Englisch

Das Gesundheitsprojekt
Mit Migranten
für Migranten
MiMi

Diabetes

Inform · Prevent · Act

Guide | available in twelve languages

DDS
Deutsche Diabetes Stiftung

Ethno-
Medizinisches
Zentrum e.V.

IMPRESSUM

Informieren – Vorbeugen – Handeln
Diabetes-Leitfaden – Ausgabe in mehreren Sprachen

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MSD

Wir danken der Firma MSD SHARP & DOHME GMBH für die freundliche Unterstützung bei der Realisierung dieser Broschüre.

Dear readers,

In Germany, life expectancy has been rising for years. However, with the onset of old age and triggered by a lifestyle defined by affluence, there is also a higher incidence of chronic illnesses - even, in some cases, with several appearing at the same time.

One of the most widespread chronic diseases is diabetes mellitus, a metabolic illness, also known as the "sugar disease". It is estimated that about twelve million people in Germany suffer from diabetes. Among the more than 15 million inhabitants with a migration background, diabetes occurs even more frequently than among the German population, especially Type 2 diabetes. This is particularly true of migrants who came to Germany in the 60s of the last century and who have now reached an age that is at stronger risk.

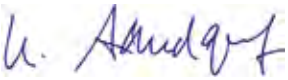
Due to the frequency of diabetes and especially the many complications associated with it, this disease has, in the meantime, become an important healthcare and social issue for policymakers. In this country, the costs incurred by diabetes have run up to 50 billion euros so far. Secondary disorders e.g. heart attack, stroke, blindness at an early age, kidney failure, the necessity for dialysis and amputations are very dramatic for the people affected. If the disease is discovered at a late stage, the result is often a noticeable fall in the quality of life, and life expectancy, too.

Preventive, health-promoting measures are very important to minimise the risk of contracting the disease. That is why this guide was compiled in the context of the project supported by the Bavarian State Ministry for Health and Care: MiMi – Health with migrants for migrants. It was developed by the Ethno-Medical Centre regd. association (Ethno-Medizinisches Zentrum e.V.) with the help of the German Diabetes Foundation (DiabetesStiftung DDS) and translated into numerous languages in order to address migrants in Germany directly in their own language.

The guide is intended to educate people and give them necessary information about both the social and the medical background of diabetes, and healthy lifestyle models. The readers learn how to remain healthy and how they can enhance their wellbeing by changing their diet and having more daily exercise. The primary goal of all the information and suggestions is to prevent people from developing Type 2 diabetes, or, if diabetes has already been diagnosed, to keep the damage to a minimum and to counteract a worsening of the disease.

Additionally, valuable tips are given on living with the disease, important terminology is explained, and addresses offered where help can be found.

It is our heartfelt wish that this guide may contribute to improved health for you and for all citizens of our country.



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1 Chronic diseases

A chronic disease is understood to be a disease that develops slowly, becomes permanent and whose root cause cannot be removed. This often demands great endurance on the part of those affected. Not infrequently, the chronically ill have already made many visits to doctors and undergone numerous examinations before a correct diagnosis is made and appropriate therapy commenced.

For the patient, life with a chronic disease involves a high degree of personal responsibility and generally a change in his way of life. At the same time, certain ways of behaviour and habits he is accustomed to have to be abandoned and new forms of behaviour learned. In general, during the course of the disease, a form of therapy according to guidelines has to be observed, frequently with regular medication and medical examinations. For the patient's relatives, being confronted with the disease on a daily basis also means many changes. They have to learn how to cope with the disease and should be supportive of those affected.

In Germany, more and more people suffer from chronic diseases, e.g. asthma, rheumatism, dementia, epilepsy, Parkinson's disease, coronary heart disease and diabetes mellitus.

In view of the high frequency of diabetes mellitus cases, this guide – which was developed by the Ethno-Medical Centre (EMZ) in co-operation with the German Diabetes Foundation (Deutsche Diabetes-Stiftung) – is devoted to this chronic disease. It provides information on the disease, its diagnosis and therapy options, and offers advice on preventive measures. Specialist terms are explained in the glossary. At the end of the guide you will find a list of important organizations and self-help groups that provide advice and support.

In Germany, over eight million diabetes sufferers are receiving treatment. There are also an estimated three to four million undetected cases of Type 2 diabetes because the people affected do not know that they have the disease. Diabetes is detected more frequently as people become older. The incidence of diabetes – in particular of Type 2 diabetes – tends to be even greater among migrants than among people without a history of immigration.

Most diabetics have Type 2 diabetes (about 90 % of cases of diabetes cases). The remaining 10 % are distributed among Type 1 diabetes, gestational diabetes (diabetes during pregnancy) and special forms of the disease.

2 What is diabetes mellitus?

When people – and doctors – talk of diabetes they usually mean the chronic metabolic disease diabetes mellitus (the word diabetes is of Greek and Latin origin and means, literally "honey-sweet discharge").

Our diet mainly comprises carbohydrates (sugar), lipids (fats) and proteins (albumin). We ingest the energy (calories) we require in carbohydrates and fats. Carbohydrates are contained, for example, in pasta, bread, potatoes and fruit. Carbohydrates are converted by the digestive system in the body into simple sugar (such as glucose) and released into the blood, thereby reaching body cells in the form of energy. In order that the cells can absorb the sugar, the hormone insulin is required as a kind of key.

In the case of diabetics, however, the pancreas produces either no insulin at all (Type 1 diabetes) or an insufficient amount of it (Type 2 diabetes). Or it is not really effective, since the cells are less sensitive to insulin (insulin resistance). As a consequence, sugar accumulates in the blood. At the same time, the cells receive insufficient glucose and therefore cannot function properly. The cells of the body then draw on fatty acids in order to acquire energy. Through utilization of fat cells, waste products – so-called ketone bodies – arise, which over-acidify the blood.

TYPE 2 DIABETES

The Type 2 diabetic is generally (more than 80 %) overweight and, in contrast to the Type 1 diabetic, his body is (still) capable of producing insulin. However, the insulin produced is only released into the blood stream after a delay, or in an insufficient quantity. In addition, the insulin present in the bloodstream cannot work properly, since the body's cells are immune to it (insulin-resistant). Correspondingly, the glucose cannot be infiltrated into the body's cells. The cause of insulin resistance and dysfunctional insulin release is an interaction of genetic disposition and health-related risk behaviour, such as excess weight and lack of exercise.

To a large extent, Type 2 diabetes develops insidiously and initially unnoticed. People mostly contract the disease from the age of 40, and prevalence of the disease increases with age. Severe metabolic deviations are seldom, compared to Type 1 diabetes. On the other hand, Type 2 diabetics frequently suffer from other health-related restrictions such as excess weight, high blood pressure and lipid metabolic disorders and these taken together are also termed metabolic syndrome. As a consequence, they are at greater risk of developing cardio-vascular diseases such as heart attack and stroke.

