	Develop and provide nutrition and healthcare education and support to other pharmacists, pharmacy learners, and members of the interprofessional healthcare team
12	Lead or participate in nutrition and healthcare quality improvement, safety, and public health initiatives
13	Develop, evaluate, and/or align policies, practices, and protocols according to accreditation standards, regulatory requirements, and evidence-based practice
14	Develop and/or utilize selection strategies for nutrition support, medications, devices, and equipment to improve cost effectiveness, resource utilization, and risk mitigation
15	Utilize health information technology and clinical decision support to optimize pharmacotherapeutic decisions
16	Engage in continuous professional development in the nutrition support pharmacy specialty area, such as healthcare committee involvement, scholarly activities, and continuing education
17	Evaluate clinical literature and its applicability to nutrition support pharmacy practice
18	Advocate for the role and contribution of nutrition support pharmacy to the public, healthcare providers, health system, and policy makers

The panel identified three content domains that describe the key high-level components of nutrition support pharmacy. Across the three content domains, the panel identified seven content sub-domains and developed 40 knowledge areas that describe specific job knowledge associated with the practice of nutrition support 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	**Nutrition Support**
1A	Normal and Abnormal Nutrition
1A1	Physiology and Pathophysiology of Nutrition (e.g., ingestion, digestion, absorption, metabolism, excretion, appetite)
1A2	Fluid, Electrolyte, and Acid-Base Homeostasis and Disorders
1A3	Nutrition Requirements throughout the Lifecycle (e.g., pregnancy, pediatric, older adults)
1A4	Nutrition Deficiencies and Toxicities
1A5	Malnutrition
1B	Nutrition Support Formulations and Delivery
1B1	Parenteral Nutrition Sterile Compounding (e.g., USP <797>)
1B2	Enteral Nutrition Formulations
1B3	Nutrition Support Delivery Technology and Devices
2	**Therapeutics and Patient Management**
2A	Treatment Planning
2A1	Nutrition Assessment
2A2	Clinical Assessment (e.g., functional, cognitive, physical, laboratory analysis, diagnostic testing)
2A3	Pharmacodynamics, Pharmacokinetics, and Pharmacogenomics
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 (e.g., health literacy, access to care)
2A7	Practice Settings (e.g., critical/acute care, home healthcare, alternate care sites)
2B	Therapeutic Implementation
2B1	Enteral Nutrition
2B2	Parenteral Nutrition
2B3	Oral Nutrition
2B4	Pharmacotherapy
2B5	Non-Pharmacologic Treatments and Lifestyle Modification
2B6	Interprofessional Care Coordination
2B7	Patient and Caregiver Education and Counseling
2C	Treatment Outcomes and Monitoring
2C1	Therapeutic Targets and Endpoints
2C2	Nutrition Status Monitoring
2C3	Clinical Status Monitoring
2C4	Adverse Events and Complications
2C5	Drug-Drug, Nutrient-Nutrient, and Drug-Nutrient Interactions
2C6	Adherence to Diet and Nutrition Support
2C7	Medication Reconciliation and Optimization
3	**Professional Practice**
3A	Quality of Care
3A1	Public Health and Preventative Care
3A2	Continuity of Care (e.g., transitions of care, phases of care)
3A3	Clinical Practice Guidelines (e.g., ASPEN, SCCM)
3A4	Medication Safety and Safe Practices for Nutrition Support
3A5	Ethics and Patient Advocacy
3B	Practice Management
3B1	Professional Practice Standards, Guidelines, Competencies, and Regulations
3B2	Quality Management and Process Improvement
3B3	Clinical Informatics (e.g., clinical decision support, CPOE, EHR-ACD interoperability)
3B4	Pharmacoeconomics (e.g., reimbursement)
3B5	Research Methods and Statistics
3B6	Nutrition Information Resources (e.g., Oley Foundation, ASPEN, FDA, ASHP)

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

The BPS Board-Certified Nutrition Support Pharmacist (BCNSP) program is a credential for pharmacists who address the clinical status, nutrition status, and direct care of patients receiving acute and/or chronic nutrition support, including parenteral and enteral nutrition.

The purpose of the BCNSP program is to validate that the pharmacist has the advanced knowledge, skills, and experience necessary to optimize the safety and efficacy of nutrition support and the nutrition status of patients.

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	17	18
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	
1B1				X	X					X	X	X	X	X				
1B2				X	X					X	X	X	X	X				
1B3		X	X	X	X	X	X	X		X	X	X	X	X				
2A1	X	X	X				X	X	X	X	X		X				X	
2A2	X	X	X		X	X	X	X	X	X	X		X				X	
2A3	X	X	X		X	X	X		X	X	X		X				X	
2A4		X	X		X		X	X	X	X	X							
2A5		X	X				X	X	X	X	X		X					
2A6	X	X	X				X	X	X	X	X	X						
2A7	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	
2B1	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	
2B2	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	
2B3	X	X	X	X	X		X	X	X	X	X		X					
2B4	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	
2B5	X	X	X		X	X	X	X	X	X	X	X	X				X	
2B6		X	X		X	X	X	X	X		X		X					
2B7		X	X		X	X	X	X	X	X	X							

