GESTATIONAL DIABETES MANAGEMENT

The Diabetes and Pregnancy Program
Accredited by Association of
Diabetes Care & Education Specialists
St. Luke's University Health Network
Maternal Fetal Medicine

St Luke's
UNIVERSITY HEALTH NETWORK

484-526-3900

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Introduction

A diagnosis of gestational diabetes often can cause worry and fear in a mother-to-be. The Diabetes and Pregnancy team at St. Luke's Maternal Fetal Medicine Department is ready to support you through the rest of your pregnancy to make caring for your diabetes as easy as possible. Our goal is for you and your baby to remain healthy throughout your pregnancy.

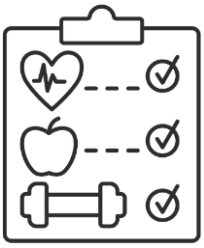
The Diabetes Team

The diabetes team consists of a nurse practitioner, a registered nurse and registered dietitians who are Certified Diabetes Educators. Our team works closely with the Maternal Fetal Medicine doctors to assure that you will receive streamlined, state-of-the-art care.

If you have any questions or concerns, please call 484-526-3900.

Our Program

The program includes attending 2 main classes:



Class 1:

- Introduction to Gestational Diabetes
- Monitoring Blood Sugars
- Diet and Exercise Recommendations

Class 2:

- Review of Class 1 (discuss meeting diet and exercise recommendations)
- Discuss Medications (e.g. insulin, metformin)
- Post-Partum Guidelines

Follow-up appointments will be scheduled based on the recommendations of diabetes team. We encourage patients to schedule follow-up visits as needed based on their understanding of the education.

To schedule an appointment, please call 484-526-3900.

Approved by the Patient Education Committee
Approval Date 11/2023 – Approval #23-0017

What is Gestational Diabetes?

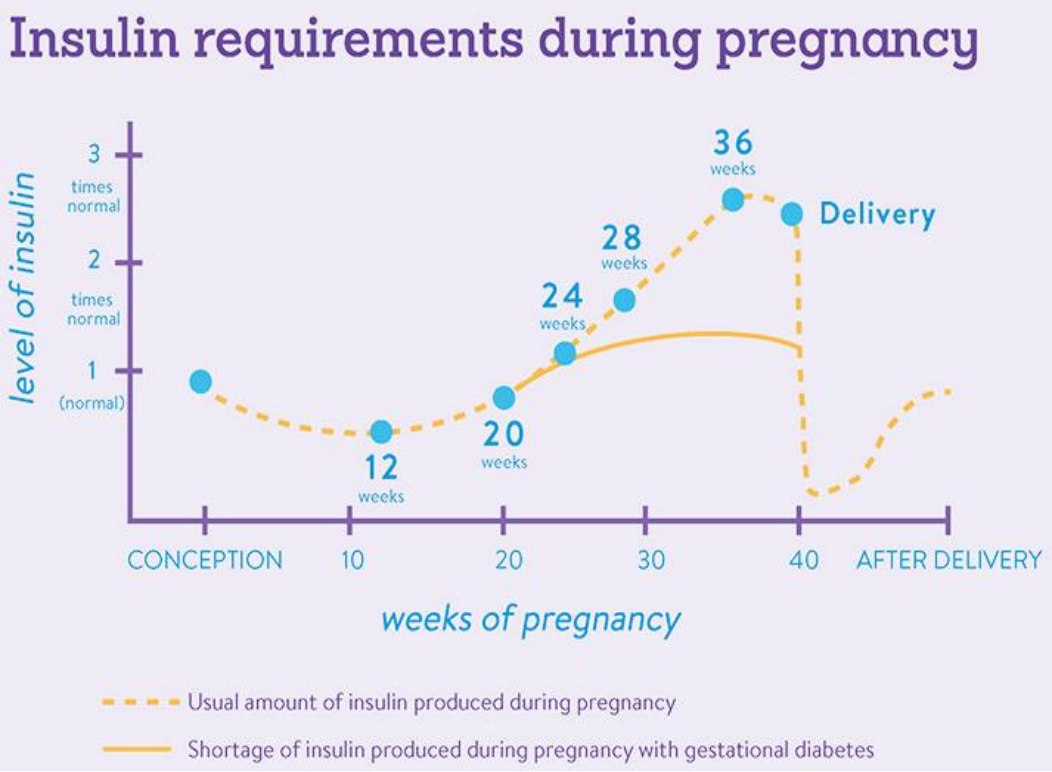
Gestational diabetes is diabetes that develops during pregnancy. In the United States, gestational diabetes affects about 2% to 10% of all pregnancies. Treatment for gestational diabetes usually includes diet, physical activity, blood sugar monitoring and medicine (if needed). If left untreated, gestational diabetes can cause problems for both mothers and babies.

To better understand gestational diabetes, you need to understand how your body works.

- You eat food that digests into sugar; these foods are called **carbohydrates.**
- Once carbohydrates are digested and absorbed into your blood stream, your body needs to move them into your cells. **Insulin** is a hormone in the body which normally makes this happen.
- Once in your cells, your body uses sugar as a fuel source (like gas for your car).

In Pregnancy:
When you are pregnant, your placenta releases other hormones that do not allow the insulin to work. This is called **insulin resistance**.

- To overcome insulin resistance during pregnancy, your body must make up to <u>three times</u> the insulin you normally need. Mothers who develop gestational diabetes are not able to make enough extra insulin.



Insulin requirements during pregnancy. HealthPartners Blog. https://www.healthpartners.com/blog/possible-give-gestational-diabetes/. Published 2023.

As your pregnancy progresses, placental hormones increase causing insulin resistance which happens around 24-28 weeks of pregnancy. These will increase until the baby is born.

That is why most women are ordered to have a Glucose Tolerance Test between 24 and 28 weeks of pregnancy.

Testing for Gestational Diabetes – Glucose Tolerance Test

In the United States, the test for gestational diabetes is a two-part Glucose Tolerance Test consisting of a one-hour and three-hour glucose tolerance test which are explained below.

Testing as early as the first trimester (<14 weeks) may be recommended if your pre-pregnancy BMI is >25 and you have one or more of the following risk factors:

- Age greater than 25
- Family history of diabetes – close blood relatives (e.g. parent, brother, sister)
- Sedentary/inactive lifestyle (little to no exercise)
- Ethnic background (e.g. African American, Latino, Asian, Native Americans, Pacific Islander)
- History of pregnancy with gestational diabetes or baby weighing more than 8 lbs. 13 oz.
- History of high blood pressure, polycystic ovarian disease (PCOS), hypothyroidism, high cholesterol, cardiovascular disease, or impaired fasting glucose
- Multiple gestations (being pregnant with more than one baby)

One-Hour Glucose Tolerance Test

This is done at any time of day; you **do not** need to be fasting. The laboratory will give you a drink and take your blood sugar in one hour. The table at right shows results and usual next steps.

