MALNUTRITION AND DEHYDRATION IN NURSING HOMES: KEY ISSUES IN PREVENTION AND TREATMENT

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EXECUTIVE SUMMARY

Studies using a variety of measurements and performed over the last five to 10 years on different nursing home subgroups have shown that from 35 percent to 85 percent of U.S. nursing home residents are malnourished. Thirty to 50 percent are substandard in body weight. Specific components of The Nursing Home Reform Act of 1987 (NHRA) address the prevention of both malnutrition and dehydration—these include provisions for resident assessment, individualized care planning, physician oversight, standards for sufficient nurse staffing, and the provision of quality of life, care, and service. This law mandates that facilities meet residents' nutrition and hydration needs. Yet the level of malnutrition and dehydration in some American nursing homes is similar to that found in many poverty-stricken developing countries where inadequate food intake is compounded by repeated infections.

The consequences of these conditions for elderly nursing home residents are potentially serious. Under-nutrition is associated with infections (including urinary tract infections and pneumonia), pressure ulcers, anemia, hypotension, confusion and impaired cognition, decreased wound healing, and hip fractures. Undernourished residents become weak, fatigued, bedridden, apathetic, and depressed. When hospitalized for an acute illness, malnourished or dehydrated residents suffer increased morbidity, and require longer lengths of stay. Compared with well-nourished hospitalized nursing home residents, they have a five-fold increase in mortality in the hospital.

Several risk factors contribute to the occurrence of malnutrition and dehydration. They include effects of multiple underlying chronic conditions, the side effects of the treatment of these conditions, and structural factors within the nursing home setting.

Examples of these chronic conditions and their treatment include depression, cognitive impairment, poor oral health, dysphagia, and the side effects of medications. Often untreated, depression occurs in a significant percentage of residents, and depressed residents are more likely to suffer weight loss. Also, nationally, 60 to 70 percent of nursing home residents are cognitively impaired. Many can no longer feed themselves. Nearly all residents of dementia units need assistance with eating. Poor oral health contributes to inadequate intake of nutrition: one study found that as many as 70 percent have untreated dental decay. Many nursing home residents have few or no teeth, and either poorly fitting or no dentures. Swallowing disorders (dysphagia) due to dementia, stroke, Parkinson's and other neurological diseases affect 40 to 60 percent of nursing home residents. Finally,

medications such as digitalis, psychotropic drugs, aspirin, and some antibiotics decrease appetite or irritate the stomach.

Structural factors within the nursing home setting that contribute to malnutrition and dehydration include lack of individualized care, inadequate staffing, high nurse aide turnover, and lack of professional supervision of aides. While eating habits are highly individualized, residents in most homes do not have a choice of foods; cultural and ethnic food preferences are ignored. In one study, when nutritional supplements were ordered in response to weight loss, only 2 percent of the residents consumed the supplements in accordance with the physician's order. Nursing homes are often poorly staffed. Certified nursing assistants (CNAs) typically assist seven to nine residents to eat and drink during the daytime, and as many as 12 to 15 residents during the evening meal. This contrasts with the ideal of one CNA for every two to three residents who require eating assistance. Residents are fed quickly or forcefully and sometimes not fed at all. Compounding the inadequate numbers of CNAs is a 93 percent per year staff turnover rate. A newly hired CNA may not know how to care for a resident already at risk for malnutrition and dehydration. The lack of supervisory licensed nurses, as well as their lack of nutritional knowledge, leaves CNAs to do the best they can without appropriate help from professionals.

Four issues are key to the prevention and treatment of malnutrition and dehydration: inadequate staffing, poor environment, insufficient data collection, and lack of enforcement. Finding solutions that address these issues will require understanding and cooperation from all involved—residents and their families, nursing home directors, geriatricians and nursing home staff, and government regulators. Specific approaches include:

1. The institution of a minimum direct-care staffing ratio at mealtimes, e.g., one CNA per two to three residents requiring eating assistance.

2. Adequate management and supervision of staff by licensed nurses.

3. Appropriate involvement of all professionals including physicians, nurses, registered dietitians, speech pathologists, and dentists.

4. In-service education for nursing assistants on assisting residents to eat and drink safely and adequately.

5. Utilization of all nursing home personnel to assist at mealtime; cross-training of administrative and other indirect care staff as CNAs; supporting and training family members to help residents to eat; training volunteers in tray set-up and mealtime socialization; and further exploring the development of another category of worker at mealtime.

6. Creation of an environment conducive to eating, including the provision of homelike surroundings at mealtime, smaller social neighborhoods, attractive food, choice in food, attention to ethnically sensitive/appropriate food choices, and making foods available 24 hours a day.

7. Addition of the Body Mass Index (BMI) nutritional standard to the required standard of a 5 percent weight loss in a month or 10 percent weight loss in six months as a trigger for evaluating nutritional status.

8. Accurate collection of nutritional status and staffing data as part of an improved survey system for compliance with nutrition and hydration standards.

9. Citing and fining deficiencies in nursing homes to improve compliance.

Malnutrition, dehydration, and weight loss in nursing homes constitute one of the largest, silent epidemics in this country. We hypothesize that most cases of malnutrition and dehydration can be prevented or reversed, if they occur, with the use of an interdisciplinary approach. Physicians, nurses, speech pathologists, dietitians, dentists, administrative nursing home personnel, and CNAs must collaborate in resolving these problems. Higher staff-to-resident ratios, both at mealtime and 24 hours a day, are imperative. CNAs must be taught how to assist residents with eating, and knowledgeable registered nurses must supervise them during mealtimes.

Not only may malnutrition and dehydration result in readmission to the acute hospital—a stressful event for frail elders—but they also contribute to a decreased quality of life, morbidity, and mortality. In addition to these physiological, psychological, and pathological consequences, nursing home residents who do not receive adequate nutrition and hydration during the last months or years of their lives are denied one of life's greatest pleasures—the enjoyment of food and drink of their choice in a pleasant, social environment.

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THE PROBLEM

"This is no way to live. I wish I were dead and buried."

—A 76-year-old man who died weighing 69 pounds, 54 percent less than his ideal weight of 150 pounds.[1]

MALNUTRITION

Adequate nutrition is an integral part of health, happiness, independence, quality of life, and physical and mental functioning. Yet nutritional deficiencies are common among U.S. nursing home residents, despite federal and state regulations designed to ensure against their occurrence.[2] Potentially serious and frequently undetected, the problem of malnutrition—defined here as poor nutrition resulting from an insufficient or poorly balanced diet or from defective digestion or defective assimilation of food[3]— is often avoidable.[4]

In 1974, C.E. Butterworth suggested in *Nutrition Today* that malnutrition was the skeleton in the hospital closet: he was convinced that malnutrition occurring in acute care hospitals was "physician-induced."[5] At that time, studies had yet to document that an equally ominous skeleton lurked in the nursing home closet.[6] Since then, studies using a variety of measurements and sampling frames have shown that 35 to 85 percent of nursing home residents are malnourished.[7] This encompasses a wide array of conditions—obesity, lipid disorders, protein/energy under-nutrition (PEU), and vitamin and mineral deficiencies.* All except obesity are prevalent among nursing home residents.[8]

Usually, malnutrition is synonymous with PEU, the most serious, inadequately studied, and difficult-to-treat condition.[9] Both calorie and protein intakes are often low among nursing home residents—30 to 50 percent are substandard in body weight, mid-arm muscle circumference, and serum-albumin level, which indicates widespread PEU.[10] Low serum-albumin levels cause edema when fluid flows from the blood vessels into the surrounding tissue. Also, blood pressure falls as serum-albumin levels fall. Reports on PEU's prevalence range from 50 to 85 percent. Rudman and Feller state that the incidence of PEU in American nursing homes is similar to that of many poverty-stricken developing countries, where the effects of inadequate food intake are compounded by the catabolic effects of repeated infections caused by poor hygiene.[11]

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* The terms *protein/calorie under-nutrition* (PCU) and *protein/energy under-nutrition* (PEU) are used synonymously. In this paper, we will use the term protein/energy under-nutrition, defined as a deficiency of both protein and energy (i.e., calories).

DEHYDRATION

Dehydration is the most common fluid and electrolyte disorder of frail elders, both in long-term care settings and in the community.[12] Data from the 1996 National Hospital Discharge Survey[13] show that 208,000 patients 65 years of age and older were discharged from short-stay hospitals with a primary diagnosis of dehydration. Since the average length of stay for people 65 and older was 6.5 days in 1996, and the average cost of care per day was $1,006, the cost of hospitalization for dehydration in that year was $1.36 billion.[14]

Dehydration, defined as a rapid weight loss of greater than 3 percent of body weight,[15] can result from increased fluid losses due to illness (e.g., diarrhea, infections, fever), the effects of medications (e.g., diuretics), or decreased fluid intake. Physiological changes that occur as people age (e.g., decreased ability of the kidney to concentrate urine, and decreased thirst sensation) may also contribute to dehydration.[16] Changes in functional and cognitive status (e.g., mobility and dementia) also put nursing home residents at risk for dehydration. People who must be fed because of functional or cognitive impairments are especially vulnerable. It takes 30 to 60 minutes to feed a person safely and sufficiently, and staffing in nursing homes is often inadequate for the task.

Although inadequate hydration, along with malnutrition, is one of the most long-standing and pressing problems in nursing homes, there is little research on the prevalence either of borderline or overt dehydration.[17] In a 1999 study of 40 residents, Kayser-Jones et al. found that only one nursing home resident consumed an adequate amount of liquids. Elderly people who do not receive adequate fluids are more susceptible to urinary tract infections, pneumonia, decubitus ulcers, and confusion and disorientation.[18] In addition, life-threatening electrolyte imbalances (i.e., hypernatremia and hyperkalemia) can occur. Mortality rates for untreated dehydration may be very high.[19]

CONTRIBUTING FACTORS

Malnutrition in developing countries occurs because of food shortages. Nursing homes usually provide proper diets, but for many reasons, residents' food intake is often inadequate.[20] Taste, smell, and appetite may be decreased in old age. Depression (often untreated) occurs in eight to 38 percent of residents, and depressed people are more likely to suffer weight loss. Also, medications such as digitalis and psychotropic agents can cause anorexia, and drugs such as aspirin and erythromycin can cause gastrointestinal irritation.[21]

Sixty to 70 percent of nursing home residents are cognitively impaired.[22] Many cognitively and functionally impaired residents cannot feed themselves—one study found that the residents who needed the most assistance remained malnourished even though

they were served a diet higher in calories than was a group of non-malnourished residents.[23]

Poor oral health also contributes to an inadequate intake of nutrients. At least 80 percent of nursing home residents have some tooth loss; 50 percent of those who wear dentures need replacement or relining of their dentures, and about one-third have mucosal lesions.[24] One study found untreated dental decay in 70 percent of residents.[25] In another, conducted in two proprietary nursing homes and published in 1998, Kayser-Jones found that 51 percent of the residents had few or no teeth and poorly fitting or no dentures. Only three had dentures that fit properly, 16 percent had dental caries, 15 percent reported oral pain, and 7 percent had oral lesions. Poor oral health can result in a decreased intake of nutrients.

Dysphagia (swallowing disorders) due to conditions such as dementia, stroke, Parkinson's disease, and other neuromuscular disorders also contributes to an inadequate intake of food and liquids. An estimated 40 to 60 percent of institutionalized elders have identifiable signs and symptoms of dysphagia.[26] In a 1988 study of 82 nursing home residents that investigated the social, cultural, clinical, and environmental factors that influenced nutritional intake, Kayser-Jones found that 45 (55%) had some degree of dysphagia, ranging from mild to profound. Only 10 (22%) had been referred to a speech pathologist for an evaluation. She concluded that unrecognized and unmanaged dysphagia may lead to malnutrition, dehydration, aspiration pneumonia, and asphyxiation.

Along with poor oral health and undiagnosed dysphagia, Kayser-Jones and her colleagues found that lack of individualized care, inadequate staffing, and lack of mealtime supervision by professional staff were among the predominant factors that contribute to poor nutritional intake.[27] Although eating habits and food likes and dislikes are highly individualized, most nursing home residents do not have a choice of food. Also, even though increasing numbers of minority elders are entering nursing homes, western food is often served to all, regardless of ethnicity.[28] In 1997, Kayser-Jones and Schell found that each certified nursing assistant (CNA) on the daytime shift typically had seven to nine residents to assist or feed. Each evening-shift CNA was assigned 12 to 15 residents. Because staffing was inadequate, residents were fed quickly or forcefully. Sometimes they were not fed at all. Commercial liquid oral supplements were ordered when residents lost weight. However, only nine of 29 (31%) were actually served the number and type of supplements the physician had ordered, and only two (6.9%) actually consumed the full amount of supplement as ordered.[29] Thus, although supplements were often ordered as a

treatment measure, many residents became frail and died, having lost 20 to 35 percent of their weight, from the time they were inducted into the study.[30]

CONSEQUENCES

Malnutrition and dehydration have serious adverse consequences for nursing home residents. Protein/energy under-nutrition has been associated with infections, pressure ulcers, anemia, postural hypotension, cognitive problems (i.e., confusion and impaired cognition), decreased wound healing, and mortality. PEU, along with calcium and Vitamin D deficiencies, is an important factor in the pathogenesis of hip fractures, which are a frequent cause of morbidity, functional disability, and mortality.[31] If nursing home residents who are chronically malnourished and/or dehydrated develop an acute illness, their condition will worsen during hospitalization. Furthermore, malnutrition and dehydration in hospitalized elders have been associated with an increased length of stay and increased mortality. People suffering from PEU have a higher incidence of concurrent illnesses such as pneumonia and about a fivefold increase in mortality in the acute care setting when compared with well-nourished patients.[32]

In PEU, the body breaks down its own lean body mass (i.e. protein) in an effort to survive. Muscle mass is lost; there is an impaired immune response, and impaired organ function. When this occurs, the person becomes weak and fatigued—severely malnourished nursing home residents tend to remain in bed. They lack initiative, become exhausted, bedridden, apathetic, and refuse to eat. They will die if not treated. Malnutrition is a predictor of death for residents with Alzheimer's disease.[33]

Today, there are about 17,000 nursing homes with 1.8 million beds in the United States (the bed capacity is greater than that of acute hospitals) and about 1.5 million Americans over age 65 reside in them at any one time. It is estimated that 43 percent of all Americans who turned 65 in 1990 will spend some time in a nursing home during their lifetimes.[34] As more people live longer, and as more elderly people live to 85 years and beyond, the incidence of malnutrition and dehydration is likely to become even greater and more serious.

