
Diabetes

Summary

- People with diabetes have high blood glucose levels caused by a problem with the hormone insulin.
 - The two main types of diabetes are type 1 (insulin dependent) and type 2 (non-insulin dependent).
 - There is no cure, but symptoms can be controlled with diet, exercise and medication.
 - If untreated, high blood glucose levels can result in serious complications.
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Diabetes is a chronic condition in which the levels of glucose (sugar) in the blood are too high. Blood glucose levels are normally regulated by the hormone insulin, which is made by the pancreas. Diabetes occurs when there is a problem with this hormone and how it works in the body.

Around 5.1 per cent of Australians aged 18 years or older have diabetes. The risk of diabetes increases with age, from 2.8 per cent in people aged 35 to 44, to 15.0 per cent in those aged 65 to 74. Aboriginal people have one of the highest rates of type 2 diabetes in the world.

Glucose in the body

The body uses glucose as its main source of energy. Glucose comes from foods that contain carbohydrates, such as potatoes, bread, pasta, rice, fruit and milk. After food is digested, the glucose is released and absorbed into the bloodstream.

The glucose in the bloodstream needs to move into body tissues so that cells can use it for energy. Excess glucose is also stored in the liver, or converted to fat and stored in other body tissues.

Insulin is a hormone made by the pancreas, which is a gland located just below the stomach. Insulin opens the doors (the glucose channels) that let glucose move from the blood into the body cells. It also allows glucose to be stored in muscle, the liver and other tissues. This is part of a process known as glucose metabolism.

In diabetes, either the pancreas can't make insulin (type 1 diabetes), or the cells don't respond to the insulin properly (insulin resistance) and the pancreas produces inadequate insulin for the body's increased needs (type 2 diabetes).

If the insulin cannot do its job, the glucose channels cannot open properly. Glucose builds up in the blood instead of getting into cells for energy. High blood glucose levels cause the health problems linked to diabetes, often referred to as complications.

Symptoms of diabetes

Some types of diabetes have no symptoms, and can go undiagnosed for a long time, but some common symptoms can include:

- being more thirsty than usual
 - passing more urine
 - feeling tired and lethargic
 - slow-healing wounds
 - itching and skin infections, particularly around the genitals
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- blurred vision
- nausea and vomiting
- weight loss
- mood swings.

Diabetic ketoacidosis

Ketoacidosis is a medical emergency. Most cases of ketoacidosis occur in people with established type 1 diabetes, especially if they have another illness or miss insulin doses. However, it can also be the first presentation of type 1 diabetes.

The symptoms of ketoacidosis are:

- loss of appetite
- weight loss
- vomiting
- excessive passing of urine
- altered consciousness
- coma.

Seek immediate medical advice if these symptoms occur.

Types of diabetes

The main types of diabetes are called type 1 and type 2. Other varieties include gestational diabetes, diabetes insipidus and pre-diabetes.

Type 1 diabetes

Approximately one in every ten Australians with diabetes has type 1 diabetes. Type 1 diabetes is much more common in Australia than in many other countries. Type 1 diabetes is:

- caused by an autoimmune destruction of insulin-making cells in the pancreas, which means insulin is no longer made
- one of the most common chronic childhood illnesses in developed nations
- most commonly develops in people under 30, but can occur at any age
- sometimes called juvenile diabetes or insulin-dependent diabetes mellitus, although these terms are no longer in common use.

There is no cure, but type 1 diabetes can be successfully managed with insulin injections, nutrition and exercise.

If a person with type 1 diabetes skips a meal, exercises heavily or takes too much insulin, their blood sugar levels will fall. This can lead to hypoglycaemia. The symptoms include tremor, sweating, dizziness, hunger, headache and change in mood. This can be remedied with a quick boost of sugar (such as jellybeans or glucose tablets), then something more substantial such as fruit. A person with type 1 diabetes should have lollies on hand at all times, just in case.

Type 2 diabetes

Type 2 diabetes is sometimes described as a 'lifestyle disease' because it is more common in people who don't do enough physical activity, and who are overweight or obese. It is strongly associated with high blood pressure, abnormal cholesterol levels, and an 'apple' body shape, where excess weight is carried around the waist.

Type 2 diabetes, the most common form of diabetes, affects 85 to 90 per cent of all people with diabetes. While it usually affects mature adults (over 40), younger people are also now being diagnosed in greater numbers as rates of overweight and obesity increase. Type 2 diabetes used to be called non-insulin dependent diabetes or mature onset diabetes.

Research shows that type 2 diabetes can be prevented or delayed with lifestyle changes. However, there is no cure.

Gestational diabetes

Affecting three to eight per cent of pregnant women, gestational diabetes is diabetes that occurs during pregnancy. After the baby is born, the mother's blood glucose levels usually return to normal. Women are at greater risk of developing type 2 diabetes after experiencing gestational diabetes.

