

# Pregnancy with Pre-Existing Diabetes

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Our goal is to help you have a safe pregnancy and a healthy baby. When you have pre-existing diabetes, keeping your blood sugar in the target (goal) range for pregnancy is one of the most important things you can do to take care of yourself and your baby. You can do this by:

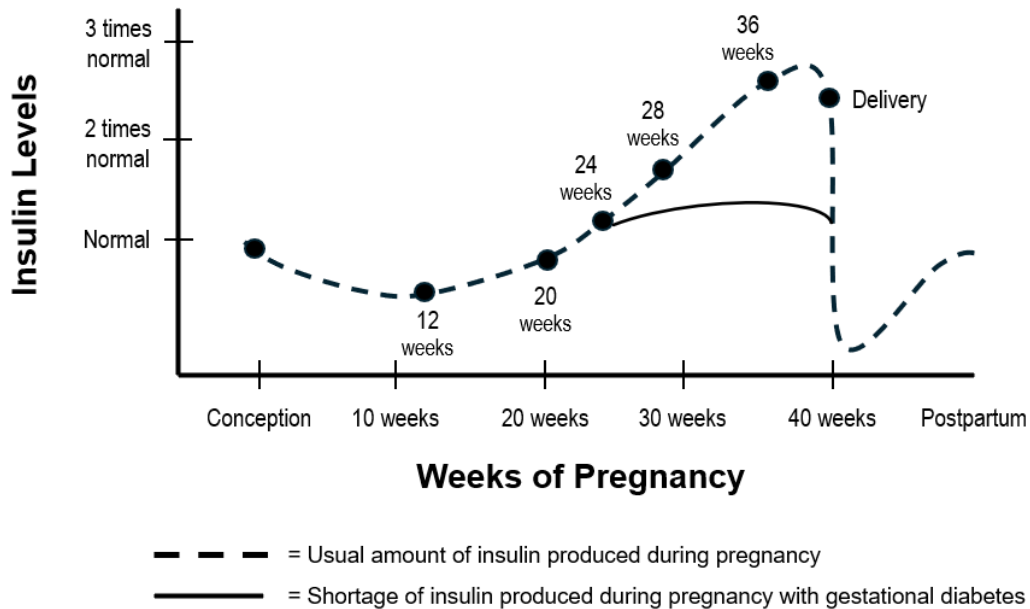
- Following a healthy meal plan for pregnancy
- Being active (if recommended by your healthcare provider or dietitian)
- Tracking your weight gain during pregnancy
- Checking and tracking your blood sugar
- Following up often with your provider about your blood sugar and treatment
- Checking your blood pressure

## How does pregnancy affect blood sugar?

As your body changes and your baby grows, the placenta (the organ that forms in your uterus during pregnancy that provides your baby with oxygen and nutrients as it grows) makes special chemicals called hormones. These hormones increase your need for insulin. This is why it is important to watch your blood sugar and adjust your diabetes treatment weekly throughout pregnancy. Your insulin needs are changing quickly. Some common insulin changes throughout pregnancy include:

- **In the 1<sup>st</sup> trimester:** Insulin needs decrease slightly in the first trimester.
- **In the 2<sup>nd</sup> and 3<sup>rd</sup> trimester:** Starting in the second trimester and continuing until around 38 weeks of pregnancy, your insulin needs increase. Insulin needs may decrease slightly just before birth.

- **After childbirth:** Insulin needs decrease after childbirth, when you deliver the placenta or when it is removed. Often, insulin needs are lower right after giving birth than they were before pregnancy. Insulin needs will usually return to your normal level of need after delivery. We use your insulin need level before pregnancy to help us determine your insulin needs after giving birth.



### What are the risks for my baby if my blood sugar levels are high?

High blood sugar levels in the pregnant parent will travel through the placenta and affect the baby. When babies receive this extra blood sugar, they will make more insulin to help deal with the extra sugar. Risks from this include:

- Having a large baby at birth (weighing more than 9 pounds or 4,000 grams)
  - This may cause a higher risk of harm to the baby, such as a broken collar bone or other injuries, during delivery.
- Low blood sugar (hypoglycemia) in your baby at birth
  - Babies make insulin in response to the pregnant parent's high blood sugar levels. Right after birth, the baby's blood sugar may

drop too low since the baby is no longer receiving their parent's extra blood sugar.

- Other risks like premature (early) birth, birth defects (your baby's body parts developing differently from normal), stillbirth (when a baby dies in the uterus or during birth), jaundice (yellowing of the skin and eyes due to liver issues), or learning difficulties
- Possibly increasing the risk of higher body fat, high blood pressure, and type 2 diabetes for your child later in their life

All these risks are much lower in parents who can keep their blood sugar levels within target ranges during pregnancy.

