

## What is low blood sugar?

Low blood sugar is a potential side effect of insulin or medications which lower blood sugar. Patients may develop the following symptoms: headache, dizziness, pale face, increased heart rate, shivering, cold sweating, inability to concentrate, blurred vision, nausea, vomiting, fatigue, hunger etc. Low blood sugar may lead to serious consequences if not managed promptly.

Patients should take note of the following points:

1. Inform your doctor if symptoms of low blood sugar occur frequently.
2. Always carry some sugary food or drink e.g. candies or sugar cubes. Take them immediately upon occurrence of symptoms of low blood sugar. Patients who are confused or unconscious should be sent to Accident & Emergency Department immediately. Do not force-feed an unconscious patient with food or drink.
3. To prevent low blood sugar, patients should:
  - \* Use the medications as directed.
  - \* Ensure adequate food intake and regular meal time. Avoid delaying or skipping meals.
  - \* Avoid over-exercising.
  - \* Attend follow-up consultation to monitor the disease progress.

## Pharmacist's advices

1. Use the medications as directed. Do not stop using the medications or change the dose or frequency unless directed by your doctor.
2. Use the medications preferably at the same time every day.
3. If you have history of drug allergy, consult your doctor or pharmacist before using the medications.
4. Tell your doctor and pharmacist if you are pregnant, planning to become pregnant, or breastfeeding.
5. Avoid drinking alcohol. Alcohol can increase the risk of side effects from medications and cause low blood sugar.
6. Over-the-counter (OTC) medications (such as cold remedies) may contain alcohol or sugar. Consult your doctor before using any other medications, including health supplements, Traditional Chinese Medicine, Proprietary Chinese Medicines and over-the-counter medications. For patients who are taking metformin, there is an increased risk of lactic acidosis if non-steroidal anti-inflammatory drugs are taken at the same time. Please consult your doctor or pharmacist if necessary.
7. Please consult your doctor or pharmacist if you encounter any difficulties in using the medications.
8. Please consult your doctor if symptoms persist or worsen after using the medications.

9. Diabetic patients are more prone to bacterial infection. Special attention should be paid to personal hygiene especially foot care and manicure. Patients should inspect their foot regularly and consult the doctor for any wounds or infections. Do not apply any topical medications (e.g. medication for corns) on feet without medical advice.

## What if I miss a dose?

Use the missed dose as soon as you remember. Skip the missed dose if it is almost time for your next scheduled dose.

Do not double the dose.

## How to store?

- Store in a cool, dry place and away from direct heat and light.
- Keep out of reach of children.
- Discard all medications that are expired or no longer required.
- Do not share the medication with other people.

**? For any query,  
please seek advice from your doctor,  
pharmacist or other healthcare  
professionals.**

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# Medications for Diabetes Mellitus – Medications to Lower Blood Sugar



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## What is Diabetes Mellitus?



Sugar level in the human body is mainly regulated by insulin secreted from the pancreas. Blood sugar level rises when the body does not produce sufficient insulin or utilise the insulin very well. Excess sugar in the blood is excreted in urine. Diabetes mellitus is a type of disease in which the blood sugar level becomes persistently high. When this happens, various body organs (e.g. heart and kidneys) may be affected. Complications of diabetes mellitus include impaired vision, stroke, heart attack, kidney failure, gangrene, etc. Severe gangrene of the limbs may lead to amputation. Therefore, diabetic patients should receive long term medical treatment to control blood sugar levels and other cardiovascular risk factors (e.g. blood pressure, blood lipid level) in order to reduce the risk of developing complications.

### There are two main types of diabetes mellitus:

#### Type 1 Diabetes Mellitus

Its development is more frequent in children and adolescents when the patients cannot produce insulin. Life-long insulin injections are usually required.

#### Type 2 Diabetes Mellitus

It is commonly seen in older adults and obese patients, when the body does not produce enough insulin, or the insulin action is impeded. The condition can usually be treated by medications which lower blood sugar. In some cases, insulin may be required for adequate control.

### Precautions on lifestyle

- Monitor blood sugar and blood lipid levels and blood pressure regularly.
- Meals should be taken at regular time each day. Do not delay or skip meals. Have a balanced diet. Eat food with less calories, less salt, less fat and less cholesterol. Eat plenty of vegetables and fruits.
- Quit smoking. Limit consumption of alcohol and caffeinated beverages.
- Exercise regularly.
- Maintain a healthy body weight, especially for overweight and obese patients.
- Maintain good personal hygiene to reduce the risk of complications such as skin infections.
- Take enough rest, manage stress and maintain a positive attitude.

## Medications to lower blood sugar

Classes of medications	Common side effects	Precautions
<b>Oral medications</b>		
<b>Sulphonylureas</b> Glibenclamide, Gliclazide, Glimepiride, Glipizide	Headache, dizziness, stomach upset, weight gain	※ Take with meals. Do not delay meal time after taking the medications to prevent low blood sugar.
<b>Biguanides*</b> Metformin	Nausea, vomiting, diarrhoea	※ Take with meals. ※ Avoid drinking alcohol, which increases lactate levels in the body*. ※ Inform your doctor if you are going for any surgery.
<b>Alpha-glucosidase inhibitors</b> Acarbose	Diarrhoea, gas	※ Take with meals.
<b>DPP-4 inhibitors**</b> Alogliptin, Linagliptin, Saxagliptin, Sitagliptin, Vildagliptin	Diarrhoea, sudden and severe stomach pain, headache	※ Take with meals.
<b>Thiazolidinediones***</b> Pioglitazone	Swelling in your hands, ankles, or feet, rapid weight gain, sore throat	※ Take with meals.
<b>SGLT-2 inhibitors****</b> Dapagliflozin, Empagliflozin	Dizziness, lower back or side pain, change in how much or how often you urinate, bloody or cloudy urine, pain while urinating	※ Take with meals in the morning. ※ Swallow the whole tablet. Do not chew or crush. ※ Drink plenty of water after taking this medication.
<b>Subcutaneous injections</b>		
<b>GLP-1 receptor agonists**</b> Exenatide, Liraglutide, Lixisenatide	Headache, nausea, vomiting, diarrhoea	※ Refrigerate before opening. ※ Inject exenatide and lixisenatide within one hour before meals. ※ Drink plenty of water after using this medication.
<p>* Lactic acidosis is a rare but serious side effect of metformin. It mainly affects patients with impaired renal function. Symptoms include unusual tiredness, weakness, muscle pain, and trouble breathing. In severe cases, this condition can be fatal.</p> <p>** Pancreatitis is a rare but serious side effect of DPP-4 inhibitors and GLP-1 receptor agonists. Symptoms include loss of appetite, nausea and vomiting, etc.</p> <p>*** Impaired liver and cardiac function is a rare but serious side effect of pioglitazone. Symptoms include nausea, vomiting, unusual tiredness or weakness, loss of appetite, dark urine, trouble breathing, swelling in your hands, ankles, or feet and rapid weight gain.</p> <p>****Diabetic ketoacidosis is a rare but serious side effect of SGLT-2 inhibitors. Symptoms include abdominal pain, nausea, vomiting, loss of appetite, extreme thirst, breathing difficulty, severe fatigue or drowsiness.</p> <p>※ If you experience sleepiness, dizziness or blurred vision after taking the medications, avoid driving or activities requiring mental alertness or coordination. Avoid alcohol as it may increase the side effects.</p> <p>※ If you notice any allergic reactions like skin itchiness, face or hand swelling, breathing difficulty etc., consult your doctor immediately.</p>		