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Healthy eating and diabetes for the older generation

Recommendations for older people with diabetes are similar to those for younger people with diabetes but the focus is more on adequate intake of total energy and food groups that can supply all the nutritional requirements. Special issues for older persons with diabetes include dehydration, constipation and the need for nutritional supplements.

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Older persons range from the healthy elderly living independently to the variously abled elderly living in residential care. No single eating plan will be appropriate for all.

Nutritional recommendations change for people as they age. People aged over 70 years have lower energy requirements but increased requirements for various nutrients, including protein, vitamin D, calcium and riboflavin (Table 1). The nutritional goals for the elderly living independently can differ from those living in residential care.[1] In addition, there are often other nutritional issues and special considerations for older persons with certain health conditions, including diabetes.

Adequate nutrition and hydration are required to maintain health, strength, mobility and quality of life. Nutritional assessment is part of the annual monitoring that is specified by the Service Incentive Payments schedule for older individual persons. This assessment should include a review of trends, weight gain or loss, food and fluid consumption, and special requirements.[1,2]

This article reviews general dietary guidelines, special issues, weight issues and the management of unstable diabetes in older persons.[1,3-6]

IN SUMMARY

- **For most of the healthy 'younger' elderly, standard nutritional recommendations are suitable; however, the 'older' elderly often have additional nutritional issues and special requirements.**
- **For elderly people, the focus for healthy eating is on adequate intake of total energy and food groups that supply all the nutritional requirements.**
- **Special issues for older persons with diabetes include dehydration, constipation and the need for nutritional supplements.**
- **It is important to monitor weight in all older persons and to respond promptly to weight loss.**
- **The risk of hypoglycaemia and frequency of sick days are higher in older persons with diabetes than in those without the condition. Older persons with diabetes and their carers should know how to respond to problems of glycaemia and have ready access to professional advice if needed.**

General dietary guidelines for older persons

The box on page 46 outlines guidelines for healthy eating in older persons with diabetes. These recommendations are not that different from those for younger people with diabetes; however, guidelines for younger people focus more on energy restriction whereas for older people the focus is on achieving adequate energy intake and meeting increased nutrient requirements.

Special issues

Fluids

Older persons are prone to dehydration because of reduced accessibility and/or desire for fluid, the effects of medications and impaired renal concentrating ability. People who spend most of their time sitting or who are bedbound may not have easy access to fluids. The ageing process and some medications reduce thirst and increase renal water loss. Adequate fluid intake will improve wellbeing and reduce the risk of constipation, urinary tract infections and renal stones (see Table 2 for tips on encouraging adequate fluid intake).

The volume and specific gravity of urine as well as the serum urea:creatinine ratio are simple guides to the adequacy of fluid intake and hydration respectively (see the box on page 48). Fluids include a range of drinks, and the water content in some foods can be high (e.g. fruit and vegetables). Consumption of large amounts of fluids high in sugar may affect control of blood glucose but small amounts of sugary fluids are appropriate in an individual with an otherwise healthy diet, especially if the person is struggling to eat or drink adequate amounts.

Alcohol

Many older persons do not drink excessive amounts of alcohol but often enjoy an appetiser before a meal. Small amounts of alcohol (one or two standard drinks per day) are generally acceptable but large amounts can increase the risk of

Table 1. Recommended daily intakes of various nutrients for older people*

Nutrient	Recommended daily intake			
	Men		Women	
	51 to 70 years	Over 70 years	51 to 70 years	Over 70 years
Protein	64 g	81 g	46 g	57 g
Riboflavin	1.3 mg	1.6 mg	1.1 mg	1.3 mg
Calcium	1000 mg	1300 mg	1300 mg	1300 mg
Iron	8 mg	8 mg	8 mg	8 mg
Vitamin D_3 (cholecalciferol) – adequate intake value	10 µg (400 IU)	15 µg (600 IU)	10 µg (400 IU)	15 µg (600 IU)

* The above nutrient requirements are the same for people with and without diabetes.