### **What are the risks for me if my blood sugar levels are high?**

Risks from high blood sugar for the pregnant parent include:

- **Preeclampsia** (a type of severe high blood pressure) that can lead to stroke, seizures, and kidney failure
- C-section or other complications (medical issues) related to giving birth to a large baby

### **How do I monitor (check) and manage my blood sugar levels during pregnancy?**

It is important to monitor your blood sugar levels closely throughout pregnancy. Check your blood sugar levels when you're fasting (you haven't had anything to eat or drink for 8 hours), before each meal, 2 hours after each meal, before bed, and during the night (if needed). It may be helpful to use a **continuous sugar monitor** (a wearable device that tracks your blood sugar levels at all times). Check to make sure you are in the target ranges for blood sugar levels for pregnancy using the table below:

### Target blood sugar levels (in mg/dL) during pregnancy

Overall range	Fasting	Before a meal	1 hour after a meal	2 hours after a meal
65-140	Less than 95	Less than 95	Less than 140	Less than 120

#### How do I manage low blood sugar (hypoglycemia)?

You should treat low blood sugar if your levels are less than 65 mg/dL. Low blood sugar is common in the 1<sup>st</sup> trimester. Always carry fast-acting carbohydrates (like juice or glucagon tablets) with you and wear your medical ID. Ask your doctor to give you a prescription for a glucagon injection pen, and have your friends and family trained to use it on you in an emergency.

#### How do I manage high blood sugar (hyperglycemia)?

Having slightly high blood sugar levels increases the risk of having a large baby. In pregnancy, having a blood sugar level higher than 200 mg/dL for more than 4 hours increases the risk of a stillbirth and **diabetic ketoacidosis, or DKA**. DKA is a life-threatening condition that happens when your body can't make enough insulin.

- If you have Type 1 diabetes and your blood sugar is above 200 mg/dL, check for **ketones** (acids your body produces when you don't have enough insulin). Read more about how to check for ketones in the section below. **Urine ketones** (ketones in your pee) can develop at lower blood sugar levels in pregnancy.
- If your blood sugar is higher than 200 mg/dL for 4 hours or more, or if you do a test and you have urine ketones, please call Michigan Medicine Birth Center Triage at (734) 764-8134.
- If you have urine ketones and any of the possible signs or symptoms of DKA, please go straight to Birth Center Triage at Von Voigtlander Women's Hospital or call 911 if you are not able to get there yourself.

Possible signs of DKA include a blood sugar level over 200 mg/dL, urine ketones, and difficulty breathing, nausea, or vomiting.

### **How do I test for ketones?**

You can get ketone test strips through a doctor's prescription, or you can buy them at a pharmacy. Follow these steps to use the ketone test strips:

1. You can either pass the end of the ketone test strip through your urine as you pee (be sure to wet it completely), or collect your pee in a clean, dry container and dip the test strip in.
2. Shake off any extra drops of urine from the test strip.
3. Wait 15 seconds (or whatever time it says to wait on the brand of test strips you are using).
4. Compare the color on your test strip to the color key on the side of the bottle. Any color other than the original beige (pale brown color) means that there are some ketones in your urine. The closer the color is to deep purple, the more ketones that are in your body.

### **What are some other risks related to pregnancy and diabetes?**

Risks to you during pregnancy related to complications from diabetes include:

- Worsening of **diabetic retinopathy** (eye damage caused by diabetes)
  - It is recommended to get a dilated eye exam each trimester during pregnancy.
- Increased risk of **preeclampsia** from diabetic kidney disease
  - Preeclampsia is a condition that only occurs in pregnancy, typically in the late 3<sup>rd</sup> trimester. Blood pressure rises and can lead to seizures, strokes, and kidney failure. In early stages of preeclampsia, there are usually no signs or symptoms. That is why it is important to watch your blood pressure carefully during pregnancy.

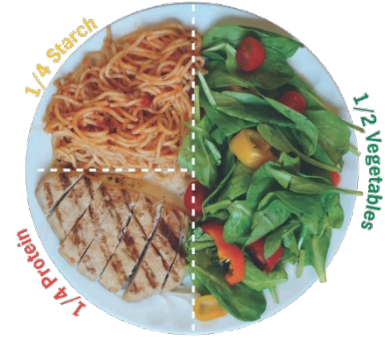
- Ask your doctor if you should be measuring your blood pressure at home. If you have a blood pressure higher than 140/90, that is a concern and you should call your doctor or Birth Center Triage at (734) 764-8134.
- Signs of preeclampsia can include headache, changes in vision, swelling, and right-sided upper stomach pain.

