Consensus Statement of the Academy of Nutrition and Dietetics/American Society for Parenteral and Enteral Nutrition: Characteristics Recommended for the Identification and Documentation of Adult Malnutrition (Undernutrition)

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ABSTRACT
The Academy of Nutrition and Dietetics (Academy) and the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) recommend that a standardized set of diagnostic characteristics be used to identify and document adult malnutrition in routine clinical practice. An etiologically based diagnostic nomenclature that incorporates a current understanding of the role of the inflammatory response on malnutrition's incidence, progression, and resolution is proposed. Universal use of a single set of diagnostic characteristics will facilitate malnutrition's recognition, contribute to more valid estimates of its prevalence and incidence, guide interventions, and influence expected outcomes. This standardized approach will also help to more accurately predict the human and financial burdens and costs associated with malnutrition's prevention and treatment, and further ensure the provision of high quality, cost effective nutritional care.
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MALNUTRITION IS MOST simply defined as any nutritional imbalance (1). People suffer from overnutrition when they consume too many calories. Although the focus of this consensus statement is adult undernutrition, we cannot fail to recognize the enormous impact that obesity has on both personal and national health and rising health care costs (2). Even overweight or obese adults who develop a severe acute illness or experience a major traumatic event are at risk for malnutrition and frequently need and benefit from intensive nutrition intervention (3-6).

Those adults who lack adequate calories, protein, or other nutrients needed for tissue maintenance and repair experience undernutrition. In acute, chronic, and transitional care settings, recognition and treatment of adult undernutrition is a primary concern (3,7-10). For the purposes of this discussion, therefore, the term adult "malnutrition" shall be synonymous with adult "undernutrition."

Adult undernutrition typically occurs along a continuum of inadequate intake and/or increased requirements, impaired absorption, altered transport, and altered nutrient utilization. Weight loss can, and frequently does, occur at multiple points along this continuum. Individuals may also present with inflammatory, hypermetabolic, and/or hypercatabolic conditions. Inflammation is increasingly identified as an important underlying factor that increases risk for malnutrition, and that may contribute to suboptimal response to nutrition intervention and increased risk of mortality (7-9). As such, individuals may exhibit a wide range of characteristics from "severe malnutrition" to those with non-severe (mild to moderate) malnutrition that if left unrecognized and unaddressed is likely to progress to a severely malnourished state (3-11). Although various laboratory tests and physical signs or symptoms have been suggested as potential markers for inflammation, and some are briefly mentioned in passing in this document, the Academy of Nutrition and Dietetics (Academy) and the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) *do not* propose any specific inflammatory markers for diagnostic purposes at this time.

Malnutrition is a major contributor to increased morbidity and mortality, decreased function and quality of life, increased frequency and length of hospital stay, and higher health care costs (2,7-11). Jensen and colleagues propose an overarching definition of malnutrition as "decline in lean body mass with the potential for functional impairment" at multiple levels—ie, molecular, physiologic, and/or gross motor (8). The diagnosis of malnutrition in a patient is an undeniably complicating condition that in

many cases significantly increases resource utilization in the acute care setting beyond that experienced by the patient in nutritional health (7-11).

Our purpose is to define malnutrition for adults in all settings. In the absence of data showing that malnutrition should be defined differently in different settings, the Academy and A.S.P.E.N. have adopted patient-specific definitions based on etiologies including social and environmental circumstances, chronic illness, and acute illness. The distinction between acute and chronic illness is based on time (the National Center for Health Statistics [NCHS] defines "chronic" as a disease or condition that lasts 3 months or longer) (12). The Academy and A.S.P.E.N. propose etiology-based definitions that consider time and degree of inflammatory response in categorizing an illness or injury as acute vs chronic (7-9).

