NUTRITION

The Power of Protein

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Increase protein intake. These three simple words have been featured on nutritional care plans millions of times in nursing homes from New York to New Mexico. In fact, a real-life patient we will call Mrs. Stanley had a nutritional care plan addressing her unintended weight loss, which stated this very intervention. She also had a separate care plan dealing with her heel and sacral pressure ulcers, which reiterated the same three words—increase protein intake. A quick look at the dietitian's notes showed the dietitian concurred and had performed several calculations to back up the recommendation. The documentation stated the following: "115 lbs ÷ 2.2 kg/lb = 52.3 kg x 1.3 g protein/kg body weight = 67.99 g protein/day."

This medical record showed this facility had correctly identified the resident's protein needs and set an intervention in place to address it. So why, some years later, was an attorney staring into the eyes of the dietitian as a court reporter recorded, "Please tell me how you provided 67.99 g of protein to my client every day?" The dietitian did not have much of a recollection of Mrs. Stanley. After all, Mrs. Stanley passed away almost three years ago and was only in the facility for seven months. After a moment, the dietitian asked if she could see her notes. The chart, already open to the nutrition documentation, slid across the table. The dietitian's eyes darted across the few meager entries as she composed an answer. "We gave Mrs. Stanley Ensure® (Ross Products, Columbus, Ohio) three times a day." As the dietitian sighed in relief, the attorney had many more questions and wanted many more answers. How much protein was in each can of Ensure? Did three cans of a medical nutrition supplement provide all the protein she needed? How was the remainder of her protein needs met? Did Mrs. Stanley consume every can in its entirety every day? How often were her labs monitored? Could she possibly heal with her severely depleted albumin level? Were her needs adjusted when her sacral wound worsened to Stage 4? Did she require more protein after the surgical debridement? Could anything else have been done or tried to meet her protein needs?

The next time you review a care plan and it calls for increasing protein intake, consider the exact steps you are going to take to bring this approach to fruition. Knowing and documenting how you are going to achieve this goal is an important component of the care plan. This takes a general understanding of protein.

FUNCTIONS OF PROTEIN

Protein has many specific functions in the body, including helping to maintain fluid and acid-base balance, acting as transporters of certain materials, playing a role in the immune system, acting as hormones, and providing energy if there are insufficient glucose and fatty acids to keep the cells furnished adequately.[1] In the long-term care population, one of the most common functions of protein is growth and repair (eg, when a patient has a pressure ulcer). The body constantly deposits protein into new cells to replace those that have been lost. No new living tissue can be built without protein—so it follows that no wound can heal without adequate protein from which to build new tissue.

(above) To meet a person's protein needs, it may be necessary to supplement his or her meal intake with protein-rich items like milk.

Table 1. Classification of Amino Acids[2]

Indispensable	Dispensable	Conditionally Indispensable
Histidine	Alanine	Arginine
Isoleucine	Aspartic Acid	Cysteine
Leucine	Asparagine	Glutamine
Lysine	Glutamic Acid	Glycine
Methionine	Serine	Proline
Phenylalanine	Tyrosine	
Threonine		
Tryptophan		
Valine		

PROTEIN'S BUILDING BLOCKS

The primary function of dietary protein is to provide amino acids.[3] Protein is different than carbohydrates and fat because it contains nitrogen. Protein is approximately 16% nitrogen, and it is this nitrogen content that gives rise to the amino acids. Amino acids are classified as dispensable, indispensable, or conditionally indispensable.[2]

If your body cannot synthesize the amino acid in question, it is classified as indispensable. This category used to be called essential amino acids; while the name has changed, the meaning has not. If you cannot synthesize it, you must get it from dietary sources.

The dispensable amino acids can be made by the body if it is given sufficient building blocks to do so. These amino acids were formerly called non-essential, implying that you did not have to get them from your diet because the body would manufacture its own supply.

The final category is called conditionally indispensable, which was previously known as conditionally essential. This category includes amino acids that the body can synthesize, but in certain circumstances it may not be able to synthesize enough to keep up with demand. For example, if a patient is suffering from a disease or condition that triggers a physiological stress response with the resultant release of stress hormones, the need for certain amino acids may increase, and the body might not be able to meet the increased demand. Thus, this group is called conditionally indispensable because it requires certain conditions. (See Table 1 for the specific amino acids in each category.)

