Nutritional Strategies for Frail Older Adults

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Ms Posthauer and Ms Sloan have disclosed that they have no financial relationships related to this article. Dr Collins has disclosed that she is a consultant/advisor to Abbott Nutrition and is/was a member of the speaker’s bureau for Abbott Nutrition. Ms Dorner has disclosed that she is/was a stock shareholder of Becky Dorner & Associates, Inc.

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This continuing educational activity will expire for physicians on March 31, 2014.

PURPOSE:
To enhance the learner’s competence with knowledge of nutritional strategies for frail older adults.

TARGET AUDIENCE:
This continuing education activity is intended for physicians and nurses with an interest in skin and wound care.

OBJECTIVES:
After participating in this educational activity, the participant should be better able to:
1. Analyze how normal aging, sarcopenia, anorexia, malnutrition, and Alzheimer’s disease impact the nutrition of older adults.
2. Apply evidence-based guidelines to improve nutritional status and wound healing in older adults.
ABSTRACT
The objectives of this continuing education article are to analyze the aging process and its effect on the nutritional status of frail older adults; determine how sarcopenia, anorexia, malnutrition, and Alzheimer disease increase the risk for pressure ulcer development and impact the healing process; and to apply evidence-based nutrition guidelines and implement practical solutions for wound healing.

KEYWORDS: nutrition and older adults, nutrition and wound healing

INTRODUCTION AND OVERVIEW OF THE POPULATION
Today, 1 in every 8 Americans is 65 years of age or older. With 10,000 Americans each day entering the Medicare system, this trend is estimated to continue for the next 10 years. By 2030, this age group is expected to be double what it was in the year 2000. This represents a growth from 35 million to 72 million, which translates to almost 20% of the total US population. Life expectancies have increased for those 65 years and older, as well as those 85 years and older. According to the US Census Bureau projections, the oldest-old population (adults 85 years or older) could grow to 19 million by 2050.

The aging population is creating a dramatic increase in demands on the healthcare system because average healthcare costs rise substantially with age. Hospitalization rates increased slightly to 336 per 1000 Medicare enrollees in 2007, with an average length of hospital stay at 5.6 days. Although only about 4% of the total population older than 65 years live in a long-term-care setting, such as a skilled nursing facility, use of these facilities rises with age. For example, of adults 85 years or older, 15% live in a long-term-care setting. Skilled nursing facility stays increased significantly from 1992 to 2007, rising from 28 per 1000 Medicare enrollees in 1992 to 81 per 1000 in 2007, which also reflects an increase in short-term stays. Use of home care services also increased with age. Regardless of the setting, nutrition is a primary factor in successful aging. Food and nutrition are critical to an individual’s physiological, social, cultural, and psychological quality of life.

After reading this article, clinicians should be able to better assess the effects of nutrition on frail older adults and to apply evidence-based nutrition guidelines and implement practical solutions for wound healing.

PHYSIOLOGICAL CHANGES ASSOCIATED WITH AGING AND NUTRITIONAL STATUS
Certain diseases and conditions can negatively affect quality of life, contribute to functional declines, and inhibit an older individual’s ability to remain at home. Almost 80% of older adults have at least 1 chronic health condition, whereas half of all older adults have 2 or more chronic conditions. The most costly chronic health conditions include heart disease, stroke, cancer, and diabetes. Food insecurity and/or lack of access to appropriate foods may lead to nutritional issues, which can have a major impact on health, the ability to maintain independence, and quality of life.

In addition, in the United States, approximately 18% of older adults have complete tooth loss, which can challenge the ability to chew and swallow nutritious foods.

Based on data from 2003 to 2004, diet quality among older Americans is poor. On average, older Americans met or exceeded diet quality standards for whole fruit, total grains, and meat/beans. In contrast, the average intake of foods containing solid fats and added sugars, alcoholic beverages, and sodium intake was above the recommended amounts, and vegetables, whole grains, oils, and nonfat/low-fat milk products were below the recommended amounts.

For frail older adults, physiological changes associated with aging can make it difficult to consume an adequate diet. These individuals may need additional supplementation to the diet to provide adequate nutrition. Table 1 details some of the many changes that occur during the aging process that may inhibit the ability to consume an adequate diet.

Nutrition Screening and Assessment
It is essential to have a solid nutrition-screening program in all healthcare settings that serve older adults. In acute care, screening should be done within 24 hours of admission; in skilled nursing facilities, within 5 days; other long-term-care settings, within 14 days; and in home care, upon the first registered nurse visit. Assessing the appetite can predict impending weight loss and target older adults for intervention. The Simplified Nutritional Appetite Questionnaire (SNAQ) was designed to measure appetite in older community dwelling and institutionalized persons. The SNAQ is a reliable, valid tool to identify adults who are at risk for significant weight loss in the next 6 months. Research supports the use of validated screening tools such as the Mini Nutrition Assessment (MNA), the Malnutrition Universal Screening Tool (MUST), the Malnutrition Screening Tool, or the SNAQ.