Result:	Your doctor will usually:
Less than 134 mg/dl	Do nothing
135 mg/dl to 179 mg/dl	Send you for a three-hour test
Greater than 180 mg/dl	Send you for diabetes education

Three-Hour Glucose Tolerance Test

This test requires fasting (nothing to eat or drink) for at least eight hours before the test. You do not need to follow a special diet. You will need to stay at the testing site during the test. The following are the results for the three-hour test.

Test name:	Normal Result:
Fasting	Less than 95 mg/dl
One hour	Less than 180 mg/dl
Two hours	Less than 155 mg/dl
Three hours	Less than 140 mg/dl

If any <u>two</u> results are high, then your doctor will diagnose you with gestational diabetes.

Your doctor should go over these results with you. Your doctor can also diagnose gestational diabetes based on findings from an ultrasound examination (e.g. fetal macrosomia, polyhydramnios, etc.).

Your doctor may ask you to repeat the testing if you show signs of high blood sugar including:

- Polyhydramnios (too much amniotic fluid)
- Fetal Macrosomia (large baby on ultrasound)
- Sugar/glucose in your urine

Complications of Gestational Diabetes

Good blood sugar control helps to prevent the complications of gestational diabetes which occur if your blood sugars are too high.

The two main complications of gestational diabetes are:

Fetal Macrosomia means your baby is larger than normal.

Mother and baby share blood sugar levels. Therefore, if mom's blood sugars are too high, baby will start to make more insulin to lower their sugar levels.

The extra insulin can act like a growth hormone, causing the baby to become too big. Like adults, the baby will take this extra sugar and store it as fat, typically in the abdomen (belly). Therefore, the growth of baby's abdomen (belly) in comparison to the rest of their body will be measured during your growth ultrasounds.

A baby estimated to weigh more than 8 lbs. 13 oz. at delivery is too large. Overweight babies can be more difficult to deliver vaginally than a baby that is normal weight. This can lead to needing a Cesarean section. Studies show that children who are overweight at birth are at a higher risk for being overweight later in life.

Neonatal Hypoglycemia means low blood sugar in a newborn.

If mother's blood sugars are too high, baby will make more insulin to lower their blood sugar. Once delivered, baby will continue to make more insulin but does not receive the extra sugar, causing their blood sugars to drop.

Baby is highest risk in the first 12-24 hours of life. After birth, blood sugar levels will be checked several times until the blood sugars are normal. If baby's blood sugars are very low or not improving, baby may need to be admitted to the NICU for IV's to improve their blood sugar and monitoring.

Other complications of gestational diabetes include:

- Jaundice (yellowing of baby's skin and eyes)
- Polyhydramnios (too much amniotic fluid)
- Increase in blood pressure/Pre-eclampsia
- Pre-Term Labor or Stillbirth (in severe cases of poorly controlled blood sugars)

Treatment of Gestational Diabetes

Gestational diabetes is treated by the following: (1) Monitoring your blood sugars at home, (2) Diet (Medical Nutrition Therapy), (3) Exercise, (4) Medicine (if needed)

Blood Sugar Monitoring

The diabetes educator will order a blood sugar meter during your Class 1 visit; to be picked up from your pharmacy. Class 1 will include a demonstration of how to use your prescribed blood sugar meter. For questions related to cost please call your insurance company or pharmacy.

How to Check Blood Sugar with Meter:

1) Clean hands: wash your hands with unscented soap and water or use unscented waterless sanitizer. Alcohol can dry your fingers and is not recommended.
2) Prepare your meter and lancet device per the manufacturer's instructions.
3) Stick the sides of your fingertip to get a blood sample.
4) Apply the blood sample to the meter according to the instructions.
5) Record your result in a logbook or MyChart Glucose Flowsheet.

How Often to Test Blood Sugars: 4 times each day until baby is born

You must test four times daily even if blood sugars are well controlled because blood sugars continue to increase as you get closer to your delivery date.

Time	Goal
Fasting No food/only water for at least 8 hours but no more than 10 hours from the time of your bedtime snack, right in the morning before you eat breakfast	60-95* mg/dL *if on anti-diabetic medications: 60-90
2 hours After the Start of Each Meal 2 hours after the first bite of breakfast, lunch, and dinner (not snacks)	<120 mg/dL

1 hour After the Start of Each Meal = <140 mg/dL

- The diabetes team will notify you if you need to test 1 hour after your meal

It is normal for blood sugar levels to vary. Your doctor/nurse practitioner will make decisions in your treatment plan based on trends in your sugar levels, not just one number.

Times:	Testing:
	(1) Test Fasting Blood Sugar
	Breakfast
	(2) Test After Meal Blood Sugar
	Mid-Morning Snack
	Lunch
	(3) Test After Meal Blood Sugar
	Mid-Afternoon Snack
	Dinner
	(4) Test After Meal Blood Sugar
	Bedtime Snack

Test 4 Times* Daily

1. **Fasting**
2. **After Breakfast**
3. **After Lunch**
4. **After Dinner**

Eat every 2 - 3½ hours

*Do not test more than 4 times daily except with hypoglycemia. Your insurance/pharmacy will only dispense 100 test strips and 100 lancets every 25 days.

Reporting Blood Sugars:

Please report your blood sugars **once weekly** until delivery for our diabetes team to review.

Preferred Method:	**MyChart *Glucose Flowsheet*** (St. Luke's App or Website under "Track My Health")
Other Methods:	**Attachment to MyChart Message:** You can write down your blood sugars on a piece of paper, take a picture, and attach to a MyChart message. You can attach three images per message.
	Call 484-526-3900: If leaving a voicemail, please include name, date of birth, and specify timing (fasting/after meal) and blood sugar reading.

How to Contact the Diabetes Team:
MyChart message to Diabetes Nurse Practitioner (found in your care team) or reply to message from diabetes team. We strive to respond to messages within 24 - 48 hours during normal business hours Monday through Friday. If no response in 48 hours, please call 484-526-3900.

ALWAYS CALL 484-526-3900 IF BLOOD SUGARS ARE:

<60 (less than 60)
OR
>160 (greater than 160) twice in the same day

Medical Nutrition Therapy

A registered dietitian will give you a meal plan based on your individual needs to help you manage your gestational diabetes.

Weight Management

- This is not a diet to lose weight. It is a well-balanced way to eat that will help control your blood sugars.
- It is normal to maintain your weight or lose a small amount of weight when starting this meal plan due to being more conscious of your eating habits. This is okay as long as your baby continues to grow normally.

Appropriate Weight Gain for Pregnancy

Pre-pregnancy BMI	Total Weight Gain	Weekly Weight Gain (2^{nd} and 3^{rd} trimester)
Underweight: less than 18.5	28 to 40 lbs.	1 lb.
Normal Weight: 18.5 to 24.9	25 to 35 lbs.	1 lb.
Overweight: 25 to 29.9	15 to 25 lbs.	½ to ⅔ lb.
Obese: greater than 30.0	11 to 20 pounds	½ lb.