Malnutrition, dehydration, and weight loss in nursing homes constitute one of the largest, silent epidemics in this country. We hypothesize that most cases of malnutrition and dehydration can be prevented or reversed, if they occur, with the use of an interdisciplinary approach. In one study that used this approach, the investigator succeeded in increasing the weight of 60 percent of underweight residents to within normal range within two to 12 months.[35] Physicians, nurses, speech pathologists,

dietitians, dentists, administrative nursing home personnel, and CNAs must collaborate in resolving these problems.

The knowledge that malnutrition and dehydration are common in nursing homes is 20 to 30 years old, but few investigators have examined eating problems and the process of feeding residents. We know little about why some residents stop eating, why they do not or cannot feed themselves, and why they sometimes refuse to be fed by others. The feeding of residents with multiple pathologies and functional and cognitive disabilities is a complex, challenging, and time-consuming endeavor. Higher staff-to-resident ratios at mealtime are imperative. CNAs must be taught how to feed residents, and knowledgeable registered nurses must supervise them during mealtimes.

Not only may malnutrition and dehydration result in readmission to the acute hospital—a stressful event for frail elders—but they also contribute to a decreased quality of life, morbidity, and mortality. In addition to these physiological, psychological, and pathological consequences, nursing home residents who do not receive adequate nutrition and hydration during the last months or years of their lives are denied one of life's greatest pleasures—the enjoyment of food and drink of their choice in a pleasant, social environment.

THE LAW AND REGULATIONS

The provisions of the federal Nursing Home Reform Act of 1987 (NHRA) and related regulations address nutrition and hydration directly.[36] The Health Care Financing Administration (HCFA) administers this law, which applies to approximately 17,000 nursing homes that participate in the Medicare and/or Medicaid programs.[37] The law and requirements that govern nutrition and hydration are the same for both Medicare and Medicaid, as well as for all private-pay residents in nursing homes.

The states have primary responsibility for enforcing the NHRA. The federal government has oversight responsibility. HCFA's Long-Term Care Survey Procedures and Interpretive Guidelines set out the protocol federal and state agency surveyors must use to assess whether a facility meets federal standards of care as defined by the law and regulations. While the Procedures and Interpretive Guidelines do not have the force of law, they are the "authorized interpretations" of the statutory and regulatory requirements.[38] If a facility in a given state does not meet the NHRA provisions, the state survey agency issues a deficiency.

One of the NHRA's notable features is its application to "each" resident. The law's focus on the individual is a key element in the consideration of resident protection and facility accountability as factors for meeting the law's requirements. Facilities that do not meet the regulations for "each" resident are not in compliance with the federal law and should be cited. The importance of this provision became apparent during an unsuccessful 1995 attempt to roll back the NHRA's resident protection provision. The guarantee of appropriate services for "each" resident came under severe attack with the proposed "Medicaid Transformation Act."[39] The proposal would have eliminated the word "each" from the NHRA, thus significantly reducing federal and state government's ability to hold facilities accountable for providing services to each resident. The new standard would have applied to all the "facility residents" rather to than each individual resident. Thus, a nursing home could easily have made the case that because *almost all* the residents were cared for, the standards had been met.

NHRA PROVISIONS RELATING TO NUTRITION AND HYDRATION

Several provisions of the law provide an integrated structure for ensuring that nursing homes meet residents' nutrition and hydration needs. These provisions are related to resident assessment, individualized care planning, standards for sufficient nurse staffing, physician oversight, and the provision of care, services, and quality of life. Other relevant resident-rights provisions include freedom from physical and chemical restraints, which

are known to decrease appetite and impede eating; and the right to reasonable accommodation of individual needs, an important protection in assuring choice of food and an environment conducive to eating.

The law requires facilities to assure that each resident maintains "acceptable parameters of nutritional status, such as body weight and protein levels, unless the clinical condition demonstrates that this is not possible." Similar language applies to hydration. Therapeutic diets are required for residents with nutritional problems.[40] The status of a resident who enters a facility with good nutrition and hydration must be maintained unless one of these three situations prevails: (1) a disease process (e.g., terminal cancer) progresses to the point of interfering with adequate nutrition; (2) a new disease process is superimposed on the original diagnosis and causes malnutrition; or (3) the resident refuses food and water.

Even with progression of an existing disease or a new diagnosis that threatens to lead to malnutrition and dehydration, nursing homes must provide nutrition and hydration services appropriate to the condition.[41] These services must be such as to allow the resident to "attain and maintain the highest practicable physical, mental, and psychosocial well-being." If a resident can no longer lift a fork, spoon, or glass to his mouth, that person must receive assistance from staff whenever he needs food and drink. If a person refuses food because of depression, the law requires the facility to assess the condition and provide appropriate treatment and services for the depression.

Resident Assessment

The NHRA's resident assessment requirement is key to preventing and treating malnutrition and dehydration. The federally mandated Resident Assessment Instrument (RAI) is a set of items, definitions, and response categories designed to provide a comprehensive health assessment of nursing home residents.[42] It focuses on the resident's physical, cognitive, and psychosocial functioning, and includes information on malnourishment or dehydration. Its primary objective is to maintain and promote the highest practicable level of functioning for each resident and to determine each resident's strengths, preferences, and dislikes. The RAI consists of two parts: the Minimum Data Set (MDS) and the Resident Assessment Protocols (RAPs).

Each resident must undergo a full RAI assessment upon admission, whenever a significant change in health status occurs, and at least annually after admission to a nursing facility (certified for Medicaid) and more often in a skilled nursing facility (certified for Medicare). The MDS, which includes weight loss and change in ability to feed oneself,

must be completed quarterly. Since July 1, 1998, the MDS information has been transmitted electronically to the states and to HCFA, providing a record over time of each resident's status.

The MDS is a short assessment instrument used primarily to identify residents who may have potential problems, and to provide triggers to alert health professionals of potential problems, risk factors, and the potential for improved function. It collects the minimum amount of information necessary to assess oral, nutrition, and hydration status. If the MDS shows that a resident may have a health problem that requires intervention, nursing homes must perform the more in-depth—or RAP—assessment. The RAP review is important because it can identify new problems, indicate problems that may have improved, suggest services that could help improve the resident's condition, and suggest care-plan goals and staff approaches to improve the resident's functional status.[43]

The RAP assessment identifies the causes of actual or potential nutrition and hydration problems and helps staff to analyze specific resident information gleaned from the MDS. The nutrition and dehydration RAPs guide staff in the assessment of chewing and swallowing problems, decreased ability to feed oneself, the effects of a variety of medical conditions and medications, the effects of related causes, including depression, behavioral symptoms (e.g., an inability to remember how to eat due to dementia), and inability to communicate one's nutrition and hydration needs.

RAP triggers for questionable nutritional status include: nutritional deficiency as shown by various lab tests; weight loss of 5 percent or more in 30 days, 7.5 percent in three months, or 10 percent or more in six months; alterations of taste due to diseases, medical therapies, and prescription drugs; hunger; parenteral or IV feedings; mechanically altered or therapeutic diets; 25 percent of meals left uneaten; pressure sores; and edema.

RAP triggers for dehydration include: failure to eat or take medications, diminished cognitive status, diagnosis of dehydration, diarrhea, fever, internal bleeding, dizziness, vertigo, vomiting, recent weight loss, not consuming all liquids provided, parenteral, IV or tube feedings, and taking a diuretic.

The nutrition and dehydration RAPs may not be triggered when the resident shows no outward signs of malnutrition.[44]

Ideally, an interdisciplinary team that includes nurses, social workers, the various therapists, and whenever possible, the resident, will use information gleaned from the

RAI process (i.e., the MDS and the RAP) to write an individualized care plan. This plan guides implementation of care and is updated to reflect changes in a resident's condition.[45]

OTHER MECHANISMS

HCFA's Long-Term Care Survey Procedures and Interpretive Guidelines, which guide federal and state surveyors as they inspect facilities, parallel the information in the nutrition and dehydration RAPs. The guidelines emphasize the importance of identifying risk factors that contribute to malnutrition and dehydration. They recognize important elements of the environment such as: seating arrangements, a calm environment, eating in the dining room, availability of staff to assist residents to eat, choice of foods (including culturally acceptable foods), and palatable special diets. Clinical conditions are described.

Since there are no "ideal weight charts" for older age groups, the federal survey guidelines describe "suggested parameters" for evaluating the significance of unplanned weight loss. Weight loss equal to or greater than 5 percent in one month, 7.5 percent in three months, or 10 percent in six months is considered significant. The dehydration guideline includes determination of fluid needs as 30cc (one ounce) per kilogram (2.2 pounds) of body weight. The guideline cross-references with the RAI, providing an integrated system for surveyors to assess the provision of nutrition, hydration, and related services.[46]

In addition to the survey guidelines, experts have long agreed on the need to identify "key indicators" that would identify nursing homes whose inadequate care results in poor outcomes.[47] Thirty key or quality indicators (QIs) have been developed based on information from the RAI.[48] The presence of these indicators is not a determinant of poor care. Rather they are flags that indicate to surveyors the need for additional review. These indicators have the potential to target malnutrition and dehydration. For example, the quality indicator, "Eating Decline with Weight Loss," defines nutritional decline using the MDS definition of a 5 percent weight loss in one month and identifies residents whose ability to feed themselves has declined. Terminally ill residents are excluded from the nutrition/weight loss QI, but it may identify others with eating problems.[49] HCFA will further validate the QI system over the next four years and evaluate its effectiveness in the survey system.[50]

The QI system has been developed for surveyor and facility use. Since July 1999, the survey process has included 24 of the 30 MDS/QIs. Through state agencies, they are also available to facilities to use in carrying out NHRA-mandated quality assurance.

Information about quality indicators may be available to consumers nationwide in the future.[51]

This would allow residents and families to identify potential nutrition and hydration problems before poor outcomes occur.

NHRA'S EFFECT ON ASSESSMENT AND PREVENTION OF DEHYDRATION AND MALNUTRITION

Studies conducted before the NHRA's passage (1987) and implementation (1990) identified malnutrition in 35 to 85 percent of nursing home residents.[52] A few studies since then have evaluated the RAI's impact, but none have measured the effect of all the NHRA provisions on improving the resident's nutrition and hydration status.

The RAI's Effect

In 1996, Catherine Hawes found that use of the MDS had resulted in a 24 percent increase in the accuracy and comprehensiveness of information in resident's charts, and a 17 percent increase in the number of problems addressed in the care plans. While residents retained their level of function in eating for a longer period of time, a greater number of residents were assessed as having nutritional problems and there was also a significant reduction in residents' ability to eat and drink.[53] A 1997 study by Hawes and her colleagues showed that a greater proportion of residents with MDS-identified nutrition and hydration problems or the potential for problems had some form of care plan to address these issues. Ninety-two percent of the care plans they reviewed addressed nutritional problems, and 66 percent addressed dehydration problems.[54] The quality of the care plans' is unknown. Additional data disclosed that as a result of RAI use, fewer residents at the facilities studied were malnourished, and dehydration was less prevalent than it was before passage of the NHRA. However, one disturbing finding of this study was that malnourished residents showed a lower rate of improvement than did a group of residents in the same facilities who were studied pre-NHRA.[55]

The Staffing Standard's Effect

While these positive effects of the MDS are encouraging, concerns remain that residents are not gaining the full benefit of the RAI process because of inadequate staffing. A 1986 Institute of Medicine report identified staffing inadequacies in nursing homes: "To hold down costs, most of the care is provided by nurse aides who, in many nursing homes are paid very little, receive little training, are inadequately supervised and are required to care for more residents than they can properly serve."[56]

A decade later, and six years after the NHRA's implementation, another Institute of Medicine report on the adequacy of nurse staffing in nursing homes contained similar concerns: "In some nursing homes there is a clear need for more nurse aides to provide bedside care. …Inadequate nurse aide staffing leads to increased risk of medical complications and expense, [and] intermittent discomfort from hunger and thirst. …Under staffing (both qualitative and quantitative) leads to injuries, which leads to further understaffing, and the needs of the patient go unmet…."[57]

The NHRA and regulations require that only one registered nurse (RN) be on duty eight hours a day, seven days a week. If the facility has an average daily occupancy rate of 60 residents or fewer, this RN may also serve as the director of nursing. If average daily occupancy exceeds 60 residents, the facility is required to have an RN director of nursing and an RN on duty eight hours a day. The Nursing Home Reform Law (NHRL) also requires a licensed nurse (either an RN and/or an LPN/LVN) to be on duty around the clock. Each facility is required to provide nursing and related services sufficient to attain or maintain the highest practicable level of physical, mental, and psychosocial well-being of each resident. The law and regulations weaken these limited requirements by allowing waivers of all the licensed nurse staffing under certain conditions.[58]

A 1998 HCFA study found that inadequate staffing is the most important factor in MDS inaccuracy. This includes staff shortages, turnover, and staff that are not knowledgeable about the MDS. Since an accurately completed RAI is the basis for planning and implementing residents' care, this preliminary evaluation of MDS accuracy indicates that staffing inadequacies are undermining attempts to significantly reduce the problems of malnutrition. HCFA plans to conduct further study on the accuracy of the MDS.[59]

Weight Measurement in Identification of Early Weight Loss

Another area of concern centers on weight-loss standards and weight-measurement methods.

