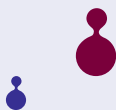


A photograph of a woman and a young girl sitting on the grass in a park, blowing dandelions. The woman is on the left, smiling and looking towards the girl. The girl is on the right, also smiling and looking at the dandelion she is holding. Dandelion seeds are floating in the air around them. A large blue circle is overlaid on the image, containing the text "What is diabetes?".

What is
diabetes?



What is diabetes?

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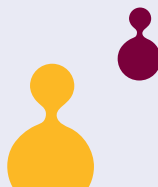
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What is diabetes?



Through this brochure The Norwegian Diabetes Association aims to provide an introduction to diabetes. It is intended for those of you who have recently found out that you have diabetes, if you have a history of diabetes in your family, circle of friends or workplace – or if you just want some basic information about diabetes.

The Norwegian Diabetes Association has information on diabetes in a number of languages. On the website diabetes.no/innvandrere you will find articles, educational videos and an overview of the brochures available in your language.







One disease, many faces

Diabetes is a serious, chronic disease due to lack of insulin, and in most cases the effects of insulin are decreased - so-called insulin resistance. However, no two medical histories are alike; diabetes has as many faces as there are people with diabetes.

Before the Canadians F. Banting and C.H. Best discovered how to produce insulin in 1921, insulin-dependent diabetes inevitably resulted in death. Diabetes remains a serious disease, which can be fatal, but it is also a disease you can learn to live well with. Developments in the field of diabetes treatment have improved the quality of everyday life for countless numbers of people with diabetes.



Metabolism

Diabetes takes various forms, which – both individually and collectively – form a complex clinical picture. Type 1 diabetes, type 2 diabetes, MODY, LADA and gestational diabetes are actually different diseases. What they all have in common, is excessively high blood sugar levels.

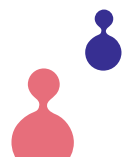
For the body to work, it needs fuel and energy. We get this through the nutrients in the food we eat, i.e. carbohydrates,

fats and proteins. In order to fully utilize the nutrients, we need to produce the hormone insulin. This is produced in special cells (beta cells) in a gland called the pancreas, and the insulin is then transported via the blood to all cells in the body. The insulin regulates how the cells absorb and use sugar (glucose).

Symptoms

Without insulin blood sugar levels increase, and the body is unable to get enough energy. The body also starts burning fat and protein in an attempt to obtain energy. Increasing blood sugar levels cause presence of sugar in your urine. This increases both the volume and frequency of urination, and many patients become excessively thirsty. The loss of sugar in the urine results in loss of calories, which often causes untreated or poorly-controlled diabetics to lose weight. Other symptoms may include urinary tract infections and an irritated crotch.

Without treatment – in worst case scenarios – patients can develop acidosis, which is a potentially mortal condition. It is characterized by deep, heavy breathing with a distinctive acetone (pear drops) smell on the breath, abdominal pain, vomiting and ultimately unconsciousness. However, in many individuals with diabetes, primarily those with type 2 diabetes, the disease develops slowly, to the extent that people often don't notice the symptoms. Eventually however, the metabolic changes will affect all bodily functions, leaving you feeling weak, tired and depressed.



Together for a good
life with diabetes –
and a future without



Variants of diabetes

Type 1 diabetes

Type 1 diabetes – also known as insulin-dependent diabetes – affects all age groups, but occurs mostly in children, teenagers and young adults.

The disease is caused by destruction of the insulin-producing cells (beta cells) in the pancreas. For reasons we do not understand, the body's immune system identifies the beta cells as foreign elements and destroys them. This causes severe symptoms – and as a consequence also a rapid diagnosis. People with type 1 diabetes have to receive insulin in order to live, and this is injected with an insulin pen or via an insulin pump.

Type 2 diabetes

Type 2 diabetes is the most common form of diabetes, and in recent years we have seen an explosive development in the number of cases, both in Norway and globally.

The disease is caused by reduced insulin production, or/and insulin that doesn't work as it should – so called insulin resistance. Type 2 diabetes can, to some extent, be controlled and treated by weight loss, physical activity and diet, but most people with this form of diabetes will also need treatment with medication.

Type 2 diabetes usually occurs in adults and the elderly, but is increasingly being diagnosed in young adults. Certain ethnic minorities – in particular those from the Indian subcontinent – are at greater risk of developing type 2 diabetes.