One study supported the use of the MUST as the most accurate nutrition screening tool to identify the risk of malnutrition in older adults admitted in the hospital setting. The tool screens for 6 different areas: food intake and swallowing/chewing, weight loss in the past 3 months, mobility, psychological stress or acute disease in the past 3 months, neuropsychological problems such as dementia, and body mass index. Using this simple tool to rate each of the 6 areas, if an individual has a score of 12 to 14, that is considered a normal nutrition status, 8 to 11 is considered at risk and warrants a referral to a registered dietitian (RD), and 0 to 7 is...
considered malnourished and would require referral to an RD. Table 2 describes the screening tools and how they can be retrieved.

The RD will follow the Academy of Nutrition and Dietetics Nutrition Care Process of Nutrition Assessment, Nutrition Diagnosis, Nutrition Interventions, and Nutrition Monitoring and Evaluation. In addition to the RD referral, the attending physician and interdisciplinary team should be informed to collaborate on a plan aimed at ameliorating the potential for nutritional compromise.

There are few validated nutrition assessment tools; however, the Subjective Global Assessment is used in some acute care centers. The RD will choose an appropriate nutrition assessment tool and complete a comprehensive assessment that includes medical record review, nutrition-focused physical assessment, review of laboratory values, and patient interview to determine current diseases and conditions, changes in weight or food intake, food allergies or intolerances, gastrointestinal disturbances, food-medication interactions, and wounds or pressure ulcers (PrUs). Table 3 outlines the information that should be included in a comprehensive nutrition assessment.

### NUTRITION DIAGNOSIS AND NUTRITION INTERVENTION

After the comprehensive nutrition assessment is completed, the RD will determine a nutrition diagnosis, such as “Increased need for protein related to increased demands for healing as evidenced by delayed wound healing.” The next step is to determine nutrition interventions based on the comprehensive nutrition assessment.
assessment. Interventions should be individualized to the person’s needs and desired outcomes and revised as often as needed based on the person’s responses to the interventions as well as outcomes toward goals. Table 4 addresses the role of nutrition in pressure ulcer healing.

**Sarcopenia**

Sarcopenia is the progressive loss of muscle mass and function termed “poverty of the flesh” by the Greeks. The current description states sarcopenia is “the age-associated loss of skeletal muscle mass, which results in decreased strength and aerobic capacity and thus functional capacity.” Sarcopenia is a multifactorial disease process that may result from suboptimal hormone levels (primarily estrogen and testosterone), protein and vitamin D deficiency, decrease in physical activity, chronic inflammation, and insulin resistance. The decline in skeletal muscle mass is greater in men than in women and is assumed to be related to hormonal factors including growth hormone and testosterone. Estrogen and testosterone can impede production of catabolic cytokines, interleukin 1 and interleukin 6, implying that the loss of these hormones with age could have both indirect and direct catabolic effects on muscle.

Physiological anorexia, decreased caloric intake, and weight loss are all related to aging, which in turn is associated with a decline in muscle mass and increased mortality. It is estimated that 45% of the older adults in the United States are affected by sarcopenia, a number that will increase as the population ages. The prevalence of sarcopenia in adults older than 60 years ranges from 8% to 40% and increases to 50% for those older than 75 years, with an estimated healthcare cost of $18.5 billion. Hispanic men and women have relatively higher rates of sarcopenia. The average adult will gain a pound of weight and lose half a pound of muscle yearly from 30 to 60 years and after the age of 70 years; muscle loss accelerates to 15% per decade. A serious component of sarcopenia is its link to diminished functional status. Estimates indicate that 20% of older adults in the United States are functionally disabled, and the risk of disability is 1.5 to 4.6 times higher in older persons with sarcopenia than in those of the same age with normal muscle.

Pathological sarcopenia is linked with an extremely high rate of disability. The frailty accompanying sarcopenia can dramatically increase the risk of falls for older adults, and half of all accidental deaths among people older than 65 years are related to falls. Sarcopenic obesity, defined as the coexistence of age-related loss of skeletal muscle mass and strength and excess body fat, positions obese older adults at risk for adverse outcomes and functional decline. The significance of the sarcopenic obese individual’s inability to perform instrumental activities of daily living in the community may influence his/her decision to live independently. The United States spends more than $26 billion annually on additional healthcare costs for individuals older than 65 years who lose their ability to live independently over the
The large National Health and Nutrition Examination Study III conclusion reported that sarcopenic obesity, to a greater extent than sarcopenia or obesity alone, is strongly associated with insulin resistance in both young and old adults, underlining the importance of low muscle mass as an independent risk factor for type 2 diabetes.

Diabetes plus sarcopenic obesity is a condition that can affect the healing of wounds, thus emphasizing the need for early nutrition assessment and intervention. Approximately 35% of all hospital discharges are adults older than 65 years hospitalized for trauma, illness, or diminished functional capacity. Hospitalized older adults placed on bed rest for extended periods of time have increased nitrogen excretion leading to a greater loss of skeletal muscle mass than younger persons. Ferrando et al showed that consuming a supplement of essential amino acids, 15 g offered 3 times a day, reduced the loss of muscle mass, decreased the fractional synthetic rate, and increased nitrogen excretion. Bed rest also lowers daily total energy expenditure as noted by Gretebeck et al, who showed that 10 days of bed rest resulted in a 21% reduction in total energy expenditure. This decrease in strength and functional ability, coupled with loss of skeletal muscle mass, can result in ambulatory, independent older adults becoming nonambulatory. The loss of muscle mass, strength, and function causes sustained physical impairment and contributes to delayed recovery. Complicating matters further, bed rest or decreased physical activity contributes to loss of lean body mass and compromised skin integrity, ultimately resulting in increased risk for pressure wounds, and may prolong the healing process.