TYPE 1 DIABETES

The insulin-producing cells in the pancreas are destroyed by the body's own immune system. This process is also termed an auto-immune reaction. The result is an absolute lack of insulin.

This is why those affected must inject themselves with insulin their whole life. This type of diabetes frequently begins during childhood, in adolescence or young adulthood. The disease often appears suddenly, and in most cases severe metabolic deviations can be observed already at the outset.

PREGNANCY DIABETES

This type, also known as gestational diabetes, can occur during pregnancy. It generally disappears after the birth. There is an increased risk, however, of suffering from diabetes again during a later pregnancy, or of developing Type 2 diabetes later in life. Even slightly higher blood glucose levels pose a serious health risk for mother and child.

3 Which factors influence diabetes?

Heredity transmission plays a big role, especially for Type 2 diabetes. For people whose relatives suffer from Type 2 diabetes, the risk of contracting the disease themselves is about double. Other important factors influencing the development of diabetes are, above all, diet and exercise habits.

WEIGHT

Overweight plays an important role for Type 2 diabetes. The more a diabetic weighs, the less effective is the insulin available. Weight loss and maintenance of a healthy weight are therefore important objectives. Any weight loss can markedly improve blood glucose values.

Weight orientated on the so-called Body Mass Index (BMI) is recommended. This tells us whether a person is underweight, has a normal weight or is overweight, right up to adipositas (obesity). This is how to calculate your own BMI value:

$$\text{BMI} = \frac{\text{Weight in kilograms}}{\text{Height in metres x height in metres}}$$

The normal BMI for women lies between 19 and 24, for men between 20 and 25. Excess weight begins for women with a BMI of between 25 and 30. For men to be overweight, the BMI value is from 26-30.

Body weight can be judged even more easily on the basis of abdominal girth. It is critical for women if it is more than 88 cm, in the case of men, more than 102 cm.

Regarding body fat, it is the deeper-lying so-called visceral belly fat situated in the hollow of the belly that is dangerous, since although this increases the amount of insulin in the blood, the glucose does not reach the cells because of an insulin resistance.

DIET

Basically, diet plays an important role both in the prevention and in the treatment of diabetes. It is advisable to consult a dietician in order to draw up a personal diet plan – in particular if there is a desire to lose weight.

Generally speaking, the recommended diet for a diabetic is no different to a balanced diet for a healthy person. Certain principles of healthy nutrition apply for everyone.

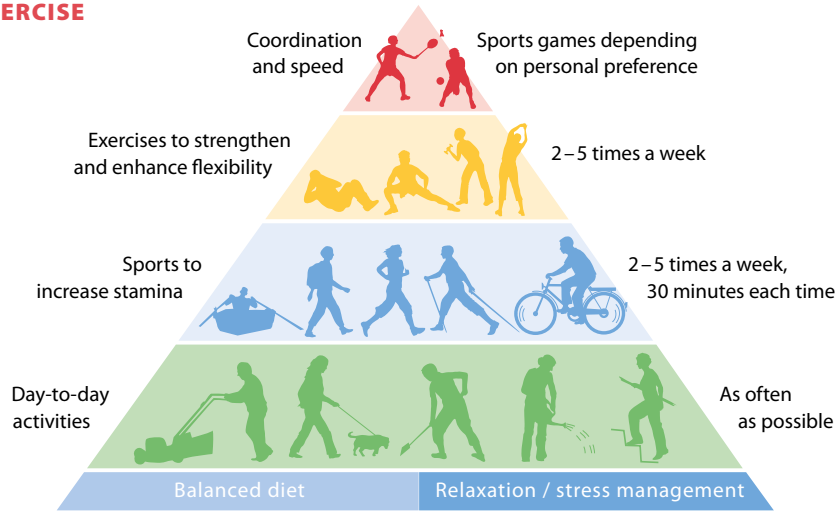
Food that is cultivated according to the seasons, harvested and sold in the region should be given preference. A calender showing the produce of every season can be obtained e.g. from the Consumers' Association, giving details of what is available – fresh from the field.

The daily meal plan for diabetics should be based on slow-acting carbohydrates - around 45-60 %. These include wholemeal rice, wholemeal pasta, fresh fruit and vegetables, corn and wholemeal products, pulses (beans, lentils and peas) and low-fat milk products.

GENERAL DIET RECOMMENDATIONS

- About 30 g of fibres daily in the food (15 g per 1,000 kcal). This is reached by eating several portions of vegetables and fruit every day, and also pulses several times a week. One should choose primarily wholemeal products when purchasing cereal products.
- Quality instead of quantity is the key for the consumption of fat. Hidden fats (e.g. in cold cuts/sausage or biscuits) are to be avoided – lean cuts of meat e.g. raw ham are preferable. Fish should be eaten very regularly, the best kinds being seafish (herring, mackerel, salmon and tuna fish), since it contains important Omega B fatty acids. The best oils for salad and raw vegetables are olive and/or rape. Solidified fats which are often contained in convenience products should be avoided.
- Caution is to be exercised as far as sugar is concerned. In general, it is advisable not to drink beverages containing sugar, since these rapidly increase the level of blood glucose. Where sweetening is desired, artificial, no-energy sweeteners or a very small amount of sugar should be used. On the whole, the amount of calories consumed via granulated sugar should be under 10 % (about 30–50 g per day). It has to be borne in mind that sugar is hidden in many food products (for example, fruit: bananas, grapes, and sweet cherries; ketchup and alcohol), which means that the recommended maximum daily amount is reached very quickly.
- The consumption of alcohol ought to be kept to a low level, too. A maximum intake of 20 g of alcohol for men and 10 g for women a day is assumed to be tolerable for health (20 g of alcohol are contained e.g. in: ½ litre of beer, ¼ litre of wine or 0.06 litres of brandy). If possible, alcohol should not be drunk daily, but rather only at the weekends, e.g. in the form of a dry white wine or a wine spritzer with a meal.
- In general, one should only eat what is suitable for one's body. If there are constantly problems with certain foodstuffs (e.g. wind / flatulence and feeling over-satiated), then these ought to be avoided. As a rule, convenience products should be steered clear of, if possible, because they contain far too many hidden calories, salts, fats and sugar.

EXERCISE



Physical activity is one of the main pillars upon which the prevention of Type 2 diabetes rests.

THROUGH REGULAR PHYSICAL EXERCISE, MANY POSITIVE EFFECTS CAN BE ACHIEVED:

- The blood pressure drops
- The resting heart rate slows down
- The lipid levels (blood fats) improve
- The blood glucose levels sink
- The sensitivity of cells to insulin is increased
- The immune mechanisms are improved
- The physical appearance becomes better (e.g. by muscles being developed and belly fat reduced)
- Mental and physical well-being increase.