At greater risk

In order to develop type 2 diabetes, you must have a hereditary predisposition; however, obesity and lack of physical activity are the most important causative factors. Research also shows that migration and stress play a part. Development of the disease is often slow with diffuse symptoms. Because of this, people can be unwell for some time before the correct diagnosis is made.

If you have any questions about diabetes, or how to prevent the disease, contact the diabetes information helpline, Diabeteslinjen (tel. 815 21 948). The helpline is manned by counsellors who can provide help and guidance in a number of languages, including Norwegian, English, Somali, Turkish, Urdu/Punjabi and Arabic. For more information about Diabeteslinjen – and for chat and mail – see diabetes.no



LADA

LADA (Latent Autoimmune Diabetes in Adults) is a slow-onset type 1 diabetes affecting adults. LADA has similarities to type 2 diabetes and are often diagnosed as one initially; however, it is an autoimmune type 1 diabetes, involving slow destruction of the insulin-producing cells. In the first stages people with LADA manage OK without having to be given insulin.

MODY

MODY (Maturity Onset Diabetes of the Young) is due to several variants of genetic defect in the beta cells. 2-3 % of all cases of diabetes are due to a genetic defect in a single gene, which is why this is called «monogenic» diabetes.

Gestational diabetes

Gestational diabetes is type 2 diabetes or decreased glucose tolerance, first diagnosed during pregnancy. As with type 2 diabetes, certain ethnic minorities are particularly vulnerable to gestational diabetes. If you are pregnant, or planning to become pregnant, you need to be aware of the symptoms of diabetes. Discuss the need for any intervention with your doctor. This is important in order to safeguard the health of both mother and child.

Complications

Poorly-regulated diabetes often results in complications – typically affecting the heart, eyes, feet, kidneys or nerves.

These complications can result in poor quality of life and decreased life expectancy. Most people with diabetes are afraid of developing complications. Research shows that complications are predominantly associated with high blood sugar levels over a long period of time. In terms of maintaining a healthy heart, it is important to treat high blood pressure and keep cholesterol under control as well.

Today, a lot can be done to avoid complications or prevent them from progressing. In recent decades improved treatment of diabetes has resulted in fewer people with diabetes developing complications associated with the disease. However, the incidence of diabetes has increased so much that the number of people suffering complications from diabetes has not actually decreased.

Diseases resulting from diabetes never occur suddenly, but develop over time, usually 5–15 years. Because complications develop slowly, a 50–60 year-old's life expectancy can be reduced by

5–6 years, while an 80-year-old who develops diabetes, does not develop complications. However, high blood sugar usually causes tiredness, depression and a reduced ability to carry out

Diseases resulting from diabetes never occur suddenly, but develop over time, usually 5–15 years.

the activities of daily living. Consequently, an elderly person should also be appropriately controlled even if the requirements don't need to be as strict. Nonetheless it is important to understand that many elderly people might already have developed complications by the time they are diagnosed with type 2 diabetes.



Live life
- with diabetes



Treatment

The development of new interventions and medicines has made everyday life much easier for people with diabetes. Improved methods of treatment and greater understanding of the importance of a healthy diet, physical activity and self care, reduce the chances of people developing severe complications.

The main cornerstones of treatment for diabetes are:

motivation, knowledge, diet, physical activity and, if needed, medication. People with diabetes should be able to measure their own blood sugar. This results in greater peace of mind and enables you to achieve good glycaemic control, that is, to adjust your blood sugar in relation to your activities. Learning about the disease is just as important. Education and knowledge of your own disease is a precondition for good self care. Achieving good control of diabetes can take time – you can't learn everything at once.



With your doctor

By measuring HbA1c (long-term blood sugar) and fasting blood sugar, your doctor can assess (with you) how you are managing in terms of keeping your blood sugar levels under control. Checking of weight, blood pressure, cholesterol and triglycerides is also very important – together with annual investigations of eyes, feet and kidneys. The kidneys are checked both by taking blood tests and measuring the quantity of albumin in the urine.

Some factors that can help you live a good life with diabetes include:



Healthy eating. Irrespective of which type of diabetes you have, diet has an effect on blood sugar levels, cholesterol and blood pressure. Consequently, if you have diabetes, your self treatment must include choosing a diet that is best for you. For more information, see diabetes.no/innvandrerere and diabetes.no/kosthold.



If you smoke, try to quit. Smoking increases your risk of cardiovascular disease (disease of the heart and arteries), and people with diabetes are already predisposed to these complications.



