**Q&A developed from World Health Organisation**

*Source: https://www.who.int/news-room/fact-sheets/detail/diabetes*

1. **Q:** What is diabetes?

**A:** Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. Insulin is a hormone that regulates blood glucose. Hyperglycaemia, also called raised blood glucose or raised blood sugar, is a common effect of uncontrolled diabetes and over time leads to serious damage to many of the body's systems, especially the nerves and blood vessels.

1. **Q:** What are common symptoms of diabetes?

**A:** Symptoms of diabetes include: feeling very thirsty, needing to urinate more often than usual, blurred vision, feeling tired, and losing weight unintentionally. Over time, diabetes can damage blood vessels in the heart, eyes, kidneys and nerves.

Symptoms of type 2 diabetes can be mild. They may take several years to be noticed. Symptoms may be similar to those of type 1 diabetes but are often less marked. As a result, the disease may be diagnosed several years after onset, after complications have already arisen.

1. **Q:** Health problems caused by diabetes?

**A:** Over time, diabetes can damage blood vessels in the heart, eyes, kidneys and nerves. People with diabetes have a higher risk of health problems including heart attack, stroke and kidney failure. Diabetes can cause permanent vision loss by damaging blood vessels in the eyes. Many people with diabetes develop problems with their feet from nerve damage and poor blood flow. This can cause foot ulcers and may lead to amputation.

1. **Q:** What is gestational diabetes?

**A:** Gestational diabetes is hyperglycaemia with blood glucose values above normal but below those diagnostic of diabetes. Gestational diabetes occurs during pregnancy.

1. **Q:** How do I know if I have gestational diabetes?

**A:** Gestational diabetes is diagnosed through prenatal screening, rather than through reported symptoms.

1. **Q:** Any long-term effects of gestational diabetes?

**A:** Women with gestational diabetes are at an increased risk of complications during pregnancy and at delivery. These women and possibly their children are also at increased risk of type 2 diabetes in the future.

1. **Q:** What is Type 1 diabetes?

**A:** Type 1 diabetes (previously known as insulin-dependent, juvenile or childhood-onset) is characterised by deficient insulin production and requires daily administration of insulin. Neither its cause nor the means to prevent it are known.

1. **Q:** What is Type 2 diabetes?

**A:** Type 2 diabetes affects how your body uses sugar (glucose) for energy. It stops the body from using insulin properly, which can lead to high levels of blood sugar if not treated. Type 2 diabetes is often preventable. Factors that contribute to developing type 2 diabetes include being overweight, not getting enough exercise, and genetics.

1. **Q:** How do I treat Type 1 diabetes?

**A:** People with type 1 diabetes need insulin injections for survival.

1. **Q:** How do I treat Type 2 diabetes?

**A:** Some people with type 2 diabetes will need to take medicines to help manage their blood sugar levels. These can include insulin injections or other medicines. Some examples include:

* Metformin
* Sulfonylureas
* Sodium-glucose co-transporters type 2 (SGLT-2) inhibitors

1. **Q:** How to treat diabetes?

**A:** One of the most important ways to treat diabetes is to keep a healthy lifestyle. Along with medicines to lower blood sugar, people with diabetes often need medications to lower their blood pressure and statins to reduce the risk of complications.

1. **Q:** Can I prevent Type 2 diabetes?

**A:** Lifestyle changes are the best way to prevent or delay the onset of type 2 diabetes. To help prevent type 2 diabetes and its complications, people should:

* Reach and keep a healthy body weight
* Stay physically active with at least 30 minutes of moderate exercise everyday
* Eat a healthy diet and avoid sugar and saturated fats
* Not smoke tobacco

1. **Q:** How to prevent Type 2 diabetes symptoms from worsening?

**A:** Early diagnosis is important to prevent the worst effects of type 2 diabetes. The best way to detect diabetes early is to get regular check-ups and blood tests with a healthcare provider.

**Q&A developed from Healthway Medical (SG clinic)**

*Source: https://healthwaymedical.com/diabetes/*

1. **Q:** What is glucose?

**A:** Glucose is the type of sugar that exists in our blood and is the main source of energy for our body. It is derived from carbohydrates which are found in foods such as rice, noodles, bread, and sugar.

1. **Q:** How does exercise manage diabetes?

