

What I need to know about Preparing for Pregnancy if I Have Diabetes



National Institute of
Diabetes and Digestive
and Kidney Diseases

National Diabetes Information
Clearinghouse

What I need to know about Preparing for Pregnancy if I Have Diabetes

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Introduction

If you have **diabetes**,* the best time to control your blood **glucose**, also called blood sugar, is *before* you get pregnant. High blood glucose levels can be harmful to your baby during the first weeks of pregnancy—even before you know you are pregnant. Blood glucose targets are different for women who are trying to get pregnant. Targets are numbers you aim for.

Pregnancy and new motherhood are times of great excitement and change for any woman. If you have type 1 or type 2 diabetes and are hoping to get pregnant soon, you can learn what to do to have a healthy baby. You can also learn how to take care of yourself and your diabetes before, during, and after your pregnancy. If you have diabetes and are already pregnant, don't panic! Just make sure you are doing everything you can to take care of yourself and your diabetes during your pregnancy.

For Women with Gestational Diabetes

Read more about **gestational** diabetes, a type of diabetes that develops only during pregnancy, in *What I need to know about Gestational Diabetes* at www.diabetes.niddk.nih.gov.

*See page 47 for tips on how to say the words in **bold** type.

If you have diabetes, your pregnancy is considered high risk, which means you have an increased risk of problems during your pregnancy. You need to pay special attention to your health, and you may need to see doctors who specialize in treating diabetes or its complications. Millions of high-risk pregnancies, such as those in which women are older than 35 or carrying two or more babies, produce perfectly healthy babies without affecting the mother's health.

Taking Care of Your Baby and Yourself

Keeping your blood glucose as close to normal as possible before and during your pregnancy is the most important thing you can do to stay healthy and have a healthy baby. Your health care team can help you learn how to use meal planning, physical activity, and medicines to reach your blood glucose targets. Together, you'll create a plan for taking care of yourself and your diabetes.

Pregnancy causes a number of changes in your body, so you might need to change how you manage your diabetes. Even if you've had diabetes for years, you may need to change your meal plan, physical activity routine, and medicines. As you get closer to your delivery date, your needs might change again.



“I took good care of my diabetes before and throughout my pregnancy. And now I have a healthy little girl!”

How Diabetes Can Affect You and Your Baby

High blood glucose levels before and during pregnancy can

- worsen your long-term diabetes problems, such as eye problems, heart disease, and kidney disease
- increase the chance of problems for your baby, such as being born too early, weighing too much, having breathing problems or low blood glucose right after birth, or other health problems
- increase the risk of your baby having birth defects
- increase the risk of losing your baby through **miscarriage**, which means loss of the baby before 20 weeks, or stillbirth, which means the baby dies in the womb after 20 weeks

However, research has shown that when women with diabetes keep blood glucose levels under control before and during pregnancy, the risk of birth defects is about the same as in babies born to women who don't have diabetes.



If your blood glucose level is too high, then your baby also gets too much glucose.

Glucose in a pregnant woman's blood passes through to the baby. If your blood glucose level is too high during pregnancy, so is your baby's glucose level before birth. After delivery, however, the baby's glucose level may drop quickly and go too low.

Having diabetes can also increase your chances of developing the following conditions:

- **Preeclampsia** is a condition in which you develop high blood pressure and too much protein in the urine during the second half of pregnancy. This condition can cause serious problems for you and your baby that can be life threatening. The only cure for preeclampsia is to give birth. If you develop preeclampsia late in your pregnancy, you may need to have surgery—called a **cesarean** section, or c-section—to deliver your baby early. If you develop preeclampsia earlier, you may need bed rest and medicines, or you may have to be hospitalized, to allow your baby to develop as much as possible before delivery.
- **Depression** can make you too tired to manage your diabetes and care for your baby. If during or after your pregnancy you feel anxious, sad, or unable to cope with the changes you are facing, talk with your doctor. Depression is a treatable illness. Your doctor can suggest ways you can get help and support.

Your Diabetes, before and during Your Pregnancy

As you know, in diabetes, blood glucose levels are above normal. Whether you have type 1 or type 2 diabetes, you can manage your blood glucose levels and lower the risk of health problems.

A baby's brain, heart, kidneys, and lungs form during the first 8 weeks of pregnancy. High blood glucose levels are especially harmful during this early stage. Yet many women don't realize they're pregnant until 5 or 6 weeks after **conception**. To protect your baby's health, work with your health care team to get your blood glucose under control before you get pregnant.

If you are already pregnant, see your doctor as soon as possible to make a plan for taking care of yourself and your baby. Even if you learn you're pregnant later in your pregnancy, you can still do a lot for your health and your baby's health.

Use a Planning Checklist

You can use the planning checklist "My Plan to Prepare for Pregnancy with Diabetes" and other tools at the end of this booklet to help you plan for and have a safe and healthy pregnancy. The planning checklist includes the same topics that are discussed in the following sections. Tackle one thing at a time to keep from feeling overwhelmed. Your health care team can help you with tasks that are difficult for you.

Planning Ahead

Before you get pregnant, talk with your doctor about having a baby. Your doctor can help you make sure your blood glucose levels are on target and give you the care and information you need to prepare for pregnancy.

If you are thinking about getting pregnant, you can take these steps:

- If you have questions or worries, discuss them with your health care team.
- If you're overweight, talk with your doctor about losing extra weight before you get pregnant.

If you're not ready for pregnancy, talk with your doctor about how to delay getting pregnant until you are ready.