But more physical exercise does not always lead to a significant loss of weight.
One ought to be aware of this so as not to be disappointed.

EXERCISE IN THE DAILY ROUTINE AND IN LEISURE TIME:

- *Every step counts*

Not only the daily walking or running session counts as "movement". More exercise can be integrated into daily life, consciously and easily. Using the stairs more often instead of the lift is a good example. For short distances use the bicycle, or get off one stop earlier – it's so easy! This is because: every step counts.

- *Moderate exercising*

One doesn't have to, and shouldn't, run a marathon in order to become fitter. People unused to training should set themselves the goal of exercising enough to get into a light sweat for about 30 minutes, 5 times a week.

- *Individually adjusted*

Exercise should always be adjusted to the individual state of health and level of fitness. If a person hasn't been active for a longer period, he should check his level of performance and set up training goals (with himself, too).

- *Which kinds of sport are suitable?*

Basically, it's important that exercise is good fun. If one doesn't feel comfortable with one type of exercise, then another kind has to be tried. The individual needs and skills ought to be taken into consideration at all times. For people who have problems with their joints, swimming or cycling are a good choice because both sports are gentle on the joints. For back problems, Nordic walking or swimming the back stroke would be suitable.

- *Who can help with this?*

Sports medicine doctors, physiotherapists or fitness trainers help to find suitable kinds of sport and the correct stress intensity. Many healthcare insurers, in the meantime, offer programmes, too, e.g. entry-level courses for Nordic walking. Just speak to the healthcare providers about it…

THE FOLLOWING TIPS CAN HELP TO CHANGE EXERCISE HABITS:

- Always set small and attainable goals. It's the only way to lasting success.
- Increase the daily activities because every exercise counts.
- The goal is to exercise additionally for at least 30 minutes, 3–5 days a week.
- Always combine endurance training with weight-lifting.
- Look for like-minded people or join existing initiatives e.g. Nordic walking meets. This boosts the motivation and staying power.
- It's best to choose activities that are fun in the long-term (e.g. dancing), because having fun doing it is the biggest motivation (e.g. dancing, too).
- Before beginning a training programme, have a health check-up at the doctor's, just to be on the safe side.

MORE SERENITY AND CALMNESS THROUGH RELAXATION

Anxiety and severe stress can easily give rise to metabolic disorders. In such situations, an increased quantity of the stress hormone adrenaline is released, as a result of which the blood glucose level of the diabetic rises. Stress should be avoided wherever possible. If this cannot be avoided, it has to be ensured that the diabetic's therapy is correspondingly adjusted.

4 How can one prevent diabetes?

There is no well-founded knowledge concerning the prevention of Type 1 diabetes, since the factors that give rise to this type of diabetes are not yet completely known.

However, the risk of contracting Type 2 diabetes can be reduced through certain measures. In this connection, the most important are exercise and avoiding overweight, or weight reduction.

Persons aged 35 and over are entitled to the examination of their individual metabolic and cardiovascular situation (the so-called "Check-up 35+"). This way, a possible increased blood sugar level can be detected at an early stage and the necessary countermeasures initiated.

PERSONS AT RISK ARE:

- People over 45 years of age
- People with a BMI (Body Mass Index) > 27 kg/m^2
- People with high blood pressure > 140/90 mm Hg
- People with metabolic disorders
- People with coronary heart disease or circulatory problems of the brain
- People who already have a family history of diabetes
- People who have already had increased levels of blood glucose
- Women who have been pregnant (especially the women who were treated with insulin during pregnancy)
- Women whose babies weighed more than 4,000 g at birth.

THE FOLLOWING PREVENTIVE MEASURES ARE RECOMMENDED:

- Achievement and maintenance of a healthy weight.
- Exercise/physical activity, whereby at least 30 minutes of moderate physical activity (for example, cycling and running or fast walking) should take place several days a week.
- A healthy diet, by which three portions of vegetables and two portions of fruit daily are ideal, and the consumption of sugar as well as of convenience foods and fast food are reduced. Instead of fruit juices as a basic beverage, always drink mineral water (approx. 1.5 – 2 litres a day).
- Moderate consumption of alcohol (a maximum of one glass of dry white or red wine at the weekend or twice a week).
- Giving up smoking, since it also increases the risk of cardiovascular diseases.

5 How is diabetes detected?

SYMPTOMS

- *Type 1 diabetes* begins quite suddenly, mostly among children, adolescents and young adults. When the blood sugar level is extremely high (hyperglycaemia), the person affected loses consciousness because of an absolute lack of insulin in his blood.

- In the case of *Type 2 diabetes,* by contrast, the symptoms appear gradually, sometimes only after a period of years, and are not necessarily noticeably felt. At the early stage, one mostly does not notice any symptoms, so that on detection of diabetes, it is not infrequent for complications to already exist.

- *Gestational diabetes* generally gives rise to no direct symptoms, and is mostly detected by coincidence during prenatal care. However, it can cause problems during pregnancy and birth, and carries risks for mother and child in later life.

MEDICAL EXAMINATIONS

In many cases, diabetes can be diagnosed at an early stage by a simple blood test. In the context of early diagnosis preventive examinations (e.g. Check-up 35+), the glucose in a fasting blood plasma state should be examined. An unremarkable fasting glucose value does not automatically mean that diabetes can be excluded. If the measured values in blood plasma lie within a so-called threshold zone, then a so-called oral glucose tolerance test (OGTT) should be considered.

SYMPTOMS OF TYPE 1 DIABETES

- Tiredness, lack of drive
- Noticeably higher frequency of urination
- Stronger thirst than normal
- Dry skin and itchiness
- Impaired vision
- Impaired wound healing
- Significant (unintended) weight loss
- Sweet taste in mouth
- Infections of urinary tract

SYMPTOMS OF TYPE 2 DIABETES

- Listlessness
- Exceptional thirst
- Poor general condition
- Dizziness
- Susceptibility to infection
- Weight loss
- Itching skin

The symptoms are often mild. Type 2 diabetes frequently remains undetected for a long time, and only becomes noticeable when long-term damage appears.

Once a pregnancy has been diagnosed, the possibility of diabetes should be monitored and excluded for women at high risk (among others > 45 years old, BMI > 30kg/m^2, family history of diabetes, previous pregnancy diabetes). If increased levels of glucose can be excluded – at the first pre-natal check-up – an oral glucose tolerance test should be conducted on all women in the 24 – 28 week of pregnancy to diagnose gestational diabetes.

The result of the oral glucose tolerance test provides information about the ability of the body to degrade glucose.

HbA_{1c} (HAEMAGLOBIN A1C)

Blood glucose is docked onto haemaglobin, which is a red blood colouring agent. Identifying HbA_{1c} in the blood serves the long-term monitoring of diabetes and its treatment because it provides information about the blood glucose levels of the last eight to twelve weeks.

