



GESTATIONAL DIABETES

GENERAL INFORMATION

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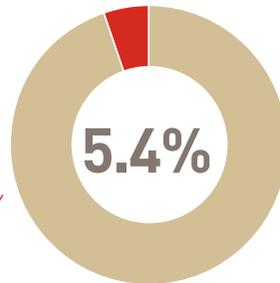
Lilly | DIABETES



Gestational diabetes is a glucose metabolism disorder that occurs or is noticed for the first time during pregnancy. The physiological hormone insulin is responsible for regulation of glucose metabolism. Hormonal changes during pregnancy result in pronounced increases in the amount of insulin required. In some women, either the body does not produce sufficient insulin or the effect on insulin on the body's cells is reduced. This means the glucose in the blood can no longer be properly utilized and the blood glucose level is too high.

WHO IS AT RISK?

Gestational diabetes is one of the most frequent secondary conditions that occur during pregnancy. This condition shows an upwards tendency in Germany: In 2016 it affected approx. 5.4% of pregnant women – around 40,500 women.



Women with the following preconditions are at increased risk:

- ✓ Overweight
- ✓ Type 2 diabetes in parents or siblings
- ✓ Older at birth (the risk increases with age)
- ✓ Gestational diabetes in a previous pregnancy
- ✓ Vitamin D deficiency

HOW IS GESTATIONAL DIABETES DIAGNOSED?

In most cases, gestational diabetes occurs between the 4th and 8th month of pregnancy. As a rule it does not cause much in the way of symptoms, that is the typical signs of diabetes such as pronounced thirst or frequent urination are lacking. For this reason, the law requires all pregnant women to be tested for glucose metabolism disorders between the 24th and 28th week of pregnancy. If your risk of developing gestational diabetes is raised, your doctor will test your blood at your first appointment to determine whether your glucose levels are already raised. Even if this is not the case, the regular test for raised blood glucose levels should be carried out in the 24th to 28th week. This ensures that a diabetes that develops later will not be missed.

Oral glucose tolerance test (oGTT)

The oGTT provides information on your body's ability to metabolize a defined amount of sugar (glucose) within a given time period. For the test you are asked to drink 75g of a glucose solution on an empty stomach. Blood samples are then taken at

certain intervals for glucose content determination. To ensure correct testing, do not eat or drink anything, or engage in strenuous exercise, beginning at 10 in the evening the day before the test.

Gestational diabetes is diagnosed if your blood glucose level exceeds one of the following values:

- ✓ Fasting level: ≥ 92 mg/dl (5.1 mmol/l)
- ✓ 1 hour after drinking the glucose solution: ≥ 180 mg/dl (10.0 mmol/l)
- ✓ 2 hours after drinking the glucose solution: ≥ 153 mg/dl (8.5 mmol/l)

If you are diagnosed with gestational diabetes your treatment must begin immediately.

WHAT DOES GESTATIONAL DIABETES MEAN FOR YOUR BABY?

Your baby is supplied with all the necessary nutrients through the umbilical cord. If your blood glucose level is too high, too much glucose also enters the foetal circulation. The baby has to produce more insulin to process the glucose in the blood. The excessive blood insulin and glucose levels make more nutrients available to the foetus than is normally the case. It therefore grows more quickly and shows above-average weight gain.

Hypoglycaemias

If your blood glucose level is too high at the end of the pregnancy, the body of your child will have become used to producing more insulin. This does not mean your baby is born with diabetes. The overproduction of insulin persists for several days after birth, even though your child no longer requires so much of this substance. Therefore, the blood glucose level of your baby may drop considerably during its first days of life and must be checked regularly.





WHAT ARE THE POTENTIAL RESULTS OF GESTATIONAL DIABETES FOR YOU?

Frequent infections

Women with gestational diabetes are at increased risk of contracting infections. The most frequent are bladder and vaginal inflammations, increasing the likelihood of premature birth. Tell your doctor right away about any symptoms you experience and get treatment. Gum inflammations are also more frequent.

