



# Critical Role of Nutrition in Improving Quality of Care: An Interdisciplinary Call to Action to Address Adult Hospital Malnutrition

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## ABSTRACT

The current era of health care delivery, with its focus on providing high-quality, affordable care, presents many challenges to hospital-based health professionals. The prevention and treatment of hospital malnutrition offers a tremendous opportunity to optimize the overall quality of patient care, improve clinical outcomes, and reduce costs. Unfortunately, malnutrition continues to go unrecognized and untreated in many hospitalized patients. This article represents a call to action from the interdisciplinary Alliance to Advance Patient Nutrition to highlight the critical role of nutrition intervention in clinical care and to suggest practical ways to promptly diagnose and treat malnourished patients and those at risk for malnutrition. We underscore the importance of an interdisciplinary approach to addressing malnutrition both in the hospital and in the acute post-hospital phase. It is well recognized that malnutrition is associated with adverse clinical outcomes. Although data vary across studies, available evidence shows that early nutrition intervention can reduce complication rates, length of hospital stay, readmission rates, mortality, and cost of care. The key is to systematically identify patients who are malnourished or at risk and to promptly intervene. We present a novel care model to drive improvement, emphasizing the following six principles: (1) create an institutional culture where all stakeholders value nutrition; (2) redefine clinicians' roles to include nutrition care; (3) recognize and diagnose all malnourished patients and those at risk; (4) rapidly implement comprehensive nutrition interventions and continued monitoring; (5) communicate nutrition care plans; and (6) develop a comprehensive discharge nutrition care and education plan.

J Acad Nutr Diet. 2013;113:1219-1237.

**T**HE UNITED STATES IS entering a new era of health care delivery in which changes in health care policy are driving an increased focus on costs, quality, and transparency of care. This new focus on improving the quality and efficiency of hospital care highlights an urgent need to revisit the long-standing challenge of hospital malnutrition and

elevate the role of nutrition care as a critical component of patient recovery. Malnutrition is common in the hospital setting and can adversely affect clinical outcomes and costs, but it is often overlooked. Although results of intervention studies vary, addressing hospital malnutrition has the potential to improve quality of patient care and clinical outcomes and reduce costs.<sup>1</sup> Today it is estimated that at least one third of patients arrive at the hospital malnourished<sup>1-5</sup> and, if left untreated, many of those patients will continue to decline nutritionally,<sup>5</sup> which may adversely impact their recovery and increase their risk of complications and readmission. Hospital malnutrition is not a new problem, but “the skeleton in the hospital closet,” was brought to light in Butterworth's call for practices aimed at proper diagnosis and treatment of malnourished patients.<sup>6</sup> As we enter a new era of health care delivery, the time is now to implement a novel, comprehensive nutrition care model

as part of improved quality standards and to leverage proven examples for success.

Effective management of malnutrition requires collaboration among multiple clinical disciplines. In many hospitals, malnutrition continues to be managed in silos, with knowledge and responsibility provided predominantly by the dietitian. However, the new era of quality care will require a deliberately more holistic and interdisciplinary process to address this critical issue. All members of the clinical team must be involved, including nurses who perform initial nutrition screening and develop innovative strategies to facilitate patient compliance; dietitians who complete nutrition assessment/diagnosis and develop evidence-based intervention(s); pharmacists who evaluate drug-nutrient interactions; and physicians, including hospitalists, overseeing the overall care plan and documentation to support reimbursement for services. Recognition of this problem and the opportunity to improve

The *Journal of the Academy of Nutrition and Dietetics*, *Journal of Parenteral and Enteral Nutrition*, and *MEDSURG Nursing Journal* have arranged to publish this article simultaneously in their publications. Minor differences in style may appear in each publication, but the article is substantially the same in each journal.

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2212-2672/\$36.00

[doi:10.1016/j.jand.2013.05.015](https://doi.org/10.1016/j.jand.2013.05.015)

Available online 17 July 2013

patient care were the impetus behind creating the Alliance to Advance Patient Nutrition (Alliance). The Alliance brings together the Academy of Nutrition and Dietetics (AND), the Academy of Medical-Surgical Nurses (AMSN), the Society of Hospital Medicine (SHM), the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.), and Abbott Nutrition. The Alliance is made possible with support from Abbott Nutrition. These health organizations are dedicated to the advancement of effective hospital nutrition practices to help improve patients' medical outcomes and support all clinicians in collaborating on hospital-wide nutrition procedures. The established charter of the Alliance is to champion improved hospital nutrition practices through identification of malnourished patients and patients at risk for malnutrition, early nutrition intervention and treatment, and inclusion of nutrition as a standard component of all care processes.

Nutrition intervention for malnourished patients is a low-risk, cost-effective strategy to improve quality of hospital care, but it requires interdisciplinary collaboration. As representatives of the Alliance, we announce a call to action. We aspire to facilitate the institution of universal nutrition screening, rapid and appropriate nutrition interventions utilizing effective interdisciplinary nutrition partnerships, and integration of comprehensive strategies to prevent or treat hospital malnutrition. This paper is not intended to provide practice-based guidelines, but rather highlights available data on the critical role nutrition plays in improving patient outcomes, outlines an innovative nutrition care model, underscores the importance of an interdisciplinary approach to address hospital malnutrition, and identifies challenges believed to impair optimal nutrition care. In addition, specific solutions that can be employed by dietitians, nurses, physicians, and other health care professionals, such as nurse practitioners, physician assistants, pharmacists, and dietetic technicians, registered, are provided.

## BURDEN OF HOSPITAL MALNUTRITION

Although estimates of the prevalence of malnutrition vary by setting,

subgroup, and method of assessment, the prevalence of malnutrition in hospitals is particularly startling. It is estimated that at least one third of patients in developed countries have some degree of malnutrition upon admission to the hospital<sup>1-3,5</sup> and, if left untreated, approximately two thirds of those patients will experience a further decline in their nutrition status during inpatient stay.<sup>5</sup> Unfortunately, despite the availability of validated screening tools, malnutrition continues to be under-recognized in many hospitals.<sup>7,8</sup> Moreover, among patients who are not malnourished upon admission, approximately one third may become malnourished while in the hospital.<sup>9</sup>

Historically, a variety of tools and definitions have been used throughout the nutrition literature. For the purposes of this paper mild through severe malnutrition will be the focus and is the intent when the term *malnutrition* is used. Malnutrition is most simply defined as any nutrition imbalance<sup>10</sup> that affects both overweight and underweight patients alike and is generally described as either "undernutrition" or "overnutrition."<sup>11</sup> Hospitalized patients, regardless of their body mass index (BMI), typically suffer from undernutrition because of their propensity for reduced food intake due to illness-induced poor appetite, gastrointestinal symptoms, reduced ability to chew or swallow, or nil per os (NPO) status for diagnostic and therapeutic procedures. In addition, they may have increased energy, protein, and essential micronutrient needs because of inflammation, infection, or other catabolic conditions. A consensus statement by AND and A.S.P.E.N. published in May 2012 defines malnutrition as the presence of two or more of the following characteristics: insufficient energy intake, weight loss, loss of muscle mass, loss of subcutaneous fat, localized or generalized fluid accumulation, or decreased functional status.<sup>11</sup>

The importance of identifying at-risk patients is highlighted by data showing that malnutrition is associated with many adverse outcomes, including an increased risk of pressure ulcers and impaired wound healing, immune suppression and increased infection rate, muscle wasting and functional loss increasing the risk of falls, longer length of hospital stay, higher readmission

rates, higher treatment costs, and increased mortality.<sup>1</sup> Therefore, malnutrition places a heavy burden on the patient, clinician, and health care system.

