

# Explainer: What is diabetes?

May 13 2013, by Merlin Thomas

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Credit: AI-generated image ([disclaimer](#))

To keep your body functioning, glucose must always be present in your blood. It's as important as oxygen in the air you breathe. The brain can only function for a few minutes without either before it stops working altogether.

To achieve this level of control is not easy. Some days you might eat a banquet. Other times you might eat nothing at all. Yet through it all,

[glucose levels](#) will normally fluctuate only very slightly. This is achieved thanks to an elaborate system of checks and balances that carefully regulate how much glucose is going into the blood and how much is going out.

[Diabetes](#) is the state in which this balance fails and glucose levels rise.

As sugars are digested and absorbed from your diet, they trigger the release of hormones, the most important of which is insulin, which is made and released by the [beta cells](#) of the [pancreas](#).

Insulin coordinates the body's response to rising [blood glucose levels](#), telling the cells of the [liver](#), muscles and fat to take away glucose from the blood (and store it for later use). It also tells the liver to stop making and releasing any extra glucose, which is rendered unnecessary by having just had a meal.

Diabetes occurs when there is not enough insulin (or insulin function) to keep glucose levels under control.

Many different factors can contribute to the decline and loss of insulin's functions. In some people, their [immune system](#) can inadvertently destroy the insulin producing beta-cells of the pancreas. This is called type 1 diabetes.

Type 1 diabetes accounts for around 10% of all people with diabetes. It can occur at any age, not just in children and [adolescents](#). Regular [insulin injections](#) are always needed to treat it. At present there is no way to restore the body's ability to make its own insulin, but a cure for [type 1 diabetes](#) may be possible one day.



Physical activity and a good diet can reduce the risk of complications from type 2 diabetes. Credit: Michael Lokner

## **Type 2 diabetes**

The most common form of diabetes is type 2 diabetes, which accounts for over 90% of cases. At least 1.7 million Australians currently have type 2 diabetes, and this number is expected to double over the next decade. At least a quarter of Australians will develop diabetes in their lifetime, mostly after the age of 60. By 2030 it is anticipated that one in ten adults in the world will have type 2 diabetes.

Any calories we eat that are in excess of those burnt by our metabolism or physical activities, are stored as fat. Most people develop type 2 diabetes because they cannot safely sequester all the excess energy from their diet as healthy fat, and a toxic waist starts to accumulate. This

ectopic fat damages the beta-cells and produces resistance to insulin's actions.

But while many Australians are overweight, only some develop type 2 diabetes. Some people are better than others in safely storing fat and/or remain capable of making enough insulin. However, others simply can't sustain this extra workload and eventually there is not enough insulin (function) to keep glucose levels under control.

Some people develop type 2 diabetes without being very overweight. People of Asian descent, for example, are prone to lay down ectopic fat if they eat too much or are inactive. So gaining five kilograms almost doubles their risk of type 2 diabetes. By comparison, a five-kilogram weight gain in a Caucasian person has less than half this effect.

The best way to prevent type 2 diabetes is to rest your beta cells and lose your excess fat. Changes in the amount and types of sugar and fibre in your diet, for example, can reduce the strain on your pancreas. Reducing your waist through dieting and increased physical activity will burn fat and reduce its limiting effects on your metabolism.

The loss of insulin's functions can have a number of effects on health and well-being. Type 2 diabetes usually starts out as a silent problem. The most common symptoms – fatigue, poor vision, irritability, reduced libido and passing urine more frequently – may all be dismissed as signs of getting old or other health problems. However, when suspected, diabetes can be easily identified by a blood test.

Diabetes can sometimes result in serious and life-threatening damage to blood vessels, heart, nerves, eyes, bladder and kidneys. This makes diabetes a leading cause of disability, illness and death in Australians.

Good management of type 2 diabetes can reduce the risk of

complications. This involves interventions including diet, physical activity and usually medications to not only maintain good glucose levels, but also optimal blood pressure, weight and lipid levels. Close monitoring for early signs of complications also allows for their early detection and treatment.

In its early stages, type 2 diabetes is reversible. Gastric bypass surgery, for example, will "cure" type 2 diabetes in most cases. It requires major surgery that is not suitable for most people with type 2 diabetes. But it illustrates just how important waist control is for the prevention and management of [type 2 diabetes](#).

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