My Health Care Team

Regular visits with members of a health care team who are experts in diabetes and pregnancy will ensure you get the best care. Your health care team may include

- a medical doctor who specializes in diabetes care, such as an **endocrinologist** or a **diabetologist**. You will need monitoring and advice on glucose control during and after your pregnancy.

- an **obstetrician-gynecologist**, or OB/GYN, who has experience treating women with diabetes. Ask for a referral if your current gynecologist does not also deliver babies. You may be referred to a maternal-fetal medicine specialist, also called a **perinatologist**. These doctors are OB/GYNs who have had special training to take care of women with high-risk pregnancies. You will see your OB/GYN regularly throughout your pregnancy.



“I’m working with my health care team to take good care of myself and my diabetes. We’re doing all we can to make sure I have a healthy baby and a safe pregnancy.”

- a nurse educator or nurse practitioner, who provides prenatal care and advice on managing diabetes.
- a registered **dietitian** to help with meal planning. A healthy diet—for glucose control and nutrition—has never been more important than now. The phrase “You’re eating for two” is not about quantity as much as food choices.
- specialists who diagnose and treat diabetes-related problems, such as **ophthalmologists** and **optometrists** for vision problems, **nephrologists** for kidney disease, and **cardiologists** for heart disease. If you are already experiencing problems from diabetes, you’ll need those conditions monitored throughout your pregnancy.
- a social worker or **psychologist** to help you cope with stress, worry, and the extra demands of pregnancy. You may already have this kind of support, or you may need it suddenly. If anxiety mounts or you become depressed, tell your OB/GYN. Ask for a referral if you need help working through issues during your pregnancy or after your baby is born.

- a doctor who cares for children, called a **pediatrician**. You might want to ask friends, family, or your health care team for recommendations. Many pediatricians visit their newest patients at the hospital soon after their birth.
- a doctor who cares for newborn babies, called a **neonatologist**. The hospital will assign a neonatologist if urgent care for your baby is needed at the hospital.
- a **lactation** consultant, who is trained to help with breastfeeding. She can give you the information and support you need to start breastfeeding your baby.

You are the most important member of the team. Your health care team can give you expert advice, but you'll be responsible for keeping your diabetes under control every day.

My Blood Glucose Levels

Daily Blood Glucose Levels before Pregnancy

If you are thinking about getting pregnant, talk with your doctor about what your blood glucose targets should be as you get ready to have a baby. Find out when and how often you should check your daily blood glucose levels with a blood glucose meter. If you already check your blood glucose levels, you may need to check them more often than you do now.

The following chart shows target blood glucose numbers for women with diabetes who are planning to become pregnant.

Target Blood Glucose Numbers (mg/dL) for Women with Diabetes Planning to Become Pregnant	
Before meals and when you wake up	80 to 110
1 to 2 hours after eating	100 to 155

Daily Blood Glucose Levels during Pregnancy

During your pregnancy, you'll check your blood glucose levels using a blood glucose meter several times a day. Most doctors recommend testing at least four times a day. Talk with your doctor about when you should check your blood glucose levels and check off the times using the checklist included under "My Daily Blood Glucose Monitoring Times" at the end of this booklet.

Getting correct results from your meter is important. Follow the directions for using your meter and take care of your meter. Recheck your blood glucose level if a test result seems off. Ask your health care team for help if you have questions about using your meter or your test results.



"I check my blood glucose at least four times a day. The results show whether I need to change my meal plan or insulin to keep my blood glucose on target."

The daily target blood glucose numbers recommended by the American Diabetes Association for most pregnant women are in the following table.

Target Blood Glucose Numbers (mg/dL) for Women with Diabetes Who Become Pregnant	
Before meals, at bedtime, and overnight	60 to 99
1 to 2 hours after eating	100 to 129

Ask your doctor what targets are right for you. Write down your targets in “My Target Blood Glucose and A1C Numbers” at the end of this booklet.

You can keep track of your blood glucose levels using “My Daily Blood Glucose Record” at the end of this booklet. Write down the results every time you check your blood glucose. Your blood glucose records can help you and your health care team decide whether your diabetes care plan is working. You also can use this form to make notes about your **insulin** and **ketones**.

The A1C Test

Another way to see whether you're meeting your targets is to have an A1C blood test. Results of the A1C test reflect your average blood glucose levels during the past 3 months. The American Diabetes Association now recommends that most women with diabetes should aim for an A1C target as close to normal as possible—below 7 percent, and ideally below 6 percent—before getting pregnant and during pregnancy. Your doctor can help you set an A1C target that is best for you. Write your target under “My Target Blood Glucose and A1C Numbers” at the end of this booklet.

Low Blood Glucose

When you're pregnant, you're at increased risk of having low blood glucose, also called **hypoglycemia**. When blood glucose levels are too low, your body can't get the energy it needs. Although hypoglycemia can happen suddenly, it is usually mild and can be treated quickly. Eating or drinking something with **carbohydrates**—sugars and starches found in many foods—can bring your blood glucose level back to normal. Left untreated, hypoglycemia can make you pass out.

Low blood glucose can make you

- hungry
- dizzy or shaky
- confused
- pale
- sweat more
- weak
- anxious or cranky
- have headaches
- have a fast heartbeat

Low blood glucose can be caused by

- meals or snacks that are too small, delayed, or skipped
- doses of insulin that are too high
- increased physical activity

Low blood glucose also can be caused by drinking too many alcoholic beverages. However, women who are trying to get pregnant or who are already pregnant should avoid drinking alcohol.



