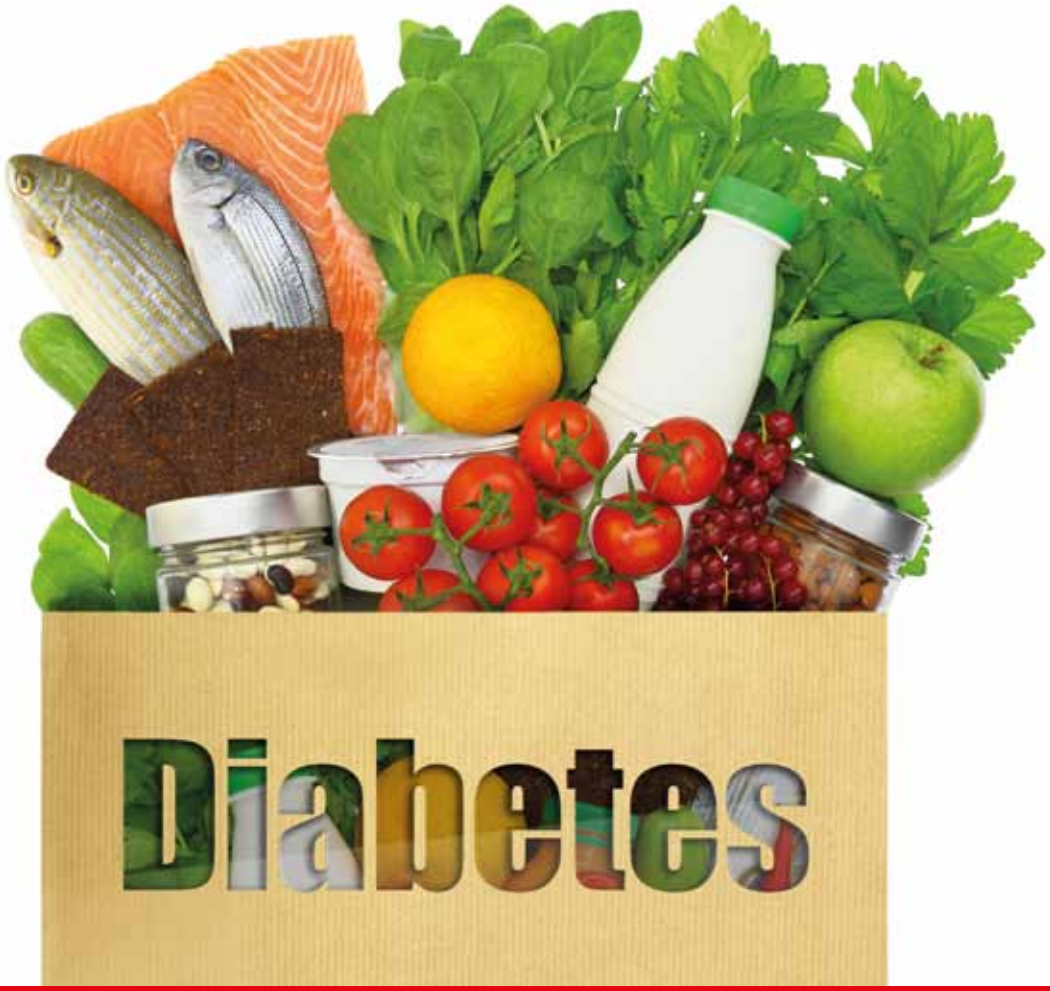
en, 2016



Living an active and health-conscious life **with diabetes**.

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Wien ist anders.

Important dietary guidelines for diabetics

Do NOT consume more than the following per day:

- ➔ 1 - 2 teaspoons of spreadable fat (margarine, butter ect.)
- ➔ 1 - 2 tablespoons of cooking fat (olive oil, maize oil, rapeseed oil etc.)
- ➔ 30 - 35 g of hidden fats (cold cuts, meat, cheese, sweets, snack foods etc.)

Prepare yourself low-fat meals.
You can use the following methods:

- ➔ Steaming
- ➔ Grilling – without additional fat
- ➔ In a clay pot
- ➔ On coated dishes / on tin foil

Start your day with breakfast.