2C1		X	X	X	X	X	X	X	X	X	X	X	X	X			X	
2C2		X	X	X	X		X	X	X	X	X	X	X	X			X	
2C3		X	X	X	X	X	X	X	X	X	X	X	X				X	
2C4			X	X	X	X	X	X	X	X	X	X	X	X			X	
2C5	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X	
2C6	X	X	X				X	X	X	X	X							
2C7	X		X		X	X	X	X	X	X	X				X			
3A1	X		X							X	X	X						X
3A2	X	X	X				X	X	X	X	X	X	X	X		X		X
3A3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3A4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3A5	X	X	X				X	X	X	X	X	X						X
3B1			X	X	X	X		X	X	X	X	X	X	X		X	X	X
3B2				X							X	X	X	X	X	X	X	X
3B3				X								X	X		X			
3B4	X	X	X					X	X			X		X				
3B5												X	X				X	
3B6			X							X	X	X	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 nutrition support pharmacy practice? How important is this knowledge area to nutrition support 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 nutrition support pharmacy practice? How frequently is this knowledge used in nutrition support 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 job analysis panelists, the specialty examination council, and BPS staff persons. The pilot test was conducted during the dates of May 16 to May 22. Pilot testers did not identify any necessary changes. See Appendix C for a copy of the final survey text.

The survey was open and available from June 1 to July 10. All pharmacists who hold the BCNSP 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,

American Society of Health-System Pharmacists, and American Society for Parenteral and Enteral Nutrition.

The survey yielded 93 usable responses. Responses were not used if the ratings for task and knowledge statements were not completed or if the respondent indicated spending less than 25% of their pharmacy practice in nutrition support pharmacy.

Responses to Demographic Questions		
Percentage of Time in Nutrition Support Pharmacy	Mean = 55.52 | SD = 24.44	***n***
25% – 50%		50
51% – 75%		22
76% – 99%		11
100%		10
Post-Graduate Pharmacy Residency Programs		***n***
PGY1 Pharmacy		19
PGY1 Managed Care Pharmacy		23
PGY1 Community-Based Pharmacy		12
PGY2 Ambulatory Care Pharmacy		14
PGY2 Cardiology Pharmacy		7
PGY2 Clinical Pharmacogenomics		10
PGY2 Community-Based Pharmacy Administration and Leadership		5
PGY2 Corporate Pharmacy Administration and Leadership		3
PGY2 Critical Care Pharmacy		10
PGY2 Emergency Medicine Pharmacy		9
PGY2 Geriatric Pharmacy		4
PGY2 Health System Pharmacy Administration and Leadership		4
PGY2 Infectious Diseases Pharmacy		5
PGY2 Internal Medicine Pharmacy		5
PGY2 Investigational Drugs and Research		6
PGY2 Medication Use Safety and Policy		5
PGY2 Neurology		3
PGY2 Nutrition Support Pharmacy		10
PGY2 Oncology Pharmacy		3
PGY2 Palliative Care / Pain Management Pharmacy		3
PGY2 Pediatric Pharmacy		2
PGY2 Pharmacotherapy		6
PGY2 Pharmacy Informatics		4
PGY2 Population Health Management and Data Analytics Pharmacy		3
PGY2 Psychiatric Pharmacy		4
PGY2 Solid Organ Transplant Pharmacy		4

Other: Saudi Nutrition Support Residency, Critical Care/Nutrition Support Residency		2	
BPS Certifications		***n***	
BCACP - Ambulatory Care		6	
BCCCP - Critical Care		16	
BCCP - Cardiology		15	
BCEMP - Emergency Medicine		12	
BCGP - Geriatric		9	
BCIDP - Infectious Diseases		7	
BCNP - Nuclear		7	
BCNSP - Nutrition Support		46	
BCOP - Oncology		10	
BCPP - Psychiatric		6	
BCPPS - Pediatric		6	
BCPS - Pharmacotherapy		10	
BCSCP - Compounded Sterile Preparations		2	
BCTXP - Solid Organ Transplantation		0	
Years of Experience in Pharmacy	Mean = 17.30 |SD = 12.41	***n***	**%**
0-5		18	19.4%
6-10		15	16.1%
11-15		24	25.8%
16-20		7	7.5%
20+		29	31.2%
Years of Experience in Nutrition Support Pharmacy	Mean = 14.03 |SD = 12.74	***n***	**%**
0-5		31	33.3%
6-10		23	24.7%
11-15		13	14.0%
16-20		4	4.3%
20+		22	23.7%
Primary Practice Setting		***n***	**%**
Academic Institution / Educational Institution		8	8.6%
Academic Medical Center or Hospital		25	26.9%
Children's Hospital		13	14.0%
Community Hospital		18	19.4%
Community Pharmacy		1	1.1%
Home Infusion / Ambulatory Infusion		10	10.8%
Hospice		2	2.2%
Hybrid Academic-Community Hospital		2	2.2%
Integrated Health System / Accountable Care Organization		2	2.2%
Investigational Drug Service		2	2.2%
Long-Term Care Pharmacy		2	2.2%

