Chapter 6
Invited Commentary

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Optimal nutritional support in the geriatric population, of which I am a grateful living member, is obviously important not only for the maintenance of optimal structure, body composition, cellular and system function, health, well-being, and life style, but also for productive longevity and vitality. Life itself, the quality of life, and living life to its full capacity are all clearly dependent upon, and related to, the quality of all aspects of nutritional support and fitness.

Nutrition support is an amalgamation of art and science, as is the rest of the broad field of medicine including geriatrics. Both had their origins in curiosity, empirical observations, ideals, concepts, philosophy, innovation, experimentation, and the application of newly accumulated and evaluated knowledge to practical use. This has been the basis for the practice of medicine for millennia, and advances have been made arithmetically and tediously for hundreds of years until the late nineteenth century and early twentieth century, when discovery, creativity, science, and technology virtually exploded, and have continued to advance logarithmically to the current day. Moreover, this rapid increase in knowledge and technology is likely to continue in the foreseeable future and has a significant influence on the application of nutritional support to the practice of geriatrics, especially geriatric surgery.

When I was a first year surgical resident in 1962 at the Hospital of the University of Pennsylvania, I experienced an epiphany from which I have not recovered nor deviated to this day. While caring for the complex, critically ill patients of my chair and mentor, Dr. Jonathan E. Rhoads, on a particularly devastating weekend, I was unable to support them adequately after technically successful major operations performed earlier that week, and despite my best efforts to provide them with the highest possible state-of-the-art care available in that venerable tertiary care academic institution at that time, three of the patients, all elderly in their seventh and eighth decades of life, died. I was disheartened, disappointed, and discouraged by my helplessness and ineffectiveness in achieving success in our therapeutic goals, and I unabashedly expressed my frustrations to Dr. Rhoads on rounds afterward. Indeed, I informed him that this series of ultimate failures indicated to me that I was not likely to become an effective surgeon and that I was seriously considering leaving the surgical residency to train in another specialty or even a different profession. Dr. Rhoads listened patiently to my lamentations, and then gave me the most significant tutorial of my life. He explained to me that surgical operations were only one important part of patient care: that the procedures undertaken might have been maximally technically proficient, but that the patients could not withstand the sum of the series of insults imposed by the pathophysiologic condition, the major operative injury (sometimes multiple within a short time period), the general anesthetic side effects, the associated comorbidities, complications including pneumonia and sepsis, and the resultant poor nutritional and metabolic state. Indeed, he pointed out to me that the common denominator contributing to the death of these patients was clearly malnutrition, which severely compromised their ability to recover, to restore normal cellular function, and to survive, and even though the operation was a technical success, the overall functional reserve capacity of the patient was exhausted beyond the requirements essential to provide endogenous substrates to support immunocompetence, healing, and vital bodily functions. Essentially, although the patients starved to death, they manifested their malnutrition clinically and functionally by serial failure of their cellular and system functions. This concept, of which I had not previously been aware, was not only surprising, but also foreign and difficult for me to accept initially. After all, the surgical mantra at that time was, "cut well, sew well, do well." The master had patiently and skillfully converted what started out to be quite a negative encounter to the most positive turn-around in my embryonic career. My life was forever transformed from that moment, and I have pursued the "holy grail" of providing optimal nutrition to all patients from that point forward and will likely be obsessed with attempting to perfect the technology and results until my own end.

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I owe much to the many geriatric individuals I have had the privilege of having as patients throughout my career for all that they have taught me in so many ways. My experiences with them have served to forge a body of knowledge, skills, expectations, and more importantly, an attitude that if you give them the opportunity and a little help and direction, that there is virtually no limit to what they can accomplish within the realm of human possibility. Contrarily, in a manner analogous to premature infants, if you ignore their needs, are inattentive to them for too long a time, or do not provide them with the critical support they require in adequate amounts and for critical periods of time, then they are likely to slip through your fingers and be irretrievably lost. Nowhere is the old adage more relevant, "be where you are supposed to be, when you are supposed to be there, fully prepared and willing to do what you are expected to do, as well as you can do it." Without an appropriate attitude and timing, all of the skills acquired from mastery of the "six competencies" of education and training will fall short of expectations, and of the potentials both of the patient and the caregiver.

