



**BOARD OF PHARMACY SPECIALTIES
NUTRITION SUPPORT PHARMACY SPECIALIST CERTIFICATION
CONTENT OUTLINE/CLASSIFICATION SYSTEM
APPROVED AUGUST 2018/**FOR USE ON FALL 2019 EXAMINATION AND FORWARD****

UNDERSTANDING THE CONTENT OUTLINE/CLASSIFICATION SYSTEM

The following domains, tasks and knowledge statements were delineated by the BPS Nutrition Support Pharmacy Practice Analysis Taskforce and validated through a role delineation study. The proportion of examination items allotted to each domain was determined through analysis and discussion of the results of the role delineation study by the BPS Nutrition Support Pharmacy Practice Analysis Taskforce and approved by the BPS Board of Directors.

Each of the major areas/domains of BPS Nutrition Support Pharmacy practice noted below will be tested. Questions will not be grouped by domain on the exam. Rather, items testing each domain are distributed throughout the total examination. Please note this examination will **SAMPLE** a candidate's knowledge rather than trying to test all of his/her knowledge. Examination items will address problems and situations reflective of the full range of practice.

Domain 1: Clinical Practice: Provision of Patient-Centered Nutrition Support Tasks (67% of the exam)

Tasks related to the comprehensive management of a patient requiring specialized nutrition support including collecting, interpreting, and integrating pertinent clinical data; and designing, implementing, monitoring, and modifying patient-specific plans of care for patients requiring specialized nutrition support in collaboration with the healthcare team.

Task 1: Interview the patient and/or designated caregiver to obtain medical, surgical, nutrition, medication, allergy, psychosocial, cultural, and socioeconomic history.

Task 2: Evaluate relevant medical, surgical, and nutrition history along with physical, laboratory, and radiologic findings to determine nutrition status.

Task 3: Obtain appropriate nutrition assessment parameters for evaluating clinical and nutrition status.

Task 4: Evaluate appropriate indications for nutrition support, including suitability and feasibility.

Task 5: Evaluate reimbursement eligibility for nutrition support (e.g., diagnosis, formulations, services, supplies, duration).

Task 6: Define the goals for nutrition support.

Task 7: Determine the preferred route and access device(s) for nutrition support.

Task 8: Identify and address clinically significant interactions between drugs, dietary supplements, and nutrients.

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Task 9: Estimate micronutrients, macronutrients, fluid and electrolyte requirements

Task 10: Select an appropriate feeding formulation and delivery system.

Task 11: Select the administration method for feeding formulation (e.g., bolus, intermittent, continuous, cyclic).

Task 12: Select appropriate adjunctive pharmacologic therapies.

Task 13: Individualize the therapeutic plan of care based on safety, ethical, cultural, legal, economic, quality-of-life issues.

Task 14: Design a monitoring plan to ensure safety and efficacy of the nutrition care plan.

Task 15: Recognize and manage complications of nutrition support.

Task 16: Modify the patient's therapeutic plan of care based on clinical status and progress toward therapeutic goals (includes discontinuation of nutrition therapy).

Task 17: Collaborate as members of the interprofessional team to communicate essential information regarding the patients' status and nutrition care plan.

Task 18: Communicate the nutrition support plan across transitions of care.

Task 19 Document the nutrition support plan in the medical record.

Task 20: Educate the patient and caregivers regarding the patient's nutrition care plan and available resources.

Knowledge of:

1. Components of a nutritionally adequate diet (e.g., dietary reference intake)
2. Anatomy, physiology, and metabolism related to nutrition support
3. Normal ingestion, digestion, absorption, metabolism, and excretion of nutrients
4. Disease states, clinical conditions, and therapies that affect ingestion, digestion, absorption, metabolism, or excretion of nutrients
5. Relationship between nutrient intake, requirements (e.g., maintenance, repletion, weight loss), and nutrition status across the age spectrum and in health and disease
6. Effects of psychosocial and socioeconomic factors on nutrition status
7. Ethical, cultural, legal, economic, quality of life, safety issues, language, language proficiency, education level, comprehension, home environment, and disabilities impact on nutrition support and related educational needs for patients and their caregivers
8. Diagnostic tests and clinical findings used to assess nutrition status (e.g., malnourished, nutritionally at-risk)
9. Physical assessment techniques and clinical findings used to evaluate nutrition status
10. Effects of disease states, clinical conditions, or altered metabolism on nutrition status