In 2008, the Society for Sarcopenia, Cachexia, and Wasting Disease convened an expert panel to develop nutritional recommendations for the prevention and management of sarcopenia.

**Table 3. ESSENTIAL COMPONENTS FOR A COMPREHENSIVE NUTRITION ASSESSMENT**

<table>
<thead>
<tr>
<th>A comprehensive nutrition assessment should include some basic information, such as</th>
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<tbody>
<tr>
<td>• Preadmission illness, medical history, diagnosis, and recent changes in condition</td>
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<tr>
<td>• Height, current weight, usual body weight, weight history, and significant changes in weight (&gt;5% in 30 d, or &gt;10% in 180 d)</td>
</tr>
<tr>
<td>• Current food and fluid intake adequacy compared with calculated nutritional needs</td>
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<tr>
<td>• Eating ability (able to feed self, requires assistance, needs total assistance)</td>
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<tr>
<td>• Interview with the individual and/or family or staff for food preferences and tolerances</td>
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<tr>
<td>• Medications that may affect food/fluid intake or tolerance (food-medication interactions)</td>
</tr>
<tr>
<td>• Other factors that may impact nutritional status (such as chewing/swallowing ability, gastrointestinal problems, depression, pressure ulcers, wounds)</td>
</tr>
<tr>
<td>• Signs/symptoms of dehydration (such as poor skin turgor, flushed dry skin, coated tongue, oliguria, irritability, confusion)</td>
</tr>
<tr>
<td>• Current nutrition interventions (such as food or dining interventions, oral nutritional supplements)</td>
</tr>
<tr>
<td>• Monitoring and evaluation of nutritional status and outcomes</td>
</tr>
<tr>
<td>• Intolerances and allergies: drug allergies, food allergies or intolerances, food or fluid aversions</td>
</tr>
<tr>
<td>• Dental/oral: chewing and swallowing ability, dentition.</td>
</tr>
<tr>
<td>• Mental status: altered cognitive function, altered mental status, dementia, Alzheimer disease</td>
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<tr>
<td>• Cultural factors: religion, customs that influence eating</td>
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</tbody>
</table>

Nutrition-focused physical examination should include an inspection of the body to determine information regarding the individual’s nutrition status. By evaluating the individual’s eyes, mouth, skin, nails, hair, and extremities, additional information related to nutrition status may be revealed. A visual of the individual’s overall appearance can help a clinician determine whether the person appears to be underweight or cachectic, which may be associated with inadequate total energy intake due to anorexia, poor appetite, hypermetabolism, or any number of other factors. Protein energy malnutrition may be indicated by muscle wasting, abdominal distention, edema, and/or weakness in the extremities, and factors such as flaky dermatitis or pigmentation changes in the skin. An oral examination may reveal issues with chewing and/or swallowing due to poor dental condition, inadequate or poor-fitting dentures, sore mouth, lesions, inflamed or swollen gums, or other factors. Vitamin C or riboflavin deficiency may be indicated by bleeding gums. Skin examinations help to assess for presence of ulcers, lesions, skin tears, rashes, bruises, turgor, dryness, or flakiness.

Source: Dorner B. Used with Permission.
of muscle protein synthesis and muscle protein breakdown in sarcopenia results in net negative protein balance. Older adults are at risk for inadequate protein intake, and 32% to 41% of women and 22% to 38% of men ingest less than the recommended dietary allowance for protein (0.8 g/kg per day) for healthy adults. Older adults fail to ingest the highest acceptable macronutrient distribution for protein—35% of their energy intake. On average, older adults consume fewer calories and protein than do younger adults, and although the exact cause of the decreased intake is unclear, one hypothesis is that lower muscle

Table 4.
NUTRIENT NEEDS FOR PRESSURE ULCERS

<table>
<thead>
<tr>
<th>Based on Individual Assessment</th>
<th>Prevention</th>
<th>Treatment</th>
<th>Goals</th>
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<tbody>
<tr>
<td>Calories/kg body weight*</td>
<td>• 30–35</td>
<td>• 30–35</td>
<td>• Promote anabolism</td>
</tr>
<tr>
<td></td>
<td>• Adjust calories as needed based on weight loss or gain, or level of obesity</td>
<td>• Decreased calories may be needed for individuals who have had significant unintended weight loss</td>
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</tr>
<tr>
<td></td>
<td>• Increased calories may be needed for individuals who have had significant unintended weight loss</td>
<td>• 50%–60% of calories from carbohydrate sources</td>
<td></td>
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<tr>
<td></td>
<td>• Least restrictive diet when intake is poor</td>
<td>• Enhanced foods or oral medical nutritional supplements if needed (between meals)</td>
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<tr>
<td></td>
<td>• Nutrition support if needed and if consistent with the individual’s goals of care</td>
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</table>

| Protein, g/kg body weight     | • 1.25–1.5 | • 1.25–1.5 when compatible with goals of care |
|                               | • Reassess as condition changes | • Promote a positive nitrogen balance |
|                               | • Monitor renal function | • Prevent or correct protein-energy malnutrition |

| Fluids, mL/kg body weight**   | • 1 mL of fluid intake per kcalorie per day | • Adequate fluid to promote hydration |
|                               | • Monitor for signs and symptoms of dehydration: changes in weight, skin turgor, urine output, elevated serum sodium, or calculated serum osmolality |
|                               | • Additional fluids needed for insensible fluid losses: eg, vomiting, diarrhea, profuse sweating, draining wounds |
|                               | • Methods to estimate fluid needs: 30 mL/kg body weight/day; or 1 mL/kcalorie consumed |

| Vitamins/minerals             | • Encourage a balanced diet with good sources of vitamins and minerals |
|                               | • If deficiencies are confirmed or suspected, provide multivitamin and mineral supplement (up to 100% US Reference Daily Intake) daily |
|                               | • If clinical signs of deficiency are present, provide <40 mg elemental zinc daily |

