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Standards for Nutrition Support: Adult Hospitalized Patients

Andrew Ukleja, MD, AGAF[1]; Karen Gilbert, RN, MSN, CNSC, ACNP[2]; Kris M. Mogensen, MS, RD-AP, LDN, CNSC[3]; Renee Walker, MS, RD, LD, CNSC, FAND[4]; Ceressa T. Ward, PharmD, BCPS, BCNSP, BCCCP[5]; Joe Ybarra, PharmD, BCNSP[6]; Beverly Holcombe, PharmD, BCNSP, FASHP, FASPEN[7]; Task Force on Standards for Nutrition Support: Adult Hospitalized Patients, the American Society for Parenteral and Enteral Nutrition

Abstract

The American Society for Parenteral and Enteral Nutrition defines standards as benchmarks representing a range of performance of competent care that should be provided to assure safe and efficacious nutrition care in most circumstances. Standards are documents that define the structure needed to provide competent care. These Standards for Nutrition Support for Adult Hospitalized Patients are an update of the 2010 Standards. These practice-based standards are intended for use by healthcare professionals charged with the care of adult hospitalized patients receiving nutrition support therapy in any hospital with or without a formal nutrition support service or team. These Standards address professional responsibilities as they relate to patient assessment, diagnosis, education, care plan development, implementation, clinical monitoring, evaluation, and professional issues around nutrition support. (*Nutr Clin Pract.* 2018;00:1–15)

Keywords

enteral nutrition; hospitalization; nutrition assessment; nutrition support; parenteral nutrition; standard of care

Introduction

The American Society for Parenteral and Enteral Nutrition (ASPEN) is dedicated to improving patient care by advancing the science and practice of clinical nutrition and metabolism. Founded in 1976, ASPEN is an interdisciplinary organization whose members are involved in the provision of clinical nutrition therapies, including parenteral and enteral nutrition. With more than 6,500 members from around the world, ASPEN is a community of dietitians, nurses, pharmacists, physicians, scientists, students, and other health professionals from every facet of nutrition support clinical practice, research, and education. ASPEN envisions an environment in which every patient receives safe, efficacious, and high-quality nutrition care. ASPEN's mission is to improve patient care by advancing the science and practice of clinical nutrition and metabolism. These Standards for Nutrition Support for Adult Hospitalized Patients are an update of the 2010 standards.[1] They are intended for use by any hospital with or without a formal nutrition support service (or team).

ASPEN defines standards as benchmarks representing a range of performance of competent care that should be provided to assure safe and efficacious nutrition care in most circumstances.[2] Standards are documents that define the structure needed to provide competent care. Standards usually address professional responsibilities as they relate to patient assessment, diagnosis, education, care plan development, implementation, clinical monitoring, evaluation, and professional issues. ASPEN 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

From the [1]Beth Israel Deaconess Medical Center, Division of Gastroenterology, Boston, Massachusetts, USA; [2]Thomas Jefferson University Hospital, Philadelphia, Pennsylvania, USA; [3]Department of Nutrition, Brigham and Women's Hospital, Boston, Massachusetts, USA; [4]Michael E. DeBakey Veteran Affairs Medical Center, Houston, Texas, USA; [5]Emory Healthcare, Atlanta, Georgia, USA; [6]Medical City McKinney, McKinney, Texas, USA; and [7]American Society for Parenteral and Enteral Nutrition, Silver Spring, Maryland, USA.

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Corresponding Author:
Beverly Holcombe, PharmD, BCNSP, FASHP, FASPEN, ASPEN, 8401 Colesville Rd, Suite 510, Silver Spring, MD 20910.
Email: beverlyh@nutritioncare.org

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.

Important Note

These standards do not constitute medical or other professional advice and should not be taken as such. To the extent that the information published herein may be used to assist in the care of patients, this is the result of the sole professional judgment of the attending healthcare professional whose judgment is the primary component of quality medical care. The information presented in these standards is not a substitute for the exercise of such judgment by the healthcare professional. Circumstances in clinical settings and patient indications may require actions different from those recommended in this document and in those cases, the judgment of the treating professional should prevail.

Audience for Standards

These practice-based standards are intended for use by healthcare professionals charged with the care of adult hospitalized patients receiving nutrition support therapy.

Level of Care

As limited by the *Important Note* above, these Standards of Practice present a range of performance of competent care that should be provided by healthcare professionals caring for adult hospitalized patients receiving nutrition support therapy. Terminologies included in each standard are specified as:

(a) *"Shall"*: Indicates standards to be followed strictly.
(b) *"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 have been developed by the ASPEN Task Force on Standards for Nutrition Support: Adult Hospitalized Patients, reviewed by the ASPEN Clinical Practice Committee, and approved by the ASPEN Board of Directors on July 25, 2018. These Standards of Practice should be used in conjunction with the previously published ASPEN Clinical Guidelines, Standards, Position Papers, and other Board Approved documents, which can be accessed at the ASPEN Documents Library, http://www.nutritioncare.org/Clinical_Practice_Library/.

Chapter I: Organization

Standard 1. Nutrition Support Service (or Team)

A nutrition support service (or team) should assess and in collaboration with patients' primary teams, manage the nutrition support therapy of patients who require or may require nutrition support therapy. These patients are often, but not always, determined to be nutritionally-at-risk at admission or upon subsequent evaluation.[3] Organized nutrition support services (or teams) are associated with improved patient outcomes, decreased length of hospitalization, and improved cost effectiveness.[4-19] If a hospital does not have a designated nutrition support service (or team), the care used to provide nutrition support therapy should be interprofessional. The scope and design of the nutrition support service (or team) and their respective activities vary according to the unique attributes of each hospital. Among various organizations, management of nutrition support may comprise a spectrum of activities including no formal structure, an administrative nutrition committee only, a consultative nutrition support service (or team), or a nutrition support service (or team) that assumes responsibility for the nutrition care of patients who receive nutrition support therapy.