In small individuals, weight losses that are slightly below the RAP's one-, three-, and six-month triggers are of concern. Kayser-Jones identified this issue in 1997, using a weight loss of two pounds in one month for those weighing less than 100 pounds as an identifying factor for an "eating problem."[60] An even slower weight loss—one pound per month in a 100-pound elderly woman—would not, by itself, alert professionals and trigger further evaluation under the RAP. Yet if the weight loss continued, this resident would lose 12 percent of her body weight in a year.

Another concern involves measurement techniques. Recent studies show that when residents were measured by weight loss, 8 percent were identified as undernourished. When measured by Body-Mass Index (BMI) 31 percent were undernourished.[61] These studies, which use BMI to measure nutritional status, find it a more reliable indicator than HCFA's weight-loss measures.[62]

In 1995, Blaum, Fries et al. studied the risk of malnutrition in facilities with no deficiencies in quality of care. This study, which reviewed the status of 6,832 residents in more than 200 nursing homes in seven states, excluded residents with terminal prognoses and those who were tube- or parenterally fed. Approximately 25 percent of these residents had a low BMI. About 10 percent had suffered a loss of 5 percent of body weight in one month or 10 percent in six months.[63] In 1997, Hawes stated in testimony before the U.S. Senate Special Committee on Aging that after excluding residents with a terminal prognosis and new admissions, nursing home residents who left more than 25 percent of their food on their plates had an increased likelihood of having a low BMI. Those who needed assistance with eating were almost twice as likely to suffer weight loss as those who ate independently. Hawes also found that depressed residents were more likely to suffer weight loss. Her preliminary analysis suggested that residents with low BMIs were more likely to die within one year. Of those that lived, 85 percent showed no improvement.[64]

Quality-of-Care Effects

The presence of malnutrition in nursing homes varies according to the quality of the care provided. In Hawes's 1997 study of weight loss in facilities ranked into four quartiles (from best to worst), mean weight loss was 14 percent of total body weight. However, weight loss in the worst facilities was almost double that of the best facilities. Unsurprisingly, good care practices appear to make a difference.[65]

The Effect of the Survey and Enforcement Processes

The Long-Term Care Survey Procedures and Interpretive Guidelines do not appear to capture the extent of malnutrition in nursing homes—for example, during the first half of 1998, the surveyors found problems with malnutrition at only 11.4 percent of California facilities.[66] In addition, facility-reported weight loss and survey citations of nutritional deficiencies are not consistent with literature reports of the extent of the problem. HCFA's On-Line Survey, Certification and Reporting System (OSCAR), contains facility-reported data on resident characteristics. It shows that 8.6 percent of nursing home residents gained or lost weight in 1995–96.[67] However, recent research identifies the

annual incidence of malnutrition among residents as being as low as 8 percent and as high as 31 percent. This suggests serious under-reporting.[68]

The 1998 Nursing Home Certification survey data (or OSCAR) show deficient nutrition practices at 8.1 percent of facilities. This is a decrease from 9.1 percent in 1991.[69] These figures suggest that the survey system, prior to implementation of a new survey protocol in July 1999, did not fully identify deficient nutrition practice. Figures are not available for deficiencies in hydration practice.

HCFA survey protocol uses a small, targeted sample of approximately 20 percent of residents in a facility to study nursing home compliance with rules.[70] HCFA says budgetary pressures dictated this small sample size. Consumers feared this small sample size would leave residents unprotected because the extent of malnutrition would be hard to identify.[71] Reports of poor care, including malnutrition and dehydration, in California nursing homes in 1998 provided an opportunity to test the use of a larger survey sample size. Following the two-stage method that IOM recommends, HCFA conducted enforcement surveys in two California nursing homes at the same time as the state's survey. In both facilities, HCFA's survey found nutritional problems that the state survey agency had missed. Residents with low weight (BMI) did not receive food supplements and continued to lose weight.[72] The first stage of the IOM-recommended process, which has been tested in 100 nursing homes, uses a large sample of residents and follows it with an in-depth review of selected residents if first-stage results indicate the need. This first stage uses more than 75 quality standards, which were compared with a norm from a group of more than 60 facilities.[73]

Consumer advocates for nursing home residents allege industry bias in a series of HCFA policy decisions issued since implementation of the enforcement system in July 1995, and have criticized enforcement of the NHRL.[74] HCFA's enforcement guidelines for states may contribute to its inability to change facilities' behavior in identifying and treating malnutrition and dehydration.[75]

A 1995 study of New York nursing homes showed that facilities that surveyors cited *and* fined had fewer deficiencies at the time of the next survey. Those that were cited but not fined had the same or more violations on the next survey.[76] These findings suggest that facilities respond to monetary pressures: without sanctions, they have little incentive to change their behavior.

In evaluating the various elements of the NHRL, it becomes apparent that there has been some progress in identifying malnutrition in nursing homes. However,

decreasing the incidence of malnutrition remains a challenge. White House initiatives announced in July 1998 would address some consumer concerns about the enforcement system, but only if they are carried out.[77] The announcement included an initiative that targets malnutrition and dehydration as problems clearly in need of address. In response, HCFA required surveyors to implement the new malnutrition and dehydration survey protocols beginning in July 1999.[78]

ISSUES IN PREVENTION AND TREATMENT

Issues that affect residents' ability to obtain adequate food and liquids in nursing homes include inadequate staffing, poor environment, insufficient data collection, and lack of enforcement. These four problems are complicated and have remained intractable for the past three decades. Their solution requires understanding and cooperation from all stakeholders, consumers, providers, professionals, paraprofessionals, and regulators.

INADEQUATE STAFFING

Substantial evidence suggests that failure to provide adequate nutrition and hydration to nursing home residents is associated with inadequate staffing. For example, Kayser-Jones, writing in the *Journal of Gerontological Nursing* in 1997, reports on her study which found that because of inadequate staffing and supervision, residents were fed quickly and forcefully—some got little or no food. Trays were taken into rooms, but no one fed their occupants. Residents couldn't complain because they were cognitively impaired.[79] In addition, many other researchers and government reports specifically identify a wide range of inadequacies in nursing home staffing.[80]

The results of the most recent study, presented in March 1999 to the Senate Special Committee on Aging by the Office of the Inspector General at the Department of Health and Human Services, includes this description of the situation:

> In 10 sample states,* survey and certification staff, state and local ombudsmen, as well as state unit directors, identify inadequate staffing levels as one of the major problems in nursing homes. Most believe these staffing shortages lead to chronic quality-of-care problems, such as failure to adequately treat and prevent pressure sores.
>
> The type and extent of survey deficiencies and ombudsman program complaints also suggest that nursing home staffing levels are inadequate. Common personal care problems such as lack of nutrition and poor care for incontinence suggest that staffing is inadequate to provide the level of care needed to avoid these problems. Furthermore, specific complaints about nursing home staff were some of the most common types of ombudsman program complaints in 1997.

* California, Florida, Illinois, Massachusetts, New Jersey, New York, Ohio, Pennsylvania, Tennessee, and Texas.

From 1996 to 1997, the Long-Term Care Ombudsman Program reported a 26 percent increase in complaints about lack of hydration and a 24 percent increase in complaints about weight loss due to inadequate nutrition.[81] These came primarily from residents and their families.

Inadequacies in staffing include: insufficient numbers and training of licensed personnel (RN, LPN/LVN) to supervise the certified nursing assistants (CNA), insufficient numbers and training of direct-care CNAs on all shifts, staff turnover, and management philosophy about the provision of quality of care and life for residents.[82]

STAFFING OPTIONS

Staffing options that might be considered as measures to improve resident nutrition and hydration include:

- Adoption of a national minimum direct-care staffing ratio for mealtimes
- Improvement of management and supervision of direct-care staff
- Better use of professionals in nutrition and hydration services
- Provision of initial and continuing in-service education for nursing assistants
- Making more personnel available at mealtimes
    - Exploring a new type of nursing position called a feeding or hydration aide
    - Using workers with non-nursing duties to assist at mealtimes
    - Supporting and training family members to help residents to eat
    - Training volunteers in tray set-up and mealtime socialization

National Minimum Direct-Care Staffing Standard at Mealtimes

To assure that residents' nutritional needs are met, Kayser-Jones and her colleagues at the University of California, San Francisco, recommend a national minimum direct-care staffing ratio with required increases based on resident acuity. They recommend the availability of one staff person for every two to three residents who need assistance with

eating or who need to be fed. This would allow each resident about 20 to 30 minutes with the CNA instead of the current six to 10 minutes.[83]

Approximately 50 percent of all residents cannot eat independently, which increases their risk for malnutrition.[84] Nearly all residents of special care units need help at mealtimes, and about 33 percent of those on other units require varying degrees of assistance.[85] Because they lack manual dexterity or cannot remember how to feed themselves, the task of helping these residents requires time-intensive feeding techniques, such as touch and verbal cueing, which have been shown to be effective.[86]

Furthermore, a nutritional staffing standard must be part of a complete 24-hour staffing standard. The staffing standard for nutrition recommended by Kayser-Jones et al. applies only to three meals per day. However, staffing inadequacies that occur 24 hours a day also contribute to malnutrition and dehydration. All residents' care needs must be addressed if they are to eat in circumstances that maximize the potential for weight gain or maintenance. Elderly patients are not likely to eat well if they haven't been helped to move, use the toilet, or kept clean. Otherwise, they may be in pain from sitting too long, they may have wet or dried urine and feces on them, and their dentures may not be in place and comfortable because their oral hygiene has not been attended to. Residents with dementia often experience stages in which food must be available 24 hours a day if their nutritional needs are to be met.[87]

Consumers and long-term care experts support both mealtime and 24-hour staffing standards. Recently, and for the first time, the federal government indicated a willingness to consider such standards. One standard developed over the last 10 years by long-term care professionals includes both mealtime and 24-hour standards. The supporting data were presented in April 1998 at the invitational conference, *Case Mix, Quality and Staffing,* organized by the John A. Hartford Institute for Gerontological Nursing at New York University School of Nursing with the support of the Agency for Health Care Policy and Research.[88] The report of this conference was part of the deliberations of the Institute of Medicine's recent committee on Quality in Long-Term Care.

Consumer advocates support a well-defined nurse staffing standard for the following reasons: (1) A standard would provide a tool for HCFA and state licensing agencies to use to hold the industry accountable for more than $39 billion in federal dollars that will be spent for nursing home care in 2000. (2) If it is set high enough and raised according to the degree of acuity of the residents, residents and their families would

be assured of at least a minimum staffing level with the potential to provide the basic necessities such as food and water. (3) Armed with a standard, residents and families could be more effective in working with facilities to meet it, and they could report to the long-term care ombudsman and/or the licensing and certification agency when staffing levels fall below it.

Historically, the federal government has been reluctant to discuss staffing standards for nursing care in nursing homes, probably because of the cost implications. In 1986, the government would support only the inclusion of the words "sufficient staff to meet the residents' needs" as the NHRL standard. Even today, the government does not collect data solely on direct-care staff in nursing homes. Its OSCAR database collects all direct and indirect care data on RN, LVN, and CNA staffing levels for the two weeks prior to the annual survey. The information is self-reported and is the only publicly available source of information on staffing. The most recent national data available show that RNs in Medicare- /Medicaid-certified facilities spent an average of 42 minutes with each resident per day. The average LPN/LVN's patient care time was also 42 minutes per resident per day, and the average for CNAs was 126 minutes per resident per day—for a total of 3.5 hours of direct and indirect care from all sources per resident in a 24-hour period. Medicare (skilled care)-only certified facilities have the highest staffing levels. In 1997 the national average for RNs in these facilities was 130 minutes per resident day (almost three times the time for all certified facilities). LPN/LVN time was 78 minutes, and CNAs spent 150 minutes—for a total of just under six hours of care per resident day.[89]

State-mandated staffing requirements generally fall below the current national average of 3.5 hours per resident day even though some states do separate direct and indirect care. The majority of states require from two to 2.5 hours per patient day. Other states have lower standards (e.g., 1.5 hours per resident day for nursing facility care) and many have none.[90] Only one state has a requirement calling for more than 6 hours of direct and indirect care per resident per day. It applies only to skilled nursing, level 3.

HCFA disclosed a willingness to consider a new policy at The National Citizens' Coalition for Nursing Home Reform (NCCNHR) annual meeting in November 1998, following a presentation about staffing conditions in nursing homes by nursing assistants, consumers, advocates, and ombudsmen. Officials said that staffing standards based on the results of a HCFA-sponsored staffing study conducted by Abt Associates, Inc., would be considered. Publication of that study, expected in fall 1999, was delayed until the summer of 2000, when the required internal HCFA review will have been completed.

