

# **Diabetes: information and Living with this Disease**

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**ISBN: 978-80-53056-58-8**

Diabetes, also known as could keep blood sugar levels stable and prevent complications associated with diabetes. In addition to diet, regular exercise and possibly medication treatment as recommended by a doctor is also important. Diabetes mellitus, is a chronic disease characterized by high levels of sugar (glucose) in the blood that results from insufficient production of insulin in the body or the body's reduced ability to use this hormone effectively. Insulin is a hormone produced by the pancreas that allows glucose to enter the cells and serve as a source of energy. In diabetes, this process is disrupted, which can lead to long-term damage to various organs and systems in the body, including the eyes, kidneys, nerves and heart. There are two main types of diabetes. Type 1 diabetes is an autoimmune disease in which the immune system attacks and destroys the insulin-producing cells of the pancreas. This type usually appears in childhood or early adulthood and requires lifelong insulin administration. Type 2 diabetes is more common and usually develops in adulthood, especially in people who are overweight, have a sedentary lifestyle or a genetic predisposition. In this type, either the body does not produce enough insulin or the cells do not respond to it as they should. This disease requires careful management and health monitoring. Regular monitoring of blood glucose levels using a glucose meter or continuous monitoring systems is essential to keep diabetes under control. An important part of treatment is following a special diet that should be rich in fiber, vegetables, whole grains and contain limited amounts of simple sugars and saturated fats. The dietary plan should be individually tailored to each patient's needs to help stabilize blood sugar levels and prevent complications. Regular physical activity is also key to improving insulin sensitivity and maintaining a healthy body weight. At least 150 minutes of moderate-intensity exercise per week, such as brisk walking, swimming or cycling, is recommended. In some cases, the use of oral antidiabetic drugs or injectable insulin is also necessary, especially if dietary and exercise measures are not sufficient to achieve target glycaemic values. In addition to treatment and prevention of complications, it is important for patients with diabetes to have regular medical check-ups that include monitoring blood pressure, cholesterol, kidney function and vision status. Educating patients about their disease, including the ability to independently

responding to changes in health status and recognising the signs of hypoglycaemia or hyperglycaemia plays a vital role in the successful management of the disease. Proper treatment and lifestyle can significantly improve quality of life and reduce the risk of long-term complications. Patients should also be informed about the treatment and support options available, including specialist diabetes centres and support groups for patients with diabetes and their families.

Long-term complications of diabetes can be serious and significantly affect the patient's quality of life, so it is essential to pay attention to prevention, early diagnosis and proper treatment of this disease from the very beginning. The most common chronic complication is diabetic retinopathy, which affects the tiny blood vessels in the eye and can lead to blindness if not detected and treated in time. Regular eye examinations are therefore crucial to preserve vision. Another serious complication is diabetic nephropathy, a kidney disorder that can progress to chronic kidney failure requiring dialysis or transplantation. Preventive measures include strict control of blood sugar, blood pressure and cholesterol levels, as well as regular kidney function tests. Neuropathy, damage to the peripheral nerves, is often manifested by pain, tingling or loss of sensation in the limbs, especially in the legs. This condition can lead to gait disturbances, injuries that the patient does not feel and, in extreme cases, to the need for amputation. It is therefore important that patients check the condition of their feet daily and wear appropriate footwear. In addition to these complications, the risk of cardiovascular diseases such as myocardial infarction, angina pectoris or stroke increases significantly in diabetics. Diabetics often suffer from other risk factors such as hypertension, dyslipidaemia or obesity, which further increase the risk. For this reason, consistent control of blood pressure, blood fat levels, body weight and a healthy lifestyle is an essential part of treatment. Not only medication therapy, but also patient education, regular exercise, a balanced diet, and cooperation with the physician and other health care professionals are key to effectively managing diabetes and preventing its complications. Modern treatment approaches, including the use of insulin pumps, continuous glucose monitoring and individualized therapy, significantly improve the prognosis of patients and reduce

the risk of complications. Thus, an emphasis on prevention and a comprehensive approach to treatment is essential to maintain the highest possible quality of life for people with diabetes.

## **How did I get diabetes?**

This question haunted me for a long time before I realised how complex and multi-layered the process of this disease is. Diabetes, or diabetes mellitus, is not something that happens suddenly or without cause. It is the result of a combination of genetic predisposition, lifestyle and other health factors. In my case, not only did hereditary predispositions play a role - several relatives in my family had diabetes - but also my eating habits, lack of exercise and the stress I was exposed to at work and in my personal life. I tended to consume too many sweets and junk food, which gradually led to weight gain. All of this, along with a lack of physical activity, caused my body to have trouble regulating my blood sugar levels. Gradually, I started to show the first symptoms such as constant fatigue, frequent urination and increased thirst. Eventually, my doctor diagnosed me with type 2 diabetes, which meant that my body was unable to use insulin effectively. Since then, I have had to pay more attention to my health, adjust my diet, exercise regularly and monitor my blood sugar levels to prevent further complications. This process has opened my eyes and taught me how important it is to take care of my health and not to underestimate the signals our body sends us. This personal experience made me realize how important early detection and proper treatment of diabetes is to prevent serious health complications and improve the quality of life of patients with this disease.

