

Nutrition Guideline

Seniors Health Overview (65 Years and Older)

For Professional Reference Only

Applicable to: Nurses, Physicians, and Other Health Professionals

Recommendations:

- The diet for seniors, 65 years and older, should include a variety of foods based on Canada's Food Guide with the emphasis on foods high in protein.
- It is important to ask seniors how they are eating as intake can be impacted by many age-related changes such as physical health, motor capabilities, weight changes, hydration status, taste changes, oral health/hygiene, social isolation, food insecurity, chronic disease, dysphagia, polypharmacy, mental health, dementia, frailty and malnutrition, as well as cultural and religious beliefs.
- A comprehensive nutrition assessment by a Registered Dietitian will provide further information if any of these changes are impacting nutrition status.
- The ideal body mass index (BMI) range for seniors (65 years and older) is 22 – 29.9 kg/m².
- Weight change (%) is a better indicator for estimating disease risk in seniors (65 years and older) compared to BMI.

Macronutrient Requirements:

- Energy:
 - Women/men (acute or chronic illness and/or underweight): 25 – 30 kcal/kg/day and more for weight gain.
 - Women (healthy active): 25 – 35 kcal/kg/day.
 - Men (healthy active): 30 – 40 kcal/kg/day.
- Protein:
 - Minimum of 1.0–1.2 g protein/kg body weight to maintain and regain muscle function and strength.
 - Requirements may increase to 1.2–1.5 g protein/kg body weight during acute and chronic diseases.
- Fluid:
 - 30 mL/kg actual weight with a minimum of 1500 mL (6 cups) per day as a guide.
 - A hydration assessment, monitoring and management plan is beneficial for preventing, identifying and correcting dehydration and over hydration in older adults.
- Vitamins and minerals of concern for seniors include:
 - Vitamins A, B₁₂, vitamin D, calcium, iron, and zinc.
 - If not able to meet requirements of nutrients from food sources, or at an increased risk for a deficiency, discuss supplement use with a health care provider.
- Fibre:
 - Males over 50 years of age: 30 g fibre/day.
 - Females over 50 years of age: 21 g fibre/day.

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- Management of chronic diseases such as cardiovascular disease, diabetes and chronic renal failure with restrictive diets should be evaluated based on risk versus benefit on overall nutrition status and impact on the quality of life especially in seniors who may be at nutrition risk.
- Early identification of dysphagia is important to minimize dysphagia-associated complications such as aspiration pneumonia, respiratory infections, dehydration, undernutrition/ malnutrition, social isolation, decreased quality of life, and death.
- Being aware of the signs and symptoms of dysphagia may aid in diagnosis and allow the timely implementation of strategies and treatments such as:
 - A clinical and/or swallowing assessment completed by a qualified health care professional to identify dysphagia.
 - Management of dysphagia through appropriate changes to food textures and/or fluid consistency to better align with an individual's swallowing ability.
- Medication reviews are important to decrease the risk of adverse drug events as a result of polypharmacy.
- Seniors suffering from dementia are at increased risk of malnutrition due to various nutritional problems. Nutrition screening for frailty and malnutrition should be a routine practice in seniors to identify those at risk.
- Seniors who are identified as being 'at risk' through screening must be provided with options for assessment, education, treatment and service referrals, including a referral to a Registered Dietitian.
- A referral is recommended to a specialist in geriatrics, other appropriate health care professionals, community support resources, and services such as meal and grocery delivery options if needed.

Introduction

Nutrition in seniors is a topic of growing interest because good nutritional status is associated with successful aging, lower susceptibility to disease, prevention of pressure injuries, improved wound healing, better cognitive and physical performance, and improved quality of life.¹

Optimizing overall nutrition status should be the overarching goal for all seniors, and nutrition interventions should focus on achieving adequate nutritional intake.¹

Seniors at nutrition risk should have a comprehensive nutrition assessment completed by a Registered Dietitian.

Key Questions

What is a healthy diet for seniors?

- A healthy diet for seniors, 65 years and older, should include a variety of foods based on Canada's Food Guide, with an emphasis on foods high in protein.
- Following the healthy eating recommendations of Canada's Food Guide will provide sufficient energy, protein, vitamins and minerals to meet requirements as well as other healthful phytochemicals available only in food.