*Alternate methods of calculation: Indirect calorimetry is the gold standard for determining caloric needs (however, few healthcare facilities or organizations provide the technology needed for this method of determination).

**Adjusted depending on condition, with less fluid possibly needed for those with severe renal problems or chronic heart failure, and additional fluids needed for air-fluidized beds, dehydration, draining wounds, ostomy losses, and so on.

Source: Dorner B. Used with permission.
mass results in lower physiological nutrient needs. \textsuperscript{45} Ingestion of protein-deficient meals fails to stimulate protein synthesis because the availability of blood amino acids is not increased. \textsuperscript{46} The consumption of moderate to large servings of high-quality protein or a high-quality protein meal plus exercise has been shown to stimulate muscle synthesis. The study of Paddon-Jones and Rasmussen\textsuperscript{47} considered not only the amount of daily protein but also the timing of intake to yield maximum protein synthesis. Consumption of 25 to 30 g of high-quality protein at each meal produced protein synthesis similar to younger persons. \textsuperscript{47} A protein intake of 1.6 g/kg per day was demonstrated to increase exercise-induced muscle hypertrophy in older adults. \textsuperscript{58} The sarcopenia expert panel recommended a protein intake of 1.0 to 1.5 g/kg per day with equal amounts of protein consumed at breakfast, lunch, and dinner. \textsuperscript{41} Sarcoenic individuals with wounds should be encouraged to adapt this strategy and consume a balanced amount of protein at each meal. The recommended protein intake for individuals with PrUs of 1.25 to 1.5 g/kg per body weight meets the intervention recommendation for sarcopenia. \textsuperscript{49}

Based on the estimated energy and protein needs of frail older adults, it may be beneficial to offer nutritional supplements between meals, especially when they are exercising. The prime responsibility of essential amino acids is the regulation of protein synthesis, \textsuperscript{50} and leucine appears to be a beneficial amino acid. \textsuperscript{51} Leucine is a precursor for protein synthesis and stimulates specific intracellular pathways associated with muscle protein synthesis. β-Hydroxy-β-methylbutyrate (HMB), a metabolite of the essential amino acid leucine, is thought to increase the rate of protein synthesis and slow protein catabolism. \textsuperscript{52} When older adults consumed nutrition supplements with HMB, their function, strength, and lean body mass improved, \textsuperscript{53} as well as their protein turnover. \textsuperscript{34}

Supplementing the diet with whey protein is beneficial because whey protein delivers the correct amino acids in proportion to the ratio of skeletal muscle. Whey protein supplementation stimulates an important mechanism that preserves muscle mass by creating and maintaining a high concentration of essential amino acids in the blood. \textsuperscript{55} The protein digestion rate is an independent factor modulating postprandial protein deposition. Consequently, protein supplements that are hydrolyzed for rapid absorption may be better utilized by older adults because they do not rely on digestive enzymes as do intact proteins. One randomized, double-blind, crossover 15-day study using a hydrolyzed liquid protein supplement given to older adult women resulted in positive nitrogen balance. \textsuperscript{56} Creatine may improve the effects of exercise on sarcopenic individuals, but additional studies are recommended. \textsuperscript{41}

**Vitamin D:** Vitamin D deficiency is the most prevalent nutritional deficiency for older adults regardless of their race or ethnicity. Vitamin D levels, which decrease with age, help preserve the type II muscle fibers that are prone to atrophy in older adults. \textsuperscript{57} The expert panel recommended vitamin D levels should be measured in all frail and/or sarcopenic older adults, and vitamin D supplementation in doses sufficient to increase levels greater than 100 nmol/L should be given as an adjunctive therapy to increase muscle strength. \textsuperscript{43} Dosages of 50,000 IU a week of either vitamin D2 or D3 are acceptable when vitamin D levels are low. Because sarcopenia contributes to the decline in function and disability of older adults, implementing nutrition interventions that assist in the management of the disease may also prevent PrUs.

