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Gestational diabetes

What is gestational diabetes?

Gestational diabetes (GD) is a glucose (sugar) intolerance that first appears during pregnancy. GD creates a sugar elevation of varying degrees of severity in the mother's blood.

During pregnancy the body goes through a change in its metabolism that affects the way sugar is processed. In early pregnancy, blood sugar is more easily absorbed by the cells in the body. This prevents that too much glucose reaches the baby, which could be dangerous for its development. Around the middle of the pregnancy, the blood sugar will tend to be less absorbed by the cells, which means there is more sugar in the blood available for the baby to grow – this process is called "glucose intolerance". If there is too much sugar circulating in the blood this can become a problem for the baby. When the woman has GD her body may have more difficulty regulating its blood sugar by itself which can lead to "hyperglycemia" (elevated blood sugar).

Why should we screen for gestational diabetes?

The symptoms generated by GD may be very similar to some of the symptoms women may experience during pregnancy which makes them difficult to associate to GD.

An unproperly managed GD can have consequences on the mother and her baby. In 2017, the *Institut National de Santé Publique du Québec* (INSPQ) published a report on GD discussing the various risk factors for the mother as well as for the baby. The primary risks associated to GD are:

- Preeclampsia
- Cesarian section
- Shoulder dystocia
- Prematurity
- Macrosomia (generally defined as a baby weighing > 4000 grams)

Other risks are mentioned by the SOGC, such as major anomalies of the baby, trauma at birth (such as Duchenne-Erb palsy) and fetal demise, but these risks are not supported by the INSPQ. There is however real risk of developing type 2 diabetes later in life for the women with GD.

How do we screen for gestational diabetes?

The Canadian guidelines recommend a universal screening to all pregnant women between 24 and 28 weeks pregnancy de determine who is at risk of having GD. Previously, some doctors

would recommend screening for GD only if the woman had risk factors. This approach is no longer recommended since up to 40 % of women with GD remained undiagnosed.

There are 2 different recognised approaches in Canada to screen for GD:

Two step approach: this is the preferred approach, recommended by the SOGC and the Canadian Diabetes Association.

The first step of this approach will determine which women are more at risk of developing GD and the second step will allow a diagnostic to be made in order to determine if there is presence of GD, thus eliminating false positives possibly obtained with the first step.

The first step consists of drinking a juice containing 50 grams of sugar, after which a blood test will be done one hour later. This test shows how the body manages this amount of sugar in an hour. The test is done at the hospital and you do not need to be fasting to do it. If the blood sugar reveals to be higher than a certain amount, it will be recommended that the woman does the second step.

The second step is a diagnostic test that consists in drinking a juice containing 75 grams of sugar as well as doing three blood tests: the first one while fasting, before drinking the juice, the second blood test one hour after drinking the juice and the third two hours after the juice. If one of these values is above the established reference values a diagnosis of GD is then made.

One step approach: this is the alternative approach which is done in one step.

This approach is considered as an acceptable alternative to the 50 grams test. With this approach you skip directly to the second step mentioned above (the juice containing 75 grams of sugar), but the diagnostic values used for GD are a little more conservative.

Women who present various factors among the following are considered more at risk of developing GD and may be offered to go directly to the 'one step approach'. The established risk factors are:

- Being ≥ 35 years old (SOGC) or ≥ 40 years old (INSPQ)
- Obesity (defined by the SOGC as a BMI ≥ 30)
- Family history of diabetes
- Certain ethnicities (native American, African, Asian, latin American)
- Previous baby over 4000g
- History of GD in previous pregnancy
- PCOS
- Acanthosis nigricans (hyperpigmentation of the skin)
- Corticotherapy
- Socioeconomic vulnerability
- Weight gain
- Smoking

Women who have some of these risk factors are not only more at risk of having GD, but also of pre-existing diabetes which is why they are often offered a screening or diagnostic test early in pregnancy. Blood tests can be done by your midwife at the beginning of your pregnancy in order to rule-out a pre-existing diabetes, one of which being your glycosylated hemoglobin (HbA1C) which will reflect your blood glucose for the previous three months.

GDM management

It is widely acknowledged by health professionals that screening and treating GD can improve outcomes for the mother and her baby. Some studies have found that it leads to less shoulder dystocias, preeclampsia, large babies and birth by caesarian.

When a diagnosis of GD is made, a follow-up is then organized at the Diabetes Clinic of the Jewish General Hospital. This follow-up consists in having appointments at the Perinatal Center, with a specialized nurse, a nutritionist and a doctor. The first step is to adopt a balanced diet and integrate daily exercise. A glycemic journal (monitoring your blood glucose) is also asked in order to achieve the determined blood sugar target values; this implies taking a drop of blood from the finger 4 times a day.

If the blood sugar remains elevated, an insulin treatment is then required; this will concern approximately 8 % to 20 % of women. Insulin treatment is relatively simple however since it requires a medical follow-up with a doctor the midwife can no longer be the main health care provider and needs to transfer the care to a medical team.

For women with GD, the Perinatal Center also recommends a growth ultrasound at 32 weeks of pregnancy, a non-stress test (NST) twice a week towards the ends of the pregnancy as well as an induction of labor between 38 and 40 weeks.

During the postnatal period, it will also be important to redo the 75 grams test between 6 weeks and 6 months following the birth to verify if a type 2 diabetes has developed.

Controversy

For women who can maintain stable blood sugar with diet and exercise, the abovementioned management plan remains criticized by some researchers. Many consider that the risks associated to GD are mainly attributable to persistent high blood sugar and that if a woman maintains a normal blood sugar her risks remain likely lower than for women with sustained high blood sugar. Unfortunately, studies do not differentiate between diabetic women on insulin and women with diet controlled GD. Therefore it remains difficult to determine if these women are exposed to the same risks and if the benefits of GD management and induction are identical.

The study of GD is difficult for many reasons. One of these reasons being that many women with GD also have associated health risk factors such as obesity, advanced maternal age or other pre-existing medical conditions that can become mixed up with other GD risk factors. Furthermore, a very large study sample is required to evaluate the risks and benefits of a treatment in a reliable manner, because some risks such as Erb's palsy and perinatal death remain very rare.

Conclusion

The GD screening test is offered to all pregnant women between 24 and 28 weeks. Feel free to discuss with your midwife if you have any further questions or if you would like additional references. Our goal is to provide the best possible service for the health of both your pregnancy and your baby.

Through informed choice discussions, your midwife will offer the best possible options and updated recommendations on GD as well as inform you on the impacts of following these recommendations or not. You remain at the heart of the decision.