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- Whenever possible, an oral diet should be modified first to meet nutritional requirements. If requirements are not being met through diet alone, the use of oral nutritional supplements should be considered.
- It is important to ask seniors how they are eating as intake can be impacted by many age-related changes such as physical health, motor capabilities, weight changes, hydration status, taste changes, oral health/hygiene, social isolation, food insecurity, chronic disease, dysphagia, polypharmacy, mental health, dementia, frailty and malnutrition, as well as cultural and religious beliefs.² A comprehensive nutrition assessment by a Registered Dietitian will provide further information if any of these changes are impacting nutrition status.

Detailed information about *Canada's Food Guide* can be found at: Canada.ca/FoodGuide

Refer to Guideline: *General Healthy Eating for Children and Adults* for more information.

What is a healthy body weight for seniors?

Body mass index (BMI) is a screening tool used to classify a patient's weight according to the risk of developing health problems. The current targets for normal body mass index (BMI) derived from epidemiological studies of younger and middle-aged populations do not seem to apply to seniors.³

- The ideal BMI range for seniors (65 years and older) is 22 – 29.9 kg/m² and is associated with the lowest mortality risk.^{3,4}
- Measures of BMI should be interpreted in conjunction with other health measures of a health risk as part of a complete nutrition assessment.
- Obesity, as defined by BMI greater than or equal to 30 kg/m², does not carry the same mortality risk in older adults (≥65 years of age) as in younger adults.
- Waist circumference can also be used as an indicator of health risk in seniors (65 years and older) compared to BMI.³

Table 1. Body Weight Classification in Seniors using Body Mass Index (BMI) ³⁻⁸

Classification	BMI (kg/m ²)	Risk of developing health problems
Underweight	<22	Increased
Normal weight	22-26.9	Least
Overweight	27.0-29.9	Increased
Obese	≥30.0	Modest Very high Extremely high
Class I	30.0-34.9	
Class II	35.0-39.9	
Class III	≥40.0	

Table 2. Health Risk Classification in Adults according to Waist Circumference³

Waist circumference cutoff points	Risk of developing health problems
Men ≥102 cm (40 inches)	Increased
Women ≥88 cm (35 inches)	Increased

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Research indicates waist circumference (WC) cutoffs may be different in certain ethnic or racial populations.⁹ For ethnic-specific WC-cutoff values and more information on BMI and WC values and classifications, refer to Nutrition Guideline: *Body Measurements*.

Monitoring weight changes:

- Although BMI is used as the benchmark for underweight status, weight change (%) is a better indicator as seniors face age-related changes in muscle mass and function.
- For seniors who have unintentional weight loss, there is an association with increased mortality.¹⁰ It is recommended to obtain a baseline weight measurement and monitor weight changes, as needed.¹⁰
- Weight history reflects the patient's weight changes (increase or decrease in body mass) over time. Intentional or unintentional weight changes can place seniors at risk for malnutrition.
- Monitoring weight changes is important as it can indicate a change in health status. Sudden or considerable weight gains or weight losses may also indicate health risk, even if this occurs within the 'normal weight' BMI category.

What are the energy requirements for seniors?

Our present knowledge of nutrient requirements of seniors and changes in dietary intake with age is limited even though there is a growing understanding of the importance of diet in health promotion and disease prevention. Nutrient intakes and dietary habits change from adulthood through old age.

- It is estimated that energy needs decrease in seniors due to a gradual reduction in lean body mass and reduced activity level.¹¹
- Energy needs may increase with infections and stress response. Body size (height, weight), activity level, medical conditions, and weight goals (loss or gain) should be considered when determining energy needs.¹¹
- Regular measurement of body weight and fluid status may help in the monitoring of the adequacy of energy intake.¹¹

Energy recommendations:

Predictive equations to calculate energy requirements are not as accurate in older adults (60 years and older) across all weight classification.¹¹

- Research suggests that older adults have decreased energy efficiency associated with activity compared to younger adults,¹² therefore, calculating total energy expenditure using physical activity levels (PAL) may not be appropriate.
- It is recommended to use energy (kcal) per weight (kg) ranges for older adults to estimate energy needs. Note that the physical activity levels are already accounted for in these equations.
 - Women/men (acute or chronic illness and/or underweight): 25-30 kcal/kg/day and more for weight gain.
 - Women (healthy active): 25-35 kcal/kg/day.
 - Men (healthy active): 30-40 kcal/kg/day.

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What are the protein requirements for seniors?