11. Effects of medical and/or surgical therapies on nutrition status (e.g., renal replacement therapies, cardiopulmonary bypass, mechanical ventilation, bowel resection, bariatric surgery)
12. Interactions between drugs, dietary supplements, and nutrients
13. Therapeutic, stability, and compatibility considerations for the concomitant administration of drugs or other therapies with nutrition support
14. Effects of drugs and dietary supplements on nutrition status
15. Effects of nutrition status or nutrition support on drug pharmacokinetics and pharmacodynamics
16. Indications, risks, complications (e.g., mechanical, metabolic, infectious, gastrointestinal, psychosocial), benefits, limitations, and contraindications for the use of nutrition support
17. Guidelines for nutrient requirements
18. Methods to determine patient-specific nutrient requirements (e.g., indirect calorimetry)
19. Effects of disease states, clinical conditions, and altered metabolism on the determination of patient-specific nutrient requirements
20. Types of devices, supplies (e.g., pumps, bags, tubing, filters), and optimal placement of access devices to administer nutrition support
21. Indications for and limitations of vascular and enteral access devices used to administer nutrition support
22. Selection of vascular and enteral access devices based on patient-specific considerations (e.g., current or previous access, history of complications, device type, anticipated duration of therapy)
23. Regulations and guidelines for eligibility, coverage, and reimbursement for nutrition support
24. Perform calculations related to the ordering and verification of nutrition support orders.
25. Influence of disease states, clinical conditions, and therapies that affect the type of nutrition support selected
26. Methods to initiate, advance, modify, and discontinue nutrition support
27. Appropriate methods for administering nutrition support (e.g., bolus, intermittent, continuous, cyclic)
28. Indications, limitations, and contraindications for the use of parenteral nutrition components (e.g., amino acids, dextrose, fluid, electrolytes, injectable lipid emulsion, minerals, vitamins, other additives)
29. Composition and physical and chemical properties of parenteral nutrition formulations
30. Appropriate selection of enteral nutrition formulations
31. Composition and physical and chemical properties of enteral nutrition formulations (e.g., protein, carbohydrate, fat, water, vitamins, minerals, osmolality)
32. Markers of response to nutrition support
33. Outcome indicators of nutrition support (e.g., nutrition status, morbidity, mortality, wound healing, length of stay, length of intensive care unit stay, number of ventilator days, patient adherence)
34. Sources and use of nutrition support education materials for patients, caregivers, and the healthcare team
35. Regulations and strategies to ensure privacy in communications with patients and their caregivers
36. Fluid, electrolyte, and acid-base management
37. Methods to monitor and manage a nutrition support care plan based on the patient's response to nutrition support (e.g., metabolic, nutrition, and clinical)
38. Methods to prevent, monitor, and manage complications associated with nutrition support
39. Methods to prevent, monitor, and manage interactions between drugs, dietary supplements, and nutrients
40. Effective methods to document and communicate essential components of a patient-specific nutrition support care plan, including transitions of care

41. Methods for evaluating patient adherence to the nutrition support plan of care

Domain 2: Practice Management and Operations (about 26% of the exam)

Tasks related to advancement of nutrition support pharmacy practice and integration of regulations, guidelines, and quality improvement into policies, procedures, and system management to optimize the care of patients requiring specialized nutrition support.

Task 1: Perform administrative duties of interprofessional nutrition support teams or committees (e.g., human and fiscal resources, educational programs).

Task 2: Establish relationships and/or collaborative practice agreements with other healthcare providers.

Task 3: Develop systems of ongoing quality improvement, patient safety, and provision of cost-effective nutrition support.

Task 4: Maintain compliance with federal regulations, accreditation standards, and professional guidelines (including those pertaining to sterile and non-sterile product compounding)

Task 5: Develop and implement policies and procedures related to nutrition assessment, patient selection, ordering, administration, monitoring, ethical considerations, and clinical review and pharmaceutical order verification that are consistent with clinical guidelines and standards of practice.

Task 6: Integrate nutrition support into organization-specific critical pathways and practice guidelines.

Task 7: Establish policies and procedures for compounding/preparing, labeling, storing, and beyond-use-dating of enteral and parenteral nutrition formulations.

Task 8: Review and select products, supplies and equipment as part of an interdisciplinary team to safely order, compound/prepare and administer parenteral and enteral nutrition.

Task 9: Perform essential calculations for the compounding of parenteral nutrition formulations.

Task 10: Perform and supervise the safe and accurate compounding and dispensing of enteral and parenteral nutrition formulations.

Task 11: Develop and implement a plan to manage and communicate nutrition product shortages.