1.1 When an organized nutrition support service (or team) exists, it shall be directed by a clinician who has appropriate education, specialized training, patient care experience, or experience in managing nutrition support services (teams).
1.2 An organized nutrition support service (or team) should include a physician, nurse, dietitian, and pharmacist, each following the standards of practice for their discipline, as available.[20-23]
1.3 If a nutrition support service (or team) is not established, nutrition support therapy should be managed with an interprofessional approach that includes the patient's physician, nurse, dietitian, and pharmacist.

Standard 2. Policies and Procedures

Written policies and procedures for providing nutrition support therapy shall be current.

2.1 The policies and procedures shall be developed with the input of and review by all members of the nutrition support service (or team) and/or nutrition support committee.
2.2 The policies and procedures shall be reviewed periodically and revised as appropriate to define optimal patient care and therapeutic outcomes. (See 3.2.)

Standard 3. Performance Improvement

The nutrition support service (or team) and/or nutrition support committee shall regularly review and report on service performance, quality indicators, patient outcome data, and adverse events related to nutrition support therapies.[24] These reports shall be shared with all internal stakeholders and reported to external agencies as required.

- 3.1 The nutrition support service (or team) and/or nutrition support committee shall recommend policy, procedure, or protocol changes that improve and/or enhance the safety and efficacy of nutrition support therapy.
- 3.2 The review of service performance should assess the appropriateness and effectiveness of nutrition support therapy.

Chapter II: Nutrition Care

Nutrition care and the administration of nutrition support therapy shall proceed according to a series of steps with feedback loops. These steps include nutrition screening, formal nutrition assessment, creation of a nutrition care plan, implementation of the plan, patient monitoring, evaluation of the plan, evaluation of the care setting, and reformulation of the plan or termination of therapy. (See Figure 1: ASPEN Adult Nutrition Care Pathway.)

Standard 4. Nutrition Screening

Nutrition screening is defined as "a process to identify an individual who is malnourished or who is at risk for malnutrition to determine if a detailed nutrition assessment is indicated."[1] Patients who are nutritionally-at-risk shall be identified by a validated screening process and by periodic rescreening per institutional policy or standard.[3,25-33] This process should be created, approved, and regularly reviewed by a group with organizational authority, preferably a designated nutrition committee.

- 4.1 Results of the nutrition screening shall be documented and communicated and appropriate intervention shall be initiated within the time frame specified by the hospital or as clinically indicated.
- 4.2 A procedure for rescreening of patients not immediately identified as nutritionally-at-risk should be implemented and regularly reviewed.

Standard 5. Nutrition Assessment

All patients identified as nutritionally-at-risk based on the nutrition screening shall undergo a nutrition assessment.[3,27-33] This nutrition assessment shall be documented and made available to all patient care providers. The intent of the nutrition assessment is to document baseline nutrition parameters, identify nutrition risk factors and specific nutrition deficits, determine individual nutrition needs, and identify medical, psychosocial, and socioeconomic factors that may influence the prescription and administration of nutrition support therapy.[34,35]

- 5.1 The nutrition assessment shall be performed within the time frame specified by the hospital and by a dietitian or a clinician with documented specialized expertise in nutrition.
- 5.2 The nutrition assessment shall include evaluation of the patient's current nutrition status and nutrition requirements.
  - 5.2.1 A malnutrition diagnosis, if present, and degree of malnutrition shall be clearly documented to facilitate appropriate diagnosis coding.
  - 5.2.2 Degree of obesity (ie, class I, class II, or class III), if applicable, shall also be documented.
- 5.3 The patient's nutrition requirements shall be summarized based on the findings of the nutrition assessment and should include energy, macronutrient (protein, and as appropriate, carbohydrate and fat), as well as fluid, electrolyte, and micronutrient requirements, as appropriate.
- 5.4 Nutrition assessment shall include a review and documentation of factors relevant to delivery of nutrition support therapy. Relevant factors may include, but are not limited to, the following: ability to eat safely and adequately, patient's goals, assessment of aspiration risk, functional status of the gastrointestinal tract, cognitive function/abilities, enteral and vascular access, and results of tests and invasive procedures.

Chapter III: The Nutrition Care Plan

Standard 6. Goals

The process of nutrition care is multifactorial and shall include multiple levels of intervention including screening for nutrition risk factors. The nutrition care plan shall be created from a comprehensive review and analysis of information gathered from many aspects of the patient's care. The nutrition care plan should include "statements of nutrition goals and monitoring/evaluation parameters, the most appropriate route of administration of nutrition therapy, method of nutrition access, anticipated duration of therapy, and training and counseling goals and methods."[2]

A formal nutrition assessment provides the basis for the nutrition care plan. The nutrition care plan guides comprehensive nutrition therapy by defining its rationale, describing appropriate intervention and monitoring, and delineating recommended reassessment and reevaluation parameters. This process facilitates changes in care

