DOI: 10.32481/djph.2016.06.012,

Nutrition for Seniors

Ina Li, MD

More people are surviving to an older age. Eating well is vital for everyone at all ages. Your daily food choices can make an important difference in your health by impacting your energy level and many disease states such as heart disease, stroke, and diabetes. In addition, eating well will give you the nutrients to keep you muscle, bones, organs, and other parts of your body healthy throughout your entire life.

Dietary Recommendations

Aging is associated with notable changes in body composition. Bone mass, lean mass, and water content all decrease, while fat mass generally increases. The increase in total body fat is commonly accompanied by greater intra- abdominal fat stores. In addition, older adults have a reduced basal metabolic rate. The consequence of these changes in body composition is that well-standardized nutrient requirements for younger or middle-aged adults cannot be generalized to older adults.[1]

The Food and Nutrition Board of the Institute of Medicine of the National Academies[2] has released macronutrient guidelines that recommend a prudent diet, with 20%–35% of energy as fat with reduced intake of cholesterol, saturated fatty acids, and trans fatty acids. An additional 45%-65% as carbohydrates, preferably complex carbohydrates in the form of fiber, should be added to an older adult diet. The recommended daily fiber intake for those ≥60 years old is 30 grams for men and 21 grams for women. Protein intake is recommended at approximately 10%–35% of total energy.

The recommended dietary allowance (RDAs) is the average daily micronutrient intake level estimated to meet the requirements of 97%–98% of the healthy individuals in a group. This information is helpful for individualized recommendations to avoid over- nutrification (see Table 1).

Dehydration is the most common fluid or electrolyte disturbance in older adults. Normal aging is associated with a decreased perception of thirst and reduced ability to concentrate urine after fluid deprivation.[3] This is especially a concern during the hot summer months when older adults need to drink more fluids to replenish extra-corporeal losses but do not feel the need to do so. In general, fluid needs of older adults can be met with 30 mL/kg/d.

For example, a person weighing 165 lbs (approximately 75 kg), will need to drink 2250 mL (roughly a 2 Liter soda bottle) per day. Fluid needs may increase during episodes of fever or infection, as well as with diuretic or laxative therapy. Common signs of dehydration are decreased urine output, confusion, constipation, and mucosal dryness.

Table 1. Recommended Dietary Intakes of Micronutrients for Adults ≥ 71 Years Old

Nutrient	**Recommended Daily Allowance**	
	For Men	***For Women***
Calcium	1,000 mg*	1,000 mg*
Magnesium	350 mg	65 mg
Vitamin D	10 mcg*	10 mcg*
Thiamine	1.0 mg	0.9 mg

DOI: 10.32481/djph.2016.06.012,

Riboflavin	1.1 mg	0.9 mg
Niacin	12 mg	11 mg
Vitamin B6	1.4 mg	1.3 mg
Folate	320 mcg	320 mcg
Vitamin B12	2.0 mcg	2.0 mcg
Pantothenic acid	5 mg*	5 mg*
Vitamin A	625 mcg	500 mcg
Vitamin K	90 mcg*	90 mcg*
Iron	6 mg	5 mg
Zinc	9.5 mg	6.8 mg
Vitamin C	75 mg	60 mg
Tocopherol	12 IU	12 IU
Selenium	45 mcg	45 mcg
Potassium	4,700 mg*	4,700 mg*
* *Adequate intake, not recommended dietary allowance.*		
SOURCES: Data from Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, Food and Nutrition Board, Institute of Medicine, Dietary Reference Intakes for Calcium, Phosphorus, Magnesium, Vitamin D, and Fluoride. Washington, DC: National Academy Press; 1997; Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, Institute of Medicine, Dietary Reference Intakes for Thiamin, Riboflavin, Niacin, Vitamin B6, Folate, Vitamin B12, Pantothenic Acid, Biotin, and Choline. Washington, DC: National Academy Press; 1998; Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, Food and Nutrition Board, Dietary Reference Intakes for Vitamin C, Vitamin E, Selenium, and Beta Carotene, and Other Carotenoids. Washington, DC: National Academy Press; 2000; Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, Food and Nutrition Board, Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc. Washington, DC: National Academy Press; 2001; Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, Institute of Medicine, Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate. Washington, DC: National Academy Press; 2004; Dietary Reference Intakes for Calcium and Vitamin D (2011). Available at www.nap.edu (accessed Jan 2016).		