This possible change in public policy is also reflected in the Office of the Inspector General's (OIG) March 1999 report, *Quality of Care in Nursing Homes: An Overview.* This report suggests a strategy for improving care that includes a recommendation to "improve nursing home staffing levels." The report refers to the HCFA staffing study and states that HCFA should "develop staffing standards for registered nurses and certified nursing assistants in nursing homes to assure sufficient staff on all shifts to enable residents to have proper care."

The nursing home industry has historically opposed staffing ratios. In public forums, industry representatives say they need flexibility to use the public and private dollars in the most efficient way possible. They say reimbursement, especially from Medicaid, is too low to allow them to hire more staff or to raise salaries. The OIG report cited a spectrum of state Medicaid payment levels, from a low of $74.50 per patient per day in Texas to a high of $165.80 in New York. Differences in cost reports among states and between Medicare and Medicaid impede the collection of comparative data on the relationship between staffing, quality, and Medicaid rates.

Improve the Management and Supervision of Direct-Care Staff

Anecdotal evidence suggests that malnutrition and dehydration also occur in facilities with adequate numbers of staff. In 1999, the Georgia Council of Community Ombudsmen, using an assessment tool they developed, systematically observed meals at 80 nursing homes, both during the week and on weekends. While they too cited short staffing as a problem, their observations also confirmed a lack of management and supervision of those who provided nutritional services in the observed Georgia nursing homes. Some comments from their unpublished report:

> "I observed several people playing with their food, not really eating. No one came over to help or to give encouragement. They just took the trays away."
>
> "Staff attitude is bad. They act like it is a great inconvenience that they have to help anybody."
>
> "A resident said she sometimes missed meals because they forgot her."
>
> "I watched a man trying to feed himself breakfast. He had spilled his milk and coffee. The toast was on the floor. He was trying to eat cold cereal and milk with a spoon but most of it never reached his mouth. After about 15

minutes he just gave up. There was an aide sitting in the day room with him. She was reading the paper and never even looked up."

"No water was served with the meal."

"The administrator informed me that they are not required to monitor food consumption."

"I observed CNAs charting food consumption without actually looking at the trays."

Noting that these actions occurred when they were in the dining room making observations, the Georgia ombudsmen wondered what happens when they are not present.[91]

In 1998, NCCNHR's E. Holder, responding to questions from the Senate Committee on Aging, reported this observation:

> One resident two tables directly away from me was partly feeding herself and partly given spoonfuls of food from the side by the dining room manager. The resident was choking periodically and at one point regurgitated all of her food onto her tray. The manager, who never smiled throughout the meal, looked in disgust at the mess, did not offer assistance and didn't even wipe the woman's face until five or so minutes later. The resident ate no more and was offered no more food.[92]

These eyewitness accounts speak for themselves. They illustrate poor staff management and supervision of nutritional services.

How different are the results when the same resources are used to provide individualized resident-directed care. In her testimony before Senate Special Committee on Aging, S. Flagge reported on two studies at nursing homes that had transformed each care unit into a social neighborhood centered on a kitchen and dining area. Each "neighborhood" had 20 to 23 residents. Describing the studies' results, she said:

> Three important results of this change [to neighborhoods] are the increased socialization of residents, a decrease in unanticipated weight loss and a decrease in wasted food. Residents sit around tables surrounded by their

friends, eating a meal of their own choosing. Each meal is a social event, which family and friends are welcome to join. A minimum of two to three entrees is provided and anything that they don't find that they want, we can replace. ...We do not have a weight loss problem in our facility.[93]

Testifying before the same committee, S. Misiorski observed:

But food is not medicine. Food is a regular part of living your life. Food is something that should bring you a sense of joy and a sense of delight and pleasure in your day. ...In a facility that operates under a social model, the staff are guests in the residents' own home and the residents are truly empowered to make their own decisions. ...We had a female resident who, every morning when she was awakened for breakfast, became very, very angry with the staff. She became so angry that she would hit them. Now, in some nursing homes when a resident becomes combative this person may end up on medications to stop them from being combative. ...We asked her, 'Why is it so difficult for you in the morning?' ...She used to work the night shift. ...So, we individualized the approach to care. ...This woman slept, by her choice, until 11 a.m. Her first meal of the day was at noon and her third meal of the day was offered at midnight.[94]

Better Utilization of Professionals

Managing with the goal of better nutrition and hydration includes the use of professional expertise. The expertise of physicians, nurses, dietitians, speech pathologists, and dental experts plays an important role in the prevention of unintended weight loss and dehydration. Yet administrators may not know the value of using professionals to assess, plan, and supervise implementation of the care that nursing assistants execute.

Physicians

Physicians—including the medical director, attending physician and physician extenders, such as nurse practitioners—spend an average of one minute per resident day in nursing facilities.[95] Recent research shows that hospitalizations, including those from malnutrition and dehydration, decrease as the presence of physicians and physician extenders increases.[96] Physicians assess the medical needs of each resident, including the risk of unintended weight loss and dehydration. The medical director can play an important role in identifying systems changes (e.g., increasing the use of nurse practitioners) that will help prevent unintended weight loss.

Professional Nurses

State nurse practice acts and professional standards require the presence of licensed staff nurses. The delegation of nursing and nursing-related tasks (e.g., helping residents eat) to the CNA is the licensed nurse's responsibility, as is the responsibility for the results of the delegated activities.[97] In 1997, residents in U.S. nursing homes received an average of 14 minutes of RN time per eight-hour shift. They received the same amount of care from LPNs/LVNs, and they received 42 minutes per eight-hour shift of nurse-aide time.[98]

Although licensed professional nurses are rarely present during meals, evidence speaks to improved outcomes with increased nurse-to-resident ratios. Kayser-Jones and Schell have described the effectiveness of a restorative nurse aide (RNA) (supervised by an RN and specially trained to care for residents with dementia on a special care unit) in assisting patients at mealtimes.[99] When the RNA helped them, residents appeared to enjoy the meal and consumed more.

The 1998 John A. Hartford Institute for Gerontological Nursing conference, *Case-Mix, Quality and Staffing,* recommended increased numbers of licensed nurses so as to better oversee the performance of CNAs in nursing-related duties (e.g., helping residents to eat). The 1996 Institute of Medicine study, *Adequacy of Nurse Staffing: Is It Enough?,* also recommended that nursing homes increase licensed nurse staff levels. The IOM's recommendation harbored weaknesses—it recommended only one registered nurse around the clock by the year 2000, regardless of facility size or case-mix. However it did recognize that an association exists between the presence of a registered nurse and the quality of care.[100]

Registered Dietitians

Registered dietitians, dietary personnel, and food service workers together account for 12.5 percent of staff time in nursing homes, or 43 minutes per resident day.[101] Registered dietitians are usually present in nursing homes only as consultants for resident assessments—they are rarely present at mealtimes. Dietitians spend an average of 3.3 hours per week in a nursing home.[102] Yet, the more time dieticians spend in nursing homes, the shorter are residents' hospital stays.[103] Undernourished residents also have longer hospital stays.[104] A 1999 IOM report on nutrition services for older people recommends that reimbursement for nutrition services under skilled nursing be maintained and improved.

The Nutrition Screening Initiative, a project of the American Academy of Physicians, The American Dietetics Association, and the National Council on Aging, has developed and released a simple, one-page educational tool, "Nutrition Care Alerts." The information it contains helps identify residents who are at risk for nutrition-related conditions such as dehydration, unintended weight loss, bedsores, and complications of tube feeding. It also includes action steps for frontline workers, families, and the interdisciplinary team. HCFA is testing the instrument's effectiveness this year. Afterward, the long-term care ombudsman will distribute approximately 70,000 of these alerts to nursing homes.[105]

Dieticians themselves have addressed the need for increasing access to their areas of expertise. The American Dietetics Association has developed separate assessment tools for determining nutritional status. The information it yields supplements the screening information gathered through the MDS.[106]

Speech Pathologists

As noted above, dysphagia is common among nursing home residents. Yet licensed nurses, not trained to recognize the signs and symptoms of swallowing disorders, often do not refer residents to speech pathologists for evaluation and development of an appropriate care plan. These professionals can teach nurses to recognize dysphagia and help them know how to supervise nursing assistants who help these fragile residents to eat. Residents with swallowing disorders require more time to eat. When nursing assistants are hurrying to help five to 10 people, they give bites that are much too large and allow insufficient time to swallow. In order to protect themselves from choking, those who are being fed turn their heads away. Consequently, they are labeled as being resistant to care, uncooperative, or combative.[107]

Dental Expertise

Dental care in nursing homes begins with nursing assessment.[108] In addition to the MDS, nursing staff can use a Kayser-Jones-developed brief oral health status examination that provides the basis for a dental referral when necessary. While the nursing home is required to help residents obtain routine and 24-hour emergency dental care, payment is not part of the daily rate for Medicare beneficiaries. States may provide dental services as an option for residents in the Medicaid program.

The 1996 IOM staffing study recommended increased training for nursing assistants on how to care for residents with dementia, which is a risk factor for weight loss. More than 50 percent of residents have some dementing illness.[109] Techniques such as cueing, the use of finger foods, and the minimization of behavioral symptoms by decreasing hunger and thirst are some of the elements of dementia care which nursing assistants must know.

In addition, nursing assistants need basic skills and knowledge. The nursing assistant turnover rate is high—in 1997, for example, it was 93.3 percent.[110] Thus, continuing in-service education about nutrition and hydration is essential for residents' well-being. This need is illustrated by the following exchange. A CNA for 20 years complained that she could not adequately feed 10 to14 severely demented residents assigned to her on a daily basis. When asked about in-service education on feeding, one CNA remembered having attended a class three years earlier. The CNAs "remembered being taught how to calculate the percentage of food eaten, that the head of the bed should be elevated, and that they should sit down when feeding residents."[111]

Another area in which CNA training would make a difference is in how to estimate food intake. CNAs often overestimate the amount of food a resident has eaten and therefore record it inaccurately. This leads professional nurses and physicians to make inaccurate estimates of residents' food intake. It is difficult for some CNAs to understand percentages. Others are so busy assisting residents to eat that they may wait until the end of the day, or even two to three days later, to record the data.[112] Remembering becomes quite a challenge at the end of a long day. Training in time-management for nursing assistants would also help avoid inaccurate recording.

Assisting residents who have dysphagia is much more complicated and requires an advanced set of skills and knowledge. The care must be individualized and the nursing assistant must be taught particular techniques, e.g., bed and chin position, that will improve swallowing ability.[113]

Expanding Available Personnel at Mealtimes

> Exploration of the development of a new nursing position: the feeding and hydration aide.
>
> The feeding and hydration aide proposal, which would allow a level of nursing assistance with less than the required 75 hours of training to perform single tasks, is HCFA's response to the staff shortage as it affects nutrition and hydration. First put forward by the Ohio Association of Homes and Services for the Aging in 1997, it

is also included in the legislative agenda of the American Association of Homes and Services for the Aged. It is a suggested legislative action item in the President's Nursing Home Initiative of July 21, 1998.

In 1998, the creation of a feeding and hydration aide (FHA) position was included in the Kohl/Reid Bill on Criminal Background Checks for nursing home staff. This bill would have allowed each state to decide the amount of training it requires for its FHAs. The introduction of a similar bill was expected in the 1999 session of the 106th Congress but did not happen. The 1999 budget provided no funding for the bill.[114] In the meantime, Florida, Illinois, and Wisconsin have passed legislation that allows the creation of a lesser category of direct-care aide with specified training.[115] Because this type of position is illegal under the provisions of the NHRA, which specifies that nursing-related services can only be performed by a CNA, states may approve this new category of worker in licensed-only facilities.

Long-term care consumers are concerned about this approach to solving the nursing home staffing shortage for these reasons:

1. Nursing homes can already hire part-time staff to assist residents with eating and hydration. They must receive a minimum of 75 hours of training.

2. Permitting the new category of worker has the potential to undermine the 75-hour training requirement, because there is no way a state surveyor can distinguish between CNAs with 75 hours or those with less than 75 hours of training. This potential decrease in the training requirement would come at a time when the Institute of Medicine is recommending increased training for nursing assistants, particularly in the area of caring for those with dementing illnesses—those most in need of nutrition and hydration services.[116]

3. Creating the new category of worker to work mealtimes only does not guarantee that nursing facilities will provide adequate staffing 24 hours a day, seven days a week at times when nutrition and hydration services are also needed.

4. Facilities have other resources available, e.g., universal cross-training and staggered shifts that would allow them to increase staffing at mealtimes.[117] The creation of two serving periods at each mealtime (e.g., lunch seatings from 11:30 a.m. to 12:30 p.m. and from 12:30 to 1:30) would also alleviate the problem of inadequate staffing.[118]

Use of other workers at mealtimes.

Some facilities use administrative staff and other indirect-care staff to carry out non-nursing duties at mealtimes. For instance, administrative staff and volunteers, with supervision, can carry trays, remove lids, uncover drinks, open milk cartons, and perform other preparatory duties to help residents who are able to feed themselves.[119] These activities would help residents remain independent while avoiding fragmentation of care. With the supervision of an LPN/LVN or RN, nursing assistants would still help residents to eat. There is some concern that the adequacy of reimbursement in the prospective payment system may not impact the number of administrative staff, which means that this system would also be understaffed.