Drink plenty of water

Photo: iStock / Monticello

English edition, 2016

Differences between type 1 and type 2 diabetes mellitus

Characteristics	Typ 1 diabetes	Typ 2 diabetes
Prevalence	Low, less than 10 % of all diabetes cases	High, 90 % of all diabetes cases. Approx. 600,000 people affected in Austria
Age when diagnosed	Most are younger than 40, but some are children	Most are older people, but increasingly detected in over-weight young people
Body weight	Usually normal	Usually overweight
Symptoms	Pronounced	Subtle
Family history	Low	High
Treatment with tablets/injections to lower blood glucose	Not suitable	Often suitable for many years
Treatment with insulin	Required immediately	Often required after several years of the disorder

What is diabetes mellitus?

Diabetes mellitus is a metabolic disorder that is accompanied by an elevated level of glucose in the blood. The hormone insulin, which is produced by certain cells (beta cells) of the pancreas, regulates the level of glucose in the blood. When this hormone is inadequately produced or its effect is impaired, the level of glucose in the blood increases.

Signs of an elevated level of glucose in the blood are excessive thirst, increased urination, tiredness, sudden weight loss, visual impairment and susceptibility to infections, e.g. in the genital region. Diagnosis is confirmed with a blood test.

There are two types of diabetes mellitus to be distinguished

Type 1 diabetes mellitus

Diabetes mellitus type 1 is a chronic metabolic disorder, which usually occurs in children or young adults.
The disorder develops when the cells of the pancreas producing insulin are destroyed by the immune system. Following diagnosis, it is immediately treated with insulin. This treatment must be continued for life.

Type 2 diabetes mellitus

With diabetes mellitus type 2, both **the effect of insulin** and the **delivery** of insulin from the pancreas are impaired.

Type 2 risk factors:
Being overweight, unhealthy diet (a lot of fat and sugar), little exercise, family history of type 2 diabetes mellitus (immediate relatives, inheritance possible), previous diabetes during pregnancy.

Photo: iStock/Victor69

Treatment goals for type 2 diabetes

according to the Austrian Association of Diabetes

HbA1c[1)]	generally under 7 %
Blood glucose before eating two hours after eating	 110 - 130 mg/dl under 180 mg/dl
Blood pressure systolic diastolic	 130 - 140 mmHg 80 - 90 mmHg
Triglycerides LDL cholesterol	under 150 mg/dl under 70 mg/dl
Waist circumference for women Waist circumference for men	under 90 cm under 100 cm
Exercise 3 - 7 times a week	30 - 60 minutes
not smoking	

1) The HbA1c value provides information on the state of blood glucose metabolism in the last 6 to 8 weeks. The red blood cells (haemoglobin) can attach themselves to sugar molecules. The more glucose there is in the bloodstream, the more sugar molecules attach themselves to haemoglobin. This means that the higher the HbA1c value is, the higher the average blood glucose level was.

What is diabetes during pregnancy?

Diabetes during pregnancy or gestational diabetes are the names for each glucose metabolism disorder that is first detected during pregnancy. The diagnosis of diabetes during pregnancy is confirmed with a glucose tolerance test (three blood glucose measurements – with an empty stomach, one and two hours after drinking a 75 g glucose solution). It is necessary that every woman between the 24th and 28th week of pregnancy has a glucose tolerance test in the course of Mother-and-Child Pass (Mutter-Kind-Pass) examinations (an earlier examination is recommended in the event of increased risk, e.g. diabetes during a previous pregnancy).

Why does diabetes occur during pregnancy in many women?

After the 20th week of pregnancy, fat and glucose metabolism temporarily changes in the mother's body to ensure supply to the child.
Diabetes during pregnancy can occur in women with an increased diabetes risk.
When left untreated, the risk of complications in the pregnancy and in the later life of the mother and child can increase.
High risk exists in cases of being overweight, excessive weight gain during pregnancy, high blood pressure, type 2 diabetes being common in the family and the mother being older as well as in the event of previous diabetes during pregnancy.

Dangers arising from UNTREATED diabetes during pregnancy

Common complications are:

Caesarean section, increased growth of the child and a high birth weight. Furthermore, the child may have low blood glucose levels and respiratory disorders after the birth. Such children often become overweight themselves later on and are more likely to have metabolic disorders.

What can I do for me and my child?

The doctor will devise a **treatment plan** with you.
Treatment always consists of diet and self-monitoring of blood glucose levels (immediately before and one hour after main meals) and, where necessary, insulin treatment. This will help you lower your blood glucose readings to the target range.