Healthy eating for older persons with diabetes*

- Regular meals and snacks should be eaten, with consistent amounts of carbohydrate included with each meal. Aim for three meals and two or three snacks each day.
- Carbohydrates that have a low glycaemic index should be incorporated into meals on a daily basis, trying to include one low glycaemic index choice at every meal time.
- Sugar does not need to be avoided. A small amount of sugar in desserts, added to custard or in a cup of tea is appropriate, as is the use of ordinary jams and honey in small quantities. Large amounts of sugar are best limited or avoided, including ordinary cordials (diet varieties are suitable) and very sweet desserts such as sticky date pudding, lemon meringue pie and pavlova.
- Low fat diets are not recommended as the standard for the aged population. Although deep fried and high fat foods should be kept to a minimum, the emphasis should not be on eating only low fat foods. Full cream dairy products should be provided. Fats used in cooking should be of the unsaturated varieties.
- Individuals identified as being at risk of malnutrition should be encouraged to include more sources of fats and protein in their foods, such as cream, extra margarine, grated cheese and milk powder.
- High fibre products should be included in meals daily, especially wholemeal, wholegrain and high fibre white breads, high fibre cereals (including bran), cakes and muffins made with some wholemeal flour (25% wholemeal flour is well accepted), fruits, vegetables and legumes (best included in soups and casseroles).
- At least three serves of dairy foods every day should be encouraged; snacks and desserts are excellent foods to incorporate these dairy serves.
- A minimum of two fruit serves every day should be encouraged – fresh fruit that is cut up or stewed are options for people who are unable to eat whole pieces of fruit. Vitamin-enriched fruit juices are suitable for people on texture-modified diets.
- Appropriate intake of fluids should be encouraged. Six to eight glasses of fluid each day are recommended. Suitable choices for people with diabetes include water, milk, diet cordials, diet soft drinks and fruit juices in small quantities. Ordinary cordials and soft drinks can be used in moderate amounts for individuals who are struggling to meet energy requirements, but large amounts of these drinks might impair control of diabetes.

*Adapted from 'Healthy Eating and Diabetes: a guide for aged care facilities' (reference 1).

hypoglycaemia in persons with diabetes who are using insulin or sulfonylureas. Alcohol should always be served with (or immediately before) food. The amount of sugar in the alcoholic drink is often negligible and is much less important than the overall amount of alcohol.

Constipation

As many as two out of three older persons are constipated. Many factors contribute to constipation, including poor food or fluid intake, use of medications and lack of mobility. Individuals at particularly high risk of constipation include those taking narcotic analgesics, medications that have anticholinergic side effects (including tricyclic antidepressants) or diuretics and those on texture-modified diets.

To help reach the recommended daily fibre intake of 25 to 30 g, high fibre food choices should be encouraged (e.g. wholemeal, wholegrain or white high fibre bread; high fibre cereals; fresh, tinned or dried fruit; legumes; vegetables; and high fibre baked goods). Too low an intake of fibre results in low stool volumes and too high an intake with or without bulking agents such as psyllium, plus an inadequate fluid intake results in faecal impaction. Nonabsorbed sugars such as sorbitol or lactulose (30 to 60 mL/day) increase stool fluid content and can be used for laxation as can also colonic stimulants such as senna.

Adequate fluid intake and the precautionary or early use of agents such as sorbitol and/or senna should be considered to reduce the risk of constipation in older persons.

Table 2. Tips for encouraging adequate fluid intake

- Encourage small, frequent drinks
- Use a suitable cup that is easy to grasp and lift
- Try using a straw
- Choose a variety of drinks

Supplements

As people age, energy requirements generally decrease but requirements for several vitamins and minerals increase. Decreased appetite and decreased ability to manipulate food, chew and swallow it, as well as multiple medical and medication issues, can make it difficult for older persons to meet all their nutritional needs by the food they eat alone. Without careful planning, the vitamins and minerals described below are those that are most likely to be deficient in older persons.

Calcium

The composition of the daily food intake should include adequate levels of dairy products that are rich in readily absorbed calcium. A minimum of three dairy serves (or calcium fortified dairy alternatives) per day is required (e.g. 300 mL of milk

Dehydration and serum urea:creatinine ratio

When a person becomes dehydrated, the glomerular filtration rate decreases and both serum urea and creatinine levels may therefore increase. As the dehydration progresses and more water is reabsorbed, the flow of urine slows and renal reabsorption of filtered urea, but not creatinine, increases. Serum urea levels therefore increase more than serum creatinine levels and as a result the urea:creatinine ratio increases.

Conversely, in polyuria the increased urine flow in the nephron decreases urea absorption and therefore decreases the urea:creatinine ratio. Polyuria can occur because of polydipsia and polydipsia can occur because of diuresis (e.g. an osmotic diuresis from glycosuria).

or soy milk with added calcium, 200 g of yogurt or custard, 40 g of cheese). Snacks and desserts should be based on dairy products if possible, and milk should be suggested as a drink. Full cream milk is a suitable option, especially for the elderly who struggle to meet energy requirements, but reduced fat milk may be more appropriate for those who are overweight. Cheese and milk added to soup, sauces (e.g. mornay sauce), sandwiches and salads can make a significant contribution to the daily calcium intake.