A few facilities cross-train administrative staff as nurse assistants and use them at mealtimes.[120] This universal approach, which may be required for employment or offered on a voluntary basis, allows maximum staff flexibility and consistency. Some facilities find that workers in other departments do not want to take the entire nurse assistant training.

Supporting and training family members to help residents to eat and training volunteers in tray set-up and mealtime socialization.

Residents who have family members to assist with eating are unlikely to lose weight.[121] However, nursing home residents and families often do not know to whom to go when they have questions about care pertaining to eating. They have no idea from day to day of who is taking care of their relative. Thus, they may not report observations about amounts eaten (e.g., 50 percent of the food) or new symptoms (inability to swallow) to someone who knows the resident. Also, the staff may miss requests for substitute food, a requirement when the served food is unacceptable for some reason.[122]

The John A. Hartford Institute for Gerontological Nursing staffing standard requires the posting of a staff roster. The standard includes a requirement for posting the staffing ratio and a list of the names of current staff directly

responsible for resident care on each wing. In addition, the standard requires posting the cost-reporting period in the form of the average daily staffing ratios.[123] Observing this standard would mean that volunteers and family members know to whom to go for information and supervision in nutrition and other caregiving matters.

Education and supervision of family members who assist residents at mealtime is essential. Many have cared for their family members for years and know how to assist them safely, others may not recognize a swallowing problem. They may not know how to position a person who has a swallowing disorder. Volunteers, on the other hand, can be taught to assist residents by opening beverages, delivering trays, socializing, and encouraging residents to eat.

POOR ENVIRONMENT

The nursing home environment can enhance or detract from residents' ability to receive adequate nourishment. Aside from the staff itself, environmental considerations include the appropriateness of the food, the surroundings in which it is served, and the use of positioning and other adaptive equipment (assistive devices).

Appropriateness of the Food

Consideration of the appropriateness of the food served to nursing home residents includes four issues: institutional food, food preferences or choice, cultural differences, and special diets and the use of nutritional supplements.

Because it is based on lifelong experiences, eating behavior is highly individualized; yet most nursing homes ignore this and expect residents to survive the rigors of institutional food. The flaws associated with institutional diets—food that is poorly cooked and presented, diets that lack fresh fruits and vegetables, and menus that don't allow choice—are endemic and problematical. In addition, therapeutic and restrictive diets (e.g., low-salt) have come into question as professionals realize that taste and texture remain important to nursing home residents and influence nutritional intake.[124] Misiorski reports that normalization of almost all diets in one facility dramatically decreased the amount of food returned uneaten.[125] Some facilities make meals more palatable for residents with dysphagia by serving soft foods or molded three-dimensional pureed foods instead of the usual pureed food.[126] Even so, a person's ethnic food preference may be so ingrained that he or she will eat nothing that is unfamiliar.[127]

We hypothesize that unintended weight loss might diminish if lifelong food preferences are honored. The serving of appetizing food may even be cost-effective when

balanced against waste, unintended weight loss, and the high cost of supplements. If less food is wasted, allowing choice may also be cost-effective. However, professional articles on best practices in meeting food preferences do not regularly offer cost analysis.

Nutritional supplements are the "fast food of the nursing home industry." The Kayser-Jones et al. 1998 study of this issue found that 67 percent of residents with eating problems received liquid supplements.[128] Yet these supplements can actually decrease appetites, thus reducing the amount of solid food consumed; they may also contribute to constipation because they lack fiber. The appropriateness of feeding supplements may also be questionable during end-of-life care. Research on the use of supplements in end-of-life-care is in progress. Past research on this issue is equivocal.[129]

Homelike Surroundings at Mealtime

Mealtimes are usually the main social events of the day. When well planned, they can invoke strong memories of home, family, and friends. Nursing home administrator Jeanne Sanders reports that the experience of eating is as important to the well-being of nursing home residents as the food itself.[130] Nonetheless, many residents eat all of their meals in bed. Those who are taken to, or can walk to, the dinning room must usually eat in chaotic settings—with televisions blaring, staff members calling to one another over the residents' heads, and residents dressed inappropriately—that do not facilitate socialization or encourage the intake of sufficient food.[131]

Dining-room management must be based on written goals, objectives, and policies that enhance the dining experience for residents and encourage the staff to innovate. Basic strategies that ensure a homelike setting include the use of small round tables instead of U-shaped "feeding" tables; a warm finish on the table tops or colorful table cloths; the elimination of trays; seating residents in chairs instead of wheelchairs; the provision of soft music and comfortable temperatures; the creation of traffic patterns that decrease confusion; and allowing choice in table-mates.[132]

In her previously cited Senate testimony, Flagge reports on a dining model that can be adapted to a variety of facilities. Each unit, or "neighborhood," houses 25 residents, and each is equipped with steam tables, refrigerators, and freezers, promoting individual preferences. Meals are a social event, and family and friends are invited to join residents at three or four small round tables. Choices abound at every meal. Immediately available food (e.g., a piece of toast on demand) is routine.[133] These changes can improve mealtimes, encourage nutritious between-meal snacks, and help diminish malnutrition and dehydration. Even nursing homes that don't have kitchens on each unit can maintain a small refrigerator, coffeepot, and microwave oven.

Facilities should share ideas about practices like these that help prevent weight loss. HCFA maintains a website, *Sharing Innovations in Quality,* where descriptions of best practices in nursing homes can be posted. It also has a website (www.hcfa.gov/medicaid/siq/siqhmpg.htm) for providers and professionals. However, no one has evaluated the content, timeliness, or usefulness of this resource as a vehicle for preventing and treating malnutrition and dehydration, or for any other aspect of care.

Use of Assistive Devices

The use of positioning and other adaptive equipment—assistive devices—is essential to adequate nutrition. Residents with dysphagia choke more easily unless they sit at a 90-degree angle while eating. Those who eat in bed are usually seated at a 40- to 60-degree angle.[134] Residents who have had a stroke or have a neurological disease will especially benefit from a bedside dysphagia screening evaluation by a speech therapist.

INSUFFICIENT DATA COLLECTION

The prevention and treatment of malnutrition and dehydration requires accurate assessment data that has been gathered using a meaningful definition of weight loss, as well as an accurate account of staffing levels in nursing homes.

The MDS trigger for weight loss that should be assessed is 5 percent in one month, 7.5 percent in three months, or 10 percent in six months. Yet some residents, especially those who are very small, may be at risk even if they lose slightly less than 5 or 10 percent of their body weights. As noted earlier, a 100-pound elderly woman who is losing two pounds every 30 days would lose 6 percent of her body weight in three months. Yet the MDS would trigger an in-depth assessment for that person only if she had lost 7.5 percent of body weight in that time period. Thus professionals may fail to identify this person for further nutritional assessment and targeted care planning.[135] At issue is whether HCFA should reevaluate the trigger, or have a special one for residents below a certain body weight, or look at weight loss over a longer period of time. Kayser-Jones, in a personal communication, recommends that surveyors look at how much weight is lost in a one-year period and from the time of admission. A resident who loses two to three pounds a month can lose 25 to 35 pounds in one year.

Since inadequate staffing contributes to malnutrition and dehydration, collection of adequate staffing data may help decision-making. The survey team collects cumulative data on full-time equivalent staffing for the two weeks prior to the yearly survey. These data are self-reported and they are not checked against payroll. Moreover, the data's

cumulative nature does not allow regulators, the public, or facilities to have a clear understanding of the day-to-day or shift trends for direct or indirect nursing care within a facility, within a state, or nationally. Although families and residents tell about lack of staff, the government has insufficient data to support or refute what they say.[136]

SURVEY AND ENFORCEMENT

An effective survey system would find facility practices that potentially or actually cause harm to residents. Citing deficiencies in either nutrition or staffing has been difficult due, in part, to inadequate guidance for surveyors. Enforcement cannot occur without citations.

Earlier in this paper, we noted an increase in complaints to licensing and certification agencies and the ombudsman about quality of care and staffing. This increase occurred at the same time that deficiency citations were decreasing. Even though inadequate staffing has been identified as a major contributor to malnutrition, surveyors cite it only half as often as nutrition services. In 1997, surveyors cited deficient nursing services in 3.8 percent of facilities—this was a 6.6 percent decrease from 1991. In the same year, surveyors cited deficiencies in nutrition services in 8.3 percent of the facilities—versus 9.1 percent in 1991.[137] HCFA's policy has been to cite only one category of deficiency, or "F tag" (Federal deficiency identifier for the 175 survey measures). In consequence, this policy neglects to distinguish between poor nutrition as a result of lack of assessment for dysphagia (F 325) and poor nutrition as a result of inadequate staffing (F 353). The first requires the services of a speech pathologist and the second requires more staff. HCFA should require citation of the underlying cause when it can be identified and an appropriate F tag is available. Appropriate tag citation might bring increased sanctions and faster compliance.

In 1999, as part of the president's initiatives, HCFA made two additions to the survey and enforcement system that will strengthen surveys for nutritional deficiencies citations and enforcement. The use of quality indicators to improve identification of malnutrition, dehydration, and pressure sores began in July 1999. The new protocols are based on the work done by Zimmerman and Kramer and cited earlier in this paper.

HCFA began to use per-instance civil monetary penalties (CMPs) on May 17, 1999.[138] However, their use was undermined because it was limited to immediate and serious jeopardy situations—there is no preventative action in this type of enforcement. Yet the advantage of using this type of CMP is that it can apply to non-immediate and serious jeopardy, including quality-of-life problems. For instance, the case of a dining room that borders on chaotic could be cited as a deficiency and the facility could be fined.

So there can be a preventive aspect to the imposition of the per-instance CMP. This new CMP does not require surveyors to revisit prior to collecting the fine.

CONCLUSION

Malnutrition, dehydration, and weight loss are a silent epidemic in U.S. nursing homes. The next steps in addressing the issue will come from changes in public policy, creative solutions from providers and professionals, further research on key issues, and a HCFA determination to survey and enforce nutrition and hydration standards.

CHANGES IN PUBLIC POLICY

This paper offers evidence that insufficient, inadequately trained, and poorly supervised staff are the major causes of malnutrition and dehydration. Public policy options that would help correct this situation include:

1. Institute mealtime and/or 24-hour staffing standards. These could be legislated via an amendment to the Nursing Home Reform Act, or they could come administratively, with a regulation that further defines the operative phrase in the law—i.e., "Sufficient nursing and related services to attain or maintain the highest practicable level of physical, mental, and psychosocial well-being of each resident."

2. Mandate the training of nursing assistants in the care of those with cognitive impairment, who universally experience eating difficulties in the course of their illness. The IOM study on the adequacy of nurse staffing also recommends increased training. This measure may be effected either through legislation or regulation.

3. Accompany staffing changes with a requirement for more detailed collection and application of staffing data so as to determine the relationship over time between staffing and the prevention of malnutrition and dehydration in nursing home residents.

4. Reimbursement should support both professional and paraprofessional nurse staffing. Government should hold the industry accountable for the expenditure of funds targeted to staffing. HCFA reimbursement incentives should also recognize the use of speech therapists in diagnosing dysphagia and increase the use of dietitians to reduce the length of stay for hospitalized residents. Reimbursement for dental care may also be important in the prevention of malnutrition.

CREATIVE SOLUTIONS FROM PROVIDERS AND PROFESSIONALS

Nursing homes can plan and implement many simple measures to decrease malnutrition and dehydration. HCFA should evaluate and disseminate descriptions of successful ones through its *Sharing Innovations in Quality* website, and provider, professional, and consumer associations and organizations should publicize them as well. Areas for improvement include the use of volunteers and families to assist residents to eat and drink, the design of homelike dining experiences, and the provision of choice in foods, ethnically appropriate food, and 24-hour availability of a wide variety of foods. Some nursing homes have already discovered that creating small neighborhoods within larger nursing units to increase the social aspects of dining, and instituting cross-training of other nursing home staff to help at mealtimes are effective in preventing malnutrition and dehydration.

Innovations should also include education of staff about nutrition and hydration and the deployment and empowerment of staff in ways that reduce staff turnover. Effective uses of the interdisciplinary team to reduce the risk of malnutrition and dehydration may provide case examples for teaching.

RESEARCH ON KEY ISSUES

The measurement of malnutrition and dehydration in older individuals is not well defined. HCFA and the AHRQ (formerly known as the AHCPR) should support research that would help us arrive at a consensus on this important issue. In the meantime, HCFA might consider conducting a pilot study to add the use of BMI as a measurement of nutritional status, in addition to its current 7.5 percent/three-month and 10 percent/six-month-standards. A special protocol that applies to residents who weigh less than 100 pounds should be tested.

We need research to determine the contribution of dental pathology and poor dental hygiene to malnutrition.

AHRQ and HCFA are the appropriate agencies to call a national conference to determine guidelines on the use of supplements and give guidance on reimbursement, incentives, and enforcement policy to support the guidelines.

SURVEY AND ENFORCEMENT

The survey system has already been developed to more effectively uncover instances of malnutrition and dehydration. HCFA should evaluate the results of those changes. While these efforts target the survey to nutrition and hydration, the sample size remains limited. Conversely, the 1998 GAO study in California with a larger sample size was more effective in detecting malnutrition and dehydration.

Surveyors should assure that facilities are held accountable through enforcement for loss of dentures due to staff negligence or loss of teeth through neglect of mouth care.

Surveyors should also assure that a selective menu including ethnically appropriate foods is available in all nursing homes. When the lack of choice affects nutritional status, a deficiency should be cited.