Achieve your wellbeing weight. Being overweight is one of the trigger factors for type 2 diabetes. Losing weight also helps insulin to work more effectively. Overweight individuals often also have high blood pressure, which in people with diabetes, can cause an increased risk of cardiovascular disease.



Exercise regularly. The benefits of taking regular physical exercise are many, including losing weight. Exercise also enables your own insulin to work more effectively and reduces blood sugar levels. Exercise reduces the «bad» and increases the “good” cholesterol. Not least, physical activity produces good long-term benefits. Walking briskly for half an hour every day is recommended, and to achieve a tangible benefit, walk fast enough, so you build up a slight sweat.



Medication

Increased physical activity, losing weight when overweight and change in diet are fundamental in all forms of diabetes treatment. If you have been diagnosed with type 2 diabetes, starting the treatment will almost always involve changing your lifestyle habits. However, often this is not enough, and many people need to start taking medicine – tablets, insulin or other injections. If you are required to start taking medication, or change how you use it, it is important to discuss this with your doctor.

Blood sugar reducing tablets and injections

Blood sugar reducing tablets or injections are used to treat type 2 diabetes. There are several kinds, with different mechanisms of action. Some increase the amount of insulin produced in the pancreas, some improve the effects of the insulin, others influence the intestines or kidneys. The medicines must be taken as instructed by your doctor.

The two main functions of insulin

Insulin enables the body's muscle and fat cells to absorb sugar from the blood, following meals. In this way peaks in blood sugar levels can be avoided. In other words, insulin reduces blood sugar levels. Hence, disturbances in the body's insulin production and the effects of insulin have major consequences in terms of regulating the amount of sugar in the blood.

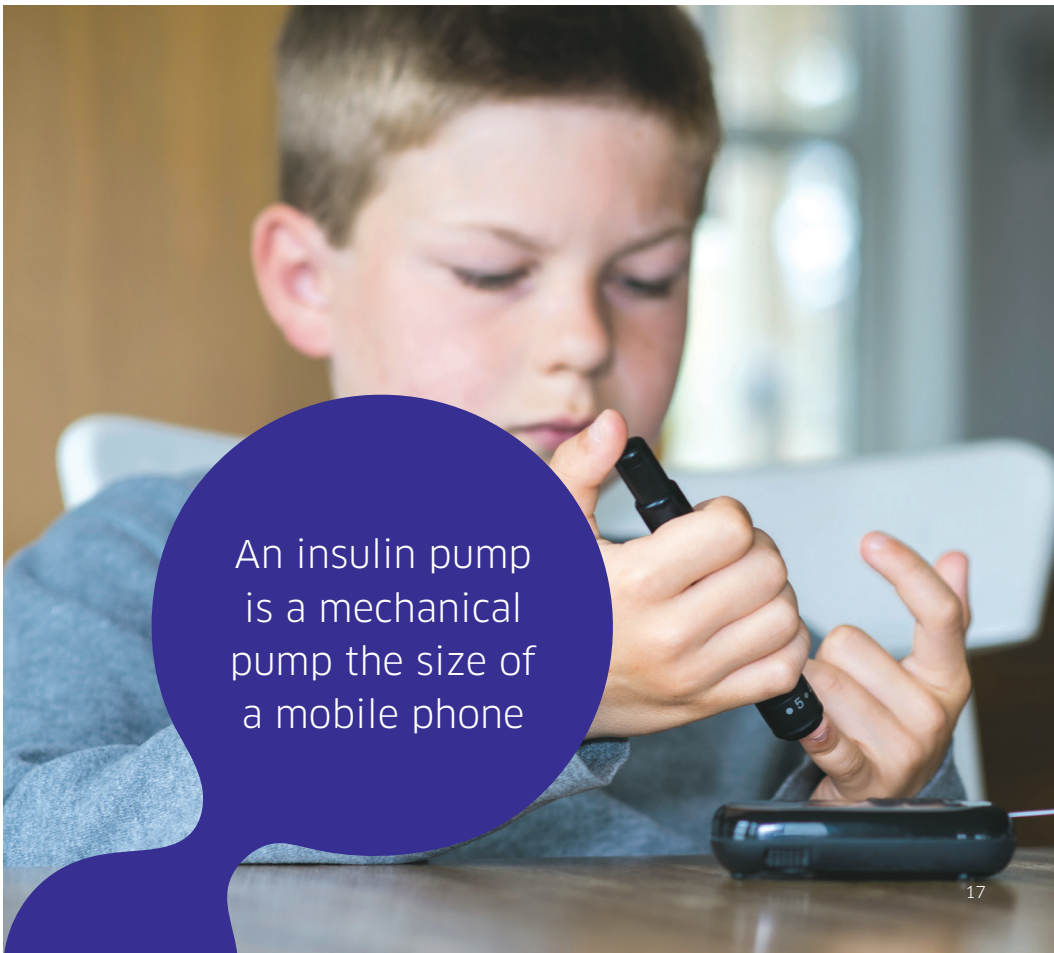
Insulin also regulates production of sugar in the liver and keeps blood sugar levels at a normal level between meals.