NEED TO STANDARDIZE CHARACTERISTICS TO DIAGNOSE AND DOCUMENT ADULT MALNUTRITION

Adult malnutrition is a common but frequently unrecognized problem whose incidence and prevalence are difficult to determine (8). In 1996, The Joint Commission mandated that nutrition screening be accomplished within 24 hours of admission (10). This resulted in the identification of multiple criteria and development of a number of different approaches to the identification of malnutrition in hospitalized patients that were not always evidence-based (13-21). Thus, there is currently no single, universally accepted approach to the diagnosis and documentation of adult malnutrition. Current estimates of the prevalence of adult malnutrition range from 15% to 60% depending on the patient population and criteria used to identify its occurrence (13). Diagnostic elements in malnutrition screening protocols vary widely and range from a simple assessment of appetite and unintentional weight loss (14) to more complex protocols that include measurement of a variety of anthropometric and laboratory parameters (15-21).

A number of the more complex protocols that have been developed to detect malnutrition in adults rely on changes in acute-phase proteins such as serum albumin and prealbumin as primary diagnostic indicators of adult malnutrition (15-20). The Academy's Evidence Analysis Library (EAL) analyzed reduction and/or change in serum albumin and prealbumin with weight loss in prolonged protein energy restriction, anorexia nervosa, nonmalabsorptive gastric partitioning bariatric surgery, calorie restricted diets, starvation, low-calorie diets, and nitrogen balance (22-24). The analysis indicated that these acute-phase proteins do not consistently or predictably change with weight loss, calorie restriction, or nitrogen balance (22-24). They appear to better reflect severity of the inflammatory response rather than poor nutritional status (7-9). These laboratory tests, while probable indicators of inflammation, do not specifically indicate malnutrition and do not typically respond to feeding interventions in the setting of active inflammatory response (7-9); therefore, the relevance of laboratory tests of acute-phase protein levels, as indicators of malnutrition, is limited.

In 2007, the Centers for Medicare and Medicaid Services (CMS) resequenced its prospective payment system (the Diagnostic Related Groups) into a hierarchical system called the Medicare Severity-Diagnostic Related Groups (MS-DRGs) that reflects the presence or absence of complications and/or comorbidities (25). The MS-DRGs are payment groups designed for the Medicare population. Patients with similar clinical characteristics and similar costs are assigned to an MS-DRG that is linked to a fixed payment amount based on the average cost of care for patients in the group. Since the designation of "malnutrition" as an MS-DRG, CMS has voiced concern about the inappropriate use of certain malnutrition codes and the wide variation in prevalence/incidence of malnutrition within the same geographic area and/or populations with similar demographics (26). In September 2010 and March 2011, the National Center for Health Statistics (NCHS) requested and received commentary from the Academy/A.S.P.E.N. on the appropriateness of the existing malnutrition codes' descriptors and use. Proposed revisions to the existing code structure and language were made at the International Classification of Disease, 9th edition (ICD-9) Coordination and Maintenance Committee hearings but were not accepted. The codes sets listed in the ICD-9 CM (Clinical Modification)—262, Other severe, protein-calorie malnutrition; 263 (263-263.09), Other and unspecified protein-calorie malnutrition; and additional code sets also listed in the Endocrine, Nutritional, and Metabolic Immunity Section that relate to specific micronutrient deficits—may continue to be used in documenting observed adult nutrition deficits (27).

According to most recent data available (2009), only 3% of patients admitted to acute care settings in the United States are diagnosed with malnutrition, and the primary ICD-9 code being used is 263.9, Protein-Calorie Malnutrition, NOS (not otherwise specified) (28). Discussions regarding revisions to the current language, to make it consistent with an etiologically based malnutrition diagnostic nomenclature, are ongoing. CMS has also questioned the use of acute-phase serum proteins as primary diagnostic criteria for malnutrition since studies (22-24) increasingly suggest limited correlation of these proteins with nutritional status.

