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Gestational Diabetes Mellitus (GDM)

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Gestational Diabetes Mellitus (GDM)

You may have found it scary to be told by your doctor or nurse that you have gestational diabetes mellitus (GDM). It is important for you to know that GDM only happens during a pregnancy. It is not the same as type 1 or type 2 diabetes.

What is diabetes?

People with diabetes have too much glucose or "sugar" in their blood. The food we eat is changed into glucose which is used for energy. Glucose is moved from your blood into the cells of your body by a hormone your body makes called insulin. People with diabetes have a hard time moving sugar into the cells of the body even though they have large amounts of sugar in their blood.

Other than GDM, there are two types of diabetes. Type 1 diabetes happens when a person does not make enough insulin. In fact, most people with type 1 diabetes do not make any insulin at all.

People with type 2 diabetes still make insulin, but it does not seem to work well, and the cells of the body can't use it properly. This causes their blood glucose levels to rise. Many, but not all, people with type 2 diabetes are overweight.

Most women with GDM do not have type 1 or type 2 diabetes.

What is GDM?

GDM is similar to type 2 diabetes. During pregnancy, your body makes hormones that make your body resistant to insulin. Most pregnant women make more insulin to keep their blood sugar levels normal. But seven to 14 percent of pregnant women still cannot make enough insulin to keep their blood sugar levels normal during pregnancy. These women have GDM.

How is GDM diagnosed?

GDM is usually found by having a "glucose tolerance test." During this test, a pregnant woman who has not had anything to eat or drink overnight is given a very sweet liquid to drink. Blood samples are taken just before the woman takes the drink and every hour for three hours after. If one or two of the values are higher than the normal range for pregnant women, GDM is diagnosed.

How did I get GDM?

You did not get GDM because you ate too many sweets or did something wrong. There is no reason to feel guilty or that you did something to cause GDM. We do know that some women seem to get GDM more often than others. Some reasons for this may be:

- Being over the age of 25.
- Being overweight before you got pregnant.
- Having a close relative with diabetes.
- Having GDM in a previous pregnancy.
- Having a baby that weighed more than nine pounds.
- Belonging to an ethnic group that has a high risk of type 2 diabetes, such as Hispanic, African American, Asian, Native American, or Pacific Islander.

Will GDM hurt me?

When you have GDM, your blood sugar levels are not usually so high that they would harm you. You may not even have any symptoms. Many women with GDM have "normal" blood sugar levels when they eat a healthy diet. In most cases, GDM will cause no threat to your health.

Will GDM hurt my baby?

It is important for you to know that once we find GDM and treat it correctly, your baby's life is at no greater risk than any other baby. Remember, no one having a baby can be promised a good outcome. We all take a certain risk when we decide to have a child.

The glucose in your blood passes easily to your baby. Your baby uses the glucose for energy to grow. Because your baby does not have diabetes (babies are rarely, if ever, born with diabetes), he/she can make a lot of insulin. If your baby has a high blood sugar level, his/her body will change the glucose to fat. This may make your baby grow quite large.

Very large babies may be hard to deliver. Both Cesarean section and birth injury are more common in a baby born to a mom with GDM. It is best to help your baby grow normally and to avoid getting too big. The best way to prevent your baby from growing too large is to keep your blood glucose level from getting too high. If your blood sugar remains high during pregnancy, your baby will continue to make large amounts of insulin. When the umbilical cord is "cut," the supply of sugar from you to your baby is stopped. Your baby may still be making a lot of insulin. This can cause your baby to suffer from a low blood sugar. This can be dangerous for your baby.

The nurses caring for your delivered baby will test your baby's blood sugar. If your baby has a low blood sugar, they may have you feed the baby, or they may give your baby glucose through a vein. This is called an IV. If this happens, your baby may be moved to the Neonatal Intensive Care Unit until the blood sugar is stable. Your baby can then join you on the regular postpartum floor. If a low blood sugar does not happen during the first few hours after birth, it is not likely to happen later.

If you have diabetes, your baby is more likely to develop jaundice during the first few days of life. Your baby's skin becomes a yellow or "pumpkin" color. Jaundice is common in newborns, but it is even more common in infants of moms with diabetes. It usually resolves in a few days and doesn't often require treatment.

What do I need to do?

