

Nutrition and Aging

Fact Sheet No. 9.322

Food and Nutrition Series|Health

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The Aging Body

Physiological changes occur slowly over time in all body systems. These changes are influenced by life events, illnesses, genetic traits and socioeconomic factors.

Sensory Changes

- Sensory changes include a decline in sight and peripheral vision, hearing, smell and taste. The losses are neither total nor rapid, but they do affect nutritional intake and health status.
- Loss of visual acuteness may lead to less activity or a fear of cooking, especially using a stove. Inability to read food prices, nutrition labels or recipes may affect grocery shopping, food preparation and eating. This could have an adverse effect on nutritional status.
- Loss of hearing may lead to less eating out or not asking questions of the waiter or store clerk.
- Changes in smell and taste can affect food preferences. If food doesn't taste appetizing or smell appealing, it is likely it won't get eaten. Recommended changes in diet such as limiting intake of salt, sugar or fat, can also lead to lower food intake.

Structural and Functional Changes

Changes in Muscle Mass

As people age, lean body mass is lost. Reduced muscle mass includes skeletal muscle, smooth muscle and muscle that affects vital organ function, with loss of cardiac muscle perhaps the most important. Cardiac capacity can be reduced and cardiac function impaired by chronic diseases such as atherosclerosis (hardening of the arteries), hypertension or diabetes.

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Changes in Metabolism

The most significant result of the loss of lean body mass may be the decrease in basal energy metabolism. Metabolic rate declines proportionately with the decline in total protein tissue. At the same time, total body fat typically increases with age. This often can be explained by lower metabolic rate in addition to too many calories. As people age, fat tends to concentrate in the trunk and as fat deposits around the vital organs. However, in more advanced years, weight often declines. To avoid gaining weight, calorie intake should be reduced and amount of physical activity can be increased. The goal is energy balance.

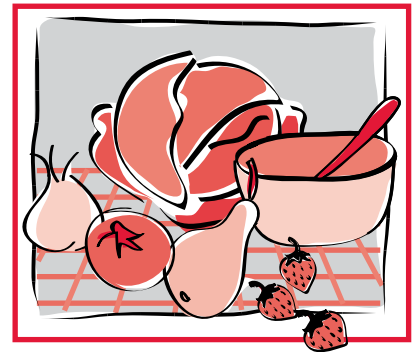
Changes in Bone Density

As people age, bone density is lost. After menopause, women tend to lose bone mass at an accelerated rate, which can lead to osteoporosis. Severe osteoporosis is debilitating and serious. Fractures and their associated illness and mortality are certainly a concern. Also, vertebral compression fractures can change chest configuration. This, in turn, can affect breathing, intestinal distension, and internal organ displacement.

Changes in Digestion

Nutrition can be a factor in all of the changes noted above. However, the slowing of the normal action of the digestive tract plus general changes have the most direct effect on nutrition. Digestive secretions diminish markedly, although enzymes remain adequate. Additionally, older adults are more likely than younger adults to become constipated. Adequate dietary fiber, physical activity, and sufficient fluid intake can help maintain regular bowel function and nutrient digestion and absorption.

Changes also occur in the kidneys, lungs and liver, and in our ability to generate new protein tissue. In addition, aging can slow the immune system's response in making antibodies.



Quick Facts

- To stay healthy adults should eat a variety of foods.
- Calcium, fiber, iron, protein and vitamins A, B 12, C and folacin in the diet or in supplement form become more important as people age.
- To reduce calories, select nutrient-dense foods. Foods high in fat, sugar and sodium should be chosen less often and in small portions

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Suggestions for Coping with Change

Sensory Changes

Loss of smell and taste affect the nutritional intake and status of many older adults. If food does not smell or taste appetizing, it will not be eaten. Suggestions:

- Add flavor to foods with seasonings. Experiment with low sodium seasonings such as lemon juice, ground pepper, curry powder, and fresh or dried herbs of all types such as thyme, rosemary, or basil (see fact sheet 9.354, Sodium and the Diet).
- Avoid cooking vegetables until they are mushy. Try roasting or sautéing fresh vegetables until they are just slightly soft and toss with olive oil and garlic.
- Add variety to meals by choosing foods with different textures and colors. Top oatmeal with chopped nuts and dried cranberries. Add sunflower seeds, chickpeas, and crisp vegetables to salads.
- Purchase produce that is in-season for the best flavor and sweetness. For example, apples in fall, citrus in winter and berries in summer.
- Eat smaller meals more often throughout the day, rather than just 3 larger meals. This can help increase appetite and stimulate the senses.

