



healthy beginnings

Diabetes and Pregnancy

PRENATAL NEWSLETTER

► INTRODUCTION

Congratulations on your pregnancy! This newsletter is written just for you, a pregnant woman with diabetes. We at Kaiser Permanente want to give you as much help and support as you need during this important time in your life and the life of your family. Doctors, nurses, dietitians, and other members of the health care team will work closely with you to keep your blood sugar as close to normal as possible. This will give you the best opportunity to have a healthy baby.

Kaiser Permanente offers you several programs to help with diabetes in pregnancy. Health care professionals at individual facilities offer classes for pregnant women about diabetes, meal planning, use of a blood glucose monitor, and other important information. A doctor, nurse, or diabetes educator will work with you individually during office visits and over the telephone to help keep you and your baby healthy. Remember, you are the most important member of your health care team. We are here to help.

► What should I do if I have diabetes during pregnancy?

By taking steps that will keep your blood sugar levels as close to normal as possible, you will be doing all that you can do to have a healthy and normal pregnancy. These steps include making wise food choices. Healthy eating will give you all the nutrition you need without extra sugars and fats that can cause your diabetes to get out of control. In addition, physical activity will help your body to lower blood sugar levels, help you to better control your rate of weight gain, and will help improve your overall well being. Walking is the easiest and healthiest form of physical activity. Many women also find that they enjoy yoga, swimming, and water exercise during pregnancy. Kaiser Permanente has many resources to help you keep active. Go to the Health Education center at your facility for more information on starting an exercise program. Be sure to talk with your doctor or other medical professional before starting an exercise routine.

Women who have diabetes during pregnancy may have a greater chance of developing high blood pressure (preeclampsia). Please review the warning signs listed in *Healthy Beginnings*, Issue 5 (24–28 weeks), and call your doctor right away if you develop any of these warning signs.

► What is diabetes?

Diabetes is a condition that affects the body's natural way of storing and using energy. It causes an overload of glucose (sugar) in the blood stream, which may lead to many health problems. In pregnancy, an overload of glucose can cause the baby to grow too large, making a natural delivery difficult. The baby may also have problems after delivery, and may need to be cared for in a special care nursery. This is why it's so important to control your blood sugar while you are pregnant.

There are three types of diabetes that can happen during pregnancy.

Gestational diabetes is the most common form of diabetes in pregnant women. It is a temporary form of diabetes caused by the body's changes during pregnancy and genetic risk factors. Because women can have gestational diabetes

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without knowing it, all women are tested for diabetes during pregnancy. Your chances of having diabetes in pregnancy are higher if:

- You had high blood sugar during a previous pregnancy.
- You have had other babies who weighed more than 9 pounds.
- You are overweight.

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► How will diabetes affect my baby?

There are no absolute guarantees, but with careful lifestyle changes, including wise food choices, physical activity, and good blood sugar control, it is less likely that there will be any problems. If you have gestational diabetes, the major risk is having a large baby (macrosomia) that may be too big for a vaginal birth. Some babies born to mothers with high blood sugar levels have a sudden drop in blood sugar (hypoglycemia) during their first few hours of life. While some babies may have problems, your health care team along with your baby's doctor will be there to assist you and your baby.

Problems of the baby born to a mother with diabetes may include the following:

Macrosomia (large baby) happens when the baby grows too big from receiving too much blood sugar from the mother. The growing baby changes the extra blood sugar to fat and may grow too large to fit through the birth canal. To avoid possible injury to the baby during a vaginal delivery, your doctor may recommend a cesarean section (C-section).

Hypoglycemia (low blood sugar) may occur if the mother's blood sugar levels have been consistently high, during pregnancy. This causes the fetus to develop high levels of insulin in the blood. After delivery, the baby no longer has the high level of sugar from

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► Will I need medication?

Sometimes making changes in your diet and activity level is not enough to keep your blood sugar in control. Your doctor or other medical professional may also prescribe insulin or oral medication. This could be necessary if your blood sugar is too high, even though you are making wise food choices and exercising.

If you need to use insulin or oral medication, you will get the help you need to learn how to take this medication. Your health care team may also ask you to check your first morning urine for ketones. Ketones are chemicals in your urine that your body produces when it does not get enough calories or does not have enough insulin.

► Glossary

CARBOHYDRATES

A nutrient in food that provides fuel for our bodies and affects the blood sugar. Carbohydrates are mainly found in foods in the starch, fruit, and milk food groups.

FAT

One of three nutrients that supply calories to the body. It is found in vegetable oil, lard, margarine, butter, shortening, mayonnaise, and salad dressing.