Knowledge of:

1. Roles of other health care professionals (e.g. physicians, nurses, dietitians, pharmacists, case managers, etc.) associated with the nutrition support team or institutional committee
2. Standards of practice for nutrition support healthcare professionals
3. Resources for training and education of nutrition support healthcare professionals
4. Standards of practice and guidelines for providing nutrition support therapy (e.g. ASPEN, ASHP, USP, CDC)

5. Accrediting organizations and standards regarding quality of patient care and safety related to nutrition support.
6. Creating collaborative practice agreements with other healthcare providers
7. Methods for developing health economic evaluations of nutrition support therapy (e.g., cost-effectiveness, cost-benefit, cost associated with provision of nutrition support)
8. Designing, measuring, analyzing, and implementing performance and/or safety improvement projects related to nutrition support therapy (e.g., plan-do-study-act, root-cause analysis, medication use evaluation)
9. Quality improvement programs that are designed to report, track, and analyze errors associated with parenteral and enteral nutrition (e.g. ordering, dispensing, administration, monitoring, infection control)
10. Outcome indicators of nutrition support (e.g. nutrition status, morbidity, mortality, wound healing length of stay, length of intensive care unit length of stay, number of ventilator days, patient adherence)
11. Methods for developing nutrition assessment and nutrition requirements policy and procedures
12. Skills and information necessary for the patient, caregivers, and the healthcare team to provide nutrition support
13. Selection and maintenance of a nutrition product formulary
14. Selection and maintenance of devices and supplies for the administration of nutrition support (e.g. pump maintenance, tubing changes)
15. Health information technology (e.g., electronic health records (EHR), computerized physician provider order entry (CPOE), automated compounders, intelligent infusion devices, and electronic outsourcing links).
16. Methods to maintain patency of parenteral and enteral access devices
17. Factors affecting suitability and safety of nutrition support formulations
18. Information regarding the composition, compatibility, stability, and physical and chemical properties of parenteral nutrition components and formulations
19. Composition and physical and chemical properties of enteral nutrition formulations (e.g., protein, carbohydrate, fat, water, vitamins, minerals, osmolality)
20. Regulations, standards, and guidelines related to sterile and non-sterile nutrition support product compounding, labeling, storage, and administration (e.g., USP <797>, FDA, Joint Commission, NABP, ASPEN, OSHA)
21. Aseptic technique for compounding parenteral nutrition formulations, including risk level assessment
22. Clean technique for preparing enteral nutrition formulations
23. Pharmaceutical calculations used in compounding nutrition support formulations
24. Quality control procedures related to the preparation, dispensing, monitoring, storage, and use of enteral and parenteral nutrition formulations (e.g., infection control, end-product analysis, water quality, validation)
25. Devices and supplies (e.g., automated compounders, filtration devices, tubing) required for compounding enteral and parenteral nutrition formulations
26. Appropriate substitution and/or allocation of available products and supplies
27. Resources for managing shortages of product and supplies used in nutrition support (e.g., ASPEN, ASHP, FDA)

Domain 3: Evidence-Based Medicine, Scholarship, Education, and Advocacy (7% of the exam)

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Tasks related to retrieval, generation, interpretation, and dissemination of knowledge related to nutrition support pharmacy, and the education of healthcare providers.

Task 1: Retrieve biomedical literature and interpret study design, methodology, statistical analysis, and results to practice evidence-based medicine.

Task 2: Contribute to the nutrition support body of knowledge by engaging in and disseminating scholarly work.

Task 3: Provide interprofessional education to improve awareness and understanding of nutrition support therapies and patient outcomes.

Task 4: Advocate for the role and contribution of nutrition support pharmacy to the public, health care providers, health system, and policy makers.

Knowledge of:

1. Literature and information retrieval systems
2. Scientific literature and other resources pertaining to nutrition and the provision of nutrition support
3. Research design and methodology, including strengths, limitations, and generalizability
4. Statistics and data analysis procedures
5. Methods for disseminating nutrition support knowledge and scholarly work
6. Resources available to conduct robust nutrition support research
7. Regulatory and ethical issues related to research (e.g., confidentiality, informed consent, patient rights, IRB)
8. Instructional methods (e.g. ASHP preceptor guidelines, continuing education programs, in-services)
9. Interprofessional education assessment and evaluation methods
10. Professional organizations and their roles and resources related to nutrition support advocacy (e.g. ASPEN, Oley Foundation, NHIA, ASHP)
11. Strategies and metrics (e.g., clinical, economic, and patient experience) used for nutrition support advocacy