

Pregnancy With Type 1 or Type 2 Diabetes

If you have type 1 or type 2 **diabetes mellitus**, you need to plan for pregnancy. Women with poorly controlled diabetes are at risk of several pregnancy problems. These risks can be greatly reduced if you take steps to become as healthy as you can before pregnancy and manage your health during pregnancy.

This pamphlet explains

- types of diabetes
- how diabetes can affect your pregnancy
- the importance of prepregnancy care
- controlling diabetes during pregnancy
- what to expect during labor, delivery, and after the baby is born

Types of Diabetes

Diabetes that is present before pregnancy is called **pregestational diabetes mellitus**. Diabetes is caused by a problem with **insulin**. Insulin moves **glucose** out of the blood and into the body's cells where it can be turned into energy.

There are three types of diabetes: type 1, type 2, and **gestational diabetes**. In type 1 diabetes, the body makes little or no insulin on its own. In type 2, insulin is produced, but the body does not respond to it the way it should. The third type, gestational diabetes, is diabetes that is discovered for the first time during pregnancy.

When the body does not make enough insulin or does not respond to it, glucose cannot get into cells and instead stays in the blood. As a result, the level of glucose in the blood increases. Over time, high blood glucose levels can damage the body and cause serious health problems, such as heart disease, vision problems, and **kidney disease**.

Women with diabetes need to regularly check and control their blood glucose levels to prevent these serious health problems. Type 1 diabetes is treated with insulin. A healthy diet and regular exercise also help

keep blood glucose levels under control. Type 2 diabetes often can be managed with weight loss, diet, and exercise. Oral medications or insulin sometimes may be needed.

How Diabetes Can Affect Your Pregnancy

If you have diabetes, controlling your blood glucose level before and during pregnancy is key for your health and the health of your fetus. If your diabetes is not managed well, you are at increased risk of several of the complications associated with diabetes. These complications can have a serious effect on pregnancy and your fetus. The following problems can occur in women with diabetes:

- **Birth defects**—Birth defects occur in 6 to 12 percent of women with pregestational diabetes. Defects of the heart, brain, spine, and skeleton can occur in the early weeks of pregnancy when these organs are developing.
- **High blood pressure**—Women with diabetes may have problems with high blood pressure, which can cause **complications** during pregnancy. High

blood pressure during pregnancy increases the risk of **preeclampsia**, a serious condition that can lead to seizures and kidney or liver problems in the mother. Preeclampsia also increases the risk of **stillbirth**.

- **Hydramnios**—In this condition, there is an increased amount of **amniotic fluid** in the **amniotic sac** that surrounds the fetus. It can lead to **preterm** labor and delivery.
- **Macrosomia** (very large fetus)—The fetus receives too much glucose from the mother and can grow too large. A large fetus can make delivery more difficult. The fetus may be at increased risk of injury. A large fetus also increases the risk of having a **cesarean birth**.

Pregestational diabetes can also cause problems after the baby is born. Babies born to women with pregestational diabetes may have problems with breathing, low glucose levels, and **jaundice**.

Most babies do well after birth, although some may need to spend time in a **neonatal intensive care unit (NICU)**. The good news is that with proper planning and control of your diabetes, you can decrease the risk of these problems.

The Importance of Prepregnancy Care

If you have diabetes and are planning to get pregnant, it is important to talk with your *obstetrician–gynecologist (ob-gyn)* or other health care professional. Schedule a prepregnancy appointment so that you can learn the steps to take before pregnancy that can decrease the risk of problems later.

Your health care professional can help you get your blood glucose level under control before you become pregnant (if it is not already). Having a stable glucose level is important because some of the birth defects caused by high glucose levels happen when the fetus's organs are developing in the first 8 weeks of pregnancy—before you may know you are pregnant. Getting your glucose level under control may require changing your medications, diet, and exercise program.

In addition to keeping your glucose level in the normal range, prepregnancy care also allows you to

- learn about and discuss treatment options for any medical problems you may have because of your diabetes, such as high blood pressure, heart disease, kidney disease, and eye problems
- discuss how to lose weight if necessary through a healthy diet and exercise
- discuss taking a prenatal vitamin supplement containing at least 400 micrograms of folic acid to help prevent *neural tube defects (NTDs)*

Controlling Diabetes During Pregnancy

Managing your diabetes while you are pregnant is a must. You can control your glucose levels with a combination of eating right, exercising, and taking medications as directed by your health care professional.

You may need to see your ob-gyn more often than other pregnant women. Your ob-gyn should schedule frequent prenatal visits to check your glucose level and do other tests.

Your Glucose Goals

Many women with diabetes who have never been pregnant are surprised at how low the recommended blood sugar level is for pregnancy. Your ob-gyn likely will recommend that you check your blood glucose level several times a day to make

sure it is in the normal range and meets the following goals:

- Fasting level = below 95 mg/dL
- 1 hour after eating = below 140
- 2 hours after eating = below 120

Keep a log that lists your glucose levels with the time of day and share your log with your ob-gyn at each prenatal visit.