Many of the adverse outcomes influenced by malnutrition are potentially preventable. Nosocomial infections are a prime example. Approximately 2 million nosocomial infections occur annually in the United States,<sup>12</sup> and those patients are more likely to spend time in the intensive care unit, be readmitted, and die as a result.<sup>13</sup> A retrospective study by Fry and colleagues examined nearly 1 million surgical patients (N=887,189) treated at 1,368 hospitals to determine the risk of nosocomial infections and better understand the underlying patient characteristics influencing that risk.<sup>14</sup> The analysis showed that patients with pre-existing malnutrition and/or weight loss had a two- to threefold increased risk of developing *Clostridium difficile* enterocolitis, surgical-site infection, or postoperative pneumonia, and a greater than fivefold higher risk of mediastinitis after coronary artery bypass graft surgery or catheter-associated urinary tract infection. Malnutrition and/or weight loss also correlated with an approximate fourfold higher risk of developing a pressure ulcer. These data are further supported by a prospective multivariate analysis demonstrating that malnutrition is an independent risk factor for nosocomial infections.<sup>15</sup>

Impaired wound healing can significantly influence length of hospital stay, and the literature supports a strong correlation between nutrition and wound healing, wherein protein synthesis is necessary.<sup>16</sup> Hospitalized patients are at increased risk because loss of significant lean body mass (LBM) accelerates during bed rest.<sup>17,18</sup> A 10% loss of LBM results in immune suppression and increases the risk of infection, and a loss of >15% to 20% of total LBM will impair wound healing.<sup>16,19</sup> A loss of ≥30% leads to the development of spontaneous wounds, such as pressure ulcers, an increased risk of pneumonia, and a complete lack of wound healing.<sup>16,19</sup> These complications are also associated with a substantial mortality risk, particularly in older patients. A study evaluating the care processes for hospitalized Medicare patients (N=2,425; aged 65 years and older) at risk for pressure ulcer

development showed that 76% of patients were malnourished, and estimated compliance with nutrition consultation was low (34%).<sup>20</sup>

Data from several recent studies show that malnutrition can also influence hospital readmission rates.<sup>21-23</sup> These studies evaluated multiple factors to identify individuals at increased risk of readmission. The largest of these studies, a retrospective observational analysis of >10,000 consecutive admissions (N=6,805), reported a 30-day readmission rate of 17%.<sup>21</sup> Comorbidities that significantly increased the risk of readmission included congestive heart failure, renal disease, cancer, weight loss (not defined), and iron-deficiency anemia. Weight loss correlated with a 26% increased risk of readmission (adjusted odds ratio=1.26).<sup>21</sup> In a large single-center study of 1,442 general surgery patients, the 30-day readmission rate was 11%.<sup>22</sup> The most common reasons for readmission were gastrointestinal problems/complications (28% of readmissions), surgical infections (22%), and failure to thrive/malnutrition (10%). These findings are consistent with the hypothesis that poor nutrition contributes to post-hospital syndrome, which, together with a variety of other factors, such as sleep disturbance, pain, and discomfort, can dramatically increase the risk of 30-day readmission, often for reasons other than the original diagnosis.<sup>24</sup>

Finally, poor clinical outcomes associated with malnutrition contribute to higher hospitalization costs. As outlined above, malnourished patients have higher rates of infections, pressure ulcers, impaired wound healing, and other adverse outcomes requiring greater nursing care and more medications. In turn, these complications can contribute to longer lengths of hospital stay and higher rates of readmission, all of which indirectly contribute to higher hospital costs.<sup>1</sup> Indeed, a study conducted in the United Kingdom estimated the annual expenditure for managing patients at medium or high risk of disease-related malnutrition to be EUR€10.5 billion (US\$11.3 billion, based on 2003 exchange rates), more than half of which was directly related to hospital care.<sup>25</sup>

These studies strongly suggest that the consequences of unrecognized and untreated malnutrition are substantial,

not only for patients' quality of care but also from a cost perspective. Malnutrition negatively affects clinical outcomes and results in higher costs and, with the changing health care landscape, reimbursement for costs associated with preventable events will be reduced. All clinicians must take action to address these concerns, improve patient quality of life, and increase the health care system value.

### IMPACT OF NUTRITION INTERVENTION ON KEY OUTCOMES

The benefits of nutrition intervention in terms of improving key clinical outcomes are well documented. Numerous studies, predominantly in patients 65 years of age and older with or at risk for malnutrition, have shown the potential of specific nutrition interventions to substantially reduce complication rates, length of hospital stay, readmission rates, cost of care, and, in some studies, mortality.<sup>5,26-36</sup> Nutrition intervention strategies represent a broad spectrum of options that can be organized into four categories: (1) food and/or nutrient delivery; (2) nutrition education; (3) nutrition counseling, and (4) coordination of nutrition care. Food and/or nutrient delivery requires an individualized approach that includes energy- and nutrient-dense food, complete oral nutrition supplements (ONS) that provide macronutrients (from carbohydrate, fat, and protein sources) combined with micronutrients (mixtures of complete vitamins, minerals, and trace elements); enteral nutrition (EN), which in the context of this report refers to nutrients provided into the gastrointestinal tract via a tube; and/or parenteral nutrition (PN). Although the nutrition support literature has generally featured smaller trials and observational studies rather than large, multicenter, randomized controlled trials, evidence strongly supports the importance of nutrition intervention. The value of EN and PN is well established in select patient populations but remains unclear in others. In addition, numerous studies have shown improved body weight, LBM, and grip strength with dietary counseling, with or without ONS.<sup>37</sup> A growing number of studies have examined the impact of ONS in malnourished

patients, providing the framework for our call to action. Evidence supporting intervention with EN and PN is beyond the scope of the current paper and will be addressed in subsequent reviews.

### Clinical Complications

Studies evaluating the efficacy of ONS delivery have generally shown a variety of metabolic improvements and, in many studies, a reduction in several clinical complications. One meta-analysis including seven studies (N=284) indicates that patients receiving ONS had reduced complication rates (eg, infections, gastrointestinal perforations, pressure ulcers, anemia and cardiac complications) compared with control patients.<sup>28</sup> More recently, a large Cochrane systematic review of 24 studies involving 6,225 patients 65 years of age and older at risk for malnutrition demonstrated fewer complications (eg, pressure sores, deep vein thrombosis, and respiratory and urinary infections) among patients receiving ONS compared with routine care (relative risk [RR]=0.86; 95% CI 0.75 to 0.99).<sup>27</sup> Available evidence indicates high-protein ONS to be particularly effective at reducing the risk of complications. A systematic review of elderly patients (older than 65 years of age) with hip fractures demonstrated a more effective reduction in the number of long-term medical complications with high-protein ONS (>20% total energy from protein) than low-protein or nonprotein-containing supplements (RR=0.78; 95% CI 0.65 to 0.95).<sup>26</sup> A meta-analysis of four randomized trials (N=1,224) also showed that, in patients with no pressure ulcers at baseline, high-protein ONS resulted in a significant 25% lower incidence of ulcers compared with routine care.<sup>38</sup> In addition, evidence indicates that nutrition intervention can reduce the risk of falls in frail and malnourished elderly patients. In 210 malnourished older adults newly admitted to an acute-care hospital, intervention with a protein- and energy-rich diet, ONS, calcium/vitamin D supplements, and counseling reduced the incidence of falls by approximately 60% compared with routine care (10% vs 23%).<sup>35</sup> Avoidance of these preventable events can shorten length of hospital stay, decrease morbidity and mortality, and reduce liability for the hospital.