Insulin

Everyone with type 1 diabetes needs to have insulin injections. There are various types of insulin - very fast acting to slow acting. All of them are injected under the skin. The amount of insulin is adjusted relative to physical activity and intake of food. Insulin can be administered using an insulin pen or insulin pump. An insulin pen is a device

for injecting insulin that looks like a normal pen, but with an in-built insulin reservoir and injection mechanism. Both single-use and multi-use pens are available. An insulin pump is a mechanical pump that delivers a fixed and regular amount of fast acting insulin, supplied by extra doses related to meals.



An insulin pump is a mechanical pump the size of a mobile phone



Low blood sugar

(hypo)

A side effect of injected insulin and some blood sugar reducing tablets (sulphonylurea) is that the blood sugar can become too low. If people with symptoms of diabetes have low blood sugar, we normally say they are having a «hypo». The medical term is hypoglycaemia.

Hypos can vary in severity, as can the symptoms from person to person.

Hypos are less common in people with type 2 diabetes. Insulin reduces blood sugar levels, and consequently too much insulin causes a hypo. Too little food can also cause a hypo because the blood easily contains insufficient sugar. Hard physical work or physical activity can also cause a hypo, because the muscles absorb sugar from the blood.

The level of blood sugar at which a hypo is caused, varies. Most people notice symptoms when their blood sugar drops towards 3 mmol/l (blood sugar concentrations are stated in millimoles per litre). Hypos can vary in severity, as can the symptoms from person to person. The mildest hypos usually only result in feelings of inner discomfort, which people with diabetes are normally able to control themselves.

Symptoms of more severe hypos include sweating, shaking, hunger, palpitations, difficulty in concentrating, anxiety, anger, pallor, lethargy, feelings of hunger and fatigue. Some people

notice it in their mouth and eyes, while others have problems reading or talking. If the blood sugar drops to as low as 2 mmol/l or lower, symptoms then include blurred vision, drowsiness and/or confusion, which indicate that the brain is not getting enough sugar.

How to increase blood sugar levels

If someone's blood sugar levels are low, they need to eat or drink something sweet quickly. Fruit, sugar cubes, a soft drink, juice or milk are good at quickly increasing blood sugar levels. After the hypo has resolved, the person should eat some bread to prevent the hypo recurring. In a severe hypo, people with diabetes may appear confused and need help taking sugar or injecting glucagon. A doctor must be called in the event of unconsciousness.

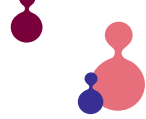




Living with diabetes

If you have a child who has been diagnosed with diabetes, this will often seem unfair, meaningless and incomprehensible. However, the sense of despair is no less significant for young people and adults. Many people do not understand why «this has happened to me» - which is a completely normal emotional reaction.





Many people experience this as a life crisis and worry about what the future holds. Often their experience is that other people are either unwilling or unable to become involved in the situation, and misconceptions about diabetes abound. Many people feel, when they are faced with strict rules from family and health care personnel, that they are being regarded as a person according to the blood sugar level.

At the same time, both relatives and people with diabetes will experience a sense of relief when the diagnosis is made. Good cooperation with the health care services in your area is important. It is crucial that you have a doctor who is interested in diabetes and with whom you can speak openly. Diabetes is a chronic condition that never goes away, and for which you yourself have to take day-to-day responsibility. The aim, of course, is to live a good, long and normal life, without becoming a patient.

Consequently, you will have to educate yourself and learn how to master the disease. It requires knowledge and courage to face new experiences, together with support from family, friends and health care personnel. Diabetes is a disease with a major focus on self treatment, but it is important that you do not let the disease get the better of you and your life.