THE ACADEMY AND A.S.P.E.N. COLLABORATE TO STANDARDIZE THE DIAGNOSIS OF ADULT MALNUTRITION

In 2009, the Academy and A.S.P.E.N. recognized the need to standardize the approach to the diagnosis of malnutrition in adults and to coordinate these efforts among their respective organizations. Current approaches to the diagnosis of malnutrition vary widely, specifically with regard to the diagnostic criteria used, and there is generally poor specificity, sensitivity, and interobserver reliability among the current protocols in use (7-9). This lack of national standardization of diagnostic characteristics results in widespread confusion and potential misdiagnosis. Also, many current screening and assessment protocols fail to appreciate the role of the inflammatory response on acute-phase proteins that are often used as primary indicators of nutritional status (8,29). The presence of inflammation can blunt a favorable response to nutrition intervention and increase the level and magnitude of human and financial resources needed to restore the patient to optimal health (7).

In 2009, A.S.P.E.N. and the European Society for Clinical Nutrition and Metabolism (ESPEN) convened an Interna-
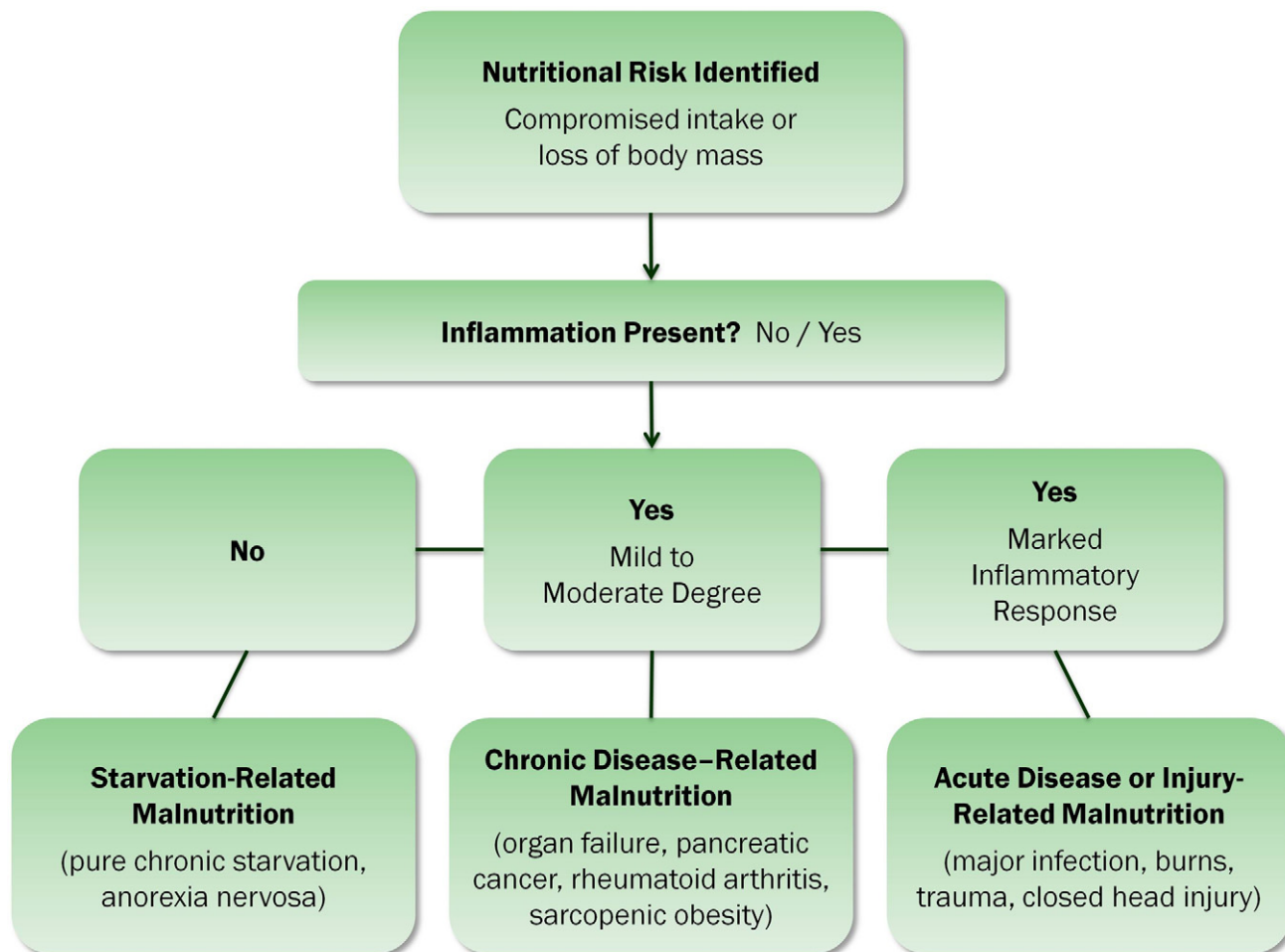
Figure. Etiology-Based Malnutrition Definitions. Adapted with permission from reference (8): Jensen GL, Bistrian B, Roubenoff R, Heimburger DC. Malnutrition syndromes: A conundrum vs. continuum. *JPEN J Parenter Enteral Nutr.* 2009;33(6):710-716.