Enforcement penalties, including civil money penalties, appear to have a positive effect on provider behavior; however, more research defining the effect on providers of enforcement related to malnutrition and dehydration would be instructive for providers, professionals, consumers, and regulators.

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RELATED PUBLICATIONS

#350 *Meeting Future Health and Long-Term Care Needs for Elderly Populations* (December 1999). Karen Davis and Susan Raetzman. In this issue brief, the authors discuss how to ensure access to health care for elderly people in the twenty-first century. During this time the baby boom generation will age and retire, Medicare spending will become an ever-larger proportion of the gross domestic product, and the Medicare program itself will be restructured to ensure its continued existence and more beneficiaries will be enrolled in Medicare managed care programs.

#343 *Financing Long-Term Care in the Twenty-First Century: The Public and Private Roles* (September 1999). Mark Merlis, Institute for Health Policy Solutions. In anticipation of the retirement of the baby boom generation, the author examines the advantages and disadvantages of improving public long-term care coverage versus relying more on private coverage for seniors.

#285 *Long-Term Care for the Elderly and State Health Policy* (June 1998). Joshua M. Wiener and David G. Stevenson, The Urban Institute. In this report, part of The Urban Institute's "Assessing the New Federalism" series co-sponsored by the Fund, the authors conclude that states must continue to integrate acute and long-term care services for the elderly if they are to contain spending, and that, in the meantime, the current method of Medicaid financing of long-term care may still be the cheapest option: payment rates are much lower than for Medicare or private insurance, and Medicaid pays only the costs that the elderly cannot.

#284 *Facts on Medicare's Home Health Benefit and Recent Policy Changes* (June 1998). Harriet L. Komisar and Judith Feder, Georgetown University Institute for Health Care Research and Policy. This fact sheet examines the effect of the Balanced Budget Act of 1997 on the provision of home health care under Medicare.

#283 *Repeal of the Boren Amendment: Potential Implications for Long-Term Care* (June 1998). Barbara Bolling Manard and Judith Feder, Georgetown University Institute for Health Care Research and Policy. This policy brief analyzes how repeal of the Boren Amendment—a provision of the Medicaid program that established federal rules for states' payments to nursing facilities, hospitals, and other institutions—may affect access to and quality of care for elderly and disabled Medicaid beneficiaries.

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ENDNOTES

[1] Kayser-Jones, 1998.

[2] Morley and Silver, 1995.

[3] Webster's Dictionary, 1984.

[4] Abassi and Rudman, 1994; Steele, 1997; Rudman, Arora, Feller, et al., 1990; Sullivan, 1995.

[5] Butterworth, 1974.

[6] Sullivan, 1995.

[7] Rudman and Abassi, Gilmore, 1995.

[8] Sullivan, 1995.

[9] Keller, 1993.

[10] Rudman, Arora, Feller, et al., 1990; Shaver, Rudman, and Abassi, 1995.

[11] Rudman and Feller, 1989; Rudman, Arora, Feller, et al., 1990.

[12] Lavizzo-Mourey, John, and Stolley, 1988; Wilson, 1998.

[13] Vital and Health Statistics.

[14] Kayser-Jones et al., 1999.

[15] Weinberg, Minaker, and the Council on Scientific Affairs, American Medical Association, 1995.

[16] Weinberg, Minaker et al., 1995; Weinberg, Pals, Levesque, Beal, Cunningham, and Minaker, 1994.

[17] Chidester and Spangler, 1997; Weinberg, Minaker et al., 1995.

[18] Chidester and Spangler, 1997.

[19] Davis, 1994; Wilson, 1999.

[20] Abassi and Rudman, 1994.

[21] Morley and Silver, 1995.

[22] NCHS, 1987.

[23] Thomas, Verdery, Gardner et al., 1991.

[24] Morley and Silver, 1995.

[25] Viglid, 1989.

[26] Steele, Greenwood, Ens, Robertson, Seidman-Carlson, 1997.

[27] Kayser-Jones, 1996; Kayser-Jones and Schell, 1997.

[28] Kayser-Jones, 1998.

[29] Kayser-Jones et al., 1998.

[30] Kayser-Jones and Schell, 1997.

[31] Morley and Silver, 1995.

[32] Kligman and Johnson, 1987; Ryan, 1995.

[33] Gambassi, 1999.

[34] Murtaugh, Kemper, and Spillane, 1990.

[35] Gants, 1997.

[36] USHCFA, 1991.

[37] Harrington, Carillo et al., 2000.

[38] USHCFA, 1997a.

[39] Gudzowsky, 1995.

[40] USHCFA, 1991.

[41] USHCFA, 1995c.

[42] Hawes, 1995.

[43] USHCFA, #8, 1999.

[44] USHCFA, #8, 1999.

[45] USHCFA, #8, 1999.

[46] USHCFA, #10, 1999.

[47] IOM, 1986.

[48] Zimmerman, Karon et al., 1995.

[49] Zimmerman, Karon et al., 1995.

[50] HCFA, 1998.

[51] Harrington, 1996.

[52] Stephens, 1988; Silver, 1988; Pinshofsky-Devin, 1986.

[53] Hawes, 1996.

[54] Hawes, Mor et al., 1997.

[55] Fries, Hawes et al., 1997.

[56] IOM, 1986.

[57] IOM, 1996.

[58] USHCFA, 1991.

[59] USHCFA, 1998.

[60] Kayser-Jones and Schell, 1997.

[61] Fries, 1997; Hawes, 1998.

[62] Blaum, Fries et al., 1995.

[63] Blaum, Fries et al., 1995.

[64] Unpublished data, 1997.

[65] Hawes, 1997.

[66] Harrington, 1999.

[67] Harrington, 1998.

[68] Fries, 1997; Blaum, 1995; Hawes, 1998.

[69] Harrington, 1997.

[70] USHCFA, 1995.

[71] Edelman, 1997.

[72] Kramer, 1998.

[73] Kramer, 1995, 1996.

[74] Edelman, 1997.

[75] USHCFA, 1995.

[76] Rudder, 1995.

[77] Shalala, 1998.

[78] USHCFA, 1999.

[79] Kayser-Jones and Schell, 1997b.

[80] Kayser-Jones and Schell, 1997a; HCFA, 1998; IOM, 1986, 1996; HHS/OIG, 1999; GAO, 1999.

[81] OIG, 1999b.

[82] IOM, 1996.

[83] Kayser-Jones and Schell, 1997a; Kayser-Jones, 1997b.

[84] Holzapfel, 1996.

[85] Kayser-Jones and Schell, 1997.

[86] Van Ort and Phillips, 1995; Lange-Alberts and Shott, 1994.

[87] Kayser-Jones and Schell, 1997a; American Dietetic Association Reports, 1998.

[88] Harrington and Kovner.

[89] Harrington, Carillo et al., 2000.

[90] NCCNHR, 1999.

[91] Georgia Ombudsmen, 1999.

[92] Holder, 1998.

[93] Flagge, 1997.

[94] Misiorski, 1997.

[95] Harrington, 1997.

[96] Intrator, 1999.

[97] NCSBN, 1995; ANA, 1996.

[98] Harrington, 1999.

[99] Kayser-Jones and Schell, 1997a, 1997b.

[100] Linn, Gurel, Linn, 1977; Spector and Takada, 1991; Cohen and Spector, 1996; IOM, 1996.

[101] Harrington, 1999.

[102] Bills and Spangler, 1993.

[103] Bills and Spangler, 1993.

[104] Cope, 1997; Torres-Gil, 1995.

[105] Hedt, 1999.

[106] ADA, 1998; Porter, 1999.

[107] Kayser-Jones and Pengilly, 1999.

[108] USHCFA, 1997a.

[109] Cohen, 1994.

[110] AHCA, 1998.

[111] Kayser-Jones, 1997a.

[112] Kayser-Jones, 1997b.

[113] Kayser-Jones and Pengilly, 1999.

[114] Jane Horvath and Don Johnson, Legislative Affairs at HCFA in 1998.

[115] State of Florida, 1999; State of Illinois, 1999.

[116] IOM, 1996.

[117] NCCNHR letter to HCFA, 1998.

[118] Kayser-Jones, 1997b.

[119] Kayser-Jones and Pengilly, 1999.

[120] Flagge, Misiorski, 1997.

[121] Kayser-Jones, 1998.

[122] USDHHS, Transmittal 272-272, 1995.

[123] Harrington, Kovner et al. (In Press).

[124] Gallagher, 1997.

[125] Misiorski, 1997.

[126] Cassens, 1995; Grover, 1997.

[127] Kayser-Jones, 1996.

[128] Kayser-Jones, 1998.

[129] Mitchell, 1988; Abassi, 1997; Cohen, 1994.

[130] Sanders, 1993.

[131] Kayser-Jones and Schell, 1997a.

[132] Lutheran, 1987; ACHA, 1993; Kayser-Jones and Schell, 1997.

[133] Flagge, 1997.

[134] Kayser-Jones and Pengilly, 1999.

[135] Kayser-Jones and Schell, 1997; Hawes, 1995.

[136] Malloy, 1997; Bryant, 1999.

[137] Harrington, 1999.

[138] USHCFA, 1999.

BIBLIOGRAPHY

Abassi, A., and Rudman, D., "Undernutrition in Nursing Homes: Prevalence, Consequences, Causes and Prevention in Nursing Homes," *Nutrition Reviews* 52 (1994):113–122.

American Dietetic Association (ADA). http://www.eatright.org/adaposag.html, 1997.

American Dietetic Association (ADA) Reports, "Diets for Older Adults in Long-Term Care," *Journal of the American Dietetic Association* 98 (1998):201–203.

American Health Care Association (AHCA). *American Health Care Association Practice Guidelines: Nutrition Care and Services for Long-Term Care Residents*, June 1993, pp. 4–17.

American Health Care Association, *Facts and Trends*, Washington, D.C., 1998.

American Health Care Association, *Resident Assessment Instrument (RAI) Training Manual and Resource Guide*. Washington, D.C., December 1990.

American Health Care Association, Testimony before the Senate Special Committee on Aging, hearing on, "Residents at Risk? Weaknesses Persist in Nursing Home Complaint Investigation and Enforcement." March 1999.

American Nurses Association, *Model Practice Acts,* 1996.

American Society on Aging, *Aging Today* (March/April 1997):3.

Anonymous, "Keeping an Eye on Residents' Nutritional Health," *Nursing Assistant Monthly* 11 (March 1995):2.

Assistant Secretary for Aging. *Food and Nutrition for Life: Malnutrition and Older Americans*. U.S. Government Printing Office, December 1994.

Bills, D., and Spangler, A., "Impact of Dietitians on Quality of Care in 16 Nursing Homes in East Central Indiana," *Journal of the American Dietetic Association* 93 (January 1993):73.

Blaum, C.S., Fries, B.E., and Fiaterone, M., "Factors Associated with Low Body Mass-Index and Weight Loss in Nursing Home Residents," *Journal of Gerontology* 50A (1995):M162–M168.

Blumberg, Jeffrey, "How Nutrition Influences Aging," *American Health Care Association Journal* (February 1990):35–37.

Boyle, K., and Collinsworth, R., "Nutritional Assessment of the Elderly," *Journal of Gerontological Nursing* 15 (1991):18, 20.

Brooks, Steve, "Where's the Beef?" *Contemporary Long-Term Care* (March 1995):58.

Bryant, Denise, Testimony before the Senate Special Committee on Aging. "Residents at Risk? Weaknesses Persist in Nursing Home Complaint Investigation and Enforcement." March 1999.

Bureau of Labor website at http://www.bls.gov, 1997.

Burger, Sarah G., Testimony before the Maryland House of Representatives in support of House Bill 540, February 1999.

Burrows, A., Satlin, A., Salzman, C., Nobel, K., and Lipsitz, L., "Depression in a Long-term Care Facility: Clinical Features and Discordance Between Nursing Assessment and Patient Interviews," *Journal of the American Geriatrics Society* 43 (1995):1118–1122.

Butterworth, C.E., "The Skeleton in the Hospital Closet," *Nutrition Today* 9 (1974):4–8.

Cassens, Digna, "Enhancing Taste, Texture, Appearance, and Presentation of Pureed Food: Improved Resident Quality of Life and Weight Status," *Nutrition Reviews* 54 (1996):552.

Chidester, J.C., and Spangler, A.A., "Fluid Intake in the Institutionalized Elderly," *Journal of the American Dietetic Association* 97 (1997):23–30.

Cohen, Donna, "Dementia, Depression, and Nutritional Status," *Primary Care* 21 (March 1994): 107–117.

Cohen, J.W., and Spector, W.D., "Impact of Medicaid Reimbursement Method and Ownership on Nursing Home Resident Outcomes," *Journal of Health Economics* 15 (1996):23–48.

Cope, Kathy, *Malnutrition in the Elderly: A National Crisis*. U.S. Government Printing Office, 1997.

Council for Responsible Nutrition, *Science Bulletin* (June 1996):3.

Davis, K.M., and Minaker, K., "Disorders of Fluid Imbalance: Dehydration and Hypernatremia," in Hazzard, N., Burman, E., Blass, J. et al. (eds.). *Principles in Geriatric Medicine and Gerontology*. 3rd Edition, New York: McGraw Hill, 1994, pp. 1183–1190.

Dimant, Jacob, "The Psychosocial and Environmental Approach to Nutritional Management in Long-Term Care," *The Journal of Medical Direction* 2 (August 1992):54–55.

