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# Gestational diabetes

The purpose of this leaflet is to provide information on gestational diabetes mellitus (GDM).

The incidence of GDM is increasing every year worldwide and is directly linked to the increase in the incidence of type II diabetes. In Estonia, 6.8% of pregnant women were diagnosed with GDM in 2017.

GDM is a carbohydrate metabolism disorder of varying severity that develops or is diagnosed during pregnancy. During pregnancy, the placenta produces hormones which cause insulin resistance, leading to elevated blood sugar levels. Unfortunately, the disease generally has no obvious symptoms and women do not notice changes in blood sugar levels.

Therefore, a glucose tolerance test (GTT) is required to confirm the diagnosis. Pregnant women at higher risk for gestational diabetes are tested in the first trimester of pregnancy. Pregnant women who develop GDM before 20 weeks of gestation may have pregestational diabetes mellitus, which existed before conception but was first detected during pregnancy. Women at moderate risk are tested between 24 and 28 weeks of gestation. The test is repeated in women at risk if the initial results are normal. Your midwife or gynaecologist will refer you for a GTT and advise you before the test.

In addition to the risks described above, pregnant women who develop signs of possible GDM will be tested. Warning signs include glucose in urine, excessive weight gain, foetal macrosomia at ultrasound, excess amniotic fluid and a fasting blood glucose of 5.1 mmol/L or more.

## **Who is at risk for GDM?**

High-risk factors for developing GDM include being overweight and having a body mass index (BMI)  $\geq 30$  kg/m<sup>2</sup> before pregnancy. BMI defines the ratio between height and weight. To calculate your BMI, divide your weight in kilograms by the square of your height:  $\text{BMI} = \text{body weight (kg)} \div \text{height (m}^2\text{)}$ .

If you had GDM during your previous pregnancy, the risk of recurrence of GDM in a subsequent pregnancy is up to 50%. You are also at risk if you have a history of glucose intolerance. 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 newborn weighing more than 4500 g, you are at risk of developing GDM during pregnancy. Pregnant women with a history of foetal death or polycystic ovary syndrome are also at high risk.

Pregnant women with a BMI of 25-30 kg/m<sup>2</sup> before pregnancy are also at risk for GDM.

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

You should not eat or drink from 20:00 the evening before the test. During the 12 hours before having a blood test, you may drink water only. Before coming in for the test, buy a ready-to-use

glucose solution from the pharmacy, where it is available in several flavours. In the morning (at 08:00), your fasting blood glucose level will be determined from venous blood. You will then be asked to drink 75 g of glucose solution. One and two hours after drinking the glucose solution, your blood glucose levels will be determined from venous blood. Do not eat or drink during the test. It is recommended that you sit quietly during the entire test.

The test results are normal if:

- your fasting blood glucose level is  $\leq 5.0$  mmol/L;
- one hour after drinking the glucose solution, your blood glucose level is  $\leq 9.9$  mmol/L;
- two hours after drinking the glucose solution, your blood glucose level is  $\leq 8.4$  mmol/L.

GDM is diagnosed when at least one of the results is higher than normal. You can find out the result of the test from your midwife/gynaecologist or on our patient portal iPatsient.

If you are diagnosed with GDM, you will be referred for group counselling, where a midwife specialised in diabetes will give you dietary advice and provide you with a glucose meter (a device that measures your blood glucose levels).

### **GDM resolves after delivery**

Three months after giving birth, see your GP and tell them that you had GDM during pregnancy. From now on, it is recommended that you have your blood glucose checked by your GP once a year.

A previous diagnosis of GDM carries a lifetime risk of progression to diabetes, which is why it is important to maintain a healthy diet and active lifestyle. 40% of patients with GDM develop type 2 diabetes within ten years. In patients with a BMI  $\geq 30$  kg/m<sup>2</sup>, the incidence increases to 50%.

