

American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Standards of Practice for Nutrition Support Pharmacists

Nutrition in Clinical Practice Volume 30 Number 1 February 2015 139–146 © 2014 American Society for Parenteral and Enteral Nutrition DOI: 10.1177/0884533614550318 ncp.sagepub.com hosted at online.sagepub.com



Anne Tucker, PharmD, BCNSP¹; Joe Ybarra, PharmD, BCNSP²;
Angela Bingham, PharmD, BCPS, BCNSP³; Allison Blackmer, PharmD, BCPS⁴;
Caitlin Curtis, PharmD, BCNSP⁵; Todd Mattox, PharmD, BCNSP⁶;
Chris Miller, PharmD, MS, MBA, BCNSP⁷; Ceressa Ward, PharmD, BCPS, BCNSP⁸;
Nancy Toedter Williams, PharmD, BCPS, BCNSP, FASHP⁹;
Standards of Practice for Nutrition Support Pharmacists Task Force;
and American Society for Parenteral and Enteral Nutrition

Keywords

nutritional support; pharmacists; professional role; nutrition therapy; clinical competence; nutrition assessment; nutrition support practice

Introduction

The American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) is a professional society of physicians, dietitians, nurses, pharmacists, other allied health professionals, and researchers. A.S.P.E.N. envisions an environment in which every patient receives safe, efficacious, and high-quality nutrition care. A.S.P.E.N.'s mission is to improve patient care by advancing the science and practice of clinical nutrition and metabolism. These Standards of Practice for Nutrition Support Pharmacists are an update of the 2008 standards. A.S.P.E.N. has developed these standards as general guidelines for Nutrition Support Pharmacists (NSPs). They present a range of performance of competent care that should be subscribed to by any NSP within or outside the context of a formal nutrition support team (also known as a nutrition support service). The application of standards is always subject to the judgment of the professional as applied to the individual case. A.S.P.E.N. defines standards as "benchmarks representing a range of performance of competent care that should be provided to assure safe and efficacious nutrition care." Standards are documents that define the structure needed to provide competent care. Standards usually address professional responsibilities as they relate to patient assessment, education, care plan development, implementation, clinical monitoring, evaluation, and professional issues. A.S.P.E.N. publishes discipline-based (eg, dietitian, nurse, pharmacist, or physician) and practice-based (eg, adult hospitalized patients, pediatric hospitalized patients, home and alternate site care) standards. Standards are presented in the most generic terms possible. The details of specific tests, therapies, and protocols are left to the discretion of individual healthcare facilities. Each healthcare facility shall strive to provide the best nutrition support care that is possible given the resources of the organization. The standards aim to ensure sound and efficient nutrition care for those in need of nutrition support therapy.

The mission of the pharmacist is to provide patient care that ensures optimal medication therapy outcomes.³⁻⁵ Nutrition support pharmacy is a specialty that focuses on optimizing nutrition support therapy outcomes. The NSP works collaboratively with other disciplines in a variety of settings along the continuum of care and across all developmental stages. The practice of nutrition support pharmacy varies with the individual pharmacist's position and practice environment. The scope of practice may include but is not limited to direct patient care; consultation with healthcare professionals, including those in industry; education of patients, caregivers, students, postgraduate trainees, colleagues, and the public; oversight of the compounding and delivery of safe and effective parenteral and enteral nutrition admixtures; participation in research activities and quality improvement; and administrative functions. Direct patient care involves the pharmacist's contribution to the selection, modification, and monitoring of patient-specific nutrition support therapy through direct observation or use of distance technology applications.⁶ Traditional roles for the NSP may

From ¹University of Houston, Houston, Texas; ²John Peter Smith Healthcare, Fort Worth, Texas; ³Philadelphia College of Pharmacy, University of the Sciences, Philadelphia, Pennsylvania; ⁴University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences, Aurora, Colorado; ⁵University of Wisconsin Hospital and Clinics, Madison, Wisconsin; ⁶Moffitt Cancer Center, Tampa, Florida; ⁷University of Kentucky, Lexington, Kentucky; ⁸Emory Healthcare, Atlanta, Georgia; and ⁹College of Pharmacy, Southwestern Oklahoma State University, Weatherford, Oklahoma.

Financial disclosure: None declared.

This article originally appeared online on October 6, 2014.

Corresponding Author:

Beverly Holcombe, A.S.P.E.N., 8630 Fenton St, Suite 412, Silver Spring, MD 20910, USA.

Email: beverlyh@nutritioncare.org

include working as a member of an interdisciplinary nutrition support service or team. Due to the variation of NSP roles, clinical practice may not apply to all pharmacists, as some may not practice in a direct patient care environment, hence the use of *may* in the clinical practice standards.