Potential long-term effects

Over the longer term, gestational diabetes can significantly increase the risk of cardiovascular diseases – regardless of other risk factors. For this reason you should also talk to your physician about preventing cardiovascular and diabetes-related risks after the child is born.

High blood pressure (hypertension)

Generally speaking, pregnancy can trigger hypertension, even in women without diabetes. This condition is, however, more frequent in women with gestational diabetes. In some cases, a complication of pregnancy known as pre-eclampsia may arise in connection with this condition. In these cases, hypertension is accompanied by additional symptoms: protein is eliminated with the urine and water collects in tissues (oedemas). Headaches, flickering before the eyes and nausea can also occur. This situation poses risks to mother and child and requires specialist medical care.

WHAT SHOULD YOU DO IF YOU HAVE GESTATIONAL DIABETES?

If you have gestational diabetes it is advisable to consult a diabetologist in addition to your gynaecologist. The best thing is to contact a diabetes specialist practice or an obstetrical centre that specializes in treatment of pregnant women with diabetes. Your advisory team will check your blood glucose level, offer dietary advice and decide whether you require insulin treatment. To avoid complications for you and your child, the most important thing is to normalize your blood glucose levels. To this end, your advisory team will agree on blood glucose target levels with you. General recommendations in cases of gestational diabetes:

Target blood glucose levels:

✓ Morning, fasting	65–95 mg/dl	(3.6–5.3 mmol/l)
✓ 1 hour after a meal	≤ 140 mg/dl	(< 7.8 mmol/l)
✓ 2 hours after a meal	≤ 120 mg/dl	(< 6.7 mmol/l)

These target levels are intended as aids to orientation. It may be that other levels are better in your individual case. In any case, follow the instructions of your doctor.



MEASURE YOUR BLOOD GLUCOSE YOURSELF

To maintain your blood glucose levels within the target range, it is important for you to check them yourself at regular intervals. This can be done using modern self-measurement devices, simply, quickly and with low pain levels. Your blood glucose level changes in the course of the day. It is normally lower before meals and at maximum after meals. For this reason, you may have to measure your blood glucose 4 times a day or more:

- ✓ Once before breakfast
- ✓ 1 or 2 hours after the start of main meals
- ✓ Also as needed before lunch and supper

Make a careful record of the measured levels. Special journals are available for this purpose, either from your doctor or ordered at Lilly Diabetes: www.lilly-diabetes.de. Based on your measured levels, your doctor can determine whether the treatment is effective or requires adjustment.

EAT A HEALTHY DIET

To keep blood glucose under control, it is in some cases sufficient to keep to a reasonable diet. This must be done in consultation with the doctor in charge of your treatment. Individual consultation by a dietician or diabetes advisor is helpful.

Dietary tips:

- ✓ Preference should be given to complex carbohydrates, which are digested more gradually. These include e.g. whole grain bread, noodles or potatoes. Avoid short-chain carbohydrates, which the body processes very quickly. These include above all sweets and fruit.
- ✓ Distribute the carbohydrates over about three main meals and 2–3 smaller snacks between meals.
- ✓ Make sure you get sufficient dietary fibre in the form of grains, fruit and vegetables.
- ✓ Protein sources should make up about one-fifth of your diet, preferably low-fat dairy products and low-fat meats, processed meat products and fish.
- ✓ Fat should not constitute more than about one-third of your diet.



KEEP AN EYE ON WEIGHT GAIN

It is important to keep to the recommended weight gain figures during a pregnancy to better control your metabolism. How much weight you gain depends on your body weight before the pregnancy and should be discussed with your doctor.

Standard recommendations:

- ✓ If your weight was normal to start with, a weight gain of between 11 and 16 kg is OK.
 - ✓ If you were slightly overweight to start with, the weight gain should not exceed 11.5 kg.
 - ✓ If you were obese before the pregnancy, the weight gain should not exceed between 5 and 9 kg.
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AVOID KETOSIS

Your body cells normally burn glucose as their energy source. However, if your body is unable to process glucose properly due to the gestational diabetes, the cells turn to using fat as their energy source.