There is growing evidence indicating that seniors need more dietary protein to contribute to general health, assist with recovery from illness (including repletion of tissue lost during illness), and maintain muscle and other body functions.¹³

- Newer consensus for seniors recommends a minimum of 1.0-1.2 g protein/kg body weight per day,¹³ even though the recommended daily allowance (RDA) for protein for seniors is 0.8 g/kg body weight per day (based on the minimum dietary protein required to avoid deficiency and maintain growth).
- Seniors may need more protein to stimulate muscle protein synthesis, maintain muscle mass and even greater benefit may be seen with higher intakes.¹³
- Newer research suggests that higher intakes of essential amino acids may have benefits including improved body composition, strength, enhanced satiety, increased thermogenesis, and may aid in the recovery after trauma, surgery, or prolonged bed rest.¹⁴⁻¹⁷

Recommendations:

- A minimum of 1.0 – 1.2 g protein/kg body weight to maintain, regain muscle function, and strength.¹³
- Seniors who are malnourished or at risk of malnutrition due to acute and chronic diseases have higher protein needs: 1.2 – 1.5 g protein/kg body weight day to offset the elevated metabolism of inflammatory conditions such as pressure ulcers, heart failure, chronic obstructive pulmonary disease (COPD), or chronic kidney disease (CKD) undergoing dialysis.¹⁸
- An exception to these recommendations is seniors with kidney disease (GFR<30) and not on dialysis.¹⁸
- To maximize muscle protein synthesis, it is suggested that 25 – 30 g of high-quality protein be consumed at each meal.¹³

Why is protein intake important in seniors?

- Long term inadequate intake of protein may result in loss of muscle mass, impaired immune function, poor wound healing, decreased brain function, compromised gut permeability, and other effects on end-organ function.^{19,20}
- Seniors are at a higher risk for conditions such as sarcopenia and osteoporosis, which can contribute to an increase in falls and fractures, disabilities, loss of independence, and death.²¹⁻²⁵
- Reasons for suboptimal protein intake in seniors include poor dentition, swallowing difficulties, decreased cognition, limited income, and self-restriction of animal protein, cholesterol and fat.²⁶

Why is the quality of protein and timing of protein intake important for seniors?

Not all dietary and supplemental proteins are of equal quality. High-quality protein or complete protein refers to foods containing all the essential amino acids (EAA). Protein found in plant products such as legumes, grains, nuts, seeds, and vegetables often lack one or more of the EAA and therefore are called incomplete proteins. Protein quality and timing of protein intake is important and should be recommended for seniors for the following reasons.¹³

- High-quality proteins are responsible for more effective muscle protein synthesis when compared to other protein sources.²⁷
- An even distribution of protein at each meal may be associated with higher lean mass and muscle strength.²⁸ In some populations, the bulk of protein intake is skewed to the evening meal.²⁹

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Strategies for intake and distribution of high-quality protein throughout the day:^{13,27,28}

- Choose extra servings of foods with emphasis on foods high in protein.
- If unable to consume 25 – 30 g of high-quality protein at each meal, try three meals with 2-3 snacks and include high-quality protein foods with every meal and snack.
- Eat high-quality protein foods such as cheese, cottage cheese, eggs, milk, fortified soy beverage, meat, poultry, fish, yogurt, and soybeans.
- Drink beverages such as milk and fortified soy beverage instead of water, tea, and coffee.
- Choose higher-quality protein supplements (e.g. whey protein) if protein supplementation is needed.

What is the fluid/ beverage recommendation for seniors?

Fluid/beverage intake is defined as the amount and type of fluid consumed orally, by food-derived fluid and from liquid meal replacements or oral nutritional supplements.¹¹

- Fluid intake should be sufficient to satisfy thirst and produce adequate urine output. Optimal fluid intake can help improve blood pressure, achieve hydration, and decrease complications of fluid overload (e.g. heart failure, ascites, pleural effusion, hypertension, and edema).
- Examples of fluids/beverages include water, milk, juice, pop, caffeinated beverages such as tea and coffee, alcohol, oral nutritional supplements, and energy drinks.
- All fluids should be assessed not only for their caloric content but also for their nutrient, fluid, and bioactive substances such as alcohol, soy protein, psyllium, caffeine, and food additives.
- There are many factors that impact fluid needs in seniors. Research indicates that there is no single factor or formula to determine fluid requirements in this population, and a comprehensive assessment is encouraged to determine fluid needs.³⁰
- Estimation of fluid needs in seniors can be based on one or more of the following equations:
 - 30 mL/kg body weight (using actual body weight) or 1500 mL/day (6 cups) minimum as a guide.³¹⁻³⁴
 - 1 mL/kcal fluid per kcal of total energy.³⁰
 - Urine output + 500 mL/day.³⁵

Why is hydration management important?