### **What should I eat and drink to stay healthy during pregnancy?**

- **Eat 3 small meals and 3 snacks per day.** This helps to spread out the carbohydrates (carbs) that you're eating evenly during the day. Examples of different carb foods are included in another section below. 1 piece of bread or fruit is about 15 grams (g) of carbs. As you snack, avoid “stacking insulin” (taking multiple insulin correction doses within 4 hours of your last correction dose). We recommend that you eat:
  - 15-30 g carbs for breakfast
  - 15-30 g carbs for a morning snack
  - 45-60 g carbs for lunch
  - 15-30 g carbs for an afternoon snack
  - 45-60 g carbs for dinner
  - 15-30 g carbs for a bedtime snack
- **Eat a breakfast that is light in carbs.** Your body is most insulin resistant (doesn't use the insulin well) in the morning. This means your body cannot handle as many carbs at this time. Foods and drinks to avoid in the morning include milk, fruit, cereal, bagels, and juice.
- **Eat every 3-4 hours.** Eating around the same times each day helps keep your blood sugar levels more even, giving you a steady energy source. Keep snacks in your car or purse so you have them ready when you need them.

- **Eat a bedtime snack.** Snacking before bedtime helps to keep your sugar levels even through the night. Try not to go more than 10 hours between your bedtime snack and breakfast.
- **Balance your meals and snacks with carbs, protein, and fat.** Foods that contain carbs raise your blood sugar, and blood sugar is used for energy. Eating a balanced meal with carbs, protein, and fat will help slow down the release of sugar into your blood, and it can help keep you from feeling hungry.
  - **Carb foods:** Breads, pasta, rice, barley, quinoa, grains, legumes (beans, peas, lentils), cereals, oatmeal, starchy vegetables (corn, potato, squash), milk and yogurt, fruit, sweets, sugary beverages, and some condiments
  - **Protein foods:** Meat, cheese, eggs, fish, tofu, tempeh, beans, lentils, nuts
  - **Healthy fats:** Nuts, seeds, olive oil, avocado oil, nut butter, avocado, fish
- **Do not drink your carbs.** Avoid sources of liquid carbs, such as regular soda pop, juice, Kool-Aid, lemonade, and sweetened tea. Liquid carbs will raise your blood sugar levels very quickly.
- **When you drink milk, only drink 1 cup (8 ounces).** You may drink 4 cups per day, but space them out during the day.
- **Choose high-fiber foods, such as whole grain products.** Examples include whole wheat bread, brown rice, oatmeal, whole wheat pasta, fruits, vegetables, beans, and lentils. Whole grains are good sources of fiber. Fiber helps to slow down your digestion of carbs and helps control your blood sugar. Make sure to look for the word “whole grain” on the package ingredients. Limit the amount of processed or refined grains that you eat, such as instant oatmeal, instant rice, or white bread.

- **Eat many different kinds of foods.** A well-balanced diet is healthy for you and your baby. Include foods from all food groups, including fruits, vegetables, protein, dairy, and whole grains.
- **Use artificial (fake) sweeteners carefully.** Artificial sweeteners are added to foods to reduce the impact on blood sugar. The most common ones are sucralose and aspartame. Limit artificial sweeteners to 2-3 servings per day. Check with your doctor or dietitian about using artificial sweeteners during pregnancy.
- **Use your blood sugar measure as a tool.** Each person responds to the carbs in foods differently. If you notice your blood sugar is too high 2 hours after eating a certain food, avoid or limit that food in your diet. For example, if your blood sugar is too high after eating 1 cup of white rice, try eating brown rice or eating a smaller amount of rice with vegetables and protein.
- **Keep taking your prenatal vitamins and any supplements that your doctor has prescribed.**



### **How can I plan safe and healthy future pregnancies with diabetes?**

- Plan any future pregnancies by working with your endocrinologist.
- Talk with your provider about what contraception (birth control) is right for you.
- Make sure to get your **A1C level** (the average amount of sugar in your blood over the last 3 months) to a goal level of less than 6.5% before you stop using contraception. The most common birth defect in babies exposed to high blood sugar in the 1<sup>st</sup> trimester is a heart defect. The heart is formed by 6 weeks after your last menstrual period, so it is



important to control your blood sugar levels before you become pregnant.

### **Who should I contact if I have any questions?**

Please feel free to call if you have any questions. Our phone number is (734) 998-2475.

- If your blood sugar level is over 200 mg/dL and you cannot reach us, please call the fellow on call at (734) 936-6267.
- You may also call Michigan Medicine Birth Center Triage for any urgent concerns about your blood sugar or pregnancy. The phone number is (734) 764-8134.

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Insulin needs during pregnancy graph adapted from: Marcinkevage, J. A., & Narayan, N. M. (2011). Gestational diabetes mellitus: taking it to heart. *Primary Care Diabetes*, 5(2), 81-88.

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