6 How is diabetes treated?

Every person affected can make a big contribution himself to the optimal implementation of the therapy. However, this is only possible if the patient receives proper instruction for himself and his diabetes, and is given practical training. Good prerequisites are created with a diet that keeps him healthy and sufficient physical exercise. Long-term changes to living habits are decisive. This is the only way that treatment can be a success, together with good medical advice and support.

BASIC THERAPY – IMPORTANT FOR EVERY TYPE OF DIABETES

Basic therapy is the keystone of treatment, regardless of the cause of diabetes, the duration of the disease, the age of the patient, the degree of possible complications and the medication strategy: instruction, diet, physical exercise, tobacco dehabituation, and stress management.

Physical exercise is one of the main pillars in the therapy of diabetes. Through regular exercise, many positive results can be reached (cf section 3 → exercise).

TREATMENT WITH HYPOGLYCAEMIC TABLETS (ORAL ANTIDIABETICS)

Drugs in tablet form for the reduction of blood sugar levels are also known as oral hypoglycaemics, and they function in different ways.

1. Metformin: among other things, it suppresses glucose produced by the liver and helps the body's cells to use insulin better (increase of insulin sensitivity).
2. Sulfonyl urea derivatives and glinides: stimulate the pancreas to release insulin into the blood, independently of the blood sugar level.
3. DPP-4 inhibitors: stimulate the pancreas to release insulin, dependening on the blood sugar level. This means that insulin is only released when the body needs it, e.g. after a meal.
4. Alpha-glucosidase inhibitors: slow down the rising level of blood sugar after meals by decelerating the digestion and absorption of carbohydrates in the intestines.
5. Pioglitazone: helps the body's cells to utilise insulin better (increase of insulin sensitivity).
6. SGLT2 inhibitors: increase the level of glucose excretion via the kidneys (excess sugar in blood is excreted via the kidneys when passing water).

Certain tablets like sulfonyl urea derivatives and glinides, and also insulin (cf following section) can increase the risk of very low levels of sugar / hypoglycaemia.

Due to the availability of tablets that reduce blood glucose levels, many diabetics are not aware of the importance of changing their previous way of life (unhealthy diet and lack of exercise). The attitude that tablets regulate blood glucose without one having to change one's lifestyle leads to the diabetes worsening long-term, and to a compulsory intake of insulin. Diabetes therapy through medication is not successful if a change in the patient's habits is not made.

TREATMENT WITH INSULIN

There are many different types of insulin:

1. Fast-acting insulin = analogue insulin: takes immediate effect after injection and lasts about 3 to 5 hours. This insulin can be injected immediately before and after meals.
2. Regular insulin (old insulin): takes effect after 15–60 minutes, which is why it should be injected where possible before meals. The effect lasts around 4–6 hours.
3. Delayed-action insulin: the effect is delayed, but lasts for 8–12 hours (in some cases 24 hours). Delayed action insulins should be injected 30–45 minutes before meals.
4. Pre-mixed insulin: mixture of regular and delayed-action insulin. Its composition is adapted to the needs of patients. The interval before meals is usually about 30 minutes .
5. Long-acting analogue insulin: takes effect after 3–4 hours, but then lasts for 20–30 hours.

The question of which type of therapy, which type of insulin and which form of administering the medication is decided on an individual basis by the doctor / the diabetologist, according to the patient's needs and the type of diabetes.

METABOLIC CONTROLS – SELF-CONTROL OF BLOOD SUGAR

Through regular self-checks by the patient and the corresponding documentation, the attending doctor can assess whether therapy goals are being met and, where necessary, can adapt or change the treatment. Moreover, the values provide information on the acute requirement for an insulin dose, taking eating and exercise behaviour into consideration.

There are special measuring devices with which one can quickly and simply measure one's blood glucose. When and how often blood glucose has to be controlled should be discussed with the attending doctor.

DIABETES HEALTH PASS (GESUNDHEITS-PASS DIABETES)

Diabetes sufferers are urgently advised to keep a personal Diabetes Health Pass, and to constantly have it on hand. This Pass contains all important information on the results of examinations (blood pressure, blood glucose level etc.), types of therapy, drugs and medicines, the well-being of the diabetic as well as pending appointments for tests and examinations.

With the aid of the Diabetes Health Pass the attending doctor can follow the course of the disease and therapy. In addition, helpers can react properly in critical situations (for example, in the case of a diabetic coma).

INSTRUCTION AND INVOLVING THE RELATIVES

Generally speaking, it is important for the diabetic to be informed about the impact of the disease, positive influencing factors as well as risk factors, handling diabetes in everyday life and therapeutic and medical care options.

Participating in appropriate training programmes is very important, and belongs to the successful carrying out of the therapy. This is where the people involved learn how to deal properly with their disease and where care has to be exercised. After such training, participants have better blood values, suffer more seldom from complications, are less often absent from work, and are affected more rarely, or much later, by long-term effects.

It is also important to involve the relatives of diabetics, or people they are close to in a supporting role in the treatment process (especially for Type 1 diabetes, at work or in school).

DISEASE MANAGEMENT PROGRAMMES

The name Disease Management Programmes (DMPs) means special treatment programmes for patients with chronic diseases. DMPs comprise continuous care and treatment, tailored to the needs of the individual patient, with the aim of a positive effect on the course of the disease as well as of avoidance or delaying of complications and secondary diseases. Moreover, the treatment is to become more structured as well as needs-based and efficient, by co-ordinating the cooperation between all doctors and facilities involved, and avoiding incorrect or double therapy.

If a chronically-ill patient wishes to enrol in one or more DMPs, he generally has to first contact a doctor who is participating in such a programme. An application will be made with him to the respective healthcare insurance fund, which decides on participation in a DMP after examination of all documents.

7 Which acute effects and complications can occur with diabetes?

LOW BLOOD SUGAR LEVEL (HYPOGLYCAEMIA)

Low blood sugar means that the body is lacking in glucose (a blood glucose level under 50 mg/dl). The symptoms are attacks of sweating, nervousness, extreme paleness, shivers, racing heart, sensation of hunger, vision disorders, impaired speech, headaches, dizziness, feeling of numbness and a tingling sensation. With severely low blood sugar, and in the absence of countermeasures, circulatory and respiratory problems as well as impaired consciousness, seizures and unconsciousness can occur which can even be fatal.

Low blood sugar is triggered by an excessive concentration of insulin and too few carbohydrates in the blood. The failure to treat hypoglycaemia can be life-threatening. Reasons for low blood sugar can be:

1. An overdose of insulin or certain tablets to reduce blood glucose.
2. Too long an interval between insulin injection and the meal.
3. Too low a quantity of food or sugar with the administered dose of insulin or tablets.
4. A dosage of insulin or tablets that does not take account of physical activity.
5. Alcohol consumption (as a result of which blood sugar initially rises, but then falls even more).

