

# Diabetes

## What is diabetes?

### A common problem

Diabetes arises because the body can't use glucose properly, either because of a lack of the hormone insulin or because the insulin available doesn't work effectively. Not only is excess sugar found in the blood but it may appear in the urine too.

The full name 'diabetes mellitus' derives from the Greek word 'diabetes' meaning siphon - to pass through, and 'mellitus,' the Latin for honeyed or sweet. It refers to a major symptom of diabetes - sugar in the urine - and is a far more acceptable name than the one it was known by in the 17th century - when it was called the 'pissing evil'.

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Diabetes has been a recognised condition for more than 3,500 years. About 2,000 years ago, it's said that Arataeus of Cappadocia described diabetes as 'a melting down of the flesh and limbs into urine'. This reflects the weight loss and excess urinating that occurs in acute, undiagnosed diabetes.

Diabetes is common, and more than 2 million people in the UK are known to have the condition (statistics supplied by Diabetes UK). However, up to 750,000 people are believed to have diabetes without realising it.

More than three-quarters of those with diabetes have what is called type 2 diabetes mellitus'. This used to be known

as non-insulin dependent diabetes mellitus (NIDDM) or maturity-onset diabetes mellitus. The remainder have type 1 diabetes mellitus, which used to be known as insulin-dependent diabetes mellitus.

### **Types of diabetes**

There are two main types of diabetes:

- In type 1, the body's unable to produce any insulin. This usually starts in childhood or young adulthood. It's treated with diet control and insulin injections. Type 1 diabetes used to be called 'insulin-dependent diabetes'.
- In type 2 diabetes, not enough insulin is produced or the insulin that is made doesn't work properly. This tends to affect people as they get older, and usually appears after the age of 40. It used to be known as maturity-onset diabetes or non-insulin dependent diabetes (NIDDM).

### **Normal blood sugar control**

In the body, glucose is converted into energy. This glucose comes ready-made in sweet foods such as sweets and cakes, or from starchy foods such as potatoes, pasta or bread when they're digested. The liver is also able to manufacture glucose.

Under normal circumstances the hormone insulin, which is made by the pancreas, carefully regulates how much glucose is in the blood. Insulin stimulates cells to absorb enough glucose from the blood for the energy, or fuel, that they need. Insulin also stimulates the liver to absorb and store any glucose that's left over.

After a meal the amount of glucose in the blood rises, and this triggers the release of insulin. When blood glucose levels fall, during exercise for example, insulin levels fall

too. A second hormone manufactured by the pancreas is called glucagon. It stimulates the liver to release glucose when it's needed, and this raises the level of glucose in the blood.

Insulin is manufactured and stored in the pancreas, which is a thin gland about 15cm (6in) long that lies crosswise behind the stomach. It's often described as being two glands in one, since in addition to making insulin it also produces enzymes that are vital for digestion of food. These include lipase, which helps to digest fat, and amylase that helps to digest starchy foods. It also releases 'bicarbonate of soda' to neutralise any stomach acid that may otherwise damage the lining of the gut.

## **Causes of diabetes**

### **Type 1**

In type 1 diabetes the cells in the pancreas that make insulin are destroyed, causing a severe lack of insulin. This is thought to be the result of the body attacking and destroying its own cells in the pancreas - known as an autoimmune reaction.

It's not clear why this happens, but a number of explanations and possible triggers of this reaction have been proposed. These include:

- infection with a specific virus or bacteria
- exposure to food-borne chemical toxins
- exposure as a very young infant to cow's milk, where an as yet unidentified component triggers the autoimmune reaction

However, these are only hypotheses and are by no means proven causes.

## **Type 2**

**In this type of diabetes the receptors on cells in the body that normally respond to the action of insulin fail to be stimulated by it - this is known as insulin resistance.**

**“More insulin may be produced, and this overproduction exhausts the insulin-manufacturing cells in the pancreas”**

**In response to this more insulin may be produced, and this overproduction exhausts the insulin-manufacturing cells in the pancreas. There is simply insufficient insulin available and the insulin that is available may be abnormal and therefore doesn't work properly.**

**The following risk factors increase the chances of someone developing type 2 diabetes:**

- increasing age**
- obesity**
- physical inactivity**

**Rarer causes of diabetes include:**

- certain medicines**
- pregnancy (gestational diabetes)**
- any illness or disease that damages the pancreas and affects its ability to produce insulin, such as pancreatitis**

**What doesn't cause diabetes?**

**It's important to be aware of the myths that have arisen about the causes of diabetes. Eating sweets or the wrong**

kind of food does not cause diabetes. However, it may cause obesity and this is associated with people developing type 2 diabetes.

Stress does not cause diabetes, although it may be a trigger for the body turning against itself, as in the case of type 1 diabetes. It does, however, make the symptoms worse for those who already have diabetes.

Diabetes is not contagious. Someone with diabetes can't pass it on to anyone else.

#### Development of symptoms

In type 1 diabetes the symptoms tend to develop more quickly, over a couple of weeks, and are more severe. In type 2 diabetes the symptoms develop slowly and are usually not so severe.

The common symptoms of both types of diabetes are:

- increased thirst
- passing water frequently, especially at night
- tiredness and fatigue
- loss of weight
- genital itching or recurrent thrush

In type 1 diabetes less common symptoms are:

- cramps
- constipation
- blurred vision
- recurrent skin infections

“In type 2 diabetes symptoms may go unnoticed for years”

**In type 2 diabetes symptoms may go unnoticed for years, and only when complications of diabetes - such as foot ulceration or blurred vision occur - is the diabetes diagnosed. Remember that all the symptoms may not be present. Whenever any of these symptoms arise it's important to test for diabetes.**

### **Diagnosing diabetes**

**Diabetes may be detected in a routine urine test where excess glucose is present. In the case of type 1 diabetes, people often develop symptoms over a short period of time, usually weeks. They may feel thirsty all the time and need to urinate a lot, and they may feel tired and lose weight.**

**A blood test that measures the level of glucose in the blood will confirm whether or not the underlying cause is, indeed, diabetes.**

### **Who is at risk?**

**It's predicted that over the next ten years the number of people with diabetes will double.**

**There are two main aims when considering the prevention of diabetes:**

- to try to prevent people developing diabetes at all**
- if someone does develop diabetes, to help them avoid the possible complications of the condition**

**Those people with a family history of type 1 diabetes are at an increased risk of developing the condition.**

**Things that put a person at greater risk of developing type 2 diabetes are:**

- getting older**

- being of Asian or African-Caribbean origin
- being a woman who has given birth to a large baby
- being overweight
- being inactive

**Because of these last two factors it's important to:**

- eat meals regularly during the day
- eat foods that are low in fat and salt
- eat lots of fruit, vegetables and pulses such as beans, lentils and peas
- cut down on sugar and have reduced sugar foods and drinks

**“Ideally you should exercise for at least 30 minutes at least five times a week.”**

**A healthy diet needs to be combined with regular exercise to help the weight stay off ('exercise' refers to anything that gets the heart rate up). Ideally you should exercise for at least 30 minutes at least five times a week. Walking, cycling, dancing and swimming are fun and easy for most people to do.**

**In the past, people with diabetes weren't encouraged to take part in sporting activities. Nowadays, diabetes should not hinder anyone's desire to keep fit.**