So-called ketones are produced when fats are broken down to be burnt as fuels. Excessive amounts of ketones in the blood (ketosis) can hyperacidify your blood with unfavourable effects on your baby.

More ketones are produced during pregnancy if you do not consume sufficient calories or carbohydrates. In some cases it may be necessary to test the ketone content of your urine yourself in the morning using special urine test strips.

Tips on how to avoid ketosis:

- ✓ Test your urine in the morning if you
 - ✓ Are overweight and have to maintain a low-calorie diet.
 - ✓ Are acutely ill, suffering from nausea with vomiting or are losing weight.
 - ✓ Keep to your diet plan:
 - ✓ Consume the recommended amounts of carbohydrates and calories.
 - ✓ If your doctor approves, eat a small late meal rich in carbohydrates, e. g. a sandwich. This will prevent ketone production during the night.
 - ✓ Do not miss a meal if at all possible.
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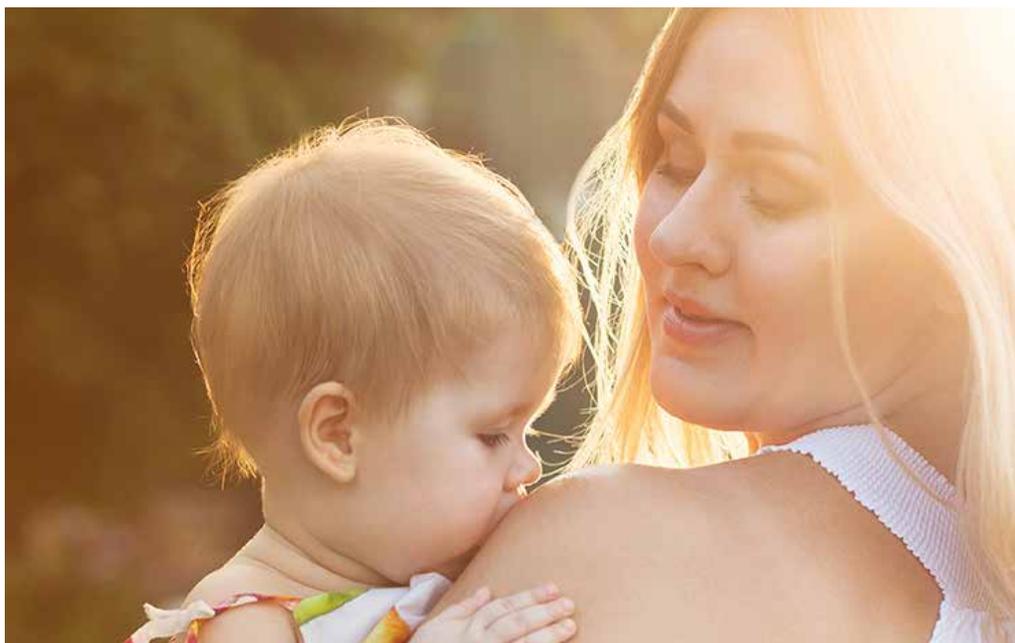
STAY ACTIVE

Physical exertion can contribute to lowering your blood glucose level. This will also increase your durability during pregnancy and birth. As a rule, sports you participated in prior to the pregnancy can be continued. It is also possible to start a light regimen of durability or strength training during a pregnancy. The important thing is to obtain advice from your gynaecologist beforehand. It makes sense to train at light to moderate intensity 3 times a week at regular intervals. The simplest method is brisk walking for at least 30 minutes or moderate muscle training, for example using a gymnastic exercise band.

WHEN IS INSULIN THERAPY NECESSARY?

