

QUICK REFERENCE GUIDE TO DIABETES FOR HEALTH CARE PROVIDERS

A special project of the Michigan Diabetes Outreach Network

Chapter 12 Gestational Diabetes Mellitus (GDM)

Risk assessment should be identified at the first prenatal visit.

Low Risk: Women who meet **all** of the following criteria: under the age of 25, are of normal weight before pregnancy, have no family history of diabetes, have no history of abnormal glucose tolerance, have no history of poor obstetric outcome, and are not members of a high risk ethnic group. No screening is required for those at low risk of developing GDM.

High Risk: Women who are have marked obesity, previous history of GDM or delivery of large-for-gestational age infant, glycosuria, strong family history of diabetes, diagnosis of polycystic ovarian syndrome (PCOS). They should be tested immediately and retested at 24-28 weeks, if necessary.

Average Risk: All other women, including those above not found to have diabetes early in pregnancy. They should undergo GDM testing at 24-28 weeks of gestation.

Diagnostic Tests*

**Based on the 2004 ADA position statement on GDM. However, the Hyperglycemia and Adverse Pregnancy Outcomes (HAPO) study demonstrated that risk of adverse maternal, fetal and neonatal outcomes continuously increased as maternal glycemia increased, even within ranges previously considered normal for pregnancy. For most complications, there was no threshold for risk. These results may call for careful reconsideration of the diagnostic criteria for GDM.*

At first prenatal visit, use the standard diagnostic testing (High Risk only):

- FPG ≥ 126 mg/dl. Fasting is defined as no caloric intake for at least 8 hours.
- Symptoms of hyperglycemia and a casual plasma glucose ≥ 200 mg/dl
- 2-hr plasma glucose ≥ 200 mg/dl during an OGTT. The test should be performed using a glucose load containing the equivalent of 75-g anhydrous glucose dissolved in water
- *Diagnosis needs to be confirmed on a subsequent day.*

Two screening approaches may be used at 24-28 weeks (Average and High Risk):

A. 1-step approach:

Perform a diagnostic 100-g OGTT, preferably in the morning after an overnight fast (at least 8 hrs). A diagnosis of GDM requires at least 2 of the following plasma glucose values to be abnormal (see below):

- Fasting: ≥ 95 mg/dl
- 1 hr : ≥ 180 mg/dl
- 2 hr: ≥ 155 mg/dl
- 3 hr: ≥ 140 mg/dl

B. 2-step approach:

1. Measure plasma/serum glucose 1 hour after a 50-g oral glucose load. A glucose ≥ 140 mg/dl identifies ~80% of women with GDM, while the sensitivity increases to ~90% by a threshold of ≥ 130 mg/dl.
2. Perform a diagnostic 100-g OGTT on a separate day in women who exceed the chosen threshold on a 50-g screening

Nutritional Intervention

All women should meet with a registered dietitian for assistance with meal planning, with calories sufficient for adequate weight gain. Carbohydrates should be based on the effect on the blood glucose and spaced throughout the day into 3 meals and 2-4 snacks. Carbohydrates can be limited to 35-40% of total calories, and are generally less well tolerated in the morning. A moderate restriction of no more than 30-45 grams at breakfast is usually recommended, with monitoring of blood glucose response. Non-nutritive sweeteners are generally safe in pregnancy. Supplementation with folic acid (600 ug per day) is recommended for all women before and during pregnancy.

Monitoring

- Weight gain (usually about 1-2 pounds per week for the second and third trimesters). Recommend at least 15 pounds for the obese and up to 40 pounds for the underweight.
- AM urine ketones - if present, may need additional carbohydrate calories before bed or may need shorter period of time between evening snack and breakfast.
- Food intake and blood glucose levels: fasting, before meals, 1-2 hours after meals.
- Meal plan is adjusted based on weight gain, AM ketones and blood glucose levels.

Blood Glucose Goals (plasma values)

	ADA*	ACOG**
Fasting	≤ 105 mg/dl	< 95 mg/dl
Pre-meal	---	60-105 mg/dl
1 hour postprandial	≤ 155 mg/dl	130-140 mg/dl
2 hour postprandial	≤ 130 mg/dl	< 120 mg/dl

* ADA (American Diabetes Association) ** American College of Obstetricians and Gynecologists

The HAPO study has shown these numbers to be too high. ADA's new position statement is expected sometime in 2008.

Insulin Administration

Generally started if nutritional therapy fails to keep blood glucose <105 mg/dl fasting or <130 mg/dl 2-hour postprandial.

Starting doses for gestational diabetes, in third trimester:

- 0.7 units/kg/day, give 2/3 in the morning as 2/3 NPH, 1/3 R (some use 70/30). Give the other 1/3 in the evening as 2/3 NPH and 1/3 R.
- Obese: 0.8-1 unit per kg per day in at least 2 doses per day
- Fasting hyperglycemia: may treat with HS dose of 10 units NPH

Oral hypoglycemic agents and insulin analogs are not approved for use in gestational diabetes at this time.

Activity and Pregnancy

- Activity may help with glycemic control.
- If active prior to pregnancy, a woman with gestational diabetes can usually continue being active.
- Heart rate should not exceed 140 beats per minute.
- Activities of less than 15-20 minutes may be indicated.
- Moderate, regular activity, especially after meals may have a positive impact on blood glucose levels.

Breast Feeding

- Should be strongly encouraged for as long as possible.
- May help with weight loss postpartum and reduce the risk of future diabetes.

Diabetes after Delivery

- Most women return to normal blood glucose following delivery.
- An estimated 40-60% of women with gestational diabetes eventually develop diabetes as they age.
 - risk of developing diabetes can be minimized if women engage in regular physical activities and maintain desirable body weight.
- Screened for diabetes 6-12 weeks post-partum, using standard criteria, and should be followed up with subsequent screening for the development of diabetes or pre-diabetes

References:

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