**A:** Regular exercise is important for diabetes control and for a healthy lifestyle in general. Exercise allows you to control your weight and help keep your heart healthy as well, which helps to reduce the risk of other health complications in future.

1. **Q:** How does smoking affect diabetics?

**A:** Smoking is bad for health, and especially dangerous for diabetes patients, as it results in the narrowing of blood vessels already caused by diabetes. This can lead to reduced blood flow to organs and result in serious complications.

1. **Q:** Why should I screen regularly for diabetes?

**A:** Early detection is crucial in fighting chronic conditions such as diabetes. Detecting risk factors early can help to combat the problem before it becomes more serious.

1. **Q:** When should I start screening for risk factors contributing to diabetes?

**A:** Screenings for height and weight, waist circumference, blood pressure should be done annually for anyone older than 18 years old. Yearly screenings for glucose and cholesterol are also important for individuals above 40 years old. Screenings should start earlier if there are any risk factors such as obesity or family history of diabetes.

**Q&A developed from MSD manual consumer version (big pharma, has SG branch)**

*Source:https://www.msdmanuals.com/en-sg/home/hormonal-and-metabolic-disorders/diabetes-mellitus-dm-and-disorders-of-blood-sugar-metabolism/diabetes-mellitus-dm*

1. **Q:** What is prediabetes?

**A:** Prediabetes is a condition in which blood glucose levels are too high to be considered normal but not high enough to be labeled diabetes. People have prediabetes if their fasting blood glucose level is between 100 mg/dL (5.6 mmol/L) and 125 mg/dL (6.9 mmol/L) or if their blood glucose level 2 hours after a glucose tolerance test is between 140 mg/dL (7.8 mmol/L) and 199 mg/dL (11.0 mmol/L). Prediabetes carries a higher risk of future diabetes as well as heart disease. Decreasing body weight by 5 to 10% through diet and exercise can significantly reduce the risk of developing diabetes.

1. **Q:** Who is affected with Type 1 diabetes?

**A:** Only about 5 to 10% of all people with diabetes have type 1 disease. Most people who have type 1 diabetes develop the disease before age 30, although it can develop later in life.

1. **Q:** Who is affected with Type 2 diabetes?

**A:** Type 2 diabetes was once rare in children and adolescents but has become more common. However, it usually begins in people older than 30 and becomes progressively more common with age. About 26% of people older than 65 have type 2 diabetes.

1. **Q:** What is the main risk factor contributing to onset of Type 2 diabetes?

**A:** Obesity is the chief risk factor for developing type 2 diabetes, and 80 to 90% of people with this disorder are overweight or obese. Because obesity causes insulin resistance, obese people may need large amounts of insulin to maintain normal blood glucose levels.

1. **Q:** Who is most at risk in developing Type 2 diabetes?

**A:** People of African, Asian American, American Indian, Alaskan native, and Spanish or Latin American ancestry are at increased risk of developing type 2 diabetes. Type 2 diabetes tends to run in families.

1. **Q:** Can other disorders or medications lead to development of Type 2 diabetes?

**A:** Certain disorders and medications can affect the way the body uses insulin and can lead to type 2 diabetes. Examples of common states (conditions) that result in impaired insulin use are:

* High levels of corticosteroids (most commonly due to use of corticosteroid medications, such as prednisone, or Cushing syndrome)
* Pregnancy (gestational diabetes)

Diabetes also may occur in people with excess production of growth hormone (acromegaly) and in people with certain hormone-secreting tumors. Severe or recurring pancreatitis and other disorders that directly damage the pancreas can lead to diabetes.

1. **Q:** What diet to follow for diabetics?

**A:** People with diabetes need to follow a healthy diet that is low in refined carbohydrates (including sugar), saturated fat, and processed foods.

1. **Q:** What is insulin?

**A:** Insulin is a hormone released from the pancreas (an organ behind the stomach that also produces digestive enzymes) which controls the amount of glucose in the blood. Glucose in the bloodstream stimulates the pancreas to produce insulin. Insulin helps glucose to move from the blood into the cells. Once inside the cells, glucose is converted to energy, which is used immediately, or the glucose is stored as fat or the starch glycogen until it is needed. If the body does not produce enough insulin to move the glucose into the cells, or if the cells stop responding normally to insulin (called insulin resistance), the resulting high levels of glucose in the blood and the inadequate amount of glucose in the cells together produce the symptoms and complications of diabetes.