A blood test called a *hemoglobin A_{1c}* may be used to track your progress. This test result gives an estimate of how well your blood glucose level has been controlled during the past 4 to 6 weeks. Your hemoglobin A_{1c} should not be higher than 6 percent.

Be aware that even with careful monitoring, women with diabetes are more likely to have low blood glucose levels, known as hypoglycemia, when they are pregnant. Hypoglycemia can occur if you do not eat enough food, skip a meal, do not eat at the right time of day, or exercise too much. Symptoms of hypoglycemia include the following:

- Dizziness
- Feeling shaky
- Sudden hunger
- Sweating
- Weakness

If you think you have symptoms of hypoglycemia, check your blood glucose level right away. If it is below 60 mg/dL, eat or drink something, such as a glass of milk, a few crackers, or special glucose tablets. Make sure your family members know what to give you as well.

Your blood glucose level can also get too high, which is called hyperglycemia. When your glucose level is too high, your body might make substances called ketones that can be harmful to your baby. Hyperglycemia can happen if you eat more food than usual, are sick, or are less active than normal.

If you have hyperglycemia, talk with your health care professional. You may need to change your diet, exercise routine, or medications.

Eating Right

Eating a well-balanced, healthy diet is a critical part of any pregnancy because your fetus depends on the food you eat for growth and nourishment. In women with diabetes, diet is even more important. Not eating properly can cause your glucose level to go too high or too low.

The number of *calories* you should consume every day depends on your weight,

how far along you are in your pregnancy, your age, and your level of activity. Your health care professional may recommend that you see a dietitian or diabetes educator to help with planning your meals. In most cases, your meal plan will include eating several small meals and snacks throughout the day and before bedtime.

During your pregnancy, it is important to watch how much weight you gain. The amount of weight you should gain depends on your weight before pregnancy. If you are a normal weight before pregnancy, you should gain 25 to 35 pounds. If you are underweight, you should gain more weight. If you are overweight, you should gain less.

You may be asked to keep a log of what you eat for several days so that it can be compared with your medication dosage, exercise, and glucose levels.

Exercise

Another key part of a healthy pregnancy is exercise. Exercise helps keep your glucose level in the normal range and has many other benefits, including

- managing your weight
- boosting your energy
- helping with sleep
- reducing backaches, constipation, and bloating

Work with your health care professional to decide what type and how much exercise is right for you. It is best to aim for at least 30 minutes of exercise on most days of the week.

Medications

If you took insulin before pregnancy to control your diabetes, your insulin dosage will usually increase while you are pregnant. Insulin is safe to use during pregnancy and does not cause birth defects. If you used an insulin pump before pregnancy, you will probably be able to continue using the pump. Sometimes you may need to switch to insulin shots.

If you normally manage your diabetes with oral medications, your health care professional may suggest a change in your dosage or that you take insulin while you are pregnant.

You should also talk with your ob-gyn about taking low-dose aspirin to help reduce the risk of preeclampsia. Having diabetes puts you at high risk of developing preeclampsia, and low-dose aspirin may lower your risk. Don't start taking aspirin on your own without talking with your ob-gyn.

Special Tests

As your pregnancy progresses, your ob-gyn may recommend special tests to check the size and well-being of the baby. These tests can help your ob-gyn detect possible problems and take steps to manage them.

A targeted **ultrasound exam** may be done in the second **trimester** to check for visible birth defects. Ultrasound exams may be repeated in later weeks to track the fetus's growth.

The following tests may be done starting at 32 to 34 weeks of pregnancy and repeated in later weeks:

- **Kick count**—This is a record of how often you feel your fetus move. A healthy fetus tends to move the same amount each day. You may be asked to keep track of this movement late in pregnancy and contact your ob-gyn if you note a difference in your fetus's activity. The usefulness of kick counts in reducing the risk of serious problems is not clear. Some ob-gyns do not use kick counts for this reason.
- **Nonstress test**—This test records changes in the fetus's heart rate using **electronic fetal monitoring**.
- **Biophysical profile (BPP)**—In this test, ultrasound is used to check the fetus's breathing, body movement, muscle tone, and the amount of amniotic fluid. Changes in the fetus's heart rate are also recorded with an electronic fetal monitor. Results of these tests can give detailed information about the fetus's condition.
- **Contraction stress test**—In this test, the fetus's heart rate is measured in response to contractions of the **uterus**.

Labor and Delivery

Your ob-gyn should discuss the timing of your delivery. You may go into labor naturally. Labor may be induced (started by drugs or other means) earlier than the due date, especially if problems with the pregnancy arise.

While you are in labor, your glucose level should be monitored closely—typically every hour. If needed, you may receive insulin through an **intravenous (IV) line**. If you use an insulin pump, you may use it during labor. You may work with your health care team throughout labor to monitor glucose levels and adjust the pump settings.

After the Baby Is Born

Experts highly recommend breastfeeding for women with diabetes. Breastfeeding gives the baby the best nutrition to stay healthy, and it is good for you as well. It can help you shed the extra weight that you may have gained during pregnancy and causes the uterus to return more quickly to its prepregnancy size.