“I keep a box of crackers on my bedside table. If I have low blood glucose during the night, I eat some crackers right away to bring my blood glucose back up to normal.”

Read more about low blood glucose in *Hypoglycemia* at www.diabetes.niddk.nih.gov.

Using Glucagon for Severe Low Blood Glucose

If you have severe low blood glucose and pass out, you'll need help to quickly bring your blood glucose level back to normal. Your health care team can teach your family members and friends how to give you an injection of **glucagon**, a hormone that raises blood glucose levels right away. If glucagon is not available, someone should call 911 to get you to the nearest emergency room for treatment.

High Blood Glucose

High blood glucose, also called **hyperglycemia**, can happen when you don't have enough insulin or when your body isn't able to use insulin correctly. High blood glucose can result from

- not taking your diabetes medicines
- eating more food than usual
- being less active than usual
- illness
- stress

Also, if your blood glucose level is already high and you have chemicals called ketones in your blood or urine, physical activity can make your blood glucose level go even higher. Symptoms of high blood glucose include

- frequent urination
- thirst
- weight loss

Talk with your doctor about what to do when your blood glucose is too high. Your doctor might suggest a change in your insulin, meal plan, or physical activity routine.

My Ketone Levels

When your blood glucose is too high or if you're not eating enough, your body might make ketones. Ketones in your urine or blood mean your body is using fat for energy instead of glucose. Your body can't use glucose for energy if you don't have enough insulin or you aren't getting enough glucose from food, so it uses fat instead. Burning fat instead of glucose can be harmful to your health and your baby's health. Harmful ketones can pass from you to your baby. Your health care team can teach you how and when to test your urine or blood for ketones.



“I check my urine every morning for ketones. That’s one of the things I do to keep my baby and myself safe and healthy.”

If ketones build up in your body, you can develop a condition called **ketosis**. Ketosis can quickly turn into diabetic **ketoacidosis**, which can be life threatening. Symptoms of ketoacidosis are

- stomach pain
- nausea and vomiting
- frequent urination or frequent thirst, for a day or more
- fatigue
- muscle stiffness or aching
- feeling dazed or in shock
- rapid, deep breathing
- breath that smells fruity

Checking Your Urine or Blood Ketone Levels

Your doctor might recommend you test your urine or blood daily for ketones or when your blood glucose is above a certain level, such as 200 mg/dL. If you use an insulin pump, your doctor might recommend that you test for ketones when your blood glucose level is unexpectedly high. You can write down the times you should check for ketones in “My Plan to Check for Ketones” at the end of this booklet.

You can prevent serious health problems by checking for ketones as recommended. Talk with your doctor about what to do if you have ketones. Your doctor might suggest making changes in the amount of insulin you take or when you take insulin.

My Checkups

Your diabetes-related health problems can affect your pregnancy. And pregnancy can make some diabetes health problems worse. Your doctor can talk with you about how pregnancy might affect any previous or ongoing problems you have. If you address these problems enough in advance, you may decide to work with your doctor to arrange for treatments, such as laser treatment for eye problems, before you get pregnant.

Before you get pregnant, talk with your doctor about

- whether your **vaccinations**—shots to help prevent diseases—are up to date
- having a Pap test to check for changes in the cells of your **cervix**, the lower part of the **uterus** that opens into the **vagina**
- being checked for sexually transmitted diseases and HIV

Have a complete checkup before you get pregnant or at the start of your pregnancy. Your doctor should check for

- high blood pressure, also called **hypertension**
- eye disease, also called diabetic **retinopathy**
- heart and blood vessel disease, also called **cardiovascular** disease
- nerve damage, also called diabetic **neuropathy**
- kidney disease, also called diabetic **nephropathy**
- thyroid disease

Also, let your doctor know about

- prior pregnancies
- health problems that run in your or your partner's family
- family or social situations that could hurt your and your baby's safety, such as domestic violence or lack of support
- other health problems you have, such as an eating disorder or depression

You'll also get regular checkups throughout your pregnancy. During these visits, your health care team will check your blood pressure and A1C levels and monitor the protein in your urine.

Smoking

Smoking can increase your chance of having a stillborn baby or a baby born too early. Smoking is especially harmful for people with diabetes. Smoking can increase diabetes-related health problems such as eye disease, heart disease, kidney disease, and **amputations**. If you smoke, talk with your doctor about how to quit.

Eating, Diet, and Nutrition

A healthy eating plan is important as you prepare for and go through pregnancy. A healthy eating plan will help you manage your blood glucose levels and weight.

If you don't already see a dietitian, you should start seeing one before you get pregnant. Your dietitian can help you learn what to eat, how much to eat, and when to eat to reach or maintain a healthy weight. These habits are important to learn for your and your baby's future. Together, you and your dietitian will create a healthy eating plan tailored to your needs, usual schedule, food preferences, medical conditions, medicines, and physical activity routine.

During pregnancy, many women need changes in their diet, such as extra calories and protein. You might need to see your dietitian every few months during pregnancy as your needs change. Eating a well-balanced diet helps ensure that you and your baby are healthy.



“My dietitian helped me include my favorite foods in my healthy eating plan.”

How Much to Eat

Talk with your dietitian about how many servings to have at each meal and snack. Your dietitian can also provide advice about portion sizes.