1. Audience for Standards

These discipline-based standards apply to NSPs who devote a significant part of their professional time to nutrition support activities. These standards are not intended for pharmacists who occasionally provide nutrition support to patients, but rather to pharmacists who, by virtue of education, training, experience, and personal interest, wish to be identified as an NSP and provide expertise in collaboration with other healthcare professionals.

2. Level of Care

These Standards of Practice represent a range of competencies that should be provided by any NSP within or outside the context of a formal nutrition support service or team. The application of standards in any individual case should be determined by the NSPs' best judgment, as well as their position and practice environment.

Terminology included in each standard is specified as follows:

- a. Shall: indicates standards to be followed strictly.
- Should: indicates that among several possibilities, one is particularly suitable without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required.
- c. *May:* indicates a course of action that is permissible within the limits of recommended practice.

These Standards of Practice for the NSP do not constitute medical or other professional advice and should not be taken as such. The information presented in these standards is not a substitute for the exercise of judgment by the healthcare professional.

These standards have been developed by the Task Force on Standards for Nutrition Support Pharmacists, reviewed by the A.S.P.E.N. Clinical Practice Committee and pharmacist experts, and approved by the A.S.P.E.N. Board of Directors. These Standards of Practice for Nutrition Support Pharmacists shall be used in conjunction with the previously published A.S.P.E.N. Clinical Guidelines, Standards, Position Papers, and other Boardapproved documents, which can be accessed at the A.S.P.E.N. Documents Library: http://www.nutritioncare.org/Library.aspx.

Chapter I. Criteria for Recognition as a Nutrition Support Pharmacist

Standard 1.1: The practice of nutrition support varies with the individual pharmacist's position, education, and practice environment. However, certain minimum qualifications are required of all pharmacists who practice in nutrition support.

- 1.1.1 A current, valid license to practice pharmacy in the United States of America or the equivalent licensure in foreign countries.
- 1.1.2 Devotes at least 30% of professional practice time to nutrition support–related activities.

Standard 1.2: The NSP should demonstrate competence in nutrition support by successfully demonstrating one of the following criteria:

- 1.2.1 Completion of an educational training program (eg, postgraduate training) that includes significant or recognized formal education and training in nutrition support therapy.
- 1.2.2 Certification in the area of nutrition support by a credentialing body such as the Board of Pharmacy Specialties, as a Board Certified Nutrition Support Pharmacist (BCNSP), or the National Board of Nutrition Support Certification, as a Certified Nutrition Support Clinician (CNSC).

Standard 1.3: The NSP shall demonstrate participation in nutrition support practice by successfully demonstrating one of the following criteria:

- 1.3.1 Active participation in nutrition assessment and selecting, modifying, and monitoring patient-specific nutrition support therapies.
- 1.3.2 Active participation in compounding and dispensing parenteral nutrition admixtures.
- 1.3.3 Active participation in a nutrition support service or committee of a healthcare organization responsible for developing, implementing, and evaluating policies and protocols for nutrition support therapies.
- 1.3.4 Active participation in the formal education and training of pharmacy students, pharmacy postgraduate trainees, and other healthcare professionals and trainees regarding nutrition support.
- 1.3.5 Active participation (eg, leader, committee member) in one or more professional societies devoted to promoting safe and effective nutrition support.

Chapter II. Nutrition Assessment

Standard 2.1: In collaboration with other healthcare professionals, the NSP providing direct patient care should participate in nutrition assessment to identify patients who are nutritionally at risk.⁷⁻⁹

- 2.1.1 The patient or caregiver may be interviewed to obtain medical, surgical, nutrition, pharmacotherapy, psychosocial, cultural, and socioeconomic history.
- 2.1.2 The medical record shall be reviewed for disease states and clinical conditions, medical and surgical therapies, allergies, pharmacotherapy, laboratory findings, physical findings, and functional status.
- 2.1.3 A nutrition-focused physical exam may be performed and shall be reviewed and interpreted.

Tucker et al 141

- 2.1.4 Biochemical parameters relevant to nutrition assessment and inflammatory status may be measured and shall be reviewed and interpreted.
- 2.1.5 Nutrition assessment shall include review of nutrient intake, allergy history, functional status of the gastrointestinal tract, and feeding access.
- 2.1.6 The NSP should document or verify the documentation of the patient's nutrition status in the medical record.

Standard 2.2: In collaboration with other healthcare professionals, the NSP shall participate in the routine assessment of the patient's energy, protein, vitamin, mineral, fluid, and electrolyte requirements according to age, disease states, clinical conditions, and pharmacotherapy.⁷⁻⁹

- 2.2.1 The NSP should document or verify documentation of nutrient requirements in the medical record.
- Standard 2.3: The NSP should assess the patient's risk for potential complications related to feeding formulation(s) and feeding access device(s).