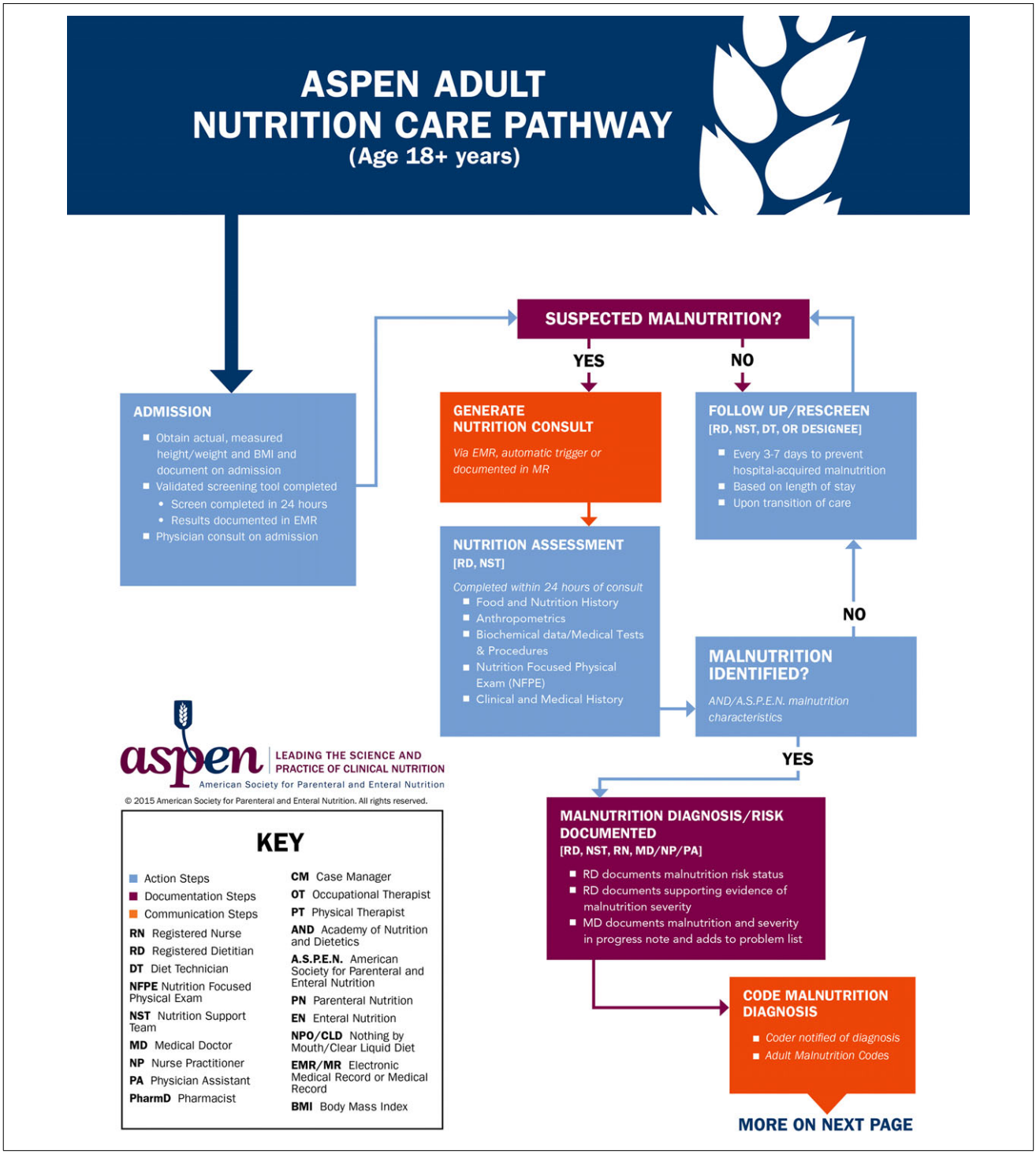

Figure 1. The American Society for Parenteral and Enteral Nutrition adult nutrition care pathway.

appropriate to the clinical setting while considering the continuum of care. Revision of the nutrition care plan based on changes in clinical status and achievement of goals of therapy should occur before discontinuation of nutrition support therapy.

Standard 7. Interprofessional Approach

The nutrition care plan should be developed using an interprofessional team approach involving the patient, caregiver (if applicable), the nutrition support service (or team), the