Refer to your After Visit Summary for your current BMI.

If you are pregnant with more than one baby, the registered dietitian will change your weight gain limits.

Adapted from: *Weight Gain During Pregnancy: Reexamining the Guidelines. Institute of Medicine of the National Academies.*

Calorie Needs in Pregnancy:

- When you are told “but you’re eating for two!” this refers to the quality, not quantity of your food.
- You only need an extra 200-400 calories per day in the second and third trimester to give the baby enough nutrition.

Example: 200 calories is about 1 cup of cooked regular oatmeal made with water and 8 oz. glass of skim milk.

Managing Common Problems:

Morning Sickness (most common in first trimester):

- Nibble on crackers, pretzels, toast, and other bland foods
- Cold or room temperature foods calm your stomach better than hot foods which may have stronger smells
- Consider trying protein shakes to supplement a meal or replace a snack. Read nutrition label for grams of carbohydrate.
- Avoid spicy, strong flavored, strong smelling, fatty, fried, and acidic foods (e.g. citrus, tomatoes, etc.)
- Do not lie down immediately after you eat; wait at least thirty minutes.
- Do not let your stomach get completely empty; have small frequent snacks every 2-3 hours

Vomiting in Pregnancy:

- Notify your OB doctor's office if you have vomited more than once in 4-6 hours, if you are unable to eat or drink for more than 4 hours, or have lost more than 5 lbs. since start of pregnancy
- Vomiting could result in elevated blood sugar levels. Vomiting may cause a stress response in your body which results in the release of stress hormones which increase the sugar in your blood.
- Discuss with your OB if the nausea/vomiting affects your life and causes you concern. Your OB may be able to prescribe medicine that can help decrease nausea and vomiting.

Avoid Dehydration:

- You should be drinking at least 8 -10, 8 oz. glasses of water every day
- Choose sugar-free beverages
- Generally safe sweeteners*:* limit to no more than 2-3 artificially sweetened beverages daily
    - aspartame (Equal®, NutraSweet™)
    - sucralose (Splenda®)
    - acesulfame potassium (Sweet One®)
    - Neotame (newer sweetener; limited studies)
    - Advantame (limited research)
- AVOID:
    - saccharin (Sweet 'N Low®)

Heartburn (more common later in pregnancy as the uterus expands to accommodate the baby):

- Avoid spicy, fried, fatty and acidic foods
- Avoid caffeine
- Sit upright while eating; do not lie down for one hour after eating
- Avoid food for two hours before bedtime
- Try sleeping with your head elevated

Essential Nutrients

Your body needs a variety of different foods for good nutrition. Your meal plan will contain guidelines to help meet your nutritional needs.

Carbohydrates (CHO or "carbs"): Needed for by mom and baby for main energy source

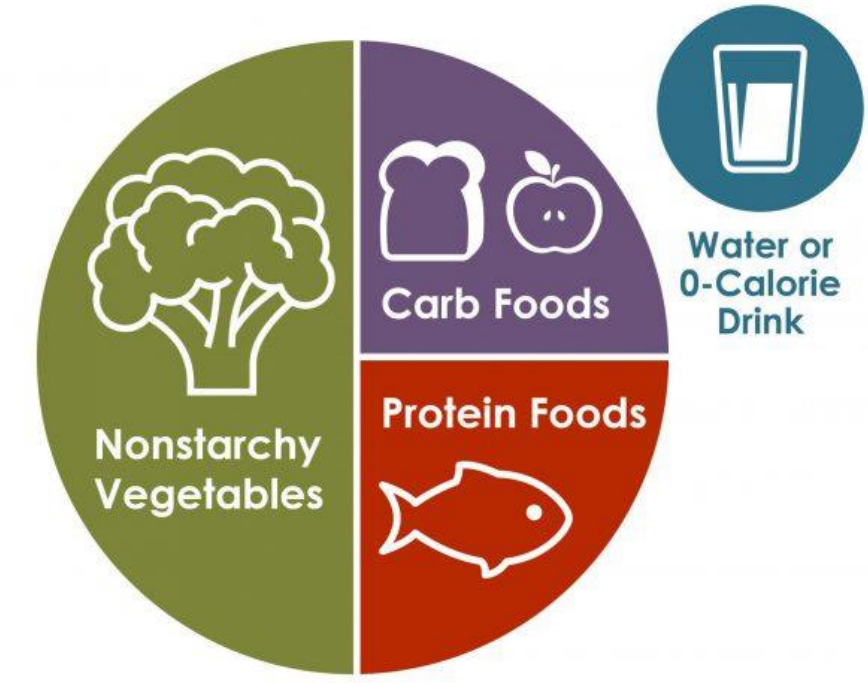
- Effect on Blood Sugar: Carbohydrates will be broken down into sugar which will increase your blood sugar.
  - Remember, even though carbohydrates increase your blood sugars, you and the baby need carbohydrates for proper growth and development.
- Food Sources: Starches, milk and yogurt, fruits and fruit juices, starchy vegetables.

Proteins (PRO): Needed by the baby for proper growth and development.

- Effect on Blood Sugar: In small amounts, protein will not raise your blood sugar levels.
  - Eating protein with every meal and snack can help to slow down the rise in your sugar from the carbohydrates.
  - Eating too much protein may cause blood sugars to remain high for longer periods of time similar to having too much fat at a meal.
- Food Sources: Animal meats, eggs, cheese, nuts, nut butters, seeds

Fats: Needed for essential fatty acids and help to promote proper brain and spinal cord development

- Effect on Blood Sugar: In small amounts, fat will not affect blood sugar levels.
  - Too much fat will cause blood sugars to slowly rise and stay high for longer.
- Food Sources:
  - Unsaturated Fats: come from vegetable sources and are healthier fats.
  - Saturated Fats: come from animal sources and are less healthy fats.



MyPlate Method:

Start with 9-inch dinner plate

Fill half with non-starchy vegetables, such as salad, green beans, broccoli, cauliflower, cabbage, and carrots.

Fill one quarter with a lean protein, such as chicken, turkey, beans, tofu, or eggs.

Fill one quarter with carb foods. Foods that are higher in carbs include grains, starchy vegetables (such as potatoes and peas), rice, pasta, beans, fruit, and yogurt. A cup of milk also counts as a carb food.

Carbohydrate Counting (1 Carb Serving = 15 grams (g) of carbohydrate)

The meal plan will limit the amount of carbohydrates you can eat with each meal.

- Do your best to not eat greater than or less than the recommended amount of carbohydrates listed on your meal plan.