Untreated GDM places your baby at risk. It is important to make sure that your blood sugar does not get too high. These are things you will need to do:

- Follow a meal plan. The dietitian will meet with you and design a meal plan to help keep your blood sugar level normal. This is not a "diet" to help you lose weight, and you should not be hungry. Most women with GDM will be able to control their blood sugar level with this meal plan.
- 2. Test your blood sugar. To be sure the meal plan is working, you will need to check your blood sugar levels. You can learn to "test" your own blood glucose levels using a small machine called a glucometer. Your doctor or nurse educator will let you know when to test. Most often, testing is done four times a day: when you first wake up in the morning and two hours after each meal. At Women & Infants, the goal of treatment is to keep the glucose level before breakfast below 95 mg/ dl and the glucose level two hours after meals below 120 mg/dl.
- 3. Exercise. Exercise may help to lower your blood sugar. Examples of exercise are walking and swimming. Check with your doctor first before exercising. If you already exercise, tell your health care team.
- 4. If you need to, take insulin. Even if you follow the meal plan, there is a chance that your blood sugars will still be too high. You may need to take insulin if this happens. Insulin will lower your blood

sugar to a level that is safe for you and your baby. Insulin is the preferred medication because it cannot "cross" to the baby. It can only be given as a shot. A nurse will teach you how to give yourself insulin. When your baby is born, you can stop taking it.

There has been research done using pills (named glyburide and metformin) to treat women with GDM. These medicines "cross" to the baby and may make your baby more likely to have a low blood sugar the day he/she is born. The long-term effects of these medications on you and your baby are not known at this time. If your blood sugar is not controlled with diet and exercise alone, you and your provider can decide what is the best option for you and your baby.

One of the side effects of any of these medicines can be a blood glucose level that is too low. This is called "hypoglycemia." It rarely happens to women with GDM who take any of these medicines during pregnancy. If your blood sugar goes too low, we usually find that you have accidentally skipped a meal or snack. The symptoms of a low blood sugar are hunger, headache, nausea, and shakiness. Eating a small snack will relieve these symptoms.

5. See your doctor often. Your pregnancy needs to be watched closely. It is normal for blood glucose levels to rise as the pregnancy progresses, so levels may be normal one week and too high the next week. There is no reason to feel guilty if your blood glucose levels are high. It is due to hormones your body makes during pregnancy and not because you are doing anything wrong.

Will I have any special tests done?

It is also important to have some tests to make sure that your baby is doing well and does not need to be delivered early. You will most often be given a "non-stress test." During this test, a fetal monitor is placed on your stomach. This records the pulse rate of the fetus. When the baby is doing well, the pulse rate will rise when he/she moves. Sometimes, the pulse rate does not speed up. This could mean there is a problem, or it could be that the baby is asleep. If an increase in heart rate is not seen, another test may be done. If this happens, it will be explained to you.

Your doctor may order ultrasounds to watch the growth of your baby. One will probably be done about two weeks before your due date to estimate the weight of the baby.

What can I expect during labor and delivery?

Having GDM does not mean that you must change all of your plans for labor and delivery. Although women with GDM are at more risk to have a Cesarean delivery, most women can still deliver vaginally. Your blood glucose levels may be checked during labor, and you may need an IV to help keep your blood sugar normal. It will also be necessary to use a fetal monitor throughout labor.

What will happen after the baby is born?

As soon as the baby is born, you no longer have GDM. You will not need to strictly follow your meal plan, test your blood glucose levels, or take medicine to control your blood sugar. GDM does not stop you from breastfeeding. Breastfeeding is recommended for most pregnant women, including those who've had GDM.

Having GDM is a risk factor for developing type 2 diabetes. It would be a good idea for you to have a test for diabetes done each year so that if you develop diabetes as the years go by, it will be diagnosed early. See page 10 for information about the time and type of test that you should have.

You can decrease your risk of diabetes by eating a healthy diet, staying at a healthy weight, and exercising regularly. Breastfeeding also lowers your risk and your baby's risk of diabetes. The longer you breastfeed your baby, the more you decrease your risk and your baby's risk of diabetes.

It is important to think about family planning at this time. It is wise to decide if you want more children and when you want to have them. You and your health care provider should discuss the choices you have for contraception and decide which one is best for you. If you do not wish to get pregnant, it is important that you use contraception.

