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# Gestational diabetes

The purpose of this information leaflet is to provide information about gestational diabetes (GD).

GD is a disorder of carbohydrate metabolism of varying severity that develops or is diagnosed during pregnancy. During pregnancy, the placenta produces hormones that cause insulin resistance, which leads to increased blood glucose levels. The condition has no visible symptoms and the woman does not feel her blood glucose levels.

The prevalence of GD is increasing every year worldwide and is directly related to the rising incidence of type 2 diabetes. Depending on the diagnostic criteria, global prevalence ranges from 4% to 42%, according to the literature. In Estonia, 17% of pregnant women were diagnosed with GD in 2023. The incidence of GD has increased by more than 10% in six years.

**Who is at risk of gestational diabetes?**

- You belong to the risk group if you were overweight (body mass index (BMI) before pregnancy ≥ 25 kg/m²). BMI shows the ratio between weight and height. To calculate it, divide your weight in kilograms by the square of your height in metres: BMI = weight (kg) ÷ height (m)²
- If you had GD during a previous pregnancy, the probability of its recurrence is approximately 50%. You are also at risk if you have been diagnosed with impaired glucose tolerance earlier in your life.
- If any of your close relatives (mother, father, sister, brother) have diabetes, you are also at risk.
- If you have previously given birth to a baby weighing more than 4500 g, you are at risk of developing GD during pregnancy.
- Pregnant women with polycystic ovary syndrome are also at risk.
- Pregnant women of African, Caribbean or South Asian origin are more likely to develop GD during pregnancy.

**What are the risks for the mother and the baby?**

The diagnosis of GD is actively pursued because it carries the following risks for the mother and the baby:

- risk of miscarriage due to high blood glucose levels in early pregnancy;
- preterm birth;
- preeclampsia;
- intrauterine foetal death (the risk is highest during the last 4-8 weeks of pregnancy);
- high birth weight (over 4500 g);
- increased likelihood of labour induction before 40 weeks or instrumental delivery (vacuum extraction, caesarean section);
- risk of birth trauma if the baby is large, making it difficult for them to move through the birth canal;
- neonatal adaptation disorders (hypoglycaemia, hyperbilirubinaemia), which will require treatment;
- later risk of being overweight and predisposition to carbohydrate metabolism disorders (overweight, obesity, type 2 diabetes) of the child.

These risks can be reduced with proper diet, physical activity and stable, normal blood glucose levels.

**When will I give birth and what will happen after giving birth?**

Your delivery plan (timing, method of delivery) will be decided during a visit to your gynaecologist in the third trimester. During the visit, the expected birth weight and the course of your pregnancy will be assessed.

In the immediate postpartum period, GD managed with diet does not require special monitoring. Medication is usually discontinued after delivery. To rule out established type 2 diabetes, your fasting blood glucose will be measured 24-36 hours after delivery. Having GD leaves you with a lifelong risk of developing type 1 or type 2 diabetes, therefore it is important to maintain a healthy diet and an active lifestyle. Approximately 40% of patients with GD develop type 2 diabetes within 15 years; among those with a BMI ≥ 30 kg/m², the risk increases to 50%. Pregnant women who develop GD in the first half of pregnancy may have previously undiagnosed diabetes. It is important to visit a midwife or family doctor 3 months after giving birth to check your blood glucose levels and assess your risk of developing diabetes. From then on, it is recommended to check your blood glucose levels once a year with your family doctor.

It may be necessary to monitor your baby's blood glucose levels for a few days after birth. The best person to help your child adjust is you. Breastfeeding and breast milk are particularly important for mothers with GD and their newborns. Breastfeeding helps stabilise the mother’s carbohydrate metabolism and reduces the risk of developing type 2 diabetes later. Breast milk is the most effective way to stabilise a newborn's blood glucose levels, reducing the risk of hypoglycaemia (low blood glucose) in the first hours and days of life. Early skin-to-skin contact and early initiation of breastfeeding support milk production and effective sucking. Newborns of mothers with GD should be breastfed as soon as possible after birth and as often as possible (every 2-3 hours or more often), supporting their active sucking.

If a newborn needs complementary feeding, we always prefer expressed breast milk and use feeding methods (e.g. spoon or cup) that do not introduce different sucking patterns from breastfeeding. If you wish, you can start practicing manual expression of breast milk from 36 weeks of pregnancy. Ask your midwife or contact a lactation consultant for information about collecting and storing breast milk.

**How is the diagnosis made?**

Pregnant women in a high-risk group are tested in the first trimester of pregnancy. Women at moderate risk are tested at 24-28 weeks of pregnancy. The test is then also repeated for women whose first-trimester test was normal. Your midwife or gynaecologist will refer you to the test and advise you beforehand.

In addition to the risks described above, pregnant women who develop signs of possible GD will be tested. Warning signs include the presence of glucose in urine, significant weight gain, large foetus on ultrasound, excess amniotic fluid or a fasting blood glucose level of 5.1 mmol/L or more.

GD cannot be diagnosed based on a single fasting or post-meal blood glucose measurement, the presence of glucose in urine or the determination of HbA1c from venous blood. A glucose tolerance test (GTT) is required to clarify the diagnosis. GTT is not performed in pregnant women with known established diabetes, who are on metformin or who have undergone gastric bypass surgery (bypass or mini-bypass) due to the risk of dumping syndrome.