Once you are pregnant, your healthy eating plan will be based on how many calories you need for pregnancy and your goals for weight gain during the pregnancy. Work with your health care team to gain the right amount of weight during pregnancy. Weight gain during pregnancy depends on your weight before pregnancy:

- Women who were underweight before pregnancy should gain 28 to 40 pounds
- Women who were normal weight before pregnancy should gain 25 to 35 pounds
- Women who were overweight before pregnancy should gain 15 to 25 pounds
- Women who were obese before pregnancy should gain 11 to 20 pounds

However, your doctor may recommend a slightly different weight gain goal for you.

You'll need to find out your body mass index (BMI) number to know whether you are underweight, normal weight, overweight, or obese before pregnancy. Online BMI calculators are available at www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm and www.cdc.gov/healthyweight/assessing/bmi.



“Eating small meals and snacks throughout the day helps keep my blood glucose under control.”

Vitamin and Mineral Supplements

Your doctor will tell you whether you need to take a vitamin and mineral supplement before and during pregnancy. Many pregnant women need supplements because their diets don't supply enough of the following important vitamins and minerals:

- iron—to help make extra blood for pregnancy and for the baby's supply of iron
- folic acid—to prevent birth defects in the brain and spinal cord
- calcium—to build strong bones

Folic acid is an important vitamin for you to take before and after you get pregnant to protect your baby's health. You'll need to start taking a folic acid supplement at least 1 month before you get pregnant. Most women who could become pregnant should take a multivitamin or supplement that contains at least 400 micrograms (mcg) of folic acid. Once you become pregnant, you should take at least 600 mcg of folic acid daily.

Vitamin D supplements. Studies suggest that having enough vitamin D in your blood may help maintain healthy blood glucose levels. However, more research is needed before special recommendations can be made about vitamin D levels or supplements for people with diabetes.

Current recommendations for vitamin D intake are

- for most people, including pregnant women and children at least 1 year old—600 International Units (IU) of vitamin D daily
- for babies younger than 1 year old—400 IU of vitamin D daily

Ask your doctor whether you should take a vitamin D supplement.



Alcoholic Beverages

You should avoid drinking alcoholic beverages while you're trying to get pregnant and throughout pregnancy. When you drink, the alcohol also affects your baby. Alcohol can lead to serious, lifelong health problems for your baby.

Artificial Sweeteners

Artificial sweeteners can be used in moderate amounts. If you choose to use sweeteners, talk with your dietitian about how much to have.

You can keep track of what you eat and drink using “My Daily Food Record” at the end of this booklet. Your food records can help you and your health care team see whether your diabetes care plan is working.

Read more in *What I need to know about Eating and Diabetes* at www.diabetes.niddk.nih.gov.

My Physical Activity Routine

Daily physical activity can help you reach your target blood glucose numbers. Being physically active can also help you reach your target blood pressure and **cholesterol** levels, relieve stress, improve muscle tone, strengthen your heart and bones, and keep your joints flexible.

Before getting pregnant, make physical activity a regular part of your life. Talk with your doctor about regular physical activity, such as walking, swimming, stretching, and using hand weights. Consider whether you have any health problems and which activities would be best for you. Your doctor may advise you to avoid activities that increase your risk of falling, such as downhill skiing, during pregnancy.

A sensible goal for most women is to aim for 30 minutes or more of activity a day, most days of the week. If you were active before pregnancy, you may be able to continue with a more moderate version of your usual physical activity routine during pregnancy. If you are already pregnant and haven't been active, start with an activity such as walking.

Read more in *What I need to know about Physical Activity and Diabetes* at www.diabetes.niddk.nih.gov.



“I wasn’t very active before I got pregnant. My doctor said that walking every day would be safe and good for me and my baby.”

You can keep track of your physical activity using “My Daily Physical Activity Record” at the end of this booklet. Your physical activity record can help you and your health care team see whether your diabetes care plan is working.

My Medicines

Medicines for Diabetes

Some medicines are not safe during pregnancy and should be stopped before you get pregnant. Tell your doctor about all the medicines you currently take, such as those for high cholesterol and high blood pressure. Your doctor can tell you which medicines to stop taking.

During pregnancy, the safest diabetes medicine is insulin. If you’re already taking insulin, you might need to change the kind, the amount, or how and when you take it. The amount of insulin you take is likely to increase as you go through pregnancy because your body becomes less able to respond to the action of insulin, a condition called insulin resistance. Your insulin needs may double or even triple as you get closer to your delivery date. Your doctor will work with you to make a personalized insulin routine.

If you’ve been taking medicines other than insulin to control your blood glucose levels, you’ll need to stop taking them. Research studies have not yet proved that diabetes medicines other than insulin are safe for use during pregnancy.

Read more in *What I need to know about Diabetes Medicines* at www.diabetes.niddk.nih.gov.

Changes in My Daily Routine

Sick Days

When you're sick, your blood glucose levels can rise rapidly and diabetic ketoacidosis can occur. Talk with your health care team about what you should do if you get sick. Be sure you know

- what to do if you're nauseated or vomiting
- how often you should check your blood glucose
- how often you should check your urine or blood for ketones
- when you should call your doctor



“When I’m not feeling well, I check my blood glucose more often than usual. I know that being sick can make my blood glucose level go too high.”

Being Away from Home

When you're away from home—for several hours or for a longer trip—you'll want to be prepared for problems. Make sure you always have the following with you:

- a snack or a meal
- food or drinks to treat low blood glucose
- your diabetes medicines and supplies
- your blood glucose meter and supplies
- your glucagon kit
- your health care team's phone numbers for emergencies

Planning to Breastfeed My Baby

You can give your baby a healthy start by breastfeeding. Breast milk provides the best nutrition for your baby and protection against certain illnesses.