HORMONE

A chemical substance produced within the body, which regulates activity of a specific tissue in the body. Estrogen, cortisol, and human placental lactogen are hormones produced by the placenta. They help the mother's body to prepare her for the pregnancy and birth. They also have an anti-insulin effect (see "insulin resistance" below).

HYPOGLYCEMIA

A condition when the blood sugar is less than 60mg/dL for an adult. This can be dangerous and should be avoided and treated rapidly.

INSULIN

A hormone made by the pancreas. Insulin helps glucose leave the blood and enter the muscles and other tissues of the body to provide fuel.

INSULIN RESISTANCE

A partial blocking of the effect of insulin. This can be caused by hormones produced by the placenta or by excessive weight gain.

KETONES

A substance produced by the body when it does not get enough calories or does not have enough insulin.

PANCREAS

A long gland that lies behind the stomach. The pancreas makes insulin and digestive enzymes.

PLACENTA

A special organ that joins the mother and fetus. It provides hormones necessary for pregnancy and supplies the fetus with water, oxygen, and nutrients (food) from the mother's blood.

PROTEIN

A nutrient that is important for growth and development. High protein foods include meat, poultry, fish, eggs, hard cheese, cottage cheese, yogurt, and milk. Non-animal sources of protein are nuts and seeds, peanut butter, legumes, soybeans, and tofu.

SELF BLOOD GLUCOSE MONITORING

A way to test blood sugar at home. A drop of blood is placed on a chemically treated test strip. A machine (or blood glucose/sugar meter) is used to read the blood sugar value of that drop of blood.

► Self blood glucose monitoring

Daily testing of blood sugar using a small monitor is extremely important for pregnant women with diabetes.

You can test your blood sugar by taking a small drop of blood from the end of your finger. The drop of blood is placed on a test strip in the blood glucose meter. The meter then "reads" the blood sugar level and displays it for you. Your medical professional can help you learn how various types and amounts of food affect your blood sugar.

Some things to remember about blood sugar testing:

- Wash and dry your hands well before testing.
- Do your first test of the day before you eat or drink anything. This is called a "fasting" blood sugar test.
- Do your after-meal blood sugar test 1 hour after you begin your meal.
- Do the finger-stick (to obtain the blood drop) on the sides of your fingertips, not the end or middle of the fingertips.
- There are fine or ultra-fine sized lancets (the needle that pokes your finger to get the blood drop). Try the ultra-fine sized one if the fine size bothers your fingers.
- All blood glucose meters need to be checked frequently. Make sure the meter is coded correctly before using it for the first time and every time you change to a new bottle of test strips. You should also do a quality control check of the strips with the solution provided in your test kit. Refer to the instructions that come with your meter for more details.

If you need assistance with your meter or blood sugar testing, please talk to your doctor, other medical professional, or visit the Health Education center at your facility.

► Nutrition tips

Meal Planning: Eat every 2 to 3 hours, which could be 3 meals and 3 to 4 snacks daily. Do not let over 10 hours pass between your bedtime snack and breakfast the following day. Spread out the carbohydrates (starches, milk, and fruit) you eat throughout the entire day.

Serving size: Be careful in this area. Using measuring cups and spoons will help. Your dietitian can show you the serving sizes you should be using. Be aware of the tendency to eat a large piece of fruit, thinking it is one serving, when it is actually 2 or more. The same considerations should be made for starches, such as bread, rice, or pasta.

Breakfast meal: Avoid milk, ready-to-eat cereal, and fruit first thing in the morning since most likely your body will not be able to handle the sugars in these foods. Instead, choose starches that are high in fiber and lean protein, such as old-fashioned rolled oats or egg whites and whole grain toast.

Calcium needs: Calcium is very important for bone health especially during pregnancy. Include 3–4 servings of calcium-rich foods per day. 1 serving = 8 oz. (1 cup) of non-fat or low-fat milk or calcium-enriched soymilk or 6 oz. of light yogurt or 1.5 oz. of cheese. Remember to count milk and yogurt as carbohydrate foods. A calcium supplement (1000–1200 mg) may be necessary if you are not able to tolerate these foods.

Purchasing packaged foods: Be sure to read the food labels when you buy foods that have already been prepared, such as frozen meals, packaged foods, and snacks. Ingredients are listed in the order of amount. If any of the first 4 ingredients are sugar, corn syrup, honey, fructose, or any word ending in "-ose," then that product probably contains too much sugar for someone with diabetes. It may raise your blood sugar too high. Whenever possible, eat fresh food that you prepare at home.