### Anorexia/Malnutrition

Appetite implies the enjoyment of food versus hunger, which is the drive for food. The term anorexia is derived from the Greek word *an* ("without") and *orex* ("appetite"). Undernutrition and/or unintended weight loss (UWL) increases the risk of PrUs in frail older adults and contributes to delayed healing. Anorexia of aging is the reduction in appetite and energy as a result of physiological, psychological, social, and cultural factors and can result in undernutrition and UWL. \textsuperscript{58} Even healthy, noninstitutionalized adults are less hungry prior to a meal and become more quickly satisfied after eating than younger people. \textsuperscript{59} When older adults decrease their food intake, they seem to reset their appetite and have difficulty increasing their intake. \textsuperscript{58} Causes of anorexia of aging include increased activity of satiety hormones, such as cholecystokinin, diminished activity of opioids that stimulate appetite, and changes in the gastrointestinal system that increase the feeling of fullness. The hedonic qualities of food that enhance the pleasure of eating, such as taste and smell, diminish with age. The deterioration of the olfactory function begins in the fifth decade, and by age 80 years, the majority of individuals have less smell identification than 5- to 9-year-olds. The primary tastes of salty, bitter, sweet, and sour all decrease with age. Many medications prescribed for older adults affect both appetite and taste of food. Restrictive therapeutic diets can also contribute to decreased food leading to poor quality of life and negative health consequences. \textsuperscript{50} The Academy of Nutrition and Dietetics (formerly the American Dietetic Association) position paper states, “The life and nutrition status of older adults residing in healthcare communities can be enhanced by individualization to less restrictive diets.” \textsuperscript{61} The National Pressure Ulcer Advisory Panel 2009 nutrition treatment guidelines recommend the revision or modification of dietary restrictions when limitations result in decreased food and fluid intake. \textsuperscript{49}

### Sociological and Psychological Causes

Consideration of sociological factors, such as personal and cultural food preferences, food consistency, food temperature, aloneness, and the dining environment all affect the appetite of older adults. The racial and ethnic diversity in the United States continues to
Because the traditional African American diet includes collard greens and other dark green and yellow vegetables, plus beans, rice, and potatoes, it is high in vitamin A, iron, and fiber. Lean meats, fish, poultry, beans, and legumes provide adequate protein for wound healing. Asian cultures obtain protein from fish, pork, and poultry; plus fruits and vegetables are plentiful in their diet. Many Asians are lactose intolerant, so prior to recommending lactose-free supplements for wound healing, the RD should explain that the supplement is appropriate and will not cause gastrointestinal distress. The USDA Food and Nutrition Information Center has many education materials available at http://fnic.nal.usda.gov/professional-and-career-resources/ethnic-and-cultural-resources. The nutrition care plan goal for frail older adults with wounds is to meet their nutritional needs within the context of their cultural and religious beliefs.

A cross-sectional study of 236 noninstitutionalized adults older than 70 years noted a 30% prevalence of self-reported anorexia. Loss of an appetite was related to a higher risk of malnutrition in the anorexic versus nonanorexic individuals, lower muscular strength, and poorer function. Domini et al note that psychological factors such as depression impacted the appetite and affected 30% of older adult medical outpatients. This statistic should prompt clinicians to investigate the weight status and appetite of older adults treated at an outpatient wound clinic and recommend treatment options for depression as appropriate. Wound healing is compromised when the nutritional status is inadequate.

The consensus statement of the Academy of Nutrition and Dietetics (Academy)/American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.), “Characteristics Recommended for the Identification and Documentation of Adult Malnutrition (Undernutrition),” noted that adults who lack adequate calories, protein, or other nutrients required for tissue maintenance and repair experience undernutrition. Malnutrition/undernutrition significantly contributes to morbidity and mortality, decreased function and quality of life, increased healthcare cost, and increased frequency of hospital visits. The Academy and A.S.P.E.N. workgroups identified and standardized characteristics that reflect nutritional status versus the inflammatory response associated with various diseases and/or conditions. The characteristics have the following attributes: basic hallmarks, support a nutrition diagnosis, characterize severity, change as nutritional status changes, evidence-based (when possible or consensus derived), and can change as evidence of validity increases. Identification of 2 or more of the following 6 characteristics is recommended for diagnosis of adult malnutrition:

- insufficient energy intake
- weight loss
- loss of muscle mass
- loss of subcutaneous fat
- localized or generalized fluid accumulation that may sometimes mask weight loss
- diminished functional status as measured by hand grip strength

Members of the interprofessional healthcare team are encouraged to develop an implementation strategy for assessing the recommended characteristics. The goal is validating and establishing those characteristics that are the most or least reliable in identifying malnutrition. The recommended characteristics to diagnose malnutrition are an important and dynamic work in progress.

Alzheimer Disease

The most common form of dementia is Alzheimer disease (AD), and its prevalence will nearly quadruple in the next 50 years, by which time approximately 1 in 45 Americans will have the disease. According to the Centers for Disease Control and Prevention, about 15.5% of all nursing home residents suffer from AD or a similar disorder. Other terms often used to describe this clinically complex loss of memory and judgment and personality changes include dementia and senile dementia of the Alzheimer type. Although the progression of AD will vary from patient to patient, it usually has an early, middle, and late stage. As the stage of the disease advances, the clinical complications also follow a progressively worsening course. As a patient’s cognitive and functional abilities decline, eating and feeding difficulties become prevalent. Difficulty swallowing, choking, poor dentition, and self-feeding deficits often lead to decreased appetite and declining oral intake. Coupled with impaired language and communication skills, UWL is a frequent complication of AD, particularly in the later stages. The presence of malnutrition has a significant impact on the overall morbidity and mortality of a patient. In a study, institutionalized older adult patients who lost 5% of their body weight in 1 month were found to be 4 times more likely to die within 1 year. When the patient becomes incompetent to make decisions, healthcare professionals must be prepared to assist the family in making decisions regarding symptom management and whether nutrition support is warranted to prevent further UWL and skin breakdown.

