GESTATIONAL DIABETES

DEFINITION:
A carbohydrate intolerance that is initially recognized during pregnancy.

SCREENING:
All pregnant women should be screened with a GLUCOSE CHALLENGE TEST (GCT) at 24-28 weeks gestation (if prenatal care begins after 28 weeks, screen at first visit).

Screen with GCT at **first** prenatal visit if any of the following risk factors are present...

- Previous history of gestational diabetes
- Glucosuria of $\geq$ 3% on a random urine specimen
- On maintenance oral steroids
- Family history of diabetes
- Previous macrosomic baby ($\geq$ 4000 g)
- Body Mass Index (BMI) $\geq$29

- If initial screen is negative, re-screen with GCT at 24-28 weeks
- If initial screen positive, do GLUCOSE TOLERANCE TEST (GTT)
    - if early GTT negative, repeat only GTT/HgbA1c at 24-28 weeks

Glucose Challenge Test (GCT):
Patient is given a 50 g oral glucose load (Glucola) without regard to the time of day or time of most recent meal. A venous blood draw is performed one hour later to determine the blood glucose level.

- Normal GCT < 130 mg/dl
- Abnormal GCT $\geq$ 130 mg/dl

- An abnormal GCT $\geq$130 and<200 should be followed by a Glucose Tolerance Test (GTT) within one week.

- If GCT $\geq$ 200 mg/ml, return to clinic in AM for fasting blood glucose (FBG).
    - If FBG $\geq$126: patient has diabetes, transfer care to HCMC high risk OB.
    - If FBG <126: perform GTT and draw Hgb A1C.

Glucose Tolerance Test (GTT):
Patient fasts starting at midnight. The next morning a fasting glucose level is drawn and then the patient is given a 100 g oral glucose load at the lab. Venous glucose levels are drawn 1, 2, and 3 hours after the ingestion of Glucola.

DIAGNOSIS: gestational diabetes is diagnosed if

- fasting value alone is high (using California Sweet Success criteria) **OR**
- at least two of the glucose values are met or exceeded (Carpenter/Coustan criteria):

Fasting < 95 mg/dl 1 hour <180 mg/dl 2 hour <155 mg/dl 3 hour <140 mg/dl	Normal Valves

- HCMC OB/GYN uses Carpenter/Coustan criteria (2 abnormal values)
- HCMC Family Medicine also incorporates California Sweet Success criteria of abnormal fasting only to diagnose GDM (because of our high risk Hispanic patient population)

- If GTT abnormal in first trimester, transfer care to HCMC OB/GYN as patient is likely a preexisting diabetic.

MANAGEMENT:

- FMC RN GDM class (GDM basics, taught blood glucose monitoring)
- FMC RD GDM class (meal plans, carbohydrate counting, goals)
- Self blood glucose monitoring goals:
  Fasting $\leq$95 mg/dl or
  2h postprandial $\leq$120 mg/ml (2 hours after START of meal)
- Initiate insulin therapy if dietary management is not adequate (i.e. fasting >95 or 2h postprandial >120). Two or more outliers in any category (fast, post break, post lunch). post dinner. Send patient to RN CDE for insulin education.
- Follow HCMC Family Medicine GDM flow chart and practice guidelines

ANTEPARTUM CONSIDERATIONS:

- A1 weekly non stress test (NST) beginning at 40 weeks
- A2 weekly NST at 30 weeks, twice weekly at 32 weeks
- Consider weekly biophysical profiles for GDM A2 starting at 34-40 weeks if hypertensive or history of previous stillborn
- Consider OBTU ultrasound for fetal weight and timing of delivery
- A1 patients can be managed expectantly and delivered vaginally
- A2 patients should be induced on due date, provided dates are reliable (ACOG criteria for term gestation)

LABOR & DELIVERY:

GDM A1: routine care, no glucose during labor needed, monitor QID postpartum hospital stay

GDM A2: ask patient to bring her meter to L&D

- Latent phase labor: reduce NPH by 50% and usual dose of regular with meals

- Active phase labor: discontinue insulin and PO intake
- Check blood glucose every hour
- Goal range 70-100 mg/dl
- If glucose stable can go to every 2 hour monitoring

- If glucose > 100 mg/dl, start continuous IV insulin infusion
- Base drip rate on blood glucose measurements
- Inform HCMC OB we are managing patient on insulin drip

Since macrosomia is a risk, be prepared for possible shoulder dystocia

HCMC Protocol for IV Insulin Infusion
50 units Regular insulin in 500 cc Normal Saline on a volumetric pump
if blood glucose is…

<100 mg/dl start D5NS at 125 cc/h
>100 mg/dl begin IVF's at 125 cc/h and 0.5 units insulin/hour
>140 mg/dl begin IVF's at 125 cc/h and 1.0 units insulin/hour
>160 mg/dl begin IVF's at 125 cc/h and 2.0 units insulin/hour
>190 mg/dl begin IVF's at 125 cc/h and 3.0 units insulin/hour
>220 mg/dl begin IVF's at 125 cc/h and 4.0 units insulin/hour

- DC insulin drip immediately after delivery
- Check blood glucose 1 hour later and Q4 hours overnight
- Next day monitor fasting and 2h post meals, glucose should normalize rapidly
- If blood glucose fasting >110 or 2h post meal >140 use sliding scale insulin
- At home check weekly fasting and 2 h postmeal, review results at pp visit

<u>POSTPARTUM VISIT</u>:
- Patients at increased risk for developing type 2 diabetes
- At postpartum visit, schedule 2 hour, 75 g oral GTT
  (after 8-12 hours of fasting preceded by 3 days of normal diet)

  - Normal: fasting <100, 2 h <140 mg/dl; recheck fasting glucose yearly

  - Impaired fasting glucose: fasting $\geq$100 and <126 mg/dl
  - Impaired glucose tolerance: GTT 2h $\geq$ 140 < 200 mg/dl

  - Diabetes: fasting $\geq$ 126, 2 h $\geq$ 200 mg/dl

If impaired fasting/glucose tolerance or diabetes diagnosed, refer patient to RD/CDE and RN/CDE ASAP.

REFERENCES:
FP Obstetrics, 2nd Edition
FMC GDM Protocol
American Diabetes Association

DIABETES (WHITE'S CLASSIFICATION)

- Used for preexisting diabetics while they are pregnant
- Based on age of onset of diabetes and the presence of certain vascular complications
- Used to estimate the degree of microvascular disease and help with prognosis for pregnancy outcome. Also used to determine best time for delivery.

Class A: Abnormal GTT, no clinical signs of diabetes mellitus
A1 - diet controlled
A2 - requiring insulin

- can be managed by Family Medicine Certified GDM providers

Class B:	Disease after age 20 and present for < 10 years	Managed by HCMC OB/GYN High Risk Clinic on Thursday AM's
Class C:	Disease onset age 10-19 OR present 10-19 years no vascular disease	
Class D:	Onset before age 10 OR present for 20+ years OR vascular disease, benign retinopathy	
Class F:	Nephropathy	
Class H:	Cardiac disease	
Class R:	Proliferative retinopathy	
Class T:	Transplant	