

## Diabetes and Medication

Management of diabetes usually involves a combination of healthy eating, regular exercise and medication. Medications prescribed for diabetes come in several different forms:

### Oral medication

- Which is taken by mouth and swallowed.

### Injectable medication

- Which is injected into the fatty (subcutaneous) layer just under the skin surface.

### Different classes of medications for diabetes

Whilst all diabetes medications assist with the management of blood glucose levels, they don't all work in the same way. Medications are grouped into different classes depending on how they work within the body. Medications within these classes all have their own 'active name' which identifies the chemical in the medication that works within the body. The medications also have a 'brand name' or 'trade name' which is the name given to the medication by its manufacturer.

The following pages list details of the different oral and injectable medications for the management of diabetes. Often with type 2 diabetes, a single medication may be effective in managing blood glucose levels initially. Over time, however, as the condition progresses, or an individual's circumstances change, additional medication may be added to existing medication to adequately manage blood glucose levels. It is important to note that the injectable medication, insulin is used in the treatment of type 1 and type 2 diabetes.

### Know your medications

It is important to know the following about your medication:

- Name of the medication you are taking
- How long before an effect is seen after commencing or changing the dose of your medication—(i.e. when would I expect to see changes in my blood glucose levels)?
- How many times a day should I take the medication, and should I take the dose before, after or with food?
- What should I do if I miss a dose?
- How will the medication affect my driving, alertness or my ability to operate machinery?
- Will my medication increase my risk of hypoglycaemia (hypo)?
- What do I need to do in relation to my medication if I am ill, fasting or having a surgical procedure?
- Is this medication suitable during pregnancy and breastfeeding?

### Other considerations

- Do not use other people's medications or share your own with anyone else.
- Review all the medications you are taking with your doctor and pharmacist to verify their effectiveness.
- Carry a list of current medications with you at all times.
- Store your medications correctly in accordance with the manufacturers' recommendation, check the expiry date prior to consumption and do not take out of date medications.