Examples of Carbohydrates:

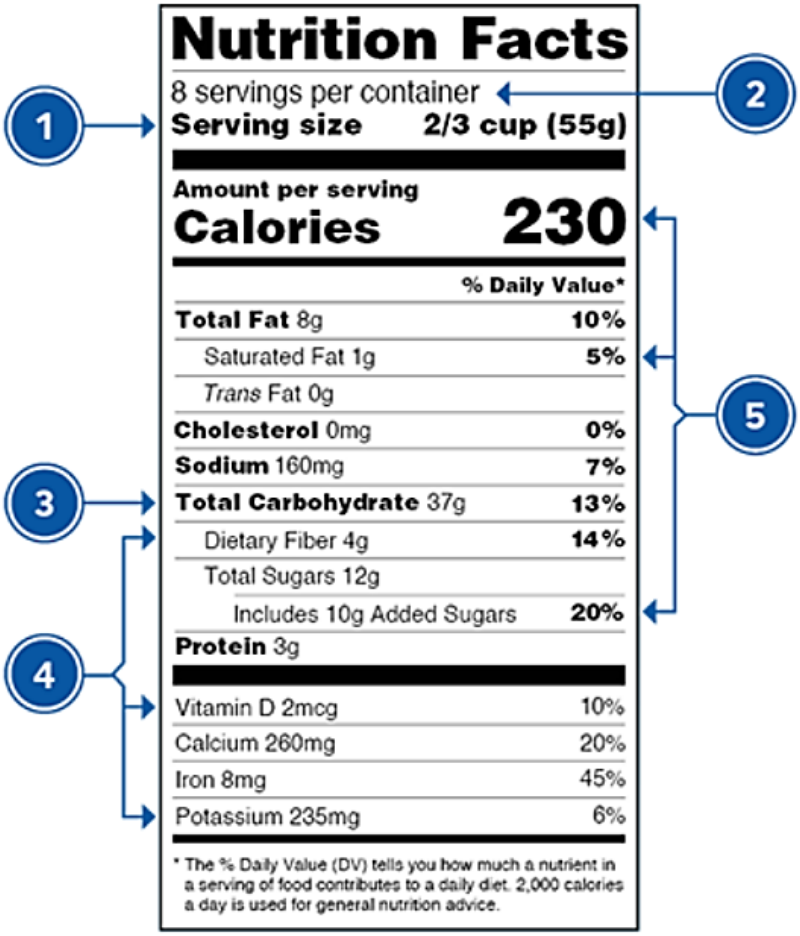
- ***Starch*** is found in pasta, cereals, potatoes, breads, beans, peas and lentils.
- ***Natural sugars*** are found in fruits, milk and vegetables.
- ***Added sugars*** are found in desserts, candy, jams, and syrups.
- ***Dietary fiber*** is found in fruits, vegetables, dried beans/peas and whole grain products such as breads and cereals.
  - ✓ Always choose whole grain, whole wheat, or brown rice when able to increase fiber intake
  - ✓ Try and include at least one high fiber food with each meal and each snack.
  - ✓ Foods that are higher in fiber will lead to lower blood sugars than low fiber options (example: wheat bread vs. white bread).

Resources to Count Carbohydrates:

- Read Nutrition Facts label
- Use Food Lists in this booklet
- Smart Phone App: MyFitnessPal or Calorie King
- Restaurant websites

Label Reading

1. Check the **Serving size** first. All the numbers on this label are for a 2/3-cup serving.
2. **This package has 8 servings.** If you eat the whole thing, you are eating 8 times the amount of calories, carbs, fat, etc., shown on the label.
3. **Total Carbohydrate** shows you types of carbs in the food, including sugar and fiber.
4. Choose foods with **more fiber, vitamins, and minerals**.
5. Choose foods with **lower calories, saturated fat, sodium, and added sugars**. Avoid *trans* fat.



Source: Food labels. Centers for Disease Control and Prevention. https://www.cdc.gov/diabetes/managing/eat-well/food-labels.html. Published September 20, 2022.

Food Lists

The following are examples of common foods and their serving sizes. If available, you should always refer to the product label for exact portion sizes.

Carbohydrates

The amount listed is equal to about **15 g** of carbohydrate.

Starches

Choose whole grains when possible!

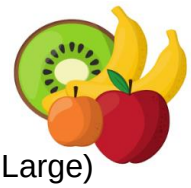
- ½ cup cooked beans (black, garbanzo, kidney, lima, pinto), lentils or split peas
- 1 slice of bread
- 1 tortilla or pita – 6 inches
- 1 waffle – 4 inches
- ½ English muffin
- ½ hot dog or hamburger bun
- ¼ large deli bagel – 1 oz
- ¾ cup unsweetened, ready to eat cereal, no fruit
- ½ cup cooked plain cereal or bulgur, no fruit
- 1/3 cup pasta, couscous, quinoa, rice or ¼ cup of sticky rice
- ½ cup of store brought spaghetti sauce
- ¾ oz pretzels
- 4-5 small crackers – ¾ oz
- 3 cups popcorn, popped
- 1 small protein granola bar (no chocolate coating)
- 5 large tortilla chips

Starchy Vegetables

- ½ cup peas, corn, mashed potato, sweet potato, or yam
- 1 small baked potato – 3 oz.

Fruits

- 1 small fresh fruit (apple, pear, orange) **Round fruits should be about the size of a tennis ball*
- 1 small banana (about the size of a dollar bill, peeled)
- ½ cup canned fruit – in water or juice. **NO** fruit packed in heavy syrup or light syrup.
- 2 tablespoons dried fruit
- ¾ cup blueberries, blackberries, or fresh pineapple
- 1 cup honeydew, cantaloupe or papaya cubes
- 1¼ cup watermelon cubes
- 17 (3oz.) small grapes
- 1 cup raspberries
- 1¼ cup whole strawberries (5 Large)
- ½ a large pear, apple or orange, grapefruit, or small mango
- 1 medium kiwi
- ½ avocado



Milk or Yogurt

- 1 cup milk (reduced fat or whole)
- 6 oz. plain or sugar free yogurt
- 1 cup unflavored Lactaid®, soy, almond or rice milk

Other

- ½ cup NO SUGAR ADDED ice cream
- ½ cup sugar free pudding
- 1 cup broth-based soup or cream soup

Protein

- 1-oz. cooked animal meat (beef, chicken, fish, lamb, pork, turkey, wild game)
- 1 oz. cheese, 1 string cheese
- ¼ cup cottage cheese
- 1 egg
- ½ - 1 handful of nuts (no shell)
- 2 tablespoon nut butter (peanut butter, soy butter, almond butter)
- ½ cup tofu

3 oz. of a protein is recommended at most meals. This is about the size of a deck of cards or the palm of your hand.

1 oz. = about 7g of Protein

*** If you are a vegetarian, please speak to the dietitian regarding other sources of protein.*

Non-Starchy Vegetables (= "free foods")
Examples: Asparagus, broccoli, beets, cauliflower, cabbage, green beans, carrots, spinach, lettuce, tomatoes, turnips, zucchini

Aim to have 2-3 servings of these daily with each meal (half your plate or about 2 handfuls).