### Length of Stay

Consistent with evidence that nutrition intervention can reduce clinical complications, strong nutrition care can also reduce the length of hospital stay. In a prospective study conducted at The Johns Hopkins Hospital, nutrition screening involving a team approach to address malnutrition and earlier intervention reduced the length of hospital stay by an average of 3.2 days in severely malnourished patients,<sup>5</sup> and this translated into substantial cost savings of \$1,514 per patient. Two meta-analyses have shown significantly reduced length of hospital stay in patients receiving ONS compared with control patients. One analysis demonstrated a reduced average length of hospital stay ranging from 2 days for surgical patients to 33 days for orthopedic patients ( $P < 0.004$ ).<sup>28</sup> In addition, patients with a lower BMI ( $< 20$ ) received the greatest benefit from optimized food and/or nutrient delivery. Likewise, in a recent meta-analysis of nine randomized trials ( $N = 1,227$ ), high-protein ONS significantly reduced length of stay by an average of 3.8 days ( $P = 0.040$ ) compared with routine care.<sup>31</sup> A recent retrospective analysis utilized information from  $> 1$  million adult inpatient cases found in the 2000-2010 Premier Perspectives Database maintained by the Premier Healthcare Alliance—representing a total of 44 million hospital episodes from across the United States or approximately 20% of all inpatient admissions in the United States. Within this sample, ONS reduced length of hospital stay by an average of 2.3 days or 21%, and the average cost savings was \$4,734 or 21.6% compared with routine care.<sup>36</sup>

### Readmissions

Hospital readmission rate is another important outcome that can be improved through nutrition intervention. Thirty-day readmission rates decreased from 16.5% to 7.1% in a community hospital that implemented a comprehensive malnutrition clinical pathway program focused on identification of at-risk patients, nutrition care decisions, inpatient care, and discharge planning.<sup>30</sup> A prospective randomized trial in acutely ill patients 65 to 92 years of age ( $N = 445$ ) demonstrated a significantly lower 6-month readmission rate among those who received a normal hospital diet plus high-protein ONS

compared with those patients who received only the normal hospital diet (29% vs 40%, respectively; hazard ratio = 0.68; 95% CI 0.49 to 0.94).<sup>32</sup> Finally, analysis of the Premier Perspectives Database showed that use of ONS reduced 30-day readmission rates by 6.7%,<sup>36</sup> indicating the significant real-world benefit of nutrition intervention on a key patient outcome.

### Mortality

Several meta-analyses have also demonstrated reduced mortality in patients receiving optimized nutrient care. An analysis of 11 studies ( $N = 1,965$ ) found significantly lower mortality rates among hospitalized patients receiving ONS (19%) compared with control patients (25%;  $P < 0.001$ ).<sup>28</sup> This represented a 24% overall reduction in mortality, and patients with lower average BMI ( $< 20$ ) receiving ONS had a greater reduction in mortality. Among elderly patients hospitalized for hip fracture, significantly fewer patients had an unfavorable combined outcome (mortality or medical complication) if they received ONS vs routine care (RR = 0.52; 95% CI 0.32 to 0.84).<sup>29</sup> Another systematic review of 32 studies ( $N = 3,021$ ) found that, in elderly patients, ONS significantly reduced mortality compared with routine care (RR = 0.74; 95% CI 0.59 to 0.92).<sup>33</sup> Subgroup analyses from the original Cochrane review and two updates have consistently shown reduced mortality in undernourished patients receiving ONS compared with routine care.<sup>27,33,34</sup>

Collectively, these data provide solid evidence that nutrition intervention significantly contributes to improved clinical outcomes and reduced cost of care, primarily in patients 65 years of age and older and those with, or at risk for, malnutrition. However, it is important to note that isolated studies and meta-analyses have not demonstrated such significantly improved clinical outcomes with nutrition intervention.<sup>37,39-42</sup> Additional research studies, particularly well-powered, randomized controlled clinical trials, are always beneficial to further explore the effects of nutrition intervention on clinical outcomes and to assess how those benefits can translate into cost savings. Nevertheless, given the importance of adequate nutrition to cell and organ function, coupled with promising

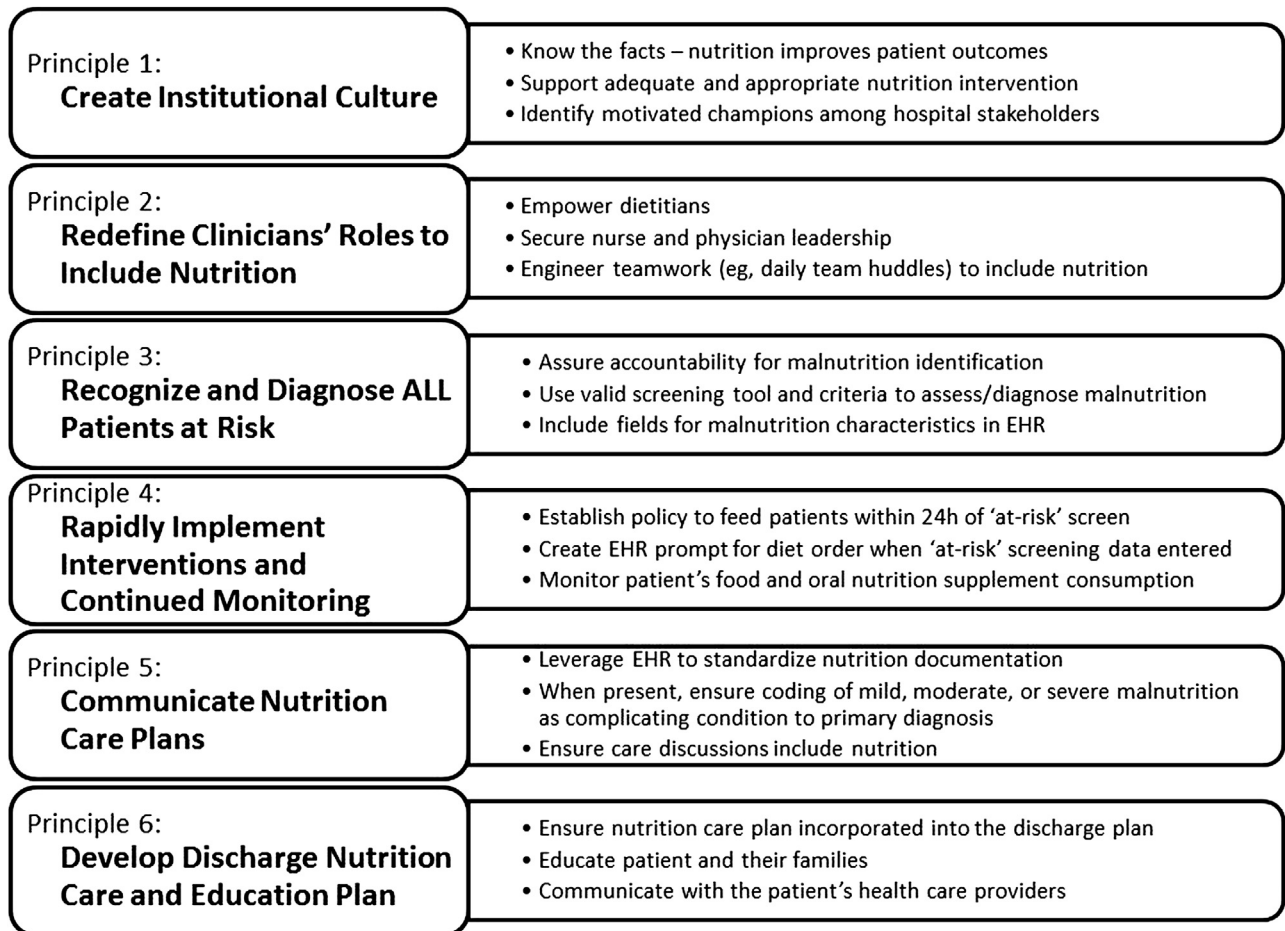
clinical data reported to date, the time is now to act on the evidence at hand and implement nutrition intervention strategies shown to be safe and efficacious.