The diagnosis of gestational diabetes in pregnant women who have undergone gastric bypass surgery is assessed using home glucose monitoring over one week at 13-16 weeks. If the results are normal, the measurement days should be repeated at 24-28 weeks. GD can be diagnosed if the fasting glucose is >5.0 mmol/L on at least three occasions or >7.4 mmol/L one hour or 60 minutes after eating or >7.0 mmol/L 1.5 hours or 90 minutes after eating or >6.7 mmol/L two hours or 120 minutes after eating.

**How is the glucose tolerance test performed?**

Schedule your meal the night before the test so that you will not have eaten or drunk anything other than water for at least 8 hours (up to 12 hours) before the GTT. Purchase a ready-made glucose solution from a pharmacy before coming to the test. They are available in different flavours. The blood collection rooms of East Tallinn Central Hospital are open from 7:30 in the morning; it is best to come as early as possible. At the laboratory, your fasting blood glucose will be determined from your venous blood, after which you will need to drink 75 g of glucose solution. Your blood glucose will be measured 1 hour and 2 hours after drinking the glucose solution. Do not eat or drink during the test. It’s best to stay calmly seated. The test results are OK if:

- fasting blood glucose is below 5.1 mmol/L;
- 1 hour after drinking the glucose solution, the blood glucose level is below 10.0 mmol/L;
- 2 hours after drinking the glucose solution, the blood glucose level is below 8.5 mmol/L.

GD is diagnosed if at least one of the values is above the norm. You can learn your GTT result from the midwife/gynaecologist monitoring your pregnancy or from the health portal terviseportaal.ee. If you are diagnosed with GD, you will be referred for gestational diabetes counselling, where a midwife specialising in diabetes will explain the principles of nutrition therapy and give you a glucometer (a device for measuring blood glucose levels) to take home.

**What is the treatment for gestational diabetes?**

The first line of treatment for GD is lifestyle modification, including the introduction of healthy eating habits. The goal of nutrition therapy is to achieve normal blood glucose levels, normal weight gain during pregnancy and the well-being of the foetus. Consistency and self-control are prerequisites for successful nutrition therapy. It is useful to keep a food diary, so you can analyse your food choices and eating habits.

Pregnant women with GD must follow a healthy, varied and nutritious diet. Selecting food is based on four principles: balance, moderation, compliance with needs and variety. The optimal daily amount of carbohydrates is approximately half of the daily calories; proteins should provide one fifth and fats one third of the necessary calories. Pregnancy is not a time to under-eat: your food must provide you and your foetus with the energy you need to survive and supply your body with the necessary nutrients. The need for calories increases during pregnancy; but if physical activity decreases, there is no need to eat more. Keep weight gain during pregnancy under control. A varied and nutritious diet ensures an adequate intake of nutrients and provides the body with the vitamins and minerals it needs.

Divide meals into three main meals and a couple of snacks; avoid excessive portion sizes.

For hydration, plain water without additives is recommended– 2-3 glasses per day; drink according to your thirst. Be cautious with juices, carbonated soft drinks and flavoured waters – these can add calories and carbohydrates to your diet without you noticing. Review your coffee and tea drinking habits. If necessary/possible, reduce or eliminate added sweeteners (sugar, honey).

**Physical activity recommendations**

Pregnant women who have not previously been physically active are advised to engage in moderate physical activity suitable during pregnancy, such as a moderately brisk walk for at least 30 minutes. Water aerobics, swimming or prenatal exercise classes are also good options. Pregnant women who exercised regularly before pregnancy can continue their usual routine. During pregnancy, activities with a high risk of falling or impact should be avoided, as well as contact sports and diving.

**Home blood glucose monitoring**

During the consultation, you will be given a glucometer and taught how to measure your blood glucose levels. A digital medical device card will be issued to you, which allows you to purchase 300 glucometer test strips and 300 lancets from the pharmacy at a discounted price per calendar half-year if you are on nutrition therapy. In the case of insulin therapy, the prescribed quantity of test strips and lancets is increased.

To enable both you and healthcare professionals to assess and monitor the course of your GD, it is important to keep a food diary and record your blood glucose measurements. Do this in a way that suits you: write it in a diary, create a text document or spreadsheet or use a glucometer app.

**Blood glucose monitoring day**

This refers to a day when you are measuring your blood glucose levels throughout the entire day. The day always begins with measuring fasting blood glucose on an empty stomach. Then measure your blood glucose 1.5 hours after each main meal and 1.5 hours after each snack and record the results.

As a result of GD treatment, your blood glucose levels should be:

- below 5.3 mmol/L on an empty stomach;
- below 7.0 mmol/L 1.5 hours or 90 minutes after a meal.

If it is not possible to measure blood glucose 1.5 hours after eating, the target blood glucose levels at other times are:

- below 7.8 mmol/L 1 hour (60 minutes) after a meal;
- below 6.7 mmol/L 2 hours (120) minutes after a meal.

Sometimes, normal blood glucose levels are not achieved despite following dietary recommendations. In such cases, medication is added to the treatment plan, most commonly insulin administered by injection. The appropriate treatment regimen will be determined by an endocrinologist and a diabetes nurse will teach you how to administer the injections.

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