Standard 2.4: The NSP shall assess subjective and objective data to prevent and/or identify drug-drug, drug-nutrient, nutrient-nutrient, and drug-laboratory interactions and/or incompatibilities. Significant findings shall be communicated to the healthcare team.

Standard 2.5: In collaboration with other healthcare professionals, the NSP shall participate in assessing the patient's appropriateness for nutrition support therapy.⁷⁻⁹

- 2.5.1 The NSP should consider patient-specific factors (eg, disease state, clinical condition, risk factors, and prognosis) in assessing the appropriateness of nutrition support therapy.
- 2.5.2 The NSP shall apply clinical practice guidelines and scientific literature in assessing the appropriateness of nutrition support therapy for the individual patient.
- 2.5.3 The NSP should use resource-efficient and fiscally responsible care when assessing the appropriateness of nutrition support therapy.

Standard 2.6: The NSP should participate in assessing the educational needs of healthcare professionals in practice or in training, patients, caregivers, and others regarding nutrition support therapy.

Chapter III. Developing and Implementing the Nutrition Care Plan

Standard 3.1: In collaboration with other healthcare professionals, the patient, and caregivers, the NSP shall participate in developing an individualized nutrition care plan. ⁷⁻⁹

- 3.1.1 The nutrition care plan shall be based on the individual patient's nutrition assessment, disease states, clinical conditions, and nutrition risk factors and shall incorporate evidence-based literature.
- 3.1.2 The nutrition care plan should include the following:
 - short- and long-term goals of nutrition support therapy;

- indication for nutrition support therapy;
- estimated energy, protein, vitamin, mineral, and fluid needs:
- recommended feeding access device;
- appropriate parameters and frequency of monitoring;
- · anticipated duration of therapy;
- · risks and benefits; and
- criteria for discontinuation.
- 3.1.3 The NSP shall promote therapy that provides safe, optimal, appropriate, resource-efficient, and fiscally responsible care.
- 3.1.4 The nutrition care plan shall support the medical care plan and be congruent with established organizational policies, procedures, and protocols.

Standard 3.2: The NSP shall review patient medications to determine the impact on the nutrition care plan and nutrient requirements.

Standard 3.3: The NSP should document or verify documentation of the nutrition care plan in the medical record.

Standard 3.4: In collaboration with other healthcare professionals, the NSP may recommend the preferred route for administration of nutrition support therapy based on the patient's medical condition, objectives of therapy, feasibility of pharmaceutical formulations, psychosocial issues, environment of care, economic concerns, and potential home or alternate site care needs.⁷⁻⁹

Standard 3.5: In collaboration with other healthcare professionals, the NSP may recommend a patient-specific feeding formulation, rate of administration (eg, initiation, advancement, discontinuation), and mode of administration (eg, intermittent, cyclic, bolus, continuous) on the basis of the patient's clinical information, disease process, and compatibility with the route of feeding access.

Standard 3.6: The NSP should recommend pharmacologic adjuncts to nutrition support therapy where applicable (eg, acid suppression agents, prokinetic agents, appetite stimulants, antidiarrheal agents).

Standard 3.7: The NSP may enter/write orders for feeding formulations, laboratory tests, and adjunctive therapy (eg, intravenous fluids, insulin, intravenous/oral electrolytes) and adjust regimens based on response to therapy, changing clinical conditions, altered laboratory values, and nutrition assessment parameters as delineated by clinical privileges and applicable professional licensure laws.

Standard 3.8: The NSP shall participate in implementing the nutrition care plan to promote appropriateness, safety, and accuracy, as well as resource-efficient and fiscally responsible care.

Standard 3.9: The NSP should recommend equipment and supplies based on the route of administration, type of feeding access device, desired infusion rate, clinical situation, and safety and cost-effectiveness as is congruent with the individual needs of the patient and caregivers.

Standard 3.10: The NSP should recommend strategies to prevent, detect, and manage complications related to the feeding formulation(s) and feeding access device(s).

Standard 3.11: The NSP shall provide strategies to prevent, detect, and manage interactions between drugs, dietary supplements, and nutrients.

Standard 3.12: The NSP shall provide strategies to prevent incompatible and unstable feeding formulations.

Standard 3.13: The NSP shall provide safe and effective strategies for administering medications through feeding access devices.

Standard 3.14: The NSP shall provide strategies for managing shortages of parenteral nutrition components.

Standard 3.15: The NSP should communicate the individualized nutrition care plan with other healthcare providers to promote continuity of care within and outside the organization.