Remember that GDM does not prevent a woman from having more children. However, you should be tested for diabetes before your next pregnancy. Untreated type 2 diabetes can cause serious problems for your baby.

How will I get through this?

It is normal to feel worried. You've been given a lot to do and think about. You are being asked to make changes quickly. Your health care team is ready to help you. If you have any questions, feel free to ask. If possible, include your family or friends in your treatment plan. Working as a team will help you and your baby during this happy time.

Testing for diabetes after the baby is born

You will have a 75-gram two-hour glucose tolerance test four to 12 weeks after the baby is born; then every one to three years after the baby is born, depending on your risk factors for type 2 diabetes, such as your family history of diabetes, if you used any medication during your pregnancy to lower your blood sugars, and your weight. This can be done using a fasting blood sugar test, a blood test called an A1c, or a 75-gram two-hour glucose tolerance test.

Glossary

Carbohydrates: Foods containing starch and sugar

Fetus: The unborn baby.

GTT (glucose tolerance test): A test used to diagnose diabetes. During this test, the pregnant woman is asked to eat normal meals containing an adequate amount of carbohydrates (>150 grams) for two to three days. Then she comes to the laboratory in a fasting state (nothing to eat or drink for eight to 14 hours). A blood sample is drawn, and the woman drinks a liquid that has glucose in it. Blood samples are drawn one, two, and three hours after the drink. A woman who is not pregnant comes to the laboratory in a fasting state (nothing state (nothing to eat or drink for eight to 14 hours). A blood samples are drawn one, two, and three hours after the drink. A woman who is not pregnant comes to the laboratory in a fasting state (nothing to eat or drink for eight to 14 hours). A blood sample is drawn, and the woman drinks a liquid that contains glucose. Another blood sample is drawn two hours after the drink.

Glucose: A type of sugar that our body uses as its main source of energy. **Hyperglycemia:** High blood sugar.

Hypoglycemia: Low blood sugar.

Insulin: A hormone produced by the pancreas which causes glucose to leave the blood stream and enter the cells of the body where it can be used for energy.

Intravenous (IV): Giving fluid through a vein.

NST (non-stress test): A fetal monitoring test used to check the well-being of the fetus.

Pancreas: An organ located in the abdomen, whose job is to produce insulin whenever the blood sugar level rises.

Perinatal: That which happens before or during labor, or shortly after birth.

Placenta: An organ that allows oxygen and nourishment to reach the fetus from the mother and which carries waste products from the fetus. Upon delivery of the fetus, the placenta is called the afterbirth.

Postpartum: That which happens following birth.



Daily schedule

- 1. Test your blood sugar when you get up, BEFORE you have anything to eat or drink. The goal is < 95 mg/dl.
- 2. Take your medication before breakfast if any has been prescribed for you.
- 3. Eat breakfast.
- 4. Two hours after breakfast, test your blood sugar. The goal is < 120 mg/dl.
- 5. Eat your morning snack.
- 6. Take your medication before lunch if any has been prescribed for you.
- 7. Eat lunch.
- 8. Two hours after lunch, test your blood sugar. The goal is < 120 mg/dl.
- 9. Eat your afternoon snack.
- 10. Take your medication before dinner if any has been prescribed for you.
- 11. Eat dinner.
- 12. Two hours after dinner, test your blood sugar. The goal is < 120 mg/dl.
- 13. Eat your bedtime snack.
- 14. Take your medication at bedtime if any has been prescribed for you.

Diabetes in Pregnancy Blood Glucose Record

Name:

DOB:

	BI	00D	sugal	SF		INSULIN	DOSES		
DATE	BB	2 AB	2 AL	2 AD	BREAK- FAST	LUNCH	DINNER	BEDTIME	COMMENTS

Nutrition guidelines for gestational diabetes

The main treatment for gestational diabetes (GDM) is how you eat. Please follow this guide until you meet with a nutritionist and receive a personal and individualized meal plan. You will see that most healthy foods are allowed. By making a few changes in the way that you eat, you can make a big difference in your blood sugars. Normal blood sugars are good for your baby.

The foods in the following list are high in sugar, one kind of carbohydrate, and should be avoided until you meet with the nutritionist. If you are unsure about a particular food, do not eat it. Check with the nutritionist at your visit.

