NUS National University of Singapore | Department of Pharmacy and Pharmaceutical Sciences Faculty of Science

HIGH BLOOD GLUCOSE

ALL ABOUT DIABETES

WHAT IS HIGH BLOOD GLUCOSE?

Scan the QR code to find out more about high blood glucose!

Our body produces a hormone called insulin that enables glucose to enter your cells. If your cells do not respond well enough to insulin, glucose cannot enter your cells and instead accumulates in the bloodstream. Your blood glucose level is usually measured by a HbA1c blood test, which shows your average blood glucose over the past 2 to 3 months.

Symptoms of high blood glucose are usually not obvious in the early stage. Some possible symptoms of high blood glucose include excessive thirst and urination, weight loss, fatigue and blurred vision. Over time, untreated high blood glucose may result in complications such as blindness, kidney failure, amputations, heart attacks and stroke.

The aim of controlling high blood glucose is to lower your risk of developing the complications described above. High blood glucose is only one of several things that can lead to heart attack, stroke or kidney failure. Your healthcare professional may use a risk assessment tool to assess and help you understand your risk.

WHAT LIFESTYLE CHANGES CAN I MAKE TO TRY TO LOWER MY BLOOD GLUCOSE?

√ Healthy diet – Eat more fruits and vegetables, and reduce intake of sugary foods

√ Exercise regularly – At least 150 minutes of physical activity each week

√ Maintain a healthy body weight – Check with your healthcare professional on your healthy weight range

√ Quit smoking

WHAT ARE THE COMMON MEDICATIONS USED TO LOWER MY BLOOD GLUCOSE?

	Metformin	SGLT-2 inhibitors	DPP-IV inhibitors
Common examples	NA	• Dapagliflozin • Empagliflozin	• Linagliptin • Sitagliptin
How does it work?	• Decrease glucose absorption from intestines, glucose production by liver • Improves body response to insulin	• Decrease glucose reabsorption from urine, thereby increasing glucose excretion in urine	• Prevent an enzyme in the body from breaking down incretin, a hormone that regulates insulin production
Common side effects	• Metallic taste in mouth • Gastric discomfort • Nausea and diarrhoea • Especially when newly started or when increasing dose	• Increased need to pass urine • Lower blood pressure • Dehydration • Changes in kidney function • Infection of urinary tract and genitals	• Skin reactions • Joint pain • Inflammation of the pancreas
Will I need blood tests?	• Yes • Kidney function testing may be performed	• Yes • Kidney function testing may be performed when starting treatment, and 2-4 weeks after starting on these medications	• Yes • Kidney function testing may be performed while you are taking these medications
What else do I need to know?	• If you have kidney failure, these medications are usually not prescribed	• Regardless of your glucose levels, these medications help to protect the heart and kidneys	• If you have kidney impairment, these medications remain suitable (Sitagliptin requires dose adjustments)

Target HbA1c
< 7%

WHICH IS THE BEST OPTION FOR ME?

The following table lists some benefits and risks for you to think about when choosing the best option for you. It is important to remember that:

- No one can say for certain what will happen to an individual person, or when.
- Your risk of developing the complications described will change over time.
- Making lifestyle changes or taking medications will prevent some people from developing the complications described, but these things will still happen to some people.
- The target HbA1c is suitable for most people and vary on a case-by-case scenario. Speak to your healthcare provider for something suitable for you.

You may find that you have more things to add to this list as you think about each option. Your healthcare provider will be able to offer more personalised information, advice and support.

	Do nothing	Lifestyle changes	Lifestyle changes + medications
What does this involve?	• Carry on as I am	• Not all the lifestyle changes may apply to you, but any will help	• You will take one or more medications every day, long-term, as well as make lifestyle changes at the same time
What are the benefits?	• No lifestyle changes to make • No extra medications to take	• You are less likely to develop the complications described • You might not need to take medications	• You are even less likely to develop the complications described • Medications can help to lower your blood glucose more than lifestyle changes alone
What are the risks?	• You are more likely to develop the complications described, although these are not certain to happen	• Making lifestyle changes may be difficult • Your risk of the complications described may not be lowered if your blood glucose remains high despite the lifestyle changes	• There might be times when your blood glucose may be too low • You might experience side effects from your medications • You might need blood tests

References:

1. Arnett DK, Blumenthal RS, Albert MA, et al. 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease: Executive Summary: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines Circulation. 2019;140(11):e563-e595.
2. American Diabetes Association Professional Practice Committee. 3. Prevention or Delay of Type 2 Diabetes and Associated Comorbidities: Standards of Medical Care in Diabetes-2022. Diabetes Care. 2022;45(Suppl 1):S39-S45.
3. American Diabetes Association Professional Practice Committee, Draznin B, Aroda VR, et al. 9. Pharmacologic Approaches to Glycemic Treatment: Standards of Medical Care in Diabetes-2022. Diabetes Care. 2022;45(Suppl 1):S125-S143.
4. American Diabetes Association Professional Practice Committee. 10. Cardiovascular Disease and Risk Management: Standards of Medical Care in Diabetes-2022. Diabetes Care. 2022;45(Suppl 1):S144-S174.