To help prepare for breastfeeding,

- talk with your health care team about your plans to breastfeed. Ask if the place where you plan to deliver your baby has the staff and setup to support successful breastfeeding.
- take a breastfeeding class. Pregnant women who learn about how to breastfeed are more likely to be successful than those who do not.
- ask your doctor to recommend a lactation consultant to help you with breastfeeding. A lactation consultant is trained to help with breastfeeding.

- talk with friends who have breastfed or consider joining a breastfeeding support group.

After Your Baby Is Born

After you have your baby, these steps can help you get off to a great start:

- Breastfeed as soon as possible after birth. The sucking instinct is very strong within the first hour of life.
- If you don't already have a lactation consultant, ask for one at the hospital to come help you.
- Ask the hospital staff not to give your baby other food or formula, unless it is medically necessary.
- Allow your baby to stay in your hospital room all day and night so that you can breastfeed often. Or, ask the nurses to bring you your baby for feedings.
- Try to avoid giving your baby any pacifiers or artificial nipples so your baby gets used to latching onto just your breast.

Many leading health organizations suggest that your baby should not have any foods or liquids other than breast milk for the first 6 months. After the first 6 months, babies can begin to eat other foods along with breast milk.

Read more in *Breastfeeding and Breast Milk Overview* at www.nichd.nih.gov/health/topics/breastfeeding or visit www.womenshealth.gov/breastfeeding.

Pregnancy and Diabetes: Checking Your Baby's Health

You will have tests throughout your pregnancy to check your baby's health. Your health care team can tell you which of the following tests you'll have and when you might have them. Your doctor might also suggest other tests. If certain diseases or conditions run in your family, you might meet with a genetic counselor. The counselor may recommend tests based on your family history and can explain the risk of certain conditions for your baby.

The following tests are usually done in your doctor's office or an outpatient care facility. You will be awake for all of these tests; anesthesia is not needed. For blood tests, your blood is drawn at your doctor's office or a commercial facility, and the blood sample is sent to a lab for analysis.

Ultrasound

Ultrasound uses a device, called a transducer, that bounces safe, painless sound waves off organs to create an image of their structure. Ultrasound is performed by a specially trained technician or health care provider. The image, called a **sonogram**, can show the baby's size, position, structures, and sex. The image can also help estimate age, evaluate growth, and show some types of birth defects.

First Trimester Screen

The first trimester screen is a test done when you are 11 to 14 weeks pregnant. This test involves a blood test and an ultrasound exam called **nuchal translucency** screening. The blood test measures the levels of certain substances in your blood. A technician will draw your blood for the test. The ultrasound measures the thickness at the back of the baby's neck.

Maternal Blood Screening Test

The maternal blood screening test is also called the multiple marker screen test, the triple screen, or quad screen. This test measures several substances in your blood. Results can tell you whether your baby is at risk for spinal cord and brain problems, Down syndrome, and other birth defects. If the results show an increased risk for problems, additional tests such as ultrasound or **amniocentesis** can provide more information.

Fetal Echocardiogram

The **fetal echocardiogram** uses ultrasound to check for problems in the baby's heart structure.

Amniocentesis

Amniocentesis uses a thin needle inserted through the abdomen into the uterus to obtain a small amount of the fluid that surrounds the baby. A specially trained technician or health care provider will perform this test.

Cells from the fluid are grown in a lab and then analyzed. Amniocentesis can help tell whether your baby has health problems and if your baby's lungs have finished developing. Mature lungs are necessary for the baby to breathe without help after delivery.

Chorionic Villus Sampling

In **chorionic villus** sampling, a thin needle is inserted into the **placenta** to obtain cells. Ultrasound is used to guide the needle into the placenta, either through the vagina and cervix or through the abdomen and uterus. The placenta is composed of tissue and blood vessels that attach the baby to the mother's uterus, so the baby can get nutrition. A specially trained technician or health care provider performs this test. Cells are then analyzed to look for health problems.

Group B Streptococcus Test

In the group B **streptococcus** test, a swab is used to take cells from your vagina and rectum for testing. Your doctor performs this test. The test is done at 36 to 37 weeks of pregnancy to look for bacteria that can cause **pneumonia** or serious infection in newborns.

Kick Counts/Fetal Movement Counting

Counting kicks and other fetal movements is an easy way to keep track of your baby's activity. You can do this test at home. You'll count how many times the baby moves during a certain period of time.

Nonstress Test

A fetal monitor checks whether your baby's heart rate increases as it should when the baby is active. Your doctor or another health care provider performs this test.

Biophysical Profile

Ultrasound checks your baby's muscle tone, breathing, and movement to obtain a biophysical profile. Ultrasound also estimates the amount of **amniotic fluid** surrounding the baby.

Contraction Stress Test

This test measures the baby's heart rate during contractions using a fetal monitor. Your doctor or another health care provider performs this test. The results can help your doctor decide whether the baby needs to be delivered early.

Labor and Delivery with Diabetes

Timing of Delivery

Your health care team will consider your health, your baby's health, and the state of your pregnancy in deciding how and when delivery should occur. Your doctor may recommend inducing labor before your due date or delivering the baby surgically using a cesarean section, or c-section. However, most women with diabetes have the option of delivering vaginally. You'll want to talk with your health care team about your options well ahead of time.



“I talked with my doctor way before I was due about my options for delivering my baby.”