tional Consensus Guideline Committee to develop an etiology-based approach (8) to the diagnosis of adult malnutrition in clinical settings (see the Figure). The recommended approach was then endorsed by A.S.P.E.N. and ESPEN. The Academy accepted these definitions developed to describe adult malnutrition in the context of acute illness or injury, chronic diseases or conditions, and starvation-related malnutrition.

CHARACTERISTICS RECOMMENDED FOR THE DIAGNOSIS ADULT MALNUTRITION

In late 2009, the Academy appointed a Workgroup with A.S.P.E.N. representation to identify and standardize markers or characteristics that reflect nutritional status vs the inflammatory response that is associated with various diseases and/or conditions. The group agreed that

characteristics to detect and diagnose malnutrition should have the following attributes: be few in number (basic hallmarks), support a *nutrition* diagnosis, characterize severity, change as nutritional status changes, be evidence-based when possible or consensus-derived, and be able to change over time as evidence of validity accrues. Since there is no single parameter that is definitive for adult malnutrition, identification of two or more of the following six characteristics is recommended for diagnosis (see the Table):

- insufficient energy intake (30-32);
- weight loss (33-36);
- loss of muscle mass (36,37);
- loss of subcutaneous fat (36,37);
- localized or generalized fluid accumulation (36,37) that

may sometimes mask weight loss; and

- diminished functional status as measured by hand grip strength (3,36,38-42).

The characteristics, as listed in the Table, distinguish between severe and non-severe malnutrition. The characteristics listed are continuous rather than discrete variables. There is insufficient evidence regarding their application in clinical settings to allow for further distinction to be made between mild and moderate forms of malnutrition at this time.

The characteristics listed in the Table should be routinely assessed on admission and at frequent intervals throughout the patient's stay in an acute, chronic, or transitional care setting. Data obtained by clinicians should be shared with all members of the health care team and should be considered in

the physician's formulation and documentation of a diagnosis of malnutrition. The development of care plans for nutritional intervention and transitional care on discharge should include monitoring of the characteristics at office or clinic visits following discharge.

If malnutrition is suspected in patients seen in ambulatory care settings, the physician, ideally in concert with a qualified nutrition professional, should assess the characteristics. A plan to address observed nutrition deficits should be developed, implemented, and the characteristics monitored at frequent intervals followed by plan revision until nutritional status is optimized.

The characteristics that have been identified are parameters that many practitioners already measure as part of the nutrition care (NCP) or nutrition assessment process. They are not meant to replace all aspects of the NCP but are to be used to standardize the clinician's approach to the diagnosis and documentation of the presence or absence of adult malnutrition.