The disease you are referring to is a medical condition that can have different causes, symptoms and consequences. It is important to understand that each illness has its own specific course and can affect a person physically and mentally. Symptoms can vary depending on the type of illness, its severity and the individual characteristics of the patient. Diagnosis often involves complex examinations that may include blood tests, imaging or specialized tests. Treatment then depends on the exact cause of the disease and may include medication, physiotherapy, lifestyle changes or, in some cases, surgery. Prevention is also key and involves regular medical

checkups, healthy diet, sufficient exercise and avoiding risk factors. For a better understanding of a specific disease, it is advisable to consult a specialist who can provide detailed information tailored to the individual needs of the patient. Understanding diabetes and its impact on life is essential for effective management of the disease, not only for the patients themselves, but also for their loved ones and caregivers. In the context of diabetes, it is important to focus on a comprehensive approach including prevention, early diagnosis and appropriate treatment to minimise potential health complications and improve the quality of life of patients.

**Types of Diabetes** Diabetes mellitus, also known as diabetes mellitus, is a chronic disease characterized by high blood glucose levels that occur due to problems with the production or action of insulin. There are several main types of diabetes, which differ in their causes, course and treatment. The first and most common type is type 2 diabetes, which accounts for approximately 90% of all cases. This type usually develops gradually, often in association with obesity, unhealthy lifestyle and genetic predisposition. In type 2 diabetes, the body cannot use insulin efficiently, leading to insulin resistance. Symptoms include frequent urination, excessive thirst, fatigue and slow wound healing. Treatment includes changing eating habits, regular physical activity, weight control, and medication or insulin therapy if needed. The second type is type 1 diabetes, which is an autoimmune disease. The immune system attacks and destroys the insulin-producing cells of the pancreas, leading to a complete lack of insulin. This type usually appears in childhood or adolescence, but can also occur in adults. Patients with type 1 diabetes must take insulin for life to keep their blood glucose levels within normal limits. Symptoms include rapid weight loss, frequent urination, severe thirst and fatigue. Another less common type is gestational diabetes, which develops during pregnancy. This condition can put the health of both mother and baby at risk, so regular monitoring of sugar levels in pregnant women is important. After giving birth, most women experience a return of their sugar levels to normal, but are at higher risk of developing type 2 diabetes later in life. In addition to these main types, there are also rare forms of diabetes, such as monogenic diabetes, which is caused by specific genetic mutations that affect the function of the beta cells of the pancreas. This type

Diabetes usually occurs at a younger age and can be mistaken for type 1 diabetes, although its course and treatment can vary considerably. The best known forms of monogenic diabetes are MODY (maturity onset diabetes of the young) and neonatal diabetes, each of which has its own genetic causes and clinical manifestations. Another less common form is secondary diabetes, which arises as a consequence of other medical conditions or as a side effect of taking certain medications. Diseases that can lead to the development of secondary diabetes include pancreatic diseases (such as chronic pancreatitis, cystic fibrosis or pancreatic tumours), endocrine disorders (such as Cushing's syndrome or acromegaly) and some autoimmune conditions. Secondary diabetes can also be triggered by long-term use of corticosteroids, certain diuretics or drugs used to treat psychiatric illnesses. Diagnosis and treatment of these rarer types of diabetes often require a specialized approach, including genetic testing, close collaboration with specialists, and an individually tailored treatment plan. your disease. Adherence to these recommendations can significantly improve the quality of life of patients with diabetes and minimize the risk of developing serious complications. Patients' active approach to treatment and prevention plays a key role in the successful management of diabetes. Understanding the different types of diabetes is crucial for correct diagnosis, effective treatment and prevention of complications such as heart disease, kidney, nerve or eye damage. Therefore, it is important to monitor your health regularly, follow your doctors' recommendations and lead a healthy lifestyle.

As diabetes is a complex disease with different types and manifestations, it is important that patients are well informed about their diagnosis and treatment options to enable them to take an active role in managing their condition.

## **Some tips for patients**

It is important for patients with diabetes to maintain a balanced diet, exercise regularly and monitor their sugar levels so that they can lead a healthy and active life despite their diagnosis. A proper diet should include plenty of fiber, whole grains, fresh fruits and vegetables, while intake of simple sugars and saturated fats should

should be limited. It is recommended to eat smaller portions regularly throughout the day to avoid fluctuations in blood glucose levels. Physical activity, such as brisk walking, swimming or cycling, not only helps to maintain a healthy weight but also to increase insulin sensitivity. Regular monitoring of blood sugar levels is also important, allowing you to react quickly to any changes and adapt your treatment or lifestyle to your current needs. In addition, patients should work closely with their doctor or diabetologist and have regular check-ups that can detect any diabetes-related complications, such as kidney, vision or vascular problems, early on. It's also advisable to keep an eye on your mental well-being, as stress can negatively affect your blood sugar levels. Overall, with proper care and adherence to recommended guidelines, people with diabetes can live full, active and happy lives. Proper management of diabetes requires a comprehensive approach including a healthy lifestyle, regular medical check-ups and medication treatment where appropriate. In this way, the risk of complications can be minimised.