The factors your health care team will consider in deciding what type of delivery is best for you and your baby may include

- your baby's size and position
- your baby's lung maturity
- your baby's movements
- your baby's heart rate
- the amount of amniotic fluid
- your blood glucose and blood pressure levels
- your general health

Blood Glucose Control during Labor and Delivery

Keeping your blood glucose levels under control helps ensure your baby won't have low blood glucose right after birth. You will be physically active when you're in labor, therefore you may not need much insulin. Hospital staff will check your blood glucose levels frequently. Some women take both insulin and glucose, as well as fluids, through an **intravenous** (IV) line during labor. Sending insulin and glucose directly into your bloodstream through a vein provides good control of blood glucose levels. If you are using an insulin pump, you might continue to use it throughout labor.

If you are having a c-section, your blood glucose levels may increase because of the stress of surgery. Your health care team will closely monitor your blood glucose levels and will likely use an IV for insulin and glucose to keep your levels under control.

After Your Baby Arrives

Breastfeeding

You can give your baby a healthy start by breastfeeding. Breastfeeding provides the best nutrition and helps your baby stay healthy.



“Even though I have diabetes, I can still breastfeed my baby. My milk gives my baby exactly what he needs.”

Your Healthy Eating Plan

If you're breastfeeding, you might need more calories each day than you needed during your pregnancy. Your dietitian can provide personalized recommendations and answer any questions you have about what, when, and how much to eat.

Your Medicines

After you've given birth, you might need less insulin than usual for several days. Breastfeeding can also lower the amount of insulin you need. Diabetes medicines other than insulin are not recommended during breastfeeding.

Low Blood Glucose

You'll be at increased risk for low blood glucose after delivery, especially if you're breastfeeding. You might need to have a snack before or after you breastfeed your baby. Your health care team may suggest that you check your blood glucose more often than usual.

Taking Care of Yourself

Remember, to be a good mom, you have to take good care of yourself. In addition to taking care of your diabetes and eating right, you can take care of yourself by taking the time for physical activity. Active moms provide a good example for their children to follow. Check with your health care team about how soon after delivery you can safely begin physical activity.

Points to Remember

- If you have diabetes, the best time to control your blood glucose, also called blood sugar, is *before* you get pregnant. High blood glucose levels can be harmful to your baby during the first weeks of pregnancy—even before you know you are pregnant.
- Keeping your blood glucose as close to normal as possible before and during your pregnancy is the most important thing you can do to stay healthy and have a healthy baby.
- Before you get pregnant, you can plan and prepare for having a healthy pregnancy and a healthy baby. If you have diabetes and are already pregnant, you can make sure you are doing everything you can to take care of yourself and your diabetes during your pregnancy.
- Regular visits with members of a health care team who are experts in diabetes and pregnancy will ensure you get the best care. Your health care team can help you learn how to use a healthy eating plan, physical activity, and medicines to reach your blood glucose targets before and during pregnancy.
- During pregnancy, the safest diabetes medicine is insulin. Your health care team will work with you to make a personalized insulin routine. Some medicines are not safe during pregnancy and should be stopped before you get pregnant. Your doctor can tell you which medicines to stop taking.

- You will have tests throughout your pregnancy to check your baby's health.
- You can give your baby a healthy start by breastfeeding.

Hope through Research

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) conducts and supports research on diabetes, including type 1, type 2, and gestational diabetes. Researchers are working to find better ways to diagnose, treat, and prevent diabetes and to improve pregnancy outcomes for women with diabetes.

The NIDDK, in collaboration with the Phoenix Indian Medical Center, is conducting a study on how to best improve the health of pregnant women and their children. They will do so by providing healthy lifestyle counseling for women receiving prenatal care at the Phoenix Indian Medical Center. The women will be overweight or obese and may or may not have diabetes. More information about the Healthy Lifestyle in Pregnancy Study, funded under National Institutes of Health (NIH) clinical trial number NCT01585454, can be found at www.ClinicalTrials.gov.

The Walking Exercise and Nutrition to Reduce Diabetes Risk for You (WENDY) Study aims to find out whether giving women with gestational diabetes both a pedometer and nutrition coaching is more successful in preventing type 2 diabetes. More information about the WENDY Study, funded under NIH clinical trial number NCT01247753, can be found at www.ClinicalTrials.gov.

The Pedometers for Gestational Diabetes (PEG) Study also is looking at whether a pedometer program for women with gestational diabetes is effective in preventing type 2 diabetes after delivery. The NIDDK, in collaboration with the University of Michigan Health System, is adapting a web-based pedometer program to women with recent gestational diabetes. The program also provides educational information about exercise, diet, and nutrition. More information about the PEG Study, funded under NIH clinical trial number NCT00862602, can be found at www.ClinicalTrials.gov.

Clinical trials are research studies involving people. Clinical trials look at safe and effective new ways to prevent, detect, or treat disease. Researchers also use clinical trials to look at other aspects of care, such as improving the quality of life for people with chronic illnesses. To learn more about clinical trials, why they matter, and how to participate, visit the NIH Clinical Research Trials and You website at www.nih.gov/health/clinicaltrials. For information about current studies, visit www.ClinicalTrials.gov.

