

# THE CASE FOR NUTRITIONAL SUPPORT

## *Eliminating Hospital-acquired Malnutrition Improves Outcomes and Reduces Costs*

Studies have clearly shown that adequate nutritional support significantly enhances patients' ability to avoid the morbidity and mortality associated with disease and trauma.<sup>1</sup> Patients' ability to recover and respond to therapy depends to a great extent on how well they synthesize protein to regain homeostasis of the body's internal and external functioning. To put it another way, patients are more likely to die from the complications of worsening malnutrition than from the disease that prevented them from eating in the first place.

### **REASONS FOR NUTRITIONAL SUPPORT**

Hospitals have a number of compelling reasons for putting effective nutritional support systems in place. For one, hospitals that fail to develop such systems will soon face a precipitous increase in red ink. The hospital executive need only compare the length of stay and complication rate of properly selected patients who receive effective nutritional support during their hospital stay with those of patients who do not. A check of morbidity tables reveals that the significantly malnourished patient has twice the likelihood of infections as the patient who has adequate nourishment. An infection can translate into \$8,500 to

\$10,000 additional cost per episode per patient stay.

Malnourished patients also spend twice the time in intensive care as adequately nourished patients. In this era of prospective reimbursement, the hospital will have to absorb the additional costs of caring for such patients.

The opportunity to improve treatment outcomes is another reason to implement a nutritional support system. Currently, the Health Care Financing Administration and other government and private agencies are looking carefully at outcomes to see how a given hospital's mortality rates compare with those of similar institutions.

If reducing costs and improving outcomes are not reasons enough for hospitals to ensure proper nutrition of patients, the ever-present danger of malpractice suits provides yet another motive. Today, if patients or their families can prove negligence on the part of the hospital or physician for failing to notice deterioration resulting from malnourishment or to act on such symptoms, malpractice suits can follow. A number of such suits are currently pending in the courts, and their number can be expected to increase unless hospitals ensure that such alleged negligence does not occur.

In short, hospitals that do not have nutritional

**Summary** Taking steps to eliminate hospital-acquired malnutrition in patients with disease or trauma significantly improves treatment outcomes. Patients' ability to recover from trauma or illness and respond to therapy depends on how well they synthesize proteins necessary to regain homeostasis. It is possible for patients to die from complications of progressive hospital-acquired malnutrition.

Hospital executives and clinical personnel must

understand that timely intervention with nonvolitional feeding in appropriately selected patients will decrease morbidity and length of stay. Hospitals that ignore nutritional support therapy for patients may be in violation of quality-of-care standards. And hospitals that do not have hyperalimentation or nutritional support teams, or that have disbanded such teams for economic reasons, are putting their critically ill patients at risk for malnutrition.

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support systems in place are putting their critically ill patients at risk of malnutrition. However, many, if not most, hospital executives and many attending physicians apparently do not understand the complexity of nutritional support therapy and its implications for the patient's health and well-being.

**THE NEED FOR NUTRITIONAL SUPPORT**

Whether or not an institution has a nutritional support (or hyperalimentation) team, hospital executives *must* understand the factors that identify a patient at risk of hospital-acquired malnutrition. Failure to recognize that a patient has become significantly malnourished while under the care of a physician is a serious breach of quality-of-care standards. A similar breach occurs when the doctor institutes therapy but fails to correct complications associated with hyperalimentation.

**PHYSIOLOGICAL CONSIDERATIONS**

To understand the forces involved in proper utilization of food and nutrients, it is necessary to review some basic physiology. Carbohydrates and fats are fuels that we need to keep going, but only protein allows us to function. There are two kinds of protein in the body: the somatic, which represents all muscle and flesh; and the visceral, which comprises all organs and circulating proteins. Patients' protein status—the adequacy of their body's protein content—will determine the outcome of their hospital stay. Nutritional assessment is necessary to document the adequacy of patients' protein synthesis.

Two classic diagnoses enter into a description of hospitalized patients who suffer from specific protein deficits. Patients who are simply starving will develop marasmus—a wasting away of the body tissue. Unless the marasmus is advanced (causing patients' body weight to fall to more than 10 percent below the standard), it has little impact on outcome. Marasmic patients can be thin but healthy. Although they may have below-normal ability to tolerate disease or trauma, they can still synthesize molecules associated with homeostasis. In other words, some critical metabolic systems are functioning normally and malnutrition is not yet a

**M**alnourished patients spend twice the time in intensive care.

clinically significant problem.