Dehydration is of major concern for seniors, especially those over the age of 85 years and those who are institutionalized.³⁴ A hydration assessment, monitoring and managing fluid intake, is beneficial for preventing the morbidity and mortality risks associated with dehydration and over hydration.³³

- Hydration assessment should identify all fluid intake, including caffeine and alcohol.
- Both physiologic changes and factors leading to a decrease in fluid intake contribute to the risk of dehydration in seniors.
- Dehydration can result in constipation, fecal impaction, cognitive impairment, functional decline, and even death.³⁶
- Dehydration can also result in delirium.^{37,38}

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Delirium

Delirium is an acute change in cognition and attention which can last from hours to days with disorganized thinking and/or altered level of consciousness that can fluctuate throughout the day.³⁹

- Delirium risk increases with age; all seniors over the age of 65 are considered at risk.³⁹
- Delirium is preventable in 30 – 40% of cases.³⁹ Providing adequate hydration is one of the successful interventions for preventing delirium.³⁸⁻⁴⁰
- It is important to encourage appropriate hydration and nutrition as the level of consciousness will typically fluctuate in delirium.

Refer to AHS Provincial Clinical Knowledge Topic for more information: *Delirium – Seniors – Inpatient*

Strategies to facilitate adequate fluid intake for seniors include:

- Educate seniors and their family and caregivers on the importance of fluid intake.
- Plan strategies to meet fluid requirements that are suited to each individual.⁴¹
- Encourage a variety of fluids at meals and between meals not limited to water, tea, and coffee, but also milk or fortified soy beverage, 100% vegetable or fruit juice, soup, oral rehydration solutions, and oral nutrition supplements.³⁴
- Identify some of the common signs and symptoms associated with dehydration such as thirst, dry skin, skin breakdown, weakness, dizziness, or confusion.⁴¹

What are the vitamins and minerals of concern for seniors?

Nutrients of concerns for the senior population include vitamin A, vitamin B₁₂, vitamin D, calcium, iron, and zinc.⁴² An inadequate dietary intake of energy foods and micronutrients, such as folate, calcium, zinc and vitamin D has been reported in community-dwelling people older than 60 years of age.⁴²

- Vitamins and minerals are essential for many biochemical processes and physiologic functions in our bodies such as growth, maintenance of well-being, and possibly prevention of disease.⁴³
- Most vitamins and minerals are best obtained through a healthy and well-balanced diet following Canada's Food Guide.
- Although routine supplementation is not recommended (except for vitamin D) for the generally healthy population, seniors who do not consume a well-balanced diet, or if intake is limited, a low-dose multivitamin and mineral supplement can be useful in meeting recommended requirements. Guidance on choosing nutrient-dense foods and supplementation use would be beneficial.⁴²
- It is advisable for seniors to meet the recommended daily allowance (RDA) for vitamins and minerals listed in Appendix 1 by consuming food sources of these nutrients. Those unable to meet their needs from food sources or those who are at an increased risk for deficiency should discuss supplement use with their health care provider.⁴⁴

Detailed information about *Canada's Food Guide* can be found at: Canada.ca/FoodGuide

Strategies to meet vitamin and mineral requirements:

- Choose a variety of healthy foods from Canada's Food Guide.
- If not eating well, individuals can ask for advice from their health care provider on vitamin and mineral supplementation.

For more information, refer to the following Guidelines: *Iron, Vegetarian Eating, Vitamin and Minerals, Calcium and Vitamin D for Prevention and Treatment of Osteoporosis*

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What are some gastrointestinal (GI) problems that can impact intake?

Aging modestly slows gastric emptying and diminishes the capacity of the gastric mucosa to resist damage.⁴⁵ Ageing is also associated with an increased prevalence of several GI disorders, including those induced by drugs (e.g. esophagitis caused by NSAIDs or bisphosphonates).⁴⁵

Constipation:

Constipation is a very common disorder of the GI system with diet considered to be one of the primary factors.^{46,47}

- Maintaining regular bowel movements helps to prevent constipation. Fibre improves the regularity of bowel movements by increasing stool bulk.⁴⁸
- Dietary fibre is found in plant foods. All vegetables and fruits, whole wheat whole grains, bran cereals, and legumes have some fibre. The best way to get the fibre needed is from fibre-containing foods rather than supplements.