### **What are the risks to the mother and child?**

Pregnant women are routinely screened for GDM because of the following risks to the mother and child:

- the risk of miscarriage due to high blood glucose levels in early pregnancy
- excess amniotic fluid and preterm labour
- preeclampsia (see [www.itk.ee](http://www.itk.ee)- Patient - Patient information - Illnesses - Preeclampsia and pregnancy)
- intrauterine foetal death (highest risk during the last 4-8 weeks of pregnancy)
- foetal macrosomia (birth weight  $\geq 4500$  g) and the need to induce labour before the 40th week or intervene instrumentally during the delivery (vacuum extraction, caesarean section)
- the risk of birth trauma in large newborns due to difficulty passing through the birth canal
- poor neonatal adaptation and hyperinsulinaemia requiring treatment
- later childhood obesity and predisposition to carbohydrate metabolism disorders (obesity, type II diabetes)

However, these risks can be avoided by following a healthy diet and keeping your blood glucose levels within a normal range.

### **How is GDM treated?**

Pregnant women with GDM are treated with medical nutrition therapy. The goal of medical nutrition therapy is to achieve normal blood glucose levels and normal weight gain during pregnancy and to ensure foetal wellbeing. Consistency and self-control are prerequisites for effective nutrition therapy. Keeping a food diary will help highlight your food choices and eating habits.

Pregnant women with GDM must eat healthy, diverse and complete foods. Selecting foodstuffs is based on four principles: balance, moderation, meeting needs and diversity. Carbohydrates must account for around 50%, protein for around 20% and fats for around 30% of your daily calories.

Pregnancy is not the time to starve yourself. Food must be sufficient to guarantee the energy and nutrients necessary for you and the foetus. During pregnancy, the need for calories increases; however, if you are less active, there is no need to increase the quantity of food consumed. Keep your weight gain during pregnancy under control. Diverse and complete foods ensure a sufficient amount of nutrients and supply the body with the necessary vitamins and minerals.

Divide your meals into three main courses and a couple of snacks. Avoid overeating.

Water is the best solution to thirst. Drink 2-3 glasses a day or when you are thirsty. Be careful with juices, carbonated soft drinks and sweetened water (near water) – they have hidden calories and carbohydrates. Cut back on sweeteners (sugar, honey) when having coffee or tea.

### **Exercise recommendations**

Pregnant women who have not been physically active before are advised to engage in moderate physical activity, such as walking for at least 30 minutes. Water gymnastics, swimming or gymnastics classes for pregnant women are also good choices. Pregnant women who were exercising regularly before pregnancy may continue their regular exercise regimen. Activities with a high risk of falling or trauma, contact sports and scuba diving should be avoided during pregnancy.

### **Home blood glucose monitoring**

At the counselling session, you will be given a glucose meter and taught how to measure your blood glucose levels. You will be issued a digital medical device card, which allows you to buy 300 test strips and 300 lancets per calendar year from the pharmacy at a discount if you have been prescribed medical nutrition therapy. In the case of insulin therapy, the number of test strips and lancets prescribed is increased.

### **Profile day**

A profile day is the day on which you monitor your blood glucose levels throughout the day. It starts by measuring your fasting blood glucose level. Continue checking your blood glucose levels 1.5 hours after each meal and record the results.

As a result of medical nutrition therapy, your blood glucose levels should be as follows:

- fasting: below 5.3 mmol/L
- 1.5 hours after a meal: below 7 mmol/L

If you are not able to check your blood glucose level 1.5 hours after a meal, the blood glucose levels at other times should be as follows:

- 1 hour after a meal: below 7.8 mmol/L
- 2 hours after a meal: below 6.7 mmol/L

Sometimes, normal blood glucose levels are not achieved despite adherence to diet. In this case, medications (usually injectable insulin) are added to the treatment regimen. An endocrinologist will prescribe the necessary treatment regimen and a diabetes nurse will teach you how to inject insulin.

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