The key to proper diabetes management is not only treating the disease itself, but also preventing potential complications and maintaining an overall healthy lifestyle, which includes a balanced diet, regular physical activity, getting enough sleep and managing stress. Regular monitoring of blood sugar levels is important to detect fluctuations early and to adapt treatment to the patient's current needs. Effective care includes working with a physician, nutritional therapist and other professionals to help develop an individualized care plan. A balanced diet should include adequate fiber, complex carbohydrates, healthy fats and protein, while limiting intake of simple sugars, excessive salt and saturated fats. Regular physical activity, such as walking, swimming or cycling, not only helps to control blood glucose levels but also improves insulin sensitivity, reduces the risk of cardiovascular disease and contributes to better mental health. It is also essential to avoid smoking and excessive alcohol consumption, which can significantly worsen the course of the disease and contribute to other health problems. Overall, successful management of diabetes requires a comprehensive approach, discipline and long-term efforts to maintain a healthy lifestyle. Proper management of diabetes brings



patients to lead an active and quality life despite this chronic disease. It is important to focus on prevention of complications and ongoing health monitoring. Proper management of diabetes and prevention of its complications requires a comprehensive and long-term approach that includes not only treatment but also lifestyle modification and ongoing monitoring of the patient's health.

A variety of tools and technologies can be very useful in the treatment and monitoring of diabetes to help patients better manage their condition and improve their quality of life. These aids include glucose meters and continuous monitoring systems that allow regular and accurate monitoring of blood glucose levels. In addition, insulin pumps and pens are available to facilitate insulin administration and increase dosing accuracy. Some modern technologies include mobile apps and online platforms that help patients monitor their health status, record diet and exercise activities and communicate with healthcare staff. These tools not only assist in the day-to-day management of diabetes, but also provide valuable information for physicians to tailor treatment to individual patient needs. With these tools, patients with diabetes can better control their condition and lead more active and healthy lives. In addition to these technologies, it is also important for patients with diabetes to have sufficient knowledge about their disease and be able to independently manage its treatment and monitoring. Education of patients and their family members plays a key role in the successful management of diabetes and the prevention of potential complications.

## **Aids to patients**

### **Glucometer:**

used to measure blood sugar by finger prick measurements enables better control diabetes and tailor treatment to current needs.

Modern glucose monitoring sensors provide significant benefits to



patients in managing their disease.

## **Sensors what it is and how it is used**

Glucose monitoring sensors are advanced devices that allow patients with diabetes to continuously monitor their blood sugar levels without the need for traditional finger pricks using a glucose meter. These sensors are typically small, portable and easy to apply to the body where they continuously measure glucose levels in the interstitial fluid. Some sensors are designed to last for days or even weeks on the skin without needing to be changed or calibrated frequently. The data collected by the sensor can often be transmitted to a mobile Proper use of these sensors requires some training and understanding of their function so that patients can effectively use the data they provide to optimize their treatment and improve diabetes control. Device or a dedicated receiver where they are displayed in real time. This allows patients to monitor trends and changes in glucose levels throughout the day and respond to any fluctuations with appropriate action. Some advanced sensors can even alert to the risk of hypoglycaemia or hyperglycaemia with alerts sent to a mobile phone or watch. The use of glucose monitoring sensors can significantly improve the quality of life of patients with diabetes by providing a detailed overview of their glucose levels and helping them to better manage their disease. Proper use of sensors and other technologies can be very beneficial for patients with diabetes, allowing them to better understand their health status and make informed decisions about their treatment. With these technologies, patients can better control their blood sugar levels and prevent potential complications associated with diabetes. At the same time, it is important that patients are adequately educated on the proper use of these



devices and understand how to interpret the data obtained. Education of patients and their families plays a key role in the successful management of diabetes and can contribute significantly to improving their quality of life. Regular consultation with healthcare professionals is also essential to optimise treatment and ensure that patients receive the best possible care.

## **Disadvantages of sensors**

Constantly feeling needles or prickly sensations on different parts of the body can be very uncomfortable and disturbing. This condition can have a variety of causes, from temporary problems such as transient nerve compression to more serious neurological disorders. Often this sensation is associated with a tingling, tingling or numbness that can affect, for example, the hands, feet, arms or face. Possible causes include neuropathy, vitamin deficiencies, poor blood circulation, prolonged sitting in one position, or even stress and anxiety. In some cases, it is necessary to seek medical attention to determine the exact cause and to determine the appropriate treatment. It is also important to monitor whether these sensations worsen or are accompanied by other symptoms, such as muscle weakness or loss of sensation, which may indicate a more serious health problem. In addition to a medical diagnosis, lifestyle modifications, regular exercise, proper ergonomics at work and adequate nutrient intake can also help.

## **Insulin pumps:**

Are small, portable devices that help diabetes patients better control their blood sugar levels by continuously delivering insulin to the body. These pumps are programmed to deliver precise amounts of insulin throughout the day, including basal insulin, which is important for keeping glucose levels stable between meals and during sleep. The basal insulin dose is carefully adjusted to best match the individual patient's needs, helping to minimise sugar fluctuations and reduce the risk of hypoglycaemia or hyperglycaemia.