Strategies for preventing and treating constipation:

- Increase fluids to 9 cups per day for females and 12 cups per day for males.
- Engage in regular physical activity.
- Respond to the urge to have a bowel movement.
- Consume foods high in fibre such as vegetables, fruit, whole wheat whole grains, and legumes (beans, peas, lentils) daily.⁴⁸

The daily recommendation for fibre intake is:

- Males over 50 years of age: 30 g fibre/day.⁴⁹
- Females over 50 years of age: 21 g fibre/day.⁴⁹

For more information, refer to the following Guidelines: *Constipation, Fibre*

What are some chronic diseases that can impact nutrition?

Prevalence of chronic diseases such as cardiovascular disease, diabetes, and chronic renal failure increase with age: One in three seniors, 80 years of age and older, have at least four chronic conditions.⁵⁰

- Although therapeutic diets are designed to improve health, they can negatively impact intake.
- Seniors may find restrictive diets unpalatable, resulting in reduced enjoyment in eating, decreased intake, unintentional weight loss, and malnutrition. In comparison, more liberal diets are associated with increased food and beverage intake.¹
- For seniors, management of chronic diseases such as cardiovascular disease, diabetes, and chronic renal failure, and the need for any dietary restriction or modification should be evaluated based on risk versus benefit on overall nutrition status and impact on the quality of life.
- All seniors with chronic diseases or risk factors would benefit from a detailed nutrition assessment. A referral to a dietitian is recommended for people with diabetes and chronic kidney disease.

For more information on cardiovascular disease, diabetes, and renal Failure refer to the following Guidelines: *Hypertension, Heart Failure, Heart Healthy, Diabetes, Renal.*

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What is dysphagia?

Dysphagia is the medical term used for difficulty during swallowing.⁵¹ Dysphagia is defined in terms of impaired oral, pharyngeal, and/or esophageal phases of swallowing.⁵²

Dysphagia is caused when there is a problem with swallowing that impacts an individual's ability to protect their airway and compromises the safety and nutritional adequacy of oral intake.⁵³ Dysphagia is common in many health conditions and there are many consequences of dysphagia, such as malnutrition, dehydration, pneumonia, repeated hospitalizations, social isolation and death.⁵⁴

It is important that individuals with dysphagia be identified and assessed early by trained health care professionals to optimize nutritional and hydration needs.⁵⁴

Signs and Symptoms of Dysphagia

Individuals and caregivers need to be aware of the signs and symptoms of dysphagia, which may aid in diagnosis and allow the timely implementation of strategies to minimize the risk of respiratory infections, dehydration, and malnutrition. Some individuals may not want to disclose that they are having difficulty swallowing, or they may be silent aspirators without any signs and symptoms of dysphagia. Signs and symptoms of dysphagia include:⁵⁵⁻⁵⁷

- Coughing and/or choking when eating or drinking
- Drooling or poor management of oral secretions
- Pocketing of food in cheeks
- Facial weakness
- Gurgly, hoarse voice or lots of throat clearing
- Multiple swallows for each bolus
- Decline in respiratory status
- Prolonged meal times
- Weight loss or malnutrition
- Recurring chest colds
- Pain with swallowing
- Increasing avoidance of multiple foods/liquids

Strategies used to Manage Individuals with Dysphagia

There are many strategies and treatments used to minimize the risk for aspiration pneumonia, respiratory infections, dehydration, and malnutrition.⁵⁵ Strategies to improve the safety, efficiency, and function for individuals with dysphagia includes:

- A clinical and/ or swallowing assessment completed by a qualified health professional to identify dysphagia. A referral should be made if the individual has not been previously assessed by a qualified health professional.
- An interdisciplinary team approach, which can include a speech-language pathologist, a dietitian, an occupational therapist, nursing staff, and a physician, is recommended for the management of dysphagia.⁵⁸

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- Management of dysphagia through:
 - Appropriate changes to food textures and/ or fluid consistency to better align with an individual's swallowing ability.⁵⁹⁻⁶¹ Specific dysphagia diet changes recommended only by qualified health professionals.
 - Postural and positioning changes during eating, safe feeding strategies such as altering the pace of delivery, reminders to swallow, multiple swallows, therapeutic swallowing exercises and using adaptive feeding equipment.⁵²
- Good oral care to reduce rates of pneumonia.⁶²
- Monitoring nutrition intake and hydration status for individuals on any type of dysphagia or fluid consistency diet.⁶³ Ongoing monitoring is important so that interventions can be safely implemented or discontinued if unnecessary.