If the patient's metabolism is sound, and if blood sugar values are regularly checked, the risk of hypoglycaemia developing is greatly reduced. Basically, it is advisable for every diabetic to have some glucose on hand at all times, which, should low blood sugar threaten, can be eaten to enable the blood sugar level to rise rapidly. With sporting activities, too, one should monitor the increased glucose consumption and adjust the medication accordingly. Moreover, it is also recommended that diabetics have syringes with glucagon (an anti-insulin hormone) in their possession for emergencies. In the case of low blood sugar, it ensures that glucose is rapidly released from the liver into the bloodstream.

HIGH BLOOD SUGAR LEVEL (HYPERGLYCAEMIA)

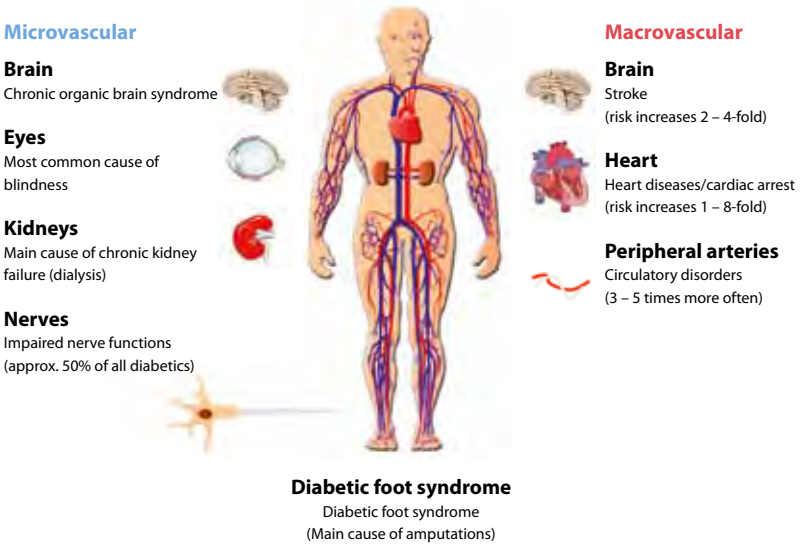
In contrast, hyperglycaemia is diagnosed when blood glucose values are above the normal level of 160 mg/dl. Older diabetes patients who additionally suffer from a severe infection are particularly at risk. In serious cases, high blood glucose can even lead to a so-called diabetic coma. With a blood glucose level that is too high (generally over 600 mg/dl), water is withdrawn from the body's cells and excreted with urine. The water loss is so high that it can no longer be compensated by simply drinking. One should therefore particularly watch out for signs such as increased urination or extreme weakness. Blood glucose should be immediately measured as soon as such symptoms appear, and appropriate measures taken (for example, administration of insulin).

8 How can one prevent long-term damage and secondary diseases caused by diabetes?

Diabetes can lead to grave, life-threatening diseases. In the development of long-term damage, genetic constellations, blood glucose levels, diet, impaired metabolism of fat, and using stimulants (especially alcohol and smoking) play a major role.

A person with diabetes is endangered predominantly by circulatory problems at the small (microvascular) and large (macrovascular) blood vessels and the nervous system. The complications develop over a period of many years and can be diagnosed and treated properly at every stage of this disease – the sooner the better.

POSSIBLE EFFECTS OF DIABETES MELLITUS



CARDIOVASCULAR DISEASES

Since an increased blood glucose level together with lipometabolic disorders and/or high blood pressure damage blood vessels, diabetics have a greater risk of contracting cardiovascular diseases (for example, heart attack or stroke). In this process, it is predominantly the blood vessels in the area of the brain, heart and legs that are affected. Type 2 diabetics are particularly prone to cardiovascular diseases, since they are often overweight, in comparison to Type 1 diabetics, and, in addition, suffer from high blood pressure and a lipometabolic disorder. Around 80 % of deaths among diabetics are triggered by advanced cardiovascular diseases.

NERVE DISEASES (NEUROPATHY)

Neuropathies give rise to numerous problems and health-related restrictions that manifest themselves, for example, in pain, tingling, numbness and a feeling of weakness in the hands and feet. Nerve damage most frequently occurs in the feet and lower leg, but the involuntary (vegetative nervous system) can also be affected (for example, digestive system, heart and vascular system, urinary bladder and sexual disorders such as potency problems). In addition, damage to the brain nerves can result, which can trigger eye and facial paralysis (palsy).

KIDNEY DAMAGE (NEPHROPATHY)

A long-term effect can be considerable impairment of the kidney function or even kidney failure, which can make dialysis or kidney transplantation necessary. These kinds of long-term damage can be fatal. For this reason, diabetics should have themselves examined regularly by a doctor. Through impairment of the kidneys, blood pressure is increased and other cardiovascular diseases fostered. In the case of smokers, kidney disease advances much more rapidly. Mainly affected are patients with Type 2 diabetes.

DAMAGE TO THE RETINA (RETINOPATHY)

Damage to blood vessels also affects the small blood vessels in the retina, which in the long term greatly impairs eyesight or can even lead to blindness. Regular checkups are therefore very important.

DIABETIC FOOT SYNDROME (DFS)/ DIABETIC FOOT

The cause of diabetic foot is often damage to the nerves and blood vessels, which can lead to impaired sensitivity and circulatory disorders. Badly-healing wounds arise, in particular, with improper care (for example, with corn parers or sharp nail scissors). At worst, single toes or the whole foot die off and have to be amputated. Sound diabetes foot care, where possible by a chiropodist, is indispensable.

TEETH

An abnormal blood glucose level causes a dysfunction in the wound healing process of diabetics. As a result, inflammation of the gums (periodontitis) can occur frequently. For this reason, diabetics should take care to maintain their oral hygiene and regularly undergo dental check-ups.

CHRONIC ORGANIC BRAIN SYNDROME

Diabetes can also trigger a chronic organic brain syndrome. The chronic organic brain syndrome is a psychological change in a person (e.g. difficulty in concentrating, irritability, impaired memory, problems with orientation), which can appear as a result of an organic disease e.g. diabetes.

PSYCHOLOGICAL AND SOCIAL PROBLEMS

People with diabetes are at significantly higher risk of having psychological and social problems. Among the typical psychological problems are e.g. depression or anxiety. Typical social problems that diabetics have are, among others, problems in relationships, and experiences of prejudice and discrimination. These can have an effect on continuing therapy and satisfaction with the therapy, as well as on the complications of diabetes.

HOW CAN LONG-TERM DAMAGE AND SECONDARY DISEASES BE PREVENTED?

Long-term damage, such as damage to the retina (retinopathy), kidney damage (nephropathy) and nerve disorders can be avoided or the risks considerably reduced by an optimally-adjusted blood sugar level (preferably at the standard value of 60–140 mg/dl or close to it). In the case of high blood pressure and a lipometabolic disorder, appropriate treatment should be commenced and advantage taken of early detection screening, in order that treatment can be provided in good time and deterioration avoided.