Managed Care	3	3.2%
Outpatient Clinic / Ambulatory Clinic	1	1.1%
Pharmaceutical Industry	2	2.2%
Specialty Pharmacy	2	2.2%
Governmental Healthcare Facility / Veterans Affairs Hospital	7	7.5%
Location of Primary Practice	***n***	**%**
United States	85	91.5%
AK	2	2.2%
AL	2	2.2%
AR	3	3.2%
AS	2	2.2%
AZ	10	10.8%
CA	10	10.8%
CO	6	6.5%
DE	1	1.1%
FL	9	9.7%
GA	5	5.4%
GU	2	2.2%
ID	1	1.1%
IL	1	1.1%
IN	1	1.1%
KS	1	1.1%
LA	1	1.1%
MA	2	2.2%
MI	2	2.2%
MO	1	1.1%
NC	1	1.1%
NH	1	1.1%
NY	1	1.1%
OH	3	3.2%
PA	5	5.4%
SC	1	1.1%
TN	4	4.3%
TX	4	4.3%
VA	2	2.2%
WA	1	1.1%
Outside of the United States	8	8.1%
Egypt	5	5.4%
Saudi Arabia	1	1.1%
Taiwan	1	1.1%
United Arab Emirates	1	1.1%

Time Spent in Professional Role	*n* (>50%)	Average %
Direct Patient Care: Parenteral Nutrition	17	30.7%
Direct Patient Care: Enteral Nutrition	0	13.3%
Direct Patient Care: Oral Nutrition	0	9.5%
Administration / Management	1	11.6%
Teaching / Precepting	1	14.9%
Research / Scholarship	0	10.7%
Other	2	8.5%
Time Spent with Patient Age Group	***n*** **(>50%)**	**Average %**
Neonate	3	19.6%
Pediatric	4	21.0%
Adult	18	34.7%
Older Adult	5	23.9%

Mean Ratings for Task Statements		Importance	Frequency
1	Evaluate patient nutrition status, medical history, medication history, present illness, clinical status, health risks, allergy, cultural, psychosocial, socioeconomic factors, and other pertinent patient characteristics	3.57	3.31
2	Establish goals of care in collaboration with the patient, caregivers, and/or interprofessional healthcare team	3.80	3.54
3	Develop patient-centered therapeutic plans in alignment with evidence-based medicine, practice guidelines, nutritional requirements, and goals of care	3.71	3.55
4	Perform the ordering, order review, compounding, labeling, and dispensing of enteral and parenteral nutrition formulations	3.75	3.46
5	Optimize the administration of nutrition support to patients by assessing availability, route, compatibility, stability, potential interactions, and medication-delivery technology	3.77	3.62
6	Optimize the administration of medications to patients by assessing availability, route, compatibility, stability, potential interactions, and medication-delivery technology	3.66	3.45
7	Monitor and evaluate patient safety, adherence, and progress toward nutrition goals	3.57	3.30
8	Establish plan for and/or coordinate transitions of care in collaboration with interprofessional healthcare team to optimize healthcare outcomes	3.57	3.33
9	Modify therapeutic plans in response to changes in clinical status, nutrition status, healthcare goals, allergy, cultural, psychosocial, socioeconomic factors, and other pertinent patient factors	3.65	3.29
10	Develop and provide nutrition and healthcare education and counseling to patients, caregivers, and/or members of the general public	3.41	3.30
11	Develop and provide nutrition and healthcare education and support to other pharmacists, pharmacy learners, and members of the interprofessional healthcare team	3.31	2.87
12	Lead or participate in nutrition and healthcare quality improvement, safety, and public health initiatives	3.42	3.06
13	Develop, evaluate, and/or align policies, practices, and protocols according to accreditation standards, regulatory requirements, and evidence-based practice	3.23	2.97
14	Develop and/or utilize selection strategies for nutrition support, medications, devices, and equipment to improve cost effectiveness, resource utilization, and risk mitigation	3.40	3.11
15	Utilize health information technology and clinical decision support to optimize pharmacotherapeutic decisions	3.35	3.12
16	Engage in continuous professional development in the nutrition support pharmacy specialty area, such as healthcare committee involvement, scholarly activities, and continuing education	3.48	3.13
17	Evaluate clinical literature and its applicability to nutrition support pharmacy practice	3.37	3.03
18	Advocate for the role and contribution of nutrition support pharmacy to the public, healthcare providers, health system, and policy makers	3.57	3.31