Pronunciation Guide

amniocentesis (AM-nee-oh-sen-TEE-siss)

amputations (AM-pyoo-TAY-shuhns)

amniotic fluid (AM-nee-OT-ik) (FLOO-id)

carbohydrates (KAR-boh-HY-drayts)

cardiologists (KAR-dee-OL-oh-jists)

cardiovascular (KAR-dee-oh-VASS-kyoo-lur)

cervix (SUR-viks)

cesarean (seh-ZAY-ree-uhn)

cholesterol (koh-LESS-tur-ol)

chorionic villus (KOH-ree-ON-ik) (VIL-uhss)

conception (kon-SEP-shuhn)

depression (duh-PRESH-uhn)

diabetes (DY-uh-BEE-teez)

diabetologist (DY-uh-beh-TOL-uh-jist)

dietitian (DY-uh-TISH-uhn)

endocrinologist (EN-doh-krih-NOL-uh-jist)

fetal echocardiogram (FEE-tuhl) (EK-oh-KAR-dee-oh-GRAM)

gestational (jess-TAY-shuhn-uhl)

glucagon (GLOO-kuh-gon)

glucose (GLOO-kohss)
hyperglycemia (HY-pur-gly-SEE-mee-uh)
hypertension (HY-pur-TEN-shuhn)
hypoglycemia (HY-poh-gly-SEE-mee-uh)
insulin (IN-suh-lin)
intravenous (IN-truh-VEE-nuhss)
ketoacidosis (KEE-toh-ASS-ih-DOH-siss)
ketones (KEE-tohnz)
ketosis (kee-TOH-siss)
lactation (lak-TAY-shuhn)
miscarriage (miss-KAIR-uhj)
neonatologist (NEE-oh-nay-TOL-uh-jist)
nephrologists (neh-FROL-uh-jists)
nephropathy (neh-FROP-uh-thee)
neuropathy (noo-ROP-uh-thee)
nuchal translucency (NOO-kuhl) (trans-LOO-sen-see)
obstetrician-gynecologist (OB-stuh-TRISH-uhn) (GY-nuh-KOL-uh-jist)
ophthalmologists (AHF-thal-MOL-uh-jists)

optometrists (op-TOM-uh-trists)
pediatrician (PEE-dee-uh-TRISH-uhn)
perinatologist (PER-ih-nay-TOL-uh-jist)
placenta (pluh-SEN-tuh)
pneumonia (noo-MOH-nyuh)
preeclampsia (PREE-ee-KLAMP-see-uh)
psychologist (sy-KOL-uh-jist)
retinopathy (RET-ih-NOP-uh-thee)
sonogram (SON-oh-gram)
streptococcus (STREP-toh-KOK-uhss)
uterus (YOO-tuhr-uhss)
vaccinations (VAK-sih-NAY-shuhns)
vagina (vuh-JY-nuh)

For More Information

To find diabetes educators (nurses, dietitians, pharmacists, and other health professionals), contact

American Association of Diabetes Educators

Phone: 1-800-338-3633

Internet: www.diabeteseducator.org.

Under “About Diabetes Education,” click on “Find a Diabetes Educator.”

To find dietitians, contact

Academy of Nutrition and Dietetics

Internet: www.eatright.org. Click on “Find a Registered Dietitian.”

To get more information about taking care of diabetes, contact

American Diabetes Association

1701 North Beauregard Street

Alexandria, VA 22311

Phone: 1-800-DIABETES (1-800-342-2383)

Email: askADA@diabetes.org

Internet: www.diabetes.org

JDRF

26 Broadway, 14th Floor

New York, NY 10004

Phone: 1-800-533-CURE (1-800-533-2873)

Fax: 212-785-9595

Email: info@jdrf.org

Internet: www.jdrf.org

For more information about pregnancy, contact

***Eunice Kennedy Shriver* National Institute of Child Health
and Human Development Information Resource Center**

P.O. Box 3006

Rockville, MD 20847

Phone: 1-800-370-2943

TTY: 1-888-320-6942

Fax: 1-866-760-5947

Email: NICHDInformationResourceCenter@mail.nih.gov

Internet: www.nichd.nih.gov

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My Plan to Prepare for Pregnancy with Diabetes

Things I can do to get ready for a healthy pregnancy and continue to do during my pregnancy

Planning Ahead

- ☐ I'll get my diabetes under control 3 to 6 months before I try to get pregnant.
- ☐ I'll avoid getting pregnant before I am ready.
- ☐ I'll reach a healthy weight before I get pregnant.
- ☐ If I'm already pregnant, I'll see my doctor right away.

My Health Care Team

- ☐ I'll make sure I have the health care team that I need.
- ☐ I'll meet with members of my team regularly.

My Blood Glucose Levels

- ☐ I'll set targets with my doctor for my daily blood glucose levels.
- ☐ I'll set a target with my doctor for my A1C test result.
- ☐ I'll learn how and when to check my blood glucose on my own.
- ☐ I'll learn what to do if my blood glucose is too low.
- ☐ I'll make sure my family or friends know how to give me glucagon for low blood glucose.
- ☐ I'll learn what to do if my blood glucose is too high.

My Ketone Levels

- ☐ I'll learn how and when to check my urine or blood for ketones.
- ☐ I'll learn what to do if I have ketones in my urine or blood.

My Checkups

- ☐ I'll get the recommended checkups and lab tests for
 - blood pressure
 - eye disease
 - heart and blood vessel disease
 - nervous system disease
 - kidney function
 - thyroid disease
 - average blood glucose level—the A1C test
- ☐ I'll check with my health care team to make sure my vaccines are up to date.

Smoking

- ☐ If I smoke, I'll quit.
- ☐ I will ask for help to quit.

My Healthy Eating Plan

- ☐ I'll see a dietitian or diabetes educator about what, when, and how much to eat.
- ☐ I'll take a daily folic acid supplement or multivitamin with folic acid before I get pregnant to protect my baby from birth defects of the brain and spine. I'll keep taking folic acid during my pregnancy.
- ☐ I'll ask whether I need other vitamin and mineral supplements and will take them as directed.
- ☐ I won't drink alcoholic beverages during my pregnancy and while breastfeeding.