RECOMMENDED REGULAR CHECK-UPS

Every three to six months	• Blood pressure • Weight (abdominal girth for women up to 88 cm, for men up to 102 cm) • Analysis of patient's notes on self-measured blood glucose values • Urine test for protein in the urine (indication for kidney damage) • HbA1c value • Examination of the feet for circulatory disorders and nerve damage
Annually	• Electrocardiograph (ECG) • Examination of nerve function • Ophthalmological examination • Examination of blood vessels in the legs • Measurement of blood fat • Measurement of serum creatine level (to check the extent of kidney function)
Self-check	• Blood glucose (standard value: on an empty stomach not below 60 mg/dl, before meals: 80–100 mg/dl, after meals over 120 mg/dl) • Blood pressure • Test of urine for acetone and sugar • Weight

9 How does one live with diabetes?

Despite initial helplessness at the time of diagnosis, every diabetic has the possibility to positively influence the course of the disease. With the help of modern forms of treatment and therapy, most diabetics nowadays can lead a largely normal life without serious restrictions. Depending on the type of diabetes, adjustment of blood glucose and medication, as well as on the personal resources of the diabetic and his relatives, the demands and burdens of the disease can vary.

SPORTS

With diabetes, physical exercise contributes towards an enhanced effect of insulin. With Type 2 diabetes, in particular, insulin resistance can be countered through sporting activity. However, certain rules of behaviour have to be observed with sport, since with physical activity additional glucose is utilised. Since with Type 1 diabetes insulin is injected, its quantity must be adjusted to take account of physical activity in order to prevent a low blood glucose level (hypoglycemia). For this reason, people with diabetes should be well informed with regard to their sports activities.

In the case of children and adolescents with Type 1 diabetes, there are no special restrictions as far as school sports are concerned. With regard to low blood glucose, increased attention is required on the part of school staff merely in the case of sports such as swimming. In general, the teachers should be sufficiently informed about the diabetes disease of the child or adolescent, so that they can take the right decisions in the case of emergencies.

TRAVEL

Travel abroad should be well prepared. In particular, diabetics who are dependent on insulin must have a sufficient quantity of all required utensils (such as syringes, insulin preparations, blood glucose measuring device, glucose and glucagon injections) on hand when they travel. It is also important to have a "medical certificate concerning the carrying of necessary drugs and medicines" for possible customs controls. It is recommended that extensive medical advice be obtained before departure. A change in both climate and diet can have an unfavourable effect on the health of diabetics. Information has also to be obtained on recommended vaccinations, since possible diseases can cause severe metabolic deviations. For travel in other time zones, insulin administration has to be adjusted to local time. Arrangement of insurance cover for illness abroad is also advised.

DRIVING A CAR

Diabetics who have to inject insulin have a higher hazard potential in road traffic due to the threat of low blood glucose. The ability to drive is severely restricted by low blood glucose. When an insulin-dependent diabetic wishes to obtain a driving licence, he has to be certified fit to drive by a doctor specialising in traffic medicine. This certificate is issued when diabetics can prove that they regularly monitor their metabolism and have taken part in training programmes for diabetics. Moreover, diabetics must always be prepared for possible low blood glucose and have glucose on hand. Lorries and passenger-carrying vehicles, however, may not be driven by diabetics with compulsory insulin intake. The driving of a vehicle is also not permitted when a tendency towards severe hypoglycaemia exists.

WORKING LIFE

As a rule, diabetics can pursue their occupation or profession. At the same time, it is important to talk openly about the disease with supervisors and colleagues, in order to gain acceptance of the necessity of perhaps eating between meals and of a well-organized work load.

Occupations in which low blood glucose might represent a danger to other people – such as train drivers, pilots, bus drivers, police and soldiers – are not suitable for diabetics. Diabetics should also avoid occupations such as roofer and building cleaner, which entail an increased accident risk. Occupations involving shift work are problematic, due to a switch in the day/night rhythm, which can lead to destabilisation of the blood glucose level.

PSYCHOLOGICAL MAKE-UP

Diabetes is a chronic disease that constitutes both a challenge and sometimes mental stress for sufferers. Diabetics quite often suffer from depression. Whether the depression existed before diabetes was contracted, or was developed during the course of the disease, varies for each diabetic. It has been observed, however, that diabetics who suffer from depression concern themselves less with their therapy and do not always comply with their diet plan or take their medication regularly, thus worsening their diabetes. Depression should therefore receive specialist treatment.

BREASTFEEDING

Mothers with diabetes should not forgo breastfeeding their babies. Diabetes has no effect on the quality of breast milk. This form of infant nutrition has advantages not only for the child but also for the mother. Via breast milk, the child obtains all important nutrients, and the mother achieves a more beneficial glucose and lipid metabolism, which arises as a result of the low oestrogen level during breastfeeding. As a consequence, the diabetic mother has less need of insulin.

FASTING – FOR EXAMPLE DURING RAMADAM

Health experts are of the opinion that most diabetics should not fast during Ramadam. However, if they should decide to fast then they ought to be aware of several basic facts and special risks. Before Ramadam begins, they ought to speak about it to their doctor or diabetes consultant one or two months beforehand, and make an appointment in plenty of time.

10 What does one have to consider with diabetes in old age?

The majority of Type 2 diabetes sufferers are over the age of 65. Age-related health restrictions and having diabetes can considerably affect one's quality of life. Among other things, signs of ageing, such as impaired vision, mental deterioration, depression, incontinence and the risk of falling, can be worsened through secondary diseases associated with diabetes. Moreover, Type 2 diabetes in old age is often detected relatively late and mostly incidentally as a result of a routine blood test. The body's early warning signals, such as exceptional thirst and frequent urination, can be missing completely in the case of elderly people.

When diabetes is detected in old age, the main objects of therapy are not only the control of blood glucose level, but also the maintenance and enhancement of independence. Due to the risks of falling and low blood glucose, it often turns out to be difficult to achieve low blood glucose levels. Strict diets are also no longer advisable, and underweight should be avoided. Exercise should be encouraged as far as possible.

11 Which experts can offer further help?

Once diabetes has been diagnosed, a number of experts are available to advise and support the diabetic:

- Family doctor/GP: the first person to contact is the family doctor/GP. He is responsible for basic care of the diabetic and usually performs the initial diagnosis.
- Diabetologist: diabetes practices and clinics are specialised in the demands and needs of diabetics. Contact data on qualified diabetes specialists (diabetologists) are to found at www.diabetes-risiko.de, www.deutsche-diabetesgesellschaft.de, www.diabetes-deutschland.de and www.diabetesweb.de
- Diabetes advisors and assistants: they help diabetics to cope with diabetes in everyday life, and organize educational and training programmes for diabetics.
- Self-help groups: the self-help groups that exist in every region fulfill a supporting function. Contact data can be obtained from attending doctors, pharmacies, health insurance funds (Krankenkassen) or the local health authority.
- Clinics/Hospitals: should diabetes take a complex course, diabetics can turn to clinics and hospitals. For further information visit: www.diabetes-risiko.de or www.deutsche-diabetes-gesellschaft.de.
- Pharmacies: pharmacies can provide necessary information, drugs and medicines as well as aids such as measuring devices. The diabetic can also obtain aids and devices via special diabetes suppliers /mail-order companies.