If you achieve these target readings together with the doctor treating you, your health and the health of your child will not be different from the health of woman who do not have diabetes during pregnancy.

Target readings for the blood glucose level during pregnancy:

- up to 95 mg/dl before eating and
- up to 140 mg/dl an hour after eating

Pregnancy in cases of known diabetes

Diabetics wishing to become pregnant should discuss the best time for a pregnancy with the doctor treating them. As part of the process, a thorough examination is important (eyes, kidneys, blood pressure) and a **good blood glucose level before conception.**
Glucose lowering medication should not be taken during pregnancy as they can harm the unborn child.
Therefore, a **switch to insulin** is usually necessary.


Photo: iStock/BHPhoton

Subsequent monitoring

Regular follow-up examinations are necessary after childbirth: the glucose tolerance test should be repeated two months after childbirth in cases of diabetes during pregnancy. With a healthy lifestyle (no nicotine, normal weight, exercise) you can halve your risk of developing diabetes following diabetes during pregnancy.

You should also ensure that your child has a healthy lifestyle (diet and exercise) and normal weight.

Elevated or low blood glucose?

The glucose level in the blood is measured as a concentration in milligrams of sugar per decilitre of blood (mg/dl). Normal blood glucose before eating (with an empty stomach) is 70 to 100 mg/dl.
Diabetes is present with blood glucose levels above 125 mg/dl with an empty stomach (measured on at least two different dates).
In people who do not take blood-glucose-lowering medication, **sharply decreased blood glucose levels under 60 mg/dl (hypoglycaemia)** are rare. In any case, please visit a doctor for further clarification and potential treatment (normally the general practitioner).

Excessive blood glucose readings
(Hyperglycaemia)

- Tiredness
- Reduced ability to function
- Excessive thirst
- Increased urination
- Visual impairment
- Poorly healing wounds
- Itching
- Unintentional weight loss
- Erectile dysfunction
- Fungal infections

Low blood glucose readings (Hypoglycaemia)

- Sweating
- Trembling
- Restlessness
- Ravenous appetite
- Palpitations
- Dizziness
- Loss of conciousness

Low blood glucose levels can be caused by certain medications, e.g. Sulfonil (urea or insulin). What should you do? 2 - 4 pieces of dextrose or a glass of fruit juice brings blood glucose back within the normal range.
An abnormal glucose level is not always the cause of the specified symptoms. There are many causes of these. An elevated level of blood glucose often causes no symptoms at all at the start of the disease. Therefore, your blood glucose level with an empty stomach should be taken at least once a year by your general practitioner.

What can you do?

- Healthy diet,
- Increase exercise,
- If necessary, self-monitoring of blood glucose and
- Lose weight if you are overweight

Healthy diet for diabetics

Diet has an impact on blood glucose, blood lipids, blood pressure and body weight. Choosing and preparing the right meals helps to improve health. Don't expect any miracles from crash diets! It is far more important to change your diet in the long term.

Fasting and diabetes

Should you want to fast for religious reasons (e.g. Ramadan), treatment with medication or insulin must imperatively be adjusted by your doctor. **Children and pregnant women with diabetes should not fast under any circumstances.**

Do NOT consume more than the following daily...

- 1 - 2 teaspoons of spreadable fat (margarine, butter)
- 1 - 2 tablespoons of cooking fat (plant oil such as rapeseed oil or olive oil)

What does our food consist of?

Our food consists of the three basic nutrients of protein, fat and carbohydrates. These nutrients provide our body with the necessary energy and supply us with vitamins and minerals. Carbohydrates in our diet enter our blood as sugar. Our body requires insulin so that it can use the sugar as energy.

Diabetes mellitus is present when this **process is impaired** because
- either too little insulin is produced or
- the insulin effect is diminished.

As a result, some of the sugar remains in the blood and the blood glucose level is elevated.

In principle, carbohydrates are contained in:
- Side dishes (pasta, rice, potatoes, bulgur, dumplings, spätzle etc.)
- Bread and confectionery
- Cereal products (flour, oats, muesli, semolina etc.)
- Fruit
- Liquid dairy products (milk, yoghurt, sour/buttermilk, whey)
- Pastries/sweets, sugar, honey
- Snacks (crisps)
- Sugary drinks (lemonade, fruit juice, syrup)

It comes down to quality and quantity.