<u>1 Serving</u>:

- 1 cup raw vegetables
- ½ cup cooked vegetables
- ½ cup tomato or vegetable juice

Fats

- 1 teaspoon of oil or solid fat such as margarine, butter, or mayonnaise
- 1½ tablespoon reduced fat cream cheese
- 2 tablespoons reduced fat salad dressing, sour cream or half and half
- 1 tablespoon salad dressing, cream cheese, or reduced fat mayonnaise
- 1 tablespoon seeds

Limited to 2-3 servings per meal. This will help limit excessive weight gain during pregnancy. You do not need to add fat to each meal. Many foods contain fat naturally.

Try to replace saturated fats with unsaturated fats. Choose liquid fats such as olive oil or canola oil instead of solid fats such as butter, lard, shortening, or margarine for cooking or baking.

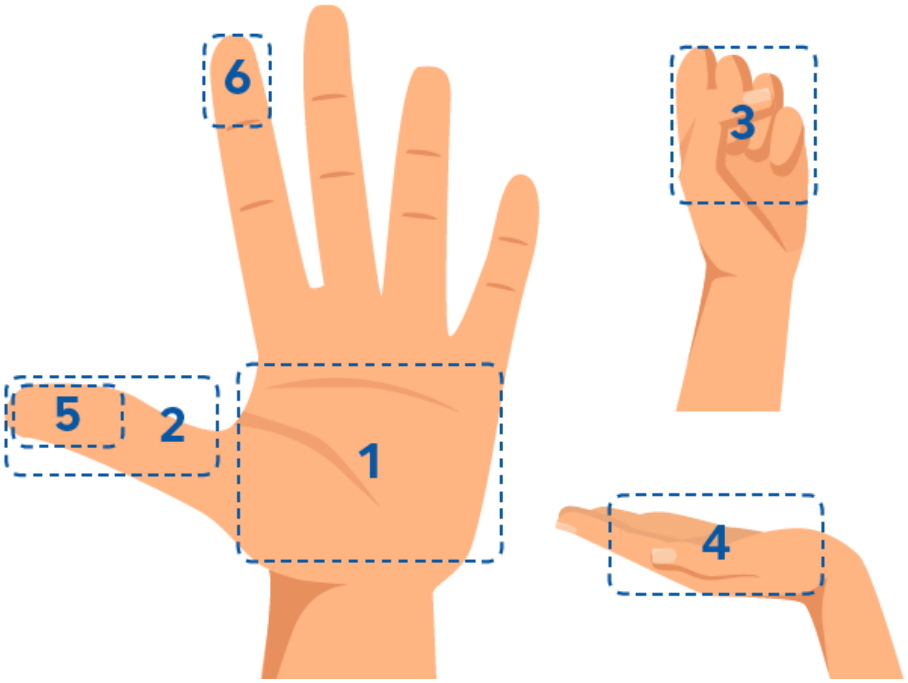
Combination Foods/Take-Out

- 1 cup casserole = 30 grams carbohydrate + 2 oz. protein
- 1 beef and bean burrito = 45 grams carbohydrate + 1oz. protein
- 1 small hard or soft-shell meat and cheese taco = 15 grams carbohydrate + 1oz. protein
- 1 "kid size" hamburger = 30 grams carbohydrate + 1oz. protein
- 6 chicken nuggets = 15 grams carbohydrate + 2oz. protein
- 1 small French fries or 2 small slices of plain thin crust pizza = 30 grams carbohydrate
- 6-inch submarine sandwich = 45 grams carbohydrate + 2oz. protein
- 1/3 cup hummus = 15 grams carbohydrate + 1oz. protein

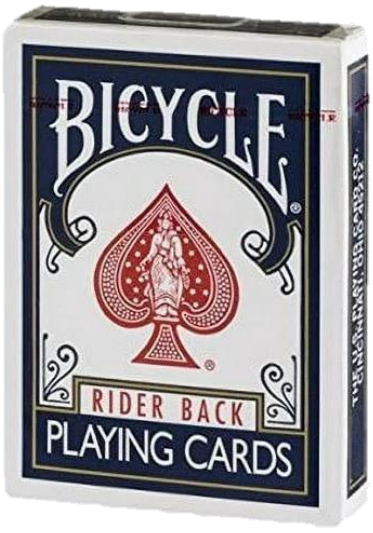
When eating out, always eat one less serving of carbohydrate than usual.
Foods that you do not prepare have hidden carbohydrates.

Tips for Estimating Portion Sizes

1. **3 ounces of meat, fish, or poultry**
   Palm of hand (no fingers)
2. **1 ounce of meat or cheese**
   Thumb (tip to base)
3. **1 cup or 1 medium fruit**
   Fist
4. **1–2 ounces of nuts or pretzels**
   Cupped hand
5. **1 tablespoon**
   Thumb tip (tip to 1st joint)
6. **1 teaspoon**
   Fingertip (tip to 1st joint)



Size of Tennis Ball: 1 small round fruit



1 Deck of Playing Cards = 3oz

Meal Planning Ideas

The following are some sample meals for breakfast, lunch and dinner. The goal of the meal plan is to decrease the portion sizes of the foods you enjoy eating. If you have questions regarding a food, please ask your dietitian.

The examples given do not include free foods, such as non-starchy vegetables. Adding free vegetables to a meal completes the meal and adds to your fullness.

Carbohydrate foods are in bold letters.
Depending on your calorie level, you may have additional servings of protein.
If you are hungry, you may add protein into your meals and snacks.

Breakfast: 45 grams carbohydrate *(3 carb servings)*

Option 1	Option 2
1½ cup multigrain Cheerios® **1 cup milk** 1 hard-boiled egg and 1 string cheese	**½ cup cooked plain oatmeal** **1 light yogurt – 6 oz.** **1 slice wheat toast** 100 calorie pack almonds or peanut butter
Option 3	**Option 4**
1 light yogurt – 6 oz. **2 slices wheat toast** 1 slice ham 1 slice cheese	**1 cup milk** **2 slices wheat toast or 1 English muffin** 2 tablespoons of peanut butter

Lunch or Dinner: 45 grams carbohydrate *(3 carb servings)*

Option 1	Option 2
1 cup chicken noodle soup *or* small fresh fruit **2 slices wheat bread** 2 slices ham 1 slice cheese	**6 saltine squares** **1 cup tomato soup** 1 small chicken breast **1 slice of wheat bread**
Option 3	**Option 4**
5 Triscuits® **1 fresh fruit cup** ½ cup cottage cheese or 1 oz. cheese wedges	**½ cup no sugar added pudding or 1 light yogurt – 6 oz.** **1 small apple** **1 slice wheat bread** 2 slices turkey 1 slice cheese
Option 5	**Option 6**
1 medium potato - 6oz. 1 small chicken breast **½ cup of sugar-free pudding**	**$^{2}/_{3}$ cup pasta** **½ cup pasta sauce** 2-3 small meatballs