Individuals who are malnourished suffer from more complications and infections, which worsen their medical condition and
Impaired cognition, confusion, and social isolation have a significant impact on an individual’s nutritional status. Physical limitations, such as immobility, poor positioning during meals, self-feeding deficits, chewing or swallowing difficulties, and impaired communication, can also have an effect on oral intake. In addition, psychosocial factors, such as loneliness or depression, frustration, anger, confusion, and fear of incontinence, can limit nutritional intake. Gastrointestinal disturbances, as noted in Table 1, such as abdominal pain, nausea, vomiting, diarrhea, or malabsorptive conditions, can inhibit one’s appetite. Medications that decrease appetite, cause malabsorption, or increase nutrient losses can alter one’s desire to eat. Also, common conditions associated with malnutrition include diabetes, renal impairment, cancer, and cardiac disorders, which many individuals suffer from in addition to the diagnosis of AD.

Meal timing and the dining environment have a significant impact on one’s desire to eat. The environment for eating should be as simple as possible and minimize distractions. Patients with AD are often confused and may become distracted very easily, so it is best to clear the clutter and keep the table settings basic. Patterned tablecloths and placemats should be removed. Noise should be minimized, and the television should be off to allow concentration on the meal. If soothing music calms the individual, it can be played during meals—but this is an individual preference. Mirrors can often be confusing, as can lighting that produces shadows. Steps should be taken to remove these items. The individual should be seated at the same seat for each meal in order to develop a routine. If the individual is in a healthcare facility, he/she should be encouraged to eat in the main dining area rather than alone. Eating alone can reduce appetite by as much as 30% to 44%.

Verbal cues, praise, and mimic techniques may all be used to encourage proper meal intake. Verbal cues may include reminding the patient to lift the eating utensil, chew, and swallow. These individuals often chew and chew and chew but forget to swallow. Cues to “swallow now” and “take another bite” may help to encourage better meal consumption. Praise for following the cues and eating well can reinforce the behavior and make the meal more pleasant. Often, individuals may forget the physical action needed to eat, so it may be useful to act out lifting the fork to the mouth and then demonstrate a chewing motion. Hand-over-hand techniques are also valuable in prompting the desired action. Communication during meals is an important nutrition strategy and should be done with patience and gentleness. Finger foods are preferred for many of these techniques and help promote independent feeding. Table 5 lists some common finger food substitutions.

For an already malnourished individual, a PrU can be life threatening. The accumulated effects of immobility, poor nutritional intake, and immune system challenges increase the risk of PrUs by 74%. A PrU develops when the skin integrity reduces and becomes vulnerable to pressure, wetness, and friction. The assessment and management of a wound require a multidisciplinary approach to achieve positive outcomes. Although adequate dietary intake is important for all individuals, meeting the individual’s nutrient needs is even more important when a wound is present. When a wound develops, protein and calorie needs are significantly increased. Preventing loss of lean body mass, by providing adequate calories and carbohydrates, is crucial to allow protein to facilitate the wound healing process. When nutritional intake is suboptimal, wound healing and lean body mass restoration compete for nutrients. Therefore, it is crucial to provide adequate protein and calories to rebuild tissue and prevent muscle wasting. Early dietary intervention, targeted at wound healing, is imperative.

Because weight loss is an independent predictor of mortality, individuals in the early stages of AD would benefit from dietary interventions aimed at improving their nutritional status. Initiating dietary supplementation with added calories and protein may decrease the risk of malnutrition and the development of PrUs. Supplementation can be provided orally or through a tube feeding if oral intake is inadequate to meet nutritional needs. Nasogastric tube feeding is usually not recommended in individuals with AD because of increased risk of self-extubation, with percutaneous endoscopic gastrostomy (PEG) tubes generally more accepted. Individuals are often able to have pleasure feedings in addition to PEG feedings. This maintains the individual’s dignity and allows for normal social interaction at mealtimes. The decision on whether to use tube feedings is a very

Table 5. FINGER FOOD SUBSTITUTIONS

<table>
<thead>
<tr>
<th>Regular Menu Item</th>
<th>Finger Food Item</th>
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<tbody>
<tr>
<td>Scrambled eggs and bacon</td>
<td>Scrambled eggs with bacon bits served in a pita pocket</td>
</tr>
<tr>
<td>French toast</td>
<td>French toast sticks</td>
</tr>
<tr>
<td>Baked fish</td>
<td>Fish sticks</td>
</tr>
<tr>
<td>Baked chicken</td>
<td>Chicken nuggets or fingers</td>
</tr>
<tr>
<td>Spaghetti</td>
<td>Ravioli with sauce on the side for dipping</td>
</tr>
<tr>
<td>Mashed potatoes</td>
<td>Potato tots or french fries</td>
</tr>
<tr>
<td>Creamed corn</td>
<td>Corn on the cob</td>
</tr>
<tr>
<td>Carrot slices</td>
<td>Steamed and softened whole baby carrots</td>
</tr>
<tr>
<td>Pudding</td>
<td>Pudding popsicle on a stick</td>
</tr>
<tr>
<td>Ice cream cup</td>
<td>Ice cream sandwich or cone</td>
</tr>
</tbody>
</table>