Osteoporosis

Weight-bearing exercise and a diet high in calcium help protect against osteoporosis. Current treatments include estrogen replacement, exercise and calcium supplements. (See 9.359, Osteoporosis.)

Suggestions:

- Walk, lift weights, swim or enroll in a group fitness or water aerobics class. Exercise at least three times a week and have fun!
- Include two to four daily servings of dairy products such as milk, yogurt or cheese.
- If digesting milk is a problem, cultured dairy products such as yogurt or buttermilk may be better tolerated. Another option is vitamin D and calcium fortified soy, almond, or rice milk.
- Post-menopausal women may

need a calcium and/or vitamin D supplement if they can't get enough through diet alone. Talk to a physician or registered dietitian.

Dehydration and Constipation

Changes in kidney function can affect thirst sensation, thereby decreasing fluid intake with potential for dehydration. In addition to inadequate fluid intake, many older adults do not consume adequate fiber. Inadequate fluid and fiber intake along with increased physical inactivity can result in constipation. (See fact sheet 9.333, Dietary Fiber).

Suggestions:

- Aim to consume 8 cups (women) or 13 cups (men) per day of fluids from beverages and/or foods containing water.
- Choose a variety of fruits, vegetables, and whole grains to include in your diet.

Loss of teeth

Improperly fitting dentures may unconsciously change eating patterns because of difficulty with chewing. A soft, low-fiber diet without important fresh fruits and vegetables may result.

Suggestions:

- Have poorly fitting dentures adjusted.
- Chop, steam, stew, grind or grate hard or tough foods to make them easier to chew without sacrificing their nutritional value. Try grating carrots, broccoli, or Brussels sprouts to make a salad.

Nutrient Needs

Calories

Calorie needs change due to more body fat and less lean muscle. Less activity can further decrease calorie needs. The challenge for older adults is to meet the same nutrient needs as when they were younger, yet consume fewer calories. Choosing nutrient-dense foods – foods high in nutrients in relation to their calories – will help reduce calories. For example, low-fat milk is more nutrient dense than regular milk. Its nutrient content is the same, but it has fewer calories because it has less fat.

Protein

Protein needs usually do not change for the elderly, although research studies are not definitive. Protein requirements

can vary because of chronic disease. Balancing needs and restrictions is a challenge, particularly in health care facilities. Protein absorption may decrease as individuals age, and the body may make less protein. However, this does not mean protein intake should be routinely increased, because of the general decline in kidney function. Excess protein could unnecessarily stress kidneys.

Fat

Reducing the overall fat content in the diet is reasonable and may be the easiest way to cut calories and reduce weight. Lower fat intake is often also necessary because of chronic disease.

Carbohydrates and Fiber

About 60 percent of calories should come from carbohydrates, with emphasis on complex carbohydrates. Glucose tolerance may decrease with advancing years, and complex carbohydrates put less stress on the circulating blood glucose than do refined carbohydrates.

Such a regime also enhances dietary fiber intake. Adequate fiber, together with adequate fluid, helps maintain normal bowel function. Fiber also is thought to decrease risk of intestinal inflammation. Vegetables, fruits, grain products, cereals, seeds, legumes and nuts are all sources of dietary fiber (See fact sheet 9.333, Dietary Fiber).

Water

Of all the nutrients, water is the most important, serving many essential functions.

Adequate water intake reduces stress on kidney function, which tends to decline with age. Adequate fluid intake also eases constipation. With the aging process, the ability to detect thirst declines, so it is not advised to wait to drink water until one is thirsty. Individuals should be sure to drink plenty of water, juice, milk, and coffee or tea to stay properly hydrated. The equivalent to nine (for women) or 13 (for men) glasses of fluid should be consumed every day. It may be helpful for people to use a cup or water bottle which has calibrated measurements on it, in order to keep track of how much they drink throughout the day.