Tools for Nutrition Screening:

The nutritional status of older adults can be influenced by a variety of factors (see Table 2). It is important to keep these factors in mind as many are modifiable. For example, if a patient is not eating because of dental pain, then correcting the dental issue may solve the issue of poor nutrition.

Table 2. Risk Factors for Poor Nutritional Status[1]

Alcohol or substance abuse
Cognitive dysfunction
Decreased exercise
Depression, poor mental health

Functional limitations
Inadequate funds
Limited education
Limited mobility, transportation
Medical problems, chronic diseases
Medications
Poor dentition
Restricted diet, poor eating habits
Social isolation

The use of screening tools to survey older patients about their nutritional intake is important as it evaluates the risk of malnutrition among frail older adults and identifies those who may benefit from early intervention. The shortened version of the Mini-Nutritional Assessment tool (www.mna-elderly.com) contains only 6 screening questions which is simple to use in routine care. Another nutritional assessment tool, the Simplified Nutrition Assessment Questionnaire, can be answered by patients through the mail or while sitting in a waiting room. It has a sensitivity and specificity of 88.2% and 83.5% for identifying those at risk of weight loss (www.slu.edu/readstory/newslink/6349).

Another way to determine nutritional risk of an older person is by tracking his/her weight over time. For example, clinically important weight loss is commonly defined as loss of 10 lbs (4.5 kg) or >5% of usual body weight over a period of 6–12 months. Weight loss of this degree serves a warning sign that the person is not thriving. It is associated with poor wound healing, infections, pressure sores, depressed functional ability, and mortality. Involuntary weight loss is present in approximately 13% of older outpatients, 25%–50% of hospitalized older adults, and >50% of nursing-home residents.[4]

Another useful measure of body size is the Body Mass Index (www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/index.html). A BMI lower than 18.5 is designated as underweight however, this level should be interpreted in the context of the individual's lifelong weight history.

Medications can also cause nutrient deficits and side effects that might lead to weight loss. For example, anti-depressants such as serotonin selective reuptake inhibitors (SSRIs), calcium channel blockers, H2-receptor antagonists, proton-pump inhibitors, narcotic and nonsteroidal analgesics, furosemide, and potassium supplements can all cause anorexia. Anticholinergics can cause constipation and dry mouth. Table 3 lists some common Drug-Nutrient interactions.

Table 3. Drug-Nutrient Interactions[1]

Drug	**Reduced Nutrient Availability**
Alcohol	Zinc, vitamins A, B_1, B_2, B_6, B_{12}, folate
Antacids	Vitamin B_{12}, folate, iron
Antibiotics, broad-spectrum	Vitamin K
Colchicine	Vitamin B_{12}

Digoxin	Zinc
Diuretics	Zinc, magnesium, vitamin B_6, potassium, copper
Isoniazid	Vitamin B_6, niacin
Levodopa	Vitamin B_6
Laxatives	calcium, vitamins A, B_2, B_{12}, D, E, K
Lipid-binding resins	Vitamins A, D, E, K
Metformin	Vitamin B_{12}
Mineral oil	Vitamins A, D, E, K
Phenytoin	Vitamin D, folate
Salicylates	Vitamin C, folate
Trimethoprim	Folate

The growing prevalence of obesity in America extends to older adults in their 60s and 70s. excess body weight and modest weight gain (≥5 kg) in middle age can be associated with medical comorbidities in later life that include hypertension, diabetes mellitus, cardiovascular disease, obstructive sleep apnea, and osteoarthritis. However, in older individuals, higher BMI may have a protective effect with mortality rates lowest for individuals with BMIs between 27 and 29. The advantage of being overweight could be that fat mass stores energy that can be used during negative energy balance states such as an acute illness. In fact, BMI gain or loss was associated with increased mortality whereas BMI stability was not. In this group, the emphasis may better be placed on preservation of strength and flexibility and maintaining weight rather than on weight reduction.[5,6]

Nutritional Interventions

Preventing under-nutrition is much easier than treating it. Food intake can be enhanced by catering to food preferences as much as possible and by avoiding therapeutic diets unless their clinical value is certain. Patients should be prepared for meals with appropriate hand and mouth care, and they should be comfortably situated for eating. Assistance should be provided for those who need help. Placing two or more patients together for meals can increase sociability and food intake. Foods should be of appropriate consistency, prepared with attention to color, texture, temperature, and arrangement. The use of herbs, spices, and hot foods helps to compensate for loss of the sense of taste and smell often accompanying older age and to avoid the excessive use of salt and sugar. Hard-to-open individual packages should be avoided. Adequate time should be given for leisurely meals.[1]

Nutritional supplements containing protein and energy (calories) have been widely used in an effort to enhance caloric and nutrient intake, especially when patients eat only small amounts of food. The use of such supplements may decrease food intake, but overall nutritional intake usually increases owing to the nutrient quality and density of the supplements.

