



Diabetes Self-Management Education and Support



GESTATIONAL DIABETES

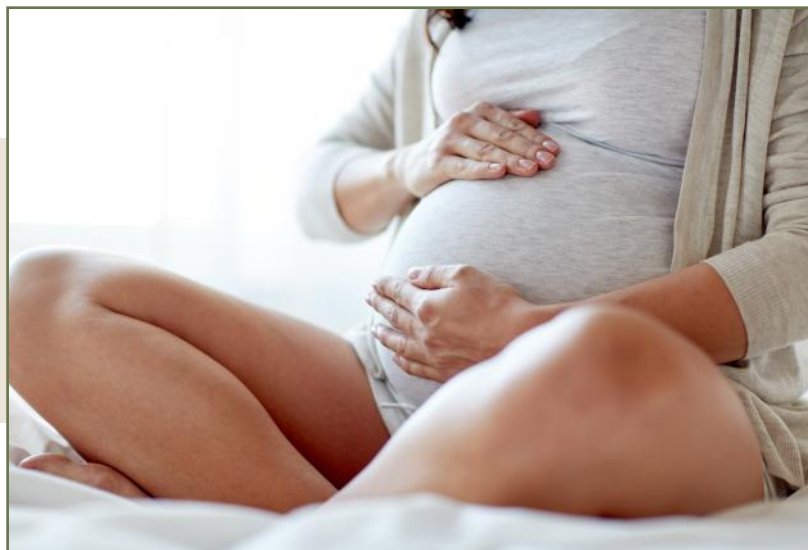


Disclaimers

The views expressed in this presentation are those of the authors/facilitators and do not necessarily reflect the official policy of the Department of Defense, Defense Health Agency or the U.S. Government. The mention of any non-federal entity and/or its products is for informational purposes only, and is not to be construed or interpreted, in any manner, as federal endorsement of that non-federal entity or its products.

Acknowledgment of Support and Disclaimer: This material is based upon work supported by the DoD Information Analysis Center Program Management Office (DoD IAC PMO) and sponsored by the Defense Technical Information Center (DTIC) and the Navy and Marine Corps Force Health Protection Command (NMCFHPC) under Contract No. FA807518D0005-FA807523F0016.

AI-enabled tools were used to assist in the development of select content within this presentation. All outputs were reviewed, validated and approved by the authors prior to use/dissemination.





Welcome to the DHA Gestational Diabetes Service!

First—congratulations! What a beautiful time in your life!

This module will discuss understanding and managing diabetes during the 2nd and 3rd trimesters of pregnancy. Having Gestational Diabetes can be scary, but there are measures you can take to decrease the risks.

The core Diabetes Self-Management Education and Support (DSMES) modules can assist with additional information at: warfighterwellness.org/diabetes



In This Module You Will:

- Recognize the importance of screening for Gestational Diabetes.
- Identify healthy behavior strategies.
- Explain what can happen after birth in relation to diabetes.
- Demonstrate your plan to remain healthy.





Glossary

Acanthosis: A dark, velvety skin that usually appears in body folds and creases like the neck, armpits or groin. Commonly associated with insulin resistance and obesity.

Gestational: Time associated with pregnancy and fetal development.

Glucose: A simple form of sugar that fuels your body's cells. This is the correct term for the form of sugar used by the body.

Insulin: A vital hormone produced in the beta cells of the pancreas that allows glucose to enter the cells for energy.

Placenta: A temporary organ that is essential for supplying oxygen, nutrients and hormones to the baby; and removing waste.

Polyendocrine Metabolic Ovarian Syndrome (PMOS): A common hormonal disorder characterized by weight changes, excessive body hair growth, mood changes, fatigue and more. This was previously known as Polycystic Ovary Syndrome (PCOS).

Postpartum: After pregnancy.

Health Literacy

Health literacy is the ability to understand and use information to make informed health decisions. The aim of this supplemental program is to increase diabetes health literacy for people with Gestational diabetes and families. This will help guide questions and better understand answers received.

Language Matters

Using a diagnoses to describe a person (e.g. "diabetic") does not actually define who they are. Diabetes is simply something that they need to deal with.



What is Gestational Diabetes (GDM)?

