

MEDICATIONS

Glucose-lowering medications for type 2 diabetes

Who will need medications?

Early use of glucose-lowering medications is required for most people with type 2 diabetes.

All patients should receive education regarding lifestyle measures: eating well and being active.

Consider cardiovascular disease risk, heart failure, chronic kidney disease and hypoglycaemia risk as well as tolerance, cost and contraindications for therapy.

Determine the individual's glycated haemoglobin (HbA1c) target – commonly ≤ 53 mmol/mol (7.0%) – although this must be individualised according to age, life expectancy, comorbidities and personal preference.

Review of glucose lowering medications

- Review therapy every 3 months until within target
- Review adherence to medications
- Check for side effects
- Exclude other comorbidities/therapies impacting on glycaemic control
- Check patient understanding of treatment and self-management

	HbA1c Recommended Target	Average blood glucose pre-meal or fasting*	Average blood glucose level 2 hours post-meal*
Adult	$\leq 7.0\%$ (53 mmol/mol)	4.0 – 8.0 mmol/L	≤ 10.0 mmol/L
Elderly with comorbidities, falls risk OR High hypo risk	$\leq 8.0\%$ (64 mmol/mol)	5.0 – 8.0 mmol/L	≤ 10.0 mmol/L
Frail, dependent, in residential care and risk of hypo	$\leq 8.5\%$ (69 mmol/mol)	6.0 – 10.0 mmol/L	≤ 12.0 mmol/L

*These ranges are a guide only. For HbA1c of 6% estimated Average Glucose (eAG) is 7.0 (5.5-8.5); for 7% eAG is 8.6 (6.8-8.3); for 8% eAG is 10.2 (8.1-12.1); for 9% eAG is 11.8 (9.4-13.9).

American Diabetes Association Diabetes Care 2020 Jan; 43(Supplement 1): S66-S76.

What types of medications are available for type 2 diabetes?

In Australia there are 7 classes of medications to manage diabetes. Each has a number of different brand names. Many of these medications are available in various combinations.

Class	Biguanide	DPP-4* inhibitor	GLP1-RA# (subcutaneous injection)	SGLT2^ inhibitor	Sulfonylurea	TZD**	Alpha glucosidase inhibitor
Drug name	Metformin	Alogliptin Linagliptin Saxagliptin Sitagliptin Vildagliptin	Dulaglutide Exenatide Semaglutide	Dapagliflozin Empagliflozin Ertugliflozin	Glibenclamide Gliclazide Glipizide Glimepiride	Pioglitazone Rosiglitazone	Acarbose
Brand names	Diabex Diaformin Formet	Galvus Januvia Nesina Onglyza Trajenta	Byetta Bydureon Ozempic Trulicity	Forxiga Jardiance Steglatro	Amaryl Daonil Diamicron Glyade Meleziide Nidem	Actos Avandia	Glucobay
How it works	Increases insulin sensitivity Inhibits liver release of glucose	Increases insulin secretion after food Decreases glucose production from liver	Increases insulin secretion after food Slows gastric emptying	Increases glucose loss through urine	Stimulates insulin secretion from pancreas	Increases insulin sensitivity	Slows carbohydrate absorption
Side effects	Nausea Diarrhoea Metallic taste in mouth Hypoglycaemia	Pancreatitis GI disturbances Joint or muscle pain	Nausea Vomiting Weight loss	Dehydration Urinary incontinence Genitourinary infections Ketoacidosis Weight loss	Nausea Diarrhoea Weight gain Hypoglycaemia	Fluid retention Heart failure Fractures in women Weight gain	Bloating Flatulence Diarrhoea Hypoglycaemia must be treated with glucose
Considerations	Cease if diarrhoea continues for a few days. Extended release has fewer GI side effects. Avoid if severe renal or hepatic impairment. May cause weight loss.	Dose reduction for renal impairment (except Linagliptin). Lower risk for hypoglycaemia than sulfonylureas. Caution if heart failure. Avoid if history of pancreatitis.	Avoid if history of pancreatitis. Avoid in frail or underweight. GI effects more common in elderly. May suppress appetite.	Avoid if low carbohydrate intake. Caution with renal impairment. Will increase need to urinate.	Efficacy may reduce as beta-cell function declines. Avoid in frail older people with irregular eating patterns. Avoid if severe renal or hepatic impairment.	Change in blood glucose levels may take 12 weeks. May worsen heart failure.	Limited role due to side effects.
How to take it	With or just after food. Withhold if fasting or nil-by-mouth. Withhold if acutely unwell.	Before or after food.	Subcutaneous injection only. Byetta – 30 minutes before meal twice daily. Bydureon, Trulicity & Ozempic – once weekly before or after food	Before or after food. Have with a full glass of water. Withhold if fasting or nil-by-mouth. Withhold if acutely unwell.	With food. Withhold if fasting or nil-by-mouth. Withhold if risk of hypo (vomiting or diarrhoea).	Before or after food.	With food.

*DPP-4 = Dipeptidyl peptidase-4; #GLP-1RA = Glucagon-like peptide-1 receptor agonist; ^SGLT-2 = Sodium-glucose co-transporter 2; **TZD = Thiazolidinedione

Tips for people taking diabetes medication



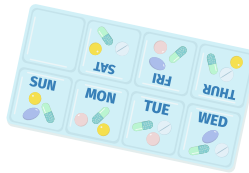
1. Take the correct dose at the right time, as prescribed by your doctor. An incorrect dose can increase some side effects from that medication.



4. If you drink alcohol, talk to your doctor or diabetes educator, as it may affect your medication or risk causing a hypo.



2. Read the information leaflet that comes in the medication box or ask your pharmacist for information.



5. If you need help remembering to take your medication, ask your pharmacist about using a dosette box or Webster-pak®.



3. Don't split or crush your tablets without checking with your pharmacist first, as it may change the effectiveness of your medication.

Further resources

NDSS (National Diabetes Services Scheme)

Contact the NDSS on **1800 637 700** to order printed copies, or visit ndss.com.au/about-diabetes/resources

- [Medications for type 2 diabetes](#)

Australian Diabetes Society

[Australian Diabetes Society Treatment Algorithm for Type 2 Diabetes](#)

Next steps

- Non-insulin injectable medicines
- Monitoring blood glucose levels
- Hyperglycaemia & sick day management
- Nutrition and eating well

Need help?
Phone 6215 9000
or visit diabetestas.org.au