Vitamins and Minerals

Vitamin deficiencies may not be obvious in all older people. However, any illness stresses the body and may be enough to use up whatever stores there are and make the person vitamin deficient. Medications also interfere with many vitamins. When drug histories are looked at, nutrient deficiencies emerge. Eating nutrient-dense foods becomes increasingly important when calorie needs decline but vitamin and mineral needs remain high. (See fact sheets 9.315 Fat-Soluble Vitamins: A, D, E, and K. and 9.312 Water-Soluble Vitamins: B-Complex and Vitamin C)

Vitamin D

The body can store fat-soluble vitamins and usually older adults are at lower risk of fat-soluble vitamin deficiencies. However, vitamin D-fortified milk is recommended for the housebound, nursing home residents, and anyone who does not get adequate exposure to sunlight.

Iron and Calcium

Iron and calcium intake sometimes appears to be low in many older adults. To improve absorption of iron, include vitamin C-rich fruits and vegetables with these foods (See 9.356, Iron: An Essential Nutrient). For example, have juice or sliced fruit with cereal, a baked potato with roast beef, vegetables with fish, or fruit with chicken. To boost your intake of calcium, have tomato slices in a cheese sandwich, or salsa with a bean burrito.

Zinc

Zinc can be related to specific diseases in the elderly. It can also be a factor with vitamin K in wound healing. Zinc improves taste acuity in people where stores are low. Habitual use of more than 15 mg per day of zinc supplements, in addition to dietary intake, is not recommended without medical supervision. If you eat meats, eggs and seafood, zinc intake should be adequate. This underscores the importance of eating a wide variety of foods. Zinc along with vitamins C and E, and the phytochemicals lutein, zeaxanthin and beta-carotene may help prevent or slow the onset of age-related macular degeneration. The best way to obtain these nutrients is to consume at least five servings of fruits and vegetables, especially dark green, orange and yellow ones. Good choices include kale, spinach, broccoli, peas, oranges and

cantaloupes. Consult your doctor to see if a supplement may also be necessary.

Vitamin E

Vitamin E may have a potential role in the prevention of Alzheimer's disease. Research has shown that eating foods with vitamin E, like whole grains, peanuts, nuts, vegetable oils, and seeds, may help reduce the risk of Alzheimer's disease. However, the same benefits did not hold true for vitamin E from supplements.

Vitamin B12

Low levels of vitamin B12 have been associated with memory loss and linked to age-related hearing loss in older adults. Folate, which is related to B12 metabolism in the body, may actually improve hearing. However, if B12 levels are not adequate, high folate levels may be a health concern. As we age, the amount of the chemical in the body, needed to absorb vitamin B12 decreases. To avoid deficiency, older adults are advised to eat foods rich in vitamin B12 regularly, including meat, poultry, fish, eggs and dairy foods. Consult your doctor to see if a vitamin B12 supplement may also be necessary.

Drugs used to control diseases such as hypertension or heart disease can alter the need for electrolytes, sodium and potassium. (See 9.361, Nutrient-Drug Interactions and Food.) Even though absorption and utilization of some vitamins and minerals becomes less effective with age, higher intakes do not appear to be necessary. As for any age group, it's important to enjoy a wide variety of foods. Also, individuals taking an herbal or dietary supplement should be sure to tell their doctor, since these supplements may interact with other drugs or nutrients in the diet

Variety of Foods

People of all ages need more than 40 nutrients to stay healthy. With age, it becomes more important that diets contain enough calcium, fiber, iron, protein, and the vitamins A, B12, C, D and Folate. Older adults should reduce calories, select nutrient-dense foods, and enjoy smaller portions of foods high in fat, sugar and sodium. Because no one food or pill provides all of the nutrients, they should eat a variety of foods to get the full spectrum of nutrients.

Consuming a variety of foods can be a challenge for older adults, who often eat the same foods over and over again. Some suggestions to add variety to the diet are below:

- Choose a variety of colors in fruits and vegetables, alternating choices throughout meals.
- Vary protein sources; choose meats, fish, whole nuts, nut butters, and beans.
- Increase the variety of texture in meals. Alternate between whole grain breads, cereals, pastas, and rice.
- Get liquids from various sources, including water, milk, juice, tea, or soup.
- Vary preparation methods for different foods. Roast, steam, or sauté vegetables. Bake, grill, or stew meats.
- Build your diet as MyPlate recommends. (See Figure 1.)



Figure 1: Go to the Web sites <http://hnrc.tufts.edu/my-plate-for-older-adults/> and www.choosemyplate.gov to find your personalized plates for good health.

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