CONSIDERATIONS IN THE APPLICATION OF THE CHARACTERISTICS IN CLINICAL SETTINGS

Each of the characteristics used in the diagnosis of malnutrition may sometimes be seen in patients for whom malnutrition is not necessarily an appropriate diagnosis—eg, the 80- to 90-year-old patient who habitually consumes "less than recommended calories," maintains a stable, lower-than-recommended body weight, but is "healthy" and able to function well in his or her home/community environment; the weight loss experienced by spinal cord injury patients, or those with various forms of muscular dystrophy secondary to deinnervation and disuse but who are consuming adequate nutrients. Also problematic is the patient who is, or who in a matter of a few days may become, severely malnourished, despite our best efforts, but in whom the criteria to diagnose malnutrition may be difficult to document—ie, the young to middle-aged adult who is acutely, critically ill or who has suffered major trauma.

Individuals who are ill, or in pain, are not always able to provide coherent answers to questions asked by health care professionals. In acute and/or other health care settings, the clinician may not always have access to the patient's medical record and must rely on recalled or historical information provided by the patient, or others who accompany the patient, to assess nutrition parameters such as caloric intake and/or unintended weight loss.

People with severe acute illness or severe trauma often experience extreme metabolic stress. Although "on admission" they often present without a prior history of malnutrition, the presence of the massive inflammatory response seen in such conditions limits the effectiveness of nutrition interventions and can contribute to the rapid development of malnutrition (8,9,43). Periods of interrupted feeding, imposed to accommodate the variety of medical-surgical interventions needed to stabilize these patients, also contribute to the development of malnutrition despite the clinician's best efforts to provide adequate calories and other nutrients. The resultant malnutrition often blunts the effectiveness of medical therapies prescribed and, thus, a vicious cycle ensues (7-9,43). Therefore, essentially "on admission," many critically ill patients, especially elderly patients, already are, or may be at significant risk of developing malnutrition and its related complications, even though the recommended characteristics for diagnosis of malnutrition may be difficult to discern early in the hospital course. As such, inability to eat—ie, compromised intake immediately prior to admission, repeated/extended cessation of feeding regimens (long periods spent *nil per os*), frequent interruptions in oral/enteral nutrition therapies and unintended weight *change*—may be parameters of particular significance for people in this category. Frequent, intensive monitoring of the critically ill patient to determine the actual level of nutrients provided is needed to ensure that patient needs are appropriately addressed (43).

When developing a differential diagnosis of malnutrition, the clinician should also recognize that the degree of inflammatory response that a patient may experience during the course of an illness or condition often changes as the acuity level of the illness or condition changes (acute vs chronic or as new conditions or complications are superimposed upon the patient's current state). The acuity level of the patient's nutritional status may also shift as his or her health status changes over time. Therefore, assessment of malnourished patients or of those at increased risk of malnutrition should be incorporated into the NCP or standard of care of the medical, nursing, and/or pharmacy professions.

INCORPORATION OF ASSESSMENT OF THE RECOMMENDED CHARACTERISTICS INTO CLINICAL CARE

Incorporation of the assessment and documentation of the characteristics into standard clinical practice is highlighted below (see Sidebar):

- **History and Clinical Diagnosis** (3,7,13,32)
  - The chief complaint and past medical history can be helpful in raising suspicion for increased risk of malnutrition and the presence or absence of inflammation (Figure).
- **Physical Exam/Clinical Signs** (3,7-9,29)
  - Physical examination can reveal the presence of several of the diagnostic characteristics of malnutrition, such as weight loss or gain, fluid retention, loss of muscle or fat, and other signs of specific macro- and/or micronutrient deficiencies.
  - Clinical signs of inflammation may be revealed, including fever or hypothermia as well as other nonspecific signs of systemic inflammatory response (eg, tachycardia, hyperglycemia) that may facilitate an etiologically based diagnosis (Figure).
- **Anthropometric Data** (33-36)
  - Unintended weight loss is a well-validated indicator of malnutrition. Weight should be measured on admission to any clinical setting and monitored frequently throughout the length of stay.