### ALLIANCE NUTRITION CARE RECOMMENDATIONS

If we are to make progress toward improving nutrition care practices that guarantee every malnourished or at-risk patient is identified and treated effectively, we must proactively identify barriers impacting the provision of nutrition care. Toward this end, at least six key challenges must be overcome. First, despite at least one third of hospitalized patients being admitted malnourished, a majority of these patients continue to go unrecognized or are inadequately screened.<sup>43</sup> Second, while the responsibility of patients' nutrition care is often placed on the dietitian many institutions lack adequate dietitian staffing to properly address all patients. Third, nutrition care is often delayed due to the patient's medical status, lack of diet order, and time to nutrition consult. In fact, a study at Johns Hopkins found that time to consultation from admission is nearly 5 days,<sup>5</sup> which is similar to the average length of hospital stay.<sup>44</sup> Fourth, nurses provide and oversee patient care 24/7, observe nutrition intake and tolerance, and interact continually with the patient and their family/caregivers, yet they are rarely included in nutrition care.<sup>45</sup> Fifth, in many care environments, physician sign-off is required to implement a nutrition care plan. Dietitian recommendations are implemented in only 42% of cases.<sup>46</sup> Finally, many patients experience difficulty consuming meals without assistance, contributing to more than half of hospitalized patients not finishing their meals.<sup>47</sup>

To address these barriers and shift the paradigm of nutrition care, the Alliance Steering Committee, whose members possess broad-ranging expertise and clinical experience, developed several key principles for advancing patient nutrition. Through a series of meetings conducted over the past year, the committee explored the following topics: empowerment of all clinicians; recognition and diagnosis of all patients; same-day automatic intervention for all at-risk patients;





**Figure 1.** The Alliance's Key Principles for Advancing Patient Nutrition. EHR=electronic health record.

education and involvement of patients in their nutrition care; and appreciation of the value of nutrition by all hospital stakeholders. Six principles deemed essential elements of optimal patient nutrition care were derived from these topics (Figure 1). Attainment of these six ideals, however, will require processes and collaboration among all hospital stakeholders, including dietitians, nurses, physicians, and administrators, each of whom must fulfill their role in this effort (Figure 2). Translation of these processes into a practical interdisciplinary nutrition care algorithm is illustrated in Figure 3.

#### **Principle 1: Create an Institutional Culture Where All Stakeholders Value Nutrition**

True progress requires that all hospital stakeholders, including clinicians and administrators, fully understand the

pervasiveness of hospital malnutrition and the effect patient nutrition care may have on overall clinical outcomes. Clinicians and administrators often fail to prioritize understanding the extent of malnutrition in their institutions and its potential impact on cost and/or quality of care. Nurses and physicians receive limited formal nutrition education during training and often do not prioritize nutrition among the competing priorities within patient care. Failing to prioritize nutrition within an institution may limit available nutrition intervention options and human resources (eg, dietitian nutrition-focused nurses and physicians) required for optimal nutrition care. To be successful, institutions need motivated nutrition champions at all levels of clinical care and administration.

To ensure that clinicians and hospital leaders understand the clinical and financial implications of malnutrition and take proper steps to address it,

the Alliance offers the following recommendations:

- Clinicians must be educated on the recognition of malnourished patients and evidence-based nutrition interventions. Discussion of nutrition care plans should be a mandated component of daily team meetings (rounds or huddles).
- Malnutrition must be appropriately included as part of the patient's diagnosis and nutrition interventions must be viewed as a core component of a patient's medical therapy. Nutrition treatment plans should be addressed with the same consistency and rigor as other therapies.
- Hospital administrators must recognize the financial benefit of optimal nutrition care. Institutional financial data must be reviewed to identify challenges

Principle	Key Hospital Stakeholders			
	Dietitian	Nurse	Physician	Hospital administrator
<b>1. Create an Institutional Culture Where All Stakeholders Value Nutrition</b>	<ul style="list-style-type: none"> <li>• Serve as primary authority on “all things nutrition”</li> <li>• Educate key hospital stakeholders on improved patient outcomes and reduced costs achieved with optimal nutrition care</li> <li>• Host hospital-wide learning opportunities at regular intervals</li> </ul>	<ul style="list-style-type: none"> <li>• Recognize the essential role that nurses play in achieving enhanced patient outcomes through individualized nutrition care</li> <li>• Incorporate nutrition into routine care checklists and processes</li> <li>• Include patient dietary intake into team huddles</li> </ul>	<ul style="list-style-type: none"> <li>• Provide leadership under-scoring nutrition care as an essential part of patient-centered care</li> <li>• Know evidence regarding impact of malnutrition and effectiveness of nutrition intervention</li> <li>• Include dietitian in daily team huddles/rounds</li> <li>• Incorporate nutrition into routine care checklists and processes</li> </ul>	<ul style="list-style-type: none"> <li>• Become a nutrition champion and provide support for the development of effective nutrition care processes</li> <li>• Share quality and economic gains to be made by investing in nutrition care with hospital leadership team</li> </ul>
<b>2. Redefine Clinicians’ Role to Include Nutrition Care</b>	<ul style="list-style-type: none"> <li>• Actively contribute nutrition expertise and engage other team members with assessment data on progress made with nutrition care efforts</li> <li>• Regularly participate in interdisciplinary rounds</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure practices are in place to support implementation of nutrition intervention</li> <li>• Develop processes to ensure that nutrition screening and dietitian-prescribed intervention occurs within the targeted timeframes</li> <li>• Facilitate nursing interventions to treat patients who are malnourished or at risk</li> </ul>	<ul style="list-style-type: none"> <li>• Empower dietitian to cooperatively lead nutrition care as clinical team member</li> <li>• Support nurse work processes to include nutrition screening and support nutrition intervention</li> </ul>	<ul style="list-style-type: none"> <li>• Support nutrition education of clinicians needing initial training and continuing education</li> <li>• Provide ordering privileges to dietitian for issues relating to the nutrition care process</li> </ul>
<b>3. Recognize and Diagnose All Malnourished Patients and Those At Risk</b>	<ul style="list-style-type: none"> <li>• Utilize standard malnutrition characteristics set forth by AND<sup>a</sup> and A.S.P.E.N.<sup>b</sup> guidelines</li> </ul>	<ul style="list-style-type: none"> <li>• Screen every hospitalized patient for malnutrition as part of regular workflow procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Consider nutrition status as an essential attribute of medical assessment, monitoring, and care plans</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure EHR<sup>c</sup> captures screening data and malnutrition criteria with the appropriate triggers in place for initiating the</li> </ul>

*(continued on next page)***Figure 2.** Summary of Alliance’s nutrition care recommendations for key hospital stakeholders.

Principle	Key Hospital Stakeholders			
	Dietitian	Nurse	Physician	Hospital administrator
	<ul style="list-style-type: none"> <li>Establish competence in nutrition-focused physical assessment</li> </ul>	<ul style="list-style-type: none"> <li>Communicate screening results through use of EHR</li> <li>Rescreen patients at least weekly during hospital stay</li> <li>Communicate changes in clinical condition indicative of nutrition risk</li> </ul>		<p>next steps when positive screens or diagnostic assessment are obtained</p>
<p><b>4. Rapidly Implement Comprehensive Nutrition Intervention and Continued Monitoring</b></p>	<ul style="list-style-type: none"> <li>Establish procedures to support policy that patients identified as “at-risk” during nutrition screen receive automated nutrition intervention within 24 hours while awaiting assessment, diagnosis, and care plan</li> <li>Lead an interdisciplinary team to establish nutrition algorithms for use in various scenarios when positive screens or diagnostic assessments are obtained</li> <li>Provide EN<sup>d</sup> formulary and micronutrient therapy options in written form as a pocket-sized document; make readily available to all staff to ensure fast intervention</li> <li>Work with nurses to establish policies and</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that procedures allowing patients identified as “at-risk” during nutrition screen receive automated nutrition intervention within 24 hours while awaiting assessment, diagnosis, and care plan</li> <li>Develop procedures to provide patients with meals at “off times” if patient was not available or under a restricted diet at the time of meal delivery</li> <li>Avoid disconnecting EN or PN<sup>f</sup> for patient repositioning, ambulation, travel, or procedures</li> <li>Work with interdisciplinary team dietitian to establish policies and interdisciplinary practices to</li> </ul>	<ul style="list-style-type: none"> <li>Support policy that provides automated nutrition intervention within 24 hours in patients identified as “at-risk” during nutrition screen, while awaiting nutrition assessment, diagnosis, and care plan</li> <li>Minimize nil per os periods for patient with scheduling of procedures/ tests and remain mindful of “holds” on PO<sup>e</sup> diets</li> </ul>	<ul style="list-style-type: none"> <li>Provide ordering privileges to dietitian for issues relating to the nutrition care process (eg, diet plans, ONS<sup>g</sup>, micronutrients, and calorie counts)</li> <li>Ensure EHR includes automatic triggers that initiate nutrition protocol measures to be reviewed when positive screens are obtained</li> <li>Ensure EHR includes a module for recording food/ONS intake data and triggers dietitian consult if consumption is suboptimal</li> </ul>

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**Figure 2.** (continued) Summary of Alliance’s nutrition care recommendations for key hospital stakeholders.