Standard 3.16: The NSP should participate in educating the patient and caregivers regarding the nutrition care plan in a way that is systematic, comprehensive, timely, and sensitive. Written educational materials appropriate for the educational level of the intended audience should be developed.

Chapter IV. Order Review and Verification and the Compounding and Dispensing of Feeding Formulations

Standard 4.1: The NSP shall participate in developing, implementing, and adhering to policies and procedures related to the parenteral nutrition order verification process that should include assessing that the order is clear, complete, and correctly transcribed and confirming that the vascular access is appropriate for administering parenteral nutrition admixtures. ¹⁰⁻¹²

Standard 4.2: The NSP shall participate in developing, implementing, and adhering to policies and procedures related to the parenteral nutrition order review process that should include a clinical review to confirm appropriate indication, nutrient dosing, nonnutrient medication dosing, and a pharmaceutical review to confirm compatibility of the ordered nutrients, nonnutrient medications, and expected stability of the formulation. ¹⁰⁻¹²

4.2.1 The NSP should participate in training other pharmacists who verify and perform the clinical and pharmaceutical review of parenteral nutrition orders and participate in the monitoring of the training program.

Standard 4.3: The NSP shall participate in developing, implementing, and adhering to policies and procedures related to compounding safe and effective parenteral nutrition admixtures as defined by the scientific literature, clinical guidelines, and standards of practice related to parenteral nutrition support (eg, The United States Pharmacopeia (USP) General Chapter <797> Pharmaceutical Compounding-Sterile Preparations, The Joint Commission, State Boards of Pharmacy rules and regulations). ¹⁰⁻¹⁶

Standard 4.4: The NSP shall participate in developing, implementing, adhering to, and adapting parenteral nutrition compounding policies and procedures based on availability of parenteral nutrition components and compounding-related supplies. ¹⁰⁻¹²

Standard 4.5: The NSP shall participate in developing, implementing, and adhering to procedures for detecting and preventing compatibility or stability problems associated with parenteral nutrition admixtures during the compounding process, including developing component compounding limits and alerts. ¹⁰⁻¹²

Standard 4.6: The NSP shall participate in developing, implementing, and adhering to quality control procedures related to compounding parenteral nutrition admixtures. ¹⁰⁻¹³ This may include qualifying and evaluating sterile compounding facilities used to procure parenteral nutrition components or compound parenteral nutrition admixtures. ^{10-12,14}

Standard 4.7: The NSP shall be involved in developing a competency-based educational curriculum for compounding parenteral nutrition admixtures and performing necessary calculations. This includes initial orientation and training as well as ongoing competency assessment. ¹⁰⁻¹²

4.7.1 The NSP shall participate in training and monitoring pharmacy personnel regarding compounding parenteral nutrition admixtures and assessment of ability to perform necessary calculations.

Standard 4.8: The NSP shall participate in developing, implementing, and adhering to policies and procedures related to labeling, delivery, and storage of parenteral nutrition admixtures prior to administration. 10-12

4.8.1 The NSP shall participate in training pharmacy personnel and monitoring parenteral nutrition admixture labeling, delivery, and storage of parenteral nutrition admixtures.

Standard 4.9: The NSP may participate in developing, implementing, and adhering to policies and procedures related to the enteral nutrition ordering and review process.

Standard 4.10: The NSP may participate in developing, implementing, and adhering to policies and procedures related to preparing safe and effective enteral nutrition formulations.¹⁷ Standard 4.11: The NSP may participate in developing, implementing, and adhering to policies and procedures related to labeling, delivery, and storage of enteral nutrition formulations prior to administration.¹⁷

Chapter V. Monitoring

Standard 5.1: In collaboration with other healthcare professionals, the NSP shall monitor patients receiving nutrition support through reports or patient visits, as appropriate.⁷⁻⁹

Standard 5.2: The NSP shall establish monitoring parameters consistent with the patient's nutrition care plan to optimize therapy and achieve optimal outcomes.⁷⁻⁹

Tucker et al 143

5.2.1 Monitoring parameters may include but are not limited to the following:

- nutrient intake:
- tolerance of nutrition therapy;
- inspection of the feeding formulation(s);
- inspection of the feeding access device(s);
- nutrition-focused physical exam to evaluate nutrition status;
- relevant laboratory measurements to evaluate clinical and nutrition status;
- relevant clinical assessments to evaluate substrate utilization or nutrient requirements;
- relevant laboratory measurements and clinical assessments to evaluate function of the gastrointestinal tract and other major organs;
- age-appropriate weight and growth rate;
- · medications;
- fluid balance;
- compliance; and
- adverse reactions.

Standard 5.3: The NSP should routinely reassess the effectiveness of nutrition support therapy by using relevant monitoring parameters to determine progress with successful achievement of the nutrition care plan goals.⁷⁻⁹

5.3.1 The NSP should document or verify documentation of results from monitored parameters, including abnormal values and potential complications, in the medical record.