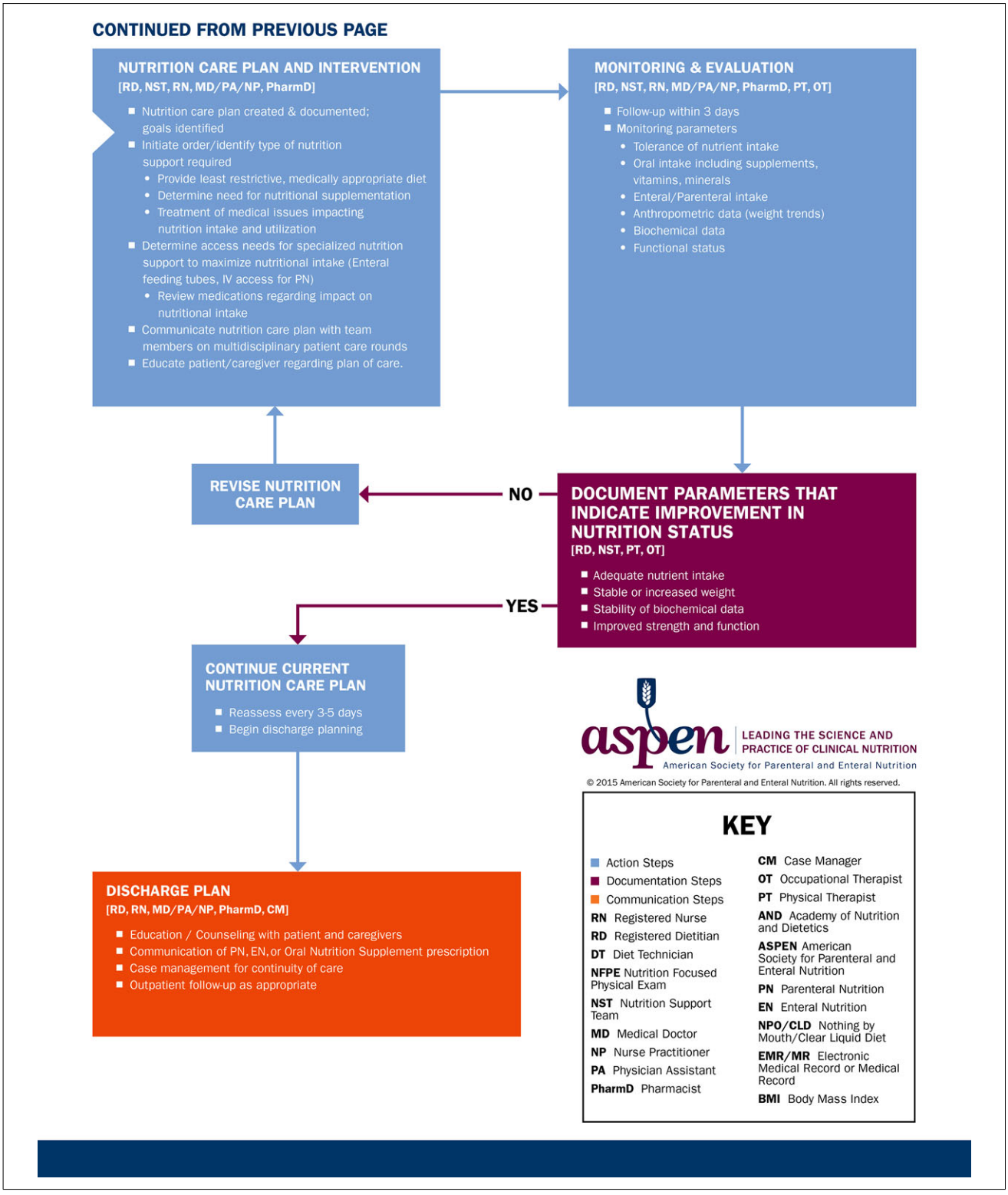

Figure 1. *Continued.*

patient's physician(s), dietitian(s), nurse(s), pharmacist(s), and other appropriate healthcare professionals.

Standard 8. Patient and Caregiver Communication

The nutrition care plan should include patient and/or caregiver(s) education about nutrition support therapy, goals, and expectations and should incorporate the wishes of the patients and/or caregiver(s). Appropriate routes of administration shall be defined, identification of intake goals shall be included, and estimated duration of therapy as well as criteria for discontinuation of therapy should be addressed.

Standard 9. Selection of Route

The route selected to provide nutrition support therapy shall be appropriate to the patient's clinical status or condition and shall periodically be assessed for continued appropriateness as well as for its adequacy in meeting goals of the nutrition care plan.[36] (See Figure 2: Route of administration algorithm.)

Standard 10. Selection of Formulation

The enteral nutrition (EN) or parenteral nutrition (PN) formulation shall be appropriate for the patient's disease process and compatible with the route of access.[37,38]

10.1 The EN or PN formulation shall be adjusted as appropriate based on the patient's clinical response.

10.2 The EN or PN formulation shall be adjusted accordingly when significant amounts of nutrients are provided (eg, parenteral infusions, medications) through means other than the EN formula or PN admixture or lost/eliminated through mechanical procedures or anatomical defects (eg, renal replacement therapy, enterocutaneous fistula) .

Chapter IV: Implementation

Standard 11. Ordering Process

Implementation of the nutrition care plan shall follow nutrition assessment and development of a formal nutrition care plan.

11.1 Authority to prescribe nutrition support therapy shall be determined by hospital policy and applicable professional licensure laws.

11.1.1 Hospital policy should clearly articulate the appropriate credentials, training, and/or certifications and competencies required for clinicians who prescribe nutrition support therapy.

11.1.2 As delineated by clinical privileges and applicable professional licensure laws, a nutrition support clinician may enter/write orders for feeding formulations, laboratory tests, and adjunctive therapy (eg, intravenous [IV] fluids, insulin, IV/oral electrolytes) and adjust regimens based on response to therapy, changing clinical condition(s), altered laboratory values, and nutrition assessment parameters.

11.1.3 Hospital policy should include a competency for nutrition support therapy prescribing.[39]

11.2 Orders for nutrition support therapy shall be documented in the patient's medical record before administration.

11.2.1 A standardized order format and review process for nutrition support therapies orders shall be used to minimize the risk of adverse events and error. This process shall include standardized electronic orders (eg, computerized provider order entry [CPOE] system) for prescribing PN and EN. Handwritten order to prescribe PN and EN should be avoided due to potential for error. Verbal and telephone orders and text messaging of orders should be avoided.[40,41] See ASPEN Parenteral Nutrition Safety Consensus Recommendations[39] and ASPEN Safe Practices for Enteral Nutrition Therapy[40] for details of the prescribing process for PN and EN.

11.3 Nutrition care plans shall be implemented to promote safe, accurate, and effective nutrition support therapy based on the patient's needs and clinical condition and will provide resource-efficient and fiscally responsible care.

Standard 12. Nutrition Support Access

Access for nutrition support therapy shall be achieved and maintained in a manner that minimizes risk to the patient and optimizes therapeutic outcome(s).[36,40-43]

12.1 Standard techniques and policies should be established and followed for access device insertion and routine care. (See section 16.5.)