Mean Ratings for Knowledge Areas		Importance	Frequency
1	**Nutrition Support**		
1A	Normal and Abnormal Nutrition		
1A1	Physiology and Pathophysiology of Nutrition (e.g., ingestion, digestion, absorption, metabolism, excretion, appetite)	3.49	3.41
1A2	Fluid, Electrolyte, and Acid-Base Homeostasis and Disorders	3.76	3.59
1A3	Nutrition Requirements throughout the Lifecycle (e.g., pregnancy, pediatric, older adults)	3.56	3.25
1A4	Nutrition Deficiencies and Toxicities	3.63	3.17
1A5	Malnutrition	3.60	3.38
1B	Nutrition Support Formulations and Delivery		
1B1	Parenteral Nutrition Sterile Compounding (e.g., USP <797>)	3.55	3.26
1B2	Enteral Nutrition Formulations	3.26	2.94
1B3	Nutrition Support Delivery Technology and Devices	3.34	3.02
2	**Therapeutics and Patient Management**		
2A	Treatment Planning		
2A1	Nutrition Assessment	3.58	3.32
2A2	Clinical Assessment (e.g., functional, cognitive, physical, laboratory analysis, diagnostic testing)	3.69	3.44
2A3	Pharmacodynamics, Pharmacokinetics, and Pharmacogenomics	3.28	3.00
2A4	Shared Decision-Making and Goals of Care	3.53	3.26
2A5	Goals of Treatment (e.g., risk vs. benefit, time to benefit)	3.48	3.35
2A6	Social Determinants of Health (e.g., health literacy, access to care)	3.28	2.96
2A7	Practice Settings (e.g., critical/acute care, home healthcare, alternate care sites)	3.49	3.27
2B	Therapeutic Implementation		
2B1	Enteral Nutrition	3.44	3.13
2B2	Parenteral Nutrition	3.73	3.52
2B3	Oral Nutrition	3.14	2.95
2B4	Pharmacotherapy	3.54	3.40
2B5	Non-Pharmacologic Treatments and Lifestyle Modification	3.09	2.86
2B6	Interprofessional Care Coordination	3.44	3.19
2B7	Patient and Caregiver Education and Counseling	3.68	3.28
2C	Treatment Outcomes and Monitoring		
2C1	Therapeutic Targets and Endpoints	3.55	3.18
2C2	Nutrition Status Monitoring	3.57	3.40
2C3	Clinical Status Monitoring	3.47	3.35
2C4	Adverse Events and Complications	3.57	3.40
2C5	Drug-Drug, Nutrient-Nutrient, and Drug-Nutrient Interactions	3.71	3.39
2C6	Adherence to Diet and Nutrition Support	3.44	3.15
2C7	Medication Reconciliation and Optimization	3.39	3.10
3	**Professional Practice**		
3A	Quality of Care		
3A1	Public Health and Preventative Care	3.14	2.71
3A2	Continuity of Care (e.g., transitions of care, phases of care)	3.53	3.04
3A3	Clinical Practice Guidelines (e.g., ASPEN, SCCM)	3.52	3.31
3A4	Medication Safety and Safe Practices for Nutrition Support	3.75	3.42
3A5	Ethics and Patient Advocacy	3.40	3.05
3B	Practice Management		

3B1	Professional Practice Standards, Guidelines, Competencies, and Regulations	3.35	3.20
3B2	Quality Management and Process Improvement	3.40	3.00
3B3	Clinical Informatics (e.g., clinical decision support, CPOE, EHR-ACD interoperability)	3.31	3.03
3B4	Pharmacoeconomics (e.g., reimbursement)	3.15	2.82
3B5	Research Methods and Statistics	3.05	2.84
3B6	Nutrition Information Resources (e.g., Oley Foundation, ASPEN, FDA, ASHP)	3.42	2.98

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, with an eigenvalue of 21.68, emerged as the primary factor explaining 55.6% of the variability in importance ratings. All subsequent factors had eigenvalues of 1.95 or less and each explained less than 5.0% 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 job analysis panel reconvened on 2 August 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 mostly representative of the target population, remarking on the relatively low sample size overall, the smaller-than-expected number of home infusion respondents, and the larger-than-expected number of respondents certified in specialties not typically overlapping with nutrition support.

The panelists agreed to retain all the task and knowledge statements developed, observing moderately high ratings across all task and knowledge ratings.

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 agreed to make one small adjustment to the weighting, which was to increase the percentage in 1B by 2% and reduce 1A in ballast. The panel cited the lower representation of home infusion respondents may have skewed the original weighting for 1B downward. The panel also noted that 1A, though important, covered more foundational knowledge that required less emphasis than the more technical knowledge in 1B.

	Content Domains and Subdomains of ECO	Survey Weight	Final Weight
1	Nutrition Support	**21%**	**21%**
1A	Normal and Abnormal Nutrition	14%	12%
1B	Nutrition Support Formulations and Delivery	7%	9%
2	Therapeutics and Patient Management	**53%**	**53%**
2A	Treatment Planning	18%	18%
2B	Therapeutic Implementation	17%	17%
2C	Treatment Outcomes and Monitoring	18%	18%
3	Professional Practice	**26%**	**26%**
3A	Quality of Care	12%	12%
3B	Practice Management	14%	14%

See Appendix D for the final Examination Content Outline.