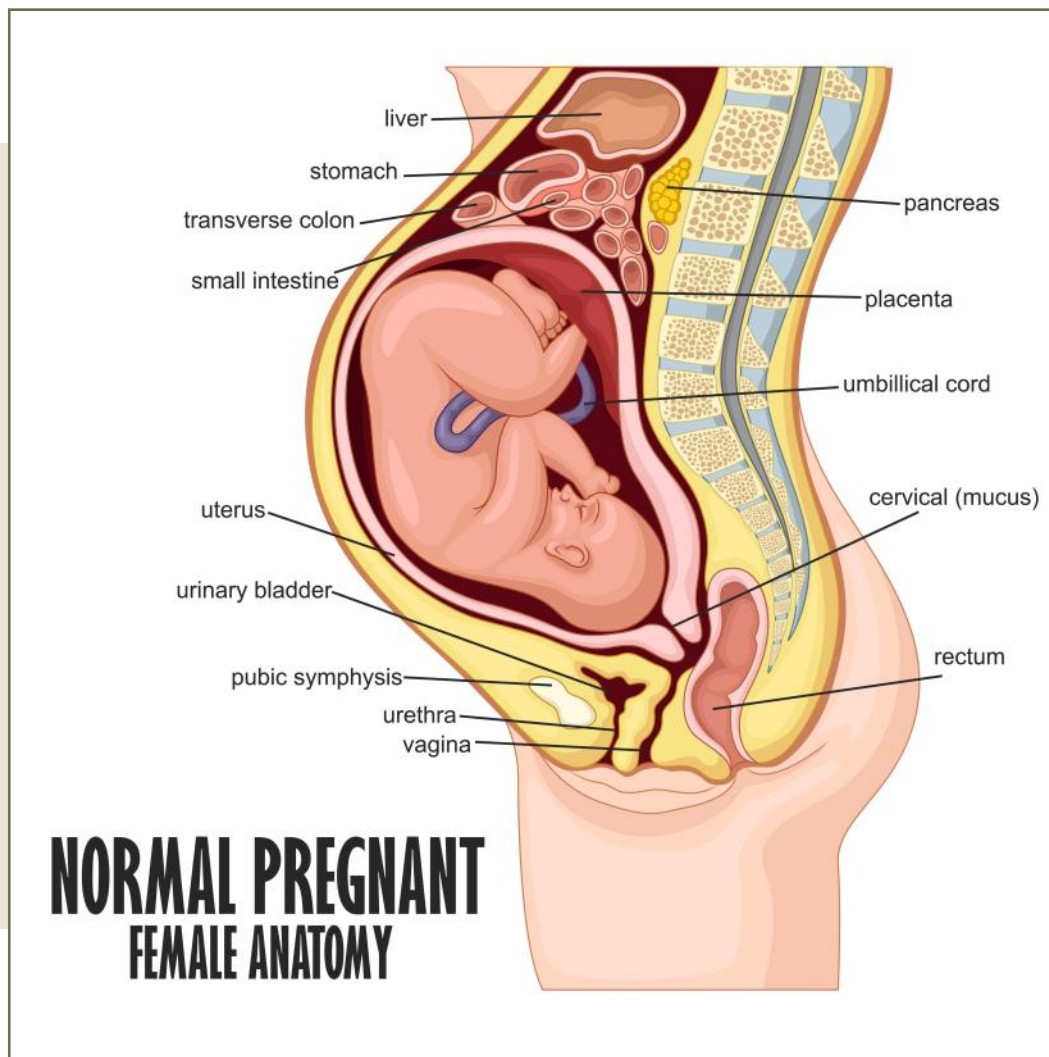
Gestational diabetes occurs later in pregnancy when placenta hormones interfere with how insulin is supposed to work. The mother would not have had diabetes before pregnancy. If she did, precautions would have been taken ideally before becoming pregnant. Diabetes can lead to potential health risks for both mother and baby if not managed with diet, exercise and sometimes medication.



What Causes GDM?

The placenta hormones, which are needed to support fetus growth, block mom's insulin leading to insulin resistance. As pregnancy progresses, insulin demands increase and the pancreas cannot keep up with the demand. This will lead to higher glucose levels. Typically occurs 24-28 weeks into pregnancy.