12.1.1 The selection of a venous access site (central vs peripheral vein) should depend on expected duration of therapy, nutrition requirements, and patient's vascular condition and preferences.[40,43,44] When PN is

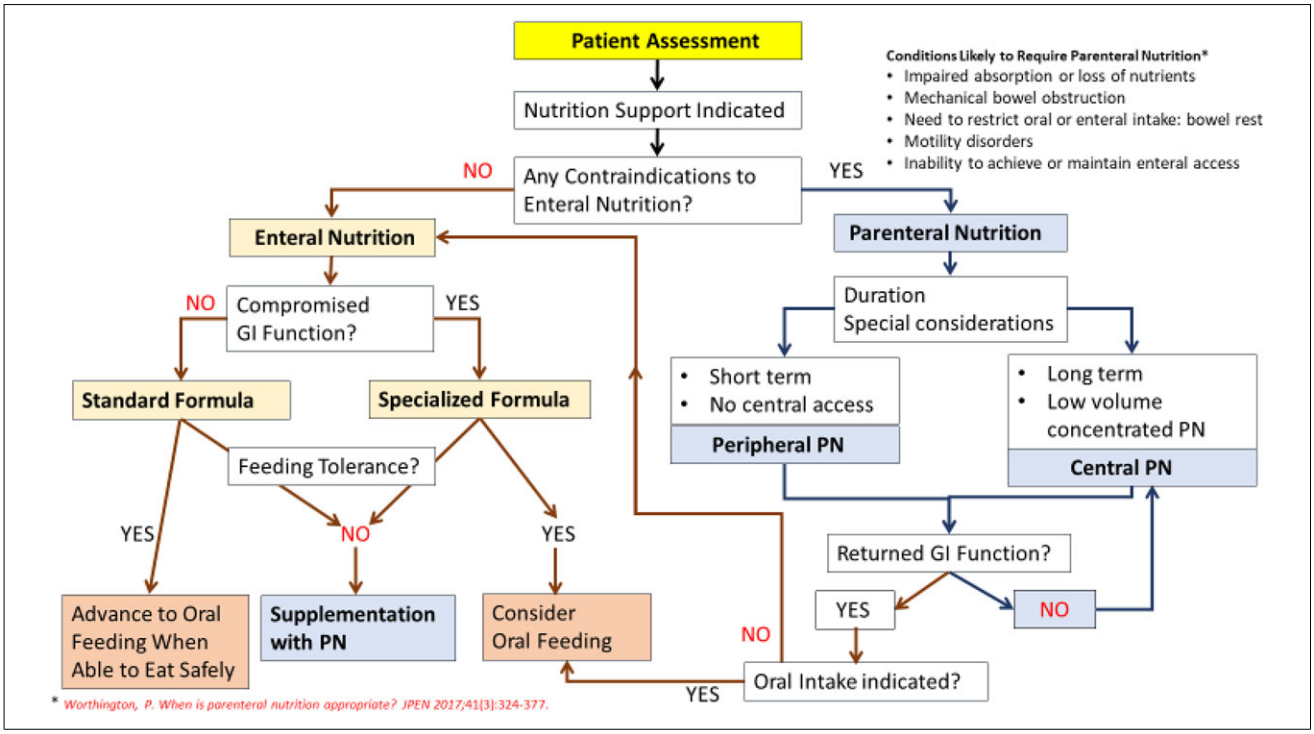

Figure 2. Route of administration algorithm. GI, gastrointestinal; PN, parenteral nutrition.

administered via a central access device, the femoral vein site should be avoided, especially in the obese, to minimize infection risks associated with nontunneled central venous catheters (CVCs).[43,45-48] Peripherally inserted central catheters (PICC) should not be used as a strategy to reduce central line-associated bloodstream infection (CLABSI).[46] A CVC with the fewest number of lumens or ports required for that patient should be used for PN administration.[46]

12.1.2 The selection of an enteral access device (nasoenteric vs enterostomy [ie, gastrostomy, jejunostomy]) should depend on the patient's disease state, needs and goals, ethical situation, gastrointestinal anatomy and function, expected duration of EN therapy, and the ability to safely access the gastrointestinal tract via radiologic, surgical, endoscopic techniques, or other guided technology.[41,42,49-51] (See Table 1: Selection of Enteral Access Based on Gastric Tolerance and Anticipated Feeding Duration.)

12.1.3 Appropriate access devices shall be placed by a physician, nurse, or trained healthcare professional who is competent to place the specific access device. Guidance technology for placement of central venous access and enteral access devices should be used only by clinicians who have completed prerequisite training and credentialing required by the respective institution.[50,52,53] Professionals with knowledge in preventing, recognizing, and managing complications associated with the placement and maintenance of the access devices should monitor the use of the access devices.[41,43,44,46-48]

12.1.4 Proper placement of central venous access devices shall be confirmed using appropriate technology and documented in

Table 1. Selection of Enteral Access Based on Gastric Tolerance and Anticipated Feeding Duration[41].

	Duration	
Normal Gastric Motility	Short Term (4–6 Weeks)	Long Term (Longer Than 6 Weeks)
Yes	Nasogastric	Gastrostomy
No	Nasoduodenal Nasojejunal	Jejunostomy

the medical record before initial use.[43,44] For enteral access devices, the auscaltatory method shall not be relied upon to differentiate between pulmonary, gastric, and small bowel placement of a nasoenteric tube.[50] When using enteral access system or guidance technology to place enteral access devices, if any difficulty occurs during insertion, confirmation of the final tube position should be done per institution protocol.[53] Radiographic confirmation is the gold standard for determining the exact tube position after insertion and should be used.[41,49-52]

12.1.5 Central venous access should be used for the delivery of PN admixtures with an osmolarity greater than 900 mOsm/L.[54] The catheter tip should be positioned in the lower segment of the superior vena cava adjacent to the cavo-atrial junction.[43] Peripheral PN may be administered, if indicated, through a peripheral access device provided the osmolarity of the admixture is less than or equal to 900 mOsm/L. Lipid injectable emulsion (ILE) may be concurrently infused.[43,44,54]

12.1.6 Monitoring procedures for nutrition support therapy administration shall include visual inspection of the patient's enteral or parenteral access devices and insertion site.

