

## Gestational Diabetes - An Endocrinologist's Perspective

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Received on 19 January 2023; Accepted on 20 February 2023; Published on 02 March 2023

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### Abstract

*Gestational diabetes mellitus (GDM) is the most common medical complication of pregnancy today. As per the American Diabetes Association (ADA) 2022, the latest definition of GDM is diabetes diagnosed in the second or third trimester of pregnancy that was not clearly overt diabetes prior to gestation. Blood sugar more than normal and less than diabetes in the first trimester is defined as hyperglycemia in early pregnancy. GDM has been associated with adverse pregnancy effects and outcomes such as preeclampsia, macrosomia, large for gestational age (LGA), shoulder dystocia, stillbirth, as well as neonatal complications. Dietary counseling and physical activity are the primary treatment for GDM. If sugar is not controlled through diet and exercise, metformin and or insulin are other treatment options.*

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**Keywords:** gestational diabetes mellitus, American Diabetes Association, macrosomia, metformin, insulin

**Abbreviations:** GDM: gestational diabetes mellitus; ADA: American Diabetes Association; LGA: large for gestational age; DIPSI: Diabetes in Pregnancy Study Group India; IADPSG: International Association of Diabetes and Pregnancy Study Groups; OGTT: oral glucose tolerance test; T2DM: type 2 diabetes mellitus

### Introduction

Approximately 5–14% of all pregnancies are complicated by gestational diabetes mellitus (GDM). GDM is due to insulin resistance. Any woman can develop GDM during pregnancy; some of the factors that may increase the risk include the following:

- Overweight or obese, family history of diabetes, having given birth previously to an infant weighing greater than 4.5 kg
- Prediabetes
- Previous GDM

- Age (women who are older than 25 are at a greater risk for developing gestational diabetes than younger women)
- Race (women who are American Indian, Asian American, African American, Hispanic or Latino, or Pacific Islander have a higher risk)

## Criteria of GDM

There are various criteria for GDM. Currently in India, Diabetes in Pregnancy Study Group India (DIPSI) criteria and International Association of Diabetes and Pregnancy Study Groups (IADPSG) criteria are used. IADPSG criteria is recommended by the American Diabetes Association (ADA). DIPSI recommends a non-fasting oral glucose tolerance test (OGTT) with 75 g of glucose with a cut-off of  $\geq 140$  mg/dl after 2 h suggesting GDM.

As per IADPSG criteria – Any one value indicates GDM, fasting sugar is equal to or more than 92 mg/dl and OGTT (after 75 g anhydrous glucose or 82.5 g hydrous glucose), 1 h sugar more than or equal to 180 mg/dl, and 2 h sugar more than 153 mg/dl.

## Effect on Mother and Fetus

Hyperglycemia caused by GDM or preexisting diabetes has been associated with adverse pregnancy effects and outcomes such as preeclampsia, macrosomia, large for gestational age (LGA), shoulder dystocia, stillbirth, as well as neonatal complications including hypoglycemia, hypocalcemia, hyperbilirubinemia, polycythemia, respiratory distress syndrome, and fetal loss. Long-term GDM patients have a 7-fold increased risk of type 2 diabetes mellitus (T2DM).

Offspring of women with a history of GDM are also at increased long-term risk of developing metabolic diseases such as obesity, T2DM, and metabolic syndrome.

## Treatment

Dietary counseling and physical activity are the primary treatment for GDM. The diet should be as general diabetes patients, include low glycemic index carbohydrates containing the macro and micronutrients, and avoid postprandial excursion. The diet should be 3 major meals and 2 light snacks.

If these measures fail after 1–2 weeks in achieving good glycemic control, then the main treatment of choice is insulin. Insulin does not cross the placenta and therefore no effect on the fetus. Fetal growth assessment by ultrasonography may also assist in guiding the intensity of glucose control. If the baby is growing excessively, in particular, if the fetal abdominal circumference is  $> 75$ th percentile, it may need to intensify the treatment. Insulin NPH and detemir are long-acting insulin approved for pregnancy. Insulin glargine is also often used, although there are no randomized trials supporting the use of insulin glargine. Insulin glargine is in category C of pregnancy. Short-acting insulin - regular, aspart, and lispro are approved in pregnancy. Insulin dose in GDM is decided on serial monitoring of blood glucose, in general, 0.4–0.7 unit/kg is required.

## Drugs for GDM

Metformin is considered safe and effective, but various long-term studies suggest mothers who take metformin during pregnancy have a long-term risk of obesity in the child. In individualized cases, sulfonylurea as glibenclamide and glyburide are used but increased risk of higher rates of LGA, neonatal hypoglycemia, birth injury, and neonatal admission to the intensive care unit.

## **Glycemic Targets in GDM as per ADA**

Fasting sugar less than 95 mg/dl and 1 h postprandial glucose should be less than 140 mg/dl, 2 h glucose should be less than 120 mg/dl [1–4].

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