Certain women are at increased risk of developing gestational diabetes. High risk groups include:

- women over 30 years of age
- women with a family history of type 2 diabetes
- women who are overweight or obese
- Aboriginal and Torres Strait Islander peoples
- women of particular cultural groups, such as Indian, Chinese, Vietnamese, Middle Eastern, Polynesian and Melanesian women
- women who had gestational diabetes in a previous pregnancy.

Gestational diabetes can cause excessive growth and fat in the baby. If the mother's blood glucose levels remain raised, the baby may be larger than normal. Following delivery, the baby may experience low blood glucose levels, particularly if the mother's blood glucose levels were raised before the birth.

Gestational diabetes can be monitored and treated and, if well controlled, these risks are greatly reduced. The baby will not be born with diabetes.

Pre-diabetes

Pre-diabetes is a condition in which blood glucose levels are higher than normal, although not high enough to cause diabetes. Pre-diabetes has no symptoms, but has a range of risk factors including obesity, smoking, heart disease, polycystic ovarian syndrome and high blood pressure. Without treatment, about one in three people with pre-diabetes will develop type 2 diabetes.

Diabetes insipidus

Diabetes insipidus is characterised by extreme thirst and the passing of vast amounts of urine. It is caused by insufficient vasopressin, a hormone produced by the brain that instructs the kidneys to retain water. Without enough vasopressin, too much water is lost from the body in urine, which prompts the affected person to drink large amounts of fluids in an attempt to maintain their fluid levels.

In severe cases, a person may pass up to 30 litres of urine per day. Without treatment, diabetes insipidus can cause dehydration and, eventually, coma due to concentration of salts in the blood, particularly sodium.

The name of this condition is a bit misleading, since diabetes insipidus has nothing to do with diabetes caused by high blood sugar levels, apart from the symptoms of thirst and passing large volumes of urine. Depending on the cause, diabetes insipidus can be treated with medications, vasopressin replacement and a low-salt diet.

Complications of diabetes

High blood glucose levels can result in serious complications. These include:

- kidney damage (nephropathy)
- eye damage (retinopathy)
- nerve damage to the feet and other parts of the body (neuropathy)
- heart disease (for example, angina or heart attacks), strokes and circulation problems in the legs
- sexual difficulties, including erectile dysfunction
- foot ulcers or infections resulting from circulation problems and nerve damage.

Treatment for diabetes

There is no cure for diabetes. Treatment aims to prevent complications by controlling blood glucose levels, as well as blood pressure and cholesterol levels, and by achieving a healthy body weight.

Management depends on the type of diabetes, but can include:

- taking insulin daily by injections or by insulin pump
- regulating diet so intake is matched to insulin and exercise
- increasing the amount of 'slow' carbohydrates in the diet, such as beans and fruit, which take longer to be absorbed by the body
- self-monitoring of blood sugar levels by regularly testing droplets of blood in a glucose meter
- self-testing of urine with a test strip – not routinely, but when problems are suspected
- physical activity and exercise
- medications and (potentially) insulin at a later stage
- weight management
- stopping smoking
- having regular checks for possible diabetes complications.

Lifestyle risk factors for type 2 diabetes

For the most common type of diabetes, type 2 diabetes, there are a number of risk factors over which you can have some control. These include:

- being overweight or obese, especially around the waist
- low levels of physical activity, including more than two hours of television watching per day
- unhealthy eating habits, such as regularly choosing high-fat, high-sugar, high-salt or low-fibre foods
- cigarette smoking.

People at risk need to have a laboratory blood glucose test (not using a portable blood glucose meter) performed by their doctor to check if they have diabetes. It is important not to wait for symptoms to develop, as these may not appear until the blood glucose is quite high.

Self-care of diabetes

Suggestions to manage your diabetes include:

- You can link up with the diabetes team in your area through your doctor or Diabetes Australia – Vic.
- Check your blood glucose levels regularly.
- Use any medication strictly as prescribed. Don't make changes to your diabetes tablets without talking to your doctor about it first.
- Be physically active as often as you can and sit less. Work out ways that you can maintain this activity.
- Have a healthy eating plan. Choose healthy foods as well as suitable amounts.
- Keep a positive mental attitude and seek advice if you are anxious or depressed from your doctor, or other

organisations such as Beyond Blue or Lifeline.

- Seek medical advice if you feel unwell.
- Consider joining a support group.

Where to get help

- Your doctor
- Local community health centre
- Diabetes specialist
- Diabetes educator
- National Diabetes Services Scheme (NDSS) information and enquiries Tel. 1300 136 588
- **Diabetes Victoria** Tel. 1300 437 386
- **Baker Heart and Diabetes Institute** Specialist Diabetes Clinic Tel. (03) 8532 1111
- **Juvenile Diabetes Research Foundation** Tel. (03) 8374 6200

This page has been produced in consultation with and approved by:

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