Standard 5.4: The NSP should routinely reassess the appropriateness of nutrition support therapy (eg, feeding formulation, route of delivery, delivery method).

- 5.4.1 The NSP should participate in developing the appropriate follow-up nutrition support therapy regimen to promote progress according to the nutrition care plan.
- 5.4.2 The NSP should participate in evaluating a patient's ability to transition to alternative modes of nutrition support.

Standard 5.5: The NSP should evaluate the safety of nutrition support therapy provided.⁷⁻⁹

- 5.5.1 The NSP shall monitor the safety and appropriateness of parenteral nutrition orders. ¹⁰⁻¹²
- 5.5.2 The NSP should evaluate the safety and appropriateness of enteral nutrition orders. ¹⁷
- 5.5.3 The NSP shall participate in evaluating and managing all existing or potential drug-drug, drug-nutrient, and nutrient-nutrient interactions.
- 5.5.4 The NSP should assess for and participate in managing complications associated with parenteral nutrition therapy.
- 5.5.5 The NSP should assess for and participate in developing a plan to manage complications associated with enteral nutrition therapy.

Chapter VI. Organization and Management of Nutrition Support Services

Standard 6.1: In collaboration with other healthcare professionals, the NSP should participate in the administrative management of the nutrition support team or services. The optimal nutrition support team should include a nutrition support physician, nurse, dietitian, and pharmacist, each having appropriate education, training, and/or experience with nutrition support services.⁷⁻¹²

6.1.1 The NSP shall collaborate with other members of the nutrition support team and/or institutional committee to develop and implement policies, procedures, and protocols related to providing nutrition support therapy. These documents shall be periodically reviewed and revised to remain current with the scientific literature, clinical guidelines, standards of care, and institutional needs

Standard 6.2: The NSP should serve as a member of and may coordinate or manage the service, team, or committee that provides nutrition support therapy.

- 6.2.1 The NSP should establish collegial relationships with other healthcare professionals in order to facilitate the work of the service, team, or committee.
- 6.2.2 The NSP should promote continuity of care within and outside the organization. The NSP may act as liaison between the nutrition support program and the medical staff, home care organizations, third-party payers, hospital administration, and others, as appropriate.
- 6.2.3 The NSP may make referrals to or receive referrals from other members of the healthcare team, as appropriate, to maintain and provide continuous optimal patient care.

Standard 6.3: The NSP shall participate in developing and maintaining technologies (eg, computerized prescriber order entry databases, automated compounding device software) pertaining to nutrition support therapies. ^{10-12,18}

Standard 6.4: The NSP shall participate in developing and maintaining an appropriate and cost-effective nutrition support formulary pertaining to parenteral nutrition components.

- 6.4.1 The NSP shall participate in reviewing and selecting the parenteral nutrition formulary.
- 6.4.2 The NSP shall participate in managing shortages of parenteral nutrition components. 10-12
- 6.4.3 The NSP shall participate in reviewing and selecting equipment and supplies (eg, automated compounding devices) used to compound parenteral nutrition admixtures, as applicable. ^{10-13,18}
- 6.4.4 The NSP may participate in reviewing and selecting supplies and equipment to safely administer parenteral feeding formulations, including but not limited to items such as infusion pumps and vascular access devices.

- Standard 6.5: The NSP may participate in developing and maintaining an appropriate and cost-effective nutrition support formulary, as it pertains to enteral nutrition components.
 - 6.5.1 The NSP may participate in reviewing and selecting the enteral nutrition formulary.
 - 6.5.2 The NSP may participate in managing shortages related to enteral nutrition formulations, components, supplies, and equipment.
 - 6.5.3 The NSP may participate in reviewing and selecting supplies and equipment to safely administer enteral feeding formulations, including but not limited to such items as infusion pumps and enteral access devices.
- Standard 6.6: The NSP should participate in planning and/or implementing patient safety and quality improvement initiatives related to nutrition support therapy.⁷⁻⁹
 - 6.6.1 The NSP may participate in designing, measuring, analyzing, and implementing performance and/or safety improvement projects.
 - 6.6.2 The NSP should be involved in developing quality improvement programs that are designed to report, track, and analyze errors associated with parenteral nutrition. ¹⁰⁻¹²
 - 6.6.3 The NSP should be involved in developing quality improvement programs that are designed to report, track, and analyze errors associated with enteral nutrition.