Modern insulin pumps are equipped with various sophisticated features that significantly improve the effectiveness of treatment. These include the ability to adjust different basal doses throughout the day and night, allowing the pump to respond better to the changing needs of the body, for example during physical activity, stress or illness. In addition, the pumps have features to calculate bolus doses of insulin that patients inject at mealtimes. This calculation is based on current blood glucose levels and the amount of carbohydrates in the diet, which helps to accurately adjust the insulin dose to minimize the risk of complications. Many modern models are capable of communicating with continuous glucose monitors (CGMs), allowing for automatic adjustments to insulin doses based on actual blood sugar data, providing users with a higher level of safety and convenience.

In addition, some insulin pumps are waterproof, allowing patients to lead an active lifestyle without the need to interrupt treatment, for example during sports, swimming or other physical activities. The design of the pumps tends to be ergonomic and discreet, so as to interfere as little as possible with the user's daily life. Insulin pumps can be particularly useful for patients with type 1 diabetes who are dependent on a regular supply of insulin, and also for some patients with diabetes

Type 2 patients who require intensive insulin therapy, for example in cases where oral medication is not sufficient to control the disease.

The advantage of insulin pumps is not only the accuracy and flexibility of insulin administration, but also the ability to improve the quality of life of patients by reducing the need for frequent injections and allowing better planning of daily routines.

More accurate insulin dosing results in stabilised blood glucose levels, which can lead to a reduced risk of long-term complications such as nerve, kidney, eye or cardiovascular damage. In addition, insulin pumps often include monitoring and data-logging features that make it easier for doctors and patients to track the progress of treatment and make necessary changes to therapy. Overall, insulin pumps are a modern and effective tool for diabetes management that contributes to better health



and quality of life for patients.

## Disadvantages of pumps:

Although insulin pumps represent a significant advance in diabetes management, there are some disadvantages and limitations associated with their use. The main disadvantages include the higher purchase price and operating costs, as insulin reservoirs, infusion sets and other consumables need to be purchased regularly. Some patients may experience discomfort or difficulty wearing the pump, especially during physical activity or sleeping. Another disadvantage may be the technical complexity of the device, which may require extensive training and ongoing support from medical staff. Some users may experience compatibility issues between the pump and other medical devices, which may affect the accuracy and reliability of the device. In addition, there is a risk of technical problems, such as device malfunctions or errors in insulin dosing, which can have serious health consequences. Although modern insulin pumps have safety features and alarms to alert users to potential problems, it is **i m p o r t a n t** that users are

to be able to interpret these signals correctly and respond when necessary. However, despite these disadvantages, many patients consider the benefits of insulin pumps to be significant enough that they are willing to accept certain limitations and potential problems associated with their use.

When deciding whether to use an insulin pump, patients should weigh the advantages and disadvantages of this type of treatment and discuss them with their doctor or diabetes specialist so that they can make an informed decision.

## **Treatment with family**

It is important to involve the whole family in the treatment of diabetes, as the support of loved ones can make a significant contribution to the successful management of the disease. When the family understands the basic principles of treatment and the needs of the patient, they can better provide the emotional and practical support needed. This includes, for example, help with preparing healthy meals, support with physical activity and monitoring adherence to the treatment regimen. Family members should be informed about how to recognise the signs of hypoglycaemia or hyperglycaemia and how to respond in such situations. Educating the family about diabetes can also help reduce stress and improve the patient's overall quality of life. Coping with diabetes together can strengthen family relationships and contribute to better understanding and cooperation in treatment. Support from family and loved ones is essential for patients with diabetes to effectively manage their disease and lead fulfilling lives. Mutual cooperation and understanding between the patient and his/her family can contribute significantly to improving quality of life and reducing the risk of complications associated with diabetes. Family understanding and support can contribute significantly to the successful management of diabetes and improve the patient's quality of life. Working together towards a healthy lifestyle can have a positive impact not only on the patient but also on the whole family. Finally, it is important that the family and loved ones of the patient with diabetes are willing to adapt their behaviour and habits to support the patient's efforts to lead a healthy lifestyle. This may include exercising together, sharing healthy recipes, and supporting health monitoring. When the family actively participates in treatment, it can greatly enhance the patient's motivation and improve the overall atmosphere in the home. At the same time, it is important that family members

respect his/her needs and boundaries, and allow him/her to take responsibility for his/her care. In this way, the family can play a key role in ensuring that the patient with diabetes leads a full and active life despite their condition. Caring for a patient with diabetes requires a comprehensive and long-term approach, including not only treatment but also lifestyle modification and ongoing monitoring of health status. Collaboration with professionals and family support can contribute significantly to the successful management of this disease and improve quality of life. Long-term diabetes care requires a comprehensive approach including regular health checks, adherence to treatment regimens and ongoing patient education. Proper treatment and lifestyle can significantly improve quality of life and reduce the risk of complications.

Psychological support is also an important part of comprehensive diabetes care, as patients often face stress and anxiety associated with the disease. Psychological support can play a key role in helping patients better manage their emotions and maintain a positive attitude towards treatment. In addition, it is important that patients have access to relevant information and educational programmes to help them better understand their disease and actively engage in their treatment. Educating patients about healthy lifestyles, good nutrition and physical activity can make a significant contribution to improving their health and quality of life. Comprehensive diabetes care includes not only treatment, but also prevention of complications and support for patients in managing their disease. Regular medical check-ups and ongoing monitoring of health status are essential for early detection of potential problems and adjustment of treatment as needed. With comprehensive care and support, patients with diabetes can lead full lives and minimize the risk of long-term complications.