Notes:



Risk Factors for GDM

- | | |
|---|---|
| ☐ Being overweight or obese. | ☐ Ethnic background. |
| ☐ Sedentary lifestyle. | ☐ Polyendocrine Metabolic Ovarian Syndrome (PMOS). |
| ☐ Family history of diabetes. | ☐ Previous history of GDM or giving birth to a baby over 9 pounds. |
| ☐ High blood pressure. | ☐ Acanthosis. |
| ☐ History of heart disease or stroke. | |
| ☐ Low HDL cholesterol or high triglycerides. | |

What are your risks for GDM?
(check above)



Screening Recommendations

Patients who have risks for diabetes will be screened before 15 weeks of gestational age. This can be an A1C blood test:

- 5.8% and below shows low risk.
- 5.9% - 6.4% shows prediabetes and high risk for GDM.
- 6.5% or higher is Type 2 diabetes. If this is the case, they will be encouraged to take action toward management immediately.

Screen any patient who does not have diabetes at 24-28 weeks gestational age with an Oral Glucose Tolerance Test (OGTT). There are two different ways to screen: 1 step and 2 step.

NOTE: Don't limit carbs for 3 days before OGTT – can cause a false positive.

1 Step OGTT

75g OGTT fasting performed at 24-28 weeks gestational age.

The patient drinks the glucose fluid within 15 minutes.

Tested with blood draw at the following times:

- Fasting: 92mg/dL (before you drink the fluid).
- 1h: 180mg/dL.
- 2h: 153mg/dL.

2 Step OGTT

Step 1 (same process with drink).

- 50mg OGTT at 24-28 weeks gestational age.
 - 1hr: > or equal to 130mg/dL proceed to step two on another day.

Step 2: 100mg OGTT.

- Fasting: 95mg/dL.
- 1h: 180mg/dL.
- 2h: 155mg/dL.
- 3h: 140mg/dL.





What are the possible risks of GDM?

Risks to mother and baby when GDM is diagnosed can be scary. These include:

Baby

- Low blood glucose.
- Breathing problems.
- Jaundice.
- Shoulder or clavicle problems.

Mom

- High blood pressure.
- Protein in the urine.
- Urinary tract infection.
- Tearing/Caesarian.

Both

- Large baby at birth.
- Caesarian section.



How did you feel when you were diagnosed?



Recognized Healthy Behaviors for GDM

Practicing the below health behaviors are essential for lowering the risks of GDM and may decrease the need for medications.

- Healthy coping
- Monitoring
- Taking medications
- Eating healthy
- Being active
- Risk reduction
- Problem solving
- Manage weight gains and losses



May suffice as treatment

What changes have you already made since becoming pregnant?



Healthy Coping

Consider your support people and resources. Not only your healthcare team and family, but specialty care like dietitians or nutritionists, mental health, other educational services and others with gestational diabetes.

Who is already on your support team?