Appendix A – Subject Matter Experts

Job Analysis Committee

Name	Credentials	Post-Licensure Experience	Job Title	Employer/ Affiliation	Location	Practice Setting
Alexandre Ivanov	PharmD, MS, BCNSP, RD, CNSC	8 Years	Pharmacy Specialist	Emory St. Joseph's Hospital	GA	Community teaching hospital
Amber Verdell	PharmD, BCNSP, BCPS	11 Years	Pharmacist	County of Los Angeles	CA	Government hospital
Angela Bingham	PharmD, BCCCP, BCNSP, BCPS, FASPEN, FCCP, FASHP, FCCM	13 Years	Vice Chair and Clinical Associate Professor	Philadelphia College of Pharmacy, Saint Joseph's University	PA	Academia-affiliated or University-based Hospital
Anhdiem Quang Le	PharmD, BCCCP, BCNSP, BCPS	11 Years	Clinical Pharmacist	Riverside County, CA	CA	Academia-affiliated or University-based Hospital
Beth Deen	PharmD, BCNSP, BCPPS	30 Years	Senior Clinical Pharmacy Specialist, Nutrition Support	Cook Childrens Medical Center	TX	Community hospital, not-for-profit

Diana W. Mulherin	PharmD, BCCCP, BCNSP, FCCM	14 Years	Clinical Pharmacist Specialist, Nutrition Support	Vanderbilt University Medical Center	TN	Academia-affiliated or University-based Hospital
Julianne Harcombe	RPH, BCNSP	22 Years	Clinical Pharmacist	Baycare - St.Joseph's Hospital	FL	Community hospital, not-for-profit
Kayla Szabo	PharmD, BCNSP	7 Years	Clinical Pharmacy Specialist	CarePathRx	PA	Specialty pharmacy
Nermeen Almoatassem Bellah Ateia	Pharma D, BCNSP	13 Years	Parenteral Nutrition Specialist Pharmacist in Charge	Premier Point Home Health Center	Oman	Specialty pharmacy
Roland Dickerson	PharmD, BS Pharm, BCNSP, FCCP, FASHP, FCCM, FASPEN	44 Years	Professor of Clinical Pharmacy and Translational Science	University of Tennessee College of Pharmacy	TN	Academia-affiliated or University-based Hospital
Sameh Abdelghany Abouelmagd Kamaleldin	Diploma in Clinical Pharmacy, BCNSP, SCOPE	20 Years	Clinical Hospital Pharmacist	Alkharj Military Hospital, Saudi Arabia	Egypt	Government hospital

Sharon M Durfee	BS Pharm, BCNSP, FASPEN	46 Years	Clinical Nutrition Support Pharmacist	Central Admixture Pharmacy Services (CAPS)	CO	Pharmaceutical industry
Todd Canada	PharmD, BS Pharm, BCCCP, BCNSP, FASHP, FTSHP, FASPEN	35 Years	Clinical Pharmacy Services Manager & Nutrition Support Team Coordinator	University of Texas MD Anderson Cancer Center	TX	Academia-affiliated or University-based Hospital

Interviewees

Name	Credentials	Post-Licensure Experience	Job Title	Employer/ Affiliation	Location	Practice Setting
Johanna Bezjak	PharmD, BCNSP	14 Years	Clinical Pharmacy Manager	CarePathRx	PA	Home Health
Shams Hamid	BSc, BCNSP	6 Years	Pharmacy Manager	Self-Employed	Iraq	Community Pharmacy
Vivian Zhao	PharmD, BCNSP, FASPEN	16 Years	Fellowship Program Director	Emory University Hospital	GA	Academia-affiliated or University-based Hospital

Job Analysis

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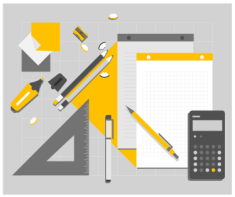
Job Analysis

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

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

you are here

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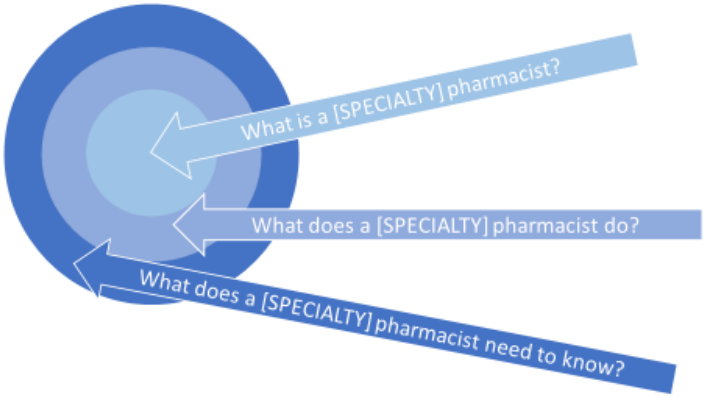
Multiple Levels of Analysis