Early in my training, I met a 97-year-old woman in the emergency department with acute upper abdominal distress. She proved to have multiple gallstones in an inflamed gallbladder together with secondary pancreatitis. The medical service consulted our surgical service pro forma, indicating that this "ancient" lady had an obviously lethal situation from which she would not likely recover, and that a surgical procedure would only accelerate her demise. But they, nonetheless, consulted us out of courtesy and for reinforcement of their decision rather than for surgical intervention. However, she was an intelligent, strong, and delightful lady with a positive outlook and supportive family who all wanted our best help and services. I admitted her, resuscitated her, started her on antibiotics, initiated pulmonary toilette procedures, and confirmed the adequacy of her hematologic and biochemical indices, together with an appraisal of her renal, kidney and cardiopulmonary functions. She responded to the supportive measures much to our satisfaction, and the next day I removed her gallbladder under local anesthesia supplemented by mild analgesics and sedatives. She rebounded amazingly well and left the hospital for home in 5 days. All she needed was adequate supportive preoperative and postoperative care and the chance to show that she had the strength, will, and reserve to overcome this major threat to her life. She was "the talk of the hospital" for quite some time and a great source of satisfaction to me and the surgical service. She celebrated her 100th birthday anniversary with us a few years later to our mutual great joy.

In a cadre of 39 patients with end-stage malignancies and malnutrition secondary to their pathophysiologic processes, and compounded further by surgical procedures, chemotherapy, radiotherapy, and combinations thereof, we undertook a study of the feasibility of attempting to meet nutritional requirements by infusing moderately hypertonic (5–15%) nutrient solutions by peripheral vein in volumes of 5 L per day while giving intravenous diuretics to help excrete the excess water administered as a vehicle for infusing the nutrients. The vast majority of these patients were in their seventh, eighth, and ninth decades of life, many of them were cathectic, and all of them were aware that they would not likely benefit from the study and perhaps might even be harmed by fluid and electrolyte aberrations, pulmonary edema, congestive heart failure, infection, thrombophlebitis, sepsis, etc. Nonetheless, this seemingly fragile, debilitated, incurable group of mostly geriatric patients demonstrated the courage, strength, determination, hope, and desire to be useful in the generation of new medical knowledge and experience, such that they participated willingly, conscientiously, and enthusiastically in this clinical experiment.

They all improved their strength, sense of well-being, ambulation, self-help, hygiene, and overall quality of hospital life to the point that several of the patients and/or their families began to express the thought that the parenteral feeding solution might be "curing" their cancers. This was most likely related to the anabolic effect of the nutrient energy substrates on their body cell mass and systems, but also in part, secondary to the fact that the health care team was much more involved with them, was keenly interested in them, spent much more time with them, and obviously cared about them. In some instances, we felt morally and ethically obligated to inform the patient and/or family sadly that the improved mental, physical, and emotional response they were witnessing was a caloric and balanced nutrient effect rather than an anticancer effect so as not to promote false hope or unfairly raise their expectations for a cancer cure. I remain grateful to this courageous, caring, unselfish group of patients and their families to this day. Furthermore, my experiences with them have convinced me of the importance of providing optimal nutrition and support to geriatric patients, even when they are likely to succumb imminently or ultimately to their underlying nonneoplastic or neoplastic pathologic disorder.

Thus, I have developed the philosophy over the years that there is more to the nutritional support of the cancer patient, especially the geriatric cancer patient, than the current science and clinical practice of medicine and surgery mandate or justify unequivocally. The emotional and psychological support of the patient and their significant others and the socially important aspects of food or nutrient intake and "breaking bread" with family and friends cannot be denied. These needs do exist, and we must address and do something about them rather than ignore them, as is all too often done. After we have exhausted all possibilities of providing reasonable, rational, or justifiable specific antineoplastic, and/or nutritional, therapy for the patient with an inexorably lethal cancer, it is of utmost importance that we never abandon the patient or the family, and at the very least, continue to support them, bond with them, relieve their guilt, and above all,

reinforce their faith in our humane and core values simply by "being there" for them and providing a feeling of comfort and hope that cannot otherwise be accomplished. The frontiers for specialized nutritional support of geriatric patients, especially geriatric cancer patients await our exploration, discovery, and judicious clinical applications.