The stable and low blood sugar is not in itself the goal of treatment, but a means of being able to live a normal and good life. The challenge is finding a form of treatment that gives you and your family the greatest possible freedom, well-being and security in your everyday lives. You must believe in yourself - this is the best medicine, both in the short and long term.

Well-controlled diabetes

Well regulated diabetes means that you have learnt how to maintain your blood sugar at a stable and even level. Good control results in a wellfunctioning body and is the best guarantee for avoiding complications in the longer term. It is important to emphasize that what causes the damage, is not single instances of high blood sugar, but chronically high values.

You are not alone

Diabetes is, and will remain, one of Norway's greatest health challenges. Around 200.000 people in Norway have type 2 diabetes, and 28.000 have type 1 diabetes – totaling approximately 230.000 people. There are also a great number of people who do not know that they have type 2 diabetes. The total figures for type 2 diabetes in Norway may be between 300.000 and 400.000 when including people who are undiagnosed.

Openness

There are many myths in relation to diabetes, possibly because the disease is «invisible». If you learn how to control the disease, you can almost live like everyone else.

Some people find it hard to tell other people about their disease; we prefer not to burden work colleagues or other people with our personal problems. However, the ones who are closest to us, need to know what to do, should a situation occur requiring their intervention. Most people know either little, or are misguided, about treatment of diabetes. Consequently, it is important to receive good, up-to-date information.

If you have any questions, please contact the diabetes helpline (Diabeteslinjen) on 815 21 948 or see diabetes.no for chat or mail.



The Norwegian Diabetes Association

Meeting other people with diabetes can be helpful and provide more peace of mind.

Other people who are in the same situation, might be someone in your workplace, perhaps someone at the doctor's or near where you live. In The Norwegian Diabetes Association you are guaranteed to meet many such people.

The Norwegian Diabetes Association is an independent interest organisation for people with diabetes, their friends and families, health care personnel and other people with an interest in diabetes. As of 2016, The Norwegian Diabetes Association has around 35.000 members, 18 county branches and 116 local branches. The association was formed in 1948 to promote the medical, financial and social rights of people with diabetes. Since its foundation, The Norwegian Diabetes Association has changed from a patient organisation to a diabetes organisation. Many of the members are health care personnel, researchers and relatives.



The Norwegian Diabetes Association's vision:

Together for a good life with diabetes – and a future without.

Among other things we:

- support diabetic research
- work for better rights for all those with diabetes
- give quality controlled information about self treatment
- work so that health care personnel throughout Norway are updated in terms of treatment and care, so that you can get the best possible treatment
- organize meet-ups for people with diabetes and their families – in your area
- provide relevant member benefits

Support us!

Supporting The Norwegian Diabetes Association's important work is simple.

Text **DIA90 to 2160** – and you send us a donation of NOK 90. The donation will be added to your telephone bill.

Contact information

THE NORWEGIAN DIABETES ASSOCIATION

Postboks 6442 Etterstad, 0605 Oslo

Street address: Østensjøveien 18

Tel.: 23 05 18 00

E-mail: post@diabetes.no

diabetes.no





Welcome as a member!

You are welcome as a member of The Norwegian Diabetes Association if you – or someone you love – has diabetes. We can help you navigate through the maze of information and the difficult medical terms, and listen to you if you need to air some concerns or share some good news.

- By becoming a member, you will also give The Norwegian Diabetes Association a greater impact, so that we can achieve our common goals. You can help others who are in the same situation as you, and perhaps most importantly: You are not alone. The Norwegian Diabetes Association gives you access to courses on the management of diabetes. The aim is improved self care through new knowledge, practical training and increased motivation.
- Special regulations apply for people with diabetes in respect of support, choice of work, driving licences, insurance etc. As a member of The Norwegian Diabetes Association you will receive continuously updated information about the regulations for people with diabetes. The association works towards increasing knowledge about diabetes among our members and their families, but also updates health care personnel, increases general knowledge about diabetes in the community, and informs – and influences – politicians and the authorities. You are always welcome to contact the association for professional advice.