Oral Medication	How It Works	Potential Side Effects	Other Considerations
<b>Biguanides</b> Active ingredient: Metformin (e.g. Diaformin, Diaformin XR, Formet, Glucobete, Diabex XR, Metex XR)	Reduces the amount of glucose released from the liver. Assists the body's own insulin to work more effectively. Slows the movement of dietary glucose from the intestine into the blood. Some effect within 48 hours of commencement, four to five days for maximum effect, depending on dose.	<b>Hypo Risk?</b> Rare when taken alone; increased risk if used with a sulfonylurea or insulin. <b>Other side effects:</b> Digestive upsets including nausea, vomiting, poor appetite, diarrhoea, stomach cramping, metallic taste, low vitamin B12 levels.	To reduce the risk of digestive upset, it is often prescribed in a small dose and gradually increased over the following weeks. Take the medication with or just after a meal. Metformin also comes as slow release formula (e.g. Diabex XR) which may have fewer digestive side effects. Metformin may need to be suspended before having a X-ray or scan involving a contrast dye.
<b>Sulfonylureas</b> Active ingredient: Glibenclamide (e.g. Daonil), Gliclazide (e.g. Glyade, Glyade MR, Diamicon MR, Nidem), Glimepiride (e.g. Aylide, Diapride, Dimirel, Amaryl), Glipizide (e.g. Melizide, Minidiab)	Stimulates the pancreas to release more insulin. Effective from initial dose, up to two weeks for maximum effect.	<b>Hypo Risk?</b> Increased, especially when taken without food. <b>Other side effects:</b> Weight gain, digestive upsets (uncommon).	To reduce the risk of hypoglycaemia, take with food at the same time each day. Refrain from skipping meals and eat at regular times. Mid meal snacks may also be necessary, particularly if more active than usual.
<b>Dipeptidyl peptidase-4 inhibitors (DPP-4 inhibitors)</b> Active ingredient: Alogliptin (Nesina), Linagliptin (Trajenta), Saxagliptin (Onglyza), Sitagliptin (Januvia), Vildagliptin (Galvus)	Helps to prolong the action of naturally occurring gut hormones (incretins) and therefore promotes insulin release from the pancreas and decreases the amount of glucose released by the liver. Maximum effect one week after commencement.	<b>Hypo Risk?</b> Rare when taken alone; increased risk if used with a sulfonylurea. <b>Other side effects:</b> Nausea, diarrhoea, headache, runny nose, sore throat, respiratory tract infections (e.g. infections of nose or throat), hypersensitivity and skin reactions.	This medication is unlikely to cause weight gain. Precaution in people with moderate to severe kidney impairment. Take with or without food.
<b>Sodium Glucose Co-transporter-2 inhibitors (SGLT-2 inhibitors)</b> Active ingredient: Dapagliflozin (Forxiga), Empagliflozin (Jardiance), Ertugliflozin (Steglatro)	Helps to reduce blood glucose levels by promoting the kidneys to release more glucose into the urine. Maximum effect one week after commencement.	<b>Hypo Risk?</b> Rare when taken alone; increased risk if used with a sulfonylurea. <b>Other side effects:</b> Genital and urinary tract infections, back pain, pain when urinating, urinating frequently and passing large amounts of urine.	Some weight loss may be experienced. SGLT2 inhibitors are not recommended for patients with moderate to severe renal impairment. Precaution in people aged over 75 years due to risk of dehydration. Rare episodes of diabetic ketoacidosis (DKA), in patients with long-standing T2D. Take with or without food.
<b>Thiazolidinediones (Glitazones)</b> Active ingredient: Pioglitazone (Acpio, Actos, APOTEX, Vexazone), Rosiglitazone (Avandia)	Assists the body's own insulin to work more effectively. Reduces the amount of glucose released from the liver. Two weeks for initial effect, up to eight weeks for maximum effect.	<b>Hypo Risk?</b> Rare when taken alone; increased risk if used with a sulfonylurea or insulin. <b>Other side effects:</b> Swelling of the lower limbs (e.g. ankles), increased risk of bone fractures (especially in women), weight gain, pain in the joints.	This medication may cause weight gain. Due to risk of swelling of the lower limbs this medication should be used with caution in people with cardiac failure. Take with or without food.
<b>Alpha-glucosidase inhibitors</b> Active ingredient: Acarbose (Glucobay)	Prevents the breakdown of carbohydrates to glucose in the gut. This reduces the rise in blood glucose levels after a meal. Effective from initial dose.	<b>Hypo Risk?</b> Rare when taken alone; increased risk if used with a sulfonylurea or insulin. <b>Other side effects:</b> Digestive upsets (e.g. wind, bloating, stomach pain and diarrhoea).	Digestive upsets may be minimised by starting on a small dose and gradually increasing. In the event of a hypo, pure glucose should be used to treat. Take immediately before a meal.
<b>Combination Medicine (Known as)</b> Qtern (Dapagliflozin / Saxagliptin), Jardiamet (Empagliflozin / Metformin), Galvumet (metformin/ vildagliptin), Glucovance (metformin/ glibenclamide), Glyxambi (empagliflozin-linagliptin), Janumet (metformin/sitagliptin), Janumet XR (metformin XR/sitagliptin), Kombiglyze XR (metformin XR/ saxagliptin), Nesina Met (metformin/alogliptin), Steglujan (ertugliflozin/sitagliptin), Segluromet (ertugliflozin/metformin), Trajentamet (metformin/ linagliptin), Xigduo XR (metformin XR/dapagliflozin).	A combination medicine has two different medications in the one tablet. They may be prescribed as an alternative to taking the medications separately.	<b>Hypo Risk?</b> Similar to those for the single medications described previously. <b>Other side effects:</b> Similar to those for the single medications described previously.	The advantage of a combination medicine is that it decreases the number of tablets that need to be taken and reduces the cost of prescriptions. Disadvantages include lack of flexibility of dosing. XR are 'extended release' tablets. They should not be crushed, chewed or cut.
Injectable Medication	How It Works	Potential Side Effects	Other Considerations
<b>Incretin Mimetics (GLP-1 Agonist)</b> Active ingredient: Exenatide ( Semaglutide – Ozempic , Wegovy (once weekly injection) Tirzepatide- Mounjaro ( Once weekly Injection) Liraglutide (Victoza), Dulaglutide (Trulicity)	Helps to reduce blood glucose levels by copying the action of naturally occurring gut hormone (incretin). It stimulates the pancreas to release more insulin, reduces release of glucose from the liver, slows down digestion and increases the feeling of fullness at meals.	<b>Hypo Risk?</b> Rare when taken alone; increased risk if used with a sulfonylurea. <b>Other side effects:</b> Digestive upset including nausea, vomiting, diarrhoea, indigestion, respiratory tract infections (e.g. infections of nose or throat), reaction at injection site (e.g. redness, itchiness).	It can affect some other medications that need to pass through the stomach quickly because it slows down the digestive process of the gut. May reduce appetite and therefore promote weight loss. Several formulations release the medication differently. Exenatide (Byetta) is effective immediately. Exenatide (Bydureon-extended release) takes six to seven weeks to be effective. Once a day formulation Liraglutide is effective after 24 hours. Dulaglutide takes two to four weeks to be effective.
<b>Insulin (Known as)</b> Rapid acting insulin (Actrapid, Apidra, Fiasp, Humalog, NovoRapid), Short acting insulin (Humulin R), Intermediate acting insulin (Humulin NPH, Protaphane), Long acting insulin (Lantus, Levemir, Toujeo), Premixed insulin (Humalog mix 25, Humalog mix 50, Humulin 30/70, Mixtard 30/70, Mixtard 50/50, NovoMix 30), Ultra long acting (Ryzodeg 70/30) (Degludec)	Used to replace the body's own insulin which is either not being produced at all (type 1 diabetes) or is being produced in insufficient amounts (type 2 diabetes).	<b>Hypo Risk?</b> Increased. <b>Other side effects:</b> Reaction at injection site (e.g. redness, itchiness), lipohypertrophy (fatty lump under the skin caused by accumulation of extra fat at the site of insulin injections), weight gain.	Insulin comes in a range of different types depending on how fast they work, how long they work for and when they have their maximum 'peak' effect. Hypo risk can be reduced by understanding how the different insulins work. If you are using insulin, it is important to know its name and its action profile. To reduce the risk of lipohypertrophy, it is important to rotate injection sites and ensure the use of a new needle with each injection.

