Learn simply

Pregestational Diabetes Mellitus

Known pregestational diabetes mellitus[1]

Is the patient pregnant?

No[2]

- Encourage strict glycemic control[3]
- Check HbA1c[4]
- Manage co-morbid conditions (hypertension, obesity)
- Routine preconception counseling (prenatal vitamins, folic acid supplementation, avoid alcohol)

Yes

First prenatal visit

- *Check early ultrasound to confirm dating, exclude multiple pregnancy, and document fetal wellbeing*
- Check baseline HbA1c measurement[4]
- Check baseline liver and renal function tests, 24-hour urinalysis for protein estimation and creatinine clearance

Antepartum management

- Regular prenatal visits q 1–2 weeks for glycemic control, as needed
- **Strict glucose control throughout gestation[5]**
- Serial HbA1c measurements[6]
- **Fetal anatomic survey at 18–20 weeks**
- **Fetal echocardiogram at 20–22 weeks**
- Maternal EKG (maternal echo and cardiology consultation if the EKG is abnormal)
- Maternal eye examinations
- **Weekly fetal testing after 32 weeks[7]**

Poor glycemic control and/or poor compliance

Consider delivery at 36 weeks with mature lung indices[8]

Good glycemic control[9]

Check estimated fetal weight at 37–38 weeks

EFW < 4,000 g

Await spontaneous labor at term; deliver by 39–40 weeks

EFW 4,000–4,500 g

Discuss risk of shoulder dystocia and resultant neurologic injury; offer elective cesarean delivery before labor

EFW > 4,500 g

Recommend elective cesarean delivery prior to labor

Intrapartum management

- **Strict intrapartum glucose control[10]**
- **Continuous fetal heart rate monitoring**

Routine postpartum care[11]

1. Pregestational diabetes results from either an absolute deficiency of insulin (type I, insulin-dependent diabetes mellitus) or increased peripheral resistance to insulin (type II, non-insulin-dependent diabetes mellitus (NIDDM)). It occurs in <1% of women of childbearing age. The age of onset and duration of diabetes (White classification) do not correlate with pregnancy outcome. Poor prognostic features include a history of diabetic ketoacidosis (DKA), poor compliance, poorly controlled hypertension, pyelonephritis, and vasculopathy.

2. Pregestational diabetes is associated with significant maternal and perinatal mortality and morbidity. Diabetic women should ideally be seen prior to conception. Pregnancy complications such as fetal congenital anomalies (diabetic embryopathy) and spontaneous abortion correlate directly with the degree of diabetic control around the time of conception.

3. Strict glycemic control is defined as fasting blood glucose <95 mg/dL and 1-hour postprandial <140 mg/dL (or 2-hour postprandial <120 mg/dL).

4. Approximately 5% of maternal hemoglobin is glycosylated (bound to glucose). This fraction is known as hemoglobin A1 (HbA1). HbA1c refers to the 80–85% of HbA1 that is irreversibly glycosylated and, as such, is a more reliable and reproducible measurement. Since red blood cells have a life span of 120 days, HbA1c measurements reflect the degree of glycemic control over the prior 3–4 months. A normal HbA1c is <5.9%.

5. The aim of antepartum management is to maintain strict glycemic control throughout gestation, defined as fasting blood glucose <95 mg/dL and 1-hour post-prandial <140 mg/dL (or 2-hour postprandial <120 mg/dL). A diabetic diet is recommended (defined as 36 kcal/kg or 15 kcal/lb of ideal body weight + 100 kcal per trimester given as 40–50% carbohydrate, 20% protein, 30–40% fat). Almost all patients with pregestational diabetes will also require pharmacologic therapy, particularly those with type I diabetes. Insulin remains the gold standard for women with pregestational diabetes. Although oral hypoglycemic agents (glyburide, glipizide) appear to be safe and effective and are being used more commonly as first line agents, they are not recommended for women with pregestational diabetes, particularly those with type I diabetes. Intense antepartum management and strict glycemic control can reduce perinatal mortality from 20% to 3–5%.

1. HbA1c measurements should be checked prior to conception, at first prenatal visit, and every 4–6 weeks throughout pregnancy.

2. Fetal testing is recommended in all cases of pregestational diabetes after 32 weeks' gestation because of the risks of abnormal fetal growth (intrauterine growth restriction or macrosomia), abnormal amniotic fluid volume, and fetal demise. Testing should include daily fetal kickcharts, weekly non-stress testing (NST) with or without sonographic estimation of amniotic fluid volume, and serial ultrasound q 3–4 weeks for fetal growth.

3. If an elective delivery is planned prior to 39 0/7 weeks' gestation, ACOG recommends that fetal lung maturity be documented by amniocentesis prior to delivery using diabetes-specific cut-offs.

4. If metabolic control is good, spontaneous labor at term can be awaited. Because of the risk of unexplained fetal demise, women with pregestational diabetes should be delivered by 39–40 weeks.

5. During labor, patients are typically starved. Glucose should therefore be administered (5% dextrose IV at 75–100 mL/h) and blood glucose checked every 1–2 hours. Regular insulin is given as needed (either by subcutaneous injection or IV infusion) to maintain glucose at 100–120 mg/dL.

6. During the first 48 hours postpartum, women may have a "honeymoon period" during which their insulin requirement is decreased. Blood glucose levels of 150–200 mg/dL (8.2–11.0 mmol/L) can be tolerated during this period. Once a woman is able to eat, she can be placed back on her regular insulin regimen.