

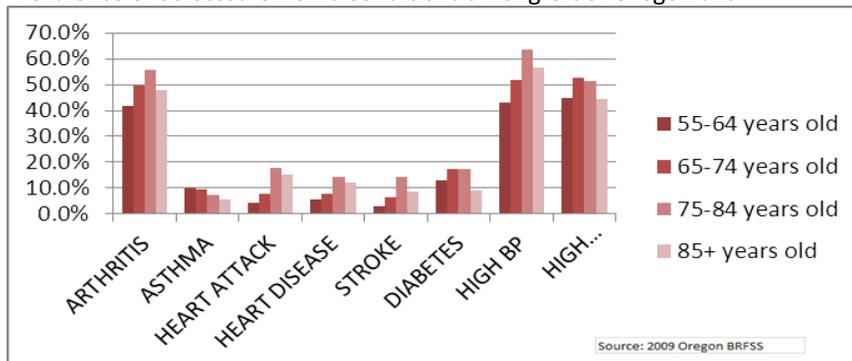
## Rationale for Nutrient Requirements

Each meal served by the Older Americans Act funded nutrition services provider must meet the current USDA/HHS *Dietary Guidelines* and must contain at least 33% percent of the current Dietary Reference Intakes (DRI) as established by the Food and Nutrition Board of the National Academy of Science-National Research Council. Nutrient requirements may be averaged over one week to allow more flexibility in menu planning. The following were identified as nutrients of concern for older adults.

Nutrient	Target Values	Compliance Values AVERAGED OVER 1 WEEK
<b>Calories</b>	700 calories	600-850 calories
<b>Protein</b>	19 g per meal	17-21 grams
<b>Total Fat</b>	<30% calories	≤ 30% calories, averaged over one week
<b>Saturated Fat</b>	<10% calories	No one meal may be more than 35% fat
<b>Trans Fat</b>	No Trans Fat	Nutrition label or manufacturer specification must indicate zero grams of trans fat per serving.
<b>Fiber</b>	>10 gm	≥7gm
<b>Calcium</b>	400 mg	400 mg
<b>Magnesium</b>	140 mg	≥88 mg/meal
<b>Zinc</b>	3.7 mg per meal	3.1mg
<b>Vitamin B6</b>	.6mg	.57 mg
<b>Vitamin B12</b>	.8 mcg	.79 mcg
<b>Vitamin C</b>	30 mg	30 mg
<b>Sodium</b>	<500 mg	FY13: <1500 FY14: <1350 mg FY15: <1200 mg FY16: <1050 mg

**Calories:** The prevalence of overweight and obesity in older Oregonians is dramatically higher now than it was a few decades ago. Obesity's associated co-morbidities such as diabetes, hypertension, dyslipidemia, metabolic syndrome, heart disease and osteoarthritis are concurrently increasing.

Prevalence of Selected Chronic Conditions among Older Oregonians



These days many older persons in need of services are not tiny and frail; they are large and frail. Nine out of ten older adults receiving congregate or home delivered meals have at least one chronic condition that nutrition and diet can help ameliorate<sup>1</sup>. One of the goals of the Older Americans Act is to keep seniors in their homes. This can be complicated by the relationship between obesity and functional limitations. It is our responsibility, as nutrition service providers, to offer healthy foods that allow seniors to consume diets that help them manage, not hinder their health.

The prevalence of undernutrition and risk of undernutrition in community dwelling older adults (>65 years) have been reported to be 4.3% and 25.4%<sup>2</sup>. In an effort to balance prevention of undernutrition, overnutrition/obesity and food security a reasonable minimum of 600 calories was chosen. A calorie limit of 850 on congregate and home delivered meals can help seniors achieve weight management as well as manage or prevent chronic disease. Calories, like all other nutrient requirements may be averaged over a week.

**Protein:** The current Estimated Average requirement for protein for all adults 19 years and older is .66 g/kg/day; a moderately higher protein intake (1.0-1.3 g/kg/day) may be required for older adults to maintain nitrogen balance due to decreased efficiency of protein synthesis and impaired insulin action. The need for increased protein intake is supported by the Health, Aging, and Body Composition Study. This study found that older adults with the highest intake of protein lost less lean body mass than those with lower protein intakes.<sup>3</sup> However, there is some concern that higher protein intake may increase risk of toxicity or impaired renal function.<sup>4</sup> The average senior meal contains usually has no problem meeting a protein target of 19 g/meal.

**Total Fat, Saturated fat and Trans fat:** The Dietary Guidelines are very clear in stating that Americans consume too much solid fats (trans and saturated) which raises cardiovascular disease risk. Solid fats are abundant in the diets of Americans and contribute significantly to excess calorie intake.

**Fiber:** Fiber is important for intestinal health and protection against heart disease and metabolic syndrome; however, the median intakes of neither men nor women 60 years and older meet the AI<sup>5</sup>. According to the Dietary Guidelines, the adequate intake of fiber is 14 g per 1,000 calories or 25 g per day for women and 38 g per day for men. In order to comply with the Dietary Guidelines, as required by the Older Americans Act, fiber should be >8g for woman and >10 g for men per meal. A compliance range of >7 g per meal was set slightly below this requirement in recognition of consumer acceptance and food costs.

