

What is low blood sugar level ?

Low blood sugar level is a potential side effect of insulin or medications which lower blood sugar level. 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 level 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 level 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 level. 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 level, 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.

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

Pharmacist's advice

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 or pharmacist before using any other medications, including health supplements, Traditional Chinese Medicines, Proprietary Chinese Medicines and OTC 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 pedicure. Patients should inspect their foot regularly and consult your doctor for any wounds or infections. Do not apply any topical medications (e.g. medication for corns) on feet without medical advice.

**? For any queries,
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 it 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 disease risk factors (e.g. high blood pressure, high 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 who cannot produce sufficient amount of 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 level. In some cases, insulin may be required for adequate control.

Precautions on lifestyle

- Monitor and record blood sugar, 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 an appropriate 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 level

Classes of medications	Common side effects	Precautions
Oral medications		
Sulphonylureas Gliclazide, Glimpiride, Glipizide	Headache, dizziness, stomach upset, weight gain	※ Take with meals. Do not delay meal time after taking the medications to prevent low blood sugar level.
Biguanides* 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.
Alpha-glucosidase inhibitors Acarbose	Diarrhoea, flatulence	※ Take with meals.
DPP-4 inhibitors** Alogliptin, Linagliptin, Saxagliptin, Sitagliptin, Vildagliptin	Joint pain, nasopharyngitis, sore throat, headache	※ Take with meals.
Thiazolidinediones*** Pioglitazone	Swelling in your hands, ankles, or feet, rapid weight gain, sore throat	※ Take with meals.
Sodium-Glucose Co-transporter 2 (SGLT-2) inhibitors**** Dapagliflozin, Empagliflozin	Dizziness, lower back or side pain, change in how much or how often you urinate, 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 the medication. ※ As the drug causes more glucose to be excreted in the urine, there is an increased risk of genital and urinary tract infections. It is important to maintain good genital hygiene.
Subcutaneous injections		
GLP-1 receptor agonists** Dulaglutide, Exenatide, Liraglutide, Lixisenatide, Semaglutide	Headache, nausea, vomiting, diarrhoea	※ Refrigerate before opening. ※ Drink plenty of water after using the medication.

* Lactic acidosis is a rare but serious side effect of metformin. It mainly affects patients with impaired renal function. Symptoms include unusual tiredness, weakness, confusion, nausea, vomiting, abdominal pain, muscle pain, and trouble breathing. Seek medical attention immediately if symptoms persist or worsen after using the medications.

** Pancreatitis is a rare but serious side effect of DPP-4 inhibitors and GLP-1 receptor agonists. Seek medical attention immediately if you experience the following symptoms: abdominal pain, loss of appetite, nausea and vomiting, etc.

*** Impaired liver and cardiac function is a rare but serious side effect of pioglitazone. Seek medical attention immediately if you experience the following symptoms: nausea, vomiting, unusual tiredness or weakness, loss of appetite, dark urine, jaundice (yellowing of the skin or whites of the eyes), trouble breathing, swelling in your hands, ankles, or feet and rapid weight gain.

****Diabetic ketoacidosis is a rare but serious side effect of SGLT-2 inhibitors. Seek medical attention immediately if you experience the following symptoms: abdominal pain, nausea, vomiting, loss of appetite, extreme thirst, breathing difficulty (fast and deep breathing), severe fatigue or drowsiness, confusion, a sweet smell to your breath or a sweet or metallic taste in your mouth.

※ 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 potentiate the side effects.

※ If you notice any allergic reactions like skin itchiness, face or hand swelling, breathing difficulty, etc., consult your doctor immediately.