Another illustrative vignette that I would like to share is related to the importance of will and determination on the part of seriously ill elderly patients in making difficult clinical judgment decisions. Even if we cannot cure them, and might actually accelerate their demise by our interventions, we must discuss all of the options with the patient and family and be tolerant of their right to make choices that may expose the patient to significant risks with major surgical treatment. This is especially true when taking no action will inevitably result in death. For example, at the Philadelphia VA Hospital, I had an 80-year-old patient with COPD who developed a squamous cell carcinoma in his left mainstem bronchus. His split pulmonary functions indicated that he would have marginally adequate ability to survive with only his right lung if he underwent left pneumonectomy. He was an avid Pennsylvania deer hunter who enjoyed hunting with his sons and his grandsons virtually as a family tradition. He knew from our discussions that he had a highly lethal condition, might not survive a pneumonectomy procedure, and certainly could not entertain rationally the thought that he would be capable afterward of withstanding the rigors of hunting deer in the cold winter season. However, he pleaded with me to give him a chance to have just one more deer season hunting with his boys, and I could not look into his pleading eyes and deny him his fervent wish. He tolerated the left pneumonectomy surprisingly well after having stopped smoking for a week or so, and his recovery was uncomplicated, reinforcing to me that patient goals and motivations are invaluable assets to surgeons and to surgical outcomes. Later that winter he not only hunted with his sons, but shot a deer while having to place the heavily padded butt of his rifle against his shoulder only 4 months post pneumonectomy. I shall never forget how happy he was to see me afterward and relate the details of his successful hunt in the snow to me and share pictures of the event. Subsequently, he rejoined his bowling team, and much to my delight, hunted again and bowled again the following year. He died more than 2 years later at age 82, but he did it his way, with our consideration, understanding, support, and love, all of which he and his wonderful family appreciated. Even though we have much more to learn regarding geriatric surgery, geriatric nutrition, and the complexities introduced by malignancies, we can take useful actions and accomplish satisfactory results while producing and/or awaiting new data, simply by exercising compassion, common sense, good judgment, and "giving a damn." Those of us who have helped caring for geriatric surgical patients have learned first-hand that age of the patient is not uniformly an independent risk factor and that physiologic changes associated with the normal aging process occur at different rates among individuals.

I have very little patience or tolerance for those of my colleagues who "write off" geriatric patients and deny them optimal care simply because they are elderly. This is the most unprofessional, disrespectful, and demeaning attitude that is anathema to me, but I am fearful that it is already creeping insidiously and increasingly into our culture and society and beginning to corrupt not only our healthcare system, but our morals, ethics, and core values. We are obligated to treat all patients, especially geriatric patients, as individuals and with respect, dignity, and compassion rather than as inanimate entry items in a computerized management algorithm.

With improved medical care delivery and effectiveness, people are living longer, and the population of patients with whom general surgeons interact is becoming progressively older at an unprecedented rate. Currently, in 2009, there are more than 38 million people in the USA who are 65 years of age or older. By the year 2030, more than 20% of the population will be over the age of 65 years, and one-half of these individuals will be admitted to a hospital during their remaining lifetime for an operative procedure. Caring for these individuals requires an awareness and understanding by the surgeons of the global changes that take place as an individual ages, as well as a clinical acumen and ability to assess accurately their relative needs, both as inpatients and as outpatients.

Issues in overall geriatric management and in geriatric surgery and nutritional support will continue to challenge us in the future and must be addressed expeditiously. The most compelling reality is that the geriatric population will continue to grow both in numbers and in longevity. This will require a major sea-change in the manner in which their health, fitness, and function will be supported, literally on an individual basis, and the means by which the fundamental social, professional, medical, ethical, financial, and other costs thereof will be embraced and met by our society.

We must develop and carry out relevant meticulously controlled study protocols specifically designed for the various cohorts of the geriatric populations to provide the data essential to understanding and solving their unique nutritional, functional, and surgical problems. We must recognize and allow for the difficulties associated with carrying out studies in aged patients with seemingly inevitable comorbidities. Moreover, we must understand that the physiologic changes that accompany the normal aging process, especially those related to nutritional needs, occur at different rates among human beings. The difference between chronologic age and physiologic age in the elderly patients must be determined clinically in a scientific manner in order to help guide prudent decision-making in their management. Although the old adage is that the chronologic age of the patient is not an independent risk factor for surgical procedures or actions, the age of the elderly patient can, indeed, become an independent risk factor

in some patients in whom a great disparity exists between their chronologic age and their physiologic age. Furthermore, establishing nutrient requirements for a heterogeneous population is not an easy task even when the group is healthy, much less when accompanied by a wide variety of health conditions, comorbidities, fitness, disabilities, nutritional status, etc.