- People with diabetes have to learn to master their disease, and legislation relating to specialist health care services stipulate that education of patients and their families is one of four main roles for Norwegian hospitals. With this in mind, health care personnel run introductory courses for people newly diagnosed with diabetes. Ask your doctor to refer you for an introductory course.
- The Norwegian Diabetes Association raises funds for research and educational work. Diabetic research is currently on the verge of a number of breakthroughs. Now we can really see the opportunities for preventing – and perhaps in the long-term curing – diabetes. The association actively cooperates with researchers, doctors and others within the health care sector, in order to improve treatment options.
- The Norwegian Diabetes Association issues a bi-monthly journal, Diabetes, and the quarterly journal, Diabetesforum, which a particular focus for health care personnel.

Diabetes can't be seen from the outside. The risk of its invisibility is that few people talk about the disease, and myths and rumours have built up around it. By being a member you can help make diabetes visible. Together we are stronger.



FORDI INGEN DIABETES- PASIENTER ER LIKE

En god diabetesbehandling er avhengig av et godt samspill mellom den som har diabetes og helsepersonell¹. Snakk med helsepersonell om kosthold, vekt og mosjon og fortell hva som passer for deg – sammen kan dere komme frem til gode løsninger.



Ref.1: Nasjonal faglig retningslinje for diabetes (internet). Helsedirektoratet.no 2016 (cited 22 september 2016)
Tilgjengelig på: <https://helsedirektoratet.no/retningslinjer/diabetes>

1017/09.011.11/16/NO

Become a member, lend us your voice

How to become a member:

- Send an SMS - diabetes - to 1960
- Visit www.diabetes.no/blimedlem
- Phone The Norwegian Diabetes Association on: 23 05 18 00
- Or, complete the form on the reverse and send it to us

As a member you will have access to the following:

- The magazine Diabetes – issued six times per year.
- Exclusive member's insurance.
- Diabeteslinjen – where you can ask questions, and receive expert responses via the Internet or telephone. You can talk to the counsellors in English, Arabic, Somali, Turkish and Urdu/Punjabi in addition to Norwegian.
- Access to courses, lectures, activities, trips and a social community.
- My page – a web area for members only. Membership discounts, articles, help with special allowances etc.
- Updated information on all aspects of the disease – factsheets and brochures.
- Legal assistance – free initial consultation and a reduced hourly rate if you need ongoing assistance.
- Hotel agreement with Scandic Hotels, Choice Hotels Scandinavia and Thon Hotels through the FFO agreement.
- Top-5 price guarantee with Fjordkraft, one of Norway's largest electricity companies. The Norwegian Diabetes Association also receives direct support when you use their electricity scheme.
- Cheaper fuel with the Circle K card. The Norwegian Diabetes Association also receives direct support for every litre of fuel you buy.
- Golf. Beginners' golf lessons with professional golfers. Cooperation with the Norwegian Golfing Association, with facilities in approximately 30 locations in Norway.
- Discounted transport costs by car on the Scandinavian Stena Line routes.

For more member benefits, please see: diabetes.no/medlemsfordeler



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More than 7000 Norwegians within 300 clinics have contributed to the development of our medicines. As an independent, family-owned company, Boehringer Ingelheim is aware of its responsibility for future generations and dedicated for improving patients'

lives and health. Research is our driving force. For us, the definition of success as a pharmaceutical company means continuous introduction of new, innovative medicines - ***because our vision is to add Value through Innovation***

Getting to the heart of type 2 diabetes, read more on our homepage:

www.boehringer-ingelheim.no

YES, I would like to become a member of The Norwegian Diabetes Association

YOU CAN JOIN BY:

Text «diabetes» to1960
Enter diabetes.no
Phone 23 05 18 00

THIS FORM CAN BE HANDED IN TO US ON THE STAND,
OR SENT IN BY POST TO:

THE NORWEGIAN DIABETES ASSOCIATION
Pb 6442 Etterstad
0605 Oslo

NAME:

ADDRESS:

POSTCODE: TOWN/CITY:

E-MAIL:

BIRTHDATE:

TELEFON:

ORDINARY MEMBERSHIP KR 450,-

SUPPORTER'S MEMBERSHIP KR 150,-

MEMBERSHIP - HEALTH CARE PERSONNEL KR 450,-

PROFESSION.....

DISCOUNTED MEMBERSHIP KR 225,-

(Young people aged 18-25, students up to 30 years, those on a minimum pension, those on disability benefits, income less than 2 x national insurance basic amount)

* This information helps us to send you personally adapted information:

HAVE TYPE 1 DIABETES

HAVE TYPE 2 DIABETES

LADA

MODY

RELATIVE

DO NOT HAVE DIABETES



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