Patients who show deficits of protein of the viscera, however, face much more serious problems. Such patients may even be obese, but this does not mean they respond properly under the stress of disease. Deficits in the visceral protein are termed "kwashiorkor." In developing countries, kwashiorkor, a disorder caused primarily by deficient

quality and quantity of dietary protein, is characterized by such symptoms as swelling, skin edema, hair change, impaired growth, and increased frequency of infection. This manifestation of malnutrition in U.S. hospitals might better be termed "kwashiorkor-like" syndrome.

**INDEXES IN NUTRITIONAL ASSESSMENT**

Deficiencies in both the somatic and visceral compartments can result in a diagnosis of kwashiorkor or a mix of kwashiorkor and marasmus. Traditionally, a full nutritional assessment uses several indexes to determine the status of the somatic and visceral protein. To assess the status of the somatic protein, physicians look for changes in weight, triceps, skin-fold thickness, midarm circumference, and arm-muscle circumference. To measure the protein status of the viscera, they check for albumin, transferrin, total lymphocyte count, and delayed skin hypersensitivity. Here the key factor is the patient's serum albumin, the best index in predicting the ability to recover without complication or an extended hospital stay.

Like albumin, the total lymphocyte count is another easily obtained measure of visceral protein status. Several decades ago, researchers noted that patients suffering from kwashiorkor had a below-normal total lymphocyte count and thus became more easily infected and were more likely to die. Such malnutrition-related acquired immune deficiency is treatable and preventable with nonvolitional feeding—either enteral or parenteral.

**IDENTIFICATION OF PATIENTS AT RISK**

Who are the patients at risk of malnutrition, and how can they be identified? Such patients include



those with one or more of the symptoms shown in the **Box**. In assessing patients' nutritional status, physicians should take into account both clinical factors and laboratory findings. Intervention is appropriate only when clinical evaluation shows patients are not eating enough food for prolonged periods and that this situation would continue, or when laboratory data indicate that patients have a significant protein deficit on admission or one connected with their hospitalization. It should also be noted that, in the terminal phase of a primary disease, such intervention will not improve patients' outcomes.

Laboratory assessments are easily obtainable. If the albumin is more than 3.5 g/dL and the patient is eating enough, involuntary feeding is usually not necessary. On the other hand, if the albumin is less than 3.5 g/dL, some sort of nutritional support should be considered because, as the albumin decreases to less than 2.0 g/dL, the risk of death and complications of illness approaches 100 percent. If the albumin drops so low that total protein is less than 5.2 g/dL, edema or swelling may develop, creating a disposition to pseudoacute respiratory distress syndrome.

Yet another measure of competence is the total lymphocyte count. If this is greater than 1,500/cu mm, the patient's immune response is greatly impaired; at less than 900/cu mm, the patient is usually anergic and has the acquired immune deficiency syndrome associated with malnutrition. It should be noted, however, that some clinical conditions can produce such symptoms without malnutrition being a contributing factor.

#### **HYPERALIMENTATION**

Hospital-acquired malnutrition is a preventable complication. It can be treated by either parenteral hyperalimentation (intravenous [IV] infusion) or enteral hyperalimentation (gavage in the intestine itself).

**Parenteral** Patients who require parenteral hyperalimentation are usually very sick. In this group, there is no such thing as a standard patient and thus no such thing as a universally suitable formula. The hyperalimentation prescription required to save the life of patients suffering from intestinal failure can cause their death if they slip into kidney, cardiac, pulmonary, or liver failure and the formula is not changed.<sup>2</sup>

The ordering physician must thus continually rewrite the hyperalimentation prescription to correct nutritional deficits and to prevent worsening aberrations in the patient's fluids, electrolytes, acid-base balance, and blood sugar level. Many

hospitals have hyperalimentation teams to assist physicians in organizing data by protocol into a more easily interpreted and workable system.<sup>3</sup> Unfortunately, economic pressures have forced many other hospitals to disband these teams. Nevertheless, issues of safety and efficacy remain the physicians' responsibility. They should note in the clinical record that they were prepared to take on the responsibilities associated with IV hyperalimentation.

**Enteral** If the patient's gastrointestinal tract is functioning, involuntary tube feeding should be used. Patients who may require such feeding, referred to as enteral hyperalimentation, fall into two broad categories: those who are stable and simply cannot eat or cannot eat enough and those who suffer from a degree of organ function failure. For the latter group, there is, again, no such thing as a standard patient and therefore no universally applicable standard formula. The physician must order and modify the enteral hyperalimentation solution to match the patient's requirements.