## **Community stories and counselling rooms**

Comprehensive diabetes care includes not only treatment, but also supporting patients in managing their disease. An important part of this care are community stories and counselling centres, which provide patients with the opportunity to share their experiences and get support from others, who are facing





similar challenges. These community platforms can be very useful for patients seeking information, advice and encouragement from people going through similar experiences. Community stories and discussions can help patients better understand their disease and find new ways to manage diabetes in their daily lives. At the same time, these platforms can serve as a valuable source of information and peer support for patients and their families. Regular sharing of experiences and advice within the community can contribute to better management of diabetes and improved quality of life for patients. Community stories and discussions can provide invaluable support and motivation to patients with diabetes in managing their disease. These platforms allow for the sharing of experiences and advice between people facing similar challenges. Regular sharing of experiences and advice within the community can contribute to better management of diabetes and improved quality of life for patients. At the same time, these platforms can serve as a valuable source of information and peer support for patients and their families. The stories of others can be inspirational for patients and help them find new ways to manage diabetes in their daily lives. In addition, community meetings and online forums provide a space to discuss different aspects of living with diabetes, from treatment and diet to emotional support and stress management. These communities play a key role in providing comprehensive care for patients with diabetes and contribute to the overall improvement of their health and quality of life. Patients can gain a sense of belonging and understanding, which is essential for managing a chronic disease. Supporting communities and sharing experiences with each other plays a vital role in the successful



managing diabetes, as patients can gain valuable advice and motivation from others going through similar situations. Community support and peer-to-peer experience sharing plays a vital role in successful diabetes management. These communities not only provide patients with valuable advice and practical tips, but also the emotional support and motivation that is essential for long-term management of this chronic disease. Sharing experiences among patients can help newly diagnosed individuals better understand their diagnosis and adjust to their new lifestyle. At the same time, these platforms can serve as a valuable source of information and peer support for patients and their families. The stories of others can be inspirational for patients and help them find new ways to manage diabetes in their daily lives. Regular sharing of experiences and advice within the community can contribute to better diabetes management and improved quality of life for patients. An important part of the support is also the opportunity to consult with others who are in a similar situation about their health problems and treatments. In this way, patients can gain a sense of belonging and understanding, which is essential for managing a chronic disease. In addition, communities can organise various activities and workshops to help patients better manage their diabetes and lead a healthier lifestyle. These activities may include, for example, exercise, healthy eating and stress management techniques. Through these communities, patients with diabetes can lead full and active lives despite their condition.

## **Spas for the sick**

Spas can be very beneficial for patients with diabetes as they offer comprehensive care aimed at improving their health and quality of life. These spas provide special programs that include medical care, rehabilitation, physical therapy and dietary meals tailored to the needs of patients with diabetes. A stay at the spa can help patients better manage their disease, reduce stress and improve overall well-being. In addition, spas often host educational programs and workshops that provide patients with valuable information about healthy living and proper diabetes care. These programs may include lectures by experts, group therapy sessions and

individual consultations with doctors and nutritional therapists. Thanks to the comprehensive care and support offered by the spa, patients with diabetes can gain new skills and knowledge to help them better manage their disease and lead a fulfilling life. Regular spa stays can be of significant benefit to the physical and mental health of patients with diabetes. The natural environment and relaxing atmosphere of the spa contribute to an overall improvement in health and can positively influence the course of treatment. Many spas are equipped with modern rehabilitation facilities and provide a wide range of treatments, including hydrotherapy, electrotherapy and movement therapy. These treatments can help relieve symptoms associated with diabetes, such as pain and neuropathy. In addition, a spa stay often includes leisure activities that contribute to overall relaxation and improved mental health for patients. Overall, spas are an important part of comprehensive care for patients with diabetes and can contribute significantly to improving their quality of life. Diabetes care is a complex process that requires the active involvement of the patient and their family. With the right treatment and support, patients with diabetes can lead a full life and minimise the risk of complications.

Treatments: Special baths and massages are common treatments, including carbonic baths, bubble baths and whirlpool baths, which help improve blood circulation and relax muscles. In addition, massages are often used to help reduce muscle tension and improve the patient's overall condition. Some spas also offer special programs including movement therapy and rehabilitation tailored to the needs of patients with diabetes. These programs are designed to encourage physical activity and improve coordination and balance. In addition, patients can take advantage of other wellness treatments such as sauna, steam room or relaxation treatments that contribute to overall relaxation and stress reduction. Regular use of these treatments can significantly contribute to improving the quality of life of patients with diabetes. Long-term treatment and proper diabetes care can significantly improve the quality of life of patients and minimise the risk of developing serious complications. It is important for patients to follow their doctor's recommendations and lead a healthy lifestyle. When treating diabetes, it is important to follow a comprehensive approach that includes not only drug treatment, but also lifestyle modification and regular health monitoring.