Table. Academy of Nutrition and Dietetics (Academy)/American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) clinical characteristics that the clinician can obtain and document to support a diagnosis of malnutrition[a][b]

Clinical characteristic	Malnutrition in the Context of Acute Illness or Injury				Malnutrition in the Context of Chronic Illness				Malnutrition in the Context of Social or Environmental Circumstances			
	Non-severe (moderate) malnutrition		Severe malnutrition		Non-severe (moderate) malnutrition		Severe malnutrition		Non-severe (moderate) malnutrition		Severe malnutrition	
(1) Energy intake (reference 30)	< 75% of estimated energy requirement for > 7 days		≤ 50% of estimated energy requirement for ≥ 5 days		< 75% of estimated energy requirement for ≥ 1 month		< 75% of estimated energy requirement for ≥ 1 month		< 75% of estimated energy requirement for ≥ 3 months		≤50% of estimated energy requirement for ≥ 1 month	
Malnutrition is the result of inadequate food and nutrient intake or assimilation; thus, recent intake compared to estimated requirements is a primary criterion defining malnutrition. The clinician may obtain or review the food and nutrition history, estimate optimum energy needs, compare them with estimates of energy consumed and report inadequate intake as a percentage of estimated energy requirements over time.												
(2) Interpretation of weight loss (references 33-36)	%	Time	%	Time	%	Time	%	Time	%	Time	%	Time
The clinician may evaluate weight in light of other clinical findings including the presence of under- or over- hydration. The clinician may assess weight change over time reported as a percentage of weight lost from baseline.	1-2	1 wk	>2	1 wk	5	1 mo	>5	1 mo	5	1 mo	>5	1 mo
	5	1 mo	>5	1 mo	7.5	3 mo	>7.5	3 mo	7.5	3 mo	>7.5	3 mo
	7.5	3 mos	>7.5	3 mos	10	6 mo	>10	6 mo	10	6 mo	>10	6 mo
					20	1y	>20	1y	20	1y	>20	1 y
Physical findings (references 36,37)												
Malnutrition typically results in changes to the physical exam. The clinician may perform a physical exam and document any one of the physical exam findings below as an indicator of malnutrition.												
(3) Body fat	Mild		Moderate		Mild		Severe		Mild		Severe	
Loss of subcutaneous fat (eg, orbital, triceps, fat overlying the ribs).												

Table. Academy of Nutrition and Dietetics (Academy)/American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) clinical characteristics that the clinician can obtain and document to support a diagnosis of malnutrition[ab] (*continued*)

Clinical characteristic	Malnutrition in the Context of Acute Illness or Injury		Malnutrition in the Context of Chronic Illness		Malnutrition in the Context of Social or Environmental Circumstances	
	Non-severe (moderate) malnutrition	Severe malnutrition	Non-severe (moderate) malnutrition	Severe malnutrition	Non-severe (moderate) malnutrition	Severe malnutrition
(4) Muscle mass	Mild	Moderate	Mild	Severe	Mild	Severe
Muscle loss (eg, wasting of the temples [temporalis muscle]; clavicles [pectoralis and deltoids]; shoulders [deltoids]; interosseous muscles; scapula [latissimus dorsi, trapezious, deltoids]; thigh [quadriceps] and calf [gastrocnemius]).						
(5) Fluid accumulation The clinician may evaluate generalized or localized fluid accumulation evident on exam (extremities; vulvar/scrotal edema or ascites). Weight loss is often masked by generalized fluid retention (edema) and weight gain may be observed.	Mild	Moderate to severe	Mild	Severe	Mild	Severe
(6) Reduced grip strength (reference 42)	N/A[c]	Measurably reduced	N/A	Measurably reduced	N/A	Measurably Reduced
Consult normative standards supplied by the manufacturer of the measurement device.						