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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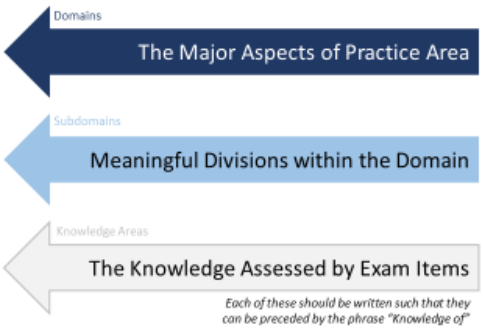
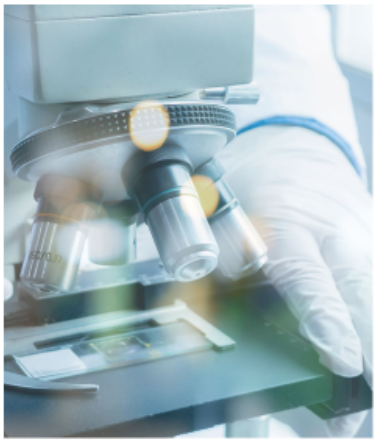
Exam Content Outline

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

Exam Content Outline Structure and Components		*(Somewhat Silly) Example*
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

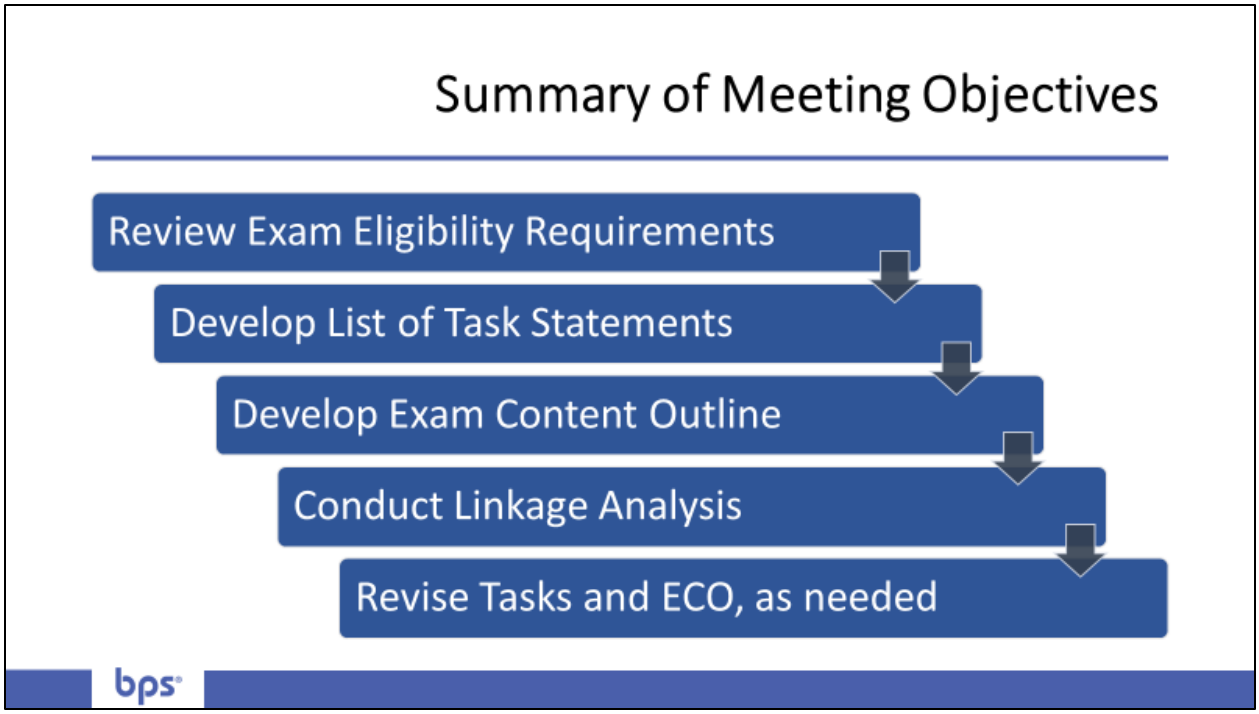
- An x-mark means that the specific knowledge is needed to perform that specific task.
- For example, knowledge of different types of chocolate is needed to *Develop Chocolate Recipes* but history of chocolate is not needed for that same task.

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

BPS 2023 Nutrition Support Pharmacy (BCNSP) Job Analysis Survey

Survey Introduction

The Board of Pharmacy Specialties (BPS) is conducting a Job Analysis for the Board-Certified Nutrition Support Pharmacy (BCNSP) 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 pharmacy practice in nutrition support pharmacy.

Survey respondents will be prompted to rate each task and knowledge area on its importance to nutrition support pharmacy 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 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, please feel free to contact ja@aphanet.org.

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

- ◯ Yes
- ◯ No

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BPS 2023 Nutrition Support Pharmacy (BCNSP) Job Analysis Survey

Task Statements

*** 2. Please rate each task statement according to its importance to nutrition support pharmacy practice and the frequency of its performance in nutrition support pharmacy practice.**