What complications can arise Diabetes can lead to various complications that affect the patient's quality of life and can have serious health consequences. The most common complications include cardiovascular disease, kidney, nerve and eye damage. Cardiovascular complications include an increased risk of myocardial infarction, stroke and other heart diseases. Kidney damage, known as diabetic nephropathy, can lead to kidney failure and the need for dialysis or kidney transplantation. Diabetic neuropathy causes pain, tingling or loss of sensation in the extremities, which can significantly impair a patient's quality of life. In addition, diabetes can cause visual impairment, including diabetic retinopathy, which can lead to vision loss. Regular medical check-ups and proper treatment can help minimize the risk of these complications and improve the overall health of patients with diabetes. Prevention and early diagnosis are key to minimizing the risk of these complications and ensuring quality of life for patients with diabetes. It is also important that patients are educated about their disease and know their treatment and prevention options. Understanding and managing diabetes requires constant care and attention to avoid serious health complications. It is essential that patients actively work with their physician and follow the recommended treatment plan.

Understanding and managing diabetes requires constant care and attention to avoid serious health complications. Regular check-ups with your doctor and adherence to a treatment plan are essential to maintain stable blood sugar levels and prevent long-term complications. Educating patients about proper lifestyle, nutrition and physical activity plays a key role in the successful management of diabetes. Patients' active approach to treatment and their awareness of their own health status can significantly contribute to improving their quality of life and reducing the risk of complications. Collaboration between the patient, doctor and other health professionals is essential for effective treatment and care of patients with diabetes. With appropriate care and support, patients with diabetes can lead full and active lives despite this chronic disease.

## **How to figure out this disease?**

Diagnosis of diabetes is usually based on a combination of clinical symptoms, laboratory tests and physical examination. The doctor may recommend tests such as a fasting glucose test, an oral glucose tolerance test or a glycated hemoglobin (HbA1c) test to confirm the diagnosis and determine the type of diabetes. These tests provide important information about blood sugar levels and how the body processes glucose. If diagnosed with diabetes, it is important to start treatment as soon as possible to prevent complications and improve the patient's quality of life. Treatment includes lifestyle changes such as dietary modification and increased physical activity, and in some cases, medication or insulin therapy. Regular monitoring and follow-up of health status are key to successfully managing diabetes and preventing potential complications. Proper management of diabetes is important to prevent complications and improve the quality of life of patients. Comprehensive care includes not only treatment, but also support for patients in managing their disease and lifestyle modification. Thanks to modern technologies and treatments, patients with diabetes can lead an active and fulfilling life. At the same time, it is important that patients are adequately informed about their condition and treatment options. Education of patients and their families plays a key role in the successful management of diabetes. With proper care and adherence to recommended procedures, patients can minimize the risk of complications and live a quality life. Diabetes care involves a comprehensive and long-term approach that includes regular medical check-ups and ongoing health monitoring.

Proper diagnosis and treatment of diabetes requires a comprehensive approach that includes regular medical check-ups, laboratory tests and an individually tailored treatment plan so that patients can lead a quality and active life despite this chronic disease. This approach should be multidisciplinary and should involve the collaboration of a general practitioner, a diabetes specialist, a dietician, and possibly a psychologist or other specialists depending on the patient's needs. In addition to monitoring glycaemic values and adjusting medication, the focus should also be on educating the patient to help them understand their disease, recognise the warning signs of complications and adopt a healthy lifestyle. Early diagnosis and proper treatment are essential to minimize the risk of long-term complications, such as diseases of the heart and blood vessels,

kidney damage (diabetic nephropathy), eye damage (diabetic retinopathy) or nervous system damage (diabetic neuropathy). The earlier the disease is detected and the better it is managed, the better the patient's chances of maintaining a full life without significant limitations. Regular check-ups with the doctor and strict adherence to the treatment plan play a key role in the successful management of this disease. The treatment plan should include not only the administration of medication or insulin, but also an emphasis on regular physical activity, a balanced diet with restriction of simple sugars, and monitoring of body weight and blood pressure. The patient's psychological well-being is also important, as stress can negatively affect blood sugar levels. The goal of modern diabetes treatment is not only to compensate for glycaemia, but to improve the patient's overall quality of life and prevent serious health complications.

## **What is hypo?**

Hypoglycaemia, or hypo, is a condition characterised by abnormally low blood sugar (glucose) levels, usually below 3.9 mmol/l. Glucose is the main source of energy for the body and especially for the brain, which is particularly dependent on its supply. When glucose levels drop too low, the body and brain become deprived, which manifests itself in various physical and mental symptoms. Hypoglycemia is most common in people with type 1 diabetes who inject insulin, but it can also occur in patients with type 2 diabetes, especially if they are taking drugs that stimulate insulin production, such as sulfonylureas. This condition can arise due to several factors, such as if the patient accidentally injects too high a dose of insulin, skips or delays meals, performs excessive physical activity without adequate energy replenishment, or consumes alcohol without adequate food intake. This is because alcohol can block the release of glucose from the liver, increasing the risk of hypoglycaemia, especially at night. Typical symptoms of hypoglycaemia include trembling hands, sweating, palpitations, nervousness, hunger, pallor, dizziness, fatigue and impaired concentration. As the glucose drops, more severe neurological symptoms such as confusion, speech impairment, uncoordinated movements, convulsions, unconsciousness or even hypoglycaemic coma can occur, which can be life-threatening. Regular