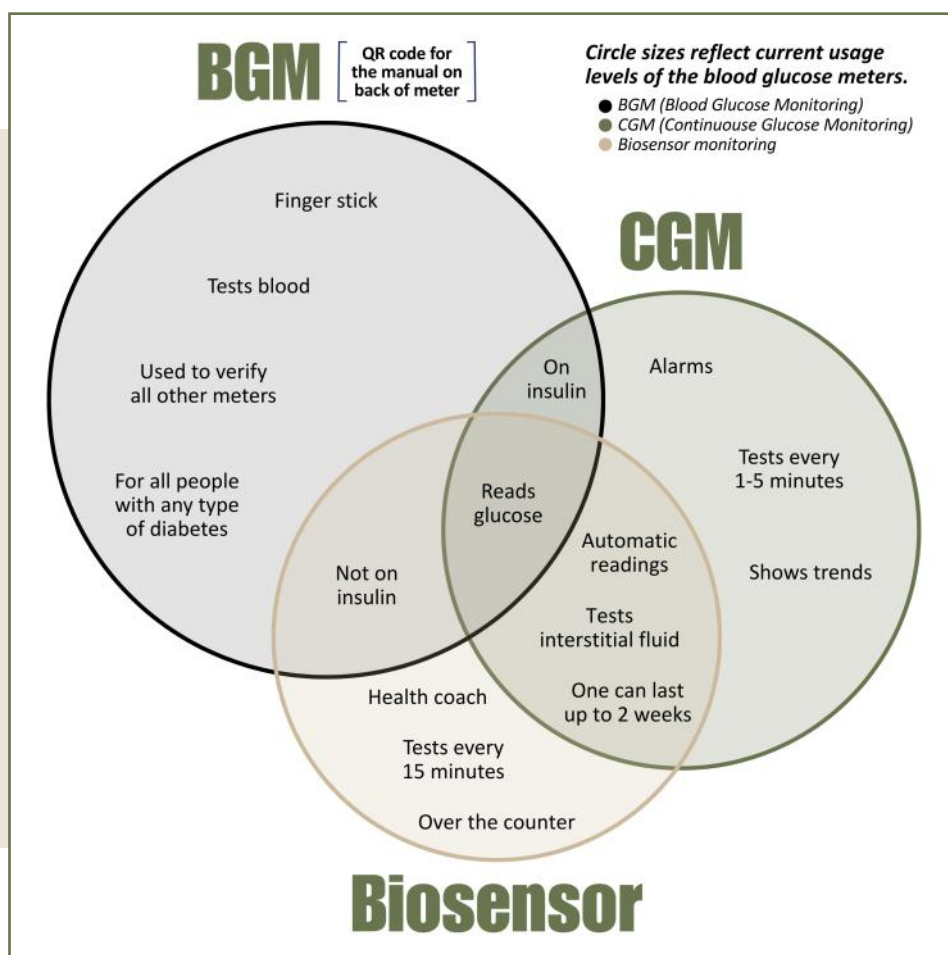
What resources are you considering?





Monitoring

Checking glucose is a powerful way to see how lifestyle choices make a difference. It doesn't matter which method is used. What matters is what you do with the results. More on the next page!



Blood Glucose Monitor (BGM)

Have your healthcare team show you and your family how to use it. For more information, review the Monitoring module of the Core DSMES.

Continuous Glucose Monitor (CGM)

There is an app to display results, show reports, and glucose trends.

Over the Counter Biosensor

These are a form of CGMs available for sale over the counter. They do not do everything a CGM does, but are very helpful in seeing effects of lifestyle on glucose.



Glucose Targets In Pregnancy

These are the overall recommended glucose targets. ALWAYS verify with your care team if they agree or have other suggestions.

Glucose	Type 1 or 2	Treated with Insulin	Not Treated with Insulin
Fasting	70-95 mg/dL	70-95 mg/dL	<95mg/dL
1h after meals	110-140 mg/dL	110-140mg/dl	<140mg/dL
2h after meals	100-120 mg/dL	100-120mg/dL	<120mg/dL

- Fasting is the glucose taken first thing in the morning before breakfast.
- After meal glucose testing is also called postprandial.
- Set individual goals with your healthcare team.

Using Glucose Levels to Achieve Targets

It is important to use the glucose levels to evaluate your self-management methods. These numbers can give insight as to how to adjust food intake, exercise or medication therapy.

If results are higher than expected, consider cause and solutions:

- You could have eaten excess carbohydrates. Next time measure portions. Walk after meals.
- You could be stressed. Take some time to relax.

If numbers are lower than expected:

- Did not eat enough. Have a well balanced snack.
- Numbers too low in morning. Have a protein snack before sleep.

What are your glucose targets?