Understanding the classification of amino acids is relevant because several of today's supplements consist of a single amino acid, such as glutamine or arginine. These amino acids fall into the category of conditionally indispensable. The thought behind this is that by providing extra amounts of certain amino acids, the gap between what the body can manufacture on its own and what the body needs will be narrowed.

PROTEIN REQUIREMENTS

The Recommended Dietary Allowance (RDA) for protein is 0.8 g per kilogram of body weight each day.[2] For example, based on the RDA, a 120-lb adult would require 43.6 g of protein per day (120 lbs ÷ 2.2 = 54.5 kg x 0.8). Most persons are not familiar with gram weights, so it is more practical to convert this to ounces. Generally, one ounce of protein is equivalent to seven grams. (See Table 2 for the protein content of various food groups.) Using the example, 43.6 g is approximately 6 oz per day. It is interesting to note that the typical American consumes almost twice that amount each day.

The RDA is based on the needs of healthy adults. Most patients, and especially those with wounds, would not fall into the category of "healthy adult." This raises the question of how far above the RDA we should estimate protein needs for the patient with multiple diagnoses, including a wound. Optimal protein intake has not been determined, and different sources state different amounts. Generally speaking, most clinicians estimate between 1.2 and 1.5 g protein/kg body weight for patients with a wound. Going back to the example, now the estimated daily needs are between 65.4 and 81.8 g of protein per day, or about 9–12 oz per day. That is quite a difference.

INCREASING PROTEIN INTAKE

To reach these increased levels, supplementation beyond the three standard meals per day will often be necessary. There are many ways to supplement. The most common way is by providing a canned beverage. There are many good products available with differing levels of both calories and protein. When reviewing products for cost effectiveness, it is helpful to remember that an 8-oz glass of whole milk provides 150 kcal and 8 g of protein.

The downside of this approach is that most patients tire quickly of the same supplement day after day. If a supplement is not consumed, it does no good and wastes money. Variety is key, and items, such as high-protein cookies, high-protein gelatins, nutrition bars, and enriched foods (eg, soups and mashed potatoes), can be used to add variety in both flavor and texture. There are many, many products available for purchase to add nutrient density to the meals, including protein powders and liquids. Protein powders are generally well accepted by patients and can be added to prepared foods. Most powders provide 4–5 g of protein per tablespoon. If one tablespoon was added to each meal, an additional 12–15 g would be provided daily. Some liquids are even more nutrient-dense and provide a large amount of protein in a small volume.

If budgetary constraints restrict the number of convenience products available, recipe modification and certain food preparation techniques can be utilized to provide higher amounts of calo-

Table 2. Protein Content of Food Groups[4]

Protein Source	Protein (Grams)
Meat, Poultry, Cheese, Eggs, Fish (1 oz)	7
Milk (1 cup)	8
Breads and Starches (1 slice or 1/2 cup)	3
Vegetables (1/2 cup)	0–2*
Fruits (1 piece or 1/2 cup)	(Trace)
Fats	0

*Beans and legumes have the highest protein content

ries and protein in common foods. Snacks may be as simple as a hard-boiled egg (80 kcal and 7 g of protein) or cheese sticks. Another technique for patients who consume at least 75% of most meals is to serve an extra ounce of the entrée at each meal, since it usually contains the protein. For milk drinkers, the consumption of additional milk or flavored milk can be encouraged. The best policy is to treat each patient as an individual and find out which foods would be accepted and preferred and document this in the medical record.

THE POWER OF PROTEIN

Mrs. Stanley's case was settled in her family's favor, as most cases of this type are. The documentation could not conclusively demonstrate that she was provided appropriate, individualized care to heal her wounds, maintain her weight, and promote her overall safety and well being. Incomplete meal records, untotaled intake and output records, sporadic wound care notes, and other inconsistencies all played a role in the outcome. The next time you look at a chart calling for increasing protein intake, examine it with a more critical eye—and put the documentation to the test. If you reviewed the medical record several years from now, would you be able to describe in detail the exact steps you were taking to meet the patient's need for more protein and whether those steps were successful? ■

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