Fast food and restaurant food: Think carefully about your choices and ask questions. If you know that the portions are too large, pack away half of the food before you start eating. Also be aware of the ingredients; many sauces have extra sugar, fat, or starch that you may not know about unless you ask.

Empty calories: Limit sugary desserts and snacks. These foods tend to raise the blood sugar too high. The artificial sweeteners *Splenda*, *Equal*, and *NutraSweet* (aspartame) are safe to consume in moderation during pregnancy. Also, avoid drinking calories.

► Diabetes menu choices

This is a quick reference guide and does not replace meeting with a dietitian who will individualize this plan and discuss other food choices.

Non-starchy vegetable group: as desired at each meal

	Starch group	Protein group	Milk group	Fruit group	Fat group
BREAKFAST	<ul style="list-style-type: none"> • 1-2 slices whole grain bread OR • ½ - 1 cup cooked oatmeal OR • 1-2 (6") corn or wheat tortillas OR • ½ -1 whole wheat English muffin 	<ul style="list-style-type: none"> • 1 egg OR • 2 egg whites OR • 1/8 cup nuts OR • 1-2 Tbsp peanut butter (natural) OR • 1 oz cooked lean meat 			<ul style="list-style-type: none"> • 1 tsp butter, oil, or mayonnaise OR • 1 Tbsp cream cheese OR • 2 Tbsp sour cream
MORNING SNACK	<ul style="list-style-type: none"> • 1 slice whole grain bread OR • 6 (2") whole wheat crackers OR • 1 (6") corn or wheat tortilla OR • 1 (6") chapati OR • ½ (6") pita OR • 1 cup poha (rice flakes) 	<ul style="list-style-type: none"> • 1 oz cooked lean meat, chicken, or fish** OR • ¼ cup cottage cheese OR • 1 oz cheese OR • ¼ cup paneer 		<ul style="list-style-type: none"> • ½ large banana OR • ½ cup mango OR • 1 small piece fresh fruit (tennis ball size) OR • 1 cup diced cantaloupe OR • ½ large grapefruit OR • 1 large kiwi 	
LUNCH	<ul style="list-style-type: none"> • 1 cup starchy vegetables OR • 2 slices whole grain bread OR • 2 (6") corn or wheat tortillas OR • 2/3 cup cooked pasta, cooked rice, or baked beans OR • 1 medium potato OR • ½ naan of 8" x 2" OR • 2 (6") chapati • 1 cup cooked beans or lentils* 	<ul style="list-style-type: none"> • 2 oz cooked meat, chicken, fish, or shellfish (crab, clams, lobster, or shrimp)** OR • ½ cup cottage cheese OR • 2 oz. light tuna canned in water ** OR • 1 cup tofu OR • 2 oz cheese OR • 4 medium sardines OR • 2 Tbsp grated parmesan cheese 	<ul style="list-style-type: none"> • 1 cup nonfat/low fat milk OR • 1 cup low fat plain or light soy milk with calcium OR • 2/3 cup nonfat/low fat plain or light yogurt 		<ul style="list-style-type: none"> • 1 tsp butter, oil, or mayonnaise OR • 1 Tbsp vinegar and oil dressing OR • 2 Tbsp avocado
AFTERNOON SNACK	<ul style="list-style-type: none"> • 1 slice whole grain bread OR • 6 (2") whole wheat crackers OR • 1 (6") corn or wheat tortilla OR • 1 (6") chapatti OR • 1 ½ cup puffed rice OR • ½ (6") pita 	<ul style="list-style-type: none"> • 1 egg OR • 2 egg whites OR • 1 oz cooked lean meat OR • 1 oz cheese OR • 1/8 cup nuts OR • ¼ cup cottage cheese 		<ul style="list-style-type: none"> • 1 small piece fresh fruit (tennis ball size) OR • ½ cup unsweetened canned fruit drained OR • 17 small grapes OR • 1 ¼ cups cubed watermelon 	
DINNER	<ul style="list-style-type: none"> • 2/3 cup cooked pasta, cooked rice, or baked beans OR • 1 whole wheat dinner roll and ½ cup cooked corn, peas, or winter squash OR • 1 small potato (tennis ball size) and ½ cup cooked starchy vegetables • 1 cup cooked dhal or legumes* 	<ul style="list-style-type: none"> • 3 oz chicken, turkey, beef or lamb OR • 3 oz cooked fish** OR • 1 ½ cups tofu OR • ¾ cup tempeh OR • ¾ cup paneer 	<ul style="list-style-type: none"> • 1 cup nonfat/low fat milk OR • 1 cup low fat, plain or light soy milk with calcium OR • 2/3 cup nonfat/low fat plain or light yogurt 		<ul style="list-style-type: none"> • 2 tsp butter, oil, or mayonnaise OR • 2 Tbsp vinegar and oil dressing
EVENING SNACK	<ul style="list-style-type: none"> • 1 slice whole grain bread OR • 6 (2") whole wheat crackers OR • ½ cup cooked oatmeal 	<ul style="list-style-type: none"> • 1 oz cheese OR • 1 oz cooked lean meat OR • 1 - 2 Tbsp peanut butter (natural) OR • ¼ cup cottage cheese 	<ul style="list-style-type: none"> • 1 cup nonfat/low fat milk OR • 1 cup low fat plain or light soy milk with calcium 		