Lunch or Dinner: 60 grams carbohydrate *(4 carb servings)*

Option 1	Option 2
1 small fruit **1 cup chicken noodle soup** **2 slices wheat toast** 2 slices ham, 1 slice cheese	**2 slices rye bread** **1 large apple** 2 slices turkey 1 slice cheese
Option 3	**Option 4**
1 small wheat hamburger roll **6 oz. serving yogurt** **17 small grapes** 1 small hamburger patty	**2 slices bread** **16 oz. milk** 3 slices roast beef
Option 5	**Option 6**
1 medium potato – 6oz. **½ cup of corn** **1 small wheat dinner roll** 1 small chicken breast	**1 cup pasta** **½ cup pasta sauce** 2-3 small meatballs

Snacks: 15 grams *(1 carb serving)*

1 small apple with peanut butter	**1 slice wheat bread** with turkey
½ large banana with peanut butter	**1 snack size Glucerna® bar**
3 graham cracker squares with peanut butter	**1-4 pk. peanut butter or cheese crackers**
½ cup fresh fruit cup with cottage cheese	**8 animal crackers** with peanut butter
5 Triscuits® with cheese	**6 saltine squares** with tuna salad
1 small pear with almonds	**11 Wheat thins®** with cheese
17 small grapes with cheese	**1 slice wheat bread with ham & cheese**

Snacks: 30 grams of carbohydrate *(2 carb servings)*

**Or Add 1 cup milk, a small fruit, sugar free pudding, or 6 oz. of light yogurt to any of the above snacks.*

1-6 pk. peanut butter or cheese crackers	**1 small apple, 1 slice wheat bread** with tuna salad
2 slices wheat bread with turkey	**Meal size Glucerna® bar**
1 cup milk, 13 tortilla chips scoops, shredded cheese, ¼ cup salsa	**6 cups popped popcorn** with shredded cheese
6 cups popped popcorn with shredded cheese	**1 cup fresh fruit cup** with cottage cheese
1 cup milk, 5 Triscuits®, with 1 string cheese and chicken salad	**1 cup milk, 5 large tortilla chips** with shredded cheese and salsa
½ cup no sugar added ice cream with 5 large strawberries, nuts, Cool Whip®	**2 slices wheat bread** with ham and cheese

General Guidelines for Healthy Food Choices

Measure your foods!
Use measuring cups and spoons or estimate with the visual guide for portion sizes.

Do not skip any meals or snacks or eat less than the grams of carbohydrate recommended.
- This can result in increased blood sugar readings due to the liver releasing stored sugar.
- Try to eat within first hour of waking up.
- Do not exceed 3.5 hours between meals/snacks during wake hours.

Foods to Avoid:
- **Sugar sweetened beverages**
  - Including cola, teas, flavored milks, fruit juice, and other sweetened drinks
  - While artificial sweeteners (**except** saccharin aka "Sweet 'N Low ®") are considered safe to use in moderation during pregnancy, we recommend limiting intake to 2-3 artificially sweetened beverages daily due to limited research
- **Concentrated sweets**
  - No desserts, candy (includes sugar free chocolate), cakes, cookies, ice cream, syrup, jam, jelly, sugar (includes brown sugar and honey)
- **Fast food** (e.g. take-out pizza and take out Chinese)
  - Try frozen pizzas or homemade as a substitute

Dining Out Tips:
- Avoid fried foods: high fat foods can keep blood sugars high for a longer period of time
  - Choose broiled, grilled, baked, or roasted entrees
  - Substitute extra vegetables or tossed salad for French fries.
- Be mindful of large portions.
  - Try eating only half the portion; when ordering food, ask that a take-home box be provided with your meal
  - Share a meal or eat an appetizer as your entrée
- Choose whole grains if available (e.g. brown rice, whole wheat pasta, or whole wheat bread, etc.)

You may eat cereals if they do not contain added sugar or high fructose corn syrup.
- Carefully read the nutrition label to for grams of carbohydrate per serving size.
- Avoid flavored cereal, oatmeal, or cream of wheat, should be plain or unflavored.
  - For example, you may eat Cheerios®, but not Honey Nut Cheerios®.
- Include protein source on the side such as a handful of nuts, an egg, or a string cheese.

<u>Recommended Cereals:</u>
- Bran Flakes®, (not Raisin Bran®)
- Corn Chex®, Rice Chex®
- Cornflakes®
- Grapenuts ®
- Kix®
- Multigrain Cheerios®
- Rice Krispies®
- Product 19®
- Puffed rice/wheat
- Special K® without fruit or chocolate
- Shredded Wheat® or plain wheat

Condiments
- Use condiments sparingly
- Many condiments contain sugar (e.g. ketchup, barbecue sauce, salad dressings, etc.)
- The nutrition label is typically based on a small serving size of 1 or 2 tablespoons

Food Related Illnesses

Listeria

Listeriosis is a serious infection usually caused by eating food contaminated with the bacterium Listeria monocytogenes. Listeria outbreaks are often linked to dairy products and produce.

Pregnant women are 10 times more likely than non-pregnant adults to get a Listeria infection due to a weakened immune system during pregnancy.

Risk for Mom:

- Listeria can cause intestinal illness. Symptoms typically start within 24 hours after eating the contaminated food and usually last 1-3 days. Symptoms typically include diarrhea and vomiting.
- If you continue to feel sick beyond 3 days, this may mean the bacteria has spread beyond the intestines. Symptoms of this typically include fever, and flu-like symptoms such as muscle aches and fatigue.

Risk for Baby:

- This infection during pregnancy can lead to miscarriage, stillbirth, and premature delivery.

Avoid Eating:

- Soft Cheese such as queso fresco, queso blanco, panela, brie, Camembert, blue-veined, or feta, unless it is labeled as made with pasteurized milk.
- Raw Sprouts *(alfalfa, clover, radish, and mung bean sprouts)*
- Melons left out for more than 4 hours *(store no more than 7 days in the refrigerator)*
- Hot Dogs and Deli Meats/Cold Cuts, unless steaming hot *(store no longer than 3-5 days in the refrigerator)* *Pre-packaged lunch meats are okay
- Smoked Fish/Pates *(canned is okay; refrigerate after opening)*
- Raw *(Unpasteurized)* Milk Products
- Raw Seafood

Seafood (Methylmercury)

Mercury is a metal found in some types of fish. Bacteria in the water can change mercury into methylmercury, which can be toxic. Although the mercury in seafood isn't a concern for most adults, special precautions apply if you're pregnant or breastfeeding. If you regularly eat fish high in mercury, the substance can accumulate in your bloodstream over time. Too much mercury in your bloodstream could damage your baby's developing brain and nervous system.

To reduce your exposure to mercury, avoid large predatory fish such as:

- Shark, Swordfish, King Mackerel, and Tilefish

It is okay to eat other types of small, cooked seafood up to 12 oz. per week.