My Physical Activity Routine

- ☐ I'll talk with my doctor about what physical activities are safe for me.
- ☐ I'll make a plan with my doctor for regular physical activity and get started as soon as possible.

My Medicines

- ☐ I'll talk with my doctor about my diabetes medicines—what kinds, how much, and how and when to take them.
- ☐ I'll talk with my doctor about my other medicines—what to keep taking and what to stop taking.

Changes in My Daily Routine

- ☐ I'll make a plan for taking care of myself when I'm sick—what to do about food, insulin, blood glucose testing, and ketone testing.
- ☐ I'll make a plan for what I need to have with me when I'm away from home—for several hours or for a longer trip.

My Plan to Breastfeed My Baby

- ☐ I'll plan to breastfeed my baby.
- ☐ I'll talk with my health care team about my plans to breastfeed.
- ☐ I'll ask which medicines are safe to keep taking while I'm breastfeeding my baby.

My Daily Blood Glucose Monitoring Times

Check off the times you should check your blood glucose levels, according to your doctor:

- ☐ fasting—when I wake up, before I eat or drink anything
- ☐ before each meal
- ☐ 1 hour after the start of a meal
- ☐ 2 hours after the start of a meal
- ☐ before bedtime
- ☐ in the middle of the night—for example, at 2 or 3 a.m.

My Target Blood Glucose and A1C Numbers

My Blood Glucose Targets

Write down the targets you and your doctor have chosen in the chart below. The chart includes plasma blood glucose targets for most pregnant women recommended by the American Diabetes Association.

Target Blood Glucose Numbers (mg/dL) for Women with Diabetes Who Become Pregnant	
Before meals, at bedtime, and overnight	60 to 99
1 to 2 hours after eating	100 to 129

My A1C Target

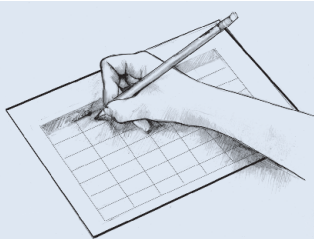
Write down your A1C target here:

My A1C target is less than _____ %.

My Plan to Check for Ketones

I should test my urine or blood for ketones

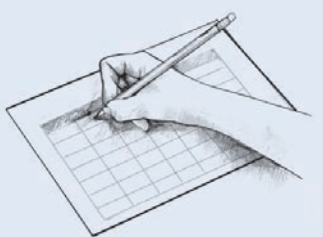
- ☐ every day before breakfast
- ☐ when I'm sick
- ☐ when my blood glucose is _____ or higher
- ☐ other times: _____



My Daily Physical Activity Record

Make a copy of this form for each week of your pregnancy.
Use this form to keep track of when, what, and how long you do a physical activity.

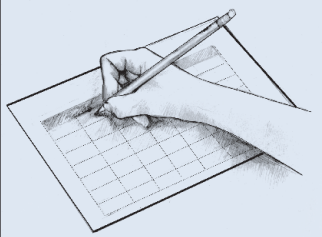
Week Starting: _____	Type of Activity	Minutes
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		
Sunday		



My Daily Blood Glucose Record

Make a copy of this form for each week of your pregnancy.
Use this form to keep track of your blood glucose numbers,
your urine or blood ketone test results, and your insulin.

Week Starting:	Fasting Blood Glucose	Urine or Blood Ketones	Insulin	Breakfast Blood Glucose	Insulin	Other Blood Glucose	Insulin	Lunch Blood Glucose	Insulin	Other Blood Glucose	Insulin	Dinner Blood Glucose	Insulin	Other Blood Glucose	Insulin	Bedtime Blood Glucose	Insulin	Other Blood Glucose	Notes
Monday			Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		
Tuesday			Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		
Wednesday			Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		
Thursday			Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		
Friday			Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		
Saturday			Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		
Sunday			Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		Time: Amount:		



My Daily Food Record

Make a copy of this form for each week of your pregnancy.
Use this form to keep track of what, when, and how much
you eat and drink.

Week Starting: <hr/>	Breakfast	Mid-morning Snack	Lunch	Mid-afternoon Snack	Dinner	Bedtime Snack
Monday						
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday						
Sunday						

National Diabetes Education Program

1 Diabetes Way

Bethesda, MD 20814-9692

Phone: 1-888-693-NDEP (1-888-693-6337)

TTY: 1-866-569-1162

Fax: 703-738-4929

Email: ndep@mail.nih.gov

Internet: www.ndep.nih.gov

www.yourdiabetesinfo.org

The National Diabetes Education Program is a federally funded program sponsored by the U.S. Department of Health and Human Services' National Institutes of Health and the Centers for Disease Control and Prevention and includes over 200 partners at the federal, state, and local levels, working together to reduce the morbidity and mortality associated with diabetes.

National Diabetes Information Clearinghouse

1 Information Way
Bethesda, MD 20892-3560
Phone: 1-800-860-8747
TTY: 1-866-569-1162
Fax: 703-738-4929
Email: ndic@info.niddk.nih.gov
Internet: www.diabetes.niddk.nih.gov

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This publication is available at www.diabetes.niddk.nih.gov.

This publication may contain information about medications and, when taken as prescribed, the conditions they treat. When prepared, this publication included the most current information available. For updates or for questions about any medications, contact the U.S. Food and Drug Administration toll-free at 1-888-INFO-FDA (1-888-463-6332) or visit www.fda.gov. Consult your health care provider for more information.



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