If calcium supplements are prescribed, it is important to consider whether the calcium will be absorbed. Older persons may not secrete enough gastric acid to make the calcium in calcium carbonate formulations bioavailable, especially if the calcium supplement is not given with a meal (when acid is secreted) or if the person is taking a proton pump inhibitor (which will inhibit acid secretion). More soluble calcium supplements (e.g. calcium gluconate, calcium citrate, calcium glucoheptonate) may be more appropriate.

Iron

Iron requirements do not usually increase in the elderly. However, many older persons are at risk of iron deficiency and anaemia because occasionally iron requirements can increase or, more commonly, iron intake decreases due to associated medical conditions and a decreased ability to manipulate, chew and swallow meat products.

Red meat in a soft form, such as in mince dishes, stews and casseroles, as well as liver and kidney, are excellent sources of iron and other vitamins and minerals. Other sources of iron include chicken and, to a lesser extent, fish, wholegrain breads and cereals, green leafy vegetables and legumes. If iron supplements are prescribed, absorption may be increased if they are taken with vitamin C supplements or with foods that are rich in vitamin C (e.g. fruit, fruit juice and vegetables).

Vitamin D

Vitamin D deficiency is common in older people and supplements of vitamin D_3 (oral cholecalciferol 25 µg [1000 IU] per day) are usually recommended. Measurement of serum 25-hydroxyvitamin D levels (target level of above 60 nmol/L) are used to assess the adequacy of a person's vitamin D stores.

As a guide to vitamin D_3 supplementation, 1 µg (40 IU) oral cholecalciferol per day will increase the 25-hydroxyvitamin D level by 1 nmol/L (derived from reference 7). An individual with a 25-hydroxyvitamin D level of 15 nmol/L will, therefore, need more than the usual recommendation of 25 µg (1000 IU) per day to increase their levels to above 60 nmol/L. To increase serum 25-hydroxyvitamin D levels by 30 nmol/L, an individual will require 30 µg (1200 IU) oral cholecalciferol per day (30 x 40 units).

Other vitamins and minerals

In most cases, eating from a full range of food groups and considering the above special requirements will provide an adequate intake of the vitamins and minerals that have not been mentioned above. However, if total energy intake is low or the range of foods is limited, other supplements may be needed. In such cases, referral of the patient to a dietitian with experience in nutritional issues in the elderly population in Australia may be beneficial.

Weight issues

Dietary advice for older persons who are of a normal weight and are overweight should be very different from the advice given to those who are underweight.[8]

Underweight persons

Weight loss in older persons, even if desired, can predict adverse outcomes because it may be secondary to disease, may lead to various forms of malnutrition, and predisposes to falls, infections and other health problems.[9] As noted above, older persons may not feel hungry, may not have access to suitable foods and may have difficulty manipulating, chewing or swallowing foods. Monitoring weight and responding promptly to weight loss is part of the medical and self-care routine for the elderly with or without diabetes.

Low sugar and low fat foods that are appropriate for younger adults with diabetes are not appropriate for older persons with diabetes who are losing or having difficulty maintaining weight. Full cream dairy products are relatively high in energy and the liberal use of unsaturated fats in cooking increases the energy density of cooked foods. Each food group offers a wide range of foods that are attractive, palatable and easy to eat and also relatively high in calories to promote weight gain. Small frequent meals are often more effective than the traditional three main meals a day for maintaining nutrition. Energy dense snacks (such as fruit with custard or full cream yogurt, puddings, full cream milk-based drinks, and crackers with margarine and cheese) increase calorie and protein intake; however, extra nutritional supplements may also be required.

A dietitian or nutritionist may be able to suggest a tailored eating plan to meet the individual's nutritional requirements, palate and ability to manipulate, chew and swallow food. Referral of the individual to a speech pathologist may be required if texture-modified diets are indicated.

Overweight persons

Older persons who are overweight or gaining weight may not be well nourished. They may be deficient in protein or various micronutrients, and their excess weight may be the result of oedema or fluid accumulation in body cavities. A target of ideal weight (BMI 18.5 to 25 kg/m^2) is not appropriate for many older persons. Weight maintenance and adequate intake of the full range of required nutrients are the primary goals.

