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# Type 1 diabetes (Diabetes type 1)

## About diabetes

Diabetes mellitus is our commonest metabolic disease. Type 1 diabetes is a chronic disease caused by lack of the hormone insulin. We have accounts of the disease dating back more than 2000 years. Yet diabetes is in many ways still a mysterious disease. The causes of diabetes are a combination of hereditary and environmental factors, but the underlying triggers for the disease have not been established.

Type 1 diabetes affects all age groups, but is most prevalent in the young. The disease is due to destruction of the insulin-producing cells (beta cells) in the pancreas. For reasons we do not know, the body's own defences (immune system) identify the beta cells as foreign elements and destroy them.

People with type 1 diabetes have to take insulin by injection. Insulin is destroyed by digestive fluids in the stomach and gut, which means it cannot be taken in tablet form.

## Symptoms

Unlike type 2 diabetes, where the symptoms are often diffuse and increase gradually, the symptoms of type 1 diabetes appear suddenly and dramatically. This means that a diagnosis is usually made very soon. If your blood sugar gets too high, sugar appears in your urine. This causes an increase in urine volume and frequent urination. The body responds by making you thirsty. Sugar excretion in your urine results in loss of calories and so often causes unintended weight loss. Urinary tract infections and itching in the groin area may also be symptoms of diabetes.

The body also starts burning fats and proteins as a way of gaining energy. Ketones are produced as by-products of the metabolised fat, and when these are released into the blood, you may develop ketoacidosis. Your general condition will deteriorate rapidly, you will be

dehydrated and typical symptoms are vomiting, stomach pain, shortness of breath and breath smelling of acetone (like nail varnish remover). Ketoacidosis can lead to coma and is life-threatening. This was the commonest cause of death in diabetes before insulin was discovered.

## Where can I get help?

If you have been diagnosed with type 1 diabetes, you will most likely be admitted to hospital to learn how to inject insulin and monitor your blood sugar. After that you will attend hospital regularly for checkups. Follow-up and a good relationship with your regular GP will also be a great help. Most people also benefit from the support of family and friends.

It is important to be aware that you are entitled to training in managing your disease. The introductory course is required to stretch over a total of at least 7 hours. The course is run by health professionals, and covers topics such as disease information, types of treatment, self-care, coping, rights and further follow-up.

Within the Norwegian Diabetes Association, you will meet other people in the same situation as you, and we will be able to give you useful information to make it easier for you to live with diabetes. For more information, visit [www.diabetes.no](http://www.diabetes.no).

## Self-monitoring

Monitoring your blood sugar is an important part of managing diabetes. Needs and targets for blood sugar control, and how to use the readings obtained, vary from one person to the next and should be discussed with your doctor.

Your fasting blood sugar should ideally be 4-6 mmol/l, and preferably lower than 10 mmol/l a couple of hours after a meal.

## Insulin therapy

Insulin is a hormone produced by the pancreas and helps the body to use blood sugar (glucose). This is the “key” that unlocks the “door” to the cells so the blood sugar can enter the cells. Glucose is what fuels the cells.

There are many types of insulin on the market. The commonest insulins are: rapid-acting (effect lasts 3-5 hours), intermediate-acting (effect lasts 12-20 hours) and long-acting (effect lasts up to 24 hours).

Therapy has to be adapted to the individual and adjusted for physical activity and food intake, especially carbohydrate intake. Most people with type 1 diabetes take one or two doses a day of intermediate-acting or long-acting insulin analogues plus rapid-acting insulin with meals.

To ensure effective and stable insulin uptake, good injection technique is all-important.

## Coping with diabetes

If you have just been diagnosed with diabetes, there is a lot to learn and understand. Your doctor should be a good source of support, but for most of the time you will have to deal with your disease on your own. This is why it is important to learn to manage your diabetes. Diabetes shouldn't prevent you from enjoying a good and long life. Most of the responsibility for achieving this rests with you, but the health service is also there to help you. Education and knowledge of your own disease is the best starting point for responsible self-care.

## Many factors affect your blood sugar

- **Food:** Your blood sugar is affected by how often, how much and what you eat.
- **Physical activity:** Will usually lower your insulin requirement.
- **Illness:** Your insulin requirement increases. This is particularly the case if you have a fever.
- **Where the insulin is injected:** Insulin reaches the bloodstream quickest if injected in the stomach. If you inject in your arms it takes longer, and injecting in your thighs or back takes the longest to work.
- **Mental stress:** Mental stress typically causes the blood sugar to rise. How much and how long your blood sugar rises varies from one situation to the next.
- **Alcohol:** If you drink alcohol, the risk of a hypo (hypoglycaemic attack) is higher, and you may not notice the symptoms early enough. Don't drink alcohol on an empty stomach, measure your blood sugar and have something to eat before going to bed.

It is easier to control your blood sugar if you lead a regular life in terms of diet and exercise.

## What is low blood sugar (a hypo/hypoglycaemia)?

If your blood sugar value is less than 4 mmol/l you are hypoglycaemic. Defining a hypo (hypoglycaemic attack) precisely is difficult, so you will need to learn to recognise your own signs. Most people will feel discomfort/or have a hypo when their blood sugar falls to 2.5-3.3 mmol/l. The threshold for a hypo varies from person to person. If you suspect you are having a hypo, it is important to measure your blood sugar.

The causes may be too much insulin, more physical activity than you are used to, or not enough food. Hypos vary in strength and often cause great discomfort. Symptoms include sweating, difficulty concentrating, trembling, pallor, agitation, aggression, lethargy, slurred speech and hunger. The Norwegian Diabetes Association has also published a factsheet on diabetes and low blood sugar.

## Complications

Uncontrolled diabetes, meaning high blood sugar over several years, may result in complications. People with diabetes have a higher risk of

- Kidney disease
- Heart attack and stroke
- Diabetic sores and lesions on the blood vessels of the legs
- Damage to the small blood vessels in the eyes, which may lead to impaired vision and blindness
- Peripheral nerve damage causing reduced sensation in the legs
- Impotence in men
- Gum diseases and infections of the mouth

Regular monitoring and effective treatment from an early stage can delay and prevent complications. The Norwegian Diabetes Association has also published a factsheet on diabetes complications.

This factsheet from the Norwegian Diabetes Association (Diabetesforbundet) was last updated in 2013.