12.2 Complications related to an access device and outcome(s) of the interventions to manage the complication(s) shall be clearly documented in the medical record.

Standard 13. PN Admixture Preparation

PN shall be prepared accurately as prescribed and stored safely according to United States Pharmacopeia (USP) General Chapter<797>: Pharmaceutical Compounding-Sterile Products.[55]

13.1 PN formulations shall be prepared using current policies and procedures regarding manufacturing, compatibility, and stability. These procedures shall be supervised by a licensed pharmacist with appropriate credentials and experience.[40,44]

13.1.1 A hospital-specific standardized process for PN preparation shall be used. This may include the use of standardized PN formulations when appropriate.[40,56]

13.1.2 A pharmacist shall review the contents of a PN order for appropriateness and compare it with previous orders when applicable.[40,56]

13.2 In hospitals that use automated compounding devices (ACDs) for preparation of PN formulations, policies and procedures shall be developed to address responsibilities for operation and maintenance, staff training, and monitoring ACD performance (ie, quality assurance).[40,57]

13.2.1 Adequate training of personnel shall include use of computer software to assist in daily use and trouble shooting of ACDs.[40]

13.2.2 PN substrate dosing limit alerts shall be activated in the computer software and used in the assessment of the PN formulation prior to compounding.[40]

13.2.3 Documents generated by the ACD or other electronic devices shall be compared with the ordered PN formulation.[40]

13.2.4 The pharmacist and/or pharmacy technician shall monitor the equipment during the preparation process to assure proper operation.[40]

13.2.5 End-product and validation testing of PN admixtures should be completed.

13.3 In hospitals that outsource preparation of PN admixtures, policies and procedures shall be developed for appropriate ordering, storage, preparation, labeling, and dispensing of PN admixtures. Hospitals should ensure that the outsource agency prepares PN formulations in accordance with USP General Chapter <797>: Pharmaceutical Compounding-Sterile Products.[55]

13.4 In hospitals that use standardized, commercially available PN products, policies and procedures shall be developed for appropriate ordering, storage, preparation, labeling, and dispensing of PN admixtures.[40,56]

13.5 PN admixtures shall be sterile and free from physical contaminants (foreign materials and physical matter) and minimize patient exposure to aluminum.[40,59]

13.6 A pharmacist should refer to ASPEN, American Society of Health-system Pharmacists (ASHP), FDA Drug Shortages, or other appropriate resource(s) on managing shortages and outages of PN components and develop hospital-specific strategies to provide optimal PN therapy during shortages.

13.7 Nonnutrient medication (eg, insulin) should be added to PN only when supported by physiochemical compatibility and stability data.[52]

13.8 A pharmacist shall conduct a visual inspection of the final PN admixture prior to dispensing.[39]

13.10 Additions to PN admixture shall not be made outside of the pharmacy sterile compounding environment.

Standard 14. EN Formula Preparation

EN formulas and products shall be prepared accurately and safely as prescribed and stored according to the manufacturers' directions and published safety consensus recommendations.[41]

14.1 EN formulas shall be prepared by trained personnel under professional supervision in a clean environment. Aseptic technique shall be used in the preparation of EN formulas.[41]
- 14.1.1 Preparation equipment shall be sanitized regularly.
- 14.1.2 Open-system containers shall be filled with EN formula using aseptic technique.

14.2 Any addition of modular products or water to the formula shall be ordered by the prescribing clinician or designee.
- 14.2.1 Additions to EN formulas shall not be done at the bedside.
- 14.2.2 Additions to closed-system EN containers shall not be made.

Standard 15. Packaging and Labeling

PN admixtures and EN formula containers shall be appropriately packaged and labeled in a standardized fashion according to hospital policy and procedure.

15.1 PN admixtures shall be packaged in administration containers that can assure maintenance of sterility and allow visual inspection during preparation, storage, and infusion.
- 15.1.1 The PN admixtures and ILE administered as a separate infusion shall be labeled with the following as described in the ASPEN Parenteral Nutrition Safety Consensus Recommendations:[40]
  - Two patient identifiers (eg, name, medical record number, date of birth)
  - Patient location or address
  - Administration date and time
  - Beyond-use date and time
  - Route of administration (central vein vs peripheral vein)
  - Prescribed volume
  - Method of administration (continuous vs cyclic)
  - Complete name of all ingredients expressed in the same units of measure as the PN order
  - All PN ingredients shall be ordered as amount per day (ie, grams per day, mEq per day)
  - Name of compounding institution or pharmacy
- 15.1.2 Auxiliary labels should be affixed to PN admixture packaging to reduce risk of error (eg, for central line only).
- 15.1.3 The PN admixture shall be stored in a refrigerator (per established guidelines), unless the admixture will be administered immediately to the patient.[40,45,55]

15.2 EN formulas shall be packaged in administration containers, which assure accuracy of volume, cleanliness, and minimize the risk for contamination.[41]
- 15.2.1 Open-system administration containers should be used if the EN formula will be modified with modular products. However, the addition of modular products to an open-system container may result in an unacceptable risk of contamination in hyperthermal environments.[41]
- 15.2.2 Hospital-prepared EN formulas shall be stored in a refrigerator (per established guidelines), unless the formula will be administered immediately to the patient.