Principle	Key Hospital Stakeholders			
	Dietitian	Nurse	Physician	Hospital administrator
	interdisciplinary practices to maximize nutrient consumption and monitoring needs	maximize food/ONS consumption <ul style="list-style-type: none"> <li>• Monitor food/ONS and communicate to dietitian/physician via EHR</li> </ul>		
<b>5. Communicate Nutrition Care Plans</b>	<ul style="list-style-type: none"> <li>• If present, ensure mild, moderate, or severe malnutrition is included as complicating condition in coding processes</li> <li>• Assume responsibility for ensuring that a patient's nutrition care plan is carefully documented in the EHR, regularly updated, and effectively communicated to all healthcare providers, including post-acute facilities and primary care physicians</li> <li>• Lead a interdisciplinary team to create and maintain standardized policies, procedures, and EHR-automated triggers relevant to nutrition, including order sets and protocols in the hospital's EHR</li> </ul>	<ul style="list-style-type: none"> <li>• Consult dietitian regarding nutrient intake concerns</li> <li>• If present, ensure mild, moderate, or severe malnutrition is included as complicating condition in coding processes</li> <li>• Incorporate nutrition discussions into handoff of care and nursing care plans</li> </ul>	<ul style="list-style-type: none"> <li>• Establish and reinforce expectation that a patient's nutrition care plan is carefully documented in the EHR, regularly updated, and effectively communicated to all health care providers</li> <li>• If present, ensure mild, moderate, or severe malnutrition is included as complicating condition in coding processes</li> </ul>	<ul style="list-style-type: none"> <li>• If present, ensure mild, moderate, or severe malnutrition is included as complicating condition in coding processes</li> <li>• Ensure EHR is adapted to ensure nutrition diagnosis and complete care plan is included as a standard category of medical assessment in the central area of EHR</li> </ul>
<b>6. Develop a Comprehensive Discharge Nutrition Care and Education Plan</b>	<ul style="list-style-type: none"> <li>• Provide patients, family members, and caregivers with nutrition education and a comprehensive</li> </ul>	<ul style="list-style-type: none"> <li>• Include nutrition as a component of all clinician conversations with patients and their family members/caregivers</li> </ul>	<ul style="list-style-type: none"> <li>• Include nutrition as a component of all clinician conversations with patients and their family members/caregivers</li> </ul>	<ul style="list-style-type: none"> <li>• Provide expectation regarding continuity of nutrition care, including discharge planning and patient education</li> </ul>

*(continued on next page)***Figure 2.** *(continued)* Summary of Alliance's nutrition care recommendations for key hospital stakeholders.



Principle	Key Hospital Stakeholders			
	Dietitian	Nurse	Physician	Hospital administrator
	post-hospitalization nutrition care plan <ul style="list-style-type: none"> <li>• Ensure patient and caregiver understand the importance of follow-up nutrition assessment and education</li> <li>• Provide specific information for nutrition follow-up appointments to patient and caregiver</li> </ul>	<ul style="list-style-type: none"> <li>• Reinforce the importance of nutrition care and follow-up post-discharge to patient and caregiver</li> </ul>	<ul style="list-style-type: none"> <li>• Reinforce the importance of nutrition care and follow-up post-discharge to patient and caregiver</li> </ul>	

<sup>a</sup>AND=Academy of Nutrition and Dietetics.

<sup>b</sup>A.S.P.E.N.=American Society for Parenteral and Enteral Nutrition.

<sup>c</sup>EHR=electronic health record.

<sup>d</sup>EN=enteral nutrition.

<sup>e</sup>PO=per oral.

<sup>f</sup>PN=parenteral nutrition.

<sup>g</sup>ONS=oral nutrition supplement.

**Figure 2.** (continued) Summary of Alliance’s nutrition care recommendations for key hospital stakeholders.

to improving nutrition intervention, project cost savings with various nutrition interventions, and revise budgets to facilitate action. Budgets must support adequate and appropriate nutrition intervention as necessitated by dietitian, nursing, and physician staff.

- Professional associations for dietitians, nurses, physicians, and hospital administrators must address the widespread problem of hospital malnutrition. Discipline-specific resources such as toolkits and practice bundles, evidence-based publications, and continuing education opportunities must be established and widely available. Funding mechanisms for nutrition-related research should be established to identify best practices to optimizing nutrition care.

**Principle 2: Redefine Clinicians’ Roles to Include Nutrition Care**

Providing effective nutrition intervention requires a champion within and collaboration among all disciplines involved in patient care. All health care professionals involved in patient care must be empowered to influence nutrition decisions. In many hospitals, however, the responsibility for nutrition recommendations almost always rest solely with the dietitian. Many institutions lack nurse and physician leaders who champion nutrition care. Interdisciplinary leadership is essential to ensure that nutrition care is valued and carries a high priority. To ensure effective management of hospital malnutrition, nurses and physicians must also play a role.

In this regard, the Alliance recommends redefining clinicians’ roles to include responsibility for optimal nutrition care, which can be accomplished as follows:

- Interdisciplinary teams must discuss potential barriers and solutions to recognize and treat malnourished or at-risk patients in their hospitals.
- Engage nurses to understand nutrition risk factors such as underconsumed meals and actions required on positive malnutrition screenings. Develop and



**Table 1.** Validated malnutrition screening tools for hospitalized patients<sup>a</sup>

Screening tool	Parameters/scoring	Development	Validation
Malnutrition Screening Tool (MST) <sup>53</sup>	Weight loss, appetite; at-risk score $\geq 2$	408 inpatients (mean age=58 y); standard for comparison: SGA <sup>b</sup> ; sensitivity 93%; specificity 93%	SGA: sensitivity 92%, specificity 61%; MNA <sup>c</sup> : sensitivity 92%, specificity 72% <sup>62</sup>
Mini Nutritional Assessment-Short Form (MNA-SF) <sup>56</sup>	Weight change, recent intake, BMI, <sup>d</sup> acute disease, mobility, dementia/depression; at-risk score $\leq 11$	155 community-dwelling elders (mean age=79 y); standard for comparison: physician assessment of nutritional status; sensitivity 98%; specificity 100% (MNA-SF <sup>e</sup> cut point $\leq 10$ )	MNA: sensitivity 90%, specificity 88% (MNA-SF cut point $\leq 11$ ) <sup>63</sup> MNA: sensitivity 89%, specificity 82% (MNA-SF cut point $\leq 11$ ) <sup>64</sup> "Nutritional assessment": sensitivity 100%, specificity 38% (MNA-SF cut point $\leq 10$ ) <sup>65</sup>
Malnutrition Universal Screening Tool (MUST) <sup>52,66</sup>	Weight change, recent/predicted intake, BMI, acute disease; high-risk score $\geq 2$	8,944 inpatients, review of 128 trials (mean age not reported); standard for comparison: nutrition support trials demonstrating improved clinical outcomes; sensitivity 75%; specificity 55%	SGA: sensitivity 61%, specificity 79% <sup>67</sup> SGA: sensitivity 72%, specificity 90%; MNA: $\kappa=0.39$ <sup>68</sup> MNA: $\kappa=0.55$ <sup>69</sup>
Nutritional Risk Screening 2002 (NRS-2002) <sup>54</sup>	Weight change, recent intake, BMI, acute disease, age; at-risk score $\geq 3$	Adapted from Malnutrition Advisory Group screening tool	SGA: sensitivity 74%, specificity 87%; MNA: $\kappa=0.39$ <sup>68</sup> SGA: sensitivity 62%, specificity 63% <sup>67</sup> MNA: $\kappa=1.00$ <sup>70</sup>
Short Nutritional Assessment Questionnaire (SNAQ <sup>®</sup> ) <sup>55</sup>	Weight change, appetite, supplements/tube feeding; at-risk score $\geq 2$	291 inpatients (mean age=58 y); standard for comparison: BMI $<18.5$ or weight loss $>5\%$ ; sensitivity 86%; specificity 89%	BMI $<18.5$ or recent weight loss $>5\%$ : sensitivity 79%, specificity 83% <sup>71</sup>

<sup>a</sup>Adapted with permission from Young and colleagues.<sup>51</sup>

<sup>b</sup>SGA=Subjective Global Assessment.