Standard 6.7: The NSP should participate in establishing and periodically reviewing the nutrition support process, which includes nutrition screening, assessment, developing and implementing a nutrition care plan, monitoring, facilitating continuity of care, and/or terminating therapy.⁷⁻⁹

Chapter VII. Advancement of Nutrition Support Pharmacy Practice

Standard 7.1: The NSP shall develop collaborative relationships with healthcare professionals, students, postgraduate trainees, patients, and caregivers in order to advance the field of nutrition support.

- 7.1.1 The NSP shall establish collegial relationships with other healthcare professionals in order to exchange knowledge and skills.
- 7.1.2 The NSP should actively participate in nutrition-related and pharmacy professional organization activities at the local, state, or national level to demonstrate commitment to nutrition support pharmacy.
- 7.1.3 The NSP should build networks, as appropriate, with members of other professional organizations and government agencies to promote optimal nutrition care.
- 7.1.4 The NSP should work to influence decision-making bodies to improve nutrition-related patient care, health services, and policies.
- 7.1.5 The NSP should provide and/or participate in pharmacy and interprofessional nutrition support-related education through formal and informal programs.

- 7.1.6 The NSP should provide and/or participate in nutrition support therapy learning experiences for pharmacy and interprofessional students and/or postgraduate trainees in classroom and/or clinical settings.
- 7.1.7 The NSP should serve as a mentor to pharmacy students, postgraduate trainees, healthcare professionals, and healthcare professional trainees as it relates to nutrition support therapy.
- 7.1.8 The NSP should provide nutrition-related education to patients and caregivers.

Standard 7.2: The NSP should promote communicating nutrition-related information and advancing the nutrition support pharmacy specialty through publications and/or presentations for healthcare professionals or the public.

Standard 7.3: The NSP may design, develop, or evaluate nutrition-related innovations, including new products and equipment used in the nutrition support process, to influence positive changes in practice and outcomes.

Standard 7.4: The NSP shall maintain professional competence through continuing professional development.

- 7.4.1 The NSP shall routinely self-assess his or her nutrition support practice in relation to professional practice standards and guidelines, relevant statutes, rules, and regulations.
- 7.4.2 The NSP should participate in a peer-review process as a method to assess his or her professional competency.
- 7.4.3 The NSP shall take action to achieve goals identified during self-assessment and peer-review evaluation.
- 7.4.4 The NSP should participate in educational programs to enhance his or her professional practice as well as develop and maintain continuing competence.
- 7.4.5 The NSP should use successful completion of a psychometrically validated certification process and/or institutional credentialing pertinent to nutrition support pharmacy to provide evidence of professional competency.

Chapter VIII. Research

Standard 8.1: The NSP shall retrieve, evaluate, and promote integrating nutrition-related research findings into practice.

8.1.1 The NSP shall use the best available evidence, including scientific literature, clinical guidelines, standards, and state and federal rules and regulations to guide practice decisions and develop nutrition-related policies, procedures, protocols, and standards of practice.

Standard 8.2: The NSP should actively participate in collaborative nutrition-related research activities consistent with area(s) of expertise.

Standard 8.3: The NSP should disseminate nutrition-related research findings through activities such as presentations, publications, and journal clubs.

Standard 8.4: The NSP may participate in nutrition-related research committees.

Tucker et al 145

Chapter IX. Ethics

Standard 9.1: The NSP, in collaboration with other healthcare professionals, is entrusted with the responsibility of providing patient care that promotes optimal outcomes via appropriate medication use and nutrition support therapy.

- 9.1.1 The NSP shall adhere to the Code of Ethics for Pharmacists.¹⁹
- 9.1.2 The NSP shall act with honesty and integrity within all professional relationships.
- 9.1.3 The NSP shall maintain confidentiality of patient information.
- 9.1.4 The NSP may counsel patients and caregivers on the intended goals of nutrition support therapy and shall provide full disclosure of potential untoward effects.²⁰
- 9.1.5 The NSP shall consider the cultural, ethical, personal, and religious beliefs of patients and caregivers when discussing plans of care to the extent the patients and caregivers reveal them.²⁰
- 9.1.6 The NSP shall encourage patients to participate in making their own healthcare decisions.
- 9.1.7 The NSP shall recognize potential and actual conflicts of interest and withdraw from participation in decisions or activities that may be influenced by such conflicts of interest.
- 9.1.8 The NSP should work with an interprofessional healthcare team to develop appropriate solutions to resolve moral, ethical, and legal dilemmas.
- 9.1.9 The NSP shall incorporate scientific, economic, ethical, and legal reasoning when making clinical decisions.²⁰