As a result, the most important thing is that you **change your eating habits** because the **type and quantity of carbohydrates consumed** affects your blood glucose.
Avoid carbohydrate-rich foods that raise your blood glucose level very quickly, e.g. white bread, fruit yoghurt, dried fruits, pastries, lemonade/fruit juices. The higher the **amount of wholemeal** and the lower the amount of added sugar, the flatter your blood glucose response curve.
Pay attention to the **portion size** and split your food into **3 small main meals, and perhaps 2 to 3 snacks** per day. This way, the target blood glucose readings can be maintained more easily.
In diabetics with special **insulin treatment**, it may be necessary to calculate the carbohydrates in food using the **carbohydrate exchange**. If this is true in your case, you will be given more information on this by your doctor or dietician.

Be open to something new.

Give yourself time to change your eating habits. Make sure your goals are realistic. Do not give up if your efforts do not immediately show results.

Keep an eye on your weight

A diet high in fat facilitates weight gain. If you are overweight, you should **lose weight**; this will **improve** the effect of the **insulin**. Opt for lean meats and cold cuts and low-fat dairy products (cheese, yoghurt etc.). Eat fish once or twice a week. Watch out for the MSC logo which stands for environmentally-friendly and sustainable fishing. Coated frying pans or a clay pot and steaming and grilling food are suitable for preparing low-fat meals.

Do not forget to drink enough water

Drink at least 1.5 litres per day. Tap water, mineral water, soda and lime or unsweetened tea (cold or warm) are good thirst quenchers. Only enjoy light lemonades in moderation. Avoid sugary drinks such as fruit juice, lemonade or syrup as they quickly elevate the blood glucose level. Alcoholic drinks should only be consumed in small quantities along with a meal (risk of low blood glucose/hypoglycaemia).

Optimal

- Wholemeal bread, black bread
- Fresh vegetables (raw, steamed, grilled)
- Skimmed milk, 1 % fat natural yoghurt
- Cottage cheese with less than 10 % fat, fresh cheese with less than 10 % fat
- Cheese with up to 35 % FDM*
- Lean meat and cold cut varieties (maximum of 2 - 3 times a week)
- Natural fish or tinned fish in its own liquid
- Legumes (beans, lentils etc.)
- Water, unsweetened drinks

Occasional

- White bread
- Vegetable in oil or fried vegetables
- Whole milk above 3.6 % fat, natural yoghurt with more than 3.6 % fat, creme fraiche, cream, single cream
- Cottage cheese with more than 20 % fat, fresh cheese
- Cheese with up to 45 % FDM*
- Fatty meats and cold cuts (veined with fat, fat coating)
- Tinned fish in oil
- Pastries and sweets
- Snacks (e.g. crisps)

*Fat in dry matter

Diet for diabetes during pregnancy

At the start of treatment for diabetes during pregnancy, diet advice should always come from a dietician or doctor.
A varied diet is especially important to ensure that mother and child always receive a good supply of nutrients. In principle, the recommendations for good nutrition during pregnancy are valid in consideration of the diabetes.

Advice and training for diabetes

If you are diagnosed with diabetes mellitus by your doctor, extensive advice or training is essential. Advice and training imparts information regarding an optimal lifestyle (diet and exercise), the required treatment (treatment with medication) and self-monitoring of the blood glucose level. You can also find out how long-term damage to health due to increased blood glucose levels (long-term effects on eyes, kidneys, feet, nerves, the heart and vessels) can be prevented.
Suitable training is offered in outpatient clinics and hospitals (diabetes outpatient clinic) with general practitioners. Please ask your doctor where you can receive suitable advice or training. Advice and training are offered both as an in-patient and out-patient to individuals and groups.
The aim of training is for people who have developed diabetes to be able to change their lifestyle in the long term and thus positively impact their disorder.

Physical activity and training

Exercise pumps glucose from the blood into the muscles and reduces the blood glucose level – the more muscle mass, the greater the effect. As a result, your disorder is positively impacted by endurance and strength training.

Some exercise is better than none, but the health effects of physical activity with low intensity are significantly less than those with medium or high intensity. Daily activity such as climbing the stairs (instead of the escalator or lift), walking short distances by foot (instead or driving or taking public transport), going for walks and suchlike are a good start, but specific endurance and strength training should be strived for in any case.

Photo: iStock/Ratmaner

There are practically no contraindications for training therapy, your doctor will advise you on this accordingly. You will also benefit from "medication training", especially in the case that you have not been very physically active in recent years.