Supplementation with energy and protein produces a small but consistent weight gain in older people.7 current evidence does not support routine supplementation for older people who are well-nourished in any setting.

Approximately 60% of older adults take self- prescribed dietary supplements. Although many vitamin and mineral supplements are generally safe, the proposed benefit of many of these over the counter supplements is lacking. The strongest recommendation for benefit surrounds calcium and vitamin D to prevent osteoporosis (Table 1). Vitamin D deficiency occurs in 30% of individuals >70 years old and is associated with impaired calcium absorption and reduced physical activity level. Screening for vitamin D deficiency with measurement of total vitamin D levels is appropriate in older patients, because repletion is associated with improved physical performance, reduced falls, improved bone healing, and response to bisphosphonates.

The current dietary allowance for older persons over the age of 51 is 1,2000 mg for calcium supplementation. For those 51-70 years of age, 600 IU of Vitamin D daily and for those over age of 71 years of age, 800 IU of Vitamin D daily is recommended. (https://ods.od.nih.gov/factsheets/VitaminD-HealthProfessional/) Vitamins such as Folic acid, vitamins B6, and B12 have not demonstrated its proposed benefit of lowering the risk of heart disease or memory loss. Whether or not antioxidants are beneficial is also the subject of controversy.

Vitamin e has not been shown to slow progression of Alzheimer disease or prevent cardiovascular disease, but it may be associated with higher risk of hemorrhagic stroke and heart failure. An expert panel reviewed Multivitamins in chronic disease prevention at the National Institutes of Health in 2006 concluded that "the present evidence is insufficient to recommend either for or against the use of multivitamins by the American public to prevent chronic disease."[7]

Conclusion:

Nutritional problems become a concern in older adults as there are age-related changes, metabolism, disease states, and medication interactions and side effects to account for. Being sensitive to these factors is paramount to ensure the health of our aging population. A wonderful resource to direct patients to as a preventive measure for their nutritional health is MyPlate (www.choosemyplate.gov). The U.S. Department of Agriculture (USDA) has put forth easy-to-understand food guidelines at this website. It discusses portion sizes, gives examples of low-fat dairy and low-sodium food choices and encourages more consumption of fruit and vegetables. In the end, a healthy diet leads to healthy living.

References

1. Geriatric review Syllabus (9th revised edition) by the American Geriatrics Society. Chapter: Nutrition and Weight.
2. Institute of Medicine of the National Academies, Food and Nutrition Board. Dietary Reference Intakes. www.iom.edu/Global/Topics/Food-Nutrition.aspx
3. Ferry, M. (2005, June). Strategies for ensuring good hydration in the elderly. *Nutrition Reviews*, *63*(6 Pt 2), S22–S29. PubMed https://doi.org/10.1111/j.1753-4887.2005.tb00151.x
4. Casaer, M. P., & Van den Berghe, G. (2014, March 27). Nutrition in the acute phase of critical illness. *The New England Journal of Medicine*, *370*(13), 1227–1236. PubMed https://doi.org/10.1056/NEJMra1304623

5. Winter, J. E., MacInnis, R. J., Wattanapenpaiboon, N., & Nowson, C. A. (2014, April). BMI and all-cause mortality in older adults: A meta-analysis. *The American Journal of Clinical Nutrition*, *99*(4), 875–890. PubMed https://doi.org/10.3945/ajcn.113.068122

6. Dahl, A. K., Fauth, E. B., Ernsth-Bravell, M., Hassing, L. B., Ram, N., & Gerstof, D. (2013, April). Body mass index, change in body mass index, and survival in old and very old persons. *Journal of the American Geriatrics Society*, *61*(4), 512–518. PubMed https://doi.org/10.1111/jgs.12158

7. National Institutes of Health State-of-the-Science Panel. (2007, January). National Institutes of Health State-of-the-Science Conference Statement: Multivitamin/mineral supplements and chronic disease prevention. *The American Journal of Clinical Nutrition*, *85*(1), 257S–264S. PubMed https://doi.org/10.1093/ajcn/85.1.257S