For an already malnourished individual, a PrU can be life threatening. The accumulated effects of immobility, poor nutritional intake, and immune system challenges increase the risk of PrUs by 74%. A PrU develops when the skin integrity reduces and becomes vulnerable to pressure, wetness, and friction. The assessment and management of a wound require a multidisciplinary approach to achieve positive outcomes. Although adequate dietary intake is important for all individuals, meeting the individual’s nutrient needs is even more important when a wound is present. When a wound develops, protein and calorie needs are significantly increased. Preventing loss of lean body mass, by providing adequate calories and carbohydrates, is crucial to allow protein to facilitate the wound healing process. When nutritional intake is suboptimal, wound healing and lean body mass restoration compete for nutrients. Therefore, it is crucial to provide adequate protein and calories to rebuild tissue and prevent muscle wasting. Early dietary intervention, targeted at wound healing, is imperative.

Because weight loss is an independent predictor of mortality, individuals in the early stages of AD would benefit from dietary interventions aimed at improving their nutritional status. Initiating dietary supplementation with added calories and protein may decrease the risk of malnutrition and the development of PrUs. Supplementation can be provided orally or through a tube feeding if oral intake is inadequate to meet nutritional needs. Nasogastric tube feeding is usually not recommended in individuals with AD because of increased risk of self-extubation, with percutaneous endoscopic gastrostomy (PEG) tubes generally more accepted. Individuals are often able to have pleasure feedings in addition to PEG feedings. This maintains the individual’s dignity and allows for normal social interaction at mealtimes. The decision on whether to use tube feedings is a very

Table 5. FINGER FOOD SUBSTITUTIONS

<table>
<thead>
<tr>
<th>Regular Menu Item</th>
<th>Finger Food Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scrambled eggs and bacon</td>
<td>Scrambled eggs with bacon bits served in a pita pocket</td>
</tr>
<tr>
<td>French toast</td>
<td>French toast sticks</td>
</tr>
<tr>
<td>Baked fish</td>
<td>Fish sticks</td>
</tr>
<tr>
<td>Baked chicken</td>
<td>Chicken nuggets or fingers</td>
</tr>
<tr>
<td>Spaghetti</td>
<td>Ravioli with sauce on the side for dipping</td>
</tr>
<tr>
<td>Mashed potatoes</td>
<td>Potato tots or french fries</td>
</tr>
<tr>
<td>Creamed corn</td>
<td>Corn on the cob</td>
</tr>
<tr>
<td>Carrot slices</td>
<td>Steamed and softened whole baby carrots</td>
</tr>
<tr>
<td>Pudding</td>
<td>Pudding popsicle on a stick</td>
</tr>
<tr>
<td>Ice cream cup</td>
<td>Ice cream sandwich or cone</td>
</tr>
</tbody>
</table>
personal one that requires careful consideration. Many times caregivers project their own feelings onto the individual and may feel the individual is suffering because of minimal food and fluid intake. Unfortunately, the level of suffering is hard to accurately assess because the individual with dementia cannot provide a meaningful answer. These emotional decisions often lead to the use of tube feedings, but the evidence shows little benefit of this practice particularly if the tube feeding is used in hopes of avoiding an occurrence of aspiration. In fact, 1 study examining the risk of aspiration pneumonia in 104 severely demented nursing home residents found that residents with feeding tubes experienced significantly more episodes of aspiration pneumonia (58%) than the residents without feeding tubes (17%; \( P < .01 \)).

Although tube feedings can meet the individual’s dietary requirements, no solid conclusions have been made regarding the impact on prevention and treatment of PrUs. Many studies have shown that even the most appropriate and timely interventions with competent caregivers may not prevent the cascade of complications from occurring in this progressive disease. Generally speaking, a tube feeding cannot fix the underlying problem or the impairments in the digestive system; often, its use complicates both the social and medical situation, but it is the decision of the responsible party with thoughtful input from the healthcare team.

**DOCUMENTATION/LITIGATION ISSUES**

Pressure ulcers and other types of wounds are increasingly costly to healthcare providers not only because of the care they require but also because they are often cited in wrongful death and medical malpractice litigation. Data analyzed by Voss et al. show that PrU litigation has increased since 1992, and settlements or verdicts in favor of the resident were seen in 87% of all cases. Nutrition plays a role because typically chronic wounds are accompanied by some degree of malnutrition, UWL, and/or dehydration. Litigation in long-term care has seen a dramatic rise over the past decade with the most common reasons for lawsuits against nursing homes including falls causing fractures, PrUs, dehydration, and malnutrition, and elopement from the facility.

Generally, litigation arises from someone’s dissatisfaction with the level of service or quality of a product he/she received. In healthcare, that service is often a matter of life and death. In every lawsuit, the medical record is scrutinized to determine the quality and quantity of care rendered. Frequently, the patient’s chart does not support the fact that optimal care in accordance with accepted standards was delivered. If the documentation is illegible, illogical, or incomplete, how can it be defended in a court of law? As mentioned previously, this can lead to a costly situation that is an unnecessary waste of money, especially at a time when reimbursement rates are stagnant or being cut and insurance claims are frequently denied. In almost every case, the same sections of the chart are problematic.