If steps are necessary to limit energy intake to either maintain or reduce an older person's weight, changes should be introduced slowly and the focus should be on reducing 'empty calorie' foods containing large amounts of fat, added sugar and alcohol. Protein foods, particularly meat and dairy products, and sources of micronutrients and fibre such as fruit, vegetables and breads and cereals with a low glycaemic index should be maintained in the diet.

Weight loss in older persons may be associated with a decreased muscle and bone mass, and therefore a program to maintain or increase physical activity should be encouraged.

Unstable diabetes

Most older people with diabetes have type 2 diabetes, in which glycaemia is better controlled and generally more stable than in individuals with type 1 diabetes. However, problems with glycaemia do occur in people with type 2 diabetes as well as in those with type 1 diabetes.

Hypoglycaemia

Older persons with diabetes have several risk factors for hypoglycaemia, and the number is likely to increase with increasing biological age (Table 3). Older persons who have several risk factors are prone to more frequent and more severe hypoglycaemia.[10] Older persons with diabetes who are taking a sulfonylurea or using insulin (particularly quick-acting insulin) are at risk if they overdose their medication, do not eat enough carbohydrates, drink alcohol or increase their physical activity. Skipping a meal, gardening or going shopping may not cause a problem in a younger person with type 2 diabetes but can cause hypoglycaemia in an older person with the condition.

The classic symptoms of hypoglycaemia may not always occur in older person and it may go unrecognised because confusion or inappropriate behaviour is attributed to the process of ageing or dementia. Regular blood glucose testing before meals is part of the routine monitoring schedule for older people taking a sulfonylurea or using insulin. A 'hypo kit' of foods at home or in the residential care facility should be readily available and should be regularly reviewed (Table 4).

Sick days

Managing diabetes in older persons during illness follows the usual guidelines but with some special precautions against the following conditions:[11]

- extreme hyperglycaemia (hyperosmolar nonketotic coma) – because of a high renal threshold for glycosuria and the confusion that can occur as blood glucose levels increase
- hypoglycaemia – because, as noted earlier, many older people are at high risk of hypoglycaemia and the symptoms may be atypical
- dehydration – because of decreased sensation of thirst and decreased renal concentrating ability.

Although most older people with diabetes have type 2 diabetes, some have type 1 and are at risk of ketoacidosis, especially if they reduce or stop taking their insulin.

Ideally, someone who lives with or cares for the older person with diabetes would know the basic sick day 'rules' of being aware of the need to monitor blood glucose levels (and sometimes urine ketones), maintain fluid intake and doses of insulin and/or sulfonylureas, and have access to advice from an appropriate health professional if needed.

Table 3. Risk factors for hypoglycaemia

- Older age
- Longer duration of diabetes
- Using insulin or sulfonylureas*
- Sleeping alone
- Being unaware of the symptoms of hypoglycaemia
- Excessive intake of alcohol
- Having renal impairment
- Cold weather
- Having comorbidities and taking other medication

* Especially quick-acting insulin, glibenclamide and glimepiride.

Table 4. 'Hypo kit' for older persons with diabetes

The following foods should be checked and restocked as needed:

Simple carbohydrates

1 bottle Lucozade (90 mL) = 15 g carbohydrate
15 g glucose tablets = 15 g carbohydrate
6 jelly beans (glucose) = 15 g carbohydrate

Complex carbohydrates

2 Sao biscuits = 15 g carbohydrate
1 slice of bread = 15 g carbohydrate
Snack pack of puree fruit or custard = 15 g carbohydrate
Fruit juice tetrapack = 30 g carbohydrate

continued

Summary

Adequate nutrition and hydration in the elderly with diabetes is required for health, strength, mobility and quality of life. Monitoring nutrition is part of the regular cycle of medical care for these individuals.

The standard nutritional recommendations are suitable for many of the healthy 'younger' elderly, but there are often various nutritional issues and special requirements in the 'older' elderly who often live in residential care.

In general, recommendations for the elderly with diabetes are similar to those for younger people with diabetes but the focus is more on adequate intake of total energy and food groups that can supply all the nutritional requirements. Special issues for older persons with diabetes include dehydration, constipation and the need for nutritional supplements (in particular calcium, iron and vitamin D). Weight loss in older persons is associated with a range of health problems and adverse outcomes. It is important to monitor weight and to respond promptly to weight loss in these individuals.

The risk of hypoglycaemia in individuals using insulin or taking a sulfonylurea and the frequency of sick days are likely to be higher in the elderly than in younger people with diabetes. It is important that the person and his or her carer know how to respond early to problems of glycaemia and have guidelines and tools relating to the management of diabetes and ready access to professional advice. MT

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