Starchy vegetables such as corn, peas, winter squash, potatoes, beans, plantains, and yams are in the starch group. 3 oz. meat is equal to a deck of cards.

Free foods: Lettuce, cucumber, cabbage, radishes, celery, mushrooms, zucchini, bell peppers, chili peppers, garlic, unsweetened mustard, unsweetened lemon/lime juice.

Foods to Avoid: Sugar, jam, honey, syrup, regular sodas, Kool-Aid, lemonade, all juices including orange, apple, cranberry, grape, etc.

* equals 2 starch and 2 protein

** Do not eat swordfish, shark, king mackerel, tilefish or raw fish. Limit canned white albacore tuna to 6 oz per week only. These fish may contain dangerous levels of mercury, which may be harmful to your baby.

Eat up to 12 oz per week of a variety of fish and shellfish that are lower in mercury.

► Proper weight gain

Proper weight gain is necessary to provide the baby with good nutrition during pregnancy. But gaining too much weight increases insulin resistance in the body, making blood sugar go up. Unless you are underweight, you should gain very little weight (0-5 pounds) in the first trimester. After 20 weeks, the average weight gain is about 1/2 to 1 pound per week. Women who are overweight or obese before they become pregnant should not gain more than 15 pounds during pregnancy.

► Food choices and weight gain

Making good food choices is one of the most important things you can do to have a healthy pregnancy. This will help keep your blood sugar in the normal range. It will also provide your growing baby with balanced nutrition. You will be able to meet with a dietitian to discuss individualized meal plans and snack ideas.

Carbohydrates affect your blood sugar and give you energy. They are found in foods mainly in the starch, fruit, and milk groups. During pregnancy, approximately 40–45 percent of calories per day should come from carbohydrate foods. Recommended carbohydrate foods include beans, lentils, and starchy vegetables. Other carbohydrate foods are brown rice, potatoes, whole grain breads, pastas, and old-fashioned oatmeal. A pregnant woman generally needs more protein. Be sure to include lean protein foods, non-fat or low-fat dairy products, fresh vegetables, and a small amount of fruit daily.

► Should I breastfeed?

We strongly encourage breastfeeding.

The body uses the calories stored during the first part of pregnancy to make breast milk. About 300-500 calories per day are used for breastfeeding. By 6 weeks after delivery, women who breastfeed usually have lost an average of 4 pounds more than women who bottle feed. This can be especially important for women with gestational diabetes, since keeping a normal body weight may reduce the risk of developing diabetes later in life.

Breastfeeding has many advantages for your baby. Breastmilk contains substances that are known to protect babies against infection, certain illnesses, and allergies. Breastmilk is easier to digest than formula. The minerals it contains are better absorbed than those found in infant formula.

If you have had gestational diabetes, you should be able to breast-feed your baby without any complications. The amount and type of milk your body makes is the same as a woman who did not have gestational diabetes.

If you took insulin before you were pregnant, your insulin needs may be different while breastfeeding. In particular, women with type 1 diabetes should be aware that their blood sugar may drop during or after nursing. You may want to check your blood sugars before and after feedings during the first few weeks of breastfeeding. You may need to eat snacks to prevent low blood sugar, especially during the night. Oral medications used to control blood sugar are usually not recommended during breastfeeding. If you took one of these medications before pregnancy, talk to your doctor or other medical professional before using it again. Most likely, you will need to control your blood sugar with wise food choices, exercise, and possibly with insulin while breastfeeding.

► How will diabetes affect my baby?

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the mother but continues to produce high levels of insulin. As a result, the newborn's blood sugar becomes very low. Immediately after birth, your baby's blood sugar level will be checked. If it is too low, the baby may need to be fed right away. We will provide special monitoring in the nursery if your baby needs it.