- Salmon, Anchovies, Herring, Sardines, Freshwater Trout, Pacific Mackerel, Shrimp, Pollock, Tilapia, Cod, Catfish, Canned light tuna

*Limit white (albacore) tuna and tuna steaks to 6 oz. a week.

Exercise

Exercise helps the muscles use the glucose (sugar) in your blood for energy which helps to lower blood sugars.

Check with your doctor before beginning a new exercise regimen.

- Do not exercise if your doctor has told you not to.
- If you have a current exercise regimen, continue if it is OK with your doctor.

Goal: 30 minutes of low-impact moderate intensity exercise at least 5-7 days a week.

- Try walking for 10-15 minutes after each meal daily.

Examples of Low Impact Exercise:

- Walking
- Yoga
- Stationary Biking
- Swimming

Talk Test: Measuring Level of Intensity

- Moderate Intensity: Recommended
  - you can talk but not sing during the activity.
- Vigorous Intensity: Not Recommended; Can Increase Blood Sugars
  - you will not be able to say more than a few words without pausing for a breath.

Monitoring: Do not continue the exercise if you have more than four painful contractions per hour.

Medication

If your sugars are not within normal range with meal planning and exercise, you may need medicine to lower them. Fifteen to 30% of women with Gestational Diabetes Mellitus (GDM) require an anti-diabetes medication.

The two options available are Insulin and Metformin.

Diabetic Medication	Insulin	Metformin
Route	Injection	Pill
Frequency	Once daily at bedtime (same time every night)	With meals, typically started with dinner
How it works	Long-Acting Insulin: gives a small amount of insulin throughout the entire day	Improves insulin sensitivity
Effectivity	See blood sugars lower within a day and full effects within 3 days	Takes 3 to 4 weeks to get to therapeutic dose (1500mg)
Passes Placenta?	No	Yes
Adjustments	Can be adjusted every 3-5 days till blood sugars are well controlled	Can be adjusted once a week as tolerated
Side Effects	Hypoglycemia (low blood sugar)	GI distress such as abdominal cramping and diarrhea

**Mealtime (fast-acting) insulin may be recommended if after meal blood sugars are elevated.*

Maternal-Fetal Testing

During the rest of the pregnancy, you will have ultrasounds and blood work done to check your health and your baby's health. Some pregnant women need different tests than others depending on their conditions; your doctor will order what you need.

Labs

HbA1c: Estimate of blood sugar levels over the past six weeks. This differs from diabetes outside of pregnancy due to increased red blood cell turnover. A1c is ordered as a baseline but treatment is guided by your actual finger-sticks using your glucometer.

- May be drawn every six to eight weeks during your pregnancy.
- Goal range: 4% to 5.6% - *(this means blood sugars are between 65 mg/dl and 114 mg/dl)*

Source: Manfred E. All about the hemoglobin A1C test. Healthline. https://www.healthline.com/health/type-2-diabetes/a1c-test. Published September 29, 2021.

CMP: Assess liver and kidney function.

Ultrasounds

Growth Scans (Level 1 Ultrasound)

- See how your baby is growing in early pregnancy.
- Then starting at 28 weeks every four to six weeks until you deliver.
- Or as recommended per Maternal Fetal Medicine Physician.

Level II Ultrasound

- Checks the baby's physical development in detail.
- Around the 20th week of pregnancy.

Fetal Echocardiogram

- Ultrasound of the baby's heart to see if it is developing normally.
- Between the 22nd and 24th weeks of pregnancy.
- Only for pre-gestational diabetes and for early gestational diabetes patients.

Additional Monitoring:
If started on an anti-diabetic medication, recommend twice weekly non-stress test and once weekly amniotic fluid index starting at 32 weeks.

- **Amniotic Fluid Index (AFI)**: This ultrasound checks your amniotic fluid level.
- **Non-Stress Testing (NST)**: During this test a monitor will be attached to your belly and the baby's heartbeat and movements will be recorded.

After You Have Your Baby

You will not need to check your sugars once the baby is born. Your sugars should return to normal after delivery since the placental hormones which were increasing insulin resistance are no longer present.

Follow-Up

Though, about 50% of mothers with gestational diabetes will develop type 2 diabetes.

For this reason, your doctor will have you complete a **2-hour Glucose Tolerance Test** about 4-12 weeks (1-3 months) after you deliver to make sure your blood sugars have returned to normal.

Preventing Type 2 Diabetes

1) **Healthy Body Weight:** Return to pre-pregnancy weight by 6-12 months postpartum.
2) **Eat a Healthy and Nutritious Diet**: Continue following our meal plan without the additional snacks.
3) **Exercise:** Thirty minutes of activity (such as walking or swimming) five to seven days per week.
4) **Follow up w/ Primary Care Doctor**: Complete A1c lab every 1-3 years.

Future Pregnancies: Your chances having gestational diabetes in future pregnancies are two in three. Ask your doctor to screen for diabetes in the first trimester with all future pregnancies.

Breastfeeding

Benefits of Breastfeeding

There are many benefits of breastfeeding including but not limited to:

Baby:

- Colostrum helps to create normal blood sugars in the baby after birth.
- Decreased risk of childhood overweight and obesity.

Mom:

- Decreased risk of retaining pregnancy weight postpartum.
    - Rapid weight loss (>4.4lb/month) after the first month postpartum is not advised for breast-feeding women.
- Increased insulin sensitivity (helps your body use your own insulin better).
- Reduction in risk for development of type 2 diabetes.
- Improved bonding with baby, decreased risk for postpartum depression.

Recommended Duration to Optimize Benefits: Exclusive breastfeeding is recommended for the first 6 months of life and should continue, with supplemental calories, from 6-12 months of age, and longer as it is mutually desired by both mother and child.

Nutrition Guidelines when Breastfeeding

- Eat 3 well-balanced meals of a variety of colorful healthy foods.
- Moms need a snack of protein & carbohydrate before or during each breastfeeding session.
    - *Examples of Protein & Carbohydrate snacks: small glass of milk, crackers with cheese or peanut butter, fruit with cheese or peanut butter, protein granola bar, ½ sandwich, small (8 oz.) Greek yogurt*
- Adequate dietary intake is required to produce an adequate amount of milk to meet baby's nutritional needs.
    - Intakes <1500 calories daily have resulted in decreased milk output.
    - A minimum intake of 1800 calories daily is recommended when breastfeeding.
        - Individual calorie needs vary depending on breast-feeding status, production volume, the amount of stored maternal fat, and calories burned.
- Hydration Recommendations: Drink to Thirst
    - Sip on a beverage (preferably water) while nursing, with a goal of keeping your urine a pale-yellow color.

Sick Day Guidelines

Call your doctor if:

- your sickness lasts more than 24 hours.
- you have vomited more than once in 4-6 hours.
- you are unable to eat or drink for more than 4 hours.
- have diarrhea more than 3 times over 24 hours.
- have had a fever over 101 degrees for 24 hours.

Test your blood sugar every 2 to 4 hours.

