Gestational Diabetes

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Clinical "Pearls"

- Refers to glucose/carbohydrate intolerance with its onset/recognition during pregnancy. Preexisting diabetes mellitus is referred to as type I or II. This more contemporary categorization/nomenclature is simpler and currently preferred over Dr. Priscilla White’s classification of different classes of gestational diabetes mellitus (GDM).10,11
- Diabetes mellitus is one of the most common medical complications of pregnancy and it affects 6-7% of all pregnancies with 90% of cases being GDM.9,10
- About 50% of women with GDM will be diagnosed with type II diabetes mellitus later in life (22-28 years after the affected pregnancy, on average).10,11 Hispanic women are especially susceptible with 60% of GDM cases converting to type II DM within five years of the affected pregnancy.10
- A1 gestational diabetes mellitus indicates that glycemic control is achieved with dietary modifications/exercise only while A2 gestational diabetes mellitus also requires insulin and/or an oral hypoglycemic agent - typically, metformin or glyburide for adequate glycemic control during pregnancy. Oral hypoglycemic agents and insulin are felt to be equally effective in achieving adequate glycemic control during pregnancy for most women.1,2,7
- Women with preexisting diabetes mellitus have either type I (caused by endogenous hyposecretion of insulin) or type II (caused by exogenous insulin resistance) forms. Most of these women will require insulin and/or an oral hypoglycemic agent for adequate glycemic control but a very small % may be able to be managed well with dietary modifications/exercise only during pregnancy.
- GDM typically resembles type II diabetes mellitus (characterized by insulin resistance). Its prevalence varies among different ethnic groups and is proportionate to the incidence of type II DM in a given patient population.10
- GDM is a disease "of excess": caused by hormonal, metabolic, physiologic changes during pregnancy as a result of substances secreted by the placenta to make more glucose available for the fetus to use as metabolic fuel.
- Avoid maternal hyperglycemia and hypoglycemia during labor for all diabetic mothers!2,5
- Supplemental/exogenous insulin needs are usually less during the active phase of labor.6
- Insulin needs drop precipitously after delivery of the placenta.6
- Use IV insulin instead of subcutaneous insulin for intrapartum glycemic control.10
- Use fast-acting (regular) insulin for infusion/sliding scale therapy during labor
- Intravenous fluids should include dextrose if blood sugars (in mg/dL) are 160 or less (laboring women need glucose as a source of metabolic energy) labors last longer if only NS or RL is used.8
- Strict glycemic control during labor is associated with improved neonatal outcomes for all diabetic mothers, including A1 gestational diabetes mellitus.2,5,4,10
- In labor, check glucose levels every 1-2 hours for patients who required
insulin/hypoglycemic medication during pregnancy and every 2-4 hours for patients who only required dietary modifications/exercise during pregnancy.

- All L&D units should have existing treatment protocols for diabetic ketoacidosis and severe hypoglycemia.
- Encourage breastfeeding for all diabetic mothers, including A1 gestational diabetes mellitus.

Management

Therapeutic Range Recommendations: 

- Ranges are typically used for glycemic control goals during labor:
  - 75 > 120 (mg/dL) or 70 > 125 (mg/dL)
  - Severe hypoglycemia: <50 or <60 (mg/dL): initiate corrective protocol
  - Severe hyperglycemia: >180 or >200 (mg/dL): MFM/IM consult/orders
  - > 240 mg/dL: Proceed below:
    - Consider diabetic ketoacidosis - check anion gap, serum acetone level STAT
    - Contact MFM/IM for consultation/orders
    - Alert nursery
    - Activate diabetic ketoacidosis treatment/management protocol (if diagnosed)

Fetal Distress Can Occur in Either Scenario:

- Proceed with emergent c-section if situation not quickly remedied/abnormal FHTs persist
- Maternal hyperglycemia is associated with fetal acidosis/neonatal hypoglycemia
- Neonatal hypoglycemia is often still detected even with normal glucose values during labor in mothers with poor antenatal glycemic control - this can be severe and refractory in nature
- Poor antenatal glycemic control is associated with fetal hyperinsulinemia and pancreatic hyperplasia