Polyhydramnios (excess amniotic fluid) happens in a relatively small number (about 10 percent) of the women with pre-existing diabetes. Excess fluid can cause premature labor or other problems.

Respiratory distress syndrome (breathing difficulty) is more common in babies of mothers with diabetes. This is due to a delay in maturity of the lungs. Your doctor may do special tests to see if the baby's lungs are developed before the baby is born.

Babies born to mothers whose blood sugar was high at the beginning of pregnancy have a somewhat greater chance of complications, such as birth defects. However, this risk can be lowered if blood sugars are well controlled before pregnancy. Babies of some mothers who have diabetes before pregnancy have a slightly increased chance of stillbirth. Usually special monitoring starts between 32–34 weeks for mothers who are taking insulin or oral medications. If a mother is not on medications, then special monitoring usually starts by 40 weeks of your pregnancy.

► Delivery of the baby

When the mother's blood sugar remains normal throughout the pregnancy, diabetes should not affect the delivery of the baby. Sometimes a cesarean section (C-section) may be necessary to deliver a baby that is too big to fit through the birth canal. Choices about delivery are very individual. You should discuss all of your concerns with your doctor or other medical professional.

► What is diabetes?

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- A close relative, such as a parent, brother, or sister has diabetes.
- You are part of an at-risk ethnic group, including African American, Asian American, Hispanic/Latina, Native American, Native Alaskan, and Pacific Islander.
- You have pre-diabetes or glucose intolerance.

Gestational diabetes usually begins after the first trimester of pregnancy. Most women with this type of diabetes have normal blood sugar in the first part of pregnancy.

Type 2 diabetes is the second most common form of diabetes in pregnancy. Type 2 diabetes is usually diagnosed in adulthood. It has become more common in childhood and adolescence due to the increase in childhood obesity. This type of diabetes can be managed with lifestyle changes (diet and exercise) or may need medications such as insulin or oral medication. Women with type 2 diabetes should see their doctor before they become pregnant to discuss steps they can take to ensure a safe pregnancy and a healthy baby. Women with type 2 diabetes should also be seen as soon as they find out they are pregnant, so that blood sugar levels can be monitored carefully.

Type 1 diabetes is less common but more likely to cause problems in pregnancy. Type 1 diabetes is usually diagnosed in children and young adults. In type 1 diabetes, the body does not produce insulin, a hormone that is needed to change sugar (glucose), starches, and other food into energy that the body needs to function. Type 1 diabetes can be managed with diet, exercise, and insulin to control blood sugar.

► What happens after pregnancy?

Once you have delivered your baby, the impact of diabetes often changes dramatically.

If you have gestational diabetes, you will probably not need insulin or oral medication after you deliver. However, as many as 60 percent of women with gestational diabetes will develop type 2 diabetes later in life. It is important that you have a blood sugar test in the laboratory 6 weeks after your baby is born to see if you still have diabetes. You may need to do this test again after you stop breastfeeding. If you do have diabetes, your doctor or other medical professional will let you know if you need to take diabetes medications. If you have pre-diabetes, wise food choices and exercise, and in some cases medication, can help delay the onset of type 2 diabetes. If your blood test is normal, it will still be important for you to keep in mind that you have an increased risk of developing diabetes later, especially if you gain weight.

If you took insulin or oral medications to treat your diabetes before you were pregnant, you will often have a decrease in your insulin needs immediately after birth. However, your body will gradually increase the need for insulin as the days go by. That's why it is important to check your blood glucose frequently before meals to know when to adjust your medication. Since oral medications are not recommended during breastfeeding, breastfeeding moms are encouraged to use insulin to control their blood sugars.

To decrease your risk for diabetes, remember the following:

- Try to reach or maintain a healthy weight. Losing the weight you gained during pregnancy will help decrease your risk.
- Try to eat plenty of fruits, vegetables, and whole grains.
- Aim for at least 30 minutes of physical activity each day.
- Have a yearly laboratory test of your blood sugar to see if you have developed diabetes.
- Plan your pregnancies and consult with your doctor or other medical professional before getting pregnant again to be sure your blood sugar is normal. Very high blood sugars in early pregnancy may cause miscarriages and birth defects in the developing fetus. If your blood sugar is in control before you get pregnant, miscarriages and birth defects can usually be prevented.

This information is not intended to diagnose health problems or to take the place of medical advice or care you receive from your physician or other health care professional. If you have persistent health problems, or if you have additional questions, please consult with your doctor. If you have questions or need more information about your medication, please speak to your pharmacist.