Prior to the latter part of the twentieth century, people in the 50–65 years age range were defined as the geriatric or elderly population, and a reasonable amount of useful clinical data had been accrued to justify various aspects of their health and nutritional recommendations for management. However, it has become obvious to nutritionists, surgeons and others that it is not valid to extrapolate from the data that exist for the 50–65-year-old age group upward to the eighth, ninth, and tenth decades of life. This problem must be solved by the systematic collection of data specifically for the older groups from 65 to 100 years of age if they are to receive optimal care based on their scientifically determined requirements, potentials, and tolerances. The challenges involved will be difficult enough in determining nutrient requirements and assessing nutritional and physiological status, but will become increasingly more difficult and complex when evaluating nutritional interventions and appraising the success of other outcomes of implementing ambitious nutritional and/or surgical therapies among the patients in these deciles. The most difficult group, and those who are most vulnerable from a nutritional standpoint, are the elderly who are institutionalized, have little or no family support, have multiple health problems, have neurological challenges, cannot perform the activities of daily living competently, and require assistance not only with feeding, but also with total custodial care. The rather steady loss of lean body mass [about 1% per year, which has been documented to occur in the elderly (>50 years age)] is greatest in those who are not able or willing to ambulate or exercise, while ingesting diets adequate in protein, thus resulting in a compounding of the usual sarcopenia that occurs in such patients. Nowhere is the "chicken or egg" phenomenon more evident than in this group of elderly persons. In addition to protein deficiencies, energy, macronutrient, micronutrient, and fluid deficiencies are also relatively more common in geriatric patients than in younger adults, although their daily requirements per kilogram body weight are not dissimilar. A major problem in the elderly is the difficulty in convincing them to drink more water and fluids, thus resulting in dehydration and its untoward consequences. Examples of other nutrient aberrations that occur commonly in the elderly are calcium and vitamin D deficiencies, which can lead to significant increases in morbidity and mortality, and these essential rutrients must be provided in larger doses in the diet or as supplements. Preventive health measures regarding the intake of these important nutrients are likely to result in significant reductions in morbidity, mortality, and health care costs, which remain to be confirmed in future studies.

As the current saga regarding health care funding and regulation unfolds, and as the vested interests of the various private and governmental power groups become more "transparent," debated, and compromised or modified, it will be particularly critical to the welfare of the geriatric population that the highest moral and ethical values be followed, that all age groups receive the respect and quality health care appropriate to their needs, and that the financial burdens be shared equitably among the citizens of this nation not only as a compassionate and caring duty, but also as a fulfillment of humane responsibility to humanity and to society.

Of paramount importance is the right of self-determination of elderly individuals and their families in the provision, modification, and cessation of all aspects of nutritional support not only from the ethical and religious points of view but from the legal mandate. A government that guarantees the rights of women to decision-making regarding their bodies and fetuses must guarantee the equivalent rights of the elderly to decision-making regarding their nutrition, surgical management, and life support. How we nourish and treat our elderly population during the next decade or two will influence greatly how we define our character as a society, culture, and nation.

I would like to close this commentary with one of my favorite anecdotal recollections from my long-time friend and fellow surgeon, Dr. David Heimbach. "It was a busy morning, about 8:30 a.m., when an elderly gentleman in his 80s, arrived to have stitches removed from his thumb. He said he was in a hurry as he had an appointment at 9 a.m. I took his vital signs and had him take a seat, knowing it would be over an hour before someone would be able to see him. I saw him looking at his watch, and decided, since I was not busy with another patient, that I would evaluate his wound. On examination, it was well healed, so I talked to one of the doctors and got the needed supplies to remove his sutures and redress his wound. While taking care of his wound, I asked him if he had another doctor's appointment this morning as he was in such a hurry. The gentleman told me no, that he needed to get to the nursing home to eat breakfast with his wife. I inquired as to her health; he told me that she had been there for a while and that she was a victim of Alzheimer's disease. As we talked, I asked if she would be upset if he was a bit late. He replied that she no longer knew who he was, that she had not recognized him in 5 years now. I was surprised, and asked him, "And you still go every morning, even though she doesn't know who you are?" He smiled as he patted my hand and said, "She doesn't know me, but I still know who she is." I had to hold back the tears as he left; I had goose bumps on my arms, and thought, "That is the kind of love I want in my life." True love is neither physical, nor romantic. True love is an acceptance of all that is, has been, will be, and will not be." Such is the human condition from my perspective.