[a]A minimum of two of the six characteristics above is recommended for diagnosis of either severe or non-severe malnutrition. Height and weight should be measured rather than estimated to determine body mass index. Usual weight should be obtained in order to determine the percentage and to interpret the significance of weight loss. Basic indicators of nutritional status such as body weight, weight change, and appetite may substantively improve with refeeding in the absence of inflammation. Refeeding and/or nutrition support may stabilize but not significantly improve nutrition parameters in the presence of inflammation. The National Center for Health Statistics defines "chronic" as a disease/condition lasting 3 months or longer (reference 12). Serum proteins such as albumin and prealbumin are not included as defining characteristics of malnutrition because recent evidence analysis shows that serum levels of these proteins do not change in response to changes in nutrient intake (references 22,23,52,53).

[b]This table was developed by Annalynn Skipper PhD, RD, FADA. The content was developed by an Academy workgroup composed of Jane White PhD, RD, FADA, LDN, Chair; Maree Ferguson MBA, PhD, RD; Sherri Jones MS, MBA, RD, LDN; Ainsley Malone, MS, RD, LD, CNSD; Louise Merriman, MS, RD, CDN; Terese Scollard MBA, RD; Annalynn Skipper PhD, RD, FADA; and Academy staff member Pam Michael, MBA, RD. Content was approved by an A.S.P.E.N. committee consisting of Gordon L. Jensen, MD, PhD, Co-Chair; Ainsley Malone, MS, RD, CNSD, Co-Chair; Rose Ann Dimaria, PhD, RN, CNSN; Christine M. Framson, RD, PhD, CSND; Nilesh Mehta, MD, DCH; Steve Plogsted PharmD, RPh, BCNSP; Annalynn Skipper, PhD, RD, FADA; Jennifer Wooley, MS, RD, CNSD; Jay Mirtallo, RPh, BCNSP Board Liaison; and A.S.P.E.N. staff member Peggi Guenter, PhD, CNSN. Subsequently, it was approved by the A.S.P.E.N. Board of Directors. The information in the table is current as of February 1, 2012. Changes are anticipated as new research becomes available. Adapted from: Skipper A. Malnutrition coding. In Skipper A (ed). *Nutrition Care Manual*. Chicago, IL: Academy of Nutrition and Dietetics; 2012 Edition.

[c]N/A=not applicable.

○ Height should be measured, when possible, or estimated using validated algorithms (44).

○ Although malnutrition can occur at any body mass index (BMI), individuals at either extreme of BMI may be at increased risk of poor nutritional status.

- **Laboratory Data** (3,7-9,22-24,29)
  ○ Indicators of inflammatory response traditionally used as indicators of malnutrition (ie, albumin, prealbumin) should be interpreted with caution as previously noted.
  ○ Other laboratory indicators of inflammation can include elevated C-reactive protein (CRP), white blood cell count, and blood glucose levels, and may aid in the determination of an etiologically based diagnosis (Figure).
  ○ Negative nitrogen balance and elevated resting energy expenditure may sometimes be used to support the presence of systemic inflammatory response and further facilitate identification of the etiologic basis for the diagnosis of malnutrition (8,9) (Figure).

- **Food/Nutrient Intake** (30-32)
  ○ Information regarding food and nutrient intake may be obtained from the patient and/or caregiver. A modified diet history, 24-hour recall, "calorie counts" (either observed intake/estimated post-meal plate waste) and/or prior documentation of periods of inadequate food intake in the patient's medical record may be used as "evidence" of inadequate intake.

- **Functional Assessment** (3,36, 38-42)

○ Hand-grip strength should be used to document a decline in physical function, as appropriate to patient circumstances. As the use of additional performance measures is more widely accepted and/or are validated in the general or select populations of adults, characteristics used to measure functional status may expand (45,46).