<sup>c</sup>MNA=Mini Nutritional Assessment.

<sup>d</sup>BMI=body mass index; calculated as kg/m<sup>2</sup>.

<sup>e</sup>SF=short-form.

intervention. Using validated screening tools to identify at-risk patients is crucial because, for many health care professionals without nutrition training, screening is currently a superficial observation wherein boxes are checked or unchecked without reliable

screening using a validated tool. Early identification of clinical criteria supporting malnutrition diagnosis and effective processes for communicating information related to the nutrition care process are often absent. Given these barriers, the Alliance is

announcing this call to action to ensure prompt diagnosis and intervention of hospitalized patients who are malnourished or at risk for malnutrition. Every hospital must institute an interdisciplinary approach to nutrition care that is based on formal policies and

<b>1. Have you lost weight recently without trying?</b>		
No	0	
Unsure	2	
If Yes, how much weight (kg) have you lost?		
1 – 5	1	
6 – 10	2	
11 – 15	3	
> 15	4	
Unsure	2	Weight Loss Score: <input type="text"/>
<b>2. Have you been eating poorly because of a decreased appetite?</b>		
No	0	
Yes	1	Appetite Score: <input type="text"/>
<b>Total MST Score (weight loss + appetite scores)</b>		<input type="text"/>

**Figure 4.** Malnutrition Screening Tool (MST). Adapted with permission from Ferguson and colleagues.<sup>53</sup>

procedures ensuring the early identification of patients who are malnourished or at risk for malnutrition and implementation of comprehensive nutrition care plans.

**Screening**

Comprehensive nutrition screening of all hospitalized patients is critical for both the timely identification of those at risk and to prioritize patients requiring nutrition assessment and intervention. The Alliance supports the Joint Commission’s recommendation for nutrition screening within 24 hours of admission to an acute-care hospital and at frequent intervals throughout hospitalization (Figure 3).<sup>49</sup> Due to limited clinician time and nutrition knowledge, a simplified, practical, validated screening tool must be used. Numerous tools exist to screen for malnutrition risk in hospitalized patients.<sup>50,51</sup> Although no universally accepted screening tool exists, it is important to select a tool that is practical, easy to use, and has been validated in the patient population of interest. Currently, validated screening tools include the Malnutrition Screening Tool (MST), Mini Nutritional Assessment-Short Form (MNA-SF), Malnutrition

Universal Screening Tool (MUST), Nutritional Risk Screening 2002 (NRS-2002), and Short Nutritional Assessment Questionnaire (SNAQ)<sup>52-56</sup> (Table 1). Important aspects of a nutrition screening tool include scientific validation, and easy administration requiring no specialized nutrition knowledge. For example, the advantage of the MST is that it is quick (takes <5 minutes) and straightforward, consists of two simple questions evaluating weight change and appetite (Figure 4) and was designed for use by busy health care professionals not necessarily trained in nutrition. These tools allow nutrition screening to become an integral part of routine clinical practice without being viewed as a burden or imposing a significant extra workload on hospital staff.

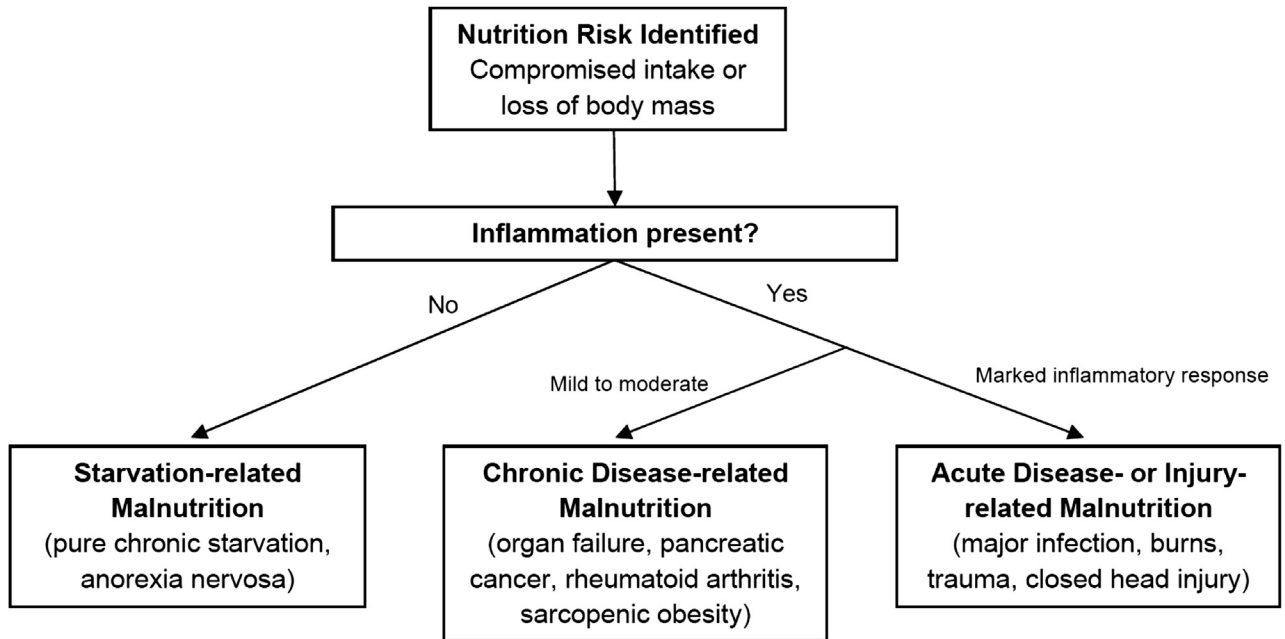
Screening results must be documented within the electronic health record (EHR) to allow for prompt communication between the nursing staff and other health care team members. When a positive nutrition screen is obtained, the EHR should be configured to trigger a query for entry of a diet order or other appropriate intervention while the patient awaits further assessment and development of a nutrition care plan. Nurses must

regularly rescreen patients with adequate nutrition status upon admission because many will become at risk for malnutrition during hospitalization. The MST can be easily completed while nurses interact with patients and their family/caregivers and while conducting regular assessments for patients at risk of pressure ulcers and falls.

**Assessment and Diagnosis**

Nutrition assessment is a method of obtaining, verifying, and interpreting data needed to identify nutrition-related problems, their causes, and significance. The dietitian must perform nutrition assessments in all patients considered at risk based on nutrition screening to characterize and determine the cause of nutrition deficits. Traditionally, changes in acute-phase proteins, such as serum albumin and pre-albumin, were considered standard biomarkers for diagnosing malnutrition.<sup>11</sup> However, it is now well documented that serum levels of these proteins are affected not only by nutrition status but also by inflammation, fluid status, and other factors. Consequently, these are no longer considered reliable or specific biomarkers for malnutrition. Consistent with this evidence, as of 2012, the AND and A.S.P.E.N. no longer recommend using inflammatory biomarkers for diagnosis of malnutrition.