12 Glossary – important terms

Adiposity (obesity)	Obesity, fatness; body fat is not normal in this case and is greatly increased; an important risk factor for Type 2 diabetics (cf metabolic syndrome)
Arteries	Blood vessels that lead the blood away from the heart; arteries; perpheral arteries are blood vessels in the limbs
Arteriosclerosis	Calcification of the arteries on the walls of the vessels
Autoimmune reaction	Body reacts to the body's own tissue, (in the case of Type 1 diabetes mellitus, to the insulin-producing beta cells in the pancreas) which is destroyed.
Blood glucose	The concentration of glucose sugar dissolved in blood – values in milligrams per decilitre (mg/dl) or millimol per litre (mmol/l)
Blood plasma	The fluid portion of the blood in which cells swim
Body Mass Index (BMI)	A means of judging body weight in relation to body size $\text{BMI} = \frac{\text{Body weight in kilograms}}{\text{Body height x body height in metres}}$ can be indicative of underweight, normal weight and overweight
Carbohydrate unit	Unit for calculation of the concentration of certain carbohydrates in food
Check-Up 35+	Preventive check-up for persons aged 35 and over who are insured with statutory health insurance funds (every 2 years)
Chronic	Long-lasting or developing slowly
Coma	A state of deep, often prolonged unconsciousness
Coronary heart disease	Disease of the coronary blood vessels that supply the heart with blood
Creatinine	Metabolic product that is excreted with urine
Depression	Mental illness characterized by mental exhaustion
Diabetes Health Pass (Gesundheits-Pass Diabetes)	Personal Diabetes Health Pass, in which all examinations and their results are clearly and precisely entered. The Pass supports attending doctors in the monitoring and adjustment of therapy and care.

Diabetes mellitus (diabetes)	Diabetes = flow (through), mellitus = honey-sweet (derived from Greek and Latin); sugar disease
Diabetic	A person who suffers from diabetes
Diabetic coma	Unconsciousness as a result of a lack, or an insufficient available quantity of insulin
Diabetic foot /diabetic foot syndrome (DFS)	The most frequent nerve damage suffered by diabetics in the feet or lower leg (often with ulcers and/or dead tissue)
Diabetologist	Specialist in the treatment of diabetes mellitus
Dialysis	The process of cleansing the blood in the case of kidney failure by passing it through a special machine
Dietary fibre	Mainly indigestible carbohydrates predominantly from vegetable foods
Disease management programmes (DMP)	Special care programmes for the chronically ill for optimization of their care and treatment
dl	Decilitre; unit of volume; 1 dl = 100 ml or 0.1 l
Electrocardiogram (ECG)	Recording of the electrical activities of the cardiac (heart) muscle
Fatty acids	Saturated fatty acids are mostly found in hard fats, and they are regarded as unhealthy because of their missing double bond. Unsaturated fats, on the other hand, which are mainly contained in oils, are regarded as healthy thanks to their double bond.
Gestational diabetes (diabetes during pregnancy)	A form of diabetes that occurs during pregnancy
Glucagon	Hormone that increases blood glucose level; antagonist of insulin
Glucose	Glucose sugar; energy for body cells; is measured to determine blood sugar level
Glucose sugar	Monosaccharide (glucose) and rapid supplier of energy. Glucose sugar is often available as a lozenge.
Haemoglobin HbA_{1c}	Red blood pigment to which glucose is bound
HbA_{1c} value	Provides the average concentration of blood sugar of the last eight to ten weeks; a kind of long-term, blood-sugar memory for the body
High blood pressure	Blood pressure above 140/90 mmHg
Hyperglycaemia (too much sugar)	Abnormally high level of sugar / blood glucose in the body
Hypoglycemia (too little sugar)	Abnormally low level of sugar / blood glucose in the body
Incontinence	Inability to hold something back (for example, urine when there is urine incontinence)

Insulin	Pancreatic hormone, with whose help glucose is absorbed by body cells as energy; a kind of key that admits glucose into body cells
Insulin resistance	Body cells react too little, or not at all, to insulin – they are insulin-resistant / insensitive to insulin
Insulin sensitivity	Sensitivity of body's cells to insulin
Involuntary, vegetative nervous system	Processes in the body that cannot be consciously influenced; for example, heart beat, metabolism and digestion
Ketone bodies	An intermediate product of fatty acid metabolism; over-acidifies the blood
Lipids	Fats (in the context of nutrition - in foods)
Macrovascular	Concerning the large blood vessels
Metabolic deviation	When the body can no longer counteract disorders of the metabolism, such as abnormally low or high level of glucose
Metabolic syndrome	Combination of four factors / diseases, caused by metabolism – with a high risk of damage to blood vessels: adiposity (obesity), high blood pressure, excessive blood fat levels and insulin resistance increase the danger of diabetes
Metabolism	Chemical processes in the body for the intake, transport and chemical transformation of substances, and for the release of metabolic substances into the body
mg/dl	Milligram per decilitre; unit of measurement of blood sugar level
Microvascular	Concerning the smallest blood vessels of the cardiovascular system
mmHg	Unit of pressure measurement in millimetres of mercury; unit of measurement of blood pressure
Nephropathy	Kidney diseases, ranging from impairment of the kidney function to kidney failure, and often necessitating dialysis and kidney transplantation; common secondary disease contracted by diabetics
Neuropathy	Collective term for varied diseases of the nervous system; when several nerves are affected, one speaks of polyneuropathy
Nutrient	Nutrients are ingested with food and metabolised
Oestrogen	Female sexual hormone
Oral glucose tolerance test (OGTT)	Test to verify flawed utilisation of glucose, as part of the diagnosis of diabetes mellitus
Oral hypoglycaemic drugs	Tablets for reduction of blood glucose levels; "sugar tablets"