Therefore, education of patients and their relatives is crucial to recognize early symptoms and correct management of their occurrence. Prompt treatment of hypoglycemia involves immediate supplementation with simple, rapidly absorbed carbohydrates. For example, 15 to 20 grams of glucose in the form of glucose tablets, a sweetened drink, fruit juice or candy is recommended. After 10 to 15 minutes, it is advisable to check blood glucose levels and repeat the procedure if necessary. Once the symptoms have subsided, it is important to eat a smaller meal or snack containing complex carbohydrates and protein to prevent the sugar levels from dropping again. If the patient is not conscious, nothing should be given by mouth and the emergency services should be called immediately. In such cases, glucagon (a blood sugar-raising hormone) may be administered if it is available and those close to the patient are trained to use it. Long-term prevention of hypoglycaemia involves careful monitoring of blood sugar levels, individual adjustment of insulin dosage, a balanced diet, a regular regime of food and physical activity and proper management of stressful situations. Today, modern diabetes care also offers technologies such as continuous glucose monitors (CGMs) or insulin pumps with automatic shut-off when sugar levels are low, which significantly increase patient safety. Understanding and managing hypoglycaemia is an essential part of living with diabetes. It not only improves quality of life and patient safety, but also allows for better long-term compensation of diabetes and reduces the risk of complications such as damage to blood vessels, nerves and other organs. Therefore, regular communication with the doctor, adherence to the treatment plan and the willingness of patients to take an active role in their care are important

## **What is hyper?**

Hyperglycemia, also referred to as hyper, is a condition where blood sugar levels exceed normal levels, which are usually kept within a narrow range to allow the body to function properly. Hyperglycemia occurs when the body cannot effectively regulate the amount of glucose in the blood, which can be caused by insufficient insulin production, reduced sensitivity of cells to insulin (insulin resistance), or a combination of both. Insulin is a hormone produced by the pancreas that allows cells to absorb glucose from the blood and

to use it as an energy source. If insulin production is insufficient or if cells do not respond to insulin properly, glucose remains in the blood, leading to hyperglycaemia. Symptoms of hyperglycemia can be varied and often develop gradually. The most common symptoms include increased thirst, frequent urination, fatigue, blurred vision, dry mouth and sometimes headaches. These symptoms are the result of the body trying to get rid of excess glucose through urination, leading to dehydration and electrolyte imbalance. Left untreated, hyperglycaemia can progress to more serious conditions such as diabetic ketoacidosis, a life-threatening complication associated with excessive production of ketone bodies due to insulin deficiency, or hyperglycaemic hyperosmolar state, which is characterised by extremely high blood sugar levels and severe dehydration. Both of these conditions require immediate medical attention and hospitalization. Prevention and management of hyperglycemia are key for patients with diabetes, both type 1 and type 2. Proper treatment includes regular blood sugar monitoring with a glucose meter, adherence to prescribed medications, including insulin therapy or oral antidiabetic medications, and lifestyle modification. A healthy diet with controlled carbohydrate intake, regular physical activity and maintaining an optimal body weight play an important role in preventing the development of hyperglycaemia and its complications. Regular medical follow-up and adjusting treatment according to the patient's current state of health not only allow better glycaemic control, but also reduce the risk of long-term complications such as kidney, nerve, eye or cardiovascular damage. Increased awareness of the symptoms and risks of hyperglycaemia, as well as patient education, contribute to improved quality of life and more successful management of this chronic disease.

Insulin : is a hormone produced by the pancreas that plays a key role in regulating blood sugar levels. It allows glucose to enter the cells where it is used as a source of energy. In type 1 diabetes, the body does not produce enough insulin, while in type 2 diabetes the cells do not respond properly to insulin. Insulin therapy is necessary for patients with type 1 diabetes and sometimes for patients with type 2 diabetes who have inadequate glycemic control with diet and oral antidiabetic drugs. Insulin is injected using an insulin pen or pump. Proper dosing and timing of insulin are key to maintaining stable blood sugar levels and preventing complications

associated with diabetes. Modern insulin preparations are highly purified and available in a variety of forms, including fast-acting, long-acting and premixed variants, which allow individual tailoring of treatment to the patient's needs.

## **Where did insulin come from?**

As the history of diabetes treatment is closely linked to the development of medicine and pharmacology, the discovery of insulin marked a major milestone in the fight against the disease. Its isolation and subsequent use in clinical practice opened up entirely new possibilities for the treatment of patients with diabetes, particularly those with type 1 diabetes who had previously had no effective therapy. The discovery of insulin represented a fundamental change - a disease that had until then been virtually fatal became a chronic but manageable disease. Insulin was first isolated in 1921 by Canadian scientists Frederick Banting and Charles Best at the University of Toronto. This discovery was the result of hard work and numerous experiments that the scientists conducted on laboratory dogs. Banting and Best were able to isolate the active substance from the pancreas of the animals and then successfully applied this substance - insulin - first to dogs with artificially induced diabetes and later to human patients. Using this approach, they were able to dramatically reduce blood glucose levels and alleviate the symptoms of the disease. Significant advances also came through collaboration with other scientists, such as biochemist James Collip, who helped develop a more stable and pure form of insulin suitable for human use. The team was led by John Macleod, whose research was conducted at the University of Toronto. For this groundbreaking discovery, Frederick Banting and John Macleod were awarded the Nobel Prize in Physiology or Medicine in 1923. Banting subsequently shared half of his prize with Best, while Macleod shared his prize with Collip - these gestures reflected the importance of the team's work on this seminal discovery. Before the discovery of insulin, diabetes, especially type 1 diabetes, was practically a death sentence. Treatment was limited to a strict, very low-carbohydrate diet that could extend a patient's life by months or years at most, but often led to severe malnutrition and a weakened body. With insulin, however, patients were able to return to a more normal way of life and improve their prognosis.