The Austrian Diabetes Society (ÖDG) recommends the following amount of exercise:

- Endurance training
  at medium intensity for at least 150 minutes per week or at high intensity*
  for at least 75 minutes per week.
- Strength training
  at least twice a week (8-12 repetitions) or strength endurance training (at least 15 repetitions per set), all major muscle groups, 3 sets per exercise.

This means, for example, that three times a week you either jog, take a gentle bike ride or go swimming for 50 minutes, or alternatively run, swim or ride a bike at high intensity for half an hour. You can maximise the benefits if you combine this with strength training twice a week (preferably in the gym).
Bear in mind that elevated blood glucose readings may impair blood circulation in the long run and therefore lead to a heart attack, stroke and many other serious illnesses. As a result, avoid other vascular risk factors by all means:
Stop smoking, and get treatment for high blood pressure and elevated blood lipids.

* High intensity means that you are not able to chat during training without panting.

Regular self-monitoring

Medications prescribed by the doctor are to be taken regularly. **Self-testing** and **recording (diabetes diary) of blood glucose and blood pressure** are important for your own metabolic assessment.

Photo: iStock/dm15050

Visit the doctor once a year

An **annual examination** with an ECG, eye test, vascular status, blood and urine findings and examination of the nerves helps to determine diabetic complications in good time so that they can be treated at an early stage. Even if you cannot determine any symptoms or complaints of a diabetic complication yourself, remind your doctor of your annual examination.


Photo: iStock/BernardaSv

This is how you monitor your blood glucose level

Materials

- Blood glucose measuring device
- Test strips
- Finger pricker
- Lancets
- Swabs

Procedure

- Wash your hands
- Clamp lancet
- Put the test strips in the blood glucose measuring device
- Prick the side of the fingertip
- Draw in drops of blood
- Blood glucose level appears after a few seconds
- Dispose of test strips and lancet
- Make a note of blood glucose level

Types of treatment for type 2 diabetes mellitus

Preparations to be swallowed (oral treatment)

Biguanides/Metformin (e.g. Glucophage®, Diabetex®, Metformin®)

- → Stop the elimination of sugar from the liver
- → Normally taken twice a day at meal times
- → Not suitable in cases of impaired kidney function
- → Potential side effects: reduced appetite, nausea, diarrhoea

Sulphonylureas (e.g. Amaryl® (glimepiride), Diamicron® (gliclazide))

- → Increase insulin secretion from the pancreas
- → Take one to three times a day before eating
- → Potential side effects: Low blood glucose (hypoglycaemia)

Gliptins (dipeptidyl peptidase-4 inhibitors) (e.g. Januvia®, Onglyza®, Galvus®, Trajenta®)

- → Increase insulin secretion from the pancreas on which blood glucose is dependent
- → Take once or twice a day, not dependent on meal times
- → Often prescribed in fixed combination with Metformin

Gliflozins (SGLT2 inhibitors) (e.g. Forxiga®, Jardiance®)

- → Promotes elimination of sugar via urination
- → Increased daytime urination, may increase urge to urinate and thirst
- → Initial slight weight loss due to increased calorie excretion
- → Occasional urogenital yeast infections may occur in women
- → Often prescribed in fixed combination with Metformin

Insulin sensitisers (Actos® (piogliatzone))

- → Increase cells' susceptibility to insulin and therefore improve the effect of insulin
- → May reduce the need for insulin in patients treated with insulin
- → Normally taken once a day, not dependent on diet
- → Potential side effects: water retention, weight gain

Absorption inhibitor (Glucobay® (acarbose))

- → Slow the absorption of carbohydrates by the intestines
- → Must be taken before each meal
- → Potential side effects: flatulence, diarrhoea

Medication injected under the skin (subcutaneously)

Insulin

- Long-acting insulin: Effective for: 12 to 36 hours
- Rapid-acting insulin: effective for 2 to 6 hours
- Mixed insulin: fixed mix of long-acting and rapid-acting insulin
- Insulin treatment also possible in combination with tablets
- Regular self-monitoring of blood glucose required
- Potential side effects: low blood glucose (risk of hypoglycaemia), weight gain

GLP-1 receptor antagonists (incretin mimetics) (e.g. Bydureon®, Victoza®, Lyxumia®, Trulicity®)

- To be injected once a day or once a week (with the exception of Lyxumia), not dependent on diet
- Normally combined with tablets and/or insulin
- Promotes the body's own insulin administration depending on the blood glucose level
- Usually reduces appetite and body weight
- Side effects: may cause nausea and vomiting predominantly at the start of treatment

Foot care

People with diabetes are at particular risk of circulatory and sensitivity disorders in the feet. These can lead to unnoticed foot injuries. For this reason, examine your feet daily, using a mirror if necessary.