1. **Q:** Why do I urinate often?

**A:** When the blood glucose level rises above 160 to 180 mg/dL (8.9 to 10.0 mmol/L), glucose spills into the urine. When the level of glucose in the urine rises even higher, the kidneys excrete additional water to dilute the large amount of glucose. Because the kidneys produce excessive urine, people with diabetes urinate large volumes frequently (polyuria).

1. **Q:** Why am I so hungry?

**A:** The excessive urination creates abnormal thirst (polydipsia). Because excessive calories are lost in the urine, people may lose weight. To compensate, diabetics often feel excessively hungry.

1. **Q:** What are some complications brought about by diabetes?

**A:** Diabetes damages blood vessels, causing them to narrow and therefore restricting blood flow. Because blood vessels throughout the body are affected, people may have many complications of diabetes. Many organs can be affected, particularly the following:

* Brain, causing stroke
* Eyes (diabetic retinopathy), causing blindness
* Heart, causing heart attack
* Kidneys (diabetic nephropathy), causing chronic kidney disease
* Nerves (diabetic neuropathy), causing decreased sensation in mainly in the feet and legs

High blood glucose levels also cause disturbances in the body's immune system, so people with diabetes mellitus are particularly susceptible to bacterial and fungal infections.

1. **Q:** What is the use of measuring blood glucose?

**A:** Doctors check blood glucose levels in people who have symptoms of diabetes, such as increased thirst, urination, or hunger. Additionally, doctors may check blood glucose levels in people who have disorders that can be complications of diabetes, such as frequent infections, foot ulcers, and yeast infections.

1. **Q:** How is blood glucose measured?

**A:** To accurately evaluate blood glucose levels, doctors usually use a blood sample taken after people have fasted overnight. Diabetes can be diagnosed if fasting blood glucose levels are 126 mg/dL (7.0 mmol/L) or higher. However, it is possible to use blood samples taken after people have eaten. Some elevation of blood glucose levels after eating is normal, but even after a meal the levels should not be very high. Diabetes can be diagnosed if a random (not done after fasting) blood glucose level is higher than 200 mg/dL (11.1 mmol/L).

1. **Q:** What is hemoglobin A1c?

**A:** Hemoglobin A1C (also called glycosylated or glycolated hemoglobin) is a protein in the blood which reflects the person's long-term trends in blood glucose levels rather than rapid changes. Hemoglobin is the red, oxygen-carrying substance in red blood cells. When blood is exposed to high blood glucose levels over a period of time, glucose attaches to the hemoglobin and forms glycosylated hemoglobin. The hemoglobin A1C level blood test is reported as the percentage of hemoglobin that is A1C. Measurements of hemoglobin A1C can be used to diagnose diabetes when testing is done by a certified laboratory (not by instruments used at home or in a doctor's office). People with a hemoglobin A1C level of 6.5% or more have diabetes. If the level is between 5.7 and 6.4, they have prediabetes and are at risk of developing diabetes.

1. **Q:** What is an oral glucose tolerance test (OGTT)?

**A:** Another kind of blood test, an oral glucose tolerance test, may be done in certain situations, such as screening pregnant women for gestational diabetes or testing older people who have symptoms of diabetes but normal glucose levels when fasting. However, it is not routinely used for testing for diabetes because the test can be very cumbersome. In this test, people fast, have a blood sample taken to determine the fasting blood glucose level, and then drink a special solution containing a large, standard amount of glucose. More blood samples are then taken over the next 2 to 3 hours and are tested to determine whether the glucose in the blood rises to abnormally high levels.

1. **Q:** Why is it important to check blood glucose levels?

**A:** Blood glucose levels are often checked during a routine physical examination. Checking the levels of glucose in the blood regularly is particularly important in older people because diabetes is so common in later life. People may have diabetes, particularly type 2 diabetes, and not know it.

1. **Q:** Who should be screened for Type 1 diabetes?

**A:** Doctors do not do routine tests to screen for type 1 diabetes even in people at high risk of type 1 diabetes (such as siblings or children of people who have type 1 diabetes).

1. **Q:** Who should be screened for Type 2 diabetes?