15.3 EN labels shall be standardized.
- 15.3.1 EN formula containers shall be labeled accurately with the contents and 2 patient identifiers (eg, name, medical record number, date of birth), product name and strength, additives, volume, and appropriate hang time.[41]
- 15.3.2 EN formula container labels shall also contain delivery site/access, route (enteral), and method of administration (eg, continuous, cyclic, bolus).[41]
- 15.3.3 EN formula container labels shall contain a statement indicating that the product is for enteral administration only.[41]
- 15.3.4 EN formula container labels shall contain a statement indicating that the product is not for IV administration.[41]

Standard 16. Administration of Nutrition Support Therapy

EN formulas and PN admixtures shall be administered safely and accurately in accordance with the prescribed order and consistent with the patient's tolerance.[40,41]

16.1 Nutrition support therapy shall be administered by or under the supervision of trained personnel.

16.2 Hospital-specific procedures shall exist regarding techniques used to administer nutrition support therapy. Organizations should use infusion pumps with the ability to reduce errors.[40]

16.3 Acute care facilities should establish a policy that prohibits the use of a PN admixture prepared for administration at home or in subacute or long-term care facilities. PN should be discontinued prior to discharge or transport to another facility.[40]

16.4 Each PN admixture should be inspected prior to and during administration. If visual changes are present, the admixture shall not be administered, and the pharmacy shall be notified.[40,60]

16.5 Before nutrition support therapy is administered to the patient, the label on the container shall be checked against the order and the patient's identity shall be verified per hospital policy to assure the prescribed formulation is delivered to the appropriate patient and administered by the correct route at the designated/intended time.[40,41,61,62] Administration tubing should be attached to PN containers immediately prior to use.[40]

16.6 The administration rate of the prescribed nutrition support therapy shall be checked each time a new volume is ordered or initiated and periodically during its administration.[40,41] Use of an independent double-check verification should be performed by a second clinician prior to beginning a PN infusion.[40,41,62]

16.7 Procedures shall be written to prevent and manage vascular or enteral access device occlusion and IV extravasation.[41,42,44,63]

16.8 EN and PN processes shall be documented in the patient's medical record including tolerance, administration volumes, and hourly rates. The amount of nutrition therapy ordered vs amount administered should be noted and reasons for discrepancies evaluated.[41]

16.9 Policies and procedures shall exist to prevent, diagnose, manage, and monitor patient infections caused by contamination of the PN admixture or the equipment/devices used in its administration, as PN is an independent risk factor for CLABSI.[46-48,64]

16.9.1 Infection prevention strategies shall be used to minimize CLABSI including a bundle of targeted, evidence-based catheter insertion and maintenance practices.[46-48]

16.9.2 Access ports shall be disinfected with an appropriate antiseptic prior to catheter manipulation and manipulation should be minimized; vascular access devices used for PN should not be used for blood sampling.[46,47,64] Coinfusion of fluids or medications into the PN system should be avoided, if possible. If no alternatives are available, a pharmacist shall review the compatibility and stability data for coinfusion prior to administration.[40,44]

16.9.3 Unit-specific data regarding CLABSI shall be shared with all internal stakeholders and reported to external agencies as required.[47]

16.9.4 PN admixtures shall be labeled with the beyond-use date and time and discarded as indicated. Once the delivery system is accessed, the administration of a PN admixture shall be completed within 24 hours.[40,44-46,55]

16.9.5 Administration sets for PN shall be changed every 24 hours or with each new PN container. A 1.2-micron filter shall be used for all total nutrient admixtures and a 0.22-micron filter for dextrose/amino acids (2-in-1) admixtures.[40,44,65]

16.9.6 ILE administered separately from PN admixtures (dextrose/amino acids) shall be infused through a 1.2-micron filter and be completed within 12 hours of initiating the infusion.[40,44,65]

16.10 A policy shall exist regarding the maximal rate of administration for ILE. Manufacturers' recommendations should be considered in formulating this statement.

16.11 Cycling of PN admixtures should be considered for patients with or at risk for liver dysfunction, on long-term PN, or those who are stable, active, and may benefit from infusion-free time.[66,67]

16.12 Prevention strategies shall be used to minimize the risk of microbial contamination of EN formulations. (Refer to the Enteral Nutrition Practice Recommendations[41] and Guidelines for the Provision and Assessment of Nutrition Support Therapy in the Adult Critically Ill Patient[31] for details.)

16.13 Procedures and protocols to minimize the risk of regurgitation and aspiration of EN formulations should be implemented.[41]

16.13.1 All patients receiving EN shall be assessed for risk of aspiration and steps employed to reduce aspiration risk and pneumonia.[31,41,68-70]

16.13.2 The head of the bed should be elevated 30–45° during EN administration unless contraindicated.[31,41,69-71]

16.14 An enteral feeding protocol should be designed to assure that optimal nutrients are delivered and unnecessary interruption of feeding minimized. Gastric residual volumes may be used to assess EN tolerance as part of a multifaceted approach.[31,41,68]

16.15 Policies and procedures shall exist to minimize the risk of enteral misconnections.[41,72-74]

16.15.1 Hospitals should conform to International Organization of Standardization (ISO) standard 80369-3 that is driving the production of products with incompatible connectors by designing features that make incorrect connections impossible (eg, ENFit).[41,74-77] Enteral delivery devices (administration sets, feeding tubes, and enteral syringes) with connectors that can physically connect with other nonenteral connectors shall not be purchased.