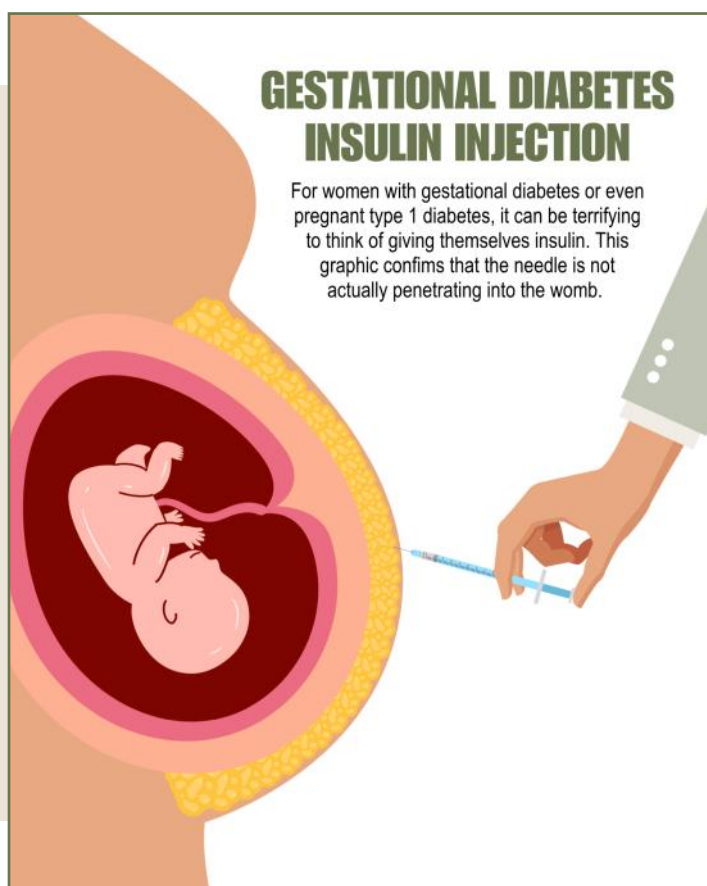


Taking Medications

Insulin is a vital hormone required for cell energy. When it needs to be supplemented, it comes in either:

- Baseline: Which is a long slow release to support all day needs.
- Bolus: Given before a meal to support glucose absorption.

Other diabetes medications can cross the placenta barrier and are not recommended.



Insulin Storage

- Should be stored in the fridge until used.
- Once open, can typically be at room temperature for 28 days. Read insert to be sure.
- Needs disposal differs by state.

Where to Inject

Rotate locations to avoid:

- Redness.
- Site tenderness.
- Delayed insulin absorption.





Healthy Eating

Be sure to eat balanced meals with half of your plate non-starchy colorful vegetables, one quarter of your plate starchy vegetables and one quarter of your plate a lean protein.

- Include fruits, vegetables, legumes, whole grains, nuts, seeds, fish and other lean protein.
- Watch portion sizes.
- Choices:
 - Chose whole grains when possible.
 - Closer to the farm the better.
 - Limit processed foods and sugary drinks.
- Timing: try to eat 3 meals and 2-3 snacks.
- Pairing: have carbohydrates (carbs) with fiber, protein or healthy fats to slow sugar absorption.



Recommended Minimum Dietary Intake

- 175g of carbs per day. This is about 12 to 15 servings. Spread them out 2-3 per meal and 1-2 per snack.
- 71g of protein per day. Common foods and protein amounts listed on page 15.
- 28g of fiber per day. It is hard to get enough fiber without beans! See page 16.
- Plenty of water. The more yellow your urine, the more dehydrated you are. Aim for a light yellow or straw color.





Carbohydrates

These include starches, fruit, milk and sweets. These are sometimes referred to as “bad” foods. Truth is, if we pay attention to healthy portion sizes, these foods are part of a healthy and balanced lifestyle. (Lists are not all inclusive)

Starches

1 serving = 15 grams of carbs

Healthy choices

- 1/3 cup brown rice
- 1/4 lg. sweet potato
- 1/2 cup mashed potato
- 1 small baked potato
- 1/2 cup beans/peas (cooked)
- 1/2 cup corn
- 3 cups popped popcorn
- 1/2 cup cooked oatmeal
- 3/4 cup dry cereal
- 1/2 cup bran cereal
- 1 slice whole grain bread

Less healthy

- 1/3 cup rice or pasta
- 1/4 large bagel
- 1/3 hamburger bun
- 1/2 English muffin
- 1/2 large biscuit
- 6 crackers
- 4" pancake or waffle
- 10 French fries
- 12-15 chips

Combo foods

- 1 cup soup
- 1 slice thin pizza
- 1/2 cup casserole
- 2" square lasagna
- 2-3 chicken strips