	Importance	Frequency
Evaluate patient nutrition status, medical history, medication history, present illness, clinical status, health risks, allergy, cultural, psychosocial, socioeconomic factors, 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, nutritional requirements, and goals of care		
Perform the ordering, order review, compounding, labeling, and dispensing of enteral and parenteral nutrition		

formulations		
Optimize the administration of nutrition support to patients by assessing availability, route, compatibility, stability, potential interactions, and medication-delivery technology		
Optimize the administration of medications to patients by assessing availability, route, compatibility, stability, potential interactions, and medication-delivery technology		
Monitor and evaluate patient safety, adherence, and progress toward nutrition goals		
Establish plan for and/or coordinate transitions of care in collaboration with interprofessional healthcare team to optimize healthcare outcomes		
Modify therapeutic plans in response to changes in clinical status, nutrition status, healthcare goals, allergy, cultural, psychosocial, socioeconomic factors, and other pertinent patient factors		
Develop and provide nutrition and healthcare education and counseling to patients, caregivers, and/or members of the general public		
Develop and provide nutrition and healthcare education and support to other pharmacists,		

pharmacy learners, and members of the interprofessional healthcare team		
Lead or participate in nutrition and healthcare quality improvement, safety, and public health initiatives		
Develop, evaluate, and/or align policies, practices, and protocols according to accreditation standards, regulatory requirements, and evidence-based practice		
Develop and/or utilize selection strategies for nutrition support, medications, devices, and equipment to improve cost effectiveness, resource utilization, and risk mitigation		
Utilize health information technology and clinical decision support to optimize pharmacotherapeutic decisions		
Engage in continuous professional development in the nutrition support pharmacy specialty area, such as healthcare committee involvement, scholarly activities, and continuing education		
Evaluate clinical literature and its applicability to nutrition support pharmacy practice		
Advocate for the role and contribution of		

nutrition support pharmacy to the public, healthcare providers, health system, and policy makers		

3. What task associated with nutrition support pharmacy is missing from this list, if any?

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BPS 2023 Nutrition Support Pharmacy (BCNSP) Job Analysis Survey

Knowledge Areas

*** 4. Please rate each knowledge area in the Nutrition Support: Normal and Abnormal Nutrition content domain according to its importance to nutrition support pharmacy practice and the frequency of its use in nutrition support pharmacy practice.**

	Importance	Frequency
Physiology and Pathophysiology of Nutrition (e.g., ingestion, digestion, absorption, metabolism, excretion, appetite)		
Fluid, Electrolyte, and Acid-Base Homeostasis and Disorders		
Nutrition Requirements throughout the Lifecycle (e.g., pregnancy, pediatric, older adults)		
Nutrition Deficiencies and Toxicities		
Malnutrition		

*** 5. Please rate each knowledge area in the Nutrition Support: Nutrition Support Formulations and Delivery content domain according to its importance to nutrition support pharmacy practice and the frequency of its use in nutrition support pharmacy practice.**

	Importance	Frequency
Parenteral Nutrition Sterile Compounding (e.g., USP <797>)		
Enteral Nutrition Formulations		
Nutrition Support Delivery Technology and Devices		

*** 6. Please rate each knowledge area in the Therapeutics and Patient Management: Treatment Planning content domain according to its importance to nutrition support pharmacy practice and the frequency of its use in nutrition support pharmacy practice.**

	Importance	Frequency
Nutrition Assessment		
Clinical Assessment (e.g., functional, cognitive, physical, laboratory analysis, diagnostic testing)		
Pharmacodynamics, Pharmacokinetics, and Pharmacogenomics		
Shared Decision-Making and Goals of Care		
Goals of Treatment (e.g., risk vs. benefit, time to benefit)		
Social Determinants of Health (e.g., health literacy, access to care)		
Practice Settings (e.g., critical/acute care, home healthcare, alternate care sites)		

*** 7. Please rate each knowledge area in the Therapeutics and Patient Management: Therapeutic Implementation content domain according to its importance to nutrition support pharmacy practice and the frequency of its use in nutrition support pharmacy practice.**

	Importance	Frequency
Enteral Nutrition		
Parenteral Nutrition		
Oral Nutrition		
Pharmacotherapy		
Non-Pharmacologic Treatments and Lifestyle Modification		
Interprofessional Care Coordination		
Patient and Caregiver Education and Counseling		

*** 8. Please rate each knowledge area in the Therapeutics and Patient Management: Treatment Outcomes and Monitoring content domain according to its importance to nutrition support pharmacy practice and the frequency of its use in nutrition support pharmacy practice.**

	Importance	Frequency
Therapeutic Targets and Endpoints		
Nutrition Status Monitoring		
Clinical Status Monitoring		
Adverse Events and Complications		
Drug-Drug, Nutrient-Nutrient, and Drug-Nutrient Interactions		
Adherence to Diet and Nutrition Support		
Medication Reconciliation and Optimization		

*** 9. Please rate each knowledge area in the Professional Practice: Quality of Care content domain according to its importance to nutrition support pharmacy practice and the frequency of its use in nutrition support pharmacy practice.**

	Importance	Frequency
Public Health and Preventative Care		
Continuity of Care (e.g., transitions of care, phases of care)		
Clinical Practice Guidelines (e.g., ASPEN, SCCM)		
Medication Safety and Safe Practices for Nutrition Support		
Ethics and Patient Advocacy		

*** 10. Please rate each knowledge area in the Professional Practice: Practice Management content domain according to its importance to nutrition support pharmacy practice and the frequency of its use in nutrition support pharmacy practice.**