Additional Reading

- Boullata JI. Overview of the parenteral nutrition use process. *JPEN J Parenter Enteral Nutr.* 2012;36(2)(suppl):10S-13S.
- Boullata JI, Hudson LM. Drug-nutrient interactions: a broad view with implications for practice. J Acad Nutr Diet. 2012;112(4):506-517.
- Chan LN. Drug-nutrient interactions. JPEN J Parenter Enteral Nutr. 2013;37:450-459.
- DiMaria-Ghalili RA, Bankhead R, Fisher AA, et al; Nurses Standards Revision Task Force and American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Board of Directors. Standards of practice for nutrition support nurses. *Nutr Clin Pract*. 2007;22(4):458-465.
- Holcombe B, Andris D, Brooks G, Houston D, Plogsted S; A.S.P.E.N. Clinical Practice Committee and Board of Directors. Information to use in the event of an IV multivitamin shortage. http://www.nutritioncare.org/lcontent.aspx?id=5346. Accessed March 31, 2014.
- Holcombe B, Andris D, Brooks G, Houston D, Plogsted S; A.S.P.E.N. Clinical Practice Committee and Board of Directors. Parenteral nutrition electrolyte and mineral product shortage considerations. http:// www.nutritioncare.org/Guidelines_and_Clinical_Practice/Clinical_ Practice_Library/Parenteral_Nutrition_Electrolyte_and_Mineral_ Product_Shortage_Considerations/. Accessed March 31, 2014.
- Holcombe B, Andris D, Brooks G, Houston D, Plogsted S; A.S.P.E.N. Clinical Practice Committee and Board of Directors. Parenteral nutrition trace element product shortage considerations, 2011. http://www. nutritioncare.org/Guidelines_and_Clinical_Practice/Clinical_Practice_ Library/Parenteral_Nutrition_Trace_Element_Product_Shortage_ Considerations/. Accessed March 31, 2014.

- Jensen GL, Compher C, Sullivan D, Mullin G. Recognizing malnutrition in adults: definitions and characteristics, screening, assessment, and team approach. JPEN J Parenter Enteral Nutr. 2013;37(6):802-807.
- Jensen GL, Hsiao PY, Wheeler D. Adult nutrition assessment tutorial. JPEN J Parenter Enteral Nutr. 2012;36(3):267-274.
- Mascarenhas MR, August DA, DeLegge MH, et al. Standards of practice for nutrition support physicians. Nutr Clin Pract. 2012;27(2):295-299.
- Medina MS, Plaza CM, Stowe CD, et al. Center for the Advancement of Pharmacy Education 2013 educational outcomes. Am J Pharm Educ. 2013;77(8):162.
- Plogsted S, Brooks G, DiBaise J, Neal A, Ybarra J; A.S.P.E.N. Clinical Practice Committee and Board of Directors. Information to use in the event of an intravenous amino acid shortage, 2013. http://www.nutritioncare.org/Professional_Resources/Drug_Shortages/PN_Amino_ Acids_Product_Shortage_Considerations_2013/. Accessed March 31, 2014.
- Plogsted S, Brooks G, DiBaise J, Neal A, Ybarra J; A.S.P.E.N. Clinical Practice Committee and Board of Directors. Parenteral nutrition intravenous fat emulsion product shortage considerations, 2013. http:// www.nutritioncare.org/Professional_Resources/Drug_Shortages/PN_ IV_Fat_Emulsions_Product/. Accessed March 31, 2014.
- Plogsted S, Gura K, Helms RA, Robinson D, Valentine C; A.S.P.E.N. Clinical Practice Committee and Board of Directors. Parenteral nutrition cysteine product shortage considerations. http://www.nutritioncare. org/Guidelines_and_Clinical_Practice/Clinical_Practice_ Library/Parenteral_Nutrition_Cysteine_Product_Shortage_ Considerations/. Accessed March 31, 2014.
- Russell M, Stieber M, Brantley S, et al; Joint Standards Task Force of A.S.P.E.N. and the American Dietetic Association Dietitians in Nutrition Support Dietetic Practice Group, American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.), and American Dietetic Association (ADA). Standards of practice and standards of professional performance for registered dietitians (generalist, specialty, and advanced) in nutrition support. Nutr Clin Pract. 2007;22(5):558-586.
- Santos CA, Boullata JI. An approach to evaluating drug nutrient interactions. *Pharmacotherapy*. 2005;25(12):1789-1800.
- White JV, Guenter P, Jensen GL, Malone A, Schofield M. Consensus statement: Academy of Nutrition and Dietetics and the American Society for Parenteral and Enteral Nutrition: characteristics recommended for the identification and documentation of adult malnutrition (undernutrition). JPEN J Parenter Enteral Nutr. 2012;36(3):275-283.