To address the need for guidance in this area, an International Guidelines group convened in 2009 and developed an overarching etiology-based definition of malnutrition that takes into account the important relationship between disease and malnutrition.<sup>57</sup> This broad definition describes three separate etiologies for malnutrition (Figure 5), two of which include the presence of disease (either acute or chronic). The AND and A.S.P.E.N. subsequently developed a standardized set of diagnostic criteria for adult malnutrition in routine clinical practice using this new etiology-based definition.<sup>11</sup> No single parameter is definitive for malnutrition; therefore, AND and A.S.P.E.N. proposed that malnutrition be diagnosed when at least two of the following six characteristics are identified: (1) insufficient energy intake; (2) weight loss; (3) loss of subcutaneous fat; (4) loss of muscle mass; (5) localized or generalized fluid



**Figure 5.** Etiology-based malnutrition definitions. Adapted with permission from White and colleagues.<sup>11</sup>

accumulation that may sometimes mask weight loss; and (6) diminished functional status. The magnitude and temporal aspects of change among these dynamic characteristics can be used to distinguish between nonsevere and severe malnutrition (Table 2).

The Alliance recommends that all clinicians become familiar with and use the AND and A.S.P.E.N. characteristics for identification and documentation of malnutrition (Figure 3).<sup>11</sup> In patients with or at risk of malnutrition, development and initiation of a nutrition care plan must occur within 48 hours of admission. Several patient characteristics indicative of malnutrition (eg, weight loss, loss of muscle or fat, fluid retention, and cutaneous signs of micronutrient deficiencies, such as glossitis or cheilosis) can be identified during routine comprehensive assessments. As noted earlier, changes in acute-phase proteins should be interpreted with caution and should not be used exclusively to diagnose malnutrition. These proteins are, however, good indicators of inflammation. In addition, other laboratory indicators of inflammation (eg, C-reactive protein, white blood cell count, and glucose levels) may be informative. A clear understanding of the patient's chief complaint and medical history is also important to appreciate the potential

for underlying inflammation, which can increase the risk of malnutrition by increasing metabolism. Conditions such as fever, infection, organ dysfunction, and hyperglycemia may be indicative of underlying inflammation and contribute to an etiology-based diagnosis, including identification of currently well-nourished patients at risk for malnutrition.

Obtaining adequate information from the patient or caregiver regarding food and nutrient intake, body weight changes, and functional changes (eg, ability to purchase and cook food, and dental status) is essential to identify periods of insufficient intake. Changes in physical function (eg, ambulation, chewing ability, and mental status issues) must be assessed and monitored as appropriate based on individual patient circumstances. Ensuring these various assessments are routinely and carefully performed is vital to an accurate diagnosis of malnutrition. In addition, specific fields for the AND and A.S.P.E.N. malnutrition characteristics must be completed so that system alerts are triggered when two of the six criteria are documented, thereby clearly communicating the malnutrition diagnosis to the health care team. Accurate coding of the malnutrition diagnosis as a complicating condition of the primary diagnosis is also critical

to ensure adequate documentation to support appropriate reimbursement and tracking of costs to allow for a more accurate quantification of the burden of malnutrition in the future.

#### Principle 4: Rapidly Implement Comprehensive Nutrition Interventions and Continued Monitoring

When a patient is identified as malnourished, appropriate nutrition intervention must be promptly ordered and fully implemented (Figure 3). Barriers to this ideal are varied, but often include: (1) NPO orders while patients await further assessment, (2) lack of nursing protocol orders focused on nutrition, (3) delay in assessment of nutrition status due to insufficient dietitian staffing, (4) dietitian recommendations unheeded due to the physician's focus on other medical concerns, (5) physician uncertainty with product formulary and/or specific micronutrient therapy options in their hospitals, and (6) inadequate food consumption due to poor appetite, disease processes, and interruptions to mealtimes.

To overcome barriers to early and optimal nutrition intervention, the Alliance provides the following recommendations:



**Table 2.** Academy of Nutrition and Dietetics and American Society for Parenteral and Enteral Nutrition clinical characteristics that the clinician can obtain and document to support a diagnosis of malnutrition<sup>a</sup>

Clinical characteristic <sup>b</sup>	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							
	Moderate <sup>c</sup>	Severe <sup>d</sup>	Moderate	Severe	Moderate	Severe						
(1) Energy intake: malnutrition is the result of inadequate food and nutrient intake or assimilation; thus, recent intake compared with 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.	<75% of estimated energy requirement for >7 days	≤50% of estimated energy requirement for ≥5 days	<75% of estimated energy requirement for ≥1 mo	≤75% of estimated energy requirement for ≥1 mo	<75% of estimated energy requirement for ≥3 mo	≤50% of estimated energy requirement for ≥1 mo						
	%	Time	%	Time	%	Time	%	Time	%	Time	%	Time
(2) Interpretation of weight loss: The clinician may evaluate weight in light of other clinical findings, including the presence of under- or overhydration. 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 mo	>7.5	3 mo	10	6 mo	>10	6 mo	10	6 mo	>10	6 mo
					20	1 y	>20	1 y	20	1 y	>20	1 y

**Physical findings**

Malnutrition typically results in changes to the physical examination. The clinician may perform a physical examination and document any one of the physical examination findings below as an indicator of malnutrition.

(continued on next page)

**Table 2.** Academy of Nutrition and Dietetics and American Society for Parenteral and Enteral Nutrition clinical characteristics that the clinician can obtain and document to support a diagnosis of malnutrition<sup>a</sup> (*continued*)

Clinical characteristic <sup>b</sup>	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	
	Moderate <sup>c</sup>	Severe <sup>d</sup>	Moderate	Severe	Moderate	Severe
(3) Body fat: Loss of subcutaneous fat (eg, orbital, triceps, fat overlying the ribs).	Mild	Moderate	Mild	Severe	Mild	Severe
(4) Muscle mass: Muscle loss (eg, wasting of the temples, clavicles, shoulders, interosseous muscles, scapula, thigh, and calf).	Mild	Moderate	Mild	Severe	Mild	Severe
(5) Fluid accumulation: The clinician may evaluate generalized or localized fluid accumulation evident on examination (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: Consult normative standards supplied by the manufacturer of the measurement device.	NA <sup>e</sup>	Measurably reduced	NA	Measurably reduced	NA	Measurably reduced

<sup>a</sup>Adapted with permission from White and colleagues.<sup>11</sup> Height and weight should be measured rather than estimated to determine body mass index. Usual weight should be obtained to determine the percentage and to determine the significance of weight loss. Basic indicators of nutrition status such as body weight, weight change, and appetite may improve substantively 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  $\geq 3$  months. Serum proteins such as serum albumin or 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.

<sup>b</sup>A minimum of 2 of the 6 characteristics is recommended for diagnosis of either severe or nonsevere malnutrition.

<sup>c</sup>The *International Classification of Diseases, 9th Revision* (ICD-9) code for moderate malnutrition is 263.0.

<sup>d</sup>The *International Classification of Diseases, 9th Revision* (ICD-9) code for severe malnutrition is 262.0.

<sup>e</sup>NA=not applicable.

Practices
<ol style="list-style-type: none"> <li>1. Screen every admitted patient for malnutrition, regardless of physical appearance</li> <li>2. Make every effort to ensure that patients receive all EN<sup>a</sup> or PN<sup>b</sup> as prescribed to maximize benefit</li> <li>3. Develop procedures to provide ONS<sup>c</sup> in between meals or with medication administration to increase overall energy and nutrient intake</li> <li>4. Create a focused meal time and supportive meal-time environment</li> <li>5. Take notice of patient meal consumption               <ul style="list-style-type: none"> <li>• Be vigilant to the amount of food eaten</li> <li>• Sharing findings among the team (eg, during team huddles) facilitates development of a targeted nutritional plan</li> </ul> </li> <li>6. Stay alert to missed meals               <ul style="list-style-type: none"> <li>• Develop procedures to provide patients with meals at “off times” if patient was not available or under a restricted diet at the time of meal delivery</li> </ul> </li> <li>7. Avoid disconnecting EN or PN for patient repositioning, ambulation, travel, or procedures</li> </ol>
<ol style="list-style-type: none"> <li>8. Consider managing symptoms of gastrointestinal distress while continuing to administer PO<sup>d</sup> diet or EN               <ul style="list-style-type: none"> <li>• Nutrients may be administered while the source of distress is being identified and treated</li> </ul> </li> </ol>
<ol style="list-style-type: none"> <li>9. Remain mindful of “holds” on PO diets or EN relative to procedures               <ul style="list-style-type: none"> <li>• Take action to reduce the amount of time that a patient’s intake is restricted</li> </ul> </li> </ol>
<ol style="list-style-type: none"> <li>10. Identify medications and disease conditions that interfere with nutrient absorption               <ul style="list-style-type: none"> <li>• Develop plans to minimize the impact</li> </ul> </li> </ol>
<p><sup>a</sup>EN=enteral nutrition by tube feeding methods.  <sup>b</sup>PN=parenteral nutrition.  <sup>c</sup>ONS=oral nutrition supplements.  <sup>d</sup>PO=per oral.</p>