Fruit

1 serving = 15 grams of carbs

1 small piece

- Apple
- Pear
- Peach
- Orange

1 cup melon cubes

- Cantaloupe
- Honeydew
- Watermelon

1 cup berries

- Strawberries
- Blueberries
- Raspberries

Other fruit options

- 1/2 banana
- 15 grapes or cherries
- 1/2 cup canned fruit (light syrup or juice)
- 2 Tbsp. raisins
- 3-4 prunes
- 1/4 - 1/2 cup fruit juice

Sweets

1 serving = 15 grams of carbs

- 1/2 cup ice cream
- 1/2 ice cream bar
- 1/4 cup sherbet
- 1/2 doughnut
- 6 vanilla wafers
- 2 Oreo cookies
- 2" unfrosted brownie
- 3 graham cracker squares
- 3 peppermint candies
- 5 chocolate kisses
- 1/2 cup gelatin
- 1 small granola bar
- 1 popsicle
- 9 jellybeans

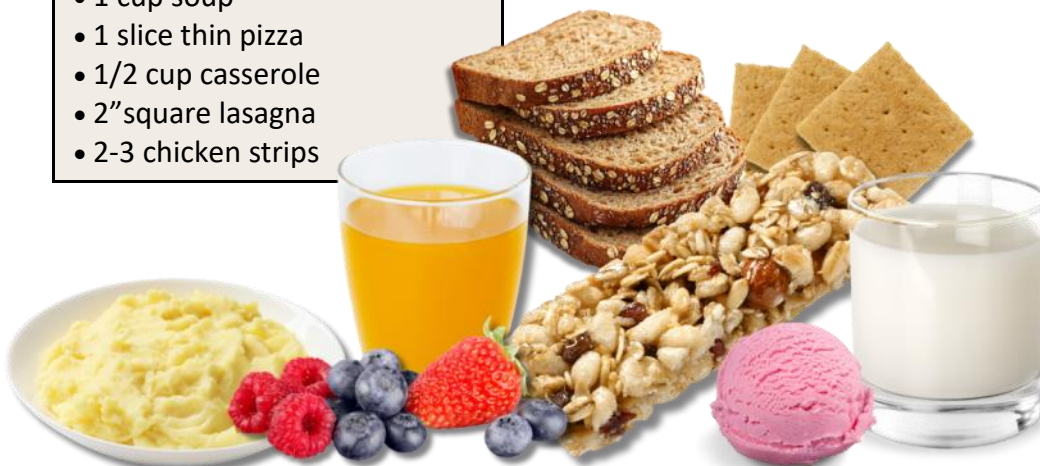
Milk

1 serving = 12 grams of carbs

- 1 cup whole milk
- 1 cup 2% milk
- 1 cup skim milk
- 6-8 oz. yogurt (varies by brand, check the label)

Milk alternatives

- 1 cup oat milk
 - 1 - 1.5 cup soy milk
 - 1 - 1.5 cup almond milk
 - 1 cup coconut milk
- (all vary by brand, check the label)





Non-Starchy Vegetables

A serving of these is 1 cup raw or cooked. Each serving has less than 5g of carbohydrates. Considered “free” foods.

- Asparagus
- Green beans
- Beets
- Broccoli
- Brussel sprouts
- Cabbage
- Carrots
- Cauliflower
- Celery
- Cucumbers
- Greens
- Lettuce
- Mushrooms
- Okra
- Onions
- Peppers
- Radishes
- Squash
- Spinach
- Tomatoes
- Turnips
- Zucchini



Proteins

The recommended 71g per day can be easy when portions are divided between meals and snacks.

- Chicken
- Turkey
- Beef
- Pork
- Fish
- Shellfish
- Bison
- Venison
- Cheese
- Cottage cheese
- Eggs
- Tofu

Serving Sizes and grams of protein

- 3 oz Chicken/Beef/Fish:
 - ~21–26 grams of protein
- 1 Egg:
 - ~6–7 grams of protein
- 1/2 cup Cooked Lentils/Beans:
 - ~8–10 grams of protein
- 2 Tbsp Peanut Butter:
 - ~7–8 grams of protein



Fats

One serving can vary, but typically one tablespoon. These are calorie dense.