Do not use the foods listed in the box below:

- cakes
- candy
- cookies
- doughnuts
- frozen yogurt
- honey
- ice cream
- jam, jelly, preserves
- popsicles
- regular soda
- sherbet/sorbet
- sugar
- sugar coated cereals
- sugary drinks (fruit punch, Gatorade, Kool-Aide, lemonade, Sunny Delight, or any presweetened drink)
- sweet rolls
- sweet sauces (BBQ)
- sweetened canned fruit
- syrup (maple, chocolate)



Continue to eat a healthy pregnancy diet. You do not need to be hungry to control blood sugars.

- Eat three moderate size meals and three to four healthy snacks every day.
- Eat every two to three hours to space food evenly through your day.
- Do not skip meals or snacks. The bedtime snack is especially important.

Carbohydrates raise blood sugars. Do not eliminate all carbohydrates. Healthy carbohydrates are found in the foods below and should be included in a healthy diet.

Starchy foods (breads, rice, pasta, potatoes, cereals)

- Choose whole grains.
- Eat moderate portions.

Fruit and fruit juice

- One piece at a time.
- Limit 100% fruit juice to a ½ cup (4 ounces) at a meal or snack, or avoid use.

Milk and yogurt

- Skim or 1% milk is healthiest.
- Use "light," Greek, or plain yogurt.

Protein foods contain little or no carbohydrate. They help

to keep blood sugars stable. Examples are meat, poultry, fish, eggs, cheese, nuts, seeds, and peanut butter.

Include protein at every meal and every snack.

Sample menus

Sample menus are provided as an example. You do not need to eat only these foods. Keep a food diary until you see the nutritionist.

Sample Day One

Breakfast

2 slices whole wheat toast 1 egg with cheese margarine 1 cup (8oz) milk (1% or skim)

Snack

1 apple 2 tablespoons of almonds

Lunch

2 slices whole wheat bread turkey mayonnaise baby carrots 1 cup Greek yogurt

Snack

4-6 crackers 1-2 tablespoons peanut butter 1 orange

Dinner

3-4 oz. chicken (1/2 breast) 2/3 cup rice broccoli, salad salad dressing 1 cup milk (1% or skim)

Bedtime Snack

4-6 crackers 2 slices cheese butter 1 cup milk (1% or skim)

Sample Day Two

Breakfast

³/₄ cup whole grain cereal 1/2 English muffin 1-2 tablespoons peanut butter 1 cup (8oz) milk

Snack

4-6 crackers 1 piece string cheese

Lunch

1 burger roll (small) cheeseburger (small amount ketchup) salad salad dressing 1 cup fresh fruit salad

Snack

³/₄ cup whole grain cereal 2 tablespoons walnuts 1 cup (8oz) milk (1% or skim)

Dinner

2-3 meatballs 1 cup pasta (cooked) 1/3 cup tomato sauce, salad dressing

Bedtime Snack

1 small apple 1-2 tablespoons peanut 1 cup light yogurt

Drawing and injecting one insulin

Get supplies.







Wash your hands.

Roll bottle if needed.





Pull plunger down to desired



Wipe the top of the bottle with BD™ Alcohol Swab.





units.





Remove air bubbles. Check to see if dose is correct.



Push plunger down.

Pick injection site. Wipe with BD[™] Alcohol Swab. Pinch up skin and push needle into skin.



Push plunger in. Pull needle out of skin.

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Mixing, drawing and injecting insulins

Get supplies.







Wash your hands.

Roll **cloudy** insulin bottle.





Pull plunger down to desired Wipe the top of both insulin bottles with BD[™] Alcohol Swab. units.





Push plunger down. Do not draw out insulin.

Pull needle out of **cloudy** bottle.



Push needle into **cloudy** bottle.

Pull plunger down to desired





Push needle into **clear** bottle.



Push plunger down.



Pull plunger down to desired units. Pull needle out of **clear** bottle.







Remove air bubbles. Check to see if dose is correct.

Push needle into **cloudy**



bottle.





units.

Wipe the injection site with BD[™] Alcohol Swab. Pinch up skin and push

needle into skin.

Courtesy of Becton, Dickinson and Company; Reprinted with permission.

Push the insulin in with the plunger. Pull needle out of

skin.