	Importance	Frequency
Professional Practice Standards, Guidelines, Competencies, and Regulations		
Quality Management and Process Improvement		
Clinical Informatics (e.g., clinical decision support, CPOE, EHR-ACD interoperability)		
Pharmacoeconomics (e.g., reimbursement)		
Research Methods and Statistics		
Nutrition Information Resources (e.g., Oley Foundation, ASPEN, FDA, ASHP)		

11. What knowledge area associated with nutrition support pharmacy is missing from this list, if any?

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BPS 2023 Nutrition Support Pharmacy (BCNSP) Job Analysis Survey

Survey Respondent Demographics

*** 12. What percentage of your professional practice is spent in nutrition support pharmacy?**

13. 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 Nutrition Support Pharmacy
- [ ] 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

14. 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

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

*** 16. How many years of experience do you have in nutrition support pharmacy?**

*** 17. 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)

*** 18. Where is your primary practice located?**

State or Territory (if in United States) -- select state --

Nation/Country

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

Direct Patient Care: Parenteral Nutrition	
Direct Patient Care: Enteral Nutrition	
Direct Patient Care: Oral Nutrition	
Administration / Management	
Teaching / Precepting	
Research / Scholarship	
Other	

*** 20. What percentage of your time do you spend with each patient age group?**

Neonate	
Pediatric	
Adult	
Older Adult	

BPS 2023 Nutrition Support Pharmacy (BCNSP) Job Analysis Survey

Thank You

21. Please provide any feedback or comments about the survey here.

22. 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	**Nutrition Support**	**26**	**21%**
1A	Normal and Abnormal Nutrition	17	14%
1A1	Physiology and Pathophysiology of Nutrition (e.g., ingestion, digestion, absorption, metabolism, excretion, appetite)	3	2%
1A2	Fluid, Electrolyte, and Acid-Base Homeostasis and Disorders	4	3%
1A3	Nutrition Requirements throughout the Lifecycle (e.g., pregnancy, pediatric, older adults)	3	2%
1A4	Nutrition Deficiencies and Toxicities	3	2%
1A5	Malnutrition	4	3%
1B	Nutrition Support Formulations and Delivery	9	7%
1B1	Parenteral Nutrition Sterile Compounding (e.g., USP <797>)	3	2%
1B2	Enteral Nutrition Formulations	3	2%
1B3	Nutrition Support Delivery Technology and Devices	3	2%
2	**Therapeutics and Patient Management**	**66**	**53%**
2A	Treatment Planning	22	18%
2A1	Nutrition Assessment	3	2%
2A2	Clinical Assessment (e.g., functional, cognitive, physical, laboratory analysis, diagnostic testing)	4	3%
2A3	Pharmacodynamics, Pharmacokinetics, and Pharmacogenomics	3	2%
2A4	Shared Decision-Making and Goals of Care	3	2%
2A5	Goals of Treatment (e.g., risk vs. benefit, time to benefit)	3	2%
2A6	Social Determinants of Health (e.g., health literacy, access to care)	3	2%
2A7	Practice Settings (e.g., critical/acute care, home healthcare, alternate care sites)	3	2%
2B	Therapeutic Implementation	22	18%
2B1	Enteral Nutrition	3	2%
2B2	Parenteral Nutrition	4	3%
2B3	Oral Nutrition	3	2%
2B4	Pharmacotherapy	3	2%
2B5	Non-Pharmacologic Treatments and Lifestyle Modification	3	2%
2B6	Interprofessional Care Coordination	3	2%
2B7	Patient and Caregiver Education and Counseling	3	2%
2C	Treatment Outcomes and Monitoring	22	18%
2C1	Therapeutic Targets and Endpoints	3	2%
2C2	Nutrition Status Monitoring	3	2%
2C3	Clinical Status Monitoring	3	2%
2C4	Adverse Events and Complications	3	2%
2C5	Drug-Drug, Nutrient-Nutrient, and Drug-Nutrient Interactions	4	3%

2C6	Adherence to Diet and Nutrition Support	3	2%
2C7	Medication Reconciliation and Optimization	3	2%
3	**Professional Practice**	**33**	**26%**
3A	Quality of Care	15	12%
3A1	Public Health and Preventative Care	2	2%
3A2	Continuity of Care (e.g., transitions of care, phases of care)	3	2%
3A3	Clinical Practice Guidelines (e.g., ASPEN, SCCM)	3	2%
3A4	Medication Safety and Safe Practices for Nutrition Support	4	3%
3A5	Ethics and Patient Advocacy	3	2%
3B	Practice Management	18	14%
3B1	Professional Practice Standards, Guidelines, Competencies, and Regulations	3	2%
3B2	Quality Management and Process Improvement	3	2%
3B3	Clinical Informatics (e.g., clinical decision support, CPOE, EHR-ACD interoperability)	3	2%
3B4	Pharmacoeconomics (e.g., reimbursement)	3	2%
3B5	Research Methods and Statistics	3	2%
3B6	Nutrition Information Resources (e.g., Oley Foundation, ASPEN, FDA, ASHP)	3	2%