

DIABETES IN OLDER ADULTS

It is estimated that over 1.7 million Australian adults have diabetes. For every 4 adults with diagnosed diabetes, there is one who is undiagnosed. The prevalence of diabetes in Australia is increasing, with the largest change in older age groups. Diabetes is common in residential aged care facilities, where residents have high levels of comorbidity, disability, frailty and polypharmacy. Older people have decreased insulin secretion from pancreatic beta-cells as a consequence of ageing. Insulin resistance is associated with a relative increase in adiposity, particularly visceral fat, and relative decrease in muscle mass seen in older people (sarcopenia). Coexisting conditions and polypharmacy may influence the incidence of diabetes in older persons.

HbA1c targets

HbA1c (glycated haemoglobin) reflects average amount of glucose in blood during the last 2-3 months. HbA1c measurement does not capture transient episodes of hypoglycaemia that may be critically important in management of older residents with diabetes. Control of diabetes symptoms (eg polydipsia, polyuria) can usually be achieved around a HbA1c level of 64 mmol/mol (8%). Targets need be individualised and balanced against resident capabilities and the risk of severe hypoglycaemia. HbA1c greater than or equal to 48mmol/mol (6.5%) is diagnostic of diabetes. The treatment goal for majority of people with diabetes is less than or equal to 53mmol/mol (7%). Targets may be individualised up or down taking into account life expectancy and resident's preferences. In residents with short disease duration, long life expectancy, no significant cardiovascular disease, and no severe hypoglycaemia, the target may be ≤ 48 mmol/mol (6.5%). However, less stringent HbA1c targets might be considered in frail residents with limited life expectancy, multiple comorbidities including dementia or cognitive impairment, significant functional impairment, severe vascular complications and high risks such as falling associated with hypoglycaemia. For these residents the target goal may be around 58-64mmol/mol (7.5-8.0%). Insulin, metformin and sulfonylureas are most effective in reducing HbA1c. Other medicines for type 2 diabetes are less effective in reducing HbA1c.

Diet, exercise and weight

Older people with diabetes may be at risk of nutritional deficiencies and malnutrition. In residents aged 65 years and older with diabetes and frailty, diets rich in protein and energy are recommended to prevent malnutrition and weight loss. As little as 5% weight loss in overweight persons can improve glycaemic control and the need for medications. Exercise is important to maintain muscle mass, balance and to reduce the risk of falls. Regular activity is important for glycaemic management.

Blood pressure and lipids

To reduce the risk of cardiovascular disease outcomes, stroke, and progressive chronic kidney disease, it is recommended that the target blood pressure in patients aged 65-85 years with diabetes be 140/90 mmHg. ACE inhibitors and angiotensin receptor blockers should be the first-line therapy. Statin therapy and an annual lipid profile are recommended in patients aged 65 years or older with diabetes to reduce absolute cardiovascular disease events and all-cause mortality. For residents aged 80 years old and older or with short life expectancy, low-density lipoprotein (LDL) cholesterol goal levels should not be so strict.

Microvascular complications

Long-term microvascular complications of diabetes include neuropathy, nephropathy and retinopathy. Vision loss due to diabetic retinopathy can significantly reduce quality of life. For detection of retinal disease, annual comprehensive eye examinations are recommended for patients aged 65 years or older with diabetes. It is recommended that patients aged 65 years or older with diabetes who are not on dialysis be screened annually for chronic kidney disease (CKD), with determination of the estimated glomerular filtration rate (eGFR) and urine albumin-to-creatinine ratio (ACR). Diabetic neuropathy is related to increasing age, duration of diabetes, higher HbA1c and lifelong glycaemic control. Peripheral neuropathy may lead to balance and gait problems; so falls prevention programs are important to reduce the risk of fractures and fracture-related complications.

continued over

Medications

Multiple glucose-lowering medications are available, including:

- Metformin
- Sulfonylureas
- Glitazones
- SGLT2 inhibitors
- DPP-4 inhibitors
- GLP-1 agonists
- Acarbose

Metformin monotherapy is an appropriate initial treatment for most people with type 2 diabetes. Selection of additional therapies should be based on patient-specific considerations. Sulfonylureas (glyburide, gliclazide, glimepiride, glipizide) have demonstrated microvascular benefits but have a high risk of hypoglycaemia.

Glyburide (glibenclamide) (Daonil) and glimepiride (Amaryl) may cause high rates of hypoglycaemia in older people and in people with autonomic neuropathy or nephropathy.

Glyburide (glibenclamide) is associated with an increased risk of cardiovascular mortality compared to gliclazide (Diamicon). Sulfonylureas, glitazones (pioglitazone, rosiglitazone) and insulin may cause weight gain; whereas SGLT2 inhibitors and GLP-1 agonists are associated with weight loss. DPP-4 inhibitors and metformin have no effect on weight. Glitazones increase the relative risk of atypical fractures and bone loss in women; whereas DPP-4 inhibitors (alogliptin, linagliptin, saxagliptin, sitagliptin, vildagliptin) and GLP-1 agonists (exenatide, liraglutide) may have a protective effect on bone. Glitazones can cause fluid retention and may precipitate or worsen heart failure. DPP-4 inhibitors may also worsen heart failure.

Recent evidence shows SGLT2 inhibitors (dapagliflozin, empagliflozin) and GLP-1 agonists are associated with a reduced risk of cardiovascular outcomes. SGLT2 inhibitors have been shown to decrease major adverse cardiovascular events (MACE), heart failure and the progression of CKD. Most oral hypoglycaemics are contraindicated in severe liver impairment. However, injectable GLP-1 agonists can be used. Metformin is not recommended in people with significant renal impairment. Renal impairment reduces the excretion of alogliptin, saxagliptin, sitagliptin and dose reduction is required. Vildagliptin may require dose adjustment, and linagliptin does not need dose adjustment in renal impairment. Sulfonylureas, SGLT2 inhibitors and GLP-1 agonists are contraindicated in severe renal dysfunction. Glitazones can be used in CKD without dosage adjustment;

however fluid retention limits their use. Low dose aspirin is recommended as secondary prevention in persons with diabetes and a history of atherosclerotic cardiovascular disease, after assessment of bleeding risk.

Summary

Diabetes management in older people must be individualised. The benefits of tight glycaemia control and achieving HbA1c targets for younger persons must be weighed against the presence of frailty, life expectancy, comorbidity, functional dependence and cognitive function in older people. Avoidance of hypoglycaemia is a key issue. In older residents with dementia or cognitive impairment medication regimes should be simplified and glycaemic targets more lenient. Values and preferences of residents and their families should be part of shared-decision making on the management of diabetes in older persons.

References

The Royal Australian College of General Practitioners. General practice management of type 2 diabetes: 2016–18. East Melbourne, Vic: RACGP, 2016.

Diabetes Management Journal. May 2019.

Clin Endocrinol Metab. 2019;104:1520-74.

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