Refer to the American Speech-Language-Hearing Association (ASHA) website for more information:

www.asha.org.

What is a Dysphagia Diet?

Modified food textures and changes to fluid consistency or thickness are commonly referred to as a dysphagia diet. An appropriate dysphagia diet:

- Provides altered textures of solid foods and/or liquid consistency that is safe for swallowing and aligns with an individual's ability to swallow.
- Ranges from less restrictive to very restrictive texture modification. For some diets, such as pureed or minced consistency, a blender or food processor is required to change the texture of food to the desired texture.
- May require a thickener to modify the consistency or thickness of fluids.

Refer to Nutrition Guideline: *Dysphagia*

What is the risk of polypharmacy?

Polypharmacy is the simultaneous use of multiple medications by a single patient for one or more conditions. Seniors are at a higher risk of predictable and preventable adverse drug events. Medication reviews are important to decrease the risk of adverse drug events as a result of polypharmacy.⁶⁴

- Polypharmacy increases the risk of adverse drug side-effects, drug-drug interactions, development of drug-induced frailty and cognitive impairment as well as nutrient deficiencies with serious consequences in seniors.⁶⁴
- In seniors, nutrient-drug interactions may lead to serious morbidity and mortality and may be misdiagnosed as the progression of a chronic disease.⁶⁴

Medications and nutrient deficiencies

Daily intake of three drugs or more interferes with important vitamins such as D, K, B and folate.⁶⁴

- Many medications disrupt the sense of smell: ACE inhibitors, beta-blockers, calcium-channel blockers, corticosteroids, gemfibrozil, levodopa, and methotrexate.

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- Many drugs interfere with nutrient absorption or accelerate nutrient excretion:
 - Acid-blocking drugs: Stomach acid is required to absorb iron, magnesium, calcium, zinc, B vitamins and proteins.
 - Statins: Cholesterol is required to absorb fat-soluble vitamins such as A, E, and D.
 - Metformin: Decrease in B₁₂ and folic acid results in increased homocysteine and cardiovascular risk.
 - Antibiotics: Destroys the “good bacteria” in the gut that play a role in digestion and absorption of vitamins and minerals (e.g. vitamin K). Some can reduce iron absorption (tetracycline).
 - Diuretics: Drains the body of water-soluble nutrients (B vitamins, magnesium, potassium, sodium, calcium, zinc, vitamin C) and deplete vitamins.
 - Beta-blockers: Blocks synthesis of melatonin.
- Some drugs such as tricyclic antidepressants, antihistamines, and diuretics can cause drug-induced dysphagia.⁶⁵
- Some drugs (anticholinergic) used for Parkinson’s disease slow down the bowel and cause sedation.⁶⁵

How does cognitive impairment impact nutrition?

Ageing may variably affect cognition, memory, intelligence, personality, and behaviour. However, many changes in mental health are difficult to attribute to ageing as they are often the result of a disease process.

- Decrease in mental capacity or performance (e.g. cognition, behaviour) thought to be age-related may instead be due to treatable illnesses (e.g. depression, hypothyroidism). A rapid decline in cognition is almost always due to disease.
- The prevalence of clinically significant depressive symptoms ranges from 8 to 16% in community-dwelling elderly persons.⁶⁶ Major depression occurs less often in later life than at younger ages and affects about 1 to 4% of elderly persons in the community.⁶⁶
- It is important to recognize that medications used to treat depression have variable time frames for efficacy.⁶⁶ Malnutrition related to mental illness may persist until treatments reach peak effect.⁶⁶ For example, some medications may take weeks before patients show signs of improvement.⁶⁶

What is the role of nutrition in seniors with dementia?

Dementia or cognitive impairment is on the rise in our ageing societies worldwide. It can be challenging for families or caregivers caring for someone with dementia. Mealtimes can sometimes become stressful. Loss of memory and problems with judgement can cause difficulties in relation to eating and nutrition. Dementia leads to dependence and finally death.⁶⁷ Although the prevalence of dementia increases with age, it is not a predictable part of ageing.

