CHAPTER 1: NUTRITION, AGING AND DEMENTIA

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AGING FACTORS

The mean age of nursing home residents in 1994 was 80.5 years and most residents experienced physical limitations in performing Activities of Daily Living (ADLs). Older individuals in long-term care facilities are often categorized as “frail elderly” and physical problems usually include poor appetite, weight loss, chronic disease, inability to self-feed, loss of taste and smell, poor oral health and polypharmacy. These changes with age are common to all but are particularly problematic in persons with dementia.

Metabolic and Appetite Changes. It is common, as we age, to either gain or lose weight. What more precisely happens is that lean tissue or muscle mass is lost and replaced with fat tissue. The rate at which this process occurs has much to do with physical activity and genetics. For the sedentary individual, this occurs at a much younger numeric age. The loss of lean tissue (or muscle) results in loss of strength and eventually the inability to perform ADLs. As one loses mobility, strength, and the capacity to perform ADLs, morbidity and mortality rates increase dramatically.

Weight loss is considered a clinical feature of dementia and most research points to the fact that the majority of the dementia population will suffer some significant weight loss at some point in the disease, usually early on. However, some persons may be just as likely to consume too much food as to consume too little. Therefore, overall, there appears to be a general dysregulation of energy balance rather than weight loss only. Weight change, in addition to being affected by lack of physical activity and appetite, may also be related, in many instances, to the fact that these individuals are no longer in control of purchasing or providing their own food. Hormonal pathways may also change with age and/or dementia thereby affecting appetite and body composition. The exact reason for body composition, appetite, and behavior change is not known.

Some have suggested that the initial (and other) weight loss that occurs as a result of dementia is related to the increased activity of wandering, restlessness, pacing, or agitation. No clinical evidence exists to suggest that individuals with dementia have an increased Resting Energy Expenditure (REE) or an activity level compared to individuals without dementia. There are lower values for lean mass and fat mass for individuals with dementia compared to non-dementia persons. Evidence does suggest decreased food intake in dementia may be related to loss of body weight. The part of the brain associated with hunger or appetite control (the median temporal cortex) is smaller in persons with Alzheimer’s disease. The aging process already leads to loss of lean tissue. Decreased activity and intake in dementia may accelerate that process and contribute to loss of activities of daily living.

Dental Changes. One of the most common problems contributing to dental changes is dry mouth. Reduced saliva flow is common among older adults and can be caused by certain medications as well as normal aging. Dry mouth causes problems such as constant sore throat, difficulty swallowing, a burning sensation, and cavities. It is also associated with decreased food intake including protein, folate, copper, calories, fiber, vitamin D, calcium and other nutrients. Lack of saliva production can be combated with oral gels created for this purpose as well as keeping moist foods, water, and other beverages available to the individual. A spray bottle or mister may also help.

Chronic Illness and Medication. Most individuals with evidence of malnutrition have been on restricted diets for chronic illness. In addition to potentially causing a decrease in saliva production, certain medications may also alter appetite. In 1994, long term care residents averaged 8 medications per day. Of those most frequently used, 23 were known to decrease food intake.

DEMENTIA FACTORS

Nutrient essentials and deficiencies. There are several possible nutrition hypotheses related to the
progression of dementia. However, at this time, we cannot name specific nutrients that with any certainty will either cause or prevent dementia.9

**Vitamins.** Intake of many nutrients typically decreases with age. This may be related to chronically low intake, decreased intake, or malabsorption. B$_{12}$, B$_6$, and Folate have received particular attention in dementia research for their role in maintaining homocysteine levels and for their work in preservation of a healthy nervous system.10 Older individuals with low blood concentrations of vitamin B$_{12}$, B$_6$, and folic acid had the poorest scores of brain function measured by a battery of cognitive tests.11

Low folate and vitamin B$_{12}$ intakes and blood concentrations are associated with neuropsychiatric disorders, and intervention with B vitamin supplements may reduce the severity of symptoms.12

**Malnutrition and Cognition.** It is unclear whether in those predisposed to dementia, malnutrition leads to progressive disease or whether the progression of the disease leads to detrimental nutrition. Persons with dementia not suffering from overt malnutrition may well be sub-clinically malnourished.

In order to measure cognitive function, there are several conventional geriatric tools that may typically be used.13 A common nutritional assessment used is the Mini Nutritional Assessment.14 Supplement intake, environmental considerations, and feeding time have all been shown to decrease malnutrition to some degree but results can vary depending on stage of disease and skill of the caregiver.

**Immune System and Antioxidants.** Dementia is partly the result of a disruption of nerve cell functioning and signaling. Animal and laboratory studies have shown that this disease involves oxidative and inflammatory processes. Vitamins C and E are two of the body’s most potent antioxidants. The strongest evidence for antioxidant protection rests with high food intake of vitamin E.9 Foods highest in vitamin E are vegetable oils, nuts, (especially almonds), and seeds (especially sunflower). Moderate food sources of vitamin E include whole grains, egg yolk, collard greens, avocados, apples and melon. These foods have not been shown to prevent dementia but they do provide high levels of the antioxidant that seems to have the greatest impact on the disease process.

**GENERAL CARE APPROACHES**

**Nutritionally Dense Foods.** The best method of providing essential nutrients to the body is via food. There are documented methods of assisting individuals with dementia to eat adequate numbers of calories per day. However, sometimes nutritional health comes down to just that: providing adequate calories but with very little nutrient content.15 If one were looking to provide the biggest nutritional bang per calorie consumed, the following types of whole food should be used:

**Whole grains:** Look for whole grain health claim on the package. Color is not helpful. Dark grain products may have molasses or caramel food coloring added. The first ingredient should be “whole wheat flour” for example. Other examples would be oats, brown rice, pearl barley, popcorn, wild rice, cracked wheat or bulgar.

**Nut butters:** Ground nut butters instead of processed have higher nutritional density. Ground peanut butter and almond butter are examples.

**Fruit spreads:** Spreads of softened dried fruit such as fig, banana, apricot, and apples.

**Soups:** Thickened soups blended from beans, milk, and vegetables.

**Sauces:** Sauces with vegetables cooked in.

**Mashed potatoes:** Mashed potatoes with blended beans or vegetables mixed in.
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References

6. Volkers N. For the elderly, dry mouth affects eating habits and teeth. Intellihealth News Service April 1, 2002