Edelman, T., "An Unpromising Picture: Implementation of the Reform Law's Enforcement Provisions Trouble Advocates," *Quality Care Advocate* (March 1997):5–6.

Ferguson, R. et al. "Serum Albumin and Prealbumin as Predictors of Clinical Outcomes of Hospitalized Elderly Nursing Home Residents," *Journal of the American Geriatrics Society* 41 (1993):545.

Fitten, L.J., Morley, J.E., Gross, P.L., Petry, S.D., and Cole, K.D., "Depression," *Journal of the American Geriatrics Society* 37 (1989):459–472.

Flagge, S., Testimony before the United States Senate Special Committee on Aging, "The Risk of Malnutrition in Nursing Homes." Serial No.105-13, October 1997, pp. 21–22.

Fries, B.E., Hawes, C., Morris, J.N., Phillips, C.B., Mor, V., and Palk, P.S., "The Effect of National Resident Assessment Instrument on Selected Health Conditions and Problems," *Journal of American Geriatrics Society* 45 (1997):994–1001.

Frisoni, G., "Food Intake and Mortality in the Frail Elderly," *Journal of Gerontology* 50A (1995):M204.

Gallagher, A., Pinteu, K., Robinson, G., Bellview-Taylor, K., and Hartery, S., "Nutrition." *Quality Care in the Nursing Home.* St. Louis, Mosby-Year Books, 1997.

Gambassi, G., Landi, F., Lapane, K.L., Sgadari, A., Mor, V., Bernaei, R., "Predictors of Mortality in Patients with Alzheimer's Disease Living in Nursing Homes," *Journal of Neurology, Neurosurgery & Psychiatry* 67 (1999):59–65.

Gants, R., "Detection and Correction of Underweight Problems in Nursing Home Residents," *Journal of Gerontological Nursing* 23 (1997):26–31.

Gazewood, J., and Mehr, D., "Diagnosis and Management of Weight Loss in the Elderly," *The Journal of Family Practice* 47 (1998):19–25.

Georgia Council of Community Ombudsmen, "Barriers to Good Nutrition in Nursing Homes 1999." Unpublished.

Gerrety, M., Williams, J., Mulrow, C., Cornell, J., Rosenberg, J., Chiodo, L., and Long, M., "Performance of Case-Finding Tools for Depression in the Nursing Home: Influence of Clinical and Functional Characteristics and Selection of Optimal Threshold Scores," *Journal of the American Geriatrics Society* 42 (1994):1103–1109.

Gilmore, S.A., Robinson, G., Posthauer, M.E., and Raymond, J., "Clinical Indicators Associated with Unintentional Weight Loss and Pressure Ulcers in Elderly Residents of Nursing Homes," *Journal of the American Dietetic Association* 95 (1995):986–988.

Goodwin, J., "Social, Psychological, and Physical Factors Affecting the Nutritional Status of Elderly Subjects," *American Journal of Clinical Nutrition* 50 (1989 Suppl):1201–1209.

Goren, Stacey, "A Survey of Food Service Managers of Washington State Boarding Homes for the Elderly," *Journal of Nutrition for the Elderly* 12 (1993):34–35.

Gorrie, Marge, "Cross Cultural Education," *Journal of Gerontological Nursing* 15 (1991):29.

Graves, E.J., Owings, M.F., *1995 Summary: National Hospital Discharge Survey. Advance Data from Vital and Health Statistics,* No. 291. Hyattsville, Maryland: National Center for Health Statistics, 1997.

Griffiths, M., and Taylor, P., "Oral Status." *Quality Care in the Nursing Home*, St. Louis, Mosby-Year Books, 1997.

Grover, L., Testimony before the United States Special Committee on Aging, "The Risk of Malnutrition in Nursing Homes." Serial No. 105-13, October 1997, pp. 22–23.

Guigoz, Y., Vellas, B., and Garry, P.J., "Assessing the Nutritional Status of the Elderly: The Mini Nutrition Assessment as Part of the Geriatric Evaluation," *Nutrition Reviews* 54 (1996):S59–65.

Gudzowsky, N., and Feinberg, J., *Congress Brings Back the Horrors: Budget Bill Rolls Back the Nursing Home Reform Law*, Consumers Union, December, 1995.

Ham, Richard, "The Signs and Symptoms of Poor Nutritional Status," *Primary Care* 21 (March 1994):1, 6.

Harrington, C., Carillo, H., Thollaug, S., and Summers, P. "Nursing Facilities, Staffing, Residents, and Facility Deficiencies, 1991–1998." Report prepared for the Health Care Financing Administration. San Francisco, CA: University of California, 2000.

Harrington, C. "Consumer Information System." San Francisco, CA: University of California, 1996.

Harrington, C., "Quality of Care and Regulation in California Nursing Homes," Testimony before U.S. Senate Special Committee on Aging, July 28, 1998.

Harrington, C., Zimmerman, D., Karon, S.L., Robinson, J., and Beutel, P. "Nursing Home Staffing and the Relationship to Quality." Report prepared for the Health Care Financing Administration. San Francisco, CA: University of California, 1997.

Harrington, C., Kovner, C., Mezey, M., Kayser-Jones, J., Burger, S., Mohler, M., Burke, R., and Zimmerman, D., "Experts Recommend Minimum Nurse Staffing Standards for Nursing Facilities in the U.S.," *The Gerontologist* 40 (February 2000):5-16.

Hawes, C., Morris, J.N., Phillips, C.D., Mor, V., Fries, B.E., Nonemaker, S. "Reliability Estimates for the MDS for Nursing Home Resident Assessment and Care Screening (MDS)." *The Gerontologist* 35 (1995):172.

Hawes, C. "Assuring Nursing Home Quality: The History and Impact of Federal Standards in OBRA-1987." The Commonwealth Fund, 1996.

Hawes, C., Testimony before The U.S. Senate Special Committee on Aging, "The Risk of Malnutrition in Nursing Homes," Serial No. 105-13, October 1997, pp. 17–21.

Hawes, C., Mor, V., Phillips, C.D., Fries, B.E., Morris, J.N., Steele-Friedlob, E., Green, A.M., and Neunstiel, M., "The OBRA-87 Nursing Home Regulations and Implementation of the Resident Assessment Instrument: Effects on Process and Quality," *Journal of the American Geriatrics Society* 45 (1997):977–985.

Health Care Financing Review. *Medicare and Medicaid Statistical Supplement, 1992 Annual Supplement*. Washington, D.C.: U.S. Department of Health and Human Services, Health Care Financing Administration, Office of Research and Demonstrations, October 1993, Vol. 63. Health Care Financing Administration Publication No. 0334.

Health Care Financing Administration. "Development and Validation of Measures and Indicators of Quality and Appropriateness of Services Rendered in Post Acute and Long-Term Care Settings: Statement of Work," 1998.

Health Care Financing Administration. "Evaluating the Use of Quality Indicators in the Long-Term Care Survey Process; Statement of Work."

Health Care Financing Administration, Jane Horvath and Donald Johnson. Meeting with Consumers, 1998.

Health Care Financing Administration, *Sharing Innovations in Quality,* Website: www.hcfa.gov/medicaid/siq/siqhmpg.htm.

Hedt, A., Long-Term Care Ombudsman Resource Center at NCCNHR, Telephone conversation with Nutrition Screening Initiative Staff, December 22, 1999.

Himmelstein, D.U., Jones, A.A., and Woolhandler. S. "Hypernatremic Dehydration in Nursing Home Patients: An Indicator of Neglect." *Journal of American Geriatrics Society,* 1983, 31(3), pp. 466–471.

Hogstel, M and Robinson, N. "Feeding the Frail Elderly." *Journal of Gerontological Nursing*, 1991, 15(3) p.18.

Holder, E., NCCNHR Response to Questions from the Senate Committee on Aging following the "Risk of Malnutrition Forum". 1998. p 17.

Holzapfel, Sally. "Feeder Position and Food and Fluid Consumed by Nursing Home Residents." *Journal of Gerontological Nursing*, April 1996, pp. 7, 8.

Huntsinger, B and Gentry, S. *A Functional Approach to Care Planning, 2d ed.*. 1993.

John A. Hartford Institute for Gerontological Nursing, *Case-Mix, Quality, and Staffing*, Minimum Staffing Ratio, April, 1998.

Institute of Medicine, *The Role of Nutrition in Maintaining Health in the Nation's Elderly.*

The National Academy Press, 1999.

Institute of Medicine, *Staffing in Hospitals and Nursing Homes: Is It Adequate?* National Academy Press, 1996.

Institute of Medicine, *Improving the Quality of Care in Nursing Homes*, National Academy Press, 1986.

Intrator, O.; Castle, N.G.; Mor, V., "Facility Characteristics Associated With Hospitalization on Nursing Home Residents., *Medical Care*, 1999; 37, pp. 228–237.

Kalodny, V and Malek, A. "Improving Feeding Skills." *Journal of Gerontological Nursing*, 1991, 17(6), p. 22.

Kayser-Jones, J. "Inadequate Staffing at Mealtime: Implications for Nursing and Health Policy." Journal of Gerontological Nursing, 1997b, 23(8), 14–21.

Kayser-Jones, J. "Mealtime in Nursing Homes: The Importance of Individualized Care." *Journal of Gerontological Nursing*, March 1996;22(3), 26–31.

Kayser-Jones, J. Statement of Jeanie Kayser-Jones, Ph.D., Professor, Physiological Nursing and Medical Anthropology, University of California, San Francisco. "The Risk of Malnutrition in Nursing Homes." Forum Before the Special Committee on Aging, United States Senate. 105th Congress, First Session. (pp. 6–10).

Kayser-Jones Responses to the Audience (pp. 37–40) (Serial No. 105-13). Washington, D.C.: U.S. Government Printing Office.

Kayser-Jones, J., "The Silence of Old Age: The Quality of Care in Nursing Homes." The Helen Nahm Lecture. *The Science of Caring,* San Francisco: School of Nursing, University of California, San Francisco, Spring 1998, 10(2), pp. 38–49.

Kayser-Jones, J., Bird, W.F., Redford, M., Schell, E.S., and Einhorn, S.H. "An Instrument to Asses the Oral Health Status of Nursing Home Residents." *The Gerontologist*, 1995, 35(6), pp. 814–824.

Kayser-Jones, J. and Pengilly, K. "Dysphagia among Nursing Home Residents: Consequences and Recommendations." *Geriatric Nursing*. 1999, 20(2), 2, pp. 77–82.

Kayser-Jones, J., Schell, E., Porter, C., Barbaccia, J.C., Steinbach, C., Bird, W.F., Redford, M., and Pengilly, K. "A Prospective Study of the Use of Liquid Oral Dietary Supplements in Nursing Homes." *Journal of American Geriatrics Society.*1998, 46(11), 1378–1386.

Kayser-Jones, J. and Schell, E. "The Effect of Staffing on the Quality of Care at Mealtimes." *Nursing Outlook*, 1997a, 45(2), pp. 64–72.

Kayser-Jones, J. and Schell, E. "Staffing and the Mealtime Experience of Nursing Home Residents on a Special Care Unit." *American Journal of Alzheimer's Disease*. 1997b, 12(2),67–72.

Kayser-Jones, J.; Schell, E.; Porter, C.; Paul, S. "Reliability of Percentage Figures Used to Record the Dietary Intake of Nursing Home Residents." *Nursing Home Medicine*, 1997, 5(3), pp. 69–76.

Kayser-Jones, J.; Wiener, C.L.; Barbaccia, J.C., "Factors Contributing to the Hospitalization of Nursing Home Residents." *The Gerontologist*. 1989, 29(9), pp. 1502–1510.

Kayser-Jones, J., Schell, E., Porter, C., Barbaraccia, J.C., Shaw, H.,. "Factors Contributing to Dehydration in Nursing Homes: Inadequate Staffing and Lack of Professional Supervision." *Journal of American Geriatrics Society.* 1999, 47(10),1187–1194.

Keller, H. "Malnutrition in Institutionalized Elderly: How and Why." *Journal of the American Geriatrics Society*, 1993, 41(10), pp. 1212–1218.

Kligman, E. and Johnson, J.K., "Prevention of Protein-Calorie Malnutrition in the Elderly Patient." *Geriatric Medicine Today*, 1987, 6(3).

Kramer, A., Grigsby, J., and Cooper, D. "Analysis of the Validity of Quality of Care Determinations." Chapter 4 in *Evaluation of the Nursing Home Survey Process*. Abt Associates, Bethesda, Maryland, December, 1996.

Kramer, A., Hrincevich, J.P., Cooper, D., and Carter, D., *Pilot Test of a Staged Quality of Care Survey Using Quality Indicator Profiles*. Center for Health Policy Research, Denver, Colorado, September, 1995.

Kramer, A., Kowalsky, J.C., Lin, M., and Ecord, M. "Comparison Between the Joint Commission Accreditation Survey and a Concurrent Nursing Home Quality Survey." Chapter 9 in *Report to Congress on HCFA Survey*. Health Care Financing Administration. March, 1998.

Kramer, A. Testimony before the Senate Special Committee on Aging. "Betrayal: The Quality of Care in California Nursing Homes," July 28, 1998.

LIFESPAN of Greater Rochester, Long-Term Care Ombudsman Program. "Meeting of Pioneers in Nursing Home Culture Change," Rochester, NY 1997.