**Wound Documentation**

Not every wound is a PrU. In many charts, all skin integrity problems are labeled PrUs. Calling every wound a PrU sets up an expectation for certain interventions, which may not be indicated for other types of wounds. Arterial ulcers, diabetic ulcers, and venous stasis ulcers are not treated the same way as PrUs. Another commonly seen problem is in describing the anatomical location of the wound. The words buttocks, sacrum, and coccyx are often used incorrectly and interchangeably. When staff members are using different words to describe the location of the wound, it causes confusion in the medical record. Other related problems are confusing right and left, and being inconsistent in the order of length, width, and depth when documenting wound measurements.

**Height and Weight**

During the course of an extended illness, a patient may be transferred between acute-care and long-term-care facilities several times. It is not uncommon to see vastly different heights and weights reported between different facilities and even within the same facility. Weight inconsistencies are so common in charts that some staff members deem it acceptable to chart “weight appears erroneous.” But what does this really say about the care we are giving if we cannot properly record the body weight?

**Communication Issues**

Many patients and/or family members claim they were never told various pieces of information. Listening and hearing are 2
very different acts; healthcare providers need to ensure that their patient hears them and can repeat back what was said. A related issue is the desire not to be the bearer of bad news. American culture shies away from discussing death, and this attitude may even permeate healthcare. Speaking frankly with patients requires finesse. Practice and simulations may help improve communication and avoid future problems.

Incomplete Assessments
It is not unusual to have nursing admitting assessment forms that are 3 pages long. It is just as common to see entire sections left blank. Blank sections on forms always raise questions. Was the nurse supposed to complete that part and just forgot? Was the information unavailable? Was the nurse intending to come back and finish it later and then forgot? It can be any of these issues.

Calorie Counts
A calorie count is often ordered when a patient is losing weight or not eating adequate amounts of food. The typical order requires that 3 days of meals be recorded, and the number of calories and grams of protein consumed each day documented in the medical record. Communication is of utmost importance because serving the meal, removing the used tray, recording what was consumed, and performing the nutritional calculations are likely to be done by 3 or 4 different staff members. The reality is that unless there is a clear system in place, meal trays often go to the dish room without being recorded, and the calorie count is then incomplete.

Intake and Output Records
Intake and output records, commonly referred to as I & O’s, are intended to measure a patient’s fluid balance. Intake refers to all the liquids consumed, either enterally or intravenously, in a 24-hour period. Output refers mainly to urine output; however, this can include other fluid losses such as excessive sweating or vomiting. Ideally, intake and output are approximately the same, or in balance. Excessive gains or losses may indicate edema or dehydration, both of which require intervention and additional documentation. These records are notoriously incomplete and illegible. Incontinent patients pose a special challenge unless they have a Foley catheter in place. Simply writing the word “incontinent” across the entire output section makes no sense. In this case you are recording only intake, and if that is the intention, the physician’s order should indicate this. Many of the forms used to record I & O’s are not user-friendly with miniscule boxes, total lines that do not coincide with shift changes, and lack of instructions. As electronic health records (EHRs) come into use, some of these problems are solved, but EHRs create new problems, such as the ability to copy and paste data without truly measuring it.

Solutions to Common Documentation Problems
Here are the authors’ suggested solutions to correct common problems with documentation.

- Revise data collection forms. Whether handwritten or electronic, blank forms should aid in data collection and reflect current policies.
- Review policies to eliminate unnecessary orders, such as I & O’s for every admittance for the first week. Unless there is a clear reason for obtaining such data, it might not be necessary to have such a policy.
- Educate staff on proper ways to deal with noncompliant patients and how to reassure angry and/or scared patients and families.
- Systematically and consistently conduct chart audits to determine if any problems exist. Peer reviews and consultants can help with this.
- Understand that this is a litigious society, and the medical record must be complete and accurate.
- Treat patients and family members with the same care as if they were one’s own relatives—with empathy, kindness, respect, and dignity.

SUMMARY
Poor outcomes are associated with undernutrition/malnutrition in the older adult including the risk of morbidity and mortality, hence the need to quickly identify and implement nutrition treatment strategies. Treating and reversing undernutrition in the older adult are challenging because of the physical changes and conditions that occur with aging, such as sarcopenia, anorexia, AD, and dementia. Nutritional interventions implemented to prevent and treat sarcopenia, weight loss, anorexia, and undernutrition

PRACTICE PEARLS

- Screen nutritional status of individuals at risk for PrUs or with a PrU using a validated nutrition screening tool. Refer to the RD as appropriate for a comprehensive nutrition assessment.
- Assess older adults’ appetite using the Simplified Nutritional Appetite Questionnaire.
- Refer all high-risk individuals to a registered dietitian for immediate assessment and intervention for nutritional problems.
- Provide adequate protein, energy, and fluid following sarcopenia/PrU guidelines.
- Distribute protein evenly at each meal to ensure adequate protein synthesis.
- Provide enriched supplements between meals when oral intake at meals is inadequate to meet needs.
- Consider the risk and benefit of enteral nutrition when oral intake cannot achieve positive outcomes.
- Assess dining environment and implement techniques that support independent feeding.
- Evaluate current data collection forms and establish a peer-review chart audit system.
can improve outcomes and the quality of life for older adults with wounds. Communication is key between members of the interprofessional team, the older adult, and his/her family to ensure that everyone understands the importance of nutrition in the prevention and treatment of wounds.

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