#### **ESTABLISH PROTOCOLS**

Hospital executives who fail to establish protocols for the identification and treatment of patients suffering from malnutrition, and who fail to ensure physicians follow procedures to immediately correct such hospital-acquired malnutrition or associated complications, are facing excess

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## **SYMPTOMS OF PATIENTS AT RISK FOR MALNUTRITION**

- Gross underweight: weight or height below the 15th percentile or emaciated appearance
- Unplanned or involuntary weight loss (10 percent or more of the usual body weight)
- Inability to take food by mouth or need to significantly reduce dietary intake for seven days or more
- Increased metabolic needs as a result of such factors as severe trauma, burns, or infection; recent multiple fractures; or complications of surgery, especially protracted fever
- Protracted nutrient losses as a result of such factors as malabsorption syndrome, short-gut syndrome, or renal dialysis
- Albumin lower than 3.5 g/dL
- Lymphocyte count less than 1,500/cu mm
- Cancer
- Delayed wound healing
- Problems chewing or swallowing



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**CHA'S IMMUNIZATION CAMPAIGN**

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**CONFRONTING THE  
TAX-EXEMPTION DEBATE**

*CHA's Task Force on Tax Exemption encourages CHA members to adopt voluntary community benefit standards as one way to defend their tax-exempt status.*

**NUTRITIONAL  
SUPPORT**

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costs stemming from such factors as increased length of stay, increased need of antibiotics, and increased need of ventilators. Ultimately such hospitals run the risk of increased complications and death associated with such failure and attendant risk of malpractice suits or inquiries of supervising bodies on patient outcome.

To avoid such complications and resultant quality-assurance issues, executives must ensure proper parenteral or enteral hyperalimentation protocols are established. Orders should be written by knowledgeable physicians, since patients requiring such therapy are extremely ill and the treatment itself can be complex. The credentials committee should set an objective standard for awarding the clinical privilege of writing complex hyperalimentation orders.

Hyperalimentation therapy itself should not become the reason for continued hospitalization because of inappropriate order writing or medical treatment. If the patient requires nutritional support, it should be provided. When provided, it should be efficacious and safe. □

**NOTES**

1. G. P. Buzby et al., "Prognostic Nutritional Index in Gastrointestinal Surgery," *American Journal of Surgery*, vol. 139, 1980, p. 160; J. L. Mullen, G. P. Buzby, and D. C. Matthews, "Reduction of Operative Morbidity and Mortality by Combined Preoperative and Postoperative Nutrition Support," *Annals of Surgery*, vol. 192, 1980, p. 604.
2. E. I. Feinstein and M. E. Astiz, "Parenteral Nutrition in Acute Renal Failure," in Mitchell V. Kaminski, Jr., ed., *Hyperalimentation—A Guide for Clinicians*, Marcel Dekker, New York City, 1985; C. B. Mills, "Nutritional Support in Cardiac Disease," in Kaminski; J. Askenazi, C. Weissman, and P. LaSala, "Nutrition for Patients with Respiratory Failure," in Kaminski; Levinsky and A. H. Spiro, "Nutritional Support and the Liver," in Kaminski.
3. B. A. Freed et al., "Enteral Hyperalimentation: Frequency of Formula Modification," *Journal of Parenteral and Enteral Nutrition*, vol. 5, no. 1, 1981, pp. 40-45.

**RURAL SYSTEM**

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current system. Later issues in the series will explore possible solutions.

The role of *Report*, Porter explains, is to familiarize rural residents with healthcare issues that will likely affect them directly at some point. Porter adds that without public education, meaningful healthcare system reform will be difficult to achieve.

**LEADERSHIP DEVELOPMENT**

As the challenges to effective rural healthcare delivery mount, providers must constantly seek to strengthen coalitions of care givers and to keep abreast of innovative answers to the problems they face.

In 1990 PHS's Center for Rural Health and Economic Development sponsored its first Invitational Rural Health Leadership Conference for administrators, trustees, and communicators associated with system hospitals. The conference focused on external forces and trends affecting rural healthcare delivery. The 1991 conference, titled "Health Care in Main Street: Joint Partnerships," featured three speakers who described successful healthcare and self-development projects. The third annual conference, "Breaking Through: The Real Meaning of Change and Transition in Rural Healthcare," will be held this October. Sr. Collins explains that the conference will explore the barriers leaders and communities face in making the transition to new forms of healthcare delivery and ways to increase access to care.

Porter says that the conferences, which bring together civic and healthcare leaders, reaffirm PHS's commitment to the region it serves. "We cannot expect to strengthen rural healthcare," he concludes, "without strengthening the economic and social fabric of our rural communities." —Phil Rheinecker