Lavizzo-Mourey, R., Johnson, J., and Stolley, P. "Risk Factors for Dehydration Among Elderly Nursing Home Residents." *Journal of American Geriatrics Society,* 1988, 36(2), pp. 213–218.

Linn, M., Gurel, L., and Linn, B.A., "Patient Outcome as a Measure of Quality of Nursing Home Care." *American Journal of Public Health,1977,* 67(4):337–344.

Lutheran Hospitals and Homes Society, *Guidelines for Dining*, 1987.

Mahowald, J.M., and Himmelstein, D.U. "Hypernatremia in the Elderly: Relation to Infection and Mortality." *Journal of American Geriatrics Society*, 1981, pp. 177–180.

Malloy, J., Testimony before the United States Senate Special Committee on Aging, "The Risk of Malnutrition in Nursing Homes," Serial No. 105-13, October 1997, pp. 12,13.

Massachusetts Dietetic Association. *Nutrition Services Improve Health and Save Money: Evidence From Massachusetts.* Massachusetts Dietetic Association (publisher), Newton, MA, 1993.

Matthews, L. "Living With OBRA." *Journal of Nutrition for the Elderly*, 1992, 12(1), pp. 44, 46.

Mion, L. "Nutritional Assessment of the Elderly in the Ambulatory Care Setting." *Nurse Practitioner Forum*, March 1994, 5(1), pp. 49–50.

Misiorski, S., Testimony before the United States Senate Special Committee on Aging, "The Risk of Malnutrition in Aging." Serial No., 105-13, October 1997, pp. 22–23.

Mitchell, S.L.; Kiely, D.K.; Lipsitz, L.A., "Does Artificial Enteral Nutrition Prolong the Survival of Institutionalized Elders with Chewing and Swallowing Problems?" *Journal of Gerontology*, 1998, 53(3) pp. M-207–M-213.

Molis, Debbie. "Innovations in Food Service." *Provider*, April 1993, pp. 20, 25.

Morley, J. E., and Silver, A. "Nutritional Issues in Nursing Home Care." *Annals of Internal Medicine*, 1995, 12(3), pp. 850–859.

Morley, J.E. "Nutritional Status of the Elderly." *American Journal of Medicine,* 1986, 81, pp. 679–685.

Muncie, H.L. Jr., and Carbenetto, C. "Prevalence of Protein-Calorie Malnutrition in Nursing and Extended Care Facility." *Journal of Family Practice*, 1982, 14, pp. 1061–1064.

Murtaugh, C., Kemper, P., and Spillane, B. "The Risk of Nursing Home Use in Later Life." *Medical Care*, 1990, 28, pp. 952–962.

National Association of State Units on Aging. *Memo to the State Nutrition Contacts*, Washington, D.C., March 24, 1995.

National Citizens' Coalition for Nursing Home Reform (NCCNHR). *Assessment and Care Planning: The Key to Good Care Consumer Information Sheet,* Washington, D.C., 1999.

National Citizens' Coalition for Nursing Home Reform (NCCNHR). Letter to Nancy Ann DeParle on President's Initiatives, August 17, 1998.

National Citizens' Coalition for Nursing Home Reform (NCCNHR). "NCCNHR Members Give Top Officials Staffing Recommendations," *Quality Care Advocate*. 1999, 14(1).

National Citizens' Coalition for Nursing Home Reform (NCCNHR). "Federal and State Minimum Staffing Requirements for Nursing Homes." December, 1999.

National Center for Health Statistics. *Advance Data from Vital and Health Statistics,* 1987, May 14; No. 135.

National Center for Health Statistics. *Health, United States, 1998*. (Publication No, PHS 98-1232). Hyattsville, Maryland: Public Health Service, 1998.

National Council of State Boards of Nursing, Inc. (NCSBN), *Model Nursing Practice Act,* 1994.

National Long-Term Care Ombudsman Resource Center, *An Ombudsman's Guide to the Nursing Home Reform Amendments of 1987,* Washington, D.C. 1993.

Nutrition Screening Initiative, The (NSI). *Nutrition Screening Manual for Professionals Caring for Older Americans,* Washington, D.C., 1997.

Nutrition Screening Initiative, The. *Screening Older American's Nutritional Health.* Washington, D.C. 1993.

Nutrition Screening Initiative, The. *Nutrition Care Alerts Warning Signs and Action Steps For Caregivers in Nursing Facilities,* 1999.

Orta, John. "Training Food Service Supervisors Using Hand-Held Computers to Conduct Nutritional Screening of Institutionalized Elderly Patients." *Journal of Nutrition for the Elderly*, 1995, 14(2/3), p. 70.

Peter D. Hart Research Associates, Inc. "National Survey on Nutrition Screening and Treatment for the Elderly." 1993.

Pinchofsky-Devin, G.D., and Kaminski, M.V. "Correlation of Pressure Sores and Nutritional Status." *Journal of American Geriatrics Society*, 1986, 34, pp. 435–440.

Pinchofsky-Devin, G.D., and Kaminski, M.V. "Incidence of Protein Calorie Malnutrition in the Nursing Home Population." *Journal of the American College of Nutrition,* 1987, 6(2), pp. 109–112.

Phillips, C.D., Hawes, C., Mor, V., Fries, B.E., and Morris, J. "Evaluation of the Resident Assessment Instrument." Health Care Financing Administration, 1996.

Pla, Gwendolyn. "Oral Health and Nutrition." *Primary Care*, March 1994, 21(1), pp. 121–131.

Porter, C., Schell, E.S., Kayser-Jones, J., Paul, S.M., "Dynamics of Nutrition Care Among Nursing Home Residents Who Are Eating Poorly." *Journal of American Dietetic Association.* In Press, 1999.

Roe, DA. *Geriatric Nutrition, 3d ed.* Englewood Cliffs, NJ: Prentice-Hall, Inc., 1992.

Ross Laboratories, Charlotte Gallagher meeting with NCCNHR staff, February 1999.

Rudder, C., and Phillips, C., *The Nursing Home System in New York State: Does It Work?* Nursing Home Coalition of New York State, New York, June 1995.

Rudman, D.; Abassi, A.A.; Isaacson, K.; Karpuik, E; "Observations on the Nutrient Intake of Eating Dependent Nursing Home Residents: Underutilization of Micronutrients Supplements." *Journal of the American College of Nutrition*, 14(6) pp. 604–613.

Rudman, D., Arora, V., Feller, A., et al. "Epidemiology of Malnutrition in Nursing Homes," in *Geriatric Nutrition: A Comprehensive Review,* John E. Morlely, Zvi Glick, and Laurence Z. Rubenstein (Eds.), New York, Raven Press, 1990, pp. 325–332.

Rudman, D. and Feller, A. "Protein-Calorie Undernutrition in the Nursing Home." *Journal of the American Geriatrics Society*, 1989, 37(2), p.176.

Ryan, C.; Bryant, E.; Eleaser, P; Rhodes, A.; Guest, K., "Unintentional Weight Loss in Long-Term Care: Predictor of Mortality in the Elderly." *Southern American Journal*. 1995, 88(7), pp. 721–724.

Sanders, Jeanne. "Nutrition Guidelines Identify Elements of Quality Care." *Provider*, August 1993, p. 37.

Sandman, P.O., Adolfsson, R., Nygren, C., Hallmans, G., and Winblad, B. " Nutritional Status and Dietary Intake in Institutional Patients with Alzheimer's Disease and Multi-Infarct Dementia." *Journal of American Geriatrics Society,* 1987, 35(1), pp. 31–38.

Shaver, H.J., Loper, J.A., and Lutes, R.A. "Nutritional Status of Nursing Home Patients." *Journal of Parenteral and Enteral Nutrition,* 1980, 4(4), pp. 367–370.

Service Employees International Union, "Caring Till It Hurts: How Nursing Home Work is Becoming the Most Dangerous Job in America." 1997.

Siebens, H., Taupe, E., Siebens, A., Cook, F., Anshen, S., and Hanauer, R., "Correlates and Consequences of Eating Dependency in Institutionalized Elderly." *Journal of American Geriatrics Society,* 1986, 34(3), pp. 192–198.

Silver, A.J., Morley, J.E., Strome, L.S., Jones, D. and Vickers, L. "Nutritional Status in an Academic Nursing Home." *Journal of American Geriatrics Society*, 1988, 36(6), pp. 487–491.

Spector, W.D. and Takada, H.A., "Characteristics of Nursing Homes that Affect Resident Outcomes," *Journal of Aging and Health*, 1991, 3(4): 427–454.

State of Illinois, Public Acts 91st General Assembly, Public Act 91-0461, An Act to amend The Nursing Home Reform Act, Section 3-206.03.

State of Florida, House Bill 1971, passed House and Senate, Effective Oct 1, 1999.

Strahan, G.W., "An Overview of Nursing Homes and Their Current Residents: Data from the 1995 National Nursing Home Survey." Advance Data from Vital and Health Statistics; Publication No. 280. Hyattsville, Maryland: National Center for Health Statistics, 1997.

Steele, C.M., Greenwood, C., Ens, I., Robertson, C., and Siedman-Carlson, R. "Mealtime Difficulties in a Home for the Aged: Not Just Dysphagia." *Dysphagia,* 1997, 12, pp. 45–50.

Stevens, N.D., Messner, R.L., and Neitch, S.M. "Incidence of Malnutrition in a Rural Nursing Home." *Nutritional Support Services*, 1988, 8, pp. 5–11.

Sugar Association, The. *Nutrition and Aging*, 1995.

Sullivan, Dennis. "Impact of Nutritional Status on Health Outcomes of Nursing Home Residents." *Journal of the American Geriatrics Society*, 1995, 43, p. 95.

Thomas, D.R., Verdery, R.D., Gardner, L., Kant, A., and Lindsay, J. "A Prospective Study of Outcome from Protein-Energy Malnutrition in Nursing Home Residents." *Journal of Parenteral and Enteral Nutrition,* 1991, 15(4), pp. 400–404.

Torres-Gil, Fernando. *Malnutrition and Older Americans*, Washington, D.C., January 1995.

U.S. Department of Health and Human Services, Health Care Financing Administration (USHFCA, 1999) 42 CFR Part 488 Medicare and Medicaid Programs: Civil Monetary

Penalties in Nursing Homes (SNF/NF). Change in Notice Requirements and Expansion of Discretionary Remedy Delegation.

U.S. Department of Health and Human Services, Health Care Financing Administration (USHCFA, 1994). 42 CFR Parts 401–498. Medicare and Medicaid Programs: Survey, Certification and Enforcement of Skilled Nursing Facilities and Nursing Facilities; Final rule. *Federal Register*. 59(217), November 10.

U.S. Department of Health and Human Services, Health Care Financing Administration (USHCFA, 1999 [formerly1995a]). State Operations Manual. Provider Certification. Transmittal No. 8 (formerly # 272) May.

U.S. Department of Health and Human Services, Health Care Financing Administration (USHCFA, 1999 [formerly 1995b]). State Operations Manual. Provider Certification. Transmittal No.13 (formerly # 273) December.

U.S. Department of Health and Human Services, Health Care Financing Administration (USHCFA, 1999 [formerly 1995c]). State Operations Manual. Provider Certification. Transmittal No.10 (formerly # 274). June.

U.S. Department of Health and Human Services, Office of the Inspector General (OIG) *Quality Care in Nursing Homes: An Overview,* March, 1999.

U.S. Department of Health and Human Services, Office of the Inspector General (OIG) *Long-Term Care Ombudsman Program: Complaint Trends.* OEI-02-98-00350, March, 1999b.

U.S. General Accounting Office (GAO), *Nursing Homes Complaint Investigation Processes Often Inadequate to Protect Residents,* March, 1999.

Vigild, M. "Dental Caries and the Need for Treatment among Institutionalized Elderly." *Community Dental Oral Epidemiology*, 1989, 17, pp. 102–105.

Vital and Health Statistics from the Centers for Disease Control and Prevention/National Center for Health Statistics. *Detailed Diagnoses and Procedures, National Hospital Discharge Survey 1991.* Washington, D.C.: U.S. Department of Health and Human Services, February, 1994.

Wilson, M-MG. "The Management of Dehydration in the Nursing Home." in Arnaud, M.J.; Baumgartner, R.J.; Morely, E.; Eds., *Hydration and Aging*. Springer, 1998, pp. 181–200.

Wade, William. "Malnutrition in the Nursing Home Patient." *Clinical Consult*, 1991, 10(12).

Webster's II, *New Riverside University Dictionary*. Boston: Houghton Mifflin, 1984.

Weinberg, A.D., Minaker, K.L., and the Council on Scientific Affairs, American Medical Association. "Evaluation and Management of Older Adults." *Journal of the American Medical Association*, 1995, 274(19). pp. 1552–1556.

Weinberg, A.D., Pals, J.K., Levesque, P.G., Beal, L.F., Cunningham, T.J., and Minaker, K.L. "Dehydration and Death During Febrile Episodes in the Nursing Home." *Journal of American Geriatrics Society,* 1994, 42(9), pp. 968–971.

Weinberg, A.D., Pals, J.K., McGlinchey-Berroth, R., and Minaker, K.L. "Indices of Dehydration Among Frail Nursing Home Patients: Highly Variable But Stable Over Time." *Journal of American Geriatrics Society,* 1994, 42(10), pp. 1070–1073.

Zimmerman, D.R., Karon, S.L., Arling, G. "Development and Testing of Nursing Home Quality Indicators." *Health Care Financing Review*, 1995, 16(4), pp. 104–127.