Monounsaturated (healthiest option)

- Canola oil
- Olive oil
- Peanut oil
- Nuts
- Avocado
- Olives

Saturated

- Butter
- Shortening
- Cream cheese
- Sour cream
- Lard

Polyunsaturated

- Soybean oil
- Corn oil
- Sunflower oil
- Margarine
- Mayonnaise
- Salad dressing
- Pumpkin seeds
- Sunflower seeds





Fiber

As stated earlier, fiber is an important part of eating healthy. This graph gives amounts for typical fiber amounts with portions of common foods.

Food Item	Serving	Fiber Grams
Apple (with skin)	1 medium	4.5
Bagels	4" bagel	2
Bananas, raw	1 banana	3.1
Barley (pearled), cooked	1/2 cup	3
Beans (navy), cooked	1/2 cup	9.5
Beans (pinto, black), cooked	1/2 cup	7.7
Blackberries, raw	1/2 cup	3.8
Bread, white	1 slice	0.5
Bread, whole-wheat	1 slice	3
Broccoli, cooked	1/2 cup	2.5
Brussels sprouts cooked	1 cup	4.5
Carrots, cooked	1/2 cup	2.3
Carrots, raw	1 carrot	2
Celery, raw	1 stalk	0.6
Chickpeas (garbanzo beans), cooked	1/2 cup	6.2
Grapefruit (pink and red), raw	1/2 grapefruit	2
Grapefruit (white), raw	1/2 grapefruit	1.3
Green beans, cooked	1/2 cup	2
Green peas cooked	1 cup	9
Lentils, cooked	1/2 cup	7.8
Lettuce (green leaf), raw	1 cup	0.7
Lettuce (romaine), raw	1 cup	1.2
Mixed veggies (frozen), cooked	1/2 cup	4
Oat bran, cooked	1/2 cup	2.8
Oranges, raw	1 orange	3.1
Pear, raw	1 pear	5.1
Peas (frozen), cooked	1/2 cup	4.4
Potato (with skin), baked	1 potato	4.4
Raspberries, raw	1/2 cup	4
Rice (brown), cooked	1/2 cup	1.7
Rice (white, long-grained), instant	1/2 cup	0.5
Sweet corn (on the cob), cooked	1 ear	1.8



Being Active

It is recommended to aim for 150 minutes of moderate intensity aerobic activity spread throughout the week or more.

Activity during pregnancy provides many benefits.

- Decreases pregnancy weight gain and postpartum weight retention.
- Reduces need for insulin.
- Recover quickly after baby is born.

Be sure to discuss with provider about activities you already do, your plan to continue, and when you may need to stop or alter as pregnancy progresses!



Talk Test for Intensity

This easy technique shows the effectiveness of activity involved in.

- Low: Can easily talk and sing.
- Moderate: Can talk, but not sing (target intensity).
- Vigorous/High: Speak only a few words at a time.

What activity do you enjoy? _____



Plan During Pregnancy

What is your plan to manage GDM while you are pregnant? What are you doing already? Making small steps every day helps reach the milestones you aim for over time.



What healthy eating habits have you already started? _____

What activity do you plan to participate in? _____

Who should you add to your support team? _____

What resources do you plan on taking advantage of? _____



OB Team Questions: Individualized Concerns

Here are recommended questions that should be discussed with the OB team that will be specific for your pregnancy.

- What to do during sick days:
 - Over the counter medications.
 - Vomiting.
- They may recommend an early deliver. It is strongly suggested that delivery happen around 39 weeks to avoid cesarean section (large baby).
- Let them know if you do not have access to healthy food. Are there resources in the area to help?



**What other questions
do you have?**



What to Expect After Pregnancy and Risks

While gestational diabetes mellitus (GDM) typically resolves shortly after delivery as hormone levels return to baseline, it leaves a lasting impact. Over half of women with GDM develop type 2 diabetes (T2D) within 5-10 years.

Continuing the healthy habits you developed will be critical in helping prevent or delay this diagnosis. Also consider these in your postpartum plan:

- Contraception that will be best for you.
- Breastfeeding decreases risk for T2D.
- Learn the risks and symptoms of T2D in the core DSMES sessions.