- Dementia or cognitive impairment can change the way someone eats such as:
 - Forgetting to eat and drink.
 - A reduced sense of satiety.
 - Finding structured meals overwhelming.
 - Food preferences changing from day to day and food not being eaten.
- Weight loss is a prominent clinical feature of dementia.⁶⁸⁻⁷¹

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- In nursing home residents with advanced dementia, weight loss was found to be an independent predictor of death.⁷²
- The mechanisms underlying weight loss in dementia are complex, multifactorial, and only partly understood.⁷⁰
- Dementia-related brain atrophy may impact regions of the brain involved in appetite regulation and eating behaviour.⁷⁰
- Seniors suffering from dementia are at increased risk of malnutrition due to various nutritional problems.⁷⁰

Many diseases can cause dementia syndrome: Alzheimer's disease and cerebrovascular dementia are the two most common causes and many cases of dementia involve both these disorders.^{73,74}

Age is the best-studied and the strongest risk factor for dementia. Cardiovascular risk factors such as hypertension are associated with an increased risk for both Alzheimer's disease and vascular dementia.⁷⁵

Guidelines on the Role of Nutrition in Seniors with Dementia:⁷⁶

- Screening for malnutrition and close monitoring of body weight is recommended.
- Oral nutrition may be supported by the provision of adequate, attractive food in a pleasant environment, with adequate nursing support and elimination of potential causes of malnutrition.
- Supplementation of single nutrients is not recommended unless there is a sign of deficiency.
- Oral nutritional supplements are recommended to improve nutritional status but not to correct cognitive impairment or prevent cognitive decline.
- Artificial nutrition is suggested in patients with mild or moderate dementia for a limited period of time to overcome a crisis situation of poor nutritional intake predominantly caused by a reversible condition. Artificial nutrition is not suggested in patients with severe dementia or in the terminal phase of life.

Refer to AHS Provincial Clinical Knowledge Topic for more information: *Delirium – Seniors – Inpatient*

What is the rationale and benefit of screening for malnutrition and frailty in seniors?

Frailty is a growing concern with our ageing population in Canada. Around 10% of seniors over the age of 65 years have frailty and this increases to 25 – 50% for those over 85 years of age.²⁴ Ageing and frailty are not synonymous. Frailty becomes increasingly common as age advances.

Nutrition screening can help with the early identification of vulnerable seniors who are at nutrition risk and can be a way to further improve care and outcomes.⁷⁷

- Nutrition is one of the key areas where treatment for frailty is promising, especially if the individual is also malnourished.
- Seniors identified at nutrition risk will benefit from a preventative and proactive personalized care plan which may lead to better treatment outcomes.
- Early nutrition interventions that address the deficiencies in seniors at risk can reverse frailty and malnutrition.
- Due to the high proportion of overlap between frailty and malnutrition, screening to identify malnutrition in all seniors considered frail and identifying frailty in malnourished seniors is recommended.

Refer to AHS Provincial Clinical Knowledge Topic for more information: *Delirium - Seniors – Inpatient*

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Nutrition screening is recommended for:

- All seniors for early identification of nutrition risk before frailty and malnutrition can occur.
- Individuals who are identified as being 'at risk' through screening must be provided with options for assessment, education, treatment and service referrals, including referral to a Registered Dietitian.
- A referral is recommended to a specialist in geriatrics, other appropriate health care professionals and community support resources and services such as meal and grocery delivery options if needed.

Refer to Nutrition Guideline: *Frailty, Nutrition Risk and Malnutrition in Seniors*

What other issues can impact nutrition in seniors?

Knowledge, beliefs and attitudes are defined as the patient's understanding of nutrition-related concepts, their conviction of the truth and feelings/emotions toward some nutrition-related statement or phenomenon, and their readiness to change nutrition-related behaviours.⁷⁸ These can influence a patient's mealtime behaviour and may be related to:

- Religion, culture, beliefs, and ethnic customs.⁷⁹
- Food restrictions due to health conditions or self-imposed.
- Readiness to learn and apply the information.
- Lack of knowledge and motivation to follow medical nutrition therapy.

Are there any handouts on nutrition for seniors that I can use with my patients?