If your blood glucose levels remain excessively high even after you have changed your diet and exercise more, treatment with insulin may be necessary. About 20–30% of women with gestational diabetes have to inject insulin. Insulin is the only diabetic drug that can be used during pregnancy and will not harm your child. Your diabetes advisory team will explain the following points to you in your training:

- ✓ Which types of insulin are right for you
- ✓ When to inject your insulin
- ✓ How much insulin you require. Your insulin requirement will change over the course of the pregnancy depending on your metabolic levels and the growth of your baby.
- ✓ How to administer insulin correctly



ARE SPECIAL EXAMINATIONS REQUIRED DURING PREGNANCY?

Ultrasound

In cases of gestational diabetes, ultrasound examinations are carried out more frequently to make sure your baby is developing in a healthy manner. During the last trimester, an ultrasound examination is performed every 2-3 weeks to monitor your baby's growth. It is particularly important to determine the size of the baby before birth so that your doctor can select the safest method.

Cardiotocography (CTG)

CTG is used to record the cardiac sounds of your child and your contractions. Towards the end of the pregnancy, starting with the 32nd week, the CTG checks are performed somewhat more frequently, twice a week, in women with insulin-dependent gestational diabetes than in normal pregnancies.

AND AFTER THE CHILD IS BORN?

Delivery in an obstetric clinic, with round-the-clock monitoring of newborns, is recommended in cases of gestational diabetes. These facilities are equipped to take specific cautions to prevent hypoglycaemia in your baby. Immediately after delivery and during the first 24 hours in the neonate ward, regular blood samples will be taken from your baby to check the blood glucose level. Your baby must be fed more frequently if its levels are too low. A hypoglycaemia can be prevented, for example, by giving it the first breastfed meal soon after birth. Therefore, your baby will normally be breastfed for the first time in the delivery room.



BREASTFEED YOUR BABY

Gestational diabetes does not impair your ability to breastfeed your baby. Human milk is the best source of nutrition for your baby. Breastfeeding alone for at least 4 months is a preventive measure against becoming overweight or diabetic as an adult.

PREVENTIVE CARE

In most cases, the mother's diabetes will recede after the pregnancy. Nonetheless, an increased risk of diabetes remains. You will therefore continue to require special preventive healthcare.

Insulin injection treatments during pregnancy are normally stopped after delivery. Your blood glucose level will be checked carefully for control purposes on the 2nd day after delivery.

All women who had gestational diabetes should undergo an additional oral glucose tolerance test after 6–12 weeks to make sure their glucose metabolism has returned to normal. Over half of women with gestational diabetes develop diabetes requiring treatment in the course of the following years. For this reason, the test should be repeated every 2–3 years, even if the results are normal. If you continue living a healthy life this is an effective preventive measure to counter the risk of developing diabetes later on:

- ✓ Eat a healthy, balanced diet suited to your needs
- ✓ Make sure you get plenty of exercise
- ✓ Normalize / maintain your body weight
- ✓ Do not smoke

Remember to have your blood glucose level checked before a further pregnancy.

Diabetes in pregnancy:

Der Ratgeber für Schwangere mit Gestationsdiabetes (A Guide for Pregnant Women with Gestational Diabetes)

Heike Schuh, 120 Seiten, Kirchheimverlag Mainz, 2007

Heike Schuh is a diabetes advisor (DDG). She has collected in this book all of the important information and recommendations on gestational diabetes you will need based on her many years of experience in a diabetological speciality practice:

- ✓ Causes and risk of gestational diabetes
- ✓ Therapeutic care during pregnancy
- ✓ Dietary recommendations for you and your baby in the first year of life
- ✓ All-inclusive overview of insulin therapy in gestational diabetes

Reference

Deutschen Diabetes-Gesellschaft (DDG) und Deutsche Gesellschaft für Gynäkologie und Geburtshilfe (DGGG) (Hg.), S3-Leitlinie Gestationsdiabetes mellitus (GDM), Diagnostik, Therapie und Nachsorge, 2nd Edition 2018

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BOOK TIP