Research and



insulin development continues today, with the aim of improving its efficacy, safety and convenience of administration. From the original animal insulin, there has been a gradual transition to human insulin produced using recombinant DNA technology, which has enabled the mass production of a high quality and safe drug. In the following years, so-called insulin analogues were developed - modified versions of insulin that mimic the natural behaviour of the hormone in the body, allowing better glucose control. These analogues are designed to have a faster onset of action or a longer duration of action, allowing patients more flexible dosing schedules. Modern technology has also brought new ways of delivering insulin, such as insulin pumps, which allow continuous delivery of insulin to the body and mimic the natural secretion of the pancreas. In addition, these pumps can be linked to continuous glucose monitoring (CGM) sensors to provide patients and physicians with valuable real-time information on blood sugar fluctuations. This combination of technologies has significantly improved diabetes management and reduced the risk of hypoglycemia and other complications. Thanks to these advances, patients with diabetes can lead active and fulfilling lives despite their disease. Improved quality of life includes not only better physical health but also psychological well-being, as patients have greater control over their condition and more opportunities for personal development, education and employment. Current research focuses on further improving insulin therapy, including development of 'smart' insulins that would only activate when sugar levels rise, or on creating fully automated glucose management systems - the so-called artificial pancreas. In parallel, work is also underway on completely new therapeutic approaches such as gene therapy, regeneration of beta cells in the pancreas or pancreatic islet transplantation. Scientists and pharmaceutical companies are working to develop innovative therapies that could change the paradigm of diabetes treatment and offer patients an even better future. The aim of these researches is not only to improve the control of the disease, but ideally also to achieve a complete cure. Thus, ongoing research and development in the field of diabetes continues to offer hope for improving the lives of patients with diabetes and

inspire generations of physicians, scientists and patients in the fight



against this worldwide chronic disease.

## **How did the disease called diabetes first appear?**

Diabetes, or diabetes mellitus, is a disease known since ancient times, when doctors described symptoms including excessive thirst and frequent urination. The origin of the name "diabetes" is related to the presence of sugar in the urine of patients suffering from this disease. Throughout history, the understanding of diabetes has evolved from early observations to modern medical discoveries that have led to a better understanding and treatment of the disease. With the development of modern medicine and laboratory methods, it has been possible to identify the causes of diabetes and develop more effective treatments. Today, diabetes is considered a complex disease requiring a multidisciplinary approach to treatment and patient care. Diabetes is a chronic disease that requires complex and long-term care. Proper treatment and lifestyle can significantly improve the quality of life of patients and reduce the risk of complications associated with the disease. Early diagnosis and appropriate treatment are key to successfully managing diabetes and minimising potential health complications. At the same time, it is important that patients are adequately informed about their condition and treatment options, allowing them to take an active role in the management of their condition. Understanding and managing diabetes requires ongoing care and attention to prevent serious health complications and improve patients' quality of life. With a comprehensive approach and support, patients with diabetes can lead full and active lives despite this chronic disease. Caring for patients with diabetes involves not only

treatment, but also support in managing their disease and lifestyle modification. Thanks to modern technologies and treatments, patients with diabetes can lead an active and quality life. Regular check-ups with a doctor and adherence to a treatment plan are essential to maintain stable blood sugar levels and prevent long-term complications. Collaboration between the patient, doctor and other health professionals is the foundation of successful treatment. With proper care and adherence to recommended procedures, patients can minimize the risk of complications and live a quality life. Long-term diabetes care requires a comprehensive and multidisciplinary approach. It seeks not only to treat the disease itself, but also to prevent potential complications and maintain an overall healthy lifestyle. In this way, the quality of life of patients with diabetes can be significantly improved and the risk of long-term complications reduced. At the same time, it is important that patients are actively involved in their treatment and continuously educated about their disease. Education of patients and their family members plays a key role in the successful management of diabetes. With proper management and comprehensive care, patients with diabetes can lead full and happy lives. Diabetes is a disease that requires a proactive approach and collaboration between the patient and healthcare professionals. With sufficient care and support, patients with diabetes can lead an active and quality life despite this chronic disease. Supporting family and loved ones is also an important part of care, as they play a significant role in enabling patients to effectively manage their disease. The current state of medicine and available treatments allow patients with diabetes to live long and quality lives. It is important to focus on the prevention of complications and the ongoing monitoring of health status. With proper treatment and adherence to recommended procedures, patients with diabetes can lead a full life. At the same time, it is crucial that patients are adequately informed about their disease and treatment options. Patient education and support are essential for successful diabetes management. With a comprehensive approach and support, patients with diabetes can minimize the risk of complications and live a quality life. Diabetes is a disease that requires constant attention and care. With the right approach and comprehensive care, patients with diabetes can lead active and fulfilling lives. The key to successful treatment is the active involvement of the patient and cooperation with health professionals. Support is also important