- Keep a log of your results.
- Call your doctor if your blood sugar is over 160 mg/dl two times in one day.

Call a family member or a friend.

- Be sure someone is available to help you and check in on you.

Medications Guidelines:

- Anti-Diabetes Medications: *(Insulin and/or Metformin)*
  - Always take your diabetes medicine.
  - Since sickness will raise your blood sugar, you need to take your diabetes medicines to bring your blood sugar levels down.
- Over-the-Counter Medications:
  - Never take any over-the-counter medicines without checking with your obstetrician first when you are pregnant.
  - Some over-the-counter medicine will raise your blood sugar.
    - Many medicines for cold and flu contain sugar. Always check the label for the carbohydrate content.
    - Your pharmacist will be able to help you choose a sugar-free over-the-counter medicine.

Guidelines for Inability to Tolerate Meal Plan:

Follow the recommendations below based on your most recent blood sugar reading if you are unable to tolerate your normal meal plan.

- If unable to tolerate solids, it is important to drink plenty of fluids to prevent dehydration.
  - You should be drinking at least 8-10, 8-oz. glasses of water per day.
  - Take small sips and aim to drink 1 cup every 1-2 hours.

Blood Sugar Greater Than >160mg/dl:

- **Have sugar-free liquids/snacks (at least 1 cup every 1-2 hours)**
  - Examples: bouillon or broth**,** plain coffee, plain tea**,** diet soda, water**,** sugar-free Jell-O®

Blood Sugar Less Than <160mg/dl:

- **Have regular liquids/snacks (at least 15 grams of carbohydrate every 1-2 hours)**
  - Examples**:** ½ cup fruit juice or regular soda, ½ cup regular Jell-O®, or ¼ cup regular pudding, ½ cup ice cream, low fat frozen yogurt, water ice, or custard, 1 cup cream soup, 1 slice of toast, 6 saltine crackers or ½ cup of hot cereal,1 cup of Gatorade® and PowerAde® or 2 ½ cups of Pedialyte®

Hypoglycemia (Low Blood Sugar)

***In case of an emergency, you should call 911** - If left untreated, hypoglycemia can lead to seizures, coma and death.*

What is Hypoglycemia?

- Hypoglycemia means low blood sugar.
- A low blood sugar during pregnancy is a blood sugar less than <60mg/dl.

Common Causes:

- Taking too much insulin/metformin
- Missing a meal or snack, eating less than usual
- Increasing activity or exercise
- Hot and humid weather

Symptoms: *(varies person to person; you may experience some and not others)*

- Fast heartbeat
- Shaking
- Sweating
- Nervousness or anxiety
- Irritability or confusion
- Dizziness
- Hunger
- Nausea

Treatment: 15-15 Rule

1. **Check your Blood Sugar**
   - Treat if blood sugar is <60mg/dl. This is a low blood sugar.
   - Also, if your blood sugar is <80mg/dl and you are experiencing symptoms. This often indicated your blood sugar is decreasing rapidly.

2. **Treat with <u>15 grams</u> of carbohydrate.**
   - Avoid over-treating, this will cause your blood sugar to be too high.
   - Do not treat with chocolate, this contains fat which is digested slowly and will take too much time to increase your blood sugar level.

Examples of 15 grams of Carbohydrate:
4-6 oz. (½ cup) of juice or regular soda
1 tablespoon of sugar, honey, or syrup
1 air head NERDS® candy (.55 oz.)
4-5 gummy lifesavers
1 pack of fruit snacks

3. **Recheck your blood sugar in <u>15 minutes</u>.**
   - Blood sugar <u>greater than</u> 60mg/dl + No Symptoms = Have a snack (½ sandwich or 6 peanut butter crackers) if it will be more than one hour until your next meal or snack.
   - Blood sugar <u>less than</u> 60mg/dl or Symptoms = Repeat 15g of carbohydrate and re-test in 15 minutes.

Be Prepared:

Always carry with you:

- Blood Sugar Meter (Check)
- Fast Acting Carbohydrate (Treat)
- Snack with Carbohydrate + Protein (Stabilize)

Prevention:

- Take your diabetes medications as prescribed.
- Eat your meals and snacks as per meal plan, evenly spaced throughout day.
- Check your blood sugar level when exercising, or if you increase your activity level.
- Take snacks with you when away from home.

Travel Guidelines

If you are planning a trip, talk with your OB-GYN.

No matter how you choose to travel, think ahead about your comfort and safety.
Use the following guidelines to help you be prepared.

Packing Diabetes Supplies: *(Meter, Lancets, Strips, Medications)*

- Take Extra: Take twice as much diabetes supplies with you in case of travel delays.
- Packaging: Try to keep all medications in the original pharmacy packaging.
- Carry-on: Keep all supplies, medications, and snacks in a carry-on bag.
    - Keep bag at your seat; do not put in the overhead bin or as checked luggage.
- Storage: Protect your meter supplies and medication from extreme heat or cold. Store in cooling packs designed for diabetes supplies.

Snacks + Fast-Acting Carbohydrate:

- Snacks: Pack extra diabetes snacks in air-tight wrapping
    - Examples: crackers, nuts, seeds, peanut butter, protein granola bars
- Fasting Acting Carbohydrate: for low blood sugar treatment

Medication:

- Take along a list of medications.
    - Take copies of your prescriptions with you, especially when traveling out of the country
- If changing time zones, your medication timing will need to be adjusted.
    - Discuss this with your doctor or diabetes educator before leaving.
- Inspect your insulin before injecting each dose. If you notice anything unusual about the appearance of your insulin or notice that your insulin needs are changing, call your doctor.

Airport Security:

- If asked, explain to airport security that you have medical supplies with you, and if you wear an insulin pump.
    - A continuous glucose monitor, or insulin pump could be damaged going through the X-ray machine. You don't have to disconnect from either; ask for a hand inspection instead.
- People with diabetes are exempt from the 3.4 oz. liquid rule for medicines, fast-acting carbs like juice, and gel packs to keep insulin cool.

Physical Activity:

- Move around every 1-2 hours.

Quick Facts

The following is a summary of your education. You should follow these guidelines until you have delivered your baby.

CHECK YOUR BLOOD SUGARS

You will need to check your blood sugar 4 times daily.

- **Fasting** (before eating breakfast):
  - ✓ **Goal range** is 60 mg/dl to 95 mg/dl.

- **Two hours** after each meal:
  - ✓ **Goal range** is less than 120 mg/dl.

Remember to report your blood sugars once weekly till delivery.

- St. Luke's Hospital Maternal Fetal Medicine Blood Sugar reporting contact information:
  - ✓ **Phone: 484-526-3900**

IF YOU HAVE ANY QUESTIONS

Please feel free to call the educators at the St. Luke's Diabetes and Pregnancy Program with any questions or concerns at **484-526-3900**. Our office hours are 8:00 am to 4:30 pm Monday through Friday. If we are assisting other patients, please leave a message and we will return you call with in one business day**.**

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