Pancreas	An organ which produces insulin that it releases into the blood; about the size of a hand and lies behind the lower part of the stomach
Periodontitis	Bacterial inflammation of gums; untreated, it can lead to destruction of periodontium, the tissues that surround and support teeth
Physiotherapist	Healthcare professional specialising in the body's ability to move and function properly
Protein	Important component of all cells that should be borne in mind even with a balanced diet
Retina	The retina is the nerve layer that lines the back of the eye, and consists of many nerve cells which are responsible for transporting and processing incoming information.
Retinopathy	Diseases of the retina, ranging from restricted vision to blindness; common secondary disease that diabetics can contract
Risk factors	Factors, such as certain forms of behaviour, which increase the probability of contracting a disease
Serum creatinine	Serum is the watery component of blood. Creatinine is a waste product that arises with muscle metabolism, enters the circulatory system and is finally excreted with urine.
Stress	Pressure, tension – mental and physical reactions which arise through external provocation, resulting in physical and mental stress
Sweeteners	Sugar substitutes, calorie-free, mostly manufactured synthetically – such as saccharin; also available in natural form (stevia, among others)
Symptoms	Signs that indicate the presence of a disease – recognised by a doctor (diagnostic findings), or experienced by the patient (complaints)
Visceral belly fat	The fat deposited in the belly which envelops inner organs

13 Addresses – for further information

Organisations	
Deutsche Diabetes-Stiftung (DDS) Staffelseestraße 6 81477 München Tel.: 089 5795790 info@diabetesstiftung.de www.diabetesstiftung.de	The DDS is a neutral, independent and charitable organisation. Its main focus is on the provision of information on diabetes to the general public, its timely discovery, the treatment and ways of recognising risks in order to prevent diabetes.
Deutsche Diabetes Gesellschaft e. V. (DDG) Geschäftsstelle Berlin: Reinhardtstraße 31 10117 Berlin Tel.: 030 31169370 info@ddg.info www.deutsche-diabetesgesellschaft.de	The German Diabetes Association, in its role as a scientific society, is devoted to extensive investigation of diabetes and its treatment.
diabetesDE – Deutsche Diabetes-Hilfe Geschäftsstelle Reinhardtstraße 31 10117 Berlin Tel: 030 2016770 Fax: 030 20167720 info@diabetesde.org www.diabetesde.org	DiabetesDE brings together everyone with diabetes and professional groups such as doctors, diabetes advisors and researchers in order to champion the cause and work for better treatment and research to fight against diabetes. Charitable and independent, it represents the interests of people who are affected by this widespread disease.
Verband der Diabetes-Beratungs- und Schulungsberufe in Deutschland e.V. (VDBD) Am Eisenwald 16 66386 St. Ingbert Tel.: 06894 59083-13 Fax: 06894 59083-14 info@vdbd.de www.vdbd.de	The VDBD is the non-profit advocacy group of consulting and training professionals (especially diabetes educators and diabetes assistants DDG) for people with diabetes in Germany.
Arbeitsgemeinschaft für Pädiatrische Diabetologie e. V. (AGPD) Universitätsklinikum TübingenUniversitätsklinik für Kinder- und Jugendmedizin Hoppe-Seyler-Straße 1 72076 Tübingen Tel.: 07071 2983781 info@diabetes-kinder.de www.diabetes-kinder.de	The association is orientated towards the medical profession as well as children with diabetes and their families, with the intention of providing well-founded knowledge on diabetes. Seminars and training materials are also offered.

Self-help groups / Associations	
Deutscher Diabetiker Bund e.V. Käthe-Niederkirchner-Straße 16 10407 Berlin info@diabetikerbund.de www.diabetikerbund.de	As the biggest and oldest self-help organisation, the Deutsche Diabetiker Bund champions the interests of all diabetics. Among other things, it offers information about developments in the treatment and research of diabetes, and also help and advice for those affected.
Diabetikerbund Bayern e.V. (im DDB) Ludwigstraße 67 90402 Nürnberg Tel.: 0911 227715 Fax: 0911 2349876 info@diabetikerbund-bayern.de www.diabetikerbund-bayern.de	The Diabetikerbund Bayern e.V. is the biggest self-help organisation for people with diabetes in Bavaria. It is the contact point for patients and their families and represents the interests of all people with diabetes.
Deutscher Diabetiker Bund (DDB) Landesverband Niedersachsen e. V. Am Nottbohm 46 a 31141 Hildesheim Tel.: 05121 876173 Fax: 05121 876181 ddb-nds-as@t-online.de www.ddb-niedersachsen.de	The Lower Saxony State Association of the Deutscher Diabetiker Bund supports diabetics by means of regular training programmes and information sessions as well as with special services for parents, children and adolescents. The self-help organisation enables diabetics to exchange experiences and share them with fellow-sufferers.
Deutsche Diabetes-Hilfe – Menschen mit Diabetes e. V. Reinhardtstraße 31 10117 Berlin Tel.: 030 2016770 info@ddh-m.de www.menschen-mit-diabetes.de	One of the biggest lobbies for the issue of diabetes. Is committed to working for the rights of those affected, and solving their problems. Works closely with partner organisations diabetesDE, DDG and VDBD, pooling resources for the broadest possible competence.

Diabetes on the Internet	
www.diabetesstiftung.de	
www.deutsche-diabetesgesellschaft.de	
www.diabetesde.org	
www.vdbd.de	
www.diabetes-kinder.de	Information – see above at organisations
www.diabetes-deutschland.de	This website provides independent information from over 50 experts – with essential facts from science and research on the topic of diabetes mellitus and health.
www.diabetesinformationsdienst-muenchen.de	The Diabetes Information Service (Diabetesinformationsdienst) of the Helmholtz Zentrum München concentrates primarily on the following topics: forms of disease, therapy and life with diabetes, research and service.
www.diabetes-kids.de	This internet initiative is directed at the parents of children with diabetes. Created by the parents of a Type 1 child, it gives people seeking advice a broad range of information and useful tips.
www.diabsite.de	Besides general information on diabetes, the website offers lots of reports on experiences, interviews with experts and dietary tips, plus a compilation of addresses and links as guides.
www.diabetes-journal.de	Platform of the Fachzeitschriften-Verlag Kirchheim (publisher of special interest magazines), including magazines for diabetics: Diabetes Journal, Subkutan, and Diabetes Forum.
www.diabetes-ratgeber.net	The internet site offers impartial information surrounding the topic of diabetes mellitus (sugar disease), both Type 1 and Type 2 diabetes. By the publisher of the "Diabetes Ratgeber" magazine.

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At the website of the Deutsche Diabetes-Stiftung (DDS), further brochures on the topic of diabetes can be viewed and/or ordered: www.diabetesstiftung.de.

Diabetes

Inform . Prevent . Act

In this guide you receive important information all about the topic of diabetes and options of therapy and prevention. What's more, the guide provides you with a selection of addresses for more information, and a list of contact centres for patients and their relatives.

- Multilingual Guide
- What is diabetes and how does it evolve?
- Which long-term damage can be caused by diabetes?
- What does one have to observe in daily life if suffering from diabetes?
- What can one do to avoid contracting diabetes?

Perhaps these are questions that you're thinking about, or you know someone who's looking for answers to these questions…

The "Diabetes – Inform . Prevent . Act" guide can be downloaded at:
www.ethnomed.com and www.mimi.eu.

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