If you breastfeed, you will need to eat extra calories every day. Talk with your health care professional about the amount and types of foods that can give you these extra calories. Eating small snacks during the day may be helpful.

You should closely monitor your blood glucose level after delivery. This is essential to determine your ongoing need for medication or to decide the best medication dosage. Most women who took insulin before pregnancy are able to go back to their prepregnancy insulin dosage very soon after birth.

Before you start having sex again, it is important to choose a **birth control** method to avoid an unplanned pregnancy. Talk with your health care professional before you have your baby about which method of birth control you plan to use after the baby is born. You should also discuss how long to plan between pregnancies.

Finally...

If you have diabetes and are planning to get pregnant, see a health care professional for prepregnancy care to achieve the best possible health before pregnancy. Working closely with your health care professional and controlling your glucose level throughout pregnancy increase your chances of having a healthy pregnancy and a healthy baby.

Glossary

Amniotic Fluid: Fluid in the sac that holds the fetus.

Amniotic Sac: Fluid-filled sac in a woman's uterus. The fetus develops in this sac.

Biophysical Profile (BPP): A test that uses ultrasound to measure a fetus's breathing, movement, muscle tone, and heart rate. The test also measures the amount of fluid in the amniotic sac.

Birth Control: Devices or medications used to prevent pregnancy.

Birth Defects: Physical problems that are present at birth.

Calories: Units of heat used to express the fuel or energy value of food.

Cells: The smallest units of a structure in the body. Cells are the building blocks for all parts of the body.

Cesarean Birth: Birth of a fetus from the uterus through an incision (cut) made in the woman's abdomen.

Complications: Diseases or conditions that happen as a result of another disease or condition. An example is pneumonia that occurs as a result of the flu. A complication also can occur as a result of a condition, such as pregnancy. An example of a pregnancy complication is preterm labor.

Contraction Stress Test: A test to measure a fetus's heart rate during mild contractions of a woman's uterus.

Diabetes Mellitus: A condition in which the levels of sugar in the blood are too high.

Electronic Fetal Monitoring: A test in which instruments are placed on a woman's abdomen and used to record the heartbeat of the fetus and contractions of the woman's uterus.

Gestational Diabetes: Diabetes that starts during pregnancy.

Glucose: A sugar in the blood that is the body's main source of fuel.

Hemoglobin: The protein molecule in red blood cells that carries oxygen from the lungs to the body and returns carbon dioxide from the body to lungs.

High Blood Pressure: Blood pressure above the normal level. Also called hypertension.

Hydramnios: A condition in which there is an excess amount of amniotic fluid in the sac surrounding the fetus.

Insulin: A hormone that lowers the levels of glucose (sugar) in the blood.

Intravenous (IV) Line: A tube inserted into a vein and used to deliver medication or fluids.

Jaundice: A buildup of bilirubin (a brownish yellow substance formed from the breakdown of red cells in the blood) that causes the skin to have a yellowish appearance.

Kick Count: A record kept during late pregnancy of the number of times a fetus moves over a certain period.

Kidney Disease: A general term for any disease that affects how the kidneys function.

Macrosomia: A condition in which a fetus weighs 8 pounds and 13 ounces (4,000 grams) or more.

Neonatal Intensive Care Unit (NICU): A special part of a hospital in which sick newborns receive medical care.

Neural Tube Defects (NTDs): Birth defects that result from a problem in development of the brain, spinal cord, or their coverings.

Nonstress Test: A test in which changes in the fetal heart rate are recorded using an electronic fetal monitor.

Obstetrician–Gynecologist (Ob-Gyn): A doctor with special training and education in women’s health.

Preeclampsia: A disorder that can occur during pregnancy or after childbirth in which there is high blood pressure and other signs of organ injury. These signs include an abnormal amount of protein in the urine, a low number of platelets, abnormal kidney or liver function, pain over the upper abdomen, fluid in the lungs, or a severe headache or changes in vision.

Pregestational Diabetes Mellitus: Diabetes that existed before pregnancy.

Prepregnancy Care: Medical care that is given before pregnancy to improve the chances of a healthy pregnancy. This care includes a physical exam; counseling about nutrition, exercise, and medications; and treatment of certain medical conditions.

Preterm: Less than 37 weeks of pregnancy.

Stillbirth: Birth of a dead fetus.

Stroke: A sudden interruption of blood flow to all or part of the brain, caused by blockage or bursting of a blood vessel in the brain. A stroke often results in loss of consciousness and temporary or permanent paralysis.

Trimester: A 3-month time in pregnancy. It can be first, second, or third.

Ultrasound Exam: A test in which sound waves are used to examine inner parts of the body. During pregnancy, ultrasound can be used to check the fetus.

Uterus: A muscular organ in the female pelvis. During pregnancy, this organ holds and nourishes the fetus.

This information is designed as an educational aid for the public. It offers current information and opinions related to women’s health. It is not intended as a statement of the standard of care. It does not explain all of the proper treatments or methods of care. It is not a substitute for the advice of a physician. For ACOG’s complete disclaimer, visit www.acog.org/WomensHealth-Disclaimer.

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