- Watch out for discolouration, injuries and inflammations
- Pressure marks and calluses are signs of poorly fitting shoes that are usually too narrow
- Do not treat calluses on the feet with a metal file
- Never walk barefoot (risk of injury)
- After washing your feet/a foot bath (maximum water temperature of 37 °C), dry well between the toes and apply a special foot cream for diabetics
- Do not use powder or corn plasters
- Do not cut your nails too short or round off the edges too sharply
- Specially trained chiropodists can help in cases of existing foot problems (ingrown nails, toe and foot deformations, calluses, corn plasters etc.)
- Seek medical attention immediately in the event of open wounds

Contact addresses

Allgemeines Krankenhaus der Stadt Wien - Medizinischer Universitätscampus
Universitätsklinik für Innere Medizin III
Klinische Abteilung für Endokrinologie und Stoffwechsel
1090 Vienna, Währinger Gürtel 18-20

Diabetesambulanz
Tel.: +43 1 404 00-60950
Please call to arrange an appointment,
Monday to Friday 13–14:00

Krankenanstalt Rudolfstiftung
inklusive Standort
Semmelweis Frauenklinik
1. Medizinische Abteilung
1030 Vienna, Juchgasse 25

Diabetesambulanz
Tel.: +43 1 711 65-2112
Please call to arrange an appointment,
Monday to Friday 8–13:00

Spezialambulanz für Typ 1 Diabetiker
(Special outpatient clinic for type 1 diabetics)
Tel.: + 43 1 711 65-2112
Please call to arrange an appointment,
Tuesday and Thursday 14–19:00

Spezialambulanz für Gestations-diabetikerinnen (Special outpatient clinic for gestational diabetics)
Tel.: + 43 1 711 65-2112
Please call to arrange an appointment,
Thursday 8–13:00

Abteilung für Kinder- und Jugendheil-kunde - Endokrinologisch-Diabeto-logische Ambulanz (Department of Paediatrics and Adolescent Medicine and out-patient clinic for endocrinology and diabetes)
Tel.: +43 1 711 65-2611

Krankenhaus Hietzing mit Neurologischem Zentrum Rosenhügel
3. Medizinische Abteilung mit Stoffwechselerkrankung und Nephrologie, mit Ambulanz
1130 Vienna, Wolkersbergenstraße 1
Tel.: +43 1 801 10-2356

Sozialmedizinisches Zentrum Ost - Donauspital
3. Medizinische Ambulanz - Diabetesambulanz
1220 Vienna, Langobardenstraße 122
Tel.: +43 1 288 02-3150

Sozialmedizinisches Zentrum Süd - Kaiser-Franz-Josef-Spital mit Gottfried von Preyer'schem Kinderspital
1. Medizinische Abteilung - Diabetesambulanz
1100 Vienna, Kundratstraße 3
Tel.: +43 1 601 91-2120

Abteilung für Kinder- und Jugend-heilkunde mit Ambulanz für Diabetes mellitus für Kinder und Jugendliche
Tel.: +43 1 601 91-2850
Please call to arrange an appointment,
Thursday 10–12:00 and 13–15:00

Wilhelminenspital
5. Medizinische Abteilung - Diabetesambulanz
(Outpatient clinic for diabetics)
1160 Vienna, Montleartstraße 37
Tel.: +43 1 491 50-2510

Frauengesundheitszentrum FEM Süd
(im Kaiser-Franz-Josef-Spital)
1100 Vienna, Kundratstraße 3
Tel.: +43 1 601 91-5201

Consultation in: German, Turkish, Bosnian, Serbian, Croatian, Arabic, Somali and English
Tuesday to Thursday: 9–16:00

Aktive Diabetiker Austria
1050 Vienna, Mittersteig 4
Tel.: +43 1 587 68 94

Österreichische Diabetikervereinigung
1020 Vienna, Obere Augartenstraße 26
Tel.: +43 1 332 32 77

Photo: iStock/Andrey Popov

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