**Calcium:** The Dietary Guidelines state that a significant number of Americans have low bone mass, as risk factor for osteoporosis, which places them at risk of bone fractures. Adults ages 51 years and older are of particular concern due to low calcium intake from food. The DRI for calcium for men and women >70 y is 1000 mg.

**Magnesium:** Older adults are at increased risk for magnesium deficiency. The 1999–2000 and 1988–94 National Health and Nutrition Examination Surveys suggest that older adults have lower dietary intakes of magnesium than younger adults<sup>6</sup>. In addition, magnesium absorption decreases and renal excretion of magnesium increases in older adults. Seniors are also more likely to be taking drugs that interact with magnesium<sup>6</sup>. This combination of factors places older adults at risk for magnesium deficiency. It is very important for older adults to get recommended amounts of dietary magnesium. The Dietary Reference Intake (DRI) for Magnesium for adults ages 70 and older is 265 mg/day for females and 350 mg/day for males. 1/3 of the DRI is 88 mg/day for females and 116 mg/day for males. The Oregon standard is 88 mg/day.

**Zinc:** Although the requirement for zinc is not known to be higher for older adults, their average zinc intake tends to be considerably less than the RDA<sup>7</sup>. A reduced capacity to absorb zinc, increased likelihood of disease states that alter zinc utilization, and increased use of drugs that increase zinc excretion may contribute to an increased risk of mild zinc deficiency in older adults.<sup>7</sup> Because the consequences of mild zinc deficiency, such as impaired immune system function, are particularly relevant to the health of older adults, particular attention is paid to maintaining adequate zinc intake. The DRI for zinc is 9.4 mg/day for males and 6.8 mg/day for females.

**Vitamin A:** This requirement was removed due to the finding from experienced dietitians that is easily achievable. It is rare to find a menu that is not in compliance for vitamin A. Additionally, because intestinal absorption of vitamin A may increase with age, vitamin A toxicity may occur at lower doses in older adults than in younger adults.<sup>7</sup>

**B6:** Vitamin B6 is important for numerous metabolic reactions and health outcomes. Inadequacy may lead to high homocysteine and impaired immune function and has been associated with impaired cognitive function and depression. Data from the Massachusetts Hispanic Elder Study showed that 30 percent of Hispanics and 28 percent of non-Hispanic white had plasma pyridoxal 5'-phosphate (PLP; the active form of vitamin B6 used as a biomarker for vitamin B6 status) concentration less than 30 nmol/L (indicator of inadequate status), and 11 percent of Hispanics and 16 percent of nonwhite Hispanics had concentration less than 20nmol/L (clinical cutoff level indicating deficient concentrations). Furthermore, PLP was associated with depressive symptomatology in this population-based study of older adults<sup>8</sup>. The DRI for B6 is 1.4 mg for males and 1.3 for females.

**B12:** Although the daily intake of total vitamin B12 does not appear to be low for most older adults, dietary intake data may underestimate the number of people who are vitamin B12 deficient given that the atrophic gastritis and loss of stomach acid prevent some older adults from absorbing it. As a result, the Institute of Medicine recommended that older adults get their vitamin

B12 in crystalline form such as from fortified foods or supplements.<sup>5</sup> Vitamin B12 deficiency can lead to peripheral neuropathy, balance disturbances, cognitive disturbances, physical disability and increased risk of heart disease from high homocysteine. The DRI for B12 is 2.0 for males and females

Vitamin C: Older adults may have higher requirements for vitamin C than younger people. A meta-analysis of 36 publications examining the relationship between vitamin C intake and plasma concentrations of vitamin C concluded that older adults (age 60-96 years) have lower plasma levels following a certain intake of vitamin C compared with younger individuals (age 15-65 years), suggesting that older adults may indeed have higher vitamin C requirements<sup>7</sup>. Moreover, some older populations have been found to have vitamin C intakes considerably below the RDA of 75 mg/day and 90 mg/day for women and men, respectively.

Sodium: Men and women over 70 years are exceeding the recommendation of 1500 mg/day to reduce the risk or manage heart disease and hypertension. Many seniors we serve have high blood pressure, kidney disease or diabetes all of which increase the importance of following a low sodium diet.

**Nutrients not identified for monitoring, but of importance to older adults:**

Omega 3-fatty acids: Among adults 60 years and older, the median intake of a-linolenic acid by women was above the AI, where as the median intake by men was not<sup>5</sup>. Omega 3 fatty acids are associated with protection against heart disease, diabetes and cognitive decline. Low intake may be partially due to the limited sources in the diet (fatty fish, flax seeds and walnuts). It would very cost prohibitive to have an Omega 3 recommendation and there is no established DRI for Omega 3- fatty acids.

Vitamin D: Older adult's poor vitamin D intake and status may be due to low intakes of fortified dairy foods and fatty fish, low sun exposure, and reduced dermal synthesis of vitamin D3.<sup>9</sup> It is very difficult to consumer adequate vitamin D from food only, which is why it is not listed as a nutrient to monitor. In addition to its importance to bone status, vitamin D deficiency has been associated with neurological conditions, diabetes, and other metabolic conditions. More nutritionists and doctors are recommending that older adults take a vitamin D supplement.

Potassium: The adequate intake (AI) for potassium is 4, 700 mg per day, this is very difficult to adhere to. There is no RDA or DRI for potassium. Few Americans, of all age groups, consume adequate potassium. Dietary potassium can lower blood pressure by blunting the adverse effects of sodium on blood pressure.

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