Refer to approved provincial Alberta Health Services nutrition education handouts to support patient education. For more information contact NutritionResources@albertahealthservices.ca

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Appendix 1. List of vitamins and minerals, requirements, concerns, function and food sources^{2,6,20,43,44,49,80-90}

milligrams = mg; micrograms = mcg; International Units = units

Vitamin	Requirements (RDA/DRI)	Reason for Concern	Function in the Body	Food Sources
Vitamin A	700 mcg daily (2333 units)* * Vitamin A as retinol	Epidemiological evidence has linked chronic vitamin A intake greater than the RDA with increased risk of hip fracture	<ul style="list-style-type: none"> Plays an important role in vision. Needed for formation and maintenance of mucous membrane, skin and bone. Supports the immune system (helps make white blood cells) 	<ul style="list-style-type: none"> Liver Milk products (milk, cheese) Eggs Carrots, sweet potatoes, red pepper. Apricot, cantaloupe Spinach, turnip. Butter, margarine
Vitamin B ₁₂	2.4 mcg daily Treatment of deficiency can include oral tablets, sublingual tablets or oral dissolving strips. Some individuals with symptoms or signs of deficiency may require monthly intramuscular injections of vitamin B ₁₂	<p>In seniors, causes of vitamin B₁₂ deficiency include:</p> <ul style="list-style-type: none"> Decreased gastric acid production Presence of atrophic gastritis Use of antacid medications <i>Helicobacter pylori</i> infection of the stomach Pernicious anemia (treated by monthly vitamin B₁₂ injections) 10-30% of older people may not adequately absorb food-bound vitamin B₁₂. It is not known which cases of vitamin B₁₂ deficiency will progress to anemia or neurologic injury if untreated. Screening and treatment is recommended under the care of a physician. 	<ul style="list-style-type: none"> Essential component of many metabolic reactions in the body 	<ul style="list-style-type: none"> Meat (all kinds) Seafood (fish, clams, crabs) Milk products (milk, yogurt, cheese) Fortified soy beverages Eggs Plant foods do not contain a significant amount of vitamin B₁₂ unless they have been fortified.

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Vitamin	Requirements (RDA/DRI)	Reason for Concern	Function in the Body	Food Sources
Vitamin D	<p>Healthy adults over the age of 50: 1000 units (25 mcg) vitamin D daily supplementation for Albertans (recommended by Nutrition Services, AHS, in view of low levels of vitamin D intake from food), and probable low levels from sun exposure.</p> <p>** Adults over 50 years (at risk of or have osteoporosis) should take 1000-2000 units (25-50 mcg) vitamin D daily.</p> <p>** These recommendations are higher than the DRIs but fall within the upper limit.</p>	<ul style="list-style-type: none"> Inadequate vitamin D intake can lead to bone loss. Getting adequate amounts of vitamin D from dietary sources is difficult. Seniors at risk of or diagnosed with osteoporosis should include food sources of vitamin D in their diet, and take a supplement each day 	<ul style="list-style-type: none"> Essential for calcium and phosphorous absorption in the intestine and bones. Plays an important role in fighting infections and controlling blood pressure and insulin production 	<ul style="list-style-type: none"> Getting adequate amounts of vitamin D from dietary sources is difficult Vitamin D-fortified drinks such as milk, soy beverage, and orange juice. Eggs Fatty fish such as salmon, herring, sardines, halibut
Calcium	<p>Adults over age 50: 1200 mg per day from food and supplements combined</p>	<p>Inadequate calcium intake can lead to bone loss</p>	<ul style="list-style-type: none"> Structural component of teeth and bone. Needed for functioning and maintenance of muscle contractions, nerve activity, hormone and enzyme secretions, and blood clotting 	<ul style="list-style-type: none"> Milk products (milk, yogurt, cheese). Fortified soy beverages and juices Canned salmon with bones White beans, navy beans and soy beans Cooked bok choy
Iron	<p>8 mg daily</p>	<p>Seniors with low dietary intake of iron or postmenopausal women on hormone replacement therapy (HRT) are at risk for iron deficiency</p>	<ul style="list-style-type: none"> Delivery of oxygen to the body's tissues and systems. Without enough iron, individuals will tire easily and be less able to fight off infections. 	<ul style="list-style-type: none"> Red meats (liver, beef, pork) Legumes (beans, peas, lentils) Whole grain products (bread, cereals, pasta) Spinach, Swiss chard Tofu Dried fruits (figs, prunes, raisins)

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Vitamin	Requirements (RDA/DRI)	Reason for Concern	Function in the Body	Food Sources
Zinc	8 to 11 mg daily	Deficiency is common among malnourished elderly persons, particularly among those who have cirrhosis or diabetes mellitus or are taking diuretics	<ul style="list-style-type: none"> Plays an important role in protein and DNA synthesis Needed for functioning and maintenance of the immune system Supports wound healing, growth and development. Structural component of insulin 	<ul style="list-style-type: none"> Meat, fish, poultry Grains and grain products (breads, cereals and pasta) Milk products (milk, yogurt, cheese) Nuts and seeds