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Diabetes: Understanding the Disease Beyond Blood Sugar

Diabetes is often described simply as a condition of “high blood sugar.” While elevated blood glucose is central to diabetes, this description does not capture the complete picture.

Diabetes is a chronic metabolic condition involving abnormalities in the way the body produces or uses insulin. Over time, persistently elevated glucose can affect blood vessels and multiple organs, which is why understanding diabetes requires looking beyond a single glucose reading.

The Role of Glucose and Insulin

Glucose is an important source of energy for the body. After we eat, carbohydrates are broken down into glucose, which enters the bloodstream.

The pancreas responds by releasing **insulin**, a hormone that helps glucose move from the bloodstream into cells where it can be used for energy.

Diabetes develops when this system no longer works effectively—either because the body does not produce enough insulin, does not respond adequately to insulin, or a combination of these mechanisms.

The underlying problem, however, differs between different types of diabetes.

Not All Diabetes Is the Same

Type 1 Diabetes

Type 1 diabetes is an autoimmune condition in which the body's immune system destroys the insulin-producing beta cells of the pancreas.

As a result, the body produces little or no insulin, and insulin therapy is essential.

Type 2 Diabetes

Type 2 diabetes is the most common form of diabetes.

It usually develops through a combination of **insulin resistance and progressive reduction in the pancreas's ability to produce sufficient insulin.**

Genetics, excess weight, physical inactivity, ageing and several other metabolic factors can influence its development.

Gestational Diabetes

Gestational diabetes is glucose intolerance first detected during pregnancy.

Although glucose levels may return to normal after delivery, a history of gestational diabetes is an important marker of increased future risk of Type 2 diabetes.

Other Types of Diabetes



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Not every person who develops diabetes has typical Type 1 or Type 2 diabetes.

Diabetes can also occur because of certain genetic conditions, pancreatic disease, endocrine disorders or medications. In some individuals, establishing the correct type of diabetes can therefore be important.

The Silent Development of Diabetes

Type 2 diabetes usually develops slowly. At first, the body becomes less responsive to insulin, so the pancreas compensates by producing more insulin to keep blood sugar normal. Over time, this compensation may no longer be enough and blood sugar gradually rises.

Because this change happens slowly and may not cause noticeable symptoms initially, Type 2 diabetes can remain undetected for years.

Fasting Glucose, Post-Meal Glucose and HbA1c Tell Different Stories

Blood glucose is not a fixed number. It changes throughout the day in response to food, activity, medication, sleep, illness and several other factors.

Fasting Blood Glucose

Reflects glucose after a period without food, usually overnight.

Post-Meal Glucose

Shows how the body handles the rise in glucose following a meal.

HbA1c

Provides an indication of average glucose exposure over the preceding few months.

These measurements provide different pieces of information. This is why a single glucose reading should not always be viewed as a complete representation of glucose health.

Effects of high blood glucose over time

Persistently elevated glucose can gradually damage both small and large blood vessels.

Small Blood Vessels

These changes can contribute to complications involving the:

Eyes → diabetic retinopathy

Kidneys → diabetic kidney disease

Nerves → diabetic neuropathy



Larger Blood Vessels

Diabetes is also associated with an increased risk of:

Heart disease

Stroke

Peripheral arterial disease

These complications generally develop over time, which is one reason early diagnosis and sustained glucose control are important.

Diabetes and Metabolic Health Are Closely Connected

Type 2 diabetes rarely exists in isolation.

It commonly occurs alongside:

Excess weight or abdominal adiposity

High blood pressure

Abnormal cholesterol and triglycerides

Fatty liver

Insulin resistance

These conditions share several underlying metabolic pathways and can collectively influence long-term cardiovascular health.

This is also why improving metabolic health can have benefits that extend beyond the glucose value itself.

Preventing Type 2 Diabetes

Not every case of Type 2 diabetes can be prevented. Genetics, age and other non-modifiable factors influence risk.

However, several important risk factors **can be modified**.

Maintaining an appropriate weight, remaining physically active, following a healthy dietary pattern and identifying prediabetes early can reduce the risk of developing Type 2 diabetes in many high-risk individuals.

This makes early identification of metabolic risk particularly valuable.

Diabetes Is a Long-Term Condition — But Its Course Can Change

A diagnosis of diabetes does not mean that health will inevitably deteriorate.

Glucose levels and metabolic health can change considerably with appropriate treatment and sustained lifestyle changes.



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Some people with Type 2 diabetes may achieve substantial improvement in glucose control, while others may require increasing treatment over time as insulin production declines.

The course of diabetes therefore varies from person to person.



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