16.15.2 Standard Luer syringes shall not be used to administer oral or enteral medications or EN formula.[41,74]

16.15.3 Tubes or catheters shall be traced from the patient to the point of origin before connecting any new device or infusion.[41,74,76]

16.15.4 Tubes and catheters having different purposes should be routed in different, standardized directions (eg, IV lines routed toward the head; enteric lines toward the feet) and labeled at proximal and distal tubing ends.[73]

16.16 Protocols shall be established for administering medications and modular products through an enteral access device.[41]

16.16.1 Medications should not be mixed directly with EN formulas due to potential drug-drug and drug-nutrient interactions.[41,78-81]

16.16.2 Medication orders should specify the route of delivery (eg, PO, NG tube, G tube, J tube) and be administered according to current guidelines. Special considerations include use of proper dosage form, administration of the drug separate from the EN formula and other drugs, and the location of drug delivery in the gastrointestinal tract.[41,78-83]

16.16.3 Enteral access device(s) should be flushed appropriately before and after each medication administration and restarting EN administration to help prevent occlusion.[41,80,82]

Standard 17. Adverse Events Management

An adverse event, including sentinel events related to the administration of nutrition support therapy and the equipment/access devices, shall be documented and reported according to hospital protocol to promote a culture of patient safety. Protocols should be developed and followed to decrease the risk of adverse events.

Chapter V: Monitoring and Reevaluating the Nutrition Care Plan

Standard 18. Parameters and Frequency

A plan for monitoring the effect of nutrition support therapy interventions should be stated in the nutrition care plan.[36,40,41]

Monitoring parameters are chosen relative to the therapy goals of the nutrition care plan. The nutrition care plan shall be revised to optimize nutrition support therapy and achieve predetermined goals, as indicated.

18.1 The frequency of monitoring should depend on severity of illness, level of metabolic stress, nutrition status, as well as the patient's clinical condition.[31,36,40,41]

18.1.1 Daily or more frequent monitoring should be required in patients who are critically ill, have debilitating diseases (eg, diabetes mellitus) or infection, are at risk for refeeding syndrome complications, are transitioning between PN or EN and oral diet, or have experienced complications associated with nutrition support therapy.

18.1.2 Weekly or as clinically indicated monitoring may be needed in patients who are clinically and metabolically stable with documented stable laboratory parameters.

18.2 Monitoring parameters should include the following:

- Physical assessment, including clinical signs of fluid and nutrient excess or deficiency
- Functional status
- Vital signs
- Actual nutrient intake (oral, enteral, and parenteral)
- Weight
- Laboratory data
- Diagnostic tests
- Review of all medications
- Changes in gastrointestinal function
- Input and output/fluid balance

18.3 Appropriate changes in nutrition support therapy shall be made based on results of monitored parameters. Recommended changes in nutrition

support therapy including EN formula/PN admixture or administration route and resulting outcomes shall be documented in the nutrition care plan.[84]

18.4 Protocols should be established to maintain blood glucose control in patients receiving EN or PN.[85-87]

Standard 19. Reevaluation of Nutrition Care Plan

The patient shall be monitored for progress toward short- and long-term goals as defined in the nutrition care plan.[36,41]

19.1 Appropriate parameters should be measured serially during nutrition support therapy and documented.[36,40,41] Parameters may include weight change, changes in laboratory data, adequacy of intake, ability to transition to oral diet, functional status performance, and quality of life.

19.2 The monitoring parameters should be compared with the goals of the nutrition care plan. If goals are not being met, a new clinical issue or complication develops, and/or an adverse event occurs, the nutrition care plan should be modified.

Chapter VI: Transition of Therapy

Standard 20. Adequacy of Intake

The transition of nutrition therapies shall be monitored. Recommendations for improving oral and EN intake shall be documented. Adequacy of energy and nutrient intake is based on clinical judgment and shall be assessed and documented before discontinuation of nutrition support therapy.[31,35,40] (See Figure 2: Route of administration algorithm.)

Standard 21. Continuity of Care

Continuity of the nutrition support therapy shall occur through active communication with all members of the patient care team, the patient, and caregiver(s). (See Figure 1: Adult nutrition care pathway.)

21.1 A plan shall be developed for transition of nutrition support therapy to an alternate healthcare facility or to home care and should include identification of the primary clinician responsible for coordinating, monitoring, providing education, and ordering home nutrition support therapy.[31,36,40,41,87,88]

21.2 Indications for home nutrition support therapy shall be documented.

21.3 Appropriate education should be provided to patient and/or caregiver(s) and documented before discharge. Communication with home infusion and healthcare agencies and with the patient's home nutrition support management team should be established prior to hospital discharge.

21.4 The nutrition support therapy prescription and administration schedule should be documented and communicated with home infusion and home health agencies before discharge.[36,40,41,45,88] Specifically, with PN, there should be pharmacist-to-pharmacist communication to the alternate healthcare facilities or home agencies.

21.5 Periodic monitoring should be recommended depending on patient's condition.[35,39,40,86]

Standard 22. Nutrition Therapy at End-of-Life Care

The decision on nutrition support therapy in an end-of-life setting should be determined by patient autonomy and the patient's family member(s) or surrogate decision maker. The patient or the patient's family member(s) or surrogate decision maker shall decide on acceptance or refusal of medical therapy.[36,41,86,88-90]

22.1 The clinician has no obligation to provide nutrition support therapy and hydration to a patient in the end-of life situation.[88-90]

22.2 Decisions at end-of-life are often made based on healthcare and spiritual literacy of the patient and his/her family; they shall be involved in the healthcare process of end-of-life.

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