**Figure 6.** Practices to support implementation of nutrition intervention.

- Unless specific contraindications exist, prompt nutrition intervention for all malnourished patients must be a high priority. Patients whose nutrition status is identified as at risk through screening must be fed within 24 hours by nurses while awaiting a nutrition consult, unless contraindicated. Examples of immediate nutrition interventions can include modifications to diet, assistance with ordering and eating meals, initiation of calorie counts, and/or addition of ONS. In many cases, establishing automated processes that trigger upon a positive screening will best accomplish rapid intervention (eg, prompting by the EHR to place a diet order).
- Standard practices to maximize nutrient consumption must be adopted. Figure 6 lists some practical approaches to support optimal nutrition. In some cases, it is as simple as staying alert to missed or poorly consumed meals and communicating such events to the dietitian so that

appropriate adjustments are made.

- Actual consumption must be monitored and intervention adjusted as appropriate. Clinicians must adhere closely to the documented nutrition care plan and document success or failure in the daily medical record. Results of watchful monitoring inform necessary changes to the nutrition care plan so that short- and long-term goals can be achieved. For example, incomplete consumption of items on the meal tray must prompt the nurse to have a discussion with the patient, and, depending on the severity of the intake deficit, underlying nutritional status, and other clinical issues, to call a nutrition huddle.

**Principle 5: Communicate Nutrition Care Plans**

All aspects of a patient’s nutrition care plan, including serial assessment and treatment goals, must be carefully

documented in the EHR, regularly updated, and effectively communicated to all health care providers (Figure 3). This will allow informed engagement by all providers and continuity of treatment if the patient is transferred to another care setting. In addition, accurate and thorough documentation is essential for proper disease coding.<sup>58</sup> For example, prior to 2012, only severe malnutrition could be coded as a complicating condition with a primary diagnosis. However, as of October 2012, mild or moderate malnutrition can now be coded as a complicating condition.<sup>59</sup> In practice, however, proper documentation and communication do not always occur. Most often, nutrition status and progress are not adequately documented in the medical record, making it difficult to determine when and if patients are consuming food and supplements. In addition, nutrition standard operating procedures and EHR-triggered care are often lacking in the hospital, and nutrition care plans and medical conditions are poorly communicated to post-acute facilities and primary care physicians.

The Alliance recommends the following strategies to improve documentation and communication of the patient's nutrition care plan, including leveraging the various forms of EHR systems now routine in most hospitals.

- Nutrition care must be formally documented via the central area on the medical record or in the EHR with the following components: (1) nutrition screening results; (2) comprehensive nutrition assessment data, including those obtained from a nutrition-focused physical assessment; (3) nutrition diagnosis; (4) nutrient–medication interactions and diagnosis-related alterations in requirements; (5) nutrition intervention(s) ordered and planned goals; (6) dietary intake pattern, including percentage of food consumed with each meal and consumption of any ordered ONS; and (7) monitoring and evaluation plan with specific indices and timeframe for re-assessment.
- Hospitals must create and maintain standardized policies, procedures, and EHR-automated triggers relevant to nutrition, including nutrition-related and specific diet order sets and protocols in the hospital's EHR (eg, algorithms for initiating ONS, EN and PN orders).
- Nutrition care plan documentation must be included in the discharge summary to ensure that post-acute facilities/clinicians fully understand all aspects of the nutrition care plan, including goals, intervention, necessary resources, monitoring, and evaluation.

#### **Principle 6: Develop a Comprehensive Discharge Nutrition Care and Education Plan**

A comprehensive, systematic approach to managing nutrition from admission through discharge and beyond is needed to consistently improve quality of care (Figure 3). The risk always exists that nutrition goals achieved in the inpatient setting may be lost if the continuity of care is not adequately addressed at the time of discharge.<sup>7,60</sup> In practice, patients and family

members/caregivers are rarely educated adequately on nutrition care by the hospital team.<sup>61</sup> Moreover, patient adherence to nutrition orders during and following a hospital stay is often poor, and not all physicians are familiar with the proper elements of a discharge nutrition care plan. Failing to address these challenges could result in nutrition care shortcomings at one of the most vulnerable stages in a patient's recovery.

To ensure continuity of care, systems must be put in place to provide patients, family members, and caregivers with nutrition education and a comprehensive post-hospitalization nutrition care plan. Toward this end, the Alliance makes the following recommendations:

- Nutrition must be a component of all clinicians' conversations with patients and their family/caregivers.
- The patient's nutrition status, nutrition recommendations and other interventions (eg, ONS, vitamin and mineral supplements, and access to food), and the post-discharge nutrition care plan must be explained by the clinical care team throughout the inpatient stay and documented in the EHR.
- Follow-up nutrition assessment and education, combined with specific follow-up appointment information must be provided to the patient and/or caregiver at time of discharge.
- Hospitals must develop clear, standardized, written instructions for nutrition care at home, including the rationale for and details on diet instruction and any recommended ONS, vitamin and/or mineral supplements that can be given to the patient and his or her caregiver upon hospital discharge.
- Nurses who manage patient transitions at discharge must prioritize nutrition within the care plan. Post-hospitalization phone calls must be adapted to include questions about dietary intake, weight change, and access to food with concerns brought to the dietitian's attention. Dietitians should be used to manage post-hospital transitions

for patients that have malnutrition as a primary or secondary diagnosis. Ensuring nutrition care is part of the transition to home is a key step in reducing hospital readmissions.

#### **CONCLUSIONS**

With the changing health care environment, quality patient care and cost containment are of utmost importance. Early and automated nutrition intervention coupled with clinician collaboration is critical in remediating the issue of malnutrition in hospitals and has a strong potential to improve patient care and reduce hospital costs. Successful management of hospital malnutrition requires an interdisciplinary team approach and leadership that fosters open communication among disciplines. To be successful, all members of the health care team must understand the importance of nutrition care in improving patient outcomes and the financial impact of failing to address this problem. Processes must be put into place to ensure that appropriate nutrition intervention is provided and patients' nutrition status is routinely monitored. Finally, additional evidence quantifying the value of nutrition care must be assessed through broad research efforts, ranging from outcomes research to prospective randomized controlled clinical trials. Funding for these initiatives is needed from institutional, federal, foundation, and industry sources. Without question, nutrition care must be made a high priority and systematized in US hospitals.

This article is a call to action from the Alliance, challenging hospital-based clinicians to incorporate the proposed principles to evoke meaningful improvement in nutrition care within their institutions. This call marks a step change in efforts to date to improve nutrition among hospitalized patients. For the first time, it unites professional organizations in a common pursuit to raise awareness about the problem of hospital malnutrition and make meaningful progress toward early nutrition intervention and improved hospital treatment practices with the ultimate goal of improving quality of care and reducing costs. To accomplish this will require interdisciplinary collaboration by dietitians, nurses, and

physicians throughout the continuum of care so that patients receive excellent nutrition care in the hospital and after discharge.

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## STATEMENT OF POTENTIAL CONFLICT OF INTEREST

K. A. Tappenden, B. Quatrara, M. L. Parkhurst, T.R. Ziegler, and A. M. Malone are members of the Steering Committee of the Alliance to Advance Patient Nutrition who have been chosen by the professional organizations they represent and reimbursed for Alliance-related expenses. Abbott Nutrition has provided funding to the member organizations of the Alliance and to Marithea Goberville, PhD, of Science Author, Inc, for writing assistance.

## FUNDING/SUPPORT

There is no funding to disclose.