References

- American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Task Force for Revision of Nutrition Support Pharmacist Standards, Rollins C, Durfee SM, et al. Standards of practice for nutrition support pharmacists. Nutr Clin Pract. 2008;23(2):189-194.
- American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.)
 Board of Directors and Clinical Practice Committee. Definition of terms,
 style, and conventions used in A.S.P.E.N. Board of Directors—Approved
 Documents. American Society for Parenteral and Enteral Nutrition. http://
 www.nutritioncare.org/uploadedFiles/Home/Guidelines_and_Clinical_
 Practice/DefinitionsStyleConventions.pdf. Published 2012. Accessed
 March 28, 2014.
- American College of Clinical Pharmacy Board of Regents, Maddux MS. Board of Regents commentary qualifications of pharmacists who provide direct patient care: perspectives on the need for residency training and board certification. *Pharmacotherapy*. 2013;33(8):888-889.
- Zarowitz BJ, Miller WA, Helling DK, Nappi J, Wells BG, Nahata MC.
 Optimal medication therapy prescribing and management: meeting
 patients' needs in an evolving health care system. *Pharmacotherapy*.
 2010:30:350e-359e.

- American Society of Health-System Pharmacists. The consensus of the pharmacy practice model summit. Am J Health Syst Pharm. 2011;68: 1148-1152.
- Murphy JE, Nappi JM, Bosso JA, et al. American College of Clinical Pharmacy's vision of the future: postgraduate pharmacy residency training as a prerequisite for direct patient care practice. *Pharmacotherapy*. 2006;26(5):722-733.
- Ukleja A, Freeman KL, Gilbert K, et al; Task Force on Standards for Nutrition Support: Adult Hospitalized Patients and American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Board of Directors. Standards for nutrition support: adult hospitalized patients. *Nutr Clin Pract*. 2010;25(4):403-414.
- Corkins MR, Griggs KC, Groh-Wargo S, et al; Task Force on Standards for Nutrition Support: Pediatric Hospitalized Patients and American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Board of Directors. Standards for nutrition support: pediatric hospitalized patients. Nutr Clin Pract. 2013;28(2):263-276.
- Durfee S, Adams SC, Arthur E, et al; Task Force on Standards for Nutrition Support: Home and Alternate Site Care and American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Board of Directors. Standards for nutrition support: home and alternate site care. Nutr Clin Pract. 2014;29(4):542-555.
- Ayers P, Adams S, Boullata J, et al. A.S.P.E.N. parenteral nutrition safety consensus recommendations. *JPEN J Parenter Enteral Nutr.* 2014;38(4):296-333.
- Boullata JI, Gilbert K, Sacks G, et al. A.S.P.E.N. clinical guidelines: parenteral nutrition ordering, order review, compounding, labeling, and dispensing. *JPEN J Parenter Enteral Nutr*. 2014;38(3):334-377.
- Mirtallo J, Canada T, Johnson D, et al; Task Force for the Revision of Safe Practices for Parenteral Nutrition and American Society for

- Parenteral and Enteral Nutrition (A.S.P.E.N.) Board of Directors. Safe practices for parenteral nutrition [published correction appears in *JPEN J Parenter Enteral Nutr*. 2006;30(2):177]. *JPEN J Parenter Enteral Nutr*. 2004;28(6):S39-S70.
- American Society of Health-System Pharmacists. ASHP guidelines on compounding sterile preparations. Am J Health Syst Pharm. 2014;71:145-166.
- Rinehard JS, Chan D, Cunningham M, et al. ASHP guidelines on outsourcing sterile compounding services. Am J Health Syst Pharm. 2010;67(9):757-765.
- Rich DS, Fricker MP, Cohen MR, Levine SR. Guidelines for the safe preparation of sterile compounds: results of the ISMP sterile preparation compounding safety summit of October 2011. Hosp Pharm. 2013;48(4):282-294.
- United States Pharmacopeia. USP General Chapter <797>: pharmaceutical compounding—sterile preparations. In: U.S. Pharmacopeia/National Formulary, Edition 37/32. Rockville, MD: United States Pharmacopeial Convention, Inc.; 2014.
- Bankhead R, Boullata J, Brantley S, et al; Enteral Nutrition Practice Recommendations Task Force and American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Board of Directors. Enteral nutrition practice recommendations. JPEN J Parenter Enteral Nutr. 2009;33(2):122-167.
- American Society of Health-System Pharmacists. ASHP guidelines on the safe use of automated compounding devices for the preparation of parenteral nutrition admixtures. Am J Health Syst Pharm. 2000;57(14):1343-1348.
- American Pharmacists Association. Code of Ethics for Pharmacists. 1984. http://www.pharmacist.com/code-ethics. Accessed April 30, 2014.
- Barrocas A, Geppert C, Durfee SM, et al; American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Ethics Position Paper Task Force. A.S.P.E.N. ethics position paper. *Nutr Clin Pract*. 2010;25(6):672-679.