Follow this Screening Plan:

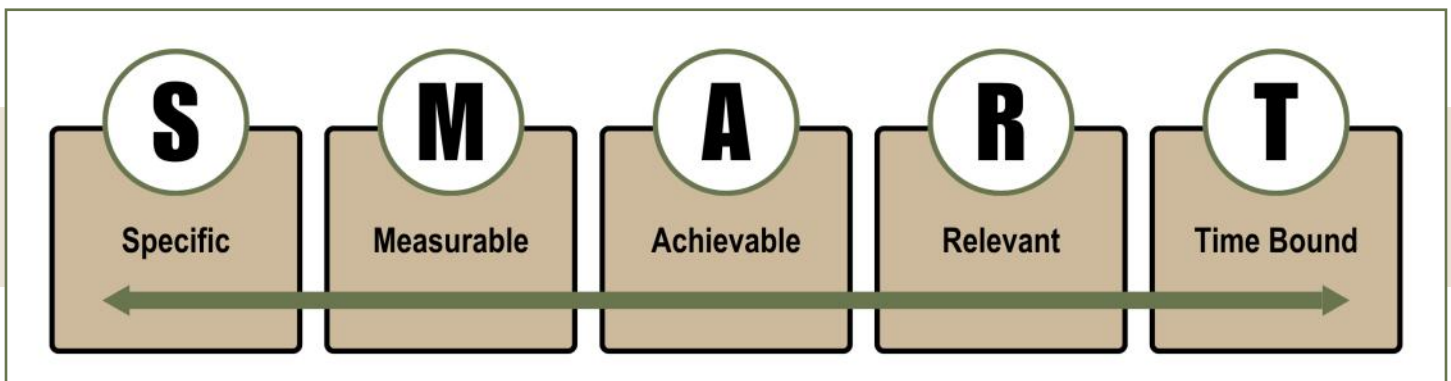
Milestone	Action Required
6 to 12 Weeks Postpartum	Diagnostic 75-gram Oral Glucose Tolerance Test (OGTT). This is the gold standard for identifying if the diabetes has resolved or transitioned into Type 2 Diabetes or Prediabetes.
Every 1 to 3 Years	Lifelong Diabetes Screening. Even if the 12-week test is normal, the mother remains at high risk and should be screened regularly (fasting glucose or HbA1c).
Future Pregnancies	Preconception Counseling. GDM has a 30% to 84% recurrence rate. Early testing (often in the first trimester) is necessary for subsequent pregnancies.



After-Pregnancy Planning

How do you plan to manage risks for T2D? _____

What goals will you set? _____



Key Points

- It is important to be screened for GDM.
- The risks of GDM can be minimized by using time tested healthy behaviors.
- There are many resources to help you learn how to self-manage GDM.
- Planning to manage GDM can help keep your glucose levels within target ranges.
- Be sure to advocate for future diabetes screening since you are at increased risk of developing Type 2 diabetes.



Resources



Diabetes Demystified



Healthy Coping



Healthy Eating



Being Active



Taking Medications



Monitoring



Reducing Risk



Tools & Solutions

Core DSMES Sessions:

These core sessions contain vital information toward understanding how diabetes effects the body and all the recommended health behaviors to support self-management.

Link to recorded classes:

warfighterwellness.org/diabetes



Online:

American Diabetes Association: <https://diabetes.org/living-with-diabetes/pregnancy/gestational-diabetes>

Center for Disease Control and Prevention: <https://www.cdc.gov/diabetes/about/gestational-diabetes.html>

National Institute of Diabetes and Digestive and Kidney Diseases: <https://www.niddk.nih.gov/health-information/diabetes/overview/what-is-diabetes/gestational>

Medline Plus: <https://medlineplus.gov/diabetesandpregnancy.html>



Notes:



The American Diabetes Association Recognizes this education service as meeting the National Standards for Diabetes Self-Management Education and Support.

If you have any concerns about the diabetes education you receive:

Please call
1-888-232-0822

or

write
**American Diabetes Association
Director, Education Recognition Program
2451 Crystal Drive, Suite 900
Arlington, VA 22202**

Refer to 006585