Thus, a careful review of the patient's chief complaint, review of systems, medical, nutrition, and psychosocial histories, physical exam, laboratory markers of inflammation, anthropometric parameters, food intake, and functional status should be performed by relevant members of the health care team when making the initial diagnosis, determining and implementing a plan of care, monitoring progress, and adjusting the plan of care to facilitate the patient's attainment and maintenance of optimal, achievable nutritional health (47-50). Sound clinical judgment and expertise are required to integrate nutrition assessment findings into the daily delivery of patient care. Findings must be included in the medical record to identify and document a diagnosis of malnutrition that will withstand the scrutiny of those whose job it is to ensure that fair, and equitable reimbursement is provided when appropriate diagnoses are made and corresponding health care services delivered.

CALL TO ACTION: NEXT STEPS
Short Term
It is important that all clinicians recognize the need to use the recommended diagnostic characteristics to assess and document nutritional status in adults. Clinicians and health care team members should begin to consider how to implement use of the recommended characteristics by bringing key members of the health care team (eg, physicians, dietetics practitioners, nurses, pharmacists, coders) together to develop an implementation strategy compatible with institutional practices and needs. A standardized format for data collection regarding the utility of assessing the recommended characteristics is needed in order to validate and establish those characteristics that are the most or least reliable in malnutri-

tion's identification and ultimately its treatment. Uniform data collection could occur across facilities, at the local or regional level, so that feasibility testing on a broader scale could eventually be accomplished. The Academy and A.S.P.E.N are collaborating to develop a standardized data collection protocol to capture these data. The characteristics will be reviewed and revised at regular intervals to reflect evidence of efficacy. The financial impact of the use of the recommended characteristics pre- and post- implementation should be determined in the areas of resource expenditure, revenue generation, and staff required to adequately address the needs of this highly vulnerable and costly segment of our population.

Systems need to be developed to track the diseases or conditions that contribute to, or are highly associated with, malnutrition. A systematic as-

sessment of the relevance of characteristics used in malnutrition's diagnosis and the routine documentation of malnutrition's negative impact on health outcomes must also occur. The Academy and A.S.P.E.N. are working to develop a registry for this purpose. A recent study by Fry and colleagues (51) showed that preexisting "malnutrition and/or weight loss" was a positive predictive variable for all eight major surgery–associated "never events" (inexcusable outcomes in a health care setting), with odds ratios ranging from 2.8 for postoperative pneumonia to 16.4 for intravascular device infection. The widespread, standardized collection and reporting of practice-based data will further support the demand for etiology-based definitions of malnutrition and help validate the use of a standardized set of characteristics to document its diagnosis.

The education and training needs of the nutrition and medical communities should be determined, and appropriate tools should be provided to remediate identified deficits. Both the Academy and A.S.P.E.N. have recognized member needs for additional training in assessment techniques and in the synthesis and formulation of a diagnosis, and have offered and will continue to offer educational opportunities in multiple venues as needs are identified.

Many Academy and A.S.P.E.N. members have requested the provision of a similar coding and diagnostic construct for the pediatric population. The Academy, A.S.P.E.N., and American Academy of Pediatrics are collaborating to address the identification and standardization of malnutrition (undernutrition) definitions and diagnostic characteristics in the pediatric age group.

Long Term

The malnutrition and inflammatory markers most useful in the documentation of disease, condition, or acuity of injury need to be identified. A standardized approach to diagnosis and greater uniformity in the selection of diagnostic descriptors (codes) to document the presence of malnutrition in adults should facilitate better correlation between best practices related to intervention and treatment, to predicted outcomes and therapeutic efficacy, and serve as a foundation for advocacy in the public policy, regulatory, and legislative arenas. Transi-

tional and discharge planning protocols must be developed to provide the resources needed to successfully maintain and nourish patients upon return to their communities and should help to reduce hospital readmission rates.

SUMMARY

The "Characteristics Recommended to Diagnose Malnutrition" is a dynamic work in progress. Clinicians should expect to see changes in the recommended characteristics used to identify and document malnutrition based upon an accumulation of evidence as data on their use is systematically collected, analyzed, and disseminated. Periodic revision as evidence accumulates will ensure that the health and well being of the public is optimized, and health care resources used with maximum efficiency.

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