Speak to your doctor or pharmacist for further information about your medications. Alternatively, contact the National Prescribing Service Medicinewise consumer telephone line on 1300 633 424 or find them at [www.nps.org.au/medicines](http://www.nps.org.au/medicines)

# Diabetes Emergency Information

## Hypoglycaemia – Blood Glucose Levels less than 4.0 mmol/L

SYMPTOMS

### Watch for symptoms of hypoglycaemia (low blood sugar)

- Sweating
- Tingling/numb lips
- Weakness
- Headache
- Hunger
- Irritability
- Drowsiness
- Light headedness / dizziness
- Disorientation
- Blurred vision
- Slurred speech
- Fast heart beat
- Nausea
- Poor concentration / mood changes
- Tearful / crying



If the person is unconscious, unable to swallow, fitting or drowsy get emergency help immediately!

**Call an Ambulance 000**

If the person is conscious and able to swallow, stay with them and proceed to Step 1.

### Step 1

If the person has a blood glucose level of 4 mmol/L or below give 15 g of quick acting carbohydrate. The person may require assistance or encouragement to eat and drink.

15 g of quick acting carbohydrate is equivalent to one of the following:



6-7 standard jelly beans



150 ml of regular soft drink (1/3 regular can)



Glucose tablets equivalent to 15 g



3 teaspoons of sugar



150 ml of fruit juice (1/2 glass)

### Step 2

If the next meal is more than 20 minutes away, give the person 15 g of longer acting carbohydrate.

This is equivalent to one of the following:



A slice of wholemeal or multigrain bread



1 small tub of yoghurt



1 piece of fruit



1 glass of milk or soy milk



**If in doubt, treat.**



**WAIT 10-15 minutes**, and then monitor blood glucose levels. If levels are not above 4 mmol/L repeat step 1. If they are above 4 mmol/L continue to step 2.



**WAIT**, and ensure the person has recovered fully before continuing with usual activities.

EMERGENCY ACTION