**A:** it is important to do screening tests in people at risk of type 2 diabetes, including those who:

* Are 35 years or older
* Have overweight or obesity
* Have a sedentary lifestyle
* Have a family history of diabetes
* Have prediabetes
* Have had diabetes during pregnancy or had a baby who weighed more than 9 pounds (4,000 grams) at birth
* Have high blood pressure
* Have a lipid disorder such as high cholesterol
* Have cardiovascular disease
* Have fatty liver disease
* Have polycystic ovary disease
* Have racial or ethnic ancestry that is associated with high risk
* Have HIV infection

1. **Q:** How often should at-risk people be screened for diabetes?

**A:** People with risk factors should be screened for diabetes at least once every three years. Diabetes risk can also be estimated using a risk calculator from the American Diabetes Association. Doctors may measure fasting blood glucose levels and hemoglobin A1C level, or do an oral glucose tolerance test. If the test results are on the border between normal and abnormal, doctors do the screening tests more often, at least once a year.

1. **Q:** How to treat diabetes mellitus?

**A:** Diet, exercise, and education are the cornerstones of treatment of diabetes and often the first recommendations for people with mild diabetes. Weight loss is important for people who are overweight. People who continue to have elevated blood glucose levels despite lifestyle changes, or have very high blood glucose levels and people with type 1 diabetes (no matter their blood glucose levels) also require medication. Because complications are less likely to develop if people with diabetes strictly control their blood glucose levels, the goal of diabetes treatment is to keep blood glucose levels as close to the normal range as possible.

1. **Q:** Why do I need to manage my diet?

**A:** Diet management is very important in people with either type of diabetes mellitus. Doctors recommend a healthy, balanced diet and efforts to maintain a healthy weight. People with diabetes can benefit from meeting with a dietitian or a diabetes educator to develop an optimal eating plan. Such a plan includes

* Avoiding simple sugars and processed foods
* Increasing dietary fiber
* Limiting portions of carbohydrate-rich and fatty foods (especially saturated fats)

1. **Q:** What is carb-counting and why should I do it?

**A:** People with Type 1 diabetes and certain people with Type 2 diabetes may use carbohydrate counting or the carbohydrate exchange system to match their insulin dose to the carbohydrate content of their meal. "Counting" the amount of carbohydrate in a meal is used to calculate the amount of insulin the person takes before eating. However, the carbohydrate-to-insulin ratio (the amount of insulin taken for each gram of carbohydrate in the meal) varies for each person, and people with diabetes need to work closely with a dietician who has experience in working with people with diabetes to master the technique. Some experts have advised use of the glycemic index (a measure of the impact of an ingested carbohydrate-containing food on the blood glucose level) to delineate between rapid and slowly metabolized carbohydrates, although there is little evidence to support this approach.

1. **Q:** How does exercising benefit diabetics?

**A:** Exercise, in appropriate amounts (at least 150 minutes a week spread out over at least three days), can help people control their weight and improve blood glucose levels. Because blood glucose levels go down during exercise, people must be alert for symptoms of hypoglycemia. Some people need to eat a small snack during prolonged exercise, decrease their insulin dose, or both.

1. **Q:** Why do I need to lose weight if I am obese?

**A:** Many people, especially those with Type 2 diabetes, are overweight or obese. Some people with Type 2 diabetes may be able to avoid or delay the need to take medications by achieving and maintaining a healthy weight. Weight loss is also important in these people because excess weight contributes to complications of diabetes. When obese people with diabetes have trouble losing weight with diet and exercise alone, doctors may give weight-loss medication or recommend bariatric surgery (surgery to cause weight loss). Certain diabetes medications can induce weight loss, especially glucagon-like peptide 1 (GLP-1) and SGLT2 inhibitor medications. Sometimes a doctor will recommend a medication that helps with weight loss.

1. **Q:** It is physically hard for me to check my blood glucose. What can I do?

**A:** Poor vision, limited manual dexterity due to arthritis, tremor, or stroke, or other physical limitations may make monitoring blood glucose levels more difficult for some people. However, special monitors are available. Some have large numerical displays that are easier to read. Some provide audible instructions and results. Some monitors read blood glucose levels through the skin and do not require a blood sample. People can consult a diabetes educator to determine which meter is most appropriate.

1. **Q:** What are the ideal ranges to keep in mind for diabetes treatment?

**A:** Experts recommend that people keep their blood glucose levels

* Between 80 and 130 mg/dL (4.4 and 7.2 mmol/L) fasting (before meals)
* Less than 180 mg/dL (10.0 mmol/L) 2 hours after meals

Hemoglobin A1C levels should be less than 7%.

Some other goals are keeping systolic blood pressure less than 140 mm Hg and diastolic blood pressure less than 90 mm Hg. For people with diabetes who have heart disease or are at high risk for heart disease, the blood pressure goal is less than 130/80 mm Hg.

1. **Q:** What causes my blood glucose level to change?

**A:** Many things cause blood glucose levels to change:

* Diet
* Exercise
* Stress
* Illness
* Medications
* Time of day

The blood glucose levels may jump after people eat foods they did not realize were high in carbohydrates. Emotional stress, an infection, and many medications tend to increase blood glucose levels. Blood glucose levels increase in many people in the early morning hours because of the normal release of hormones (growth hormone and cortisol), a reaction called the dawn phenomenon. Blood glucose may shoot too high if the body releases certain hormones in response to low blood glucose levels (Somogyi effect). Exercise may cause the levels of glucose in the blood to fall low.

1. **Q:** How can I check my blood glucose level on my own?

**A:** A fingerstick glucose test is most often used to monitor blood glucose. Most blood glucose monitoring devices (glucose meters) use a drop of blood obtained by pricking the tip of the finger with a small lancet. The lancet holds a tiny needle that can be poked into the finger or placed in a spring-loaded device that easily and quickly pierces the skin. Most people find that the pricking causes only minimal discomfort. Then, a drop of blood is placed on a reagent strip. The strip contains chemicals that undergo changes depending on the glucose level. The glucose meter reads the changes in the test strip and reports the result on a digital display. Some devices allow the blood sample to be obtained from other sites, such as the palm, forearm, upper arm, thigh, or calf. Home glucose meters are smaller than a deck of cards.

1. **Q:** What is continuous glucose monitoring (CGM)?

**A:** Continuous glucose monitoring (CGM) systems use a small glucose sensor placed under the skin. The sensor measures blood glucose levels every few minutes. There are two types of CGMs, with different purposes:

* Professional CGMs collect continuous blood glucose information over a period of time (72 hours to up to 14 days). Health care providers use this information to make treatment recommendations. Professional CGMs do not provide data to the person with diabetes.
* Personal CGMs are used by the person and provide real-time blood glucose data on a small portable monitor or on a connected smartphone. Alarms on the CGM system can be set to sound when blood glucose levels drop too low or climb too high, so the device can help people quickly identify worrisome changes in blood glucose.

CGMs can be worn for up to 14 days, often do not require calibration, and can be used for insulin dosing without fingerstick glucose confirmation. There are also systems in which the CGM device communicates with insulin pumps to either stop delivery of insulin when blood glucose is dropping (threshold suspend), or to give daily insulin (hybrid closed loop system).

1. **Q:** Is CGM suitable for me?

**A:** CGM systems are particularly helpful in certain circumstances, such as in people with type 1 diabetes who have frequent, rapid changes in blood glucose (particularly when the glucose levels sometimes go very low), which are difficult to identify with fingerstick testing. CGM systems allow people to measure the period of time that their blood glucose stays within a certain range, and doctors use this measurement to set goals for treatment and adjust insulin dose.

1. **Q:** Should I record my blood glucose level?

**A:** Keeping a record of blood glucose levels and reporting them to their doctor or nurse helps doctors and nurses provide advice in adjusting the dose of insulin or the oral antihyperglycemic medication. Many people can learn to adjust the insulin dose on their own as necessary. Some people who have mild or early type 2 diabetes that is well-controlled with one or two medications may be able to monitor their fingerstick glucose levels relatively infrequently.

1. **Q:** How does the hemoglobin AlC test differ from blood glucose measurement?

**A:** When the blood glucose levels are high, changes occur in hemoglobin, the protein that carries oxygen in the blood. These changes are in direct proportion to the blood glucose levels over an extended period. The higher the hemoglobin A1C level, the higher the person's glucose levels have been. Thus, unlike the blood glucose measurement, which reveals the level at a particular moment, the hemoglobin A1C measurement demonstrates whether the blood glucose levels have been controlled over the previous few months.