Special Circumstances

- Applicable only for diabetic mothers requiring medication for glycemic control during pregnancy
- Consideration of MFM/IM consultation is strongly recommended for these patients
- Use standard intrapartum glucose level target/monitoring parameters and guidelines

Scheduled C-section Delivery:

- Perform as early in the morning as possible (if done later in the day, start 5% dextrose infusion along with a basal infusion of insulin or IV insulin per sliding scale while patient is NPO.
- Maintain the usual or routine dosage of medication the night before EXCEPT for the following: Decrease dose of long-acting insulin (detemir/glargine) by 50%, or 67% if patient is also on a PM dose of NPH insulin
- Avoid dextrose in IV fluid being used to hydrate patient before spinal/epidural anesthesia

Induction of Labor:

- The same as cesarean with regards to PM dosing the night before and starting with the procedure in the morning
- Decrease PO intake/medication dosage by 50% if admitted for cervical ripening overnight and check glucose level upon admission, before bed/bedtime snack, and between 2-4 AM
- Maintain saline lock/avoid dextrose in IV fluid used to hydrate patient before epidural/use standard intrapartum glucose level targets and guidelines

Insulin Pump:
- Highly unlikely for patients with only gestational diabetes mellitus
- Discontinue the usual or routine insulin pump dosage parameters when the patient is admitted to hospital in the morning for c-section or induction of labor and start the appropriate protocol for glycemic control 1-2 hours before the time of scheduled c-section delivery or intrapartum when active labor occurs (typically 4 cm of cervical dilation) if induction of labor is being started
- Continue with the usual or routine insulin pump dosage parameters overnight during the process of cervical ripening and then discontinue pump, start intrapartum labor glycemic control protocol when the induction process has progressed to the point of active labor (typically 4 cm of cervical dilation)

Postpartum Issues7,9,10
- Postpartum glycemic control is much more relaxed
- Women with gestational GDM do not need frequent glucose monitoring after delivery (however, they should have at least one fasting blood sugar and, in some protocols, one 2 hour postprandial blood sugar level checked 24-72 hours postpartum prior to being discharged from the hospital noted to be normal to confirm they do not actually have non-gestational DM)
- Postpartum women, a fasting blood sugars >125 mg/dL and a 2 hour postprandial blood sugar level >200 mg/dL would typically be considered abnormal and require surveillance/possible intervention with medication to improve glycemic control
- Abnormal postpartum blood sugars would indicate non-gestational diabetes mellitus instead of gestational diabetes mellitus and a subsequent glucose screen is not necessary (MFM/IM consultation is advised for these patients with newly diagnosed non-gestational DM prior to being discharged from the hospital)
- Patients with gestational diabetes mellitus only (both A1 & A2) should have a two hour glucose screen (75 gm) done at 6-12 weeks postpartum to rule out a conversion to non-gestational diabetes mellitus
- Breastfeeding is highly recommended for all diabetic mothers since it drops blood sugar levels and has multiple benefits for their babies (the glycemic control benefit is secondary to the high metabolic demand/increased glucose utilization associated with lactation)

Antepartum Issues3,4,9,10
- Glucose monitoring typically includes a fasting value and post-prandial values x3 daily
- Glycemic control can be impaired with antenatal steroid administration, N/V/D, and infection (patients may require correctional insulin therapy PRN per a sliding scale)
- insulin needs typically increase in the third trimester of pregnancy1
- Glycemic control should be monitored every trimester via a HgbA1C
- An elevated HgbA1C in the first trimester is associated with an increased risk for miscarriage as well as congenital fetal anomalies3,9,10
REFERENCES


For more information regarding gestational diabetes mellitus and resources available to patients